



Australian Government

ICTNWK610 Design and build integrated VoIP networks

Release: 1

ICTNWK610 Design and build integrated VoIP networks

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 use appropriate tools, equipment, software and protocols to design and build an internet protocol (IP) based integrated voice network for small-to-medium enterprises.

It applies to individuals with advanced information and communications technology (ICT) skills who are working as voice over internet protocol (VoIP) network support specialists, VoIP network engineers and VoIP systems installers.

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. Plan design concepts of a voice network for specified voice quality	1.1 Determine the design requirements of an IP-based voice network, including the choice of network elements 1.2 Evaluate the various applications of real-time protocols and of signalling protocols for an appropriate gateway 1.3 Design a site numbering plan, including digit manipulation and path selection process 1.4 Plan and assign calling privileges as required 1.5 Predict VoIP call flow and potential impact on voice quality considerations and network performance

ELEMENT	PERFORMANCE CRITERIA
2. Design, configure implement and test voice protocols and interoperation of VoIP communications network	2.1 Produce the design layout of the voice network according to the design requirements 2.2 Design and configure a gateway and a gatekeeper to using H.323 protocol suite for dial plan resolution and call admission control for the network 2.3 Configure and test the use of real-time protocols, call management protocols and gateway signalling protocol in the network design 2.4 Analyse the function and interoperation of gatekeepers within an IP communications network
3. Design, configure and test a VoIP IP-to-IP call system	3.1 Analyse the IP-to-IP gateway features and functionality requirements for a given network design requirement 3.2 Configure the gatekeeper to support an IP-to-IP gateway 3.3 Configure and test the IP-to-IP gateway to provide address hiding, protocol and media interworking, and call admission control implementations 3.4 Produce test results and evaluate against design requirements

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, 2.1, 3.1, 3.4	Recognises and interprets complex technical information to determine and adhere to design requirements
Writing	1.3, 2.1, 3.4	Develops a broad range of material including test results, planning and design documentation for a specific audience using clear and detailed language in order to convey explicit information, requirements and recommendations
Numeracy	1.3, 1.5, 2.3, 3.3, 3.4	Interprets numerical data in the planning phase and undertakes measurements to evaluate performance and interoperability of network
Get the work done	1.1, 1.2, 1.4, 1.5, 2.2-2.4, 3.1-3.3	Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and

		understand the uses and potential of new technology • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • May use formal analytical and lateral thinking techniques for identifying issues and generating and evaluating possible solutions
--	--	---

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK610 Design and build integrated VoIP networks	ICANWK610A Design and build integrated VoIP 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 ICTNWK610 Design and build integrated VoIP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine requirements and produce a concepts design of a voice over internet protocol (VoIP) network
- produce a design layout
- configure and test voice gateways
- design site numbering plan, dial plans and priorities
- use networking and network management tools
- configure and test real-time protocols, call management protocols and gateway signalling protocol in the network elements
- implement voice systems and applications.

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:

- explain codecs and their protocols for use
- summarise configuration, verification and troubleshooting procedures to undertake basic router operation and routing switch with VLANs and inter-switching communications
- outline design considerations and deployment schemes
- explain gateway technologies
- summarise internetwork operating system (IOS) and internet protocol (IP) networking models
- outline procedures and techniques for implementing local area network/wide area network (LAN/WAN) topologies
- explain network topologies, architectures and elements
- identify and describe networking standards and protocols

- outline voice applications and protocols
- explain VoIP technologies.

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 networking industry, and include access to:

- a site where network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- stand-alone and lightweight wireless local area network (WLAN) controllers and access point (AP)
- hardware and software local area network LAN/WLAN voice technologies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet -

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