



Australian Government

ICTTEN317 Locate, identify and rectify telecommunications network faults

Release: 1

ICTTEN317 Locate, identify and rectify telecommunications network faults

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 use systematic and logical fault-finding techniques according to safety requirements and work practices commonly used in network fault remediation.

It applies to cablers or technicians who install and maintain a broad range of telecommunications networks.

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. Prepare for fault-finding activity	1.1 Obtain approval for site access from customer or site owner prior to site entry 1.2 Identify existing and potential site hazards, assess risks and implement risk control measures 1.3 Determine, from documentation or discussion with appropriate personnel, work to be undertaken, including reported fault location 1.4 Prepare testing in consultation with others affected by proposed work and sequence work according to established enterprise procedures

ELEMENT	PERFORMANCE CRITERIA
	1.5 Obtain required materials for testing, reporting and rectification work according to established enterprise procedures and job/work ticket requirements 1.6 Obtain required tools, equipment and testing devices according to enterprise procedures and check for correct operation and safety
2. Conduct network fault-finding activities	2.1 Establish nature of fault through analysis of source and available information 2.2 Select and safely use appropriate test equipment to locate, diagnose and analyse fault 2.3 Conduct tests according to test equipment operating instructions and requirements, and ensure diagnostic process does not compromise integrity of network element or system 2.4 Identify and test for faults efficiently without damage to equipment, circuits, surrounding environment or services 2.5 Evaluate test results to determine cause of fault/s using appropriate methods and processes
3 Action identified fault/s	3.1 Rectify faults or escalate to appropriate personnel according to test results and enterprise procedures 3.2 Confirm that fault rectification meets network performance requirements/levels 3.3 Use escalation process for dealing with unexpected situations according to enterprise procedures
4. Report fault-findings and rectification	4.1 Close out fault and update records using applicable work management systems 4.2 Restore worksite according to enterprise procedures 4.3 Notify appropriate personnel when work has been completed and obtain sign-off

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
Reading	Recognises and interprets technical documentation to determine important information

Skill	Description
Writing	• Uses clear, specific and industry-related terminology to develop basic reports and in all written tasks
Oral Communication	• Discusses technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Evaluates and reviews technical data for specifications
Navigate the world of work	• Appreciates implications of legal and regulatory responsibilities related to own role • Seeks advice about expectations when preparing for work
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to for an increasing number of routine problems, seeking assistance from more experienced colleagues when required • Understands purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

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 ICTTEN317 Locate, identify and rectify telecommunications network faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss faults with customers and appropriate personnel
- use systematic and logical fault-finding techniques and field-testing procedures according to workplace situations
- test telecommunications networks to identify a minimum of three different types of faults
- analyse test results and rectify faults for a minimum of three different types of faults
- comply with all related work health and safety (WHS) requirements and work practices
- follow direction from appropriate sources, personnel or network operators (including, operation centre, supervisor).

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:

- work health and safety (WHS) and environmental requirements
- basic communications testing, measuring devices and techniques including:
 - types and applications of testing/measuring devices including voltage testers, multimeters, continuity testers and insulation resistance testers
 - features of testing/measuring devices including safety, user calibration and parameter and range settings
 - test/measuring devices into a circuit
 - safety procedures
 - circuit arrangement of test/measuring devices

- readings
- storage, maintenance and care of test/measuring devices.
- Australian Standard quality assurance requirements for test equipment calibration certification
- network fundamentals for analog and digital signals including:
 - how information is carried
 - signal distortion, attenuation, reflection, noise, dispersion, latency and collisions
 - types of networks, network components and hardware
 - local area network (LAN) architecture
 - networking protocols and the open systems interconnection (OSI) model
 - network signal propagation
 - transmission control protocol/internet protocol (TCP/IP)
- basics of encoding networking signals including:
 - internet services
- performance parameters associated with copper cables, coaxial cables and optical cables including:
 - electrical circuit characteristics of voltage, current and resistance/impedance
 - open circuit, short circuit and pair continuity
 - split legs and crossed legs, contacts, earths and foreign battery
 - attenuation
 - return loss
 - insulation resistance (leakage)
 - cross talk
 - attenuation to cross talk ratio (ACR)
 - loop resistance
 - noise (impulse noise and average noise)
 - characteristic impedance
- test result compliance with required regulations, standards and/or codes for structured copper cables, coaxial and optical fibre cables including:
 - tests required to evaluate a given performance parameter
 - test equipment and leads needed to evaluate a given performance parameter
 - operation of test equipment for correct evaluation of specific cable performance parameters and to obtain accurate and reliable results
 - transmission performance requirements
- behaviour of faulty network elements, including symptoms and impact on network
- systematic and logical fault-finding
- interpretation of test results and network element/system specifications
- types of power and signal sources used in telecommunications networks.

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:

- site/s on which network testing and fault-finding can be conducted
- line transmission and optical measurement equipment currently used in industry
- system documentation and other site-related documentation require to conduct tests and fault-finding investigations, for a minimum of three different types of faults.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>