



**Vendor:** Cisco

**Exam Code:** 642-780

**Exam Name:** Maintaining Cisco Service Provider VPNs and  
MPLS Networks (MSPVM)

**Version:** 12.39

### QUESTION 1

A service provider is running OSPF and has turned the network for fast convergence. The service provider has determined that its routers should also be configured for LDP synchronization. If the service provider follows ITIL-based practices, how should this change be treated?

- A. As a standard change
- B. As a minor change
- C. As a major change
- D. As an emergency change

**Answer:** D

### QUESTION 2

What are three basic functional requirements when configuring MPLS layer 2 VPLS? (Choose three)

- A. A CE to PE routing protocol must be used to exchange routing prefixes
- B. A full mesh of pseudowire (emulated VC) connections must be used between PE routers
- C. Each PE must have a VFI configured
- D. LDP protocol must be running
- E. Auto discovery is needed to identify endpoints outside of the VPLS domain.

**Answer:** BCD

#### **Explanation:**

Before you configure VPLS, ensure that the network is configured as follows:

- Configure IP routing in the core so that the PE routers can reach each other via IP.
- Configure MPLS in the core so that a label switched path (LSP) exists between the PE routers.
- Configure a loopback interface for originating and terminating Layer 2 traffic.

Make sure the PE routers can access the other router's loopback interface. Note that the loopback interface is not needed in all cases. For example, tunnel selection does not need a loopback interface when VPLS is directly mapped to a TE tunnel.

VPLS configuration requires you to identify peer PE routers and to attach Layer 2 circuits to the VPLS at each PE router.

The full-mesh configuration requires a full mesh of tunnel label switched paths (LSPs) between all the PEs that participate in the VPLS. With full-mesh, signaling overhead and packet replication requirements for each provisioned VC on a PE can be high.

You set up a VPLS by first creating a virtual forwarding instance (VFI) on each participating PE router.

The VFI specifies the VPN ID of a VPLS domain, the addresses of other PE routers in the domain, and the type of tunnel signaling and encapsulation mechanism for each peer PE router. The set of VFIs formed by the interconnection of the emulated VCs is called a VPLS instance; it is the VPLS instance that forms the logic bridge over a packet switched network. The VPLS instance is assigned a unique VPN ID.

The PE routers use the VFI to establish a full-mesh LSP of emulated VCs to all the other PE routers in the VPLS instance. PE routers obtain the membership of a VPLS instance through static configuration using the Cisco IOS CLI.

The full-mesh configuration allows the PE router to maintain a single broadcast domain. Thus, when the PE router receives a broadcast, multicast, or unknown unicast packet on an attachment circuit, it sends the packet out on all other attachment circuits and emulated circuits to all other

CE devices participating in that VPLS instance. The CE devices see the VPLS instance as an emulated LAN.

To avoid the problem of a packet looping in the provider core, the PE devices enforce a "split-horizon" principle for the emulated VCs. That means if a packet is received on an emulated VC, it is not forwarded on any other emulated VC.

After the VFI has been defined, it needs to be bound to an attachment circuit to the CE device. The packet forwarding decision is made by looking up the Layer 2 virtual forwarding instance (VFI) of a particular VPLS domain.

### QUESTION 3

Refer to the exhibit. Which statement about the two show commands output is true?

```

PE#show ip bgp vpnv4 all

BGP table version is 17, local router ID is 192.168.1.17
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal, r RIB-failure, S Stale

Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 1:10 (default for vrf Customer_1)
*> 10.1.11.16/28    150.1.11.17         10           32768 ?
*> 10.1.11.49/32    150.1.11.17         10           32768 ?
*> 10.1.11.64/28    150.1.11.17         10           32768 ?
*>i10.1.12.16/28    192.168.1.33         1    100         0 ?
*>i10.1.12.49/32    192.168.1.33         1    100         0 ?
*>i10.1.12.64/28    192.168.1.33         1    100         0 ?
*> 150.1.11.16/28   0.0.0.0              0           32768 ?
*>i150.1.12.16/28  192.168.1.33         0    100         0 ?

PE#show ip route vrf Customer_1

Routing Table: Customer_1
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

 10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
D    10.1.11.16/28 [90/2195456] via 150.1.11.17, 01:32:43, Serial0/0.101
B    10.1.12.16/28 [200/1] via 192.168.1.33, 01:31:16
D    10.1.11.49/32 [90/2297856] via 150.1.11.17, 01:32:43, Serial0/0.101
B    10.1.12.49/32 [200/1] via 192.168.1.33, 01:31:16
D    10.1.11.64/28 [90/2297856] via 150.1.11.17, 01:32:43, Serial0/0.101
B    10.1.12.64/28 [200/1] via 192.168.1.33, 01:31:16
 150.1.0.0/28 is subnetted, 2 subnets
B    150.1.12.16 [200/0] via 192.168.1.33, 01:31:16
C    150.1.11.16 is directly connected, Serial0/0.101
    
```

- A. The CE-PE routing protocol between the PE and the Customer\_1 CE router is BGP.
- B. The PE router has learned four prefixes over the multiprotocol BGP session.
- C. 192.168.1.33 is the CE router and 150.1.11.17 is the PE router.

D. The PE router is supporting more than one MPLS Layer 3 VPN customers.

**Answer: B**

**QUESTION 4**

What are four essential parts of the MP-BGP VPNv4 update? (Choose four)

- A. LDP label
- B. VPN label
- C. IPv4 prefix with route descriptor
- D. LSP identifier
- E. BGP next-hop address
- F. Route targets (extended communities)

**Answer: BCEF**

**QUESTION 5**

What function does MP-BGP provides that is required for MPLS layer 3 VPM services?

- A. MP-BGP modifies or swaps the LDP label to indicate the next-hop router in MPLS cloud
- B. MP-BGP provides the penultimate hop popping function
- C. MP-BGP performs the standard MPLS LDP functions in layer 3 environment
- D. MP-BGP advertises the VPN label and identifies the correct egress PE interface

**Answer: D**

**QUESTION 6**

Which decode corresponds correctly to this MPLS header. 0x00 0x04 0xAB 0xFE?

- A. Label: 0004, Exp AB, S:1.TTL:7E
- B. Label: 0004A. TTL:BF.Exp:8. S:0
- C. Label: 0004A , Exp: 5, S: 1, TTL: FE
- D. Label: 0004. TTL:AB.Exp:7E.S:1

**Answer: C**

**QUESTION 7**

What four layer 2 MPLS VPN parameters are collected from a customer service record database to troubleshoot a VPN connectivity issue? (Choose four)

- A. Attachment circuit information
- B. UNI interface encapsulation
- C. Hop-by-hop LDP information
- D. Virtual circuit ID information
- E. Unique service identifier
- F. PE loopback information
- G. Layer 2 MPLS VPN service type

**Answer:** ABDG

**Explanation:**

Virtual Circuit Connection Verification (VCCV) is an L2VPN Operations, Administration, and Maintenance (OAM) feature that allows network operators to run IP-based provider edge (PE)-to-PE keepalive protocol across a specified pseudowire to ensure that the pseudowire data path forwarding does not contain any faults. The disposition PE receives VCCV packets on a control channel, which is associated with the specified pseudowire. The control channel type and connectivity verification type, which are used for VCCV, are negotiated when the pseudowire is established between the PEs for each direction.

Two types of packets can arrive at the disposition egress:

- \* Type 1--Specifies normal Ethernet over MPLS (EoMPLS) data packets.
- \* Type 2--Specifies VCCV packets.

Before you can implement MPLS L2VPN on a connection, you must create and configure an attachment circuit (AC) to host L2VPN.

**Supported Ethernet Encapsulation on UNI**

The Ethernet User-Network Interface (UNI) is the connection between a cable modem and customer premise equipment such as a router or a switch. The service provider may or may not use any encapsulation on the UNI.

The MPLS Pseudowire for Cable L2VPN feature supports the following transport types on an Ethernet UNI:

- \* Port-based UNI (independent of any VLAN)--The port-based UNI provides Metro Ethernet Forum (MEF)-defined Ethernet Private Line (EPL) service. In this transport type, an MPLS pseudowire is mapped to the Ethernet port.
- \* VLAN-based UNI--Ethernet VLAN using 802.1q encapsulation (including stacked VLANs). The VLAN-based

UNI provides MEF-defined Ethernet Virtual Private Line (EVPL) service. In this transport type, the MPLS pseudowire is mapped to the 802.1q VLAN.

**QUESTION 8**

The SP NOC has determined that a significant number of broadcast packets are being received from customer A, which could be a DoS attack.

Customer A is using MPLS layer VPLS services; the exercise broadcast traffic is causing degrading performance and overutilizing the access links. Which of the Cisco IOS XR MPLS layer 2 configuration parameters can be used to mitigate the problem?

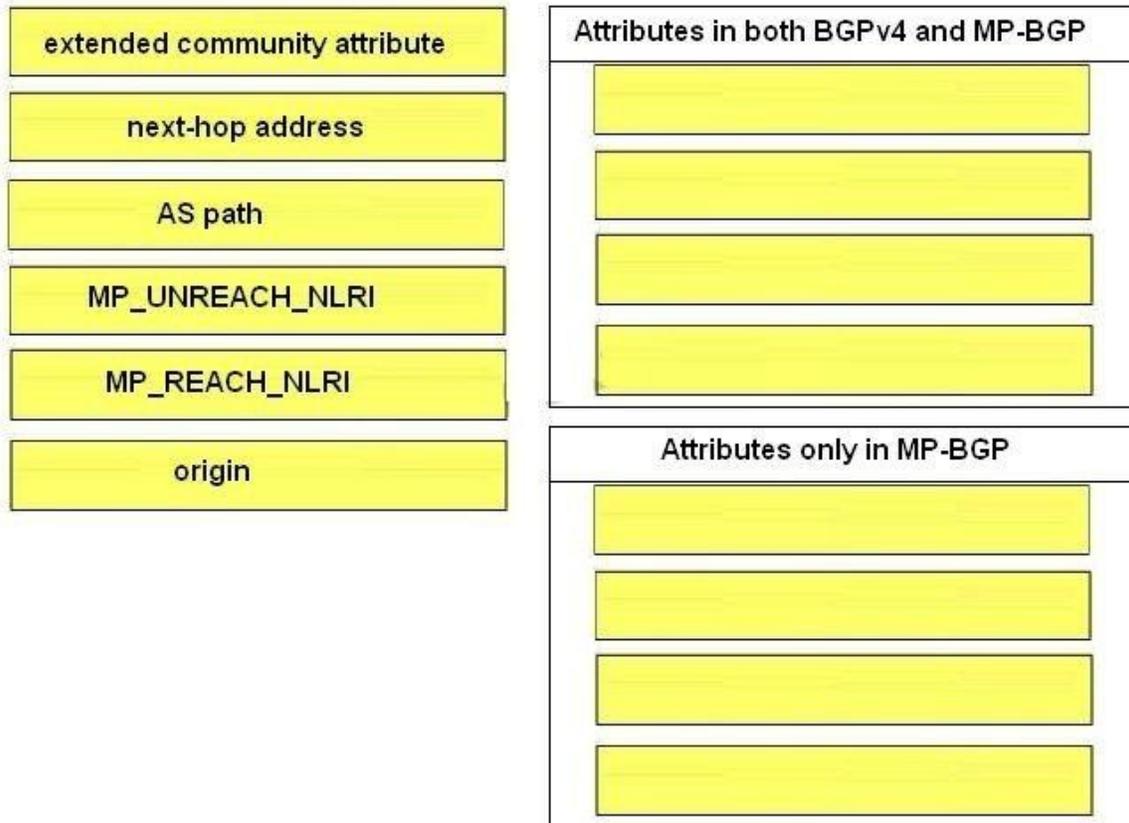
- A. The storm control parameter under the 12vpn bridge group
- B. The storm control parameter under the 12vpn xconnect group
- C. The limit-broadcast parameter under the 12vpn bridge group
- D. The storm control parameter under the 12vpn xconnect

**Answer:** A

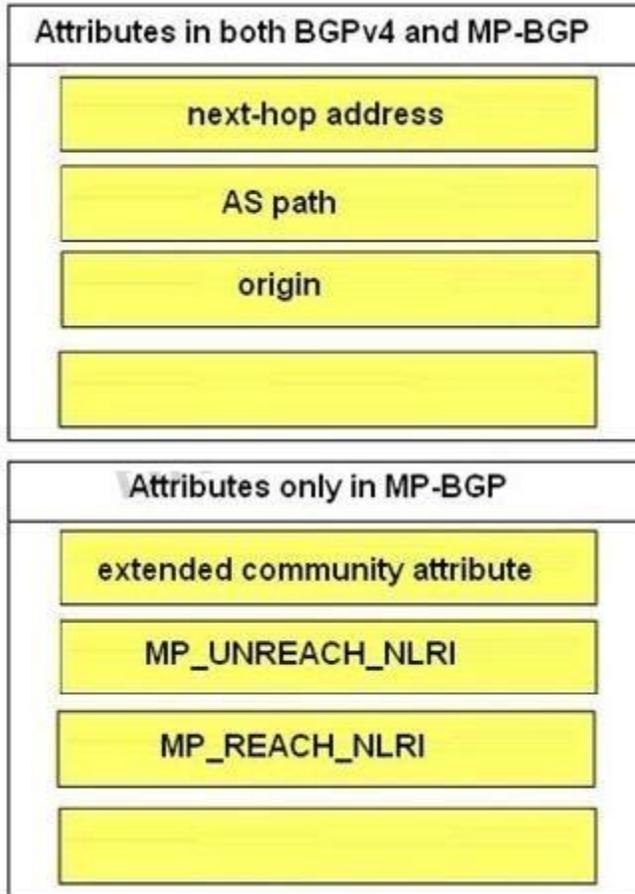
**QUESTION 9**

Drag and Drop Questions

Drag the attributes on the left to the appropriate categories on the right. Note that not all slots may be used.



**Answer:**



**QUESTION 10**

Which two IP SLA probe types can be used to monitor MPLS and VPNS for SLA compliance?  
(Choose two)

- A. UDP echo
- B. UDP echo ping
- C. MPLS LSP ping
- D. UDP delay
- E. VRF
- F. HTTP

**Answer:** CE

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