



Australian Government

ICTTEN421 Apply advanced routing protocols to network design

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 use software tools, equipment, software and protocols to configure and troubleshoot network routers.

It applies to individuals who work cooperatively with others, interpret technical information accurately and work proficiently with information communication technology (ICT). Installers of internet protocol (IP), small and medium sized enterprise (SME) network technicians, network administrators and network support personnel complete this type of work.

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

Unit Sector

Telecommunications – Telecommunications Networks Engineering

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 to apply routing protocols	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of network and network routing requirements from job briefs and appropriate personnel 1.4 Determine hardware and software diagnostic test methodologies and testing resources according to enterprise procedures

ELEMENT	PERFORMANCE CRITERIA
	1.5 Obtain operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure task is coordinated effectively with others involved at the worksite
2. Build and test advanced routing	2.1 Set up router interfaces according to manufacturer's specifications and established procedures 2.2 Implement advanced routing protocols to achieve network design requirements 2.3 Implement classless addressing across a network to perform logical connectivity, and confirm using calculations 2.4 Troubleshoot network routing according to manufacturer's specifications and established procedures 2.5 Identify security threats and initiate control measures according to enterprise procedures
3. Complete and document advanced router installation	3.1 Restore worksite to safe condition according to established safety procedures 3.2 Record and store essential installation information according to enterprise procedures 3.3 Notify appropriate personnel of completion of the task according to enterprise procedures

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, 1.3, 2.1, 2.4, 2.5, 3.2, 3.3	Recognises and interprets enterprise procedures, manuals and specifications to determine job requirements
Writing	1.2, 3.2, 3.3	- Uses clear, specific and industry-related terminology to develop network documentation and maintain network records - Writes concisely when communicating with relevant personnel

Oral Communication	1.2, 1.3, 3.3	• Liaises and negotiates with customers and peers to achieve design specifications • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.3	• Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.4, 2.4, 2.5, 3.1-3.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context and draws attention to any issues that may affect self or others • Recognises and follows organisational procedures and protocols and meets expectations associated with own role
Interact with others	1.6	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.4, 1.5, 2.1-2.5, 3.2	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including troubleshooting common network problems according to helpdesk procedures • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes on the basis of safety and specified work outcomes

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN421 Apply	ICTTEN4212A Apply advanced	Updated to meet	Equivalent unit

Code and title current version	Code and title previous version	Comments	Equivalence status
advanced routing protocols to network design	routing protocols to network design	Standards for Training Packages.	

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 ICTTEN421 Apply advanced routing protocols to network design

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Performance Evidence

Evidence of ability to:

- plan network routing requirements to meet design specification
- configure advanced protocols on network routers
- manage network addressing
- troubleshoot network
- install network security.

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 distance vector routing protocols RIP v1 and v2
- outline dynamic routing
- summarise enterprise work health and safety (WHS) procedures
- outline hybrid routing protocols enhanced interior gateway routing protocol (EIGRP)
- explain link-state routing protocols open shortest path first (OSPF)
- explain routing and packet forwarding
- describe routing tables
- summarise scalable routing strategies variable length subnet masking (VSLM) and classless inter-domain routing (CIDR)
- outline security protocols using access lists
- clarify static routing
- explain the use of software tools and equipment.

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 networks engineering field of work and include access to:

- a network facility and workstations
- tools, equipment and materials currently used in industry
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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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