



Australian Government

Department of Education, Employment and Workplace Relations

ICAA5241C Design an enterprise wireless local area network

Release: 1

ICAA5241C Design an enterprise wireless local area network

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit defines the competency required to conduct a site survey and design a complex wireless local area network (LAN). No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
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
2. Research client needs	2.1. Identify the client's current needs 2.2. Determine future needs 2.3. Document current and future needs
3. Implement site survey	3.1. Select the appropriate diagnostic tools 3.2. Undertake site survey with minimum disruption to client 3.3. Record physical and other issues that will impact on future network performance
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 upon client and user requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- The design, development and implementation of various wireless network solutions
- Ability to implement wireless networking strategies and configure wireless network software and hardware
- Implementing LAN
- Cost-benefit comparison

REQUIRED SKILLS AND KNOWLEDGE

- Analysing wireless network performance
- Producing wireless network designs

Required knowledge

- Security threats
- Network protocols and operating systems
- Security protocols, standards and data encryption
- Factor affecting signal quality
- Wireless topologies
- Wireless security strategies
- SOHO and enterprise LANs
- Layer 2 and layer 3 design issues
- Bandwidth and quality of service
- WLAN and WMAN solutions
- TCP/IP protocols and applications
- Auditing and penetration testing techniques
- Audit and intrusion detection systems

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: - Assessment must confirm the ability to assess wireless network performance and produce wireless network designs. To demonstrate competency in this unit the following resources will be needed: - Network technical requirements - Real or simulated wireless networks - Network infrastructure, including wireless hardware and software
Context of and specific resources for assessment	The breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and coordination would be characteristic. The demonstration of competency may also require self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others. Assessment must ensure: Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team coordination may also be involved.
Method of assessment	The purpose of this unit is to define the standard of performance to be achieved in the workplace. In

EVIDENCE GUIDE

	undertaking training and assessment activities related to this unit, consideration should be given to the implementation of appropriate diversity and accessibility practices in order to accommodate people who may have special needs. Additional guidance on these and related matters is provided in ICA05 Section 1. • Competency in this unit should to be assessed using summative assessment to ensure consistency of performance in a range of contexts. This unit can be assessed either in the workplace or in a simulated environment. However, simulated activities must closely reflect the workplace to enable full demonstration of competency. • Assessment will usually include observation of real or simulated work processes and procedures and/or performance in a project context as well as questioning on underpinning knowledge and skills. The questioning of team members, supervisors, subordinates, peers and clients where appropriate may provide valuable input to the assessment process.
Guidance information for assessment	The interdependence of units for assessment purposes may vary with the particular project or scenario. Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended An individual demonstrating this competency would be able to: • Demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas • Analyse and plan approaches to technical problems or management requirements • Transfer and apply theoretical concepts and/or technical or creative skills to a range of situations • Evaluate information, using it to forecast for planning or research purposes • Take responsibility for own outputs in relation to broad quantity and quality parameters • Take some responsibility for the achievement of

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	group outcomes • Maintain knowledge of industry products and services
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Range Statement**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Networks may include:

- domestic
- small
- medium
- large enterprise WLANs

Network layout and parameters may include:

- cabled connected single zone
- multiple zone
- stand-alone multi-zone wireless networks
- indoor and outdoor installations
- satellite connections
- carrier links
- LMDS
- MMDS
- Free Space Optics

Client may include but is not limited to:

- internal departments
- external organisations
- clubs
- communities
- individual people
- internal employees

Documentation may follow:

- ISO/IEC/AS standards
- audit trails
- naming standards
- version control
- project management templates and report

RANGE STATEMENT	
	- writing - maintaining equipment inventory - client training - satisfaction reports
Tools may include but are not limited to:	- modeling tools for network performance software - data and voice integration measurements - frequency and spectrum analysers - cable testing - equipment testing - carrier connection tests - power meters - radiation meter
Site survey may include but is not limited to:	- building plans - physical inspection - satellite mapping - indoor propagation analysis - path loss measurements - GPS measurements
Cabling may include but is not limited to:	Category 5e, 6, 7 coaxial and fibre
User may include:	- a person within a department - a department within the organisation - community members - a third party
Organisational requirements may include but is not limited to:	- how and what the organisation wants in regard to work environment - problem solution processes - preventative maintenance and diagnostic policy - roles and technical responsibilities in network management - vendor and product service-level support agreements
Security may include but is not limited to:	- IPSec - SSL - PKM - LEAP - WEP

RANGE STATEMENT

	• WPA • AAA • Diameter • tokens • smart cards
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Unit Sector(s)

Unit sector	Analyse and Design
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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