



642-889^{Q&As}

Implementing Cisco Service Provider Next-Generation Edge Network Services

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QUESTION 1

Which three Layer 3 VPN technologies are based on the overlay model? (Choose three.)

- A. ATM virtual circuits
- B. Frame Relay virtual circuits
- C. GRE/IPsec
- D. L2TPv3
- E. MPLS Layer 3 VPNs
- F. DMVPNs

Correct Answer: CDF

The overlay model, where the service provider provides emulated leased lines to the customer.

The service provider provides the customer with a set of emulated leased lines. These leased lines are called VCs, which can be either constantly available (PVCs) or established on demand (SVCs). The QoS guarantees in the overlay VPN model usually are expressed in terms of bandwidth guaranteed on a certain VC (Committed Information Rate or

CIR) and maximum bandwidth available on a certain VC (Peak Information Rate or PIR). The committed bandwidth guarantee usually is provided through the statistical nature of the Layer 2 service but depends on the overbooking strategy of the service provider. The peer-to-peer model, where the service provider and the customer exchange Layer 3

routing information and the provider relays the data between the customer sites on the optimum path between the sites and without the customer's involvement.

The peer-to-peer VPN model was introduced a few years ago to alleviate the drawbacks of the overlay VPN model. In the peer-to-peer model, the Provider Edge (PE) device is a router (PE-router) that directly exchanges routing information with the CPE router. The Managed Network service offered by many service providers, where the service

provider also manages the CPE devices, is not relevant to this discussion because it's only a repackaging of another service. The Managed Network provider concurrently assumes the role of the VPN service provider (providing the VPN infrastructure) and part of the VPN customer role (managing the CPE device).

The peer-to-peer model provides a number of advantages over the traditional overlay model:

Routing (from the customer's perspective) becomes exceedingly simple, as the customer router exchanges routing information with only one (or a few) PE-router, whereas in the overlay VPN network, the number of neighbor routers can grow to a large number.

Routing between the customer sites is always optimal, as the provider routers know the customer's network topology and can thus establish optimum inter-site routing. Bandwidth provisioning is simpler because the customer has to specify only the inbound and outbound bandwidths for each site (Committed Access Rate [CAR] and Committed Delivery

Rate [CDR]) and not the exact site-to-site traffic profile.

The addition of a new site is simpler because the service provider provisions only an additional site and changes the configuration on the attached PE-router. Under the overlay VPN model, the service provider must provision a whole set



of VCs leading from that site to other sites of the customer VPN.

Prior to an MPLS-based VPN implementation, two implementation options existed for the peer-to-peer VPN model:

The shared-router approach, where several VPN customers share the same PE-router.

The dedicated-router approach, where each VPN customer has dedicated PE-routers.

QUESTION 2

When implementing CSC services, which two methods can be used to exchange label information between the downstream CSC customer carrier and the CSC backbone carrier? (Choose two.)

- A. using MP-BGP
- B. using RSVP
- C. using IGP and LDP
- D. using back-to-back VRF
- E. using front VRF and internal VRF

Correct Answer: AC

Since the CSC-PE routers do not have to carry external routes in the VRF routing table, they can use the incoming label in the packet to forward the customer carrier Internet traffic. Adding MPLS to the routers provides a consistent method of transporting packets from the customer carrier to the backbone carrier. MPLS allows the exchange of an MPLS label between the CSC-PE and the CSC-CE routers for every internal customer carrier route. The routers in the customer carrier have all the external routes either through IBGP or route redistribution to provide Internet connectivity.

When a backbone carrier and the customer carrier both provide BGP/MPLS VPN services, the method of transporting data is different from when a customer carrier provides only ISP services. The following list highlights those differences.

When a customer carrier provides BGP/MPLS VPN services, its external routes are VPN-IPv4 routes. When a customer carrier is an ISP, its external routes are IP routes. When a customer carrier provides BGP/MPLS VPN services, every site within the customer carrier must use MPLS. When a customer carrier is an ISP, the sites do not need to use MPLS.

QUESTION 3

In Layer 3 MPLS VPN implementations, if a customer is using the same AS number at both customer sites and the PE-to-CE routing protocol is BGP, what must be enabled on the PE router?

- A. BGP AS override
- B. BGP allowas-in
- C. BGP SOO extended community
- D. BGP AS path prepending

Correct Answer: A



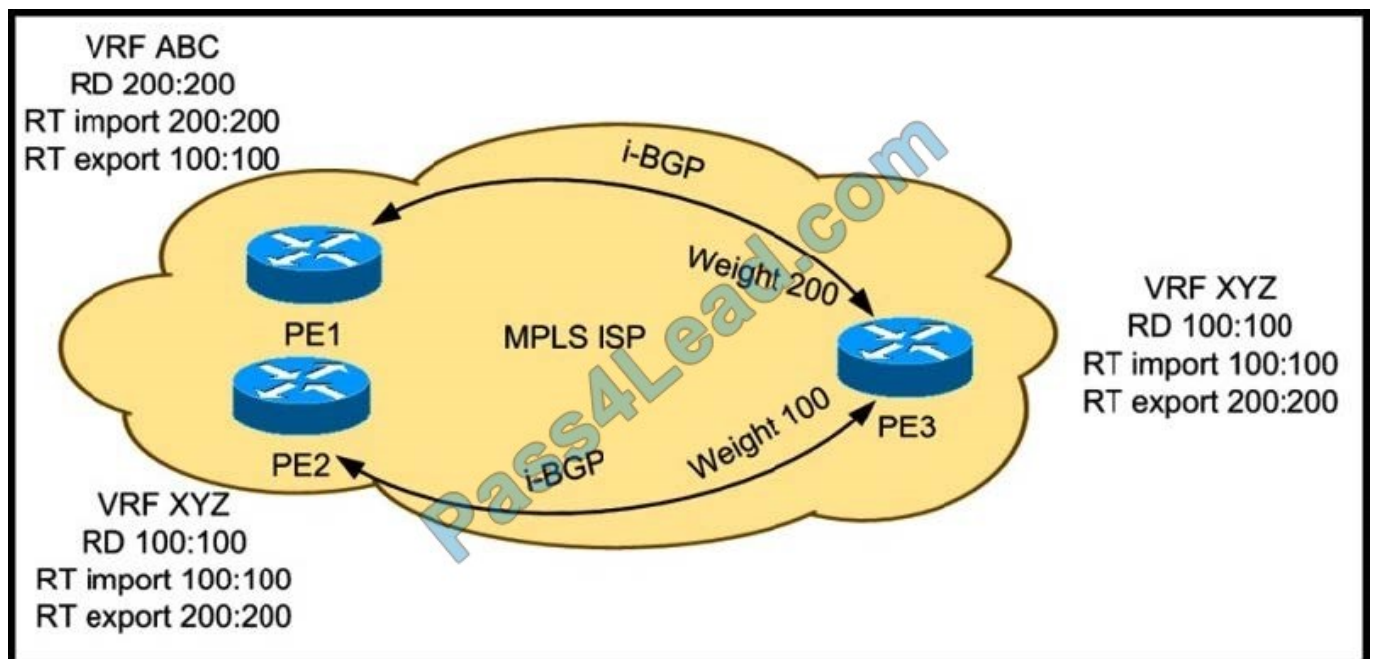
Loop prevention in BGP is done by verifying the AS number in the AS Path. If the receiving router sees its own AS number in the AS Path of the received BGP packet, the packet is dropped. The receiving Router assumes that the packet was originated from its own AS and has reached the same place from where it originated initially.

The feature could be a disaster if customers are using same AS number along the various sites and disallows customer sites having identical AS numbers to be linked by another AS number. In such a scenario, routing updates from one site will be dropped when the other site receives them. To override this feature, AS-Override function causes to replace the AS number of originating router with the AS number of the sending BGP router. The command is `neighbor ip-address as-override` and can only be executed under the VPNv4 address-family.

Reference: <https://supportforums.cisco.com/docs/DOC-21837>

QUESTION 4

Refer to the exhibit.



PE1 and PE2 are advertising the same subnet 196.168.10.0/24 to PE3. Which PE advertised subnet is installed at PE3 BGP table?

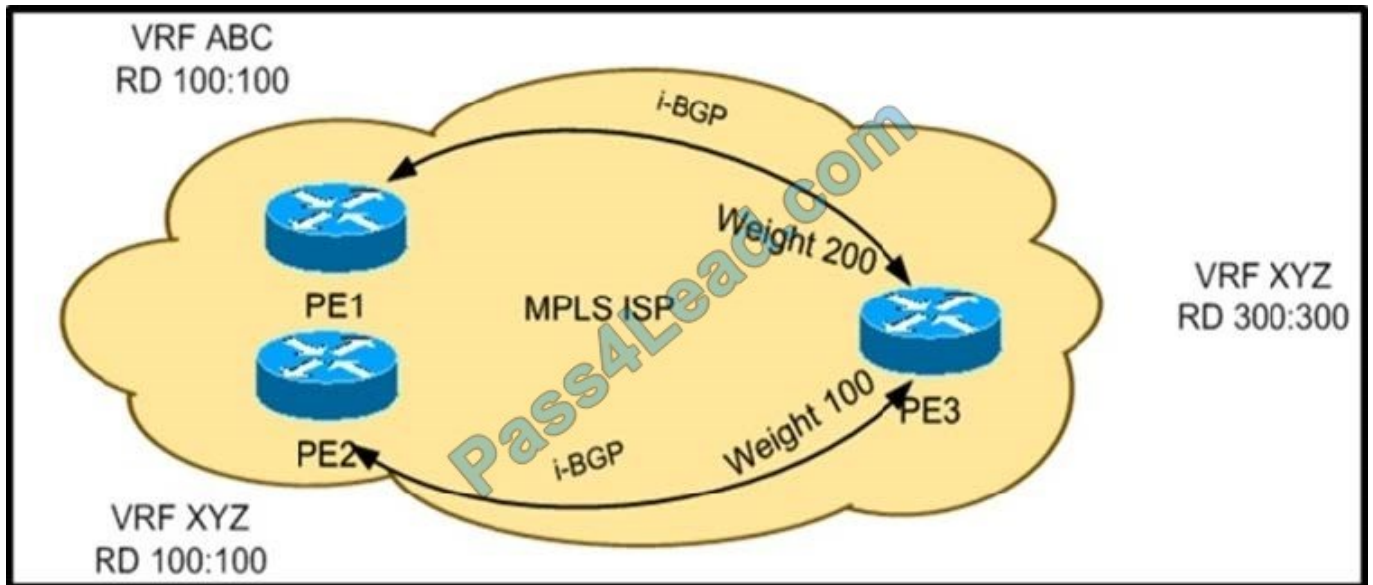
- A. PE2 subnet only due to the same RD value with PE1
- B. PE2 subnet only due to the same RD value with PE3
- C. Both PE1 and PE2 subnets due to exported subnet with RT matches import RT on PE3
- D. PE1 subnet only due to exported subnet with RT matches import RT on PE3

Correct Answer: D



QUESTION 5

Refer to the exhibit.



PE1 and PE2 are advertising the same subnet 10.10.10.0/24 and export route-target to PE3. Which PE advertised subnet is installed at the PE3 BGP table?

- A. PE1 subnet only, due to higher BGP assigned weight.
- B. PE2 subnet only because it is a member in the same VRF.
- C. PE1 and PE2 subnets
- D. PE1 and PE2 subnets as 300:300:10.10.10.0/24

Correct Answer: C



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