



Australian Government

ICTTEN419 Implement and troubleshoot enterprise routers and switches

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to determine customer needs, use information communication technologies (ICT) to meet network requirements, rectify equipment errors and create appropriate workplace documentation.

It applies to individuals working as installers of internet protocol (IP) networks, enterprise network technicians, network administrators and other network support personnel.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks 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 implementation of network routers and switches	1.1 Prepare for given job according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of network routers, network switches and network resources from job briefs or appropriate personnel 1.4 Select and obtain network services and network application requirements according to enterprise procedures

ELEMENT	PERFORMANCE CRITERIA
	1.5 Obtain identified operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure the task is coordinated effectively with others involved at the worksite
2 Implement network switches and routers	2.1 Configure routers and switches according to manufacturer's specifications and enterprise procedures 2.2 Determine network addressing scheme for network connectivity, and verify using calculations 2.3 Activate, and verify wide area network (WAN) links provide network connectivity 2.4 Enable network services and network applications to the network to complete network connectivity process 2.5 Set up traffic access and filtering according to enterprise procedures
3 Troubleshoot network switches and routers	3.1 Monitor network performance and isolate faults using diagnostic and analysis tools 3.2 Troubleshoot network and internet connectivity according to manufacturer's specifications and enterprise procedures
4 Document configuration and troubleshooting records	4.1 Restore work-site to safe condition according to established safety procedures 4.2 Record and store essential implementation information according to enterprise procedures 4.3 Notify appropriate personnel of completion of the task according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.1, 2.5, 3.2, 4.2, 4.3	Recognises and interprets technical, legislative and operational documentation to determine job requirements

Writing	1.1, 1.2, 4.2, 4.3	Uses clear, specific and industry-related terminology to produce and update workplace documentation and in communications with relevant personnel
Oral Communication	1.1-1.3, 4.3	- Clearly liaises with personnel on technical matters - Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.2	Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.2, 4.1	- Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, 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
Interact with others	1.6	Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.4, 1.5, 2.1-2.5, 3.1, 3.2	- Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including troubleshooting common network problems - Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency - Implements actions according to a predetermined plan, making adjustments if necessary - Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action - Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes on the basis of safety and specified work outcomes

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN419 Implement	ICTTEN4210A Implement and	Updated to meet	Equivalent

Code and title current version	Code and title previous version	Comments	Equivalence status
and troubleshoot enterprise routers and switches	troubleshoot enterprise routers and switches	Standards for Training Packages.	unit

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for ICTTEN419 Implement and troubleshoot enterprise routers and switches

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Performance Evidence

Evidence of ability to:

- determine customer networking requirements
- configure routers and switches using hierarchical addressing over virtual local area networks (VLANs) to meet network link requirements
- enable and control access to network services and applications across the network
- diagnose and rectify network hardware and device configuration faults
- document configuration information, fault-finding history and remediation action.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise access control lists
- give examples of characteristics of a typical enterprise including:
 - features and applications
 - work health and safety (WHS) procedures
 - record keeping procedures
 - switching and routing protocols and strategies:
 - hierarchical addressing
 - multilayer switching
 - routing protocols
 - VLAN routing
- summarise implementation of enterprise wide area networks (WAN) links
- explain network diagnostic and troubleshooting techniques
- describe network modelling

- specify how to configure and activate network access and security measures
- describe the process of configuring switches and routers to enable local area networks (LAN) and WAN links
- describe the connection process for enterprise networks using WAN services and applications
- describe the purpose of maintaining enterprise network documentation
- summarise the process and importance of troubleshooting network faults and implementing recovery actions
- describe the use of a hierarchical internet protocol (IP) network address scheme
- select and use tools and equipment to analyse enterprise networks.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network facility and workstations
- operating instructions, installation documents and manuals
- hardware and software testing tools currently used in industry.

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

Links

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