



Australian Government

ICTCBL331 Conduct basic identification and fault-finding within cabling networks and customer equipment

Release: 1

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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 for fault-finding and testing for the presence of an operational subscriber line at network termination devices (NTDs). These lines are crucial in connecting customer equipment to the carrier for the purposes of providing telephony and internet protocol (IP) data services. These network providers use convergent technologies to deliver services of next generation networks (NGNs).

It applies to technicians and cable installers who install and maintain IP-based equipment for customer and service providers for services, such as internet protocol TV (IPTV), IP security, digital home networks, IP-based cable access, TV (CATV), IP core and access networks, home automation, interactive TV, smart grids and cloud computing

Australian Communications and Media Authority (ACMA) cabling registration applies to maintaining or installing new cable elements. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Cabling

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. Plan to locate and rectify basic faults	1.1 Arrange site access according to enterprise procedures and customer requirements 1.2 Obtain information from customer about nature of the fault 1.3 Obtain suitable tools and test equipment

ELEMENT	PERFORMANCE CRITERIA
	1.4 Obtain appropriate personal protective equipment (PPE) 1.5. Identify requirements for basic identification and fault-finding of cabling from network termination device (NTD) to customer equipment and seek assistance as required
2. Identify and confirm customer and NTD equipment in place	2.1 Identify type of NTD used and its application to satellite, fibre, fixed radio, hybrid fibre coaxial (HFC) or digital subscriber line (DSL) telecommunications network/s 2.2 Identify and document typical equipment connected to NTD 2.3 Confirm correct equipment is being used for installed NTD
3. Identify and inspect NTD and customer equipment cables and patch cords	3.1 Check that NTD equipment and customer equipment are interconnected utilising cables and patch cords 3.2 Ensure all cabling sockets are visually intact and undamaged 3.3 Ensure all patch cords are visually intact and undamaged 3.4 Complete wire mapping to ensure new work is completed correctly and is in good working order 3.5 Ensure all cable, patch cords and cabling products are of the same signal bandwidth category 3.6 Obtain NTD and customer equipment user guides 3.7 Utilise NTD and customer equipment user guides to determine correct light-emitting diode (LED) status that indicates the equipment is operating correctly 3.8 Identify and record visual status of all customer equipment and NTD equipment prior to any investigative process
4. Repair faults found in NTD and customer equipment	4.1 Follow appropriate user guide fault tables to remedy equipment status according to equipment manufacturer guidelines 4.2 Conduct basic fault-finding using methodical and safe practices suitable for system and problem type 4.3 Ensure cabling or patch cord elements are correctly terminated utilising wire mapping testers according to industry standards 4.4 Correct faulty cabling by re-terminating sockets, replacing sockets and re-terminating cable or replacing damaged cable elements 4.5 Correct faulty patch cords by re-terminating plugs or replacing with new patch cords 4.6 Power down equipment for 30 seconds and reboot equipment as a remedy to problem/s

ELEMENT	PERFORMANCE CRITERIA
	4.7 Report failure of equipment to obtain normal working status to customer/supervisor and/or NTD owner for a determination to replace faulty equipment or to have equipment repaired 4.8 Ensure test equipment power adaptors are providing correct voltage to equipment, using an appropriate test device, and replace power adaptors as required 4.9 Ensure NTD equipment and customer equipment is communicating with internet by exploring internet with a computer browser gaining correct page displays from a website 4.10 Ensure customer device is connected to a wi-fi modem using service set identifier (SSID) and password
5. Complete documentation and clean-up worksite	5.1 Advise customer of successful fault clearance and obtain sign-off for customer agreement once fault is resolved and for invoicing purposes 5.2 Complete all records as required 5.3 Complete reports to justify fault diagnosis and rectification methodology as required 5.4 Remove all waste and debris from worksite and dispose of according to environmental requirements 5.5 Restore changes made to worksite during fault repair, according to industry standards

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	Identifies, plans and implements strategies to manage gaps in technical knowledge
Writing	- Recognises when unknown words are essential to meaning and uses a range of decoding strategies to identify them - Interprets textual information from relevant sources to identify relevant and key information
Oral Communication	Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Numeracy	Articulates information clearly, using specific and relevant language

Skill	Description
	suitable to audience to convey recommendations and provide verbal reports • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	• Takes readings and measurements and interprets results
Interact with others	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Get the work done	• Identifies and follows accepted communication practices and protocols when liaising with internal and external personnel on technical and operational matters

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 ICTCBL331 Conduct basic identification and fault-finding within cabling networks and customer equipment

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Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to do this on at least one of the following network termination device (NTD)/customer equipment systems:

- satellite modem/ethernet/telephony
- fixed wireless modem/ethernet/telephony
- fibre optic TX-RX/ethernet/telephony
- hybrid fibre coaxial (HFC) modem/ethernet/telephony
- digital subscriber line (DSL) modem/ethernet/telephony.

Depending on the system/s the candidate works on, the candidate must demonstrate the ability to:

- connect NTDs to customer equipment
- set-up and operate test instruments
- gather appropriate instrument test cables and adaptors
- determine status of cables/equipment to be tested such as safety and live or inactive status
- identify different cable types and their association with NTD/customer equipment
- identify whether or not NTD/customer equipment is operating correctly
- search the internet for equipment user guides
- replace faulty cable or patch cords after testing or identifying damage
- replace or re-terminate faulty sockets or connectors
- perform a browser search of a web page to confirm system is working.

Knowledge Evidence

The candidate must demonstrate the knowledge required to complete the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes, standards and associated industry guidelines, in particular:
 - Australian Communications and Media Authority (ACMA) regulations
 - work health and safety (WHS) regulations for electrical, fibre optic and electromagnetic telecommunications systems
- hazard identification such as laser light and safety signs used for telecommunications equipment
- typical equipment connected to NTD including:
 - personal computer devices including:
 - desktop/mobile computing devices
 - smartphone
 - printers
 - other devices
 - wi-fi modem/switch/router
 - DSL filters
 - internet service provider (ISP) gateway switch/router (ISP or retailer)
 - internet protocol TV (IPTV)
 - IP security, digital home networks
 - IP-based cable access TV (CATV)
 - IP core and access networks
 - home automation
 - interactive TV
 - smart grids
 - cloud computing
- basic interconnection concepts for NTD and customer equipment application including:
 - fibre optic
 - fixed radio
 - satellite
 - HFC
 - DSL twisted pair
- cable types used for NTD/customer equipment connections including:
 - Cat 5e unshielded twisted pair (UTP) cable
 - Cat 6 UTP cable
 - Cat 6/7 shielded twisted pair (STP) cable
 - RG6 coaxial cable (quad shielded)
 - fibre optic and other cable types for recognition/demonstration of the NTD network side
 - appropriate connectors for testing cables
 - appropriate adaptors and test leads for test instruments and cables to be tested
- common basic tests utilised with each NTD/customer equipment system using:

- structured cabling certifiers
- structured cabling verification/qualification tester
- wire mapper
- oscillator and probe
- multimeter
- RF power measurement (RX)
- time-domain reflectometer (TDR), available in SC certifiers
- ADSL/VDSL test instruments
- other appropriate test equipment
- NTD or customer equipment user guides
- purpose and use of test results
- fault escalation enterprise processes.

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:

- satellite modem/ethernet/telephony
- fixed wireless modem/ethernet/telephony
- fibre optic TX-RX/ethernet/telephony
- HFC modem/ethernet/telephony
- DSL modem/ethernet/telephony.

As a minimum, customer equipment may also require a portable computer, wi-fi modems, switch/router or devices that combine these parameters

Cable segments that use passive devices will also require access to RF splitters or DSL filters.

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

Links

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