



Australian Government

ICTTEN315 Determine and apply technologies within a telecommunications system

Release: 1

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
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
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 system	2.1 Identify and document encoding technologies within a given network 2.2 Identify and document basic principles of data error correction and measuring techniques within a given system

ELEMENT	PERFORMANCE CRITERIA
	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 language in order to convey explicit information

Skill	Description
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>

Assessment Requirements for ICTTEN315 Determine and apply technologies within a telecommunications system

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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

- 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

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