



Australian Government

ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling

Release: 1

ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling

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 design an internet protocol-multiprotocol label switching (IP-MPLS) network, examine MLPS data flow and configure virtual private network (VPN) tunnelling.

It applies to individuals with excellent technical skills including designers and installers of Next Generation Networks (NGN). These IP networks provide fast internet, voice over internet protocol (VoIP) and internet protocol TV (IPTV) services.

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 and design IP-MPLS network to meet business requirements	1.1 Determine IP-MPLS network design requirements in consultation with enterprise customer 1.2 Optimise factors affecting design 1.3 Use label stacking to route MPLS packets in the network to build of MPLS services 1.4 Dimension layer-3 generation of core backbone to allow MPLS IP-VPN to provide MPLS convergence services 1.5 Use MPLS control plane to set up wavelengths

ELEMENT	PERFORMANCE CRITERIA
	1.6 Produce design topology of a MPLS network to include location and types of edge label switch routers (LSR) and core LSRs in agreement with enterprise customer
2. Configure MPLS network and verify traffic engineering (TE) considerations	2.1 Configure edge and core LSRs to provide secure methods of transporting IP packets in the MPLS network using layer 2 protocols 2.2 Configure LSRs to provide toll bypass for convergence of voice and data over IP network 2.3 Classify traffic in MPLS terms and configure edge LSR to sort traffic into forward equivalent classes (FECs) 2.4 Install and remove two standardised signalling protocols for managing traffic engineering (TE) of MPLS paths 2.5 Configure MPLS-TE to provide routing on diverse paths to avoid congestion and guarantee bandwidth services
3. Configure VPN and provide a virtual private LAN service (VPLS)	3.1 Configure a MPLS VPN tunnel for a customer network to provide multipoint-to-multipoint VPN connectivity 3.2 Build a content hosting server into a MPLS based VPN to produce a media network 3.3 Use virtual private LAN services (VPLS) as a VPN method for wide area network (WAN) multipoint-to-multipoint ethernet connectivity spanning multiple metropolitan areas 3.4 Produce VPLS topology using an internet protocol IP-MPLS cloud with provider edge (PE) routers connecting VPLS domains associated with an enterprise customer
4. Complete documentation	4.1 Produce a final design plan including network elements, configuration details and recommendations for design changes 4.2 Notify customer and obtain sign-off

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
Writing	4.1	Prepares clear and concise workplace documentation including incorporating technical language to communicate complex information clearly and

		effectively
Oral Communication	1.1, 1.6	Engages with customers, about technical and operational matters, using clear language and active listening, observational and questioning techniques to confirm, clarify or revise understanding
Interact with others	1.1, 1.6, 4.2	Selects and uses appropriate conventions and protocols when consulting or negotiating with customers
Get the work done	1.2-1.6, 2.1-2.5, 3.1-3.4	- Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high impact activities with strategic implications - Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria - Uses formal, analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions - Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes and create opportunities - Uses digital systems and tools to enter, store and analyse data

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling	ICTTEN6172A Design and configure an IP-MPLS network with virtual private network tunnelling	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 ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling

Modification History

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

Performance Evidence

Evidence of ability to:

- plan and design a multiprotocol label switching (MPLS) network that meets business requirements
- configure and test the MPLS network according to specified guidelines
- produce design topology of a MPLS network
- produce a final design plan including network elements, configuration details and recommendations for design changes
- implement secure virtual private network (VPN) tunnelling.

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:

- explore current industry-accepted hardware and software products used in an IP-MPLS network
- explain MPLS IP-VPN network operating systems including:
 - transmission technologies
 - protocols
- describe the effect of the customer's business domain, function and organisation on customer requirements and network 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 of work and include access to:

- a live network and networked computers
- network design documentation, equipment specifications and organisational guidelines
- network components, routers, switches and multi-layer switches.

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 -

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