



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN6047A Manage a common channel signalling network

Release: 1

ICTTEN6047A Manage a common channel signalling network

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage common channel signalling (CCS) network to control multiple data channels. The most common CCS signalling methods in use are integrated services digital network (ISDN) and signalling system No.7 (SS7). ISDN signalling is used primarily on trunks connecting end-user private branch exchange (PBX) systems to a central office. SS7 is primarily used within the public switched telephone network (PSTN). The two signalling methods are very similar since they share a common background and in some cases, the same signalling messages are transmitted in both ISDN and SS7. Voice over internet protocol (VoIP) communications use configurations with multiple routers to communicate via VoIP and CCS over a digital primary rate interface (PRI). 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	Technical officers or engineers from private and public organisations apply the skills and knowledge in this unit. They combine technical skills with organisational skills to provide signalling facilities to interconnect telecommunications over trunked networks. They may be responsible for small projects or parts of larger projects and their primary roles are to provide trunked transmission paths for a reliable service to customers.
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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. 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 CCS and data faults or problems 1.3. Investigate cause of alarm and analyse results to determine 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 that 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 the 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 rearrangements scenarios and verify feasibility of rearrangement

ELEMENT	PERFORMANCE CRITERIA
	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

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- analytical skills to interrogate and evaluate complex information from multiple sources and to develop positions and recommendations
- communication skills to:
 - liaise with vendors, customers, and technical experts on technical and operational matters
 - negotiate with other repair and support staff
- literacy skills to incorporate technical language into written tasks such as records and reports
- numeracy skills to interpret technical data
- planning and organisational skills to work in a methodical and logical manner
- research skills to access technical information and sources to assist fault identification
- technical skills to operate testing tools

Required knowledge

- acceptance tests
- alarm set ups
- CCS:
 - architecture
 - protocols
 - signalling
 - testing
- data and signalling pathways
- repair and restoration procedures
- routing architecture

REQUIRED SKILLS AND KNOWLEDGE

- switching network equipment operation

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: • identify and implement repair action within service assurance guidelines • analyse and interpret alarms including 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.
Context of and specific resources for assessment	Assessment must ensure: • site with CCS network • tests and equipment currently used in industry • relevant legislation, codes, regulations and standards.
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 managing a CCS network • oral or written questioning of the candidate to assess required knowledge of CCS networks, testing and repair and restoration procedures • review of documentation and records completed by the candidate.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • ICTTEN6043A Undertake network traffic management • ICTTEN6044A Coordinate fault rectification and restoration of service following network outages. Aboriginal people and other people from a non-English

EVIDENCE GUIDE

	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.
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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 include:

- Australian Communications and Media Authority (ACMA) standards as they apply to carrier operation
- International Standards ISO 9000 and ISO 9001
- International Telecommunications Union (ITU) recommendations network management series E410
- occupational health and safety (OHS)

RANGE STATEMENT	
	• Privacy Act.
<i>Repair and restoration procedures</i> may include:	• arranging test sequence • conducting clearance test • notifying network operation centre (NOC) • performing fault diagnosis • repairing or replacing affected component • restoring services • verifying alarm.
<i>Escalation procedures</i> may include:	• pass onto network specialist at NOC • verification of fault status: • clearance likely to exceed set time • fault too complex for local attention • vendor technical specialist.
<i>Acceptance testing</i> may include:	• compatibility • functionality • operational • performance.
<i>Rearrangements scenarios</i> may include:	• CCS SS7 violations • digital path alarms • digital information path (DIP) running errors • link conversions.
<i>Documentation</i> may include:	• alarm management system printouts • fault clearance methods • fault details • final fault clearance tests • recommendations • test results.

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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