



Australian Government

ICTNWK517 Determine best-fit topology for a wide area network

Release: 1

ICTNWK517 Determine best-fit topology for a wide 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 identify the best way computers and local area networks (LANs) can be connected to make a wide area network (WAN).

It applies to individuals with excellent planning and information and communications technology (ICT) skills in networking areas who are required to research and recommend the most appropriate topology for a WAN.

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. Identify WAN needs	1.1 Identify the different LAN, wireless local area network (WLAN) or virtual private network (VPN) segments of the proposed WAN 1.2 Determine segment needs using functional analysis 1.3 Estimate traffic content and volumes according to expected organisational usage, by examining telecommunications infrastructure 1.4 Develop an organisational WAN functional matrix
2. Create WAN specification	2.1 Determine resource requirements for each LAN, WLAN or VPN segment on the basis of functional analysis

ELEMENT	PERFORMANCE CRITERIA
	2.2 Consider and report how features of the physical environment affect WAN design 2.3 Choose a WAN service appropriate to the amount and type of traffic expected to access the WAN 2.4 Include redundant links in the proposed WAN connectivity for link backup purposes, in case the main link is disrupted 2.5 Document appropriate WAN service

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
Writing	2.2, 2.5	Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Numeracy	1.3, 1.4	- Undertakes complex functional calculus to develop a WAN functional matrix - Interprets numerical data to estimate traffic needs and calculate business expenses
Get the work done	1.1-1.3, 2.1-2.4	- Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world - Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes - May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues with reference to resource constraints

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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ICTNWK517 Determine best-fit topology for a wide area network	ICANWK517A Determine best-fit topology for a wide 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 ICTNWK517 Determine best-fit topology for a wide area network

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Performance Evidence

Evidence of the ability to:

- consider budget constraints and business needs
- identify the configuration for connecting a local area network (LAN), wireless local area network (WLAN) or virtual private network (VPN) into a wide area network (WAN)
- document the configuration.

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 typical network topologies for the following networks:
 - large and small LANs
 - WANs
 - VPNs
 - virtual local area networks (VLANs)
 - WLANs
- identify and describe the typical components and technologies required for a WAN, including:
 - concepts and types of modems
 - internet protocol (IP) addressing
 - packet switching
 - routed or routable protocols, including IP, IPX and AppleTalk
 - router operations, including double data rate (DDR)
 - routing protocols, including routing information protocol (RIP), enhanced interior gateway routing protocol (EIGRP) and open shortest path first (OSPF)

- transmission control protocols or internet protocols (TCPs/IPs)
- relationship of asynchronous and synchronous communication
- use of microwave and satellite communication in networking
- describe the business consideration for establishing a WAN, including:
 - constraints and costs
 - features of telecommunications infrastructure, including the difference between digital and analogue networks
 - growth projections and capacity planning
 - high or low speed links
 - protocols
 - redundancy paths
 - response time and reliability requirements
 - scope of operation
 - security
 - traffic flow patterns
 - traffic load
 - users and the applications expected.

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:

- design documents relating to LANs to be incorporated into the WAN
- equipment specifications
- vendor product catalogues and costs.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

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