



Australian Government

ICTNWK561 Design enterprise wireless local area networks

Release: 1

ICTNWK561 Design enterprise wireless local 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 design an enterprise wireless local area network (WLAN) and analyse existing network layouts and parameters.

It applies to individuals working in the networking area who are required to evaluate client requirements and design a 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 WLAN network configuration	1.1 Obtain work details and scope from relevant personnel and arrange for site access in compliance with security arrangements, legislation, codes, regulations and standards 1.2 Obtain details of network layout and parameters 1.3 Hold consultations with planned stakeholders 1.4 Document the network configuration, network topology and links to carrier
2. Research client needs of WLAN	2.1 Discuss current and future network needs with client according to organisational requirements 2.2 Document current and future needs according to organisational requirements
3. Implement site survey	3.1 Select diagnostic tools and measurement processes for site

ELEMENT	PERFORMANCE CRITERIA
	survey 3.2 Select test equipment and confirm calibration for site survey 3.3 Measure and diagnose wireless working environment by conducting a site survey with minimum disruption to client and confirm safe working environment for all relevant personnel 3.4 Record physical infrastructure, building use, aesthetics and other identified issues that will impact on future network performance and acceptance by the client 3.5 Record radiofrequency interference issues, sources and subsequent resolution 3.6 Document results of site survey
4. Develop specifications for upgrade of local area network	4.1 Document relevant network performance equipment and capacity for the expanded network 4.2 Assess interferences to radiofrequency, topographic barriers, climate, obstacles, transmission distances and construction materials 4.3 Assess optimal location and position of access points, repeaters, routers and other equipment 4.4 Develop cabling plans and repeater links and power requirements 4.5 Determine frequency to be used based on client and user requirements
5. Model local area network	5.1 Determine required 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 local area network	6.1 Select and test vendor products and equipment where required 6.2 Identify sustainable compatibility, economic running costs and user connectivity access according to vendor requirements 6.3 Finalise components list 6.4 Prepare implementation plans according to organisational requirements
7. Present local area network design to client	7.1 Present the design to client according to organisational requirements 7.2 Advise client of design rationale 7.3 Inform the client of design limitations, performance expectations, unanticipated outcomes and security threats 7.4 Obtain and document feedback from client 7.5 Modify design if required 7.6 Complete design documentation and obtain 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	DESCRIPTION
Numeracy	Interprets numerical data to estimate and project traffic needs, carry out a cost benefit analysis and accurately calibrate equipment
Oral communication	- Uses listening and questioning skills to confirm knowledge for requirements and participates in a verbal exchange of ideas/solutions - Uses required, detailed and clear language to address stakeholders, users and industry bodies to disseminate information
Reading	Recognises and interprets legislative, organisational and technical material to determine job requirements
Writing	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
Teamwork	Identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience
Planning and organising	- Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world - Operates 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 knowledge of context to recognise anomalies and subtle deviations to normal expectations, focussing attention on critical issues and variables
Problem solving	Understands own legal rights and responsibilities and is extending knowledge of general legal principles applicable across work contexts
Technology	Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes

Unit Mapping Information

Supersedes and is equivalent to ICTNWK518 Design an enterprise wireless local 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 ICTNWK561 Design enterprise wireless local 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:

- design at least two enterprise wireless local area networks.

In the course of the above, the candidate must:

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

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:

- wireless network survey techniques, including:
 - audit and intrusion detection systems
 - auditing and penetration testing techniques
 - bandwidth and quality of service
 - factors affecting signal quality
- 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
- Wi-Fi access points
- key client organisation considerations when designing a wireless network, including:
 - small office home office (SOHO) and enterprise local area networks (LANs)
 - transmission control protocols and internet protocols (TCP/IP) and applications
 - wireless security strategies
 - security threats
- software considerations when designing wireless networks, including:
 - network protocols and operating systems
 - security protocols, standards and data encryption
- organisational requirements regarding:
 - discussing and documenting current and future network needs for clients
 - preparing implementation plans
 - presenting network designs to clients
- 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:

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

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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