



Cisco

642-889 EXAM

Implementing Cisco Service Provider Next-Generation Edge Network Services (SPEDGE)

Product: Demo File

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Question: 1

Which method is used to provide inter-AS AToM services?

- A. back-to-back VRF
- B. targeted LDP
- C. pseudowire stitching
- D. AToM interworking
- E. Cisco MPLS TE tunnels
- F. autodiscovery

Answer: C

Explanation:

http://www.cisco.com/en/US/docs/optical/cpt/r9_3/configuration/guide/cpt93_configuration_chapter_0111.html

Understanding L2VPN Pseudowire Stitching

L2VPN Pseudowire Stitching defines a static or dynamically configured set of two or more pseudowire segments that behave and function as a single point-to-point pseudowire. L2VPN Pseudowire Stitching enables L2VPN pseudowires to extend across two separate MPLS networks or across an inter-AS boundary, as shown in [Figure 1](#) and [Figure 2](#).

L2VPN Pseudowire Stitching connects two or more contiguous pseudowire segments to form an end-to-end multihop pseudowire. This end-to-end pseudowire functions as a single point-to-point pseudowire.

As shown in [Figure 2](#), L2VPN Pseudowire Stitching enables you to keep the IP addresses of the edge PE routers private across inter-AS boundaries. You can use the IP address of the Autonomous System Boundary Routers (ASBRs) and treat them as pseudowire aggregation (PE-agg) routers. The ASBRs join the pseudowires of the two domains.

Figure 7. L2VPN Pseudowire Stitching in an Intra-AS Topology

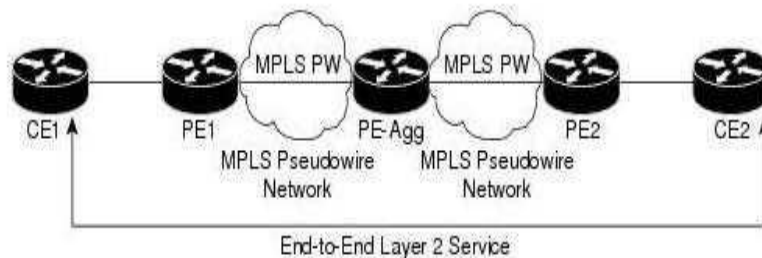
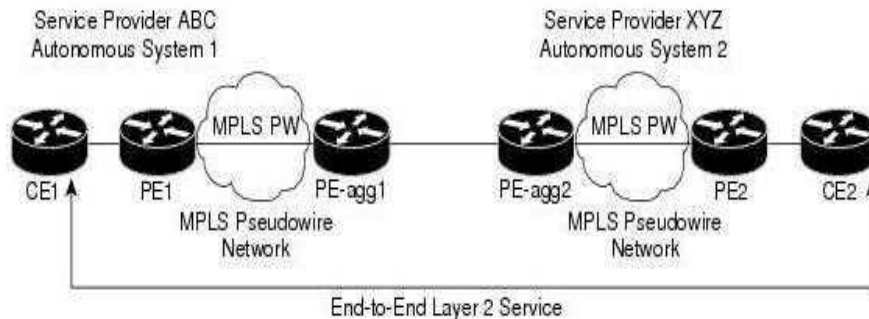


Figure 8. L2VPN Pseudowire Stitching in an Inter-AS Topology



Restrictions for L2VPN Pseudowire Stitching

- L2VPN Pseudowire Stitching is supported with AToM.
- Only static, on-box provisioning is supported.
- Sequencing numbers in AToM packets are not processed by L2VPN Pseudowire Stitching. The feature passes the sequencing data through the cross-connect packet paths, a process that is called transparent sequencing. The end point PE to CE connections enforce the sequencing.
- You can ping the adjacent next-hop PE router. End-to-end LSP pings are not supported.
- Do not configure IP or Ethernet interworking on a router where L2VPN Pseudowire Stitching is enabled. Instead, configure interworking on the routers at the edge PEs of the network.
- The control word negotiation results must match. If either segment does not negotiate the control word, the control word is disabled for both segments.
- AToM Graceful Restart is negotiated independently on each pseudowire segment. If there is a transient loss of the LDP session between two AToM PE routers, packets continue to flow.
- Per-pseudowire QoS is not supported. The TE tunnel selection is supported.
- Attachment circuit interworking is not supported.
- [NTP-J34 Configure the Pseudowire Stitching Using Cisco IOS Commands](#)

NTP-J34 Configure the Pseudowire Stitching Using Cisco IOS Commands

Purpose	This procedure configures L2VPN Pseudowire Stitching on each of the PE routers.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Question: 2

When troubleshooting EoMPLS configuration problems, which three parameters must match between the two ends of the pseudowire configurations? (Choose three.)

- A. control word usage
- B. MTU size
- C. pseudo wire ID
- D. Connect group name
- E. EFP sub interface number

Answer: A, B, C

Explanation:

Provisioning an AToM Static Pseudowire

In this configuration task, you use options in the xconnect Ethernet interface configuration command to specify a static connection, and mpls commands in xconnect mode to statically set the following pseudowire parameters:

- Set the local and remote pseudowire labels
- Enable or disable sending the MPLS control word

<p>Step 1</p>	<pre>enable</pre> <p>Example: Router> enable</p>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted.
<p>Step 2</p>	<pre>configure terminal</pre> <p>Example: Router# configure terminal</p>	<p>Enters global configuration mode.</p>
<p>Step 3</p>	<pre>interface Ethernet-type interface-number</pre> <p>Example: Router(config)# interface Ethernet 1/0</p>	<p>Enters configuration mode for the specified interface.</p>
<p>Step 4</p>	<pre>xconnect peer-ip-address void encapsulation mpls manual pw-class class-name</pre> <p>Example: Router(config-if)# xconnect 10.131.191.252 100 encapsulation mpls manual pw-class mpls</p>	<p>Configures a static AToM pseudowire and enters xconnect configuration mode where the local and remote pseudowire labels are set.</p>
<p>Step 5</p>	<pre>mpls label local-pseudowire-label remote-pseudowire-label</pre> <p>Example: Router(config-if-xconn)# mpls label 100 150</p>	<p>Sets the local and remote pseudowire labels.</p> <ul style="list-style-type: none"> • The label must be an unused static label within the static label range configured using the <code>mpls label range</code> command. • The <code>mpls label</code> command checks the validity of the label entered and displays an error message if it is not valid. The label supplied for the <code>remote-pseudowire-label</code> argument must be the value of the peer PE's local pseudowire label.

<p>Step 6</p>	<pre>[no] mpls control-word Example: Router(config-if-xconn)# no mpls control-word</pre>	<p>Sets whether or not the MPLS control word is sent.</p> <ul style="list-style-type: none"> • This command must be set for Frame Relay data-link connection identifier (DLCI) and ATM adaptation layer 5 (AAL5) attachment circuits. For other attachment circuits, the control word is included by default. • If you enable inclusion of the control word, it must be enabled on both ends of the connection for the circuit to work properly. • Inclusion of the control word can be explicitly disabled using the <code>no mpls control-word</code> command.
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Haven't been able to find where MTU Must match

Question: 3

Which Layer 2 protocol parameters can be carried inside the control word when implementing AToM service?

- A. PW ID
- B. Frame Relay FECN, BECN, and DE bits
- C. encapsulation type
- D. VC type

Answer: B

Explanation:

http://www.cisco.com/en/US/products/ps6603/products_qanda_item09186a008009d4e3.shtml#wp391_73

Q. How does Frame Relay over MPLS work?

A. Traffic is encapsulated in MPLS packets and forwarded across the MPLS network. When encapsulating Frame Relay over MPLS, the Frame Relay header and the frame check sequence (FCS) are stripped from the packet. The bits for Backward Explicit Congestion Notification (BECN), Forward Explicit Congestion

Notification (FECN), Discard Eligibility (DE) and Command/Response (C/R) are carried across the MPLS network in the "Control Word" header.

Question: 4

When implementing VPLS on Cisco routers, which data structure resembles a virtual switch and is used for learning the MAC addresses?

- A. VRF
- B. VFI
- C. SVI
- D. BVI

Answer: B

Explanation:

Restrictions for Implementing Virtual Private LAN Services on Cisco IOS XR Software

The following restrictions are listed for implementing VPLS:

- All attachment circuits in a bridge domain on an Engine 3 line card must be the same type (for example, port, dot1q, qinq, or qinany), value (VLAN ID), and EtherType (for example, 0x8100, 0x9100, or 0x9200). The Cisco CRS-1 router supports multiple types of attachment circuits in a bridge domain.
- The Engine 3 line cards, cannot simultaneously have attachment circuits and MPLS-enabled on any one of its interfaces. The line card cannot be Edge-facing and Core-facing at the same time. Line cards on the Cisco CRS-1 router can be Edge-facing and Core-facing at the same time.
- The line card requires ternary content addressable memory (TCAM) Carving configuration. The Cisco CRS-1 router however, does not require the TCAM Carving configuration.
- Virtual Forwarding Instance (VFI) names have to be unique, because a bridge domain can have only one VFI.
- On the Cisco CRS-1 router, a VPLS pseudowire (PW) can be configured only under VFI.
- The Cisco CRS-1 router does not support VPLS with TE core tunnels.
- A PW cannot belong to both a peer-to-peer (P2P) cross-connect group and a VPLS bridge-domain. This means that the neighboring IP address and the pseudowire ID have to be unique on the router, because the pseudowire ID is signaled to the remote provider edge.
- You cannot manually set up a PW on one PE and use auto-discovery on the other PE to configure the same PW in the other direction. The auto-discovery feature is supported only on the Cisco XR 12000 Series Router.

Question: 5

In hierarchical VPLS implementations, which two access architectures can be used between the UPE and NPE? (Choose two.)

- A. EoMPLS
- B. MP-BGP
- C. Frame Relay
- D. 802.1ad

Answer: A, D

Explanation:

http://www.cisco.com/en/US/docs/switches/metro/me3600x_3800x/software/release/12.2_52_ey/configuration/guide/swmpls.html#wp1244272

H-VPLS uses spoke connections, usually between Layer 2 switches acting as the CE and PE devices at the

service provider's point-of presence (POP). The spoke connections can be either an IEEE 802.1Q tagged connection or an MPLS LSP.

Question: 6

Which two methods can be used for VPLS PW signaling? (Choose two.)

- A. static
- B. BGP
- C. IGP
- D. LDP
- E. RSVP

Answer: B, D

Explanation:

VPLS Discovery and Signaling

VPLS is a Layer 2 multipoint service and it emulates a LAN service across a WAN. VPLS enables service providers to interconnect several LAN segments over a packet-switched network and make them behave as a single LAN. Service providers can provide a native Ethernet access connection to customers using VPLS.

The VPLS control plane consists of two important components, autodiscovery and signaling:

- VPLS Autodiscovery eliminates the need to manually provision VPLS neighbors. VPLS Autodiscovery enables each VPLS PE router to discover other provider edge (PE) routers that are part of the same VPLS domain.
- Once the PEs are discovered, pseudowires (PWs) are signaled and established across pairs of PE routers, forming a full mesh of PWs across PE routers in a VPLS domain.

Figure 10 VPLS Autodiscovery and Signaling

L2-VPN	Multipoint	
Discovery	BGP	
Signaling Protocol	LDP	BGP
Tunneling Protocol	MPLS	

BGP-based VPLS Autodiscovery

An important aspect of VPN technologies, including VPLS, is the ability of network devices to automatically signal information to other devices, about any association with a particular VPN. Autodiscovery requires this information to be distributed to all members of a VPN. VPLS is a multipoint mechanism for which BGP is well-suited.

BGP-based VPLS autodiscovery eliminates the need to manually provision VPLS neighbors. VPLS autodiscovery enables each VPLS PE router to discover other provider edge (PE) routers that are part of the same VPLS domain. VPLS Autodiscovery also tracks occurrences when PE routers are added to, or removed from, the VPLS domain. When the discovery process is complete, each PE router has the information required to setup VPLS pseudowires (PWs).

BGP Auto Discovery With BGP Signaling

The implementation of VPLS in a network requires the establishment of a full mesh of PWs between the provider edge (PE) routers. The PWs can be signaled using BGP signaling.

Question: 7

When implementing nonhierarchical VPLS with eight PE routers, how many total PWs will be required between the PE routers?

- A. 8

- B. 16
- C. 28
- D. 32
- E. 64

Answer: C

Explanation:
 $8 * (8-1) / 2$

Question: 8

VPWS/EoMPLS offers which type of Ethernet services as defined by the MEF?

- A. E-Tree
- B. E-LAN
- C. E-Line
- D. E-Interworking

Answer: C

Explanation:
Explanation:

- E-Line is based on a point-to-point Ethernet Virtual Connection. Two E-Line services are defined:
 - Ethernet Private Line (EPL): A very simple and basic point-to-point service characterized by low frame delay, frame delay variation, and frame loss ratio. No service multiplexing is allowed, and other than a committed information rate (CIR) no class of service (CoS) (Bandwidth Profiling) is allowed.
 - Ethernet Virtual Private Line (EVPL): A point-to-point service wherein service multiplexing (more than one Ethernet Virtual Connection) is allowed. The individual Ethernet Virtual Circuits can be defined with a rich set of Bandwidth Profiles and Layer 2 Control Protocol Processing methods as defined by the Metro Ethernet Forum.

Question: 9

When using the Cisco EVC software infrastructure, a double-tagged frame with a customer VLAN of 10 and a service provider VLAN of 150 will be best matched by which encapsulation configuration?

- A. encapsulation dot1q 10 second-dot1q any
- B. encapsulation dot1q 10 second-dot1q 150
- C. encapsulation dot1q 10 second-dot1q 50-200
- D. encapsulation dot1q 10
- E. encapsulation dot1q 150

Answer: E

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