



Australian Government

Department of Education, Employment and Workplace Relations

ICTCBL3015A Locate and identify cable system faults

Release: 1

ICTCBL3015A Locate and identify cable system faults

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes, skills and knowledge required to locate and identify cable system faults in communications cables at enterprise and customer premises sites. The cable types may be telecommunications, voice or data cabling.</p> <p>All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA)-accredited registrar.</p>
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Application of the Unit

Application of the unit	<p>Technical staff apply the skills and knowledge in this unit to locate and rectify communications cable system faults, including local area networks (LAN) and wide area networks (WAN). Their roles could include carrying out installation, maintenance and cable upgrades including structured cabling and network cabling. They may make use of test routines and databases.</p>
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Licensing/Regulatory Information

Not Applicable

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 locate and rectify cable fault	1.1. Prepare for given work according to relevant legislation, codes, regulations and standards 1.2. Inform appropriate personnel of existing and potential hazards on worksite 1.3. Arrange access to the site according to required procedure 1.4. Establish the type of cable and nature of fault from the customer for the cable system 1.5. Select suitable testing tools and equipment and personal protective equipment to meet required industry standards
2. Locate and diagnose the cable fault	2.1. Conduct appropriate test following occupational health and safety (OHS) and environmental requirements to identify type of cable fault 2.2. Isolate the fault progressively to remove likely variables from assessment 2.3. Locate the cable fault without undue interruptions to the customer activity in the shortest possible time 2.4. Notify the customer of the findings
3. Rectify the fault	3.1. Present customer with options to rectify the fault 3.2. Advise the customer of the costs of any repair not covered by service agreement 3.3. Conduct the fault rectification, if the customer agrees, in a manner which is safe to the repair team and the customer 3.4. Escalate any unresolved faults to other parties for resolution if required
4. Complete documentation and clean up worksite	4.1. Advise the customer of successful fault clearance and obtain sign off 4.2. Complete all records 4.3. Complete reports to justify the fault diagnosis and rectification methodology if required 4.4. Remove all waste and debris from worksite and dispose of according to environmental requirements 4.5. Restore any changes made to the worksite during fault repair to the client's satisfaction

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, such as 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
 - provide solutions on fault rectification to customer
- 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
- task management skills to work systematically with required attention to detail and adherence to all safety requirements
- technical skills to:
 - perform fault clearance
 - use diagnostic equipment
 - use hand and power tools

Required knowledge

- ACMA Competency Requirements for Telecommunications Cabling Provider Rules 2000
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification
- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer's requirements for safe operation of testing tools and equipment
- specific 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	
<p>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.</p>	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> • identify different faults using simple checks, tests and fault-finding methodology • determine and rank likely causes of fault • provide fault rectification solutions to customer • rectify faults • escalate unresolved faults to other parties for resolution • comply with all related OHS requirements and work practices.
Context of, and specific resources for assessment	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> • sites where cable system tests may be conducted • use of fault-finding equipment currently used in industry • relevant regulatory and equipment documentation that impact on cable system testing and fault-finding activities.
Methods of assessment	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> • review of a hands-on project completed by the candidate • review of an oral and written report, including test results and fault-finding methodologies • direct observation of the candidate locating and identifying cable system faults.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> • ICTCBL2016A Joint metallic conductor cable on customer premises.

EVIDENCE GUIDE

	<p>Aboriginal people and other people from a non-English speaking background may have second language issues.</p> <p>Access must be provided to appropriate learning and assessment support when required.</p> <p>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.</p> <p>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.</p> <p>Where applicable, physical resources should include equipment modified for people with special needs.</p>
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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 Industry Forum (ACIF) standards and codes
- AS Communications Cabling Manual (CCM) Volume 1
- AS/NZS 3000:2007
- AS/NZS 3080:2003
- AS/NZS 3084:2003
- AS/NZS 3085.1:2004

RANGE STATEMENT	
	<ul style="list-style-type: none"> • AS/NZS IEC 61935.1:2006 • AS/NZS IEC 61935.2:2006 • AS/NZS ISO/IEC 14763.3:2007 • AS/NZS ISO/IEC 15018:2005 • AS/NZS ISO/IEC 24702:2007 • cabling security codes and regulations • Contract Law • National Association of Testing Authorities (NATA) requirements • OHS • regulated or industry codes of practice including appropriate ACMA technical standards • technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006 • Trade Practices Act.
<i>Hazards</i> may include:	<ul style="list-style-type: none"> • building debris • earth potential rise (EPR): <ul style="list-style-type: none"> • event at a site, such as an electrical distribution substation, may expose telecommunications personnel, users or plant to hazardous voltages • glass fibre • live power lines • manual handling • mud and water • natural gas and other gas build up • needle stick injury • optical fibre cable may contain hazardous light • radio frequency (RF) equipment emitting radiation • remote power feeding services which operate at above telecommunications network voltage (TNV) • vermin.
<i>Type of cable</i> may include:	<ul style="list-style-type: none"> • access cable • coaxial cable • customer cable • data cable • optical fibre cable.

RANGE STATEMENT	
<i>Nature of fault</i> may include:	<ul style="list-style-type: none"> • distortion • earth hum • interference • intermittent • low signal level • noise • poor signal quality.
<i>Customer</i> may include:	<ul style="list-style-type: none"> • fault centre • individual reporting the fault • network manager • network operations centre staff • site manager.
<i>Cable system</i> may include:	<ul style="list-style-type: none"> • access network cabling • coaxial cabling • data cabling: <ul style="list-style-type: none"> • Category 5, 6E or 7 • lead-in cable • optical network cabling • structured cabling.
<i>Testing tools and equipment</i> may include:	<ul style="list-style-type: none"> • bridge set • cable locator • cable test set • digital fault test set • Megger • optical time domain reflectometer (OTDR) • pulse echo test set.
<i>Personal protective equipment (PPE)</i> may include:	<ul style="list-style-type: none"> • electrical isolators • gas detectors • personal protective clothing: <ul style="list-style-type: none"> • earmuffs • gloves: <ul style="list-style-type: none"> • plastic • rubber • leather • head protection • kneepads • masks • protective suits • safety boots

RANGE STATEMENT	
	<ul style="list-style-type: none"> • safety glasses.
<i>Appropriate test</i> may include:	<ul style="list-style-type: none"> • capacitive balancing • continuity • distortion • foreign battery test • frequency measurement • insertion loss • insulation • return loss.
<i>OHS and environmental requirements</i> may relate to:	<ul style="list-style-type: none"> • identifying other services, including power and gas • need for decommissioning and isolating worksite and lines prior to commencement • safety equipment: <ul style="list-style-type: none"> • flashing lights • gas and other hazard detection equipment • safety barriers • trench guards • warning signs and tapes • witches hats • safe working practices, such as the safe use and handling of: <ul style="list-style-type: none"> • tools and equipment • materials • chemicals • work platforms • asbestos • suitable light and ventilation • special access requirements • environmental considerations: <ul style="list-style-type: none"> • clean-up protection • noise, dust and clean-up management • stormwater protection • waste management.
<i>Type of cable fault</i> may include:	<ul style="list-style-type: none"> • attenuation • bad connections • cable damage • cracked fibre • crossed wires

RANGE STATEMENT

	<ul style="list-style-type: none"> • faulty splice • high impedance • incorrect terminations • moisture ingress • near end crosstalk • open circuits • reversal.
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Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Cabling
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