

## Exam Questions JN0-664

Service Provider - Professional (JNCIP-SP)

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**NEW QUESTION 1**

You are configuring a BGP signaled Layer 2 VPN across your MPLS enabled core network. In this scenario, which statement is correct?

- A. You must assign a unique site number to each attached site's configuration.
- B. This type of VPN only supports Ethernet interfaces when connecting to CE devices.
- C. This type of VPN requires the support of the inet-vpn NLRI on all core BGP devices
- D. You must use the same route-distinguisher value on both PE devices.

**Answer: C**

**Explanation:**

BGP signaled Layer 2 VPN is a type of VPN that uses BGP to distribute VPN labels and information for Layer 2 connectivity between sites over an MPLS network. BGP signaled Layer 2 VPN requires the support of the l2vpn NLRI on all core BGP devices1. The l2vpn NLRI is a new address family that carries Layer 2 VPN information such as the VPN identifier, the attachment circuit identifier, and the route distinguisher. The l2vpn NLRI is used for both auto-discovery and signaling of Layer 2 VPNs2. In this scenario, we are configuring a BGP signaled Layer 2 VPN across an MPLS enabled core network. Therefore, we need to ensure that all core BGP devices support the l2vpn NLRI. References: 1: <https://www.juniper.net/documentation/us/en/software/junos/vpn-l2/topics/concept/vpn-layer-2-overview.html> 2: [https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp\\_l2\\_vpns/configuration/xr-16/mp-l2-vpns-xr-16-book/vpls-bgp-signaling-l2vpn-inter-as-option-a.html](https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp_l2_vpns/configuration/xr-16/mp-l2-vpns-xr-16-book/vpls-bgp-signaling-l2vpn-inter-as-option-a.html)

**NEW QUESTION 2**

When building an interprovider VPN, you notice on the PE router that you have hidden routes which are received from your BGP peer with family inet labeled-unicast configured. Which parameter must you configure to solve this problem?

- A. Under the family inet labeled-unicast hierarchy, add the explicit null parameter.
- B. Under the protocols ospf hierarchy, add the traffic-engineering parameter.
- C. Under the family inet labeled-unicast hierarchy, add the resolve-vpn parameter.
- D. Under the protocols mpls hierarchy, add the traffic-engineering parameter

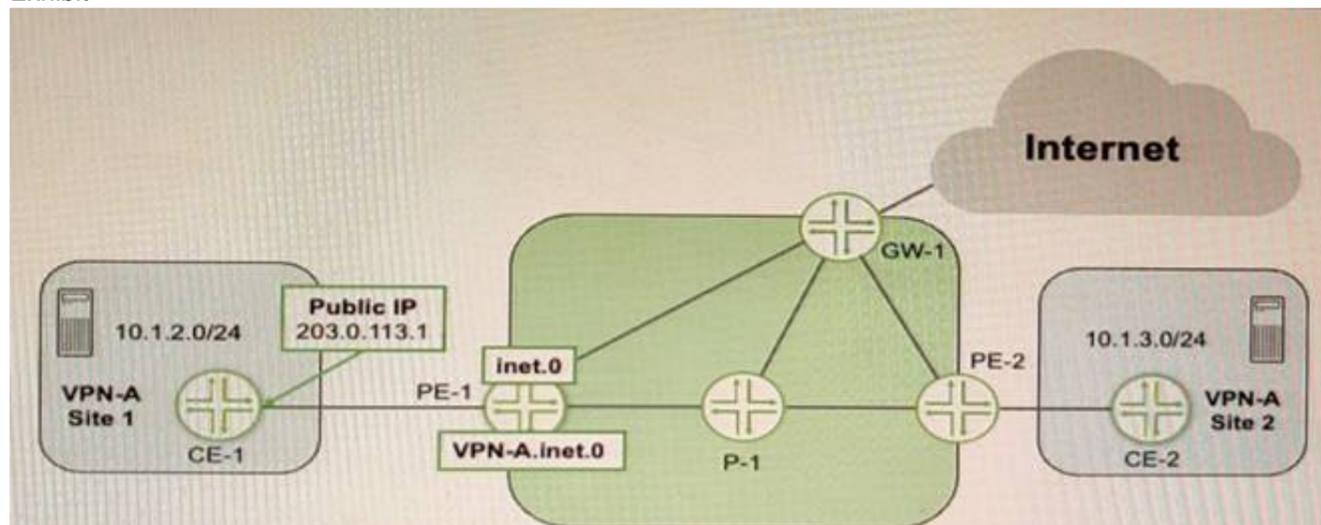
**Answer: C**

**Explanation:**

The resolve-vpn parameter is a BGP option that allows a router to resolve labeled VPN-IPv4 routes using unlabeled IPv4 routes received from another BGP peer with family inet labeled-unicast configured. This option enables interprovider VPNs without requiring MPLS labels between ASBRs or using VRF tables on ASBRs. In this scenario, you need to configure the resolve-vpn parameter under [edit protocols bgp group external family inet labeled-unicast] hierarchy level on both ASBRs.

**NEW QUESTION 3**

Exhibit



Referring to the exhibit, CE-1 is providing NAT services for the hosts at Site 1 and you must provide Internet access for those hosts. Which two statements are correct in this scenario? (Choose two.)

- A. You must configure a static route in the main routing instance for the 10.1.2.0/24 prefix that uses the VPN-A.inet.0 table as the next hop
- B. You must configure a static route in the main routing instance for the 203.0.113.1/32 prefix that uses the VPN-A.inet.0 table as the next hop.
- C. You must configure a RIB group on PE-1 to leak a default route from the inet.0 table to the VPN-A.inet.0 table.
- D. You must configure a RIB group on PE-1 to leak the 10.1.2.0/24 prefix from the VPN-A.inet.0 table to the inet.0 table.

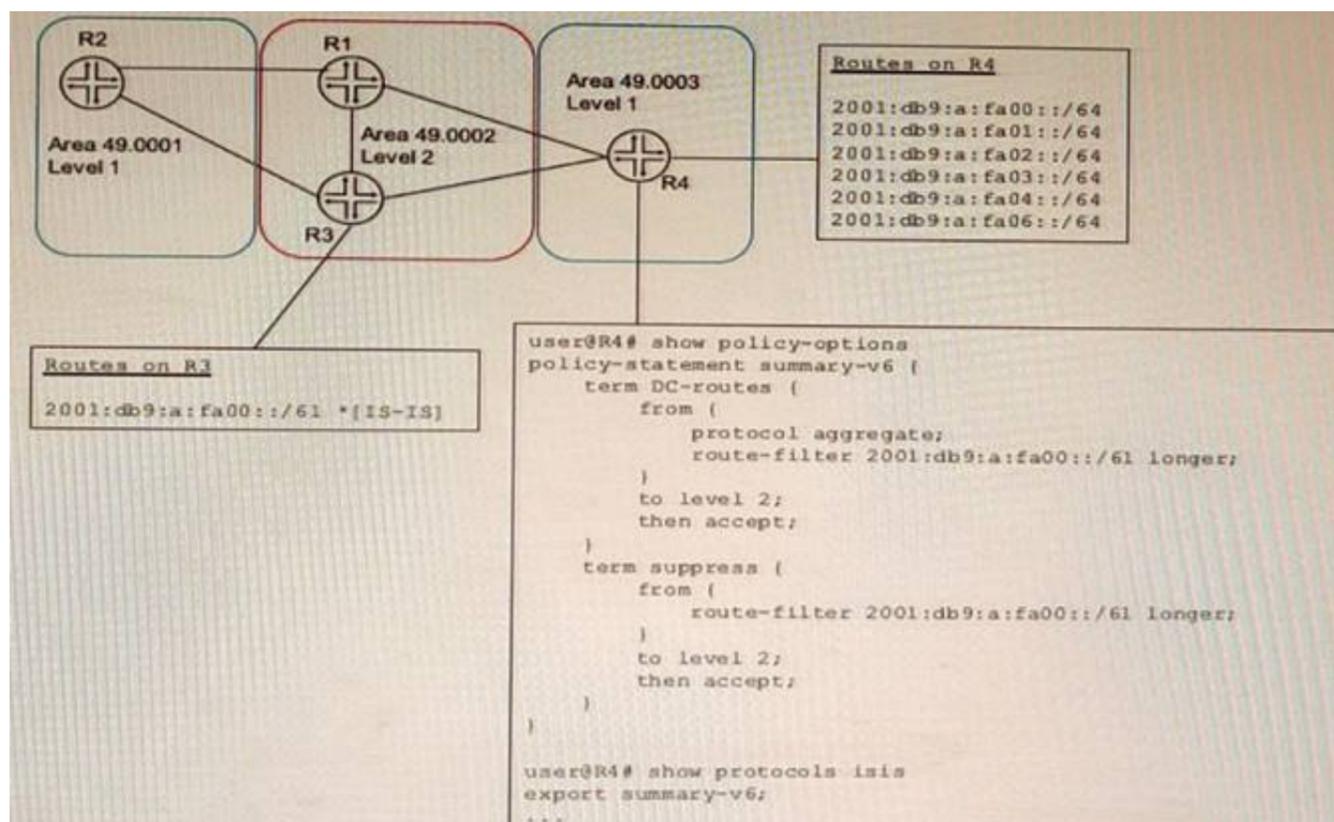
**Answer: AB**

**Explanation:**

To provide Internet access for the hosts at Site 1, you need to configure static routes in the main routing instance on PE-1 that point to the VPN-A.inet.0 table as the next hop. This allows PE-1 to forward traffic from the Internet to CE-1 using MPLS labels and vice versa. You need to configure two static routes: one for the 10.1.2.0/24 prefix that represents the private network of Site 1, and one for the 203.0.113.1/32 prefix that represents the public IP address of CE-1.

**NEW QUESTION 4**

Exhibit



A network designer would like to create a summary route as shown in the exhibit, but the configuration is not working.

Which three configuration changes will create a summary route? (Choose three.)

- A. set policy-options policy-statement leak-v6 term DC-routes then reject
- B. delete policy-options policy-statement leak-v6 term DC-routes from route-filter 2001: db9:a: fa00 : :/6l longer
- C. set policy—options policy-statement leak-v€ term DC—routes from route-filter 2001:db9:a:faOO::/61 exact
- D. delete protocols isis export summary-v6
- E. set protocols isis import summary-v6

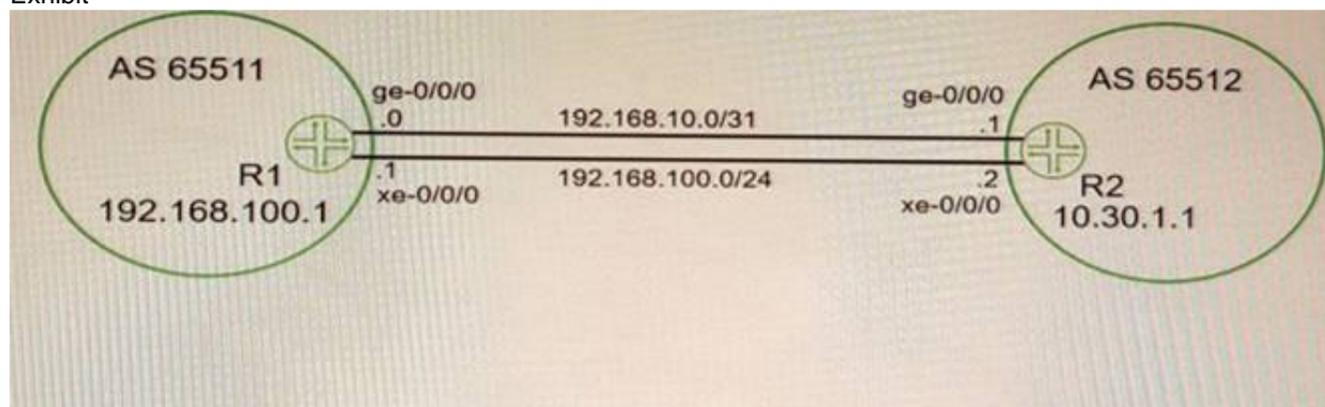
**Answer:** BCD

**Explanation:**

To create a summary route for IS-IS, you need to configure a policy statement that matches the prefixes to be summarized and sets the next-hop to discard. You also need to configure a summary-address statement under the IS-IS protocol hierarchy that references the policy statement. In this case, the policy statement leak-v6 is trying to match the prefix 2001:db9:a:fa00::/61 exactly, but this prefix is not advertised by any router in the network. Therefore, no summary route is created. To fix this, you need to delete the longer keyword from the route-filter term and change the prefix length to /61 exact. This will match any prefix that falls within the /61 range. You also need to delete the export statement under protocols isis, because this will export all routes that match the policy statement to other IS-IS routers, which is not desired for a summary route.

**NEW QUESTION 5**

Exhibit



You want to use both links between R1 and R2. Because of the bandwidth difference between the two links, you must ensure that the links are used as much as possible.

Which action will accomplish this goal?

- A. Define a policy to tag routes with the appropriate bandwidth community.
- B. Disable multipath.
- C. Ensure that the metric-out parameter on the Gigabit Ethernet interface is higher than the 10 Gigabit Ethernet interface.
- D. Enable per-prefix load balancing.

**Answer:** D

**Explanation:**

VPLS is a Layer 2 VPN technology that allows multiple sites to connect over a shared IP/MPLS network as if they were on the same LAN. VPLS tunnels can be signaled using either Label Distribution Protocol (LDP) or Border Gateway Protocol (BGP). In this question, we have two links between R1 and R2 with different bandwidths (10 Gbps and 1 Gbps). We want to use both links as much as possible for VPLS traffic. To achieve this, we need to enable per-prefix load balancing on both routers. Per-prefix load balancing is a feature that allows a router to distribute traffic across multiple equal-cost or unequal-cost paths based on the destination prefix of each packet. This improves the utilization of multiple links and provides better load sharing than per-flow load balancing, which distributes traffic based on a hash of source and destination addresses. Per-prefix load balancing can be enabled globally or per interface using the load-balance per-packet command.

Reference: 4: <https://www.cisco.com/c/en/us/support/docs/multiprotocol-label-switching-mpls/mpls/137544-technote-mpls-00.html>

#### NEW QUESTION 6

In IS-IS, which two statements are correct about the designated intermediate system (DIS) on a multi-access network segment? (Choose two)

- A. A router with a priority of 10 wins the DIS election over a router with a priority of 1.
- B. A router with a priority of 1 wins the DIS election over a router with a priority of 10.
- C. On the multi-access network, each router forms an adjacency to every other router on the segment
- D. On the multi-access network, each router only forms an adjacency to the DIS.

**Answer:** AD

#### Explanation:

In IS-IS, a designated intermediate system (DIS) is a router that is elected on a multi-access network segment (such as Ethernet) to perform some functions on behalf of other routers on the same segment. A DIS is responsible for sending network link-state advertisements (LSPs), which describe all the routers attached to the network. These LSPs are flooded throughout a single area. A DIS also generates pseudonode LSPs, which represent the multi-access network as a single node in the link-state database. A DIS election is based on the priority value configured on each router's interface connected to the multi-access network. The priority value ranges from 0 to 127, with higher values indicating higher priority. The router with the highest priority becomes the DIS for the area (Level 1, Level 2, or both). If routers have the same priority, then the router with the highest MAC address is elected as the DIS. By default, routers have a priority value of 64. On a multi-access network, each router only forms an adjacency to the DIS, not to every other router on the segment. This reduces the amount of hello packets and LSP

#### NEW QUESTION 7

You are configuring a BGP signaled Layer 2 VPN across your MPLS enabled core network. Your PE-2 device connects to two sites within the s VPN. In this scenario, which statement is correct?

- A. By default on PE-2, the site's local ID is automatically assigned a value of 0 and must be configured to match the total number of attached sites.
- B. You must create a unique Layer 2 VPN routing instance for each site on the PE-2 device.
- C. You must use separate physical interfaces to connect PE-2 to each site.
- D. By default on PE-2, the remote site IDs are automatically assigned based on the order that you add the interfaces to the site configuration.

**Answer:** D

#### Explanation:

BGP Layer 2 VPNs use BGP to distribute endpoint provisioning information and set up pseudowires between PE devices. BGP uses the Layer 2 VPN (L2VPN) Routing Information Base (RIB) to store endpoint provisioning information, which is updated each time any Layer 2 virtual forwarding instance (VFI) is configured. The prefix and path information is stored in the L2VPN database, which allows BGP to make decisions about the best path.

In BGP Layer 2 VPNs, each site has a unique site ID that identifies it within a VFI. The site ID can be manually configured or automatically assigned by the PE device. By default, the site ID is automatically assigned based on the order that you add the interfaces to the site configuration. The first interface added to a site configuration has a site ID of 1, the second interface added has a site ID of 2, and so on.

Option D is correct because by default on PE-2, the remote site IDs are automatically assigned based on the order that you add the interfaces to the site configuration. Option A is not correct because by default on PE-2, the site's local ID is automatically assigned a value of 0 and does not need to be configured to match the total number of attached sites. Option B is not correct because you do not need to create a unique Layer 2 VPN routing instance for each site on the PE-2 device. You can create one routing instance for all sites within a VFI. Option C is not correct because you do not need to use separate physical interfaces to connect PE-2 to each site. You can use subinterfaces or service instances on a single physical interface.

#### NEW QUESTION 8

Exhibit

```
user@PE1# show routing-instances
VPN-A {
  instance-type vrf;
  interface ge-0/0/1.0;
  vrf-target target:64512:1234;
  protocols {
    bgp {
      group CE {
        type external;
        family inet {
          unicast;
        }
        neighbor 10.0.0.1 {
          peer-as 64512;
          as-override;
        }
      }
    }
  }
}
```

Which two statements about the configuration shown in the exhibit are correct? (Choose two.)

- A. This VPN connects customer sites that use different AS numbers.
- B. This VPN connects customer sites that use the same AS number
- C. A Layer 2 VPN is configured.
- D. A Layer 3 VPN is configured.

**Answer:** AD

**Explanation:**

The configuration shown in the exhibit is for a Layer 3 VPN that connects customer sites that use different AS numbers. A Layer 3 VPN is a type of VPN that uses MPLS labels to forward packets across a provider network and BGP to exchange routing information between PE routers and CE routers. A Layer 3 VPN allows customers to use different routing protocols and AS numbers at their sites, as long as they can peer with BGP at the PE-CE interface. In this example, CE-1 is using AS 65530 and CE-2 is using AS 65531, but they can still communicate through the VPN because they have BGP sessions with PE-1 and PE-2, respectively.

**NEW QUESTION 9**

By default, which statement is correct about OSPF summary LSAs?

- A. All Type 2 and Type 7 LSAs will be summarized into a single Type 5 LSA
- B. The area-range command must be installed on all routers.
- C. Type 3 LSAs are advertised for routes in Type 1 LSAs.
- D. The metric associated with a summary route will be equal to the lowest metric associated with an individual contributing route

**Answer:** C

**Explanation:**

OSPF uses different types of LSAs to describe different aspects of the network topology. Type 1 LSAs are also known as router LSAs, and they describe the links and interfaces of a router within an area. Type 3 LSAs are also known as summary LSAs, and they describe routes to networks outside an area but within the same autonomous system (AS). By default, OSPF will summarize routes from Type 1 LSAs into Type 3 LSAs when advertising them across area boundaries .

**NEW QUESTION 10**

When using OSPFv3 for an IPv4 environment, which statement is correct?

- A. OSPFv3 only supports IPv4.
- B. OSPFv3 supports both IPv6 and IPv4, but not in the same routing instance.
- C. OSPFv3 is not backward compatible with IPv4
- D. OSPFv3 supports IPv4 only on interfaces with family inet6 defined

Answer: C

**Explanation:**

OSPFv3 is an extension of OSPFv2 that supports IPv6 routing and addressing. OSPFv3 is not backward compatible with IPv4 because it uses a different packet format and a different link-state advertisement (LSA) structure than OSPFv2. OSPFv3 also uses IPv6 link-local addresses as router IDs and neighbor addresses, instead of IPv4 addresses. To use OSPFv3 for an IPv4 environment, you need to enable the IPv4 unicast address family under [edit protocols ospf3] hierarchy level and configure IPv4 addresses on the interfaces.

**NEW QUESTION 10**

After a recent power outage, your manager asks you to investigate ways to automatically reduce the impact caused by suboptimal routing in your OSPF and OSPFv3 network after devices reboot.

Which three configuration statements accomplish this task? (Choose three.)

- A. set protocols ospf overload timeout 900
- B. set protocols ospf3 realm ipv4-unicast overload timeout 900
- C. set protocols ospf overload
- D. set protocols ospf3 overload timeout 900
- E. set protocols ospf3 overload

Answer: AE

**Explanation:**

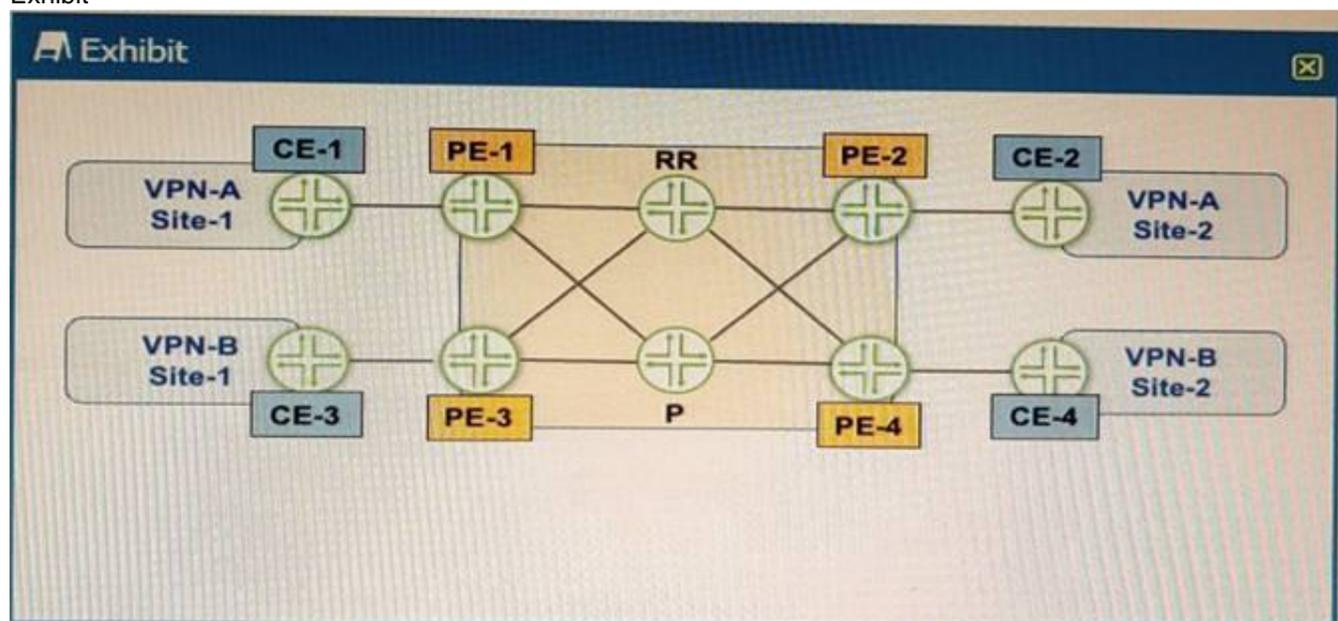
To reduce the impact of suboptimal routing in OSPF and OSPFv3 after devices reboot, you can use the overload feature to prevent a router from being used as a transit router for a specified period of time. This allows the router to stabilize its routing table before forwarding traffic for other routers. To enable the overload feature, you need to do the following:

? For OSPF, configure the overload statement under [edit protocols ospf] hierarchy level. You can also specify a timeout value in seconds to indicate how long the router should remain in overload state after it boots up. For example, set protocols ospf overload timeout 900 means that the router will be in overload state for 15 minutes after it boots up.

? For OSPFv3, configure the overload statement under [edit protocols ospf3] hierarchy level. You can also specify a realm (ipv4-unicast or ipv6-unicast) and a timeout value in seconds to indicate how long the router should remain in overload state after it boots up for each realm. For example, set protocols ospf3 realm ipv4-unicast overload timeout 900 means that the router will be in overload state for 15 minutes after it boots up for IPv4 unicast routing.

**NEW QUESTION 11**

Exhibit



Referring to the exhibit, PE-1 and PE-2 are getting route updates for VPN-B when neither of them service that VPN. Which two actions would optimize this process? (Choose two.)

- A. Configure the family route-target statement on the PEs.
- B. Configure the family route-target statement on the RR
- C. Configure the resolution rib bgp . l3vpn . 0 resolution-ribs ine
- D. 0 Statement on the PEs.
- E. Configure the resolution rib bgp.l3vpn.0 resolution-ribs ine
- F. 0 Statement on the RR

Answer: BD

**Explanation:**

BGP route target filtering is a technique that reduces the number of routers that receive VPN routes and route updates, helping to limit the amount of overhead associated with running a VPN. BGP route target filtering is based on the exchange of the route-target address family, which contains information about the VPN membership of each PE device. Based on this information, a PE device can decide whether to accept or reject VPN routes from another PE device.

BGP route target filtering can be configured on PE devices or on route reflectors (RRs). Configuring BGP route target filtering on RR is more efficient and scalable, as it reduces the number of BGP sessions and updates between PE devices. To configure BGP route target filtering on RRs, the following steps are required:

? Configure the family route-target statement under the BGP group or neighbor configuration on the RR. This enables the exchange of the route-target address family between the RR and their clients (PE devices).

? Configure the resolution rib bgp.l3vpn.0 resolution-ribs inet.0 statement under the routing-options configuration on the RR. This enables the RR to resolve next hops for VPN routes using the inet.0 routing table.

? Configure an export policy for BGP route target filtering under the routing-options configuration on the RR. This policy controls which route targets are advertised to each PE device based on their VPN membership.

#### NEW QUESTION 12

Which two statements are correct about the customer interface in an LDP-signaled pseudowire? (Choose two)

- A. When the encapsulation is vlan-ccc or extended-vlan-ccc, the configured VLAN tag is not included in the control plane LDP advertisement
- B. When the encapsulation is ethernet-ccc, only frames without a VLAN tag are accepted in the data plane
- C. When the encapsulation is vLan-ccc or extended-vlan-ccc, the configured VLAN tag is included in the control plane LDP advertisement
- D. When the encapsulation is ethemet-ccc, tagged and untagged frames are both accepted in the data plane.

**Answer:** CD

#### Explanation:

The customer interface in an LDP-signaled pseudowire is the interface on the PE router that connects to the CE device. An LDP-signaled pseudowire is a type of Layer 2 circuit that uses LDP to establish a point-to-point connection between two PE routers over an MPLS network. The customer interface can have different encapsulation types depending on the type of traffic that is carried over the pseudowire. The encapsulation types are ethernet-ccc, vlan-ccc, extended-vlan-ccc, atm-ccc, frame-relay-ccc, ppp-ccc, cisco-hdlc-ccc, and tcc-ccc. Depending on the encapsulation type, the customer interface can accept or reject tagged or untagged frames in the data plane, and include or exclude VLAN tags in the control plane LDP advertisement. The following table summarizes the behavior of different encapsulation types:

#### NEW QUESTION 15

Which two statements are correct about a sham link? (Choose two.)

- A. It creates an OSPF multihop neighborhood between two PE routers.
- B. It creates a BGP multihop neighborhood between two PE routers.
- C. The PEs exchange Type 1 OSPF LSAs instead of Type 3 OSPF LSAs for the L3VPN routes
- D. The PEs exchange Type 3 OSPF LSAs instead of Type 1 OSPF LSAs for the L3VPN routes.

**Answer:** AC

#### Explanation:

A sham link is a logical link between two PE routers that belong to the same OSPF area but are connected through an L3VPN. A sham link makes the PE routers appear as if they are directly connected, and prevents OSPF from preferring an intra-area back door link over the VPN backbone. A sham link creates an OSPF multihop neighborhood between the PE routers using TCP port 646. The PEs exchange Type 1 OSPF LSAs instead of Type 3 OSPF LSAs for the L3VPN routes, which allows OSPF to use the correct metric for route selection.

#### NEW QUESTION 18

You are responding to an RFP for a new MPLS VPN implementation. The solution must use LDP for signaling and support Layer 2 connectivity without using BGP. The solution must be scalable and support multiple VPN connections over a single MPLS LSP. The customer wants to maintain all routing for their Private network. In this scenario, which solution do you propose?

- A. circuit cross-connect
- B. BGP Layer 2 VPN
- C. LDP Layer 2 circuit
- D. translational cross-connect

**Answer:** C

#### Explanation:

AToM (Any Transport over MPLS) is a framework that supports various Layer 2 transport types over an MPLS network core. One of the transport types supported by AToM is LDP Layer 2 circuit, which is a point-to-point Layer 2 connection that uses LDP for signaling and MPLS for forwarding. LDP Layer 2 circuit can support Layer 2 connectivity without using BGP and can be scalable and efficient by using a single MPLS LSP for multiple VPN connections. The customer can maintain all routing for their private network by using their own CE switches.

#### NEW QUESTION 20

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