



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN4078A Commission an electronic system

Release: 1

ICTTEN4078A Commission an electronic system

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to commission an electronic system within a telecommunications environment in a broad range of applications. This involves commissioning 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. 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 and technicians employed by telecommunications carriers, service providers or contractors apply the skills and knowledge in this unit. It involves commissioning an electronic system at customer's premises and within a carrier network. The commissioning may be for a new installation or an upgrade of capacity or technology for an existing network or subsystem for convergence to Next Generation Networks (NGN).
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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. Prepare to commission an electronic system	1.1. Prepare for work following occupational health and safety (OHS) requirements 1.2. Organise resources based on existing and potential site hazards 1.3. Notify customer or network operations personnel for site access and network specifications 1.4. Determine the function and requirements of the electronic system from specifications 1.5. Identify potential security threats and vulnerability where remote monitoring and control via the public telecommunications network or internet are used, and report to appropriate person 1.6. Verify that the 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 the relevant control centre and notify customers affected by the outage
3. Perform commissioning procedures	3.1. Configure the 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 the cut over according to project design and industry practice in consultation with appropriate person 3.4. Conduct a security audit, including remote threat

ELEMENT	PERFORMANCE CRITERIA
	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

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- analytical skills to interpret test equipment settings and readings
- 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
- numeracy skills to make calculations
- planning and organisational skills to arrange site access and contingency plans
- problem solving to account for unexpected faults or equipment configuration anomalies
- safety awareness skills to:
 - apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
 - select and use required personal protective equipment conforming to industry and OHS standards
 - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- technical skills to:
 - conduct security audit
 - conduct tests
 - configure electronic system parameters
 - establish planned outage
 - identify security threats

REQUIRED SKILLS AND KNOWLEDGE

- install software
- perform cut over

Required knowledge

- acceptance testing
- commissioning procedures
- commissioning testing
- electrical and optical properties to be measured
- extensive range of networking equipment
- legislation and licensing associated with installation of telecommunications equipment
- network operation procedures
- power requirements and electrical safety
- setup and operation of test equipment applicable to a wide range of measurements
- 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:

- negotiate arrangements for commissioning
- configure electronic equipment and system parameters
- commission electronic system according to specifications
- deal with faults and problems and provide solutions
- identify potential security threats and vulnerability.

Context of and specific resources for assessment

Assessment must ensure:

- sites on which installation and commissioning procedures may be conducted
- relevant regulatory and equipment documentation that impact on commissioning
- use of testing equipment currently used in industry.

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 applying enterprise escalation and outage procedures within service assurance guidelines
- review of reports completed by the candidate outlining test plan and test results complete with analysis of faults with solutions
- oral or written questioning to assess knowledge of commissioning procedures and types of systems.

Guidance information for assessment

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

- ICTTEN3077A Commission an electronic unit
- ICTTEN3104A Maintain an electronic system
- ICTTEN4076A Complete equipment and software upgrades
- ICTTEN4081A Locate, diagnose and rectify faults

EVIDENCE GUIDE

- ICTTEN4198A Install, configure and test an internet protocol network
- ICAB4236B Build security into a virtual private network.

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 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.

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 requirements may include:

- decommissioning and isolating worksite and lines prior to commencement
- identifying other services:

RANGE STATEMENT	
	• gas • power • personal protective clothing: • earmuffs • gloves: • leather • plastic • rubber • head protection • kneepads • masks • protective suits • safety boots • safety glasses for laser work • safe working practices to handle: • asbestos • chemicals • materials • tools and equipment • work platforms • safety equipment: • flashing lights • gas and other hazard detection equipment • safety barriers • trench guards • warning signs and tapes • witches hats • special access requirements • suitable light and ventilation.
Hazards may include:	• earth potential rise (EPR) • optical fibre cable: • bare fibres • hazardous laser light • radio frequency (RF) equipment emitting radiation • remote power feeding services operating above telecommunications network voltage (TNV).
Network operations personnel	• alarm operations

RANGE STATEMENT	
may include:	• network operations centre staff • network operations manager • project manager.
Electronic system may relate to:	• biometrics • cellular telemetry • IPTV • multiplexing • RFID • supervisory control and data acquisition (SCADA) • surveillance • VoIP.
Security threats may include:	• disgruntled employees • general internet threats • holes in firewalls • malware • network Intrusion • recreational hackers • virus • worm.
Planned outage may refer to:	• allocation of additional services and support • notification to affected customers • plan for: • redundant path • standby equipment.
Test equipment may include:	• bit error rate (BER) tester • communication system analyser • digital analyser • laptop computer with diagnostic routines • laser source • magnetic error reduction (MER) meter • microwave link analyser • modulation analyser • multimeter • optical attenuator • optical fibre power meter • oscillator • oscilloscope • optical time domain reflectometer (OTDR)

RANGE STATEMENT	
	• pattern generator • power meter • RF microwave test set • RF sweep tester • signal level meter (SLM) • spectrum analyses • transmission measuring set • voltage standing wave ratio (VSWR) meter.
<i>Affected customers</i> may include:	• building owner • communications consultant • contractor to a major supplier • end users • equipment owner • householder • operations staff.
<i>Contingency plans</i> may include:	• additional notification to affected customers • additional technical support • provision of: • additional services • redundant path • standby equipment.
<i>Conduct tests</i> may involve:	• compatibility • end-to-end systems • monitoring features • network assess facilities • remote alarm.
<i>Appropriate person</i> may include:	• customer • design engineer • network operations manager • project manager • supervisor.
<i>Administrative tasks</i> may refer to:	• completing job orders • completing test sheets according to specification and logging test instrument usage • correct labelling of all equipment and amending where required • following quality control procedures • handing over installation briefs, documents and equipment manuals to operational staff • providing customers with a

RANGE STATEMENT	
	telecommunications cabling advice (TCA) form, such as TCA1 form or equivalent form • recording test results and updating appropriate data bases • submitting job orders • updating design specifications.

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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