



Australian Government

ICTNWK518 Design an enterprise wireless local area network

Release: 1

ICTNWK518 Design an enterprise wireless 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 conduct an internal and outdoor site survey, and design a complex wireless local area network (WLAN).

It applies to individuals working in the networking area who are required to evaluate client requirements and design an appropriate WLAN.

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. Document current network configuration	1.1 Obtain details of current network layout and parameters 1.2 Hold consultations with key stakeholders 1.3 Document the current network configuration, network topology and links to carrier
2. Research client needs	2.1 Identify the client's current needs 2.2 Determine future needs 2.3 Document current and future needs according to organisational requirements
3. Implement site survey	3.1 Select the appropriate diagnostic tools and measurement processes

ELEMENT	PERFORMANCE CRITERIA
	3.2 Select test equipment and ensure calibration 3.3 Undertake site survey with minimum disruption to client and ensure safe working environment for users and survey personnel 3.4 Record physical infrastructure, building use, aesthetics and other issues that will impact on future network performance and acceptance by the client 3.5 Record radio frequency interference issues, sources and possible resolution 3.6 Document results of site survey
4. Develop specifications for upgrade of wireless network	4.1 Document the current network performance equipment and capacity for the expanded network 4.2 Assess interference issues relating to existing radio frequency, topographic barriers, climate, obstacles, transmission distances and construction materials 4.3 Assess optimum location and position of access points, repeaters, routers and other equipment 4.4 Develop cabling plans and repeater links, including power requirements 4.5 Determine frequency to be used based on client and user requirements
5. Model network	5.1 Determine appropriate test and modelling routines 5.2 Determine estimated network traffic and planned growth 5.3 Test planned network using modelling tools and techniques 5.4 Document outcome of tests and revise design where required
6. Determine components for network	6.1 Select and test vendor products and equipment where appropriate 6.2 Consult others, including emerging industry bodies, for sustainable compatibility, economic running costs and user connectivity access 6.3 Finalise components list for suitability and vendor claims 6.4 Prepare implementation plans
7. Present design to client	7.1 Present the design in a clear and logical fashion 7.2 Provide advice to client on reasons for design choice

ELEMENT	PERFORMANCE CRITERIA
	7.3 Inform the client of design limitations, performance expectations and possible unanticipated outcomes, including security threats 7.4 Obtain feedback from client 7.5 Undertake modifications to design if required 7.6 Complete final design documentation and seek client endorsement

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	2.3, 3.2, 7.4	Recognises and interprets legislative, organisational and technical material to determine job requirements
Writing	1.3, 2.3, 3.4-3.6, 4.1, 4.4, 5.4, 6.3, 7.5, 7.6	Develops a broad range of technical material and creates records for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.2, 6.2, 7.2-7.4, 7.6	- Uses listening and questioning skills to confirm understanding for requirements and participates in a verbal exchange of ideas/solutions - Uses appropriate, detailed and clear language to address stakeholders, users and industry bodies to disseminate information
Numeracy	3.2, 5.2, 6.2	Interprets numerical data to estimate and project traffic needs, undertake a cost benefit analysis and accurately calibrate equipment
Navigate the world of work	3.3	Understands own legal rights and responsibilities and is extending understanding of general legal principles applicable across work contexts
Interact with others	7.1	Actively identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience

Get the work done	1.1, 2.1, 2.2, 3.1-3.3, 3.5, 4.2-4.5, 5.1, 5.3, 6.1, 6.4	• 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 • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focussing attention on critical issues and variables
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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK518 Design an enterprise wireless local area network	ICANWK518A Design an enterprise wireless 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 ICTNWK518 Design an enterprise wireless local area network

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Performance Evidence

Evidence of the ability to:

- assess wireless network performance requirements for the client
- measure and diagnose wireless working environment
- produce wireless models and network specifications appropriate to client requirements
- produce wireless network designs and component lists
- document the design and obtain client approval.

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:

- identify and describe wireless network survey techniques, including:
 - audit and intrusion detection systems
 - auditing and penetration testing techniques
 - bandwidth and quality of service
 - factors affecting signal quality
- outline the key technical considerations for designing a wireless network, including:
 - features of antenna design
 - layer 2 and layer 3 design issues
 - impact of radio frequency
 - problems associated with topography and obstacles in radio transmission path
 - wireless topologies
 - wireless local area networks (WLAN) and wireless metropolitan access network (WMAN) solutions

- outline the key client organisation considerations when designing a wireless network, including:
 - small office home office (SOHO) and enterprise local area networks (LANs)
 - transmission control protocols or internet protocols (TCP/IP) and applications
 - wireless security strategies
 - security threats
- outline the software consideration when designing a wireless network, including:
 - network protocols and operating systems
 - security protocols, standards and data encryption.

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:

- network infrastructure, including wireless hardware and software
- network technical requirements
- real or simulated wireless networks
- appropriate diagnostic equipment and standards.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

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