



Australian Government

ICTNWK560 Determine best-fit topologies for wide area networks

Release: 1

ICTNWK560 Determine best-fit topologies for wide area networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to identify the best way that computers and local area networks (LANs) can be connected to make a wide area network (WAN).

It applies to individuals working in the networking area, with excellent planning, information and communications technology (ICT) skills, who are required to research and recommend viable topologies 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. Determine needs of WAN	1.1 Identify and discuss work details, current and future operational requirements, budget limitations and approved stakeholders with relevant personnel 1.2 Arrange for site access in compliance with security arrangements, legislation, work health and safety (WHS) requirements, codes, regulations and standards 1.3 Identify different LAN, wireless local area network (WLAN) and virtual private network (VPN) segments of the proposed WAN 1.4 Conduct a functional analysis and determine segment needs 1.5 Estimate traffic content, volumes and organisational usage

ELEMENT	PERFORMANCE CRITERIA
	1.6 Develop an organisational WAN functional matrix according to organisational requirements
2. Create WAN specification	2.1 Determine resource requirements for each LAN, WLAN and VPN segment 2.2 Consider and report how features of the physical environment affect WAN design 2.3 Identify the WAN service that will cater for the amount and type of estimated traffic 2.4 Include redundant links in the proposed WAN connectivity and prevent disruption to main link 2.5 Identify viable WAN service
3. Report best-fit topology options for WAN	3.1 Report identified viable network topology to relevant personnel according to organisational procedures 3.2 Obtain task sign-off from relevant personnel

Foundation Skills

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

SKILL	DESCRIPTION
Numeracy	- Conducts complex functional calculus to develop a WAN functional matrix - Interprets numerical data to estimate traffic needs and calculate business expenses
Writing	Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Planning and organising	- Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation - Identifying and addressing issues with reference to resource constraints
Problem solving	- Demonstrates a sophisticated knowledge 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
Oral communication	- Presents and discusses ideas with relevant personnel - Engages with and understanding customer needs and requirements

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTNWK517 Determine best-fit topology for a wide area network.

Links

Companion Volume Implementation Guide is found on VETNet -

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

Assessment Requirements for ICTNWK560 Determine best-fit topologies for wide area networks

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine best-fit topologies for at least three wide area networks

In the course of the above, the candidate must:

- consider budget constraints and organisational needs
- identify the configuration for wireless local area network (WLAN) and the virtual private network (VPN) into a wide area network (WAN)
- document the configuration
- report the configuration to relevant personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- typical network topologies for the following networks:
 - large and small LANs
 - WANs
 - VPNs
 - WLANs
- typical components and technologies relevant for a WAN, including:
 - internet protocol (IP) addressing
 - packet switching
 - routed and routable protocols
 - routing protocols, including routing information protocol (RIP), enhanced interior gateway routing protocol (EIGRP) and open shortest path first (OSPF)
 - relationship of asynchronous and synchronous communication

- use of microwave and satellite communication in networking
- transmission control protocols and internet protocols (TCPs/IPs)
- functions and features of cybersecurity and firewalls
- business considerations for establishing a WAN, including:
 - constraints and costs
 - features of networking infrastructure
 - the difference between digital and analogue networks
 - growth projections and capacity planning
 - high and low speed links
 - required WAN protocols
 - redundancy paths
 - response time and reliability requirements
 - scope of operation
 - security
 - traffic flow patterns
 - traffic load
 - users and the applications expected
- organisational requirements policies and procedures, regarding:
 - identification of different segments in networks
 - creation of WAN functional matrices
 - reporting identified best-fit topologies with personnel
- required legislation, codes, company work practices, regulations and standards, work health and safety (WHS) requirements for scoped work.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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

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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