Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN5084A Provide expert advice and support on complex faults

Release: 1

ICTTEN5084A Provide expert advice and support on complex faults

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to provide expert advice and support on complex faults on cabling and customer premises equipment (CPE). It involves a methodical approach to the diagnosis of complex faults and organising repair or replacement of defective parts or equipment. 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.

Application of the Unit

Application of the unit	Telecommunications officers, installers, maintenance staff and manufacturer or equipment specialists apply the skills and knowledge in this unit. This unit may be applied by those in advisory roles and technical rectification roles. Networks include cabling, CPE, Access, telephony, broadband deployment, local area networks (LAN), wide area networks (WAN) and internet protocol (IP) networks for enterprise and customer systems and installations. This unit may be applied to domestic, commercial or industrial installations.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish background information	1.1. Notify ***client*** to identify ***type of fault*** and occurrence 1.2. Obtain report of any action taken by first fault repairer and subsequent result 1.3. Analyse fault history in order to establish any ***fault patterns*** including questioning personnel involved in ***previous fault repair*** if relevant 1.4. Develop strategies for identification and repair using advice from ***other engineering and technical personnel*** 1.5. Refer to ***relevant legislation***, ***codes***, ***regulations and standards*** relating to repair 1.6. Inform customer of issues and possible solutions
2. Undertake fault diagnostic	2.1. Isolate fault progressively using a ***fault identification approach*** to remove likely variables from assessment 2.2. ***Identify fault*** in the shortest time possible or escalate to appropriate level 2.3. Seek back up support from the product manufacturer when required
3. Organise fault rectification	3.1. Determine options to ***rectify fault***, including any downtime and present to customer for decision 3.2. Replace or repair defective parts or equipment according to service agreement 3.3. Reprogram equipment as required 3.4. Complete work in a manner which is safe both to the repairer and to the customer 3.5. Dismantle and remove temporary service in a safe and efficient manner where appropriate 3.6. Provide on site repair staff with clear and precise instructions on fault rectification where appropriate
4. Document fault details	4.1. Record details of fault and actions taken to both find and repair and store for future reference 4.2. Advise product manufacturer of fault and repair details if applicable 4.3. Recommend changes to product/product model design where appropriate 4.4. Advise client 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 internal and external personnel on technical and operational matters
- literacy skills to interpret technical documentation, equipment manuals and specifications
- numeracy skills to take and analyse measurements
- planning and organisational skills to organise and maintain equipment
- problem solving skills to solve equipment and logistics problems
- task management skills to work systematically with required attention to detail and adherence to all safety requirements
- technical skills to:
  - interpret drawings related to customer's telecommunications equipment
  - provide expert advice on fault clearance
  - use databases
  - use diagnostic equipment

Required knowledge

- features and operating requirements of test equipment
- information required to operate remote diagnostic equipment according to a test specification
- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer's requirements for effective operation of equipment
- specific occupational health and safety (OHS) requirements relating to the activity and site conditions
- test methods and performance requirements
- typical issues and challenges that occur on site

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:
	• methodically identify and rank likely causes of faults
	• analyse and interpret test results
	• apply enterprise escalation and outage procedures
	• prioritise fault rectification in a timely manner and report progress
	• organise repair of fault and conduct of tests to verify outcomes
	• prepare documentation of fault:
	  • nature
	  • location
	  • likely causes
	  • repair methodology
	  • recommendations relating to system redesign or specification.

Context of, and specific resources for assessment	Assessment must ensure: • sites on which fault diagnostics may be conducted • use of testing equipment currently used in industry • relevant regulatory and equipment documentation that impact on complex fault repairs.
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: • review of a complex CPE fault project completed by the candidate • review of an oral and written report with completed documentation • direct observation of the candidate providing expert advice and support on complex CPE faults.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

EVIDENCE GUIDE	
	• ICTTEN5083A Locate, diagnose and rectify complex faults. 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.	
Client may include:	• asset owner • government department • private organisation • small or medium enterprise (SME).

RANGE STATEMENT	
Type of fault may include:	• compatibility • equipment • level 2 or level 3 • network • software • system.
Fault patterns are either:	• of a spurious nature and have failed to be fixed or detected either remotely or on site • of a recurring nature and previous efforts to repair have failed.

Previous fault repair may include:	• atmospheric conditions
	• bad connections
	• building works
	• equipment failure
	• faulty circuit board
	• faulty parts
	• incorrect terminations
	• jumpering
	• near end crosstalk
	• operator error
	• other likely fault areas:
	  • building cabling (including main distribution frame (MDF))
	  • carriers
	  • external cable
	  • MDF jumpers
	• power supply
	• program errors
	• recent additions to system
	• software problems
	• time of fault.

Other engineering or technical personnel may include:	• carrier or service provider staff • electrical contractor • equipment manufacturer • equipment supplier • external customer • on site operation staff.
Relevant legislation, ***codes***, ***regulations and standards*** may	• Australian Communications Industry Forum (ACIF) standards and codes • Australian Communications and Media

RANGE STATEMENT	
include:	Authority (ACMA) technical standards • Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) electromagnetic radiation (EMR) standard • Australian building codes and regulations • Australian standards • enterprise standards • environmental protection • equipment standards • fire regulations • heritage legislation • international standards • intrinsically safe lightning protection • local government • OHS • Radcoms Act • site engineering standard • Telecoms Act • WIs, CIs, business operating procedures (BOPs), radiocommunications assignment and licensing instructions (Ralis), assignment guidelines, spectrum planning reports.

Fault identification approach may include:	• level 1:
	  • first in network maintenance
	  • has a time specification for fault identification (approx 1 hour)
	• level 2 maintenance or repair:
	  • usually involves a higher skilled operator
	  • level of maintenance or repair applies when the fault cannot be located within the specified first in maintenance timeframe or where the fault is intermittent or recurring
	• level 3:
	  • usually located at a national level within a company
	  • very highest level of skill is required at this level
	  • work on faults that cannot be located or fixed at the first two levels - spurious faults
	  • fault location and identification is usually undertaken remotely from the site using the

RANGE STATEMENT	

	on site repair person to undertake the work
	• using fault finding methodology
	• using available data:
	  • customer and repairer questioning details
	  • customer records
	  • details of system checks
	  • equipment/product manuals
	  • log books
	  • software program
	  • test data
	• using customer's specifications and system documentation:
	  • contract document
	  • specification schedules
	  • system configuration diagrams and site installation records
	  • floor distributor panel (FDP) log book data
	  • intermediate distribution frame (IDF)
	  • MDF
	  • system program.

Identify fault is most often undertaken:	• as part of a service agreement:
	  • maintenance agreements between communication companies and their clients
	• on a fee for service basis as agreed with a client:
	  • usually involve charges relating to labour and parts
	• remotely from the customer premises using resident fault repairers to undertake the actual work
	• under warranty as specified by the equipment manufacturer or supplier.

Rectify fault may include:	• component replacement • equipment reprogram • functionality tests • repair • replacement and/or modification • software redesign • visual inspections.

Unit Sector(s)

Unit sector	Telecommunications

Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering