



Australian Government

Department of Education, Employment and Workplace Relations

ICTDRE4166A Integrate customer digital reception equipment

Release: 1

ICTDRE4166A Integrate customer digital reception equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to integrate emerging audiovisual technology equipment in a customer home network. Home networks integrate many services such as broadband, digital TV, free to air (FTA), subscription TV (pay TV) and Internet protocol TV (IPTV). No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.
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Application of the Unit

Application of the unit	The unit applies to an installer working with a wide range of customer equipment types, in a variety of customer premises requiring current knowledge of equipment capabilities and connection types. The unit is contextually limited to radio frequency (RF) signal services.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
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 the worksite and complete a job safety analysis (JSA) before commencing work 1.4. Use test equipment to verify that 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 the 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 operation of the network
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 occupational health and safety (OHS) and environmental requirements and test to verify status of the connection 3.3. Notify service provider if identified problems cannot be rectified at the 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

ELEMENT	PERFORMANCE CRITERIA
	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 the 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 the 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

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to liaise with customer and colleagues and negotiate with site owner
- literacy skills to interpret technical documentation, specifications and service orders
- numeracy skills to take measurements and interpret results
- planning and organisational skills to provide enterprise equipment
- problem solving skills to respond to typical integration challenges
- task management skills to:
 - adhere to all safety requirements
 - work systematically with required attention to detail
- technical skills to:
 - configure services

REQUIRED SKILLS AND KNOWLEDGE

- design and build system
- perform diagnostic procedures
- use hand and power tools
- use test equipment for signal measurement and other enterprise-specific tools

Required knowledge

- analog and digital connectors
- contemporary equipment and connection methods
- continuity, ingress, egress, signal level and signal quality performance tests
- customer service principles, particularly dealing with customers face-to-face
- enterprise or service specific knowledge of products and services supplied
- equipment types:
 - amplifiers
 - couplers
 - splitters
 - taps
- modulation techniques
- objectives and methods of training for product use for customer education
- OHS general principles and enterprise-specific JSA requirements
- performance adjustments for tuning, balancing and replacing components
- quality assurance of enterprise requirements
- test analysis and diagnosis (enterprise diagnosis methods)
- video and audio fundamentals

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.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- identify the 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 OHS requirements and work practices
- configure services and optimise customer system
- conduct functionality tests and interpret results
- provide customer training appropriate to the equipment
- complete the task and handover to customer.

Context of, and specific resources for assessment

Assessment must ensure:

- site for DRE integration
- DRE currently used in industry
- test equipment required for DRE integration.

Methods of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct observation of the candidate installing three types of equipment and services applying all related OHS requirements and work practices
- direct observation of the candidate configuring services and optimising customer system
- oral or written questioning of the candidate to assess required knowledge.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- ICTDRE4167A Integrate data delivery modes.

Aboriginal people and other people from a non-English speaking background may have second language issues.

EVIDENCE GUIDE

	Access must be provided to appropriate learning and assessment support when required. Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed. In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. Where applicable, physical resources should include equipment modified for people with special needs.
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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.

Relevant legislation, codes, regulations and standards may include:

- Australian Communications Industry Forum (ACIF) standards and codes
- AS Communications Cabling Manual (CCM) Volume 1
- AS/NZS 3000:2007
- AS/NZS 3080:2003
- AS/NZS 3084:2003
- AS/NZS 3085.1:2004
- AS/NZS IEC 61935.1:2006
- AS/NZS IEC 61935.2:2006
- AS/NZS ISO/IEC 14763.3:2007

RANGE STATEMENT	
	• AS/NZS ISO/IEC 15018:2005 • AS/NZS ISO/IEC 24702:2007 • cabling security codes and regulations • Environmental Protection Acts • Trades Practices Act • Institute of Electrical and Electronics Engineers (IEEE) standards • ISO Draft 11801 • OHS • regulated or industry codes of practice including appropriate Australian Communications and Media Authority (ACMA) standards • technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006.
Safety hazards may refer to:	• debris • excessive dust or noise • exposed electrical wiring • exposed machinery • industrial • spilled chemicals • unsafe spatial separation of cables • unsafe structures • wet areas.
Test equipment may include:	• multimeter • signal level meter • spectrum analyser.
Customer equipment may include:	• devices: • antennas • audio equipment (amplifiers and equalisers) • recorders (disk and hard drive) • speaker systems • TV receivers • digital FTA • hard disk recorder • high definition (HD) TV • home automation • LCD TV • media centre

RANGE STATEMENT	
	• plasma TV • security systems • simulation consoles • video player • video and audio distribution systems.
Customer premises may include:	• alternative construction types, such as mud brick • concrete construction • domestic brick or timber dwelling • multi-level construction.
Client specifications may include:	• equipment types • policy, procedures and practices • service level agreements (SLAs) • standards and quality requirements.
By-laws, standards and regulations may include:	• Australian and New Zealand standards and cabling regulations • council by-laws for siting equipment and cables • electrical safety factors.
Drawing symbols may include:	• audiovisual (AV) system features • common electrical circuit features.
Optimal performance may include:	• antenna orientation • aspect ratio • contrast • picture quality • signal amplification adjustment.
Cables may include:	• coaxial • optical fibre.
Materials may include:	• antennas • cables • joiners • plugs and other connectors • support fittings.
Client may be:	• the organisation contracting the work • the organisation providing services.
OHS and environmental requirements may relate to:	• identifying other services, including power and gas • personal protective equipment: • earmuffs

RANGE STATEMENT	
	• gloves • head protection • masks • protective suits • safety boots • safety glasses • safe working practices, such as the safe use and handling of: • chemicals • materials • tools and equipment • safety equipment: • flashing lights • safety barriers • warning signs and tapes • witches hats • special access requirements • environmental considerations: • clean-up protection • stormwater protection • waste management.
Service provider may be:	• an internet service provider (ISP) or a delegated organisation acting on their behalf • a registered telecommunications carrier.
Customer may include:	• an individual • entity who is the final recipient of the service.
Customer training may include:	• customer to operate equipment functions • demonstration to customer • explanation of operating functions as provided in vendor product literature • explanation of relevant equipment functions • feedback to customer on their operation of equipment functions.
Appropriate records may include:	• connection records • equipment user guides • invoices.
Warranties may include:	• support provided by network service provider • support specified by the equipment manufacturer or supplier.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Digital reception technology
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