



Australian Government

ICTNWK404 Install, operate and troubleshoot a small enterprise branch network

Release: 1

ICTNWK404 Install, operate and troubleshoot a small enterprise branch network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to utilise networking fundamentals, including wide area network (WAN) technologies, basic security, routing and switching fundamentals, and to configure simple networks.

It applies to individuals working in a network support position. They would use the appropriate tools, equipment, software and protocols to install, operate, and troubleshoot, a small enterprise branch network.

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

Unit Sector

Networking

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. Specify the operation of a data network	1.1 Identify the various network elements 1.2 Use the open system interconnections (OSI) and transmission control protocol, or internet protocol (TCP/IP), models to explain how data flows in a network 1.3 Define the purpose, and basic operation, of the protocols in the OSI and TCP/IP models 1.4 Identify common network problems at layers 1, 2, 3 and 7, using a layered model approach

ELEMENT	PERFORMANCE CRITERIA
2. Implement a small switched network	2.1 Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts 2.2 Identify the network segmentation, basic traffic management and switching requirements 2.3 Perform, save and verify the initial switch configuration tasks 2.4 Verify the network status and switch the operation using basic utilities 2.5 Implement and verify the basic security for a switch
3. Implement an IP addressing scheme and IP services to meet network requirements	3.1 Specify the need and role of addressing in a network 3.2 Create and apply an addressing scheme to a network 3.3 Assign and verify valid IP addresses to hosts, servers and networking devices in a local area network (LAN) environment 3.4 Specify the operational requirements of private and public IP addressing 3.5 Implement static and dynamic addressing services for hosts in a LAN environment 3.6 Enable the network address translation (NAT) for a small network, with a single internet service provider (ISP) and connection, and verify the operation 3.7 Configure the dynamic host configuration protocol (DHCP) on a router
4. Implement a small routed network	4.1 Select the appropriate media, cables, ports, and connectors to connect routers to other network devices and hosts 4.2 Research and select a basic router 4.3 Perform, save and verify basic router configuration tasks 4.4 Configure and verify, a classless routing protocol 4.5 Verify the device configuration and network connectivity, using basic utilities 4.6 Implement the password, and physical security
5. Implement and verify WAN links	5.1 Research different methods for connecting to a WAN 5.2 Configure and verify, the basic WAN serial connection
6. Troubleshoot a small enterprise branch network	6.1 Identify and resolve, common switched network issues 6.2 Identify and correct, IP addressing issues

ELEMENT	PERFORMANCE CRITERIA
	6.3 Troubleshoot DHCP and NAT on a router 6.4 Identify and resolve, common routing problems 6.5 Troubleshoot basic WAN connection problems

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, 2.2, 4.1, 4.2, 4.6, 5.1	- Interprets and critically analyses complex texts - Applies appropriate strategies to construct meaning from complex texts
Writing	3.1, 3.4, 4.4	- Communicates complex relationships between ideas and information, matching the style of writing to the purpose and audience - Writes and edits computer code, and technical data, ensuring the correct syntax and accuracy
Oral Communication	1.1, 1.2, 1.3, 2.2, 3.1, 3.4, 4.2, 5.1	- Articulates clearly using specific and relevant language suitable to the audience, to convey information - Uses listening and questioning techniques to confirm the understanding of clients
Get the work done	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 5.1, 5.2, 6.1, 6.2, 6.3, 6.4, 6.5	- Determines job priorities, resources and equipment and works logically and systematically, to undertake clearly defined and familiar tasks - Understands the purposes, specific functions, and key features of common digital systems and tools, and operates them effectively to complete routine tasks - Recognises and responds to predictable routine problems, related to own role in the immediate work context, including debugging, switch

		and router network issues
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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK404 Install, operate and troubleshoot a small enterprise branch network	ICANWK404A Install, operate and troubleshoot a small enterprise branch network	Updated to meet Standards for Training Packages. Minor changes to Performance Criteria for clarity.	Equivalent 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 ICTNWK404 Install, operate and troubleshoot a small enterprise branch network

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Performance Evidence

Evidence of the ability to:

- specify the network elements
- implement a small switched network
- select and implement the suitable network addressing protocols
- select and install a router
- identify and verify, wide area network (WAN) links
- test and resolve the problems for a small enterprise branch network.

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 the design of an internet protocol (IP) addressing scheme
- describe how to install, configure and test the network elements, in order to ensure interoperability within the network
- explain how to apply network topologies, protocols and security solutions and troubleshoot defined network problems.

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 must be typical of those experienced in the network industry, and include access to:

- a site where the network installation may be conducted
- small enterprise routers and switches
- the network's design documentation

- the equipment specifications
- hardware and software
- the organisational guidelines
- computers.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet -

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