



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN5038A Design an electronic system for a telecommunications network

Release: 1

ICTTEN5038A Design an electronic system for a telecommunications network

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to design additional telecommunications network equipment and assess compatibility with existing infrastructure. It includes processes for assessing need for additional equipment, such as voice over internet protocol (VoIP), biometric identification, radio frequency identification (RFID) and security system equipment. It involves checking specifications and compatibility with the network. 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	Field officers, technicians or technical supervisors from carriers, contractors or other service providers apply the skills and knowledge in this unit. This unit applies to a switching, transmission or radio network and the various transmission paths including cable, optical fibre, radio, microwave and satellite that support it.
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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 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
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

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 customers and technical staff to ensure requirements are known and can be met within timeframes
- literacy skills to interpret technical specifications and related documentation
- planning and organisational skills to plan and prioritise own work
- problem solving skills to:
 - deal with unexpected situations on the basis of safety and specified work outcomes
 - manage unexpected configuration anomalies
- technical skills to:
 - analyse the impact of additional telecommunications equipment on the network
 - assess compatibility between existing and additional equipment
 - determine customer requirements and a design specification

REQUIRED SKILLS AND KNOWLEDGE

- identify the technical requirements, constraints and manageability issues for a given customer network requirement

Required knowledge

- electrical and optical properties to be measured
- integration, compatibility and interoperability of equipment
- legislation and licensing relevant to installation of telecommunications equipment including spectrum allocation
- power requirements and electrical safety
- transmission type and signals that may be encountered

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

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

Evidence of the ability to:

- evaluate system need for additional electronic equipment and design options
- analyse network and design systems
- assess system compatibility.

Context of and specific resources for assessment

Assessment must ensure:

- telecommunications network where additional equipment design may be conducted
- relevant regulatory and equipment documentation that impact on electronic system design.

Method 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 undertaking network analysis and design
- review of reports completed by the candidate
- oral or written questioning to assess knowledge of types of systems and application and compatibility issues.

Guidance information for assessment

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

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

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

EVIDENCE GUIDE

	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.

Determine need may include:

- customer requirements
- existing infrastructure
- network growth forecasts
- test results.

Additional electronic equipment may include:

- radio networks:
 - fixed
 - mobile
- switching
- various transmission paths:
 - cable
 - microwave
 - optical fibre
 - radio
 - satellite
 - transmission.

Customer may include:

- a carrier
- customer representative
- internal organisational customer.

Possible impacts may relate to:

- age and construction
- building facility location

RANGE STATEMENT	
	• distances between units and installations • impacts on existing services and customers • need for outages • ownership of installation site • site type.
Compatibility may relate to:	• electrical interfaces • protocols.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering
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