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Exam Questions 200-101
Interconnecting Cisco Networking Devices Part 2

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NEW QUESTION 1
- (Topic 2)
The internetwork infrastructure of company XYZ consists of a single OSPF area as shown in the graphic. There is concern that a lack of router resources is impeding internetwork performance. As part of examining the router resources, the OSPF DRs need to be known. All the router OSPF priorities are at the default and the router IDs are shown with each router.

Which routers are likely to have been elected as DR? (Choose two.)

A. Corp-1
B. Corp-2
C. Corp-3
D. Corp-4
E. Branch-1
F. Branch-2

Answer: DF

Explanation:
There are 2 segments on the topology above which are separated by Corp-3 router. Each segment will have a DR so we have 2 DRs.
To select which router will become DR they will compare their router-IDs. The router with highest (best) router-ID will become DR. The router-ID is chosen in the order below:
The highest IP address assigned to a loopback (logical) interface.
If a loopback interface is not defined, the highest IP address of all active router’s physical interfaces will be chosen.
In this question, the IP addresses of loopback interfaces are not mentioned so we will consider IP addresses of all active router’s physical interfaces. Router Corp-4 (10.1.40.40) & Branch-2 (10.2.20.20) have highest “active” IP addresses so they will become DRs.

NEW QUESTION 2
- (Topic 2)
Refer to the exhibit.
The Lakeside Company has the internetwork in the exhibit. The administrator would like to reduce the size of the routing table on the Central router. Which partial routing table entry in the Central router represents a route summary that represents the LANs in Phoenix but no additional subnets?

**A.** 10.0.0.0/22 is subnetted, 1 subnets D 10.2.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

**B.** 10.0.0.0/28 is subnetted, 1 subnets D 10.2.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

**C.** 10.0.0.0/30 is subnetted, 1 subnets D 10.4.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

**D.** 10.0.0.0/22 is subnetted, 1 subnets D 10.4.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

**E.** 10.0.0.0/28 is subnetted, 1 subnets D 10.4.4.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

**F.** 10.0.0.0/30 is subnetted, 1 subnets D 10.4.4.4 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

Answer: D

**Explanation:**
All the above networks can be summarized to 10.0.0.0 network but the question requires to "represent the LANs in Phoenix but no additional subnets" so we must summarized to 10.4.0.0 network. The Phoenix router has 4 subnets so we need to "move left" 2 bits of /24 -> /22 is the best choice - D is correct.

**NEW QUESTION 3**
- (Topic 2)
Refer to the exhibit.

The network associate is configuring OSPF on the Core router. All the connections to the branches should be participating in OSPF. The link to the ISP should NOT participate in OSPF and should only be advertised as the default route. What set of commands will properly configure the Core router?

**A.** Core(config-router)# default-information originate Core(config-router)# network 10.0.0.0 0.255.255.255 area 0 Core(config-router)# exitCore(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14

**B.** Core(config-router)# default-information originate Core(config-router)# network 10.10.2.13 0.0.0.242 area 0 Core(config-router)# exitCore(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14

**C.** Core(config-router)# default-information originate Core(config-router)# network 10.10.2.16 0.0.0.15 area 0 Core(config-router)# exitCore(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14

**D.** Core(config-router)# default-information originate Core(config-router)# network 10.10.2.32 0.0.0.31 area 0 Core(config-router)# exitCore(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14

Answer: C

**Explanation:**
There are two ways to inject a default route into a normal area.1. If the ASBR already has the default route in its routing table, you can advertise the existing 0.0.0.0/0 into the OSPF domain with the default-information originate router configuration command.2. If the ASBR doesn't have a default route, you can add the keyword always to the default-information originate command (default-information originate always). This command will advertise a default route into the OSPF domain, regardless of whether it has a route to 0.0.0.0. Another benefit of adding always keyword is that it can add stability to the internetwork. For example, if the ASBR is learning a default route from another routing domain such as RIP and this route is flapping, then without the always keyword, each time the route flaps, the ASBR will send a new Type 5 LSA into the OSPF domain causing some instability inside the OSPF domain. With the always keyword, the ASBR will advertise the default inside the OSPF domain always.In the example shown here, only choice C is correct as the wildcard mask correctly specifies the 10.10.2.16 0.0.0.15 networks, which include all IP addresses in the 10.10.2.16-10.10.2.31 range. In this question we were told that the ISP link should NOT be configured for OSPF, making choice A incorrect.


**NEW QUESTION 4**
- (Topic 2)
Refer to the exhibit.
Assume that all router interfaces are operational and correctly configured. In addition, assume that OSPF has been correctly configured on router R2. How will the default route configured on R1 affect the operation of R2?

A. Any packet destined for a network that is not directly connected to router R1 will be dropped.
B. Any packet destined for a network that is not directly connected to router R2 will be dropped immediately.
C. Any packet destined for a network that is not directly connected to router R2 will be dropped immediately because of the lack of a gateway on R1.
D. The networks directly connected to router R2 will not be able to communicate with the 172.16.100.0, 172.16.100.128. and 172.16.100.64 subnetworks.
E. Any packet destined for a network that is not referenced in the routing table of router R2 will be directed to R1. R1 will then send that packet back to R2 and a routing loop will occur.

Answer: E

Explanation:
First, notice that the more-specific routes will always be favored over less-specific routes regardless of the administrative distance set for a protocol. In this case, because we use OSPF for three networks (172.16.100.0 0.0.0.3, 172.16.100.64 0.0.0.63, 172.16.100.128 0.0.0.31) so the packets destined for these networks will not be affected by the default route. The default route configured on R1 "ip route 0.0.0.0 0.0.0.0 serial0/0" will send any packet whose destination network is not referenced in the routing table of router R1 to R2, it doesn't drop anything so answers A, B and C are not correct. D is not correct too because these routes are declared in R1 and the question says that "OSPF has been correctly configured on router R2, so network directly connected to router R2 can communicate with those three subnetworks. As said above, the default route configured on R1 will send any packet destined for a network that is not referenced in its routing table to R2; R2 in turn sends it to R1 because it is the only way and a routing loop will occur.

NEW QUESTION 5
- (Topic 2)
Which parameter or parameters are used to calculate OSPF cost in Cisco routers?

A. Bandwidth
B. Bandwidth and Delay
C. Bandwidth, Delay, and MTU
D. Bandwidth, MTU, Reliability, Delay, and Load

Answer: A

Explanation:
OSPF Cost
The cost (also called metric) of an interface in OSPF is an indication of the overhead required to send packets across a certain interface. The cost of an interface is inversely proportional to the bandwidth of that interface. A higher bandwidth indicates a lower cost. There is more overhead (higher cost) and time delays involved in crossing a 56k serial line than crossing a 10M Ethernet line. The formula used to calculate the cost is:
Cost = 1000000000/bandwidth in bps
For example, it will cost 10 EXP8/10 EXP7 = 10 to cross a 10M Ethernet line and will cost 10 EXP8/1544000 =64 to cross a T1 line. By default, the cost of an interface is calculated based on the bandwidth; you can force the cost of an interface with the ip ospf cost <value> interface sub configuration mode command.

NEW QUESTION 6
- (Topic 2)
Refer to the exhibit.
Based on the exhibited routing table, how will packets from a host within the 192.168.10.192/26 LAN be forwarded to 192.168.10.1?

A. The router will forward packets from R3 to R2 to R1.
B. The router will forward packets from R3 to R1 to R2.
C. The router will forward packets from R3 to R2 to R1 AND from R3 to R1.
D. The router will forward packets from R3 to R1.

Answer: C

Explanation:
From the routing table we learn that network 192.168.10.0/30 is learned via 2 equal-cost paths (192.168.10.9 & 192.168.10.5) - traffic to this network will be load-balanced.

NEW QUESTION 7
- (Topic 2)
What does a router do if it has no EIGRP feasible successor route to a destination network and the successor route to that destination network is in active status?

A. It routes all traffic that is addressed to the destination network to the interface indicated in the routing table.
B. It sends a copy of its neighbor table to all adjacent routers.
C. It sends a multicast query packet to all adjacent neighbors requesting available routing paths to the destination network.
D. It broadcasts Hello packets to all routers in the network to re-establish neighbor adjacencies.

Answer: C

Explanation:
Feasible Successors
A destination entry is moved from the topology table to the routing table when there is a feasible successor. All minimum cost paths to the destination form a set. From this set, the neighbors that have an advertised metric less than the current routing table metric are considered feasible successors.

Feasible successors are viewed by a router as neighbors that are downstream with respect to the destination. These neighbors and the associated metrics are placed in the forwarding table.

When a neighbor changes the metric it has been advertising or a topology change occurs in the network, the set of feasible successors may have to be re-evaluated. However, this is not categorized as a route recomputation.

Route States
A topology table entry for a destination can have one of two states. A route is considered in the Passive state when a router is not performing a route recomputation. The route is in Active state when a router is undergoing a route recomputation. If there are always feasible successors, a route never has to go into Active state and avoids a route recomputation.

When there are no feasible successors, a route goes into Active state and a route recomputation occurs. A route recomputation commences with a router sending a query packet to all neighbors. Neighboring routers can either reply if they have feasible successors for the destination or optionally return a query indicating that they are performing a route recomputation. While in Active state, a router cannot change the next-hop neighbor it is using to forward packets. Once all replies are received for a given query, the destination can transition to Passive state and a new successor can be selected.

When a link to a neighbor that is the only feasible successor goes down, all routes through that neighbor commence a route recomputation and enter the Active state.
NEW QUESTION 8
- (Topic 5)
Scenario
Refer to the topology. Your company has connected the routers R1, R2, and R3 with serial links. R2 and R3 are connected to the switches SW1 and SW2, respectively. SW1 and SW2 are also connected to the routers R4 and R5.
The EIGRP routing protocol is configured.
You are required to troubleshoot and resolve the EIGRP issues between the various routers.
Use the appropriate show commands to troubleshoot the issues.

```
R1# show eigrp
```

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The loopback interfaces on R4 with the IP addresses of 10.4.4.4/32, 10.4.4.5/32, and 10.4.4.6/32 are not appearing in the routing table of R5. Why are the interfaces missing?

A. The interfaces are shutdown, so they are not being advertised.
B. R4 has been incorrectly configured to be in another AS, so it does not peer with R5.
C. Automatic summarization is enabled, so only the 10.0.0.0 network is displayed.
D. The loopback addresses haven't been advertised, and the network command is missing on R4.

Answer: B

Explanation:
For an EIGRP neighbor to form, the following must match:
- Neighbors must be in the same subnet
- K values
- AS numbers
- Authentication method and key strings

Here, we see that R4 is configured for EIGRP AS 2, when it should be AS 1.

NEW QUESTION 9
- (Topic 5)
What occurs on a Frame Relay network when the CIR is exceeded?
A. All TCP traffic is marked discard eligible.
B. All UDP traffic is marked discard eligible and a BECN is sent.
C. All TCP traffic is marked discard eligible and a BECN is sent.
D. All traffic exceeding the CIR is marked discard eligible.

Answer: D

Explanation:
Committed information rate (CIR): The minimum guaranteed data transfer rate agreed to by the Frame Relay switch. Frames that are sent in excess of the CIR are marked as discard eligible (DE) which means they can be dropped if the congestion occurs within the Frame Relay network.
Note: In the Frame Relay frame format, there is a bit called Discard eligible (DE) bit that is used to identify frames that are first to be dropped when the CIR is exceeded.

NEW QUESTION 10
- (Topic 5)
Which two options are valid WAN connectivity methods? (Choose two.)
A. PPP
B. WAP
C. DSL
D. L2TPv3
E. Ethernet

Answer: AC

Explanation:
On each WAN connection, data is encapsulated into frames before it crosses the WAN link. The following are typical WAN protocols:
1. High-level Data Link Control (HDLC): The Cisco default encapsulation type on point-to-point connections, dedicated links, and circuit-switches connections.
2. PPP: Provides router-to-router and host-to-network connections over synchronous and asynchronous circuits. PPP was designed to work with several network layer protocols, including IP.
3. Frame-relay: A successor to X.25. This protocol is an industry-standard, switches data-link layer protocol that handles multiple virtual circuits.

http://en.wikipedia.org/wiki/Wide_area_network

NEW QUESTION 11
- (Topic 5)
Which PPP subprotocol negotiates authentication options?
A. NCP
B. ISDN
C. SLIP
D. LCP
E. DLCI

Answer: D

Explanation:
A protocol that establishes, configures, and tests data link connections used by the PPP Link Control Protocol offers PPP encapsulation different options, including the following:
- Authentication - options includes PAP and CHAP
- Compression - Data compression increases the throughput on a network link, by reducing the amount of data that must be transmitted.
- Error Detection - Quality and Magic numbers are used by PPP to ensure a reliable, loop-free data link.
- Multilink - Supported in IOS 11.1 and later, multilink is supported on PPP links between Cisco routers. This splits the load for PPP over two or more parallel circuits and is called a bundle.

NEW QUESTION 12
- (Topic 5)
Refer to the exhibit.
Which three EIGRP routes will be present in the router R4's routing table? (Choose three.)

A. 172.16.1.0/24
B. 10.1.10.0/30
C. 10.0.0.0/8
D. 10.1.11.0/30
E. 172.16.0.0/16
F. 192.168.1.0/24

Answer: CEF

NEW QUESTION 13
- (Topic 5)
What is the result of issuing the frame-relay map ip 192.168.1.2 202 broadcast command?

A. defines the destination IP address that is used in all broadcast packets on DLCI 202
B. defines the source IP address that is used in all broadcast packets on DLCI 202
C. defines the DLCI on which packets from the 192.168.1.2 IP address are received
D. defines the DLCI that is used for all packets that are sent to the 192.168.1.2 IP address

Answer: D

Explanation:
Frame-relay map ip 192.168.1.2 202 broadcast command statically defines a mapping between a network layer address and a DLCI. The broadcast option allows multicast and broadcast packets to flow across the link. The command frame-relay map ip 192.168.1.2 202 broadcast means to mapping the distal IP 192.168.1.2 202 to the local DLCI. When the “broadcast” keyword is included, it turns Frame Relay network as a broadcast network, which can forward broadcasts.


NEW QUESTION 14
- (Topic 5)
At which layer of the OSI model does PPP perform?

A. Layer 2
B. Layer 3  
C. Layer 4  
D. Layer 5

**Answer:** A

**Explanation:**
Point-to-Point Protocol (PPP) is a data link protocol commonly used in establishing a direct connection between two networking nodes. It can provide connection authentication, transmission encryption (using ECP, RFC 1968), and compression.

**NEW QUESTION 15**
- (Topic 5)
Refer to the exhibit.

![Exhibit](image)

A technician pastes the configurations in the exhibit into the two new routers shown. Otherwise, the routers are configured with their default configurations. A ping from Host1 to Host2 fails, but the technician is able to ping the S0/0 interface of R2 from Host1. The configurations of the hosts have been verified as correct. What is the cause of the problem?

A. The serial cable on R1 needs to be replaced.  
B. The interfaces on R2 are not configured properly.  
C. R1 has no route to the 192.168.1.128 network.  
D. The IP addressing scheme has overlapping subnetworks.  
E. The ip subnet-zero command must be configured on both routers.

**Answer:** C

**Explanation:**
Whenever a node needs to send data to another node on a network, it must first know where to send it. If the node cannot directly connect to the destination node, it has to send it via other nodes along a proper route to the destination node. A remote network is a network that can only be reached by sending the packet to another router. Remote networks are added to the routing table using either a dynamic routing protocol or by configuring static routes. Static routes are routes to networks that a network administrator manually configured. So R should have static route for the 192.168.1.128.

**NEW QUESTION 16**
- (Topic 5)
Which encapsulation type is a Frame Relay encapsulation type that is supported by Cisco routers?

A. IETF  
B. ANSI Annex D  
C. Q933a Annex A  
D. HDLC

**Answer:** A

**Explanation:**
Cisco supports two Frame Relay encapsulation types: the Cisco encapsulation and the IETF Frame Relay encapsulation, which is in conformance with RFC 1490 and RFC 2427. The former is often used to connect two Cisco routers while the latter is used to connect a Cisco router to a non-Cisco router. You can test with your Cisco router when typing the command `Router(config-if)#encapsulation frame-relay ?` on a WAN link.

Note: Three LMI options are supported by Cisco routers are ansi, Cisco, and Q933a. They represent the ANSI Annex D, Cisco, and ITU Q933-A (Annex A) LMI types, respectively. HDLC is a WAN protocol same as Frame-Relay and PPP so it is not a Frame Relay encapsulation type.

**NEW QUESTION 17**

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Which Layer 2 protocol encapsulation type supports synchronous and asynchronous circuits and has built-in security mechanisms?

A. HDLC  
B. PPP  
C. X.25  
D. Frame Relay  

Answer: B

Explanation:

High-Level Data Link Control (HDLC) - HDLC is the default encapsulation type on point-to-point, dedicated links, and circuit-switched connections. It is used typically when communicating between two Cisco devices. It is a bit-oriented synchronous data link layer protocol.

Point-to-Point Protocol (PPP) - Provides router-to-router and host-to-network connections over synchronous and asynchronous circuits. PPP was designed to work with several network layer protocols, such as IP, and IPX. PPP also has built in security mechanisms such as PAP and CHAP.

X.25/LAPB - ITU-T standard that defines how connections between DTE and DCE are maintained for remote terminal access and computer communications in public data networks. X.25 specifies LAPB, a data line layer protocol. X.25 is a predecessor to Frame Relay.

Frame Relay - Industry standard, switched data link layer protocol that handles multiple virtual circuits. It is a next-generation to X.25 that is streamlined to eliminate some of the time-consuming processes (such as error correction and flow control) that were employed in X.25.

### NEW QUESTION 18

What are three values that must be the same within a sequence of packets for Netflow to consider them a network flow? (Choose three.)

A. source IP address  
B. source MAC address  
C. egress interface  
D. ingress interface  
E. destination IP address  
F. IP next-hop  

Answer: ADE

### NEW QUESTION 19

The network administrator has been asked to give reasons for moving from IPv4 to IPv6. What are two valid reasons for adopting IPv6 over IPv4? (Choose two.)

A. no broadcast  
B. change of source address in the IPv6 header  
C. change of destination address in the IPv6 header  
D. Telnet access does not require a password  
E. autoconfig  
F. NAT  

Answer: AE

Explanation:

Six Benefits Of IPv6

With IPv6, everything from appliances to automobiles can be interconnected. But an increased number of IT addresses isn’t the only advantage of IPv6 over IPv4. In honor of World IPv6 Day, here are six more good reasons to make sure your hardware, software, and services support IPv6.

More Efficient Routing IPv6 reduces the size of routing tables and makes routing more efficient and hierarchical. IPv6 allows ISPs to aggregate the prefixes of their customers’ networks into a single prefix and announce this one prefix to the IPv6 Internet. In addition, in IPv6 networks, fragmentation is handled by the source device, rather than the router, using a protocol for discovery of the path's maximum transmission unit (MTU).

More Efficient Packet Processing IPv6’s simplified packet header makes packet processing more efficient. Compared with IPv4, IPv6 contains no IP-level checksum, so the checksum does not need to be recalculated at every router hop. Getting rid of the IP-level checksum was possible because most link-layer technologies already contain checksum and error-control capabilities. In addition, most transport layers, which handle end-to-end connectivity, have a checksum that enables error detection.

Directed Data Flows IPv6 supports multicast rather than broadcast. Multicast allows bandwidth-intensive packet flows (like multimedia streams) to be sent to multiple destinations simultaneously, saving network bandwidth.
Disinterested hosts no longer must process broadcast packets. In addition, the IPv6 header has a new field, named Flow Label, that can identify packets belonging to the same flow. Simplified Network Configuration Address auto-configuration (address assignment) is built in to IPv6. A router will send the prefix of the local link in its router advertisements. A host can generate its own IP address by appending its link-layer (MAC) address, converted into Extended Universal Identifier (EUI) 64-bit format, to the 64 bits of the local link prefix.

Support For New Services
By eliminating Network Address Translation (NAT), true end-to-end connectivity at the IP layer is restored, enabling new and valuable services. Peer-to-peer networks are easier to create and maintain, and services such as VoIP and Quality of Service (QoS) become more robust.

Security
IPSec, which provides confidentiality, authentication and data integrity, is baked into in IPv6. Because of their potential to carry malware, IPv4 ICMP packets are often blocked by corporate firewalls, but ICMPv6, the implementation of the Internet Control Message Protocol for IPv6, may be permitted because IPSec can be applied to the ICMPv6 packets.

NEW QUESTION 20
- (Topic 6)
It has become necessary to configure an existing serial interface to accept a second Frame Relay virtual circuit. Which of the following are required to solve this? (Choose three)

A. configure static frame relay map entries for each subinterface network.
B. remove the ip address from the physical interface
C. create the virtual interfaces with the interface command
D. configure each subinterface with its own IP address
E. disable split horizon to prevent routing loops between the subinterface networks
F. encapsulate the physical interface with multipoint PPP

Answer: BCD

Explanation:
How To Configure Frame Relay Subinterfaces
http://www.orbit-computer-solutions.com/How-To-Configure-Frame-Relay-Subinterfaces.php
Step to configure Frame Relay subinterfaces on a physical interface:
1. Remove any network layer address (IP) assigned to the physical interface. If the physical interface has an address, frames are not received by the local subinterfaces.
2. Configure Frame Relay encapsulation on the physical interface using the encapsulation frame-relay command.
3. For each of the defined PVCs, create a logical subinterface. Specify the port number, followed by a period (.) and the subinterface number. To make troubleshooting easier, it is suggested that the subinterface number matches the DLCI number.
4. Configure an IP address for the interface and set the bandwidth.
5. Configure the local DLCI on the subinterface using the frame-relay interface-dlci command.

Configuration Example: R1>enable R1#configure terminal
R1(config)#interface serial 0/0/0 R1(config-if)#no ip address
R1(config-if)#encapsulation frame-relay R1(config-if)#no shutdown
R1(config-if)#exit
R1(config-subif)#interface serial 0/0/0.102 point-to-point
R1(config-subif)#ip address 192.168.1.245 255.255.255.252
R1(config-subif)#frame-relay interface-dlci 102 R1(config-subif)#end
R1#copy running-config startup-config

NEW QUESTION 21
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