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300-515

Implementing Cisco Service Provider VPN Services

Version 1.0

Sections
1. VPN Architecture
2. Layer 2 VPNs
3. Layer 3 VPNs
4. IPv6 VPNs

Exam A

QUESTION 1

Which utility can you use to validate an LSP in an MPLS environment?

A. uRPF
B. MPLS LSP ping
C. logging
D. RSVP

Correct Answer: B
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 2 What is the primary function of a
VRF on a router?

A. It enables the router to support multiple separate routing tables, which allows the device to handle overlapping IP addresses.
B. It enables a router to run BGP and a distance vector routing protocol at the same time, which allows it to serve as a VPN endpoint between remote sites.
C. It enables a router to configure VLANs locally, which provides segregation between networks.
D. It enables the router to provide faster switching through the network by using labels to identify the input and output interfaces for neighbor routers.

Correct Answer: A
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 3 Which two statements describe primary differences between MPLS Layer 2 and Layer 3 VPNs?
(Choose two.)

A. Layer 2 VPNs use IPsec tunneling, but Layer 3 VPNs use L2TPv3 tunneling.
B. Layer 2 VPNs use AToM, but Layer 3 VPNs use MPLS/BGP.
C. Layer 2 VPNs use BGP, but Layer 3 VPNs use VPLS.
D. Layer 2 VPNs use L2TPv3 tunneling, but Layer 3 VPNs use GRE tunneling.
E. Layer 2 VPNs use IPsec tunneling, but Layer 3 VPNs use pseudowires to provide tunneling.

Correct Answer: BD
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 4

```
PE1                              PE2
ip vrf CE1                       ip vrf CE2
  rd 101:1                         rd 202:2
  route-target export 100:1        route-target export 200:2
  route-target import 200:2        route-target import 100:1

PE3                              PE4
ip vrf CE3                       ip vrf CE4
  rd 303:3                         rd 404:4
  route-target export 300:3        route-target export 400:4
  route-target import 400:4        route-target import 300:3
```

Refer to the exhibit. A network engineer has been called to configure the four PE devices in order to enable full communication among the four CE devices connected to them. While starting to configure, he experienced a connectivity issue. Which two tasks should the engineer perform in order to begin the process correctly? (Choose two.)

A. Configure PE3 to export route-targets 100:1 and 200:2. B. Configure PE3 to import route-targets 100:1 and 200:2.

C. Configure PE4 to import route-targets 101:1 and 202:2. D. Configure PE2 to export route-targets 300:3 and 400:4.

E. Configure PE1 to import route-targets 300:3 and 400:4.

Correct Answer: AB
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 5

```
PE1                                  CE1
ip vrf ce1vpn                        interface FastEthernet0/0/0
  rd 111:1                               ip address 192.168.0.2 255.255.255.0
  route-target export 111:1
  route-target import 222:2          interface FastEthernet0/0/1
                                         ip address 192.168.1.2
interface FastEthernet0/0/0          255.255.255.252
  ip vrf forwarding ce1vpn
  ip address 192.168.0.1 255.255.255.0  router ospf 100
                                         network 192.168.0.0 0.0.0.255 area1

router ospf 1 vrf ce1vpn             router bgp 65600
  network 192.168.0.0 0.0.0.255 area 1   neighbor 192.168.1.1 remote-as 65600
```

Refer to the exhibit. If the two devices are operating normally, which two conclusions can you draw from this configuration? (Choose two.)

A. CE1 must use OSPF to establish a neighbor relationship with PE1.
B. PE1 labels the routes it learns from CE1 with the route-target 222:2 and shares them with its VPNv4 peers.
C. PE1 labels the routes it learns from CE1 with the route-target 111:1 and shares them with its VPNv4 peers.
D. The PE-CE routes between the devices are being exchanged by OSPF

E. CE1 is supporting CSC.

Correct Answer: AD
Section: VPN Architecture
Explanation

Explanation/Reference:

QUESTION 6 Which two frames can be configured on an Ethernet flow point?
(Choose two.)

A. of a specific VLAN
B. with different type of service values
C. with identical type of service value
D. with different class of service values
E. with no tags

Correct Answer: AE
Section: VPN Architecture
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/cether/configuration/xe-3s/asr903/16-5-1/b-ce-xe-16-5-asr900/trunk-efp-support.html

QUESTION 7 In an Ethernet Virtual Circuit environment, which restriction do bridge domains have when
STP is running?

A. The STP mode must be RSTP or PVST+
B. Bridge domains must be mapped to a different VLAN.
C. The STP mode must be MSTP
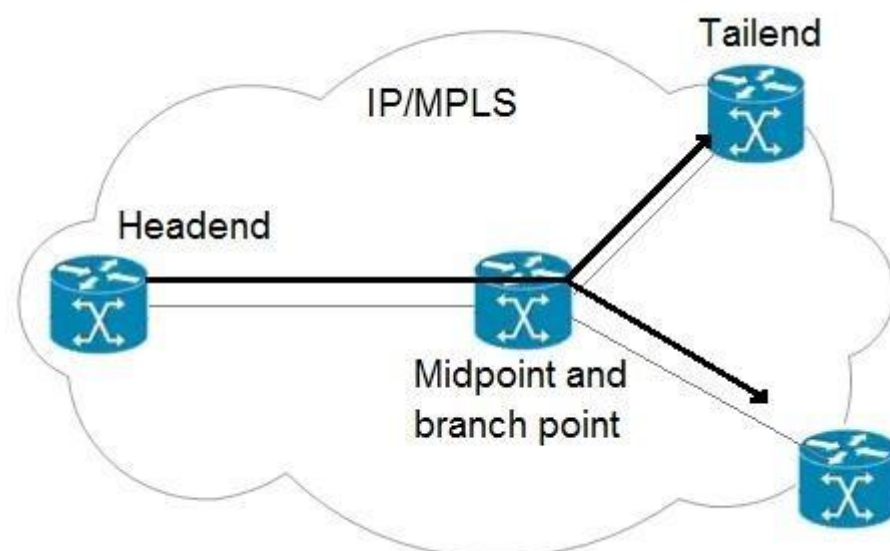D. Bridge domains must belong to different MST instances.

Correct Answer: C
Section: VPN Architecture
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr920/configuration/guide/ce/b_ce_xe-313s-asr920-book/b_ce_xe-313s-asr920-book_chapter_01.html#reference_770349446ED24E83821EF701DDC46BFD

QUESTION 8

Refer to the exhibit. An engineer is implementing an MPLS P2MP TE solution. Which type of router can serve as the midpoint router and the tailend router in this P2MP TE network implementation?

A. headend
B. source
C. transit
D. bud

Correct Answer: D
Section: VPN Architecture
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr920/configuration/guide/mpls/mp-te-path-setup-xe-3s-asr920-book/mp-te-path-setup-xe-3s-asr920-book_chapter_01.html

QUESTION 9
An engineer is investigating an EVPN traffic flow issue. Which type of traffic should the engineer allow in an EVPN Tree Service in order to fix this issue?

A. known unicast from a leaf to another leaf
B. unknown unicast from a leaf to another leaf
C. multicast from a leaf to another leaf
D. known unicast from a root to another root

Correct Answer: D
Section: VPN Architecture
Explanation

Explanation/Reference:
Reference: https://tools.ietf.org/html/draft-ietf-bess-evpn-etree-14

QUESTION 10
An engineer is investigating an MPLS LDP issue. Which command should an engineer use on a Cisco IOS XE device to display the contents of the LFIB?

A. **show mpls forwarding-table**
B. **show mpls ldp neighbors**
C. **show mpls ldp labels**
D. **show mpls ldp bindings**

Correct Answer: A

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mpls/command/mp-cr-book/mp-s2.html

QUESTION 11

```
Router# show mpls forwarding-table
Local Outgoing    Prefix          Bytes label  Outgoing   Next Hop
label label or VC  or Tunnel Id    switched     interface
29   Pop tag       10.22.22.22/32  0            Gi1/1/0    172.32.0.1
32   0             10.24.24.24/32  0            Gi1/0/0    192.168.1.2
33   0             172.24.24.24/32 0            Gi1/0/0    192.168.1.2
34   0             192.168.0.0/8   0            Gi1/0/0    192.168.1.2
35   0             10.25.25.25/32  0            Gi1/0/0    192.168.1.2
36   0             172.16.0.0/8    0            Gi1/0/0    192.168.1.2
37   25            10.26.26.26/32  0            Gi1/0/0    192.168.1.22
38   0             10.34.34.34/32  0            Gi1/0/0    192.168.1.2
```

Refer to the exhibit. Which statement about this output is true?

A. The router IP 192.168.1.2 sent an implicit null, and the output is from the penultimate LSR.
B. The adjacent router is the egress LSR and has mpls ldp explicit-null configured.
C. The adjacent LSR router configured mpls label range 0.
D. The zero in the second column is the normal behavior of an egress router LSR.

Correct Answer: B
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 12
An engineer is troubleshooting an ongoing network outage. Which command should he use that can display the live log files for a process or service running on a network device?

A. **traceroute**
B. **show run**
C. **ping**
D. **debug**

Correct Answer: D
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 13 Which tool identifies the point of failure in a P2MP LSP from
the ingress LSR?

A. Jitter TLV
B. SPAN

C. P2MP traceroute
D. P2MP ping

Correct Answer: C
Section: VPN Architecture
Explanation
Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k_r5-3/mpls/configuration/guide/b-mpls-cg53x-asr9k/b-mpls-cg53x-asr9k_chapter_01000.html

QUESTION 14
In a typical service provider environment, which two tools are used to help scale PE router connectivity requirements? (Choose two.)

A. route reflectors
B. VPNv4 address family
C. originator ID
D. cluster ID
E. confederations

Correct Answer: AE
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 15 An ISP provides a major client MPLS VPN for managed services. The MPLS engineering team needs to use the advanced VPN feature of selective VRF import so that only specific prefixes are present in the required VPNs.

Which aspect of this feature must the team consider?

A. A route must pass the import route map first and then the route target import filter.
B. The routers that are imported in the VRF can be BGP and IGP routes, so other match conditions in the route map, besides communities, can be used.
C. The **import-map** command is applied under the PE interface that connects to the CE router.
D. A route is imported into the VRF only when at least one RT that is attached to the route matches one RT that is configured in the VRF and the route is permitted by the import route map.

Correct Answer: D
Section: VPN   Architecture
Explanation

Explanation/Reference:
Reference: https://www.ccexpert.us/mpls/configuring-selective-vrf-import.html

QUESTION 16 While configuring the VRF Selection feature, you get an error message after typing the

below statement: **Router(config)#no vrf selection source 172.16.0.0 255.255.0.0 vrf VRF1**

Which action caused this message?

A. the entry of an inconsistent IP address and mask for VRF Selection
B. an attempt to configure a VRF instance on an interface that already has VRF Selection configured
C. an attempt to remove a VRF Selection entry that does not exist
D. an attempt to configure a VRF Selection table that does not exist

Correct Answer: C
Section: VPN   Architecture
Explanation

Explanation/Reference:

Reference: https://www.cisco.com/c/en/us/td/docs/ios/12_2/12_2sz/feature/guide/122szvrf.html

QUESTION 17 Which two BGP attributes prevent loops in a route reflector environment?
(Choose two.)

A. cluster ID
B. local preference
C. origin
D. originator ID
E. AS_PATH

Correct Answer: AD
Section: VPN   Architecture
Explanation

Explanation/Reference:
Reference: https://www.ciscopress.com/articles/article.asp?p=2756480&seqNum=10

QUESTION 18
An engineer needs to improve MPLS network management by implementing a set of tools to support the NOC engineers in troubleshooting network failures. Which feature should the engineer implement to check the connectivity of the MPLS LSP between the ingress and egress PE routers?

A. MPLS OAM
B. MPLS-TP
C. LDP autodiscovery
D. extended ping

Correct Answer: A
Section: VPN   Architecture
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k_r5-3/mpls/configuration/guide/b-mpls-cg53x-asr9k/b-mpls-cg53x-asr9k_chapter_01000.html

QUESTION 19

```
RP/0/0/CPU0:PE1#show run
evpn
no evi 100
no advertise-mac
!
!
vrf EVPN
address-family ipv4 unicast
import route-target
133:100
export route-target
133:100
!
!
interface BVI651
vrf EVPN
ipv4 address 192.168.100.1 255.255.255.0
mac-address 1337.1337.1337
```

Refer to the exhibit. A network operator is implementing EVPN IRB on PE1. Which two command placements enable the advertisement of Type 2 routes and what information do Type 2 routes contain? (Choose two.)

A. The operator adds in "host-routing" under the VRF EVPN.
B. Type 2 routes contain MAC/IP information.
C. Type 2 routes contain Ethernet Auto-Discovery information.
D. The operator adds in "host-routing" under the BVI651 interface.
E. Type 2 routes contain inclusive source-specific multicast route information.

Correct Answer: BD
Section: VPN   Architecture
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/vpn/61x/b-ncs5500-l2vpn-configuration-guide-61x/b-ncs5500-l2vpn-configuration-guide-61x_chapter_01010.html

QUESTION 20
You try to configure MPLS VPN VRF Selection based on a source IP address on an interface that has VRF configured, but you receive an error.

Which action must you take to correct the problem?

A. Change the source IP address.
B. Add the IP address to the VRF table.
C. Remove the VRF from the interface.
D. Configure static routes for the VRF.

Correct Answer: C
Section: VPN   Architecture
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios/12_0s/feature/guide/vrfselec.html

QUESTION 21 The CTO of a company requires the support of a network consultant to deliver an MPLS solution without resigning to a certain degree of redundancy and scalability. Which solution effectively scales to hundreds or thousands of sites?

A. L2VPN with the broadcast traffic processed at the ingress PE.
B. L3VPN with direct LSP connectivity between all PEs.
C. L2VPN by encapsulating multiple frame formats with interworking.
D. L3VPN using a hierarchical topology of N-PEs and U-PEs.

Correct Answer: D
Section: VPN   Architecture
Explanation

Explanation/Reference:

QUESTION 22 You are troubleshooting ARP connectivity issues for an Ethernet interface on an IOS XR network that runs IS-IS. You verify that the IGP protocol is running, but an ARP entry has not yet been created.

Which action should you take?

A. debug ping packets
B. debug ARP
C. ping the connected neighbor
D. verify the RIB table routes

Correct Answer: C
Section: VPN   Architecture
Explanation

Explanation/Reference:
QUESTION 23
Which two are characteristics of using a non-MPLS peer-to-peer model over a traditional overlay model? (Choose two.)

A. The model is suited for nonredundant configurations.
B. The configuration on a newly added site PE is updated automatically.
C. Provider routers know the customer network topology.
D. The customer specifies the exact site-to-site traffic profile.
E. Routing information is exchanged between the customer router and one or a few PEs.

Correct Answer: CE
Section: VPN   Architecture
Explanation

Explanation/Reference:
Reference: http://etutorials.org/Networking/MPLS+VPN+Architectures/Part+2+MPLS-based+Virtual+Private+Networks/Chapter+7.+Virtual+Private+Network+VPN+Implementation+Options/Overlay+and+Peer-to-peer+VPN+Model/

QUESTION 24 While troubleshooting an AToM L2VPN service, a network consultant notices that the AC Layer 2 encapsulations are different. Which action should the consultant take in order to make the MPLS L2VPN work?

A. tag-rewrite on the ingress and egress PE router
B. interworking IP configuration on the last PE router before label disposition
C. nonrouted interworking setup to properly translate only the Layer 2 information from the ACD. interworking IP configuration on both the AC terminations on the PEs

Correct Answer: D
Section: Layer   2   VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp_l2_vpns/configuration/xe-16-11/mp-l2-vpns-xe-16-11-book/l2vpn-interworking.html

QUESTION 25 Which mechanism reduces the network flooding caused by host ARP
learning behavior?

A. ARP suppression
B. storm control
C. root guard
D. BPDU guard

Correct Answer: A
Section: Layer   2   VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/products/collateral/switches/nexus-7000-series-switches/white-paper-c11-735015.html

QUESTION 26 What do EVPN single-active and all-active
have in common?

A. They are default gateway redundancy options.
B. They are multihoming mechanisms used for CE devices.
C. They are used to provide single connection from a CE device to a service provider.
D. They are both roles that a designated router can take when MPLS is used with EVPN.

Correct Answer: D
Section: Layer 2 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k-r6-2/lxvpn/configuration/guide/b-l2vpn-cg-asr9000-62x/b-l2vpn-cg-asr9000-62x_chapter_01011.html

QUESTION 27

```
interface Loopback0
  ip address 1.1.1.1 255.255.255.255
  ip ospf 1 area 0
!
interface GigabitEthernet0/1/0
  ip address 10.0.2.1 255.255.255.252
!
service instance 101 ethernet
    encapsulation dot1q 101
    rewrite ingress tag pop 1 symmetric

    l2vpn evpn instance 100 point-to-point
    !
    vpws context vc100
    service target 2 source 1
    member GigabitEthernet0/1/0 service-instance 101
!
interface GigabitEthernet0/1/1
  ip address 10.0.1.1 255.255.255.0
  ip ospf 1 area 0
  mpls ip
!
router bgp 65500
  bgp router-id 1.1.1.1
  neighbor 2.2.2.2 remote-as 65501
  neighbor 2.2.2.2 update-source Loopback0
  !
  address-family ipv4
    neighbor 2.2.2.2 activate
  exit-address-family
!
address-family l2vpn evpn
    neighbor 2.2.2.2 activate
exit-address-family
!
l2vpn evpn instance 100 point-to-point
  !
  vpws context vc100
    service target 2 source 1
    member GigabitEthernet0/0/0
!
```

Refer to the exhibit. An engineer is trying to configure an EVPN VWPS. What is the issue with this configuration? A.

The member in the VPWS context should be the PE-facing interface.

B. The **12vpn evpn** command should be instance 101.

C. Interface GigabitEthernet0/1/0 should not have any IP address.

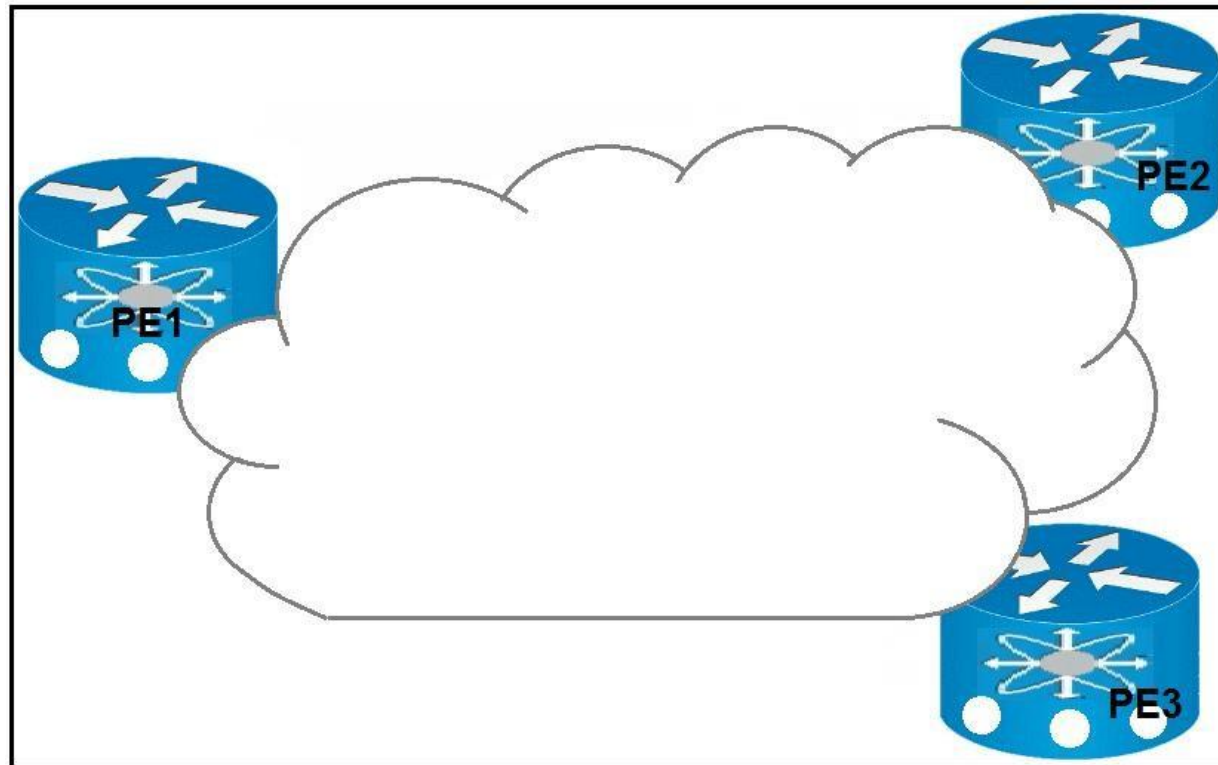D. The service instance and the EVPN instance are different.

Correct Answer: C
Section: Layer 2 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp_l2_vpns/configuration/xe-3s/asr903/16-7-1/b-mpls-l2-vpns-xe-16-7-asr900/epvn_vpws_single_homed.pdf **QUESTION**

28

Refer to the exhibit. Which result occurs when PE1 learns a new MAC address and all three PEs are enabled with EVPN native?

A. A system notification is sent to the network administrator that triggers the manual configuration of the new MAC address on PE2 and PE3.

B. The new MAC address is sent by BGP to PE2 and PE3 as a Type 2 BGP route.

C. The MAC address is entered into the CAM table and is classified for use on the native VLAN

D. The MAC address is entered into the CAM table only if it is learned on the native VLAN.

Correct Answer: B
Section: Layer 2 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k-r6-4/lxvpn/configuration/guide/b-l2vpn-cg-asr9000-64x/b-l2vpn-cg-asr9000-64x_chapter_01011.html

QUESTION 29
While troubleshooting EoMPLS configuration problems, which three parameters should an engineer match between the two ends of the pseudowire configurations? (Choose three.)

A. VLAN name

B. Xconnect group name

C. EFP subinterface number

D. pseudowire ID

E. MTU size

F. control word usage

Correct Answer: DEF
Section: Layer 2 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/support/docs/multiprotocol-label-switching-mpls/mpls/213238-mpls-l2vpn-pseudowire.html

QUESTION 30 A network architect is troubleshooting the L2TPv3 tunneling security due to the untrusted nature of the underlaying network. Which two L2TPv3 features does the architect deploy to address the ongoing issues? (Choose two.)

A. TCP MD5 authentication

B. control message hashing

C. CHAP authentication

D. control message rate limiting

E. asymmetric mutual authentication with PSK

Correct Answer: BC
Section: Layer 2 VPNs
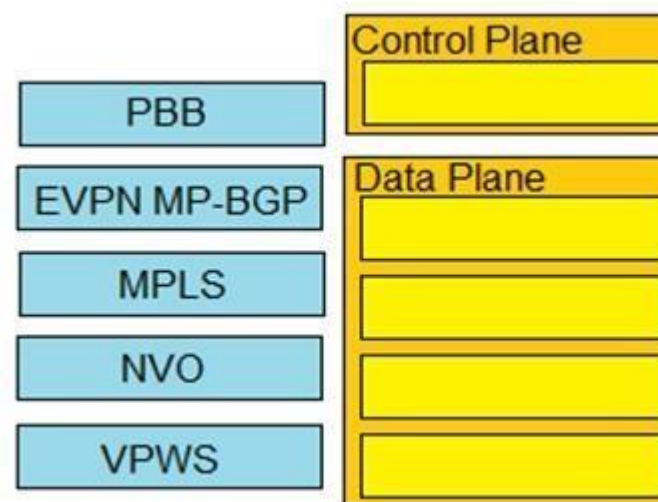**Explanation**

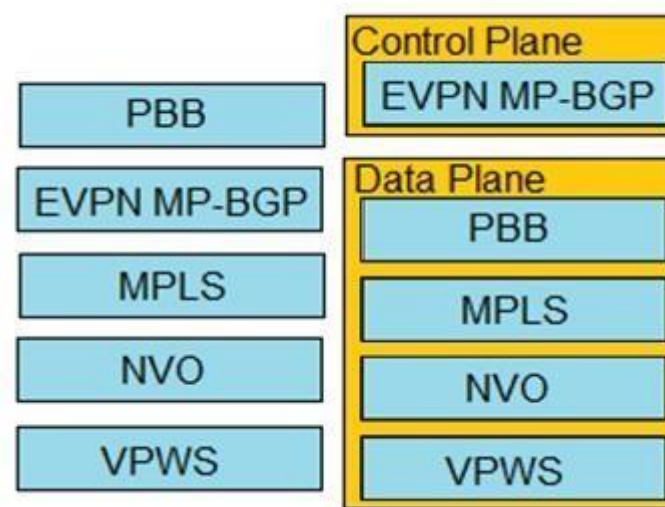**Explanation/Reference:**

QUESTION 31 DRAG
DROP

Drag and drop the EVPN components from the left onto the correct planes on the right.

Select and Place:

Correct Answer:

Section: Layer 2 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/dam/m/en_us/network-intelligence/service-provider/digital-transformation/knowledge-network-webinars/pdfs/0420-epn-ckn.pdf slide 8

QUESTION 32 What must match in the EVPN and L2VPN configuration mode when configuring EVPN native in a router?

A. interface
B. address family
C. bridge domain
D. EVI

Correct Answer: D
Section: Layer 2 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k-r6-2/lxvpn/configuration/guide/b-l2vpn-cg-asr9000-62x/b-l2vpn-cg-asr9000-62x_chapter_01011.html

QUESTION 33 An engineer is troubleshooting AToM on an IOS XE router and receives an error when creating the xconnect.

Which command does he need to complete to create the xconnect in AToM?

A. **encapsulation mpls**
B. **encapsulation 12tpv3**
C. **protocol 12tpv3**
D. **protocol none**

Correct Answer: A
Section: Layer 2 VPNs
Explanation

Explanation/Reference:

QUESTION 34

```
configure
router bgp 64520
  address-family 12vpn evpn
    neighbor 192.168.1.1

configure
12vpn
  xconnect group evpn-test
  p2p evpn12
      interface TenGigE0/1/0/1
      neighbor evpn evi 12 target 10 source 11
```

Refer to the exhibit. Which effect of this configuration is true?

A. It configures VPWS multihomed.
B. It configures VPWS single homed.
C. It configures an IPv4 peering with 192.168.1.1
D. It configures MPLS traffic engineering.

Correct Answer: B
Section: Layer   2   VPNs
Explanation

Explanation/Reference:
Reference: https://www.ciscolive.com/c/dam/r/ciscolive/emea/docs/2019/pdf/BRKSPG-2798.pdf

QUESTION 35 An engineer is troubleshooting an EoMPLS circuit on a Cisco IOS XR router interface that removes a VLAN from the distribution layer. Which configuration should the engineer apply in order to accomplish the task?

A. **interface GigabitEthernet 0/10.l2transport**
   encapsulation dot1q 10 rewrite ingress
   tag pop 1 symmetric
   l2vpn
   xconnect group 103588 p2p
   103588
   interface GigabitEthernet 0/10.10
neighbor ipv4 10.10.10.2 pw-id 103588 B.
interface GigabitEthernet 0/10.10
encapsulation dot1q 10 rewrite ingress
tag pop 1 symmetric
   l2vpn
   xconnect group 103588 p2p
   103588
   interface GigabitEthernet 0/10.10 neighbor
   ipv4 10.10.10.2 pw-id 103588
C. **interface   GigabitEthernet   0/10.10   l2transport**
   encapsulation dot1q 10 l2vpn
   xconnect group 103588 p2p
   103588
   interface GigabitEthernet 2/10.10 neighbor
   ipv4 10.10.10.2 pw-id 103588
D. **interface   GigabitEthernet   0/10.10   l2transport**
   encapsulation dot1q 10
   rewrite ingress tag translate 1-to-1 dot1ad 10

symmetric
l2vpn
xconnect group 103588 p2p
103588
interface GigabitEthernet 0/10.10 neighbor
ipv4 10.10.10.2 pw-id 103588

Correct Answer: C
Section: Layer   2   VPNs
Explanation

Explanation/Reference:

QUESTION 36
DRAG DROP

```
interface GigabitEthernet0/1
switchport trunk allowed vlan none
switchport mode trunk
service instance 2 ethernet
  encapsulation dot1q 10
  xconnect 192.168.2.2 22 encapsulation mpls
```

Refer to the exhibit. Drag and drop the EVC configuration items from the left onto the correct descriptions on the right.

Select and Place:

Correct Answer:

Section: Layer   2   VPNs
Explanation

Explanation/Reference:

QUESTION 37
A network engineer is implementing Layer 3 MPLS VPNs on Cisco IOS/IOS XE PE routers. Which PE-to-CE routing protocol requires a separate routing process to be created for each VRF?

A. RIPv2
B. OSPF
C. BGP
D. EIGRP

Correct Answer: B
Section: Layer   3   VPNs
Explanation

Explanation/Reference:

QUESTION 38 Which condition must be met before an environment can
support CSC?

A. The CSC-PE and CSC-CE must each be able to ping an interface in its respective global routing table.
B. The CSC-PE and the CSC-CE must support IPv6.
C. The CSC-PE and CSC-CE devices must be able to send labels to one another using BGP.

D. The CSC-CE must support OSPFv3.

Correct Answer: C
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 39
In Layer 3 MPLS VPN implementations, if some of the VPNv4 routes on one PE router do not appear on another PE router, what could be the problem?

A. RD mismatch between the PE routers
B. RT export and import configuration errors
C. VRF name mismatch between the PE routers
D. RD export and import configuration errors

Correct Answer: B
Section: Layer 3 VPNs
Explanation

Explanation/Reference:
Reference: http://blog.initialdraft.com/archives/1537/

QUESTION 40
With Layer 3 MPLS VPN implementations on Cisco IOS XR PE routers, an interface is assigned to a VRF using the **vrf** command in which configuration mode?

A. **RP/0/RP0/CPU0:PE(config-bgp)#**
B. **RP/0/RP0/CPU0:PE(config-if)#**
C. **RP/0/RP0/CPU0:PE(config-bgp-af)#**
D. **RP/0/RP0/CPU0:PE(config-vrf)#**

Correct Answer: B
Section: Layer 3 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios_xr_sw/iosxr_r3-7/mpls/configuration/guide/gc37v3.html

QUESTION 41
While implementing Layer 3 MPLS VPN, which feature should an engineer use at the PEs to transform the customer IPv4 prefixes into a unique 96-bit prefix?

A. RT
B. VC ID
C. RD
D. PW ID

Correct Answer: C
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 42
Which kind of traffic is supported in an MVPN Extranet?
A. PIM dense mode with Reverse Path Forwarding

B. PIM dense mode

C. PIM sparse mode

D. Bidirectional PIM

Correct Answer: C
Section: Layer 3 VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipmulti_mvpn/configuration/xe-16/imc-mvpn-xe-16-book/imc-mc-vpn-extranet.html

QUESTION 43

```
ip vrf mvpn-intranet
  rd 12:1
  vpn id 12:1
  route-target import 12:2
  route-target export 12:1
  mdt default mpls mldp 192.168.1.2
  exit
ip multicast-routing vrf mvpn-intranet
```

Refer to the exhibit. Which statement about this configuration is true?

A. Router 1 will accept multicast routes with a route-target of 12:1.

B. 192.168.1.2 must be reachable by all routers participating in the mvpn-intranet MVRF.

C. Router 1 has statically defined thresholds for data MDT.

D. The MVRF must be configured on each router on the customer and service provider networks.

Correct Answer: A
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 44

```
CE Router

router bgp 65001
    address-family ipv4 unicast
        redistribute ospf 1
        allocate-label all
    neighbor 192.168.1.25
        remote-as 65012

PE Router

router bgp 65012
    vrf custrouter
        rd 65001:65012
        address-family ipv4 unicast
            allocate-label all
            redistribute static
        neighbor 192.168.1.24
            remote-as 65001
            address-family ipv4 labeled-unicast
```

Refer to the exhibit. The CE router has established a BGP peering with the PE router, and the CE will use the core infrastructure of the PE as a backbone carrier to support CSC. Which additional task can you perform to complete the configuration?

A. Configure static routing on the CE router.
B. Configure the **address-family ipv4 labeled-unicast** command under the neighbor configuration of the CE router for the PE.
C. Change the rd value to **65001:65001** under the VRF section of the PE router.
D. Configure OSPF on the PE router.

Correct Answer: D
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 45

```
R1

router ospf 1 vrf custabc
    network 192.168.1.0 0.0.0.255 area 1
    redistribute bgp 65001 metric-type 1 subnets
```

Refer to the exhibit. Which statement describes the result of this configuration?

A. R1 redistributes BGP routes into the OSPF process of VRF custabc as E1 routes.
B. R1 redistributes BGP routes into the OSPF process of VRF custabc as E2 routes.
C. R1 mutually redistributes routes between BGP 65001 and the OSPF process of VRF custabc.

D. R1 redistributes BGP routes into the OSPF process of VRF custabc as OIA routes.

Correct Answer: A
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 46
You are writing the requirements for an MPLS L3VPN environment that uses MP-BGP between PE routers. In this environment, route targets and route distinguishers need to be advertised between the PE routers.

Which three operations meet these requirements? (Choose three.)

A. mandatory creation of PE-to-PE BGP sessions between the outgoing interface IP addresses
B. advertisement of standard communities, enabled on the PE-to-PE BGP neighbors
C. creation of PE-to-PE BGP sessions between loopback IP addresses
D. full mesh of IBGP sessions
E. full mesh of EBGP sessions and partial mesh of IBGP sessions
F. advertisement of extended communities, enabled on the PE-to-PE BGP neighbors

Correct Answer: CDF
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 47 Which is the primary function of a MPLS L3
VPN route target?

A. It imports and exports identified routes into selected VRFs.
B. It uniquely identifies NLRIs that have the same numeric value.
C. It imports the external routes it identifies into VRFs that support Internet traffic
D. It supports QoS by classifying traffic by file type when it applies MPLS EXP bits to each packet.

Correct Answer: A
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 48 Which two statements about MPLS L3 VPN RDs are
true? (Choose two.)

A. They enable EIGRP to use address families to separate traffic between IPv4 and VPNv4.
B. They are represented as 32-bit values
C. They are represented as 64-bit values.
D. They enable OSPF to import and export routes into the global routing table of a router.
E. They allow BGP to uniquely identify duplicate routes.

Correct Answer: CE
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 49 Which statement describes the **no bgp default route-target filter** command?

A. Prefixes that are received with route targets and distinguisher are accepted.
B. Prefixes that are received with route targets and distinguisher are not accepted.
C. Prefixes that are received with route targets that are not imported at the PE are not accepted.
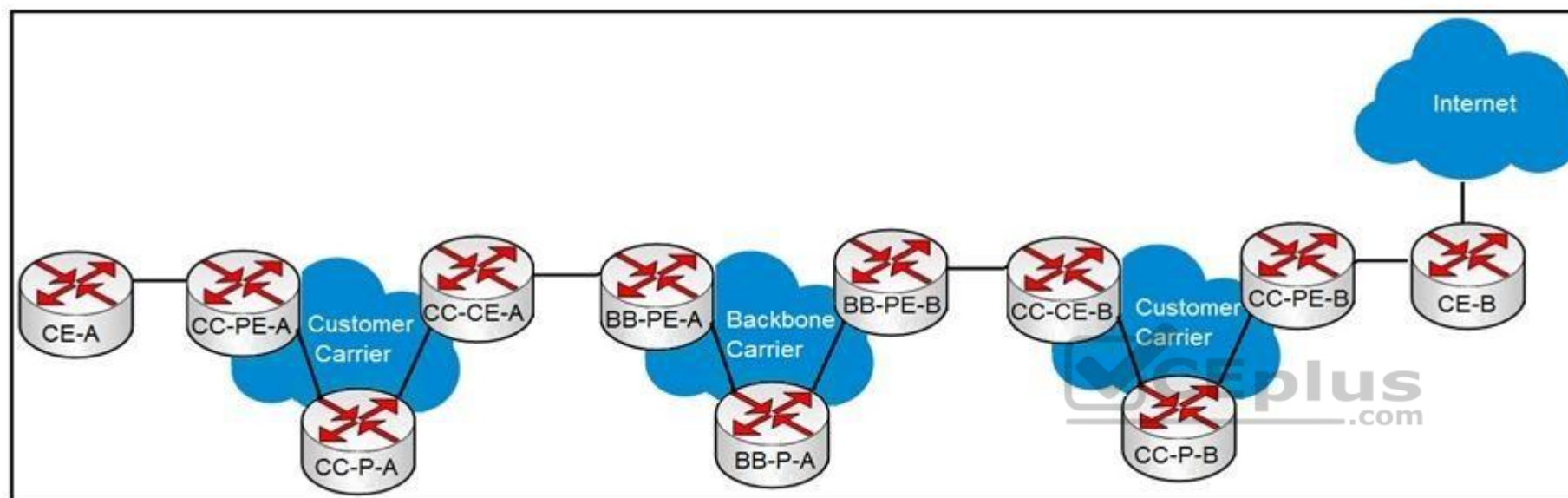D. Prefixes that are received with route targets that are not imported at the PE are accepted.

Correct Answer: D
Section: Layer   3   VPNs
Explanation

Explanation/Reference:

QUESTION 50

Refer to the exhibit. A customer carrier running MPLS VPN wants to utilize a backbone carrier to forward traffic and exchange VPNv4 prefixes between the two customer carrier networks depicted. Which two sets of routers must establish MP-iBGP sessions? (Choose two.)

A. BB-PE-A and CC-PE-B
B. CC-PE-A and CC-PE-B
C. BB-PE-A and BB-PE-B
D. CC-PE-A and BB-PE-A
E. BB-PE-A and BB-P-A
F. CC-PE-A and CC-P-A

Correct Answer: BC
Section: Layer   3   VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp_ias_and_csc/configuration/12-2sx/mp-ias-and-csc-12-2sx-book/mp-carrier-bgp.html

QUESTION 51

```
ip vrf mvpn-extranet
  rd 12:1
  vpn id 12:1
  route-target import 12:2
  route-target export 12:3
  mdt default mpls mldp 192.168.1.2
  exit
ip multicast-routing vrf mvpn-extranet
```

Refer to the exhibit. What is the effect of this configuration?

A. The mroute table is cleared.
B. Router 1 accepts multicast routes with a tag of 12:1
C. A Cisco MPLS TE tunnel is generated with 192.168.1.2 as the source IP address of router 1.
D. An LSP virtual interface tunnel is created.

Correct Answer: B
Section: Layer   3   VPNs
Explanation

Explanation/Reference:

QUESTION 52

```
mdt default mpls mldp 2.2.2.2
```

Refer to the exhibit. Which statement about this command is true?

A. It must be configured on each PE router to enable the PE routers to receive multicast traffic for this particular MVRF.
B. It is used to set the designated router on a link using PIM-SM.
C. It must be configured on the PE and CE router to enable MP-BGP to send labels for CSC.
D. It is used to set the router that will server as the root bridge for STP.

Correct Answer: A
Section: Layer   3   VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/routers/asr1000/configuration/guide/chassis/asrswcfg/lsmmldp.html

QUESTION 53

```
R1

router bgp 65010
no bgp default ipv4-unicast
neighbor 192.168.1.1 remote-as 65010
address-family ipv4
neighbor 192.168.1.1 activate
```

Refer to the exhibit. Which statement describes the result of this BGP configuration?

A. R1 operates using IPv4 and VPNv4 address families.
B. R1 operates on IPv6 only because the **bgp default ipv4-unicast** command is missing.
C. R1 establishes a VPNv4 eBGP relationship with neighbor 192.168.1.1.
D. R1 establishes an iBGP relationship with peer 192.168.1.1.

Correct Answer: D
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 54

```
PE(config-router-af)#neighbor 10.10.10.1 local-as 100
PE(config-router-af)#neighbor 10.10.10.1 remote-as 65000
PE(config-router-af)#neighbor 10.10.10.1 as-override

PE#show ip bgp vpnv4 vrf BLUE 10.10.10.10/32
BGP routing table entry for 111:1234:10.10.10.10/32, version 624
Paths: (1 available, best #2, table BLUE)
  Advertised to update-groups:
      38          39
  65000 65100 65222 65000
    192.168.40.1 (metric 31410) from 192.168.10.1 (192.168.10.1)
    Origin incomplete, localpref 100, valid, internal, best
    Extended Community:  RT:111:1234
    Originator: 192.168.20.1, Cluster list: 192.168.30.1
    mpls labels in/out nolabel/1146
```

Refer to the exhibit. While provisioning a new BGP session between the PE and CE router, you issue the **as-override** command. Which statement describes modification of the prefix before being sent to the CE router (10.10.10.1)?

A. The fourth AS changes, but no other autonomous systems change.
B. The first and fourth autonomous systems change.
C. The second and third autonomous systems change.
D. The first AS changes, but no other autonomous systems change.

Correct Answer: D
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 55

```
R1#sho run sec router isis
  ip router isis
router isis
  net 49.0002.1010.2021.00
  is-type level-1
  spf-interval 110

R2#sho run sec router isis
  ip router isis
router isis
  net 49.0001.1010.2020.00
  is-type level-2-only
  set-overload-bit
  spf-interval 100
  redistribute static ip
```

Refer to the exhibit. A technician is troubleshooting a connectivity issue and notices that there is no IS-IS adjacency between R1 and R2. What can the technician change to bring the IS-IS adjacency up?

A. Change R2's net address to be in the same area as R1.
B. Change R1's is-type to level-2-only
C. Change R1's net address to be in the same area as R2.
D. Change R2's configuration to no longer set the overload bit.

Correct Answer: B
Section: Layer 3 VPNs
Explanation

Explanation/Reference:

QUESTION 56
Which BGP feature causes to replace the AS number of originating router with the AS number of the sending router?

A. route reflectors
B. route dampening
C. confederations
D. AS override

Correct Answer: D
Section: Layer 3 VPNs
Explanation

Explanation/Reference:
Reference: https://community.cisco.com/t5/networking-documents/understanding-bgp-as-override-feature/ta-p/3111967

QUESTION 57

```
PE1                                    PE2
ip vrf CE1                             ip vrf CE2
    rd 111:1                               rd 112 :2
    route-target export 100:1              route-target export 200:2
    route-target import 200:2              route-target import 100:1
                                           route-target import 300:3
PE3
ip vrf Internet
    rd 333:3
    route-target export 300:3
    route-target import 100:1
    route-target import 200:2
```

Refer to the exhibit. PE1 and PE2 are exchanging VPNv4 routes for CE1 and CE2, and PE3 contains the default route to the internet. If the three devices are operating normally, which two conclusions describe this configuration? (Choose two.)

A. The CE1 and CE2 VRFs can exchange routes only between their respective VRFs on PE1 and PE2.
B. All three routers must be running a distance-vector routing protocol.
C. All three routers must be running MP-BGP.
D. The CE1 and CE2 VRFs can access the default route provided by the Internet VRF.
E. Only the CE2 VRF can access the default route provided by the Internet VRF.

Correct Answer: AC
Section: Layer   3   VPNs
Explanation

Explanation/Reference:

QUESTION 58
The network engineering group of a large ISP needs to harden the management plane of its Cisco 9000 Series ASRs. While addressing IPv6 ICMP issues, they realized they have to limit the rate at which IPv6 ICMP error messages are sent out on the network. Which command do they need to apply?

A. **icmp ipv6 rate-limit unreachable 1000**
B. **ipv6 rate-limit 1000**
C. **icmp ipv4 rate-limit unreachable 1000**
D. **ipv6 icmp error-interval 50 20**

Correct Answer: D
Section: IPv6   VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipv6_basic/configuration/xe-3s/ip6b-xe-3s-book/ip6-icmp-rate-lmt-xe.html

QUESTION 59
Which optional information can be included with an IPv6 ping to support the troubleshooting process?

A. IPv4 IP address
B. source MAC address
C. destination MAC address
D. IPv6 hostname

Correct Answer: D
Section: IPv6   VPNs
Explanation

Explanation/Reference:
Reference: https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipv6/configuration/xe-3s/ipv6-xe-36s-book/ip6-mng-apps.html