



Australian Government

ICTNWK418 Implement backbone technologies in a local area network

Release: 1

ICTNWK418 Implement backbone technologies in a local area 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 implement core layer (backbone) connectivity in a local area network (LAN) for applications between floors in a multi-storey building or between separate buildings.

This unit focuses on configuring high-speed (high-bandwidth) channels between high-end switches.

It applies to individuals who are required to enable backbone connectivity in a LAN.

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. Define network	1.1 Identify current and future network requirements based on the organisation's business and technical requirements 1.2 Design an appropriate structure to meet client requirements, such as video, audio or data application services 1.3 Design a network addressing system with subnet and host identities (IP addressing) and virtual LANs (VLANs) 1.4 Identify and document resource requirements according to network design

ELEMENT	PERFORMANCE CRITERIA
2. Install and configure network backbone	2.1 Install and configure switches and routers according to network requirements and resources 2.2 Install network protocol suites using configurations on switch uplink ports as required by network design specifications 2.3 Configure hosts and workstations for network access
3. Test and validate network	3.1 Test network connectivity to ensure operation parameters are met between hosts on segments or VLANs 3.2 Make adjustments as required 3.3 Validate and document network performance

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	2.2	Gathers, interprets and analyses current network design specifications and identifies relevant and key information
Writing	1.4, 3.3	Prepares technical documentation that incorporates an evaluation of information and specialised and cohesive language in a format and style appropriate to a specific audience
Get the work done	1.1-1.4, 2.1-2.3, 3.1-3.3	- Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to prioritise tasks and contingency arrangements - Uses mobile communication tools and specialised software to ensure that geographically distributed team members remain connected in virtual environments - Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks - Initiates standard procedures when responding to familiar problems within the immediate context
Reading	2.2	Gathers, interprets and analyses current network design specifications and identifies relevant and key information
Writing	1.4, 3.3	Prepares technical documentation that incorporates an evaluation of information and specialised and cohesive

		language in a format and style appropriate to a specific audience
Get the work done	1.1-1.4, 2.1-2.3, 3.1-3.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to prioritise tasks and contingency arrangements • Uses mobile communication tools and specialised software to ensure that geographically distributed team members remain connected in virtual environments • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Initiates standard procedures when responding to familiar problems within the immediate context

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK418 Implement backbone technologies in a local area network	ICANWK418A Implement backbone technologies in a local area network	Updated to meet Standards for Training Packages.	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 ICTNWK418 Implement backbone technologies in a local area network

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Performance Evidence

Evidence of the ability to:

- define, design and document the structure of the network and subnets required for the network
- build and test an asynchronous transfer mode (ATM) local area network (LAN) that provides the required services at the required communication standards
- document resource requirements and network performance.

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:

- outline current and emerging industry practice associated with:
 - bandwidth limitations, measuring and testing
 - LAN and wide area network (WAN) network topologies (three-layer LAN hierarchy: core distribution and access)
 - MAC addresses, network layer protocols
 - open systems interconnect (OSI) layer modelling
 - routers
 - virtual LANs
- identify and describe network interface cards (NICs) and switches, including:
 - fast Ethernet
 - gigabit
 - 10-gigabit Ethernet
 - store-and-forward
 - fast-forward

- fragment-free
- identify and describe internetworking protocol suites, including:
 - TCP/IP
 - IPX
 - DECnet
 - AppleTalk
 - IPv6.

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:

- local area network infrastructure
- switches with various interfaces.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

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