



Australian Government

ICTRFN602 Produce and evaluate architecture designs for WiMAX networks

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to specify the design of Worldwide Interoperability for Microwave Access (WiMAX) network architecture.

It applies to individuals working as information and communication technologies (ICT) technicians, designing and operating WiMAX networks in wireless core and access networks. Wireless convergence technology in telecommunications particularly applies to the deployment of fast wireless broadband access.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to produce architecture designs for wireless broadband	1.1 Review WiMAX specification 802.16 protocol structure for point-to-point (backhaul) and point-to-multipoint (end user) topologies, and identify requirements of network 1.2 Assess technical characteristics and functions of network elements in WiMAX network 1.3 Evaluate advantages of modulation techniques used in wireless

	access technologies 1.4 Compare characteristics and operating principles of multiplexing techniques used at physical layer of wireless access technologies
2. Design architectures for proposed fixed and mobile WiMAX network	2.1 Develop proposed network topology for fixed (802.16d) WiMAX network, showing relationship of network elements 2.2 Develop proposed network topology for mobile (802.16e) WiMAX network showing relationship of network elements 2.3 Evaluate design considerations between fixed and mobile WiMAX network and produce design specifications 2.4 Determine appropriate multiple-antenna system in WiMAX design by considering their benefits 2.5 Produce report on architecture design for WiMAX network
3. Evaluate network management products	3.1 Research, analyse and evaluate current network management products 3.2 Produce evaluation report on effectiveness of network management products that could be used to manage WiMAX network elements
4. Produce network designs for possible implementation	4.1 Compare WiMAX with other competing wireless technologies and their interoperability 4.2 Investigate inclusion of wireless fidelity (wi-fi) in the design architectures as complementary technology 4.3 Use latest technical specifications and pricing to evaluate range of architecture design solutions 4.4 Determine support and training requirements needed 4.5 Produce implementation document on WiMAX architecture configurations and designs, and present to appropriate person for approval

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	1.1, 3.1	Recognises and analyses complex technical information to evaluate a broad range of features of current security issues and best practice in security, equipment and procedures

Writing	2.1-2.3, 2.5, 3.2, 4.3, 4.5	• Uses clear, specific and industry related terminology to complete and update workplace documentation and when presenting recommendations to relevant personnel
Oral Communication	4.3, 4.5	• Liaises with personnel about technical, operational and commercial matters using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	4.3	• Performs mathematical calculations to analyse pricing data and statistics
Get the work done	1.2-1.4, 2.4, 4.1 4.2	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and understands the potential of new technology • Uses systematic, analytical processes in complex situations, gathering relevant information and identifying and evaluating options against predetermined criteria • Diagnoses faults in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the symptom

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN602 Produce and evaluate architecture designs for WiMAX networks	ICTRFN6171A Produce and evaluate architecture designs for WiMAX networks	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 ICTRFN602 Produce and evaluate architecture designs for WiMAX networks

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Performance Evidence

Evidence of the ability to:

- review and assess the Worldwide Interoperability for Microwave Access (WiMAX) communication architecture, hardware, protocols and networking systems for a new design
- integrate other wireless technologies
- analyse and evaluate competing wireless technologies
- design viable WiMAX network solutions
- assess network performance.

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:

- outline the client business domain
- explain current industry accepted network hardware and software products and their general features and capabilities
- explain the design implications of the following:
 - current industry accepted WiMAX network protocols
 - remote user issues
 - management systems
 - WiMAX network design
 - WiMAX network traffic evaluation
- explain current industry security products, devices and procedures and their general features and capabilities

- outline theoretical concepts of current industry network development and design methodologies.

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 should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- IEEE 802.16 standards for WiMAX
- client requirements
- technical specifications
- expected traffic volume
- vendors and vendor offerings and pricing
- information on a range of IT business solutions
- future organisational business processes
- a budget for architecture designs for WiMAX networks.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet -

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