

## Exam Questions 100-105

Cisco Interconnecting Cisco Networking Devices Part 1 (ICND1 v3.0)

<https://www.2passeasy.com/dumps/100-105/>



**NEW QUESTION 1**

Which network device functions only at Layer 1 of the OSI model?



- A. Option A
- B. Option B
- C. Option C
- D. Option D
- E. Option E

**Answer:** B

**Explanation:** Most hubs are amplifying the electrical signal; therefore, they are really repeaters with several ports. Hubs and repeaters are Layer 1 (physical layer) devices.

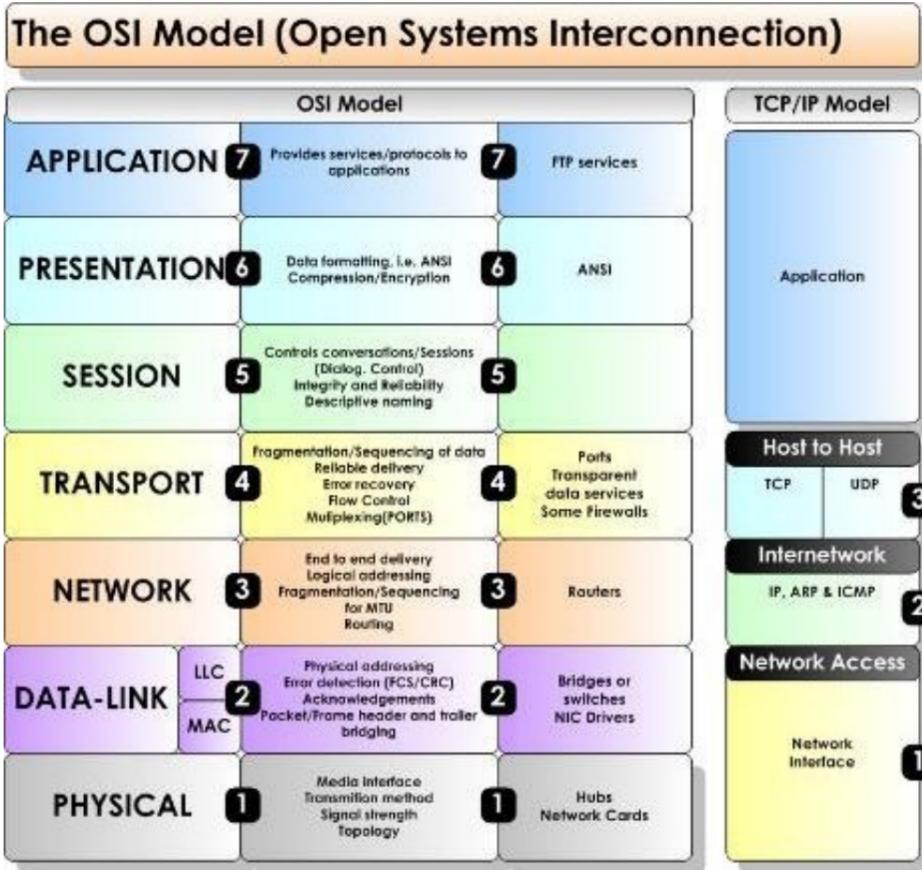
**NEW QUESTION 2**

Which layer of the TCP/IP stack combines the OSI model physical and data link layers?

- A. Internet layer
- B. transport layer
- C. application layer
- D. network access layer

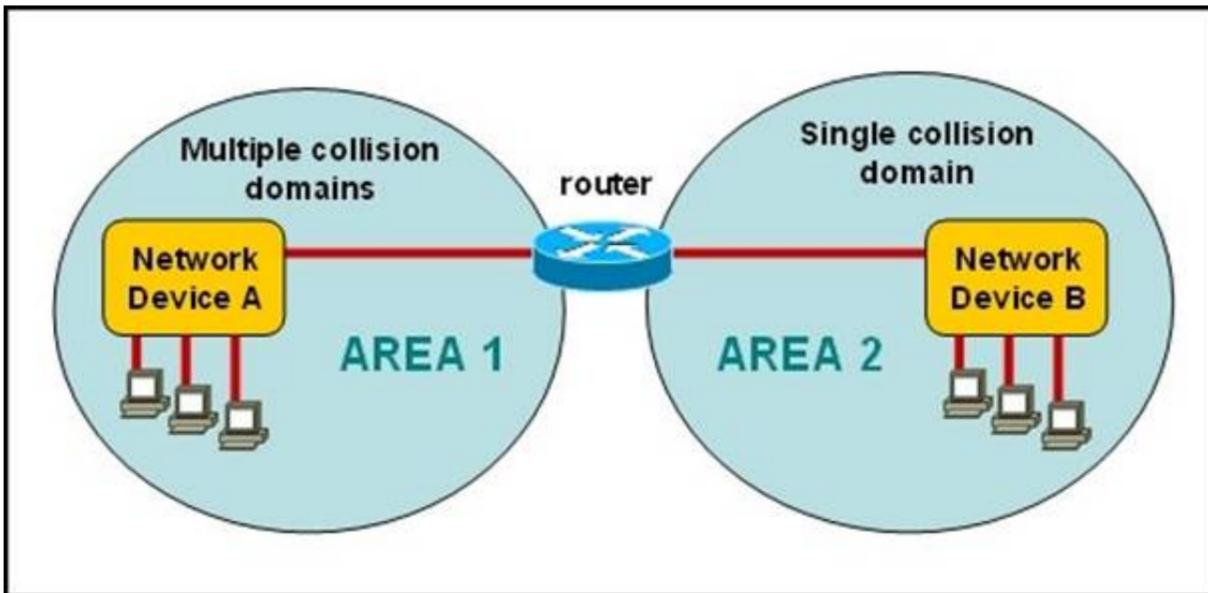
**Answer:** D

**Explanation:** The Internet Protocol Suite, TCP/IP, is a suite of protocols used for communication over the internet. The TCP/ IP model was created after the OSI 7 layer model for two major reasons. First, the foundation of the Internet was built using the TCP/IP suite and through the spread of the World Wide Web and Internet, TCP/IP has been preferred. Second, a project researched by the Department of Defense (DOD) consisted of creating the TCP/IP protocols. The DOD's goal was to bring international standards which could not be met by the OSI model. Since the DOD was the largest software consumer and they preferred the TCP/IP suite, most vendors used this model rather than the OSI. Below is a side by side comparison of the TCP/IP and OSI models.



**NEW QUESTION 3**

Refer to the exhibit.



A network has been planned as shown. Which three statements accurately describe the areas and devices in the network plan? (Choose three.)

- A. Network Device A is a switch.
- B. Network Device B is a switch.
- C. Network Device A is a hub.
- D. Network Device B is a hub.
- E. Area 1 contains a Layer 2 device.
- F. Area 2 contains a Layer 2 device.

**Answer:** ADE

**Explanation:** Switches use a separate collision domain for each port, so device A must be a switch. Hubs, however, place all ports in the same collision domain so device B is a hub. Switches reside in layer 2 while hubs are layer 1 devices.

**NEW QUESTION 4**

Which statements accurately describe CDP? (Choose three.)

- A. CDP is an IEEE standard protocol.
- B. CDP is a Cisco proprietary protocol.
- C. CDP is a datalink layer protocol.
- D. CDP is a network layer protocol.
- E. CDP can discover directly connected neighboring Cisco devices.
- F. CDP can discover Cisco devices that are not directly connected.

**Answer:** BCE

**Explanation:** CDP (Cisco Discovery Protocol) is a proprietary protocol designed by Cisco to help administrators collect information about both locally attached and remote devices. By using CDP, you can gather hardware and protocol information about neighbor devices containing useful info for troubleshooting and documenting the network.

**NEW QUESTION 5**

Which layer of the OSI model controls the reliability of communications between network devices using flow control, sequencing and acknowledgments?

- A. Physical
- B. Data-link
- C. Transport
- D. Network

**Answer: C**

**NEW QUESTION 6**

Which transport layer protocol provides best-effort delivery service with no acknowledgment receipt required?

- A. HTTP
- B. IP
- C. TCP
- D. Telnet
- E. UDP

**Answer: E**

**Explanation:** UDP provides a connectionless datagram service that offers best-effort delivery, which means that UDP does not guarantee delivery or verify sequencing for any datagrams. A source host that needs reliable communication must use either TCP or a program that provides its own sequencing and acknowledgment services.

**NEW QUESTION 7**

What must occur before a workstation can exchange HTTP packets with a web server?

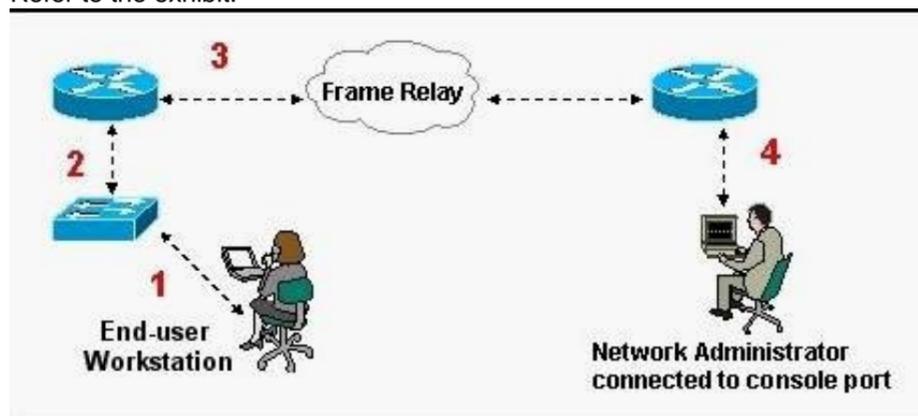
- A. A UDP connection must be established between the workstation and its default gateway.
- B. A UDP connection must be established between the workstation and the web server.
- C. A TCP connection must be established between the workstation and its default gateway.
- D. A TCP connection must be established between the workstation and the web server.
- E. An ICMP connection must be established between the workstation and its default gateway.
- F. An ICMP connection must be established between the workstation and the web server.

**Answer: D**

**Explanation:** HTTP uses TCP port 80, and a TCP port 80 connection must be established for HTTP communication to occur.  
<http://pentestlab.wordpress.com/2012/03/05/common-tcpip-ports/>

**NEW QUESTION 8**

Refer to the exhibit.



What kind of cable should be used to make each connection that is identified by the numbers shown?

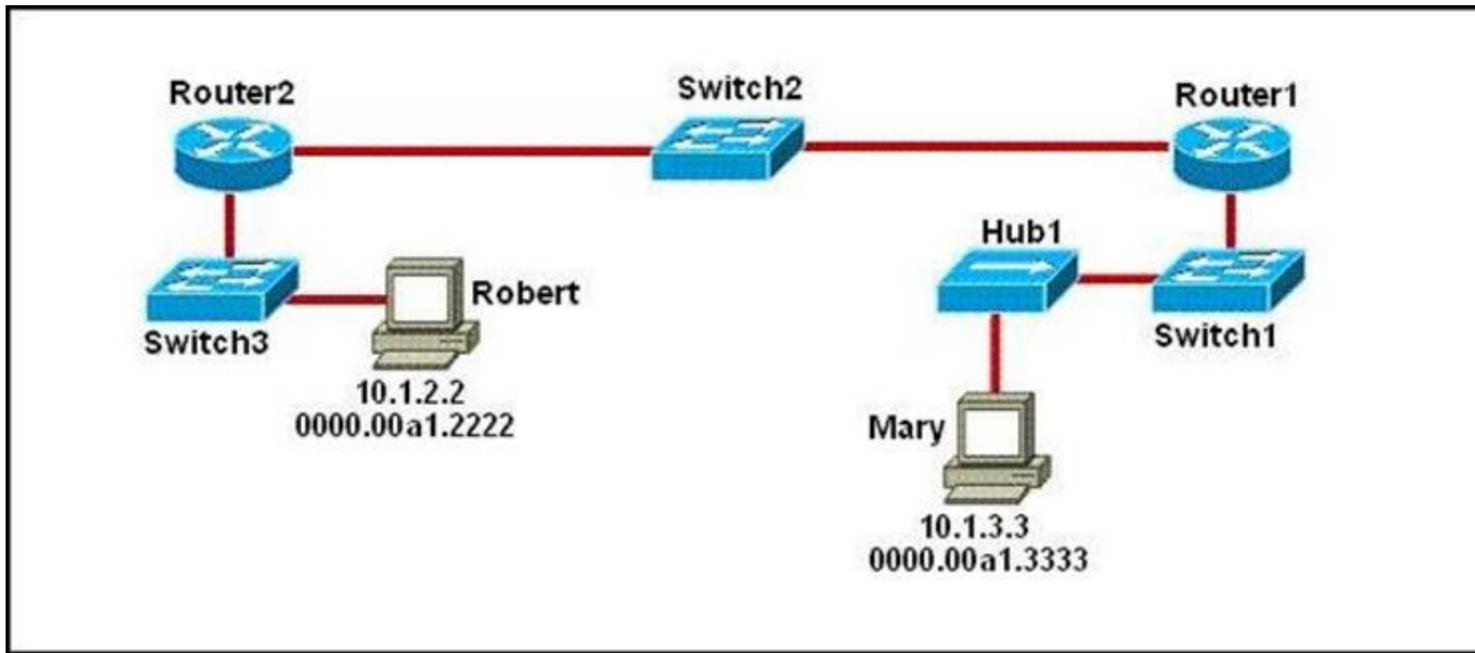
- A. 1 - Ethernet Crossover cable 2 - Ethernet straight-through cable 3 - Fiber Optic cable 4 - Rollover cable
- B. 1 - Ethernet straight-through cable 2 - Ethernet straight-through cable 3 - Serial cable 4 - Rollover cable
- C. 1 - Ethernet rollover cable 2 - Ethernet crossover cable 3 - Serial cable 4 - Null-modem cable
- D. 1 - Ethernet straight-through cable 2 - Ethernet Crossover cable 3 - Serial cable 4 - Rollover cable
- E. 1 - Ethernet straight-through cable 2 - Ethernet Crossover cable 3 - Serial cable 4 - Ethernet Straight-through cable

**Answer: B**

**Explanation:** When connecting a PC to a switch, a standard Ethernet straight through cable should be used. This same cable should also be used for switch to router connections. Generally speaking, crossover cables are only needed when connecting two like devices (PC-PC, switch-switch, router-router, etc). Routers connect to frame relay and other WAN networks using serial cables. Rollover cables are special cables used for connecting to the console ports of Cisco devices.

**NEW QUESTION 9**

Refer to the exhibit.



As packets travel from Mary to Robert, which three devices will use the destination MAC address of the packet to determine a forwarding path? (Choose three.)

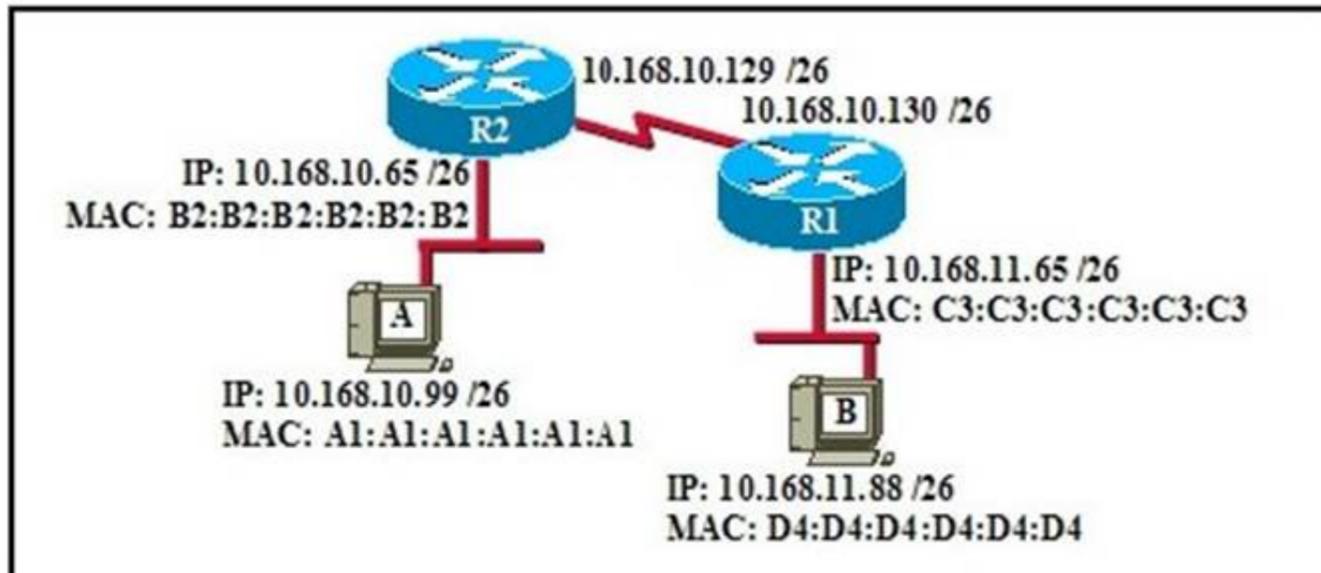
- A. Hub1
- B. Switch1
- C. Router1
- D. Switch2
- E. Router2
- F. Switch3

**Answer:** BDF

**Explanation:** Switches use the destination MAC address information for forwarding traffic, while routers use the destination IP address information. Local Area Networks employ Layer 2 Switches and Bridges to forward and filter network traffic. Switches and Bridges operate at the Data Link Layer of the Open System Interconnect Model (OSI). Since Switches and Bridges operate at the Layer 2 they operate more intelligently than hubs, which work at Layer 1 (Physical Layer) of the OSI. Because the switches and bridges are able to listen to the traffic on the wire to examine the source and destination MAC address. Being able to listen to the traffic also allows the switches and bridges to compile a MAC address table to better filter and forward network traffic. To accomplish the above functions switches and bridges carry out the following tasks: MAC address learning by a switch or a bridge is accomplished by the same method. The switch or bridge listens to each device connected to each of its ports and scan the incoming frame for the source MAC address. This creates a MAC address to port map that is cataloged in the switches/bridge MAC database. Another name for the MAC address table is content addressable memory or CAM table. When a switch or bridge is listening to the network traffic, it receives each frame and compares it to the MAC address table. By checking the MAC table the switch/bridge are able to determine which port the frame came in on. If the frame is on the MAC table the frame is filtered or transmitted on only that port. If the switch determines that the frame is not on the MAC table, the frame is forwarded out to all ports except the incoming port.

**NEW QUESTION 10**

Refer to the exhibit.



If host A sends an IP packet to host B, what will the source physical address be in the frame when it reaches host B?

- A. 10.168.10.99
- B. 10.168.11.88
- C. A1:A1:A1:A1:A1:A1
- D. B2:B2:B2:B2:B2:B2
- E. C3:C3:C3:C3:C3:C3
- F. D4:D4:D4:D4:D4:D4

**Answer:** E

**Explanation:** When packets transfer from one host to another across a routed segment, the source IP address always remains the same source IP address, and the source physical (MAC) address will be the existing router's interface address. Similarly, the destination IP address always remains the same and the destination physical (MAC) address is the destination router's interface address.

**NEW QUESTION 10**

Which of the following are types of flow control? (Choose three.)

- A. buffering
- B. cut-through
- C. windowing
- D. congestion avoidance
- E. load balancing

**Answer:** ACD

**Explanation:** During Transfer of data, a high speed computer is generating data traffic a lot faster than the network device can handle in transferring to destination, so single gateway or destination device cannot handle much amount of traffic that is called "Congestion". Buffering The Technie is used to control the data transfer when we have congestion, when a network device receive a data it stores in memory section and then transfer to next destination this process called "Buffering".

Windowing Whereas Windowing is used for flow control by the Transport layer.

Say the sender device is sending segments and the receiver device can accommodate only a fixed number of segments before it can accept more, the two devices negotiate the window size during the connection setup.

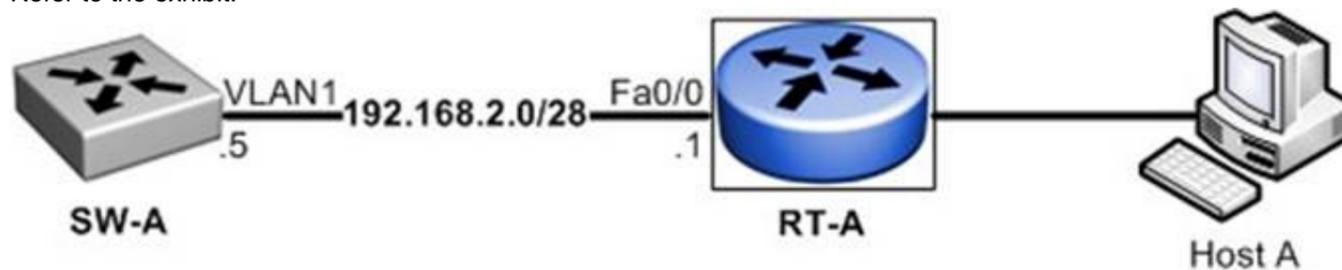
This is done so that the sending device doesn't overflow the receiving device's buffer. Also the receiving device can send a single acknowledgement for the segments it has received instead of sending an acknowledgement after every segment received.

Also, this window size is dynamic meaning, the devices can negotiate and change the window size in the middle of a session. So if initially the window size is three and the receiving device thinks that it can accept more number of segments in its buffer it can negotiate with the sending device and it increases it to say 5 for example.

Windowing is used only by TCP since UDP doesn't use or allow flow control. Reference: <http://www.info-it.net/cisco/ccna/exam-tips/flow-control.php>

**NEW QUESTION 12**

Refer to the exhibit.



What must be configured to establish a successful connection from Host A to switch SW-A through router RT-A?

- A. VLAN 1 on RT-A
- B. IP routing on SW-A
- C. default gateway on SW-A
- D. crossover cable connecting SW-A and RT-A

**Answer:** C

**Explanation:** In order for the switch to reach networks that are not local, such as networks attached to different interfaces of the router, it will need to set its default gateway to be the IP address of the attached router.

**NEW QUESTION 17**

Which three statements are true about the operation of a full-duplex Ethernet network? (Choose three.)

- A. There are no collisions in full-duplex mode.
- B. A dedicated switch port is required for each full-duplex node.
- C. Ethernet hub ports are preconfigured for full-duplex mode.
- D. In a full-duplex environment, the host network card must check for the availability of the network media before transmitting.
- E. The host network card and the switch port must be capable of operating in full-duplex mode.

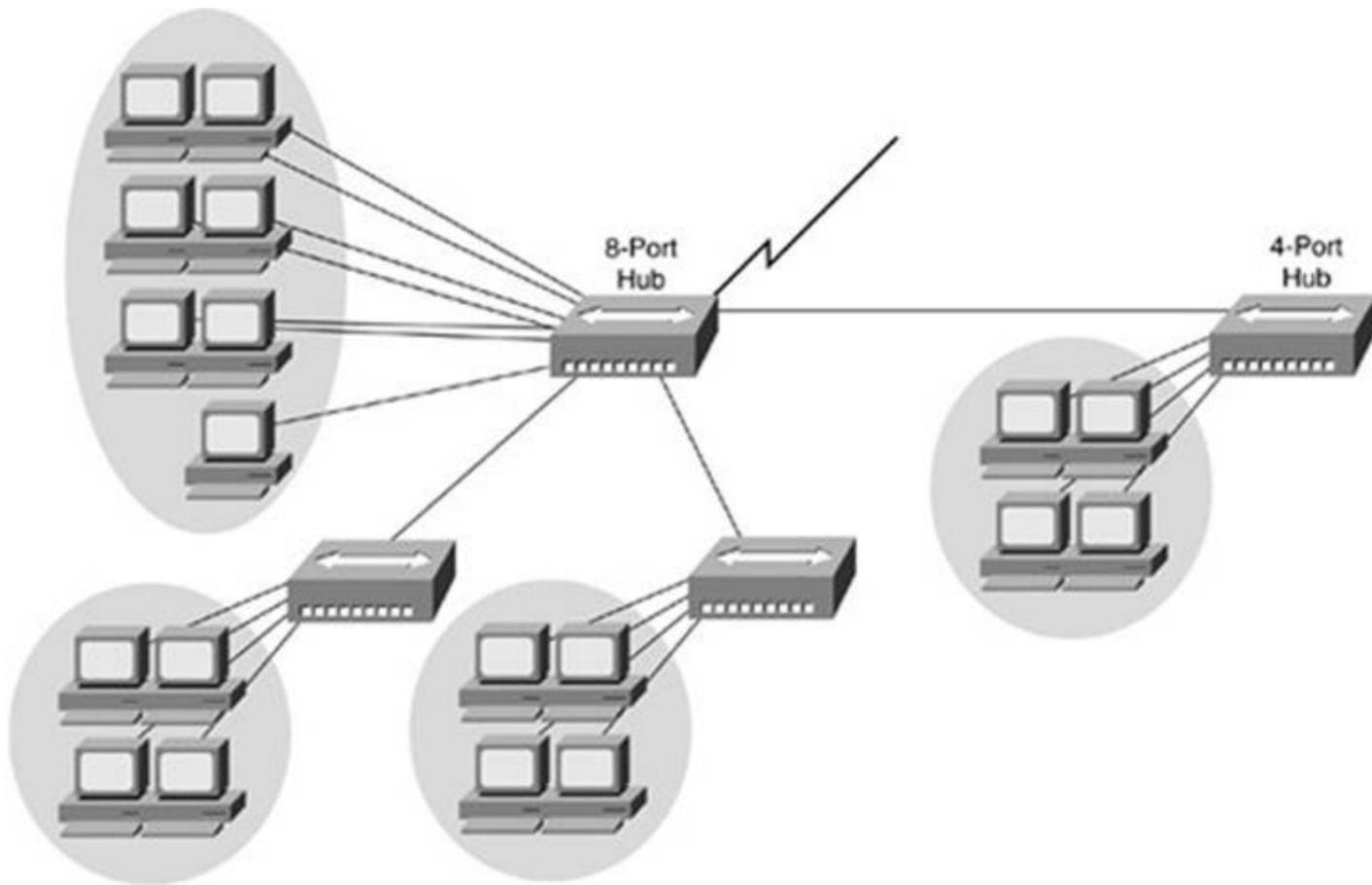
**Answer:** ABE

**Explanation:** Half-duplex Ethernet is defined in the original 802.3 Ethernet and Cisco says you only use one wire pair with a digital signal running in both directions on the wire. It also uses the CSMA/CD protocol to help prevent collisions and to permit retransmitting if a collision does occur. If a hub is attached to a switch, it must operate in half-duplex mode because the end stations must be able to detect collisions. Half-duplex Ethernet—typically 10BaseT—is only about 30 to 40 percent efficient as Cisco sees it, because a large 10BaseT network will usually only give you 3- to 4Mbps—at most.

Full-duplex Ethernet uses two pairs of wires, instead of one wire pair like half duplex. Also, full duplex uses a point-to-point connection between the transmitter of the transmitting device and the receiver of the receiving device, which means that with full-duplex data transfer, you get a faster data transfer compared to half duplex. And because the transmitted data is sent on a different set of wires than the received data, no collisions occur. The reason you don't need to worry about collisions is because now Full-duplex Ethernet is like a freeway with multiple lanes instead of the single-lane road provided by half duplex. Full-duplex Ethernet is supposed to offer 100 percent efficiency in both directions; this means you can get 20Mbps with a 10Mbps Ethernet running full duplex, or 200Mbps for FastEthernet.

**NEW QUESTION 20**

Refer to the exhibit.



If the hubs in the graphic were replaced by switches, what would be virtually eliminated?

- A. broadcast domains
- B. repeater domains
- C. Ethernet collisions
- D. signal amplification
- E. Ethernet broadcasts

**Answer:** C

**Explanation:** Modern wired networks use a network switch to eliminate collisions. By connecting each device directly to a port on the switch, either each port on a switch becomes its own collision domain (in the case of half duplex links) or the possibility of collisions is eliminated entirely in the case of full duplex links.

**NEW QUESTION 25**

Refer to the exhibit.

Address	Port
00b0.d043.ac2e	FastEthernet0/4
00b0.d0fe.ac32	FastEthernet0/6
00b0.d0da.cb56	FastEthernet0/9

The exhibit is showing the topology and the MAC address table. Host A sends a data frame to host D. What will the switch do when it receives the frame from host A?

- A. The switch will add the source address and port to the MAC address table and forward the frame to host D.
- B. The switch will discard the frame and send an error message back to host A.
- C. The switch will flood the frame out of all ports except for port Fa0/3.
- D. The switch will add the destination address of the frame to the MAC address table and forward the frame to host D.

**Answer:** A

**Explanation:** When switch receives the data frame from the host not having the MAC address already on the MAC table, it will add the MAC address to source port on MAC address table and sends the data frame.

**NEW QUESTION 26**

Refer to the exhibit.

SwitchA# show mac-address-table

< non-essential output omitted >

Destination Address	Address Type	VLAN	Destination Port
00b0.d056.fe4d	Dynamic	1	FastEthernet0/3
00b0.d043.ac2e	Dynamic	1	FastEthernet0/4
00b0.d0fe.ac32	Dynamic	1	FastEthernet0/5
00b0.d0da.cb56	Dynamic	1	FastEthernet0/6

Frame received by SwitchA:

Source MAC	Destination MAC	Source IP	Destination IP
00b0.d056.fe4d	00b0.d0da.895a	192.168.40.5	192.168.40.6

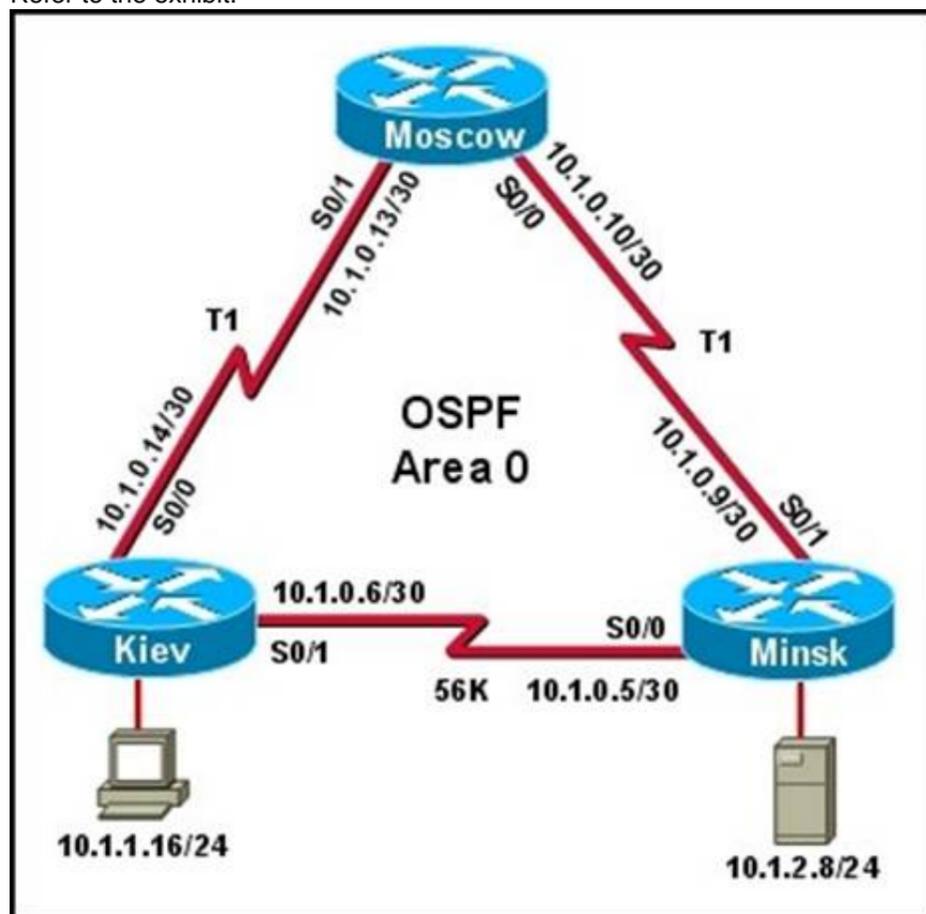
Which option describes how SwitchA will handle the frame just received?

- A. It will drop the frame.
- B. It will forward the frame out of port Fa0/3 only.
- C. It will flood the frame out all ports.
- D. It will flood the frame out of all the ports except Fa0/3.

Answer: D

**NEW QUESTION 29**

Refer to the exhibit.



The host in Kiev sends a request for an HTML document to the server in Minsk. What will be the source IP address of the packet as it leaves the Kiev router?

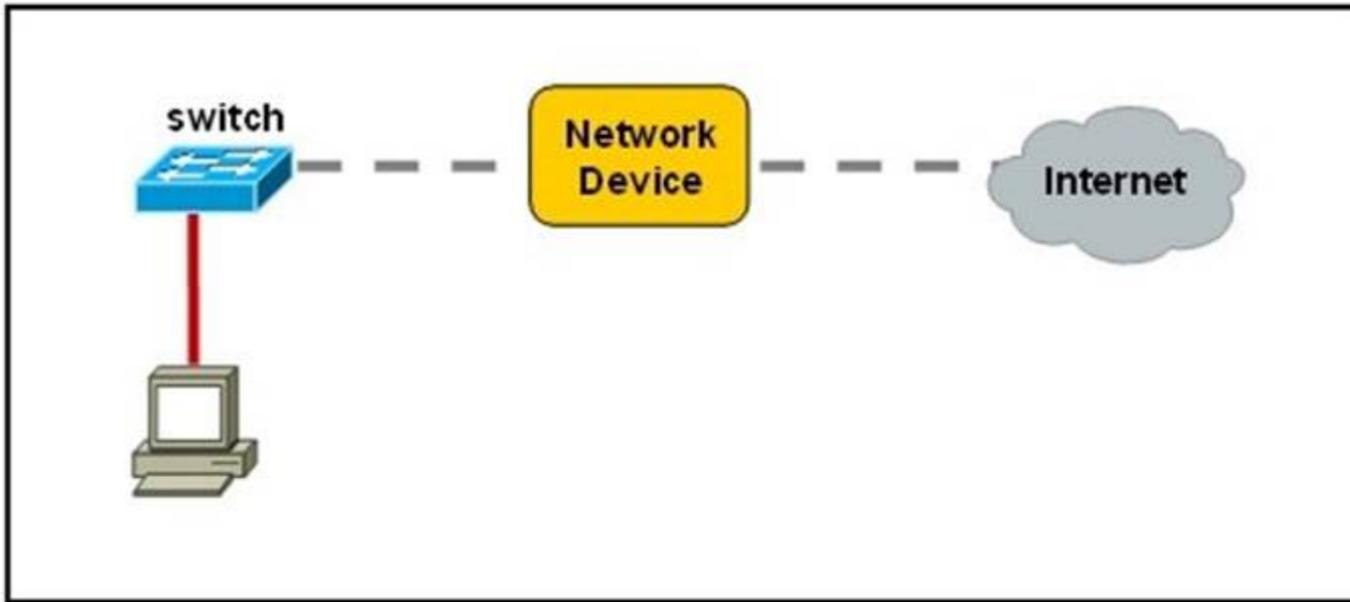
- A. 10.1.0.1
- B. 10.1.0.5
- C. 10.1.0.6
- D. 10.1.0.14
- E. 10.1.1.16
- F. 10.1.2.8

Answer: E

**Explanation:** Although the source and destination MAC address will change as a packet traverses a network, the source and destination IP address will not unless network address translation (NAT) is being done, which is not the case here.

**NEW QUESTION 30**

Refer to the exhibit.



A network device needs to be installed in the place of the icon labeled Network Device to accommodate a leased line attachment to the Internet. Which network device and interface configuration meets the minimum requirements for this installation?

- A. a router with two Ethernet interfaces
- B. a switch with two Ethernet interfaces
- C. a router with one Ethernet and one serial interface
- D. a switch with one Ethernet and one serial interface
- E. a router with one Ethernet and one modem interface

**Answer:** C

**Explanation:** Only a router can terminate a leased line attachment access circuit, and only a router can connect two different IP networks. Here, we will need a router with two interfaces, one serial connection for the line attachment and one Ethernet interface to connect to the switch on the LAN.

**NEW QUESTION 34**

A workstation has just resolved a browser URL to the IP address of a server. What protocol will the workstation now use to determine the destination MAC address to be placed into frames directed toward the server?

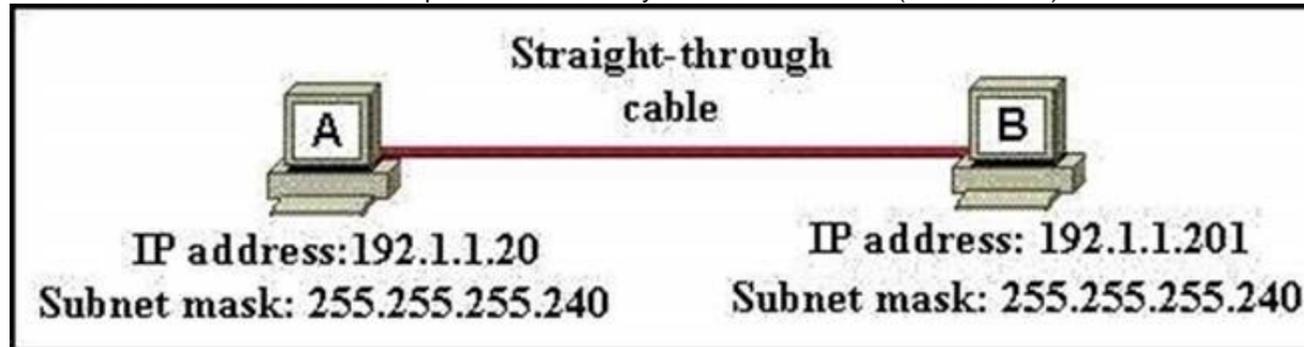
- A. HTTP
- B. DNS
- C. DHCP
- D. RARP
- E. ARP

**Answer:** E

**Explanation:** The RARP protocol is used to translate hardware interface addresses to protocol addresses. The RARP message format is very similar to the ARP format. When the booting computer sends the broadcast ARP request, it places its own hardware address in both the sending and receiving fields in the encapsulated ARP data packet. The RARP server will fill in the correct sending and receiving IP addresses in its response to the message. This way the booting computer will know its IP address when it gets the message from the RARP server

**NEW QUESTION 35**

A network administrator is connecting PC hosts A and B directly through their Ethernet interfaces as shown in the graphic. Ping attempts between the hosts are unsuccessful. What can be done to provide connectivity between the hosts? (Choose two.)



- A. A crossover cable should be used in place of the straight-through cable.
- B. A rollover cable should be used in place of the straight-through cable.
- C. The subnet masks should be set to 255.255.255.192
- D. A default gateway needs to be set on each host.
- E. The hosts must be reconfigured to use private IP addresses for direct connections of this type.
- F. The subnet masks should be set to 255.255.255.0

**Answer:** AF

**Explanation:** If you need to connect two computers but you don't have access to a network and can't set up an ad hoc network, you can use an Ethernet crossover cable to create a direct cable connection. Generally speaking, a crossover cable is constructed by reversing (or crossing over) the order of the wires inside so that it can connect two computers directly. A

crossover cable looks almost exactly like a regular Ethernet cable (a straight-through cable), so make sure you have a crossover cable before following these steps.  
 Both devices need to be on the same subnet, and since one PC is using 192.1.1.20 and the other is using 192.1.1.201, the subnet mask should be changed to 255.255.255.0.

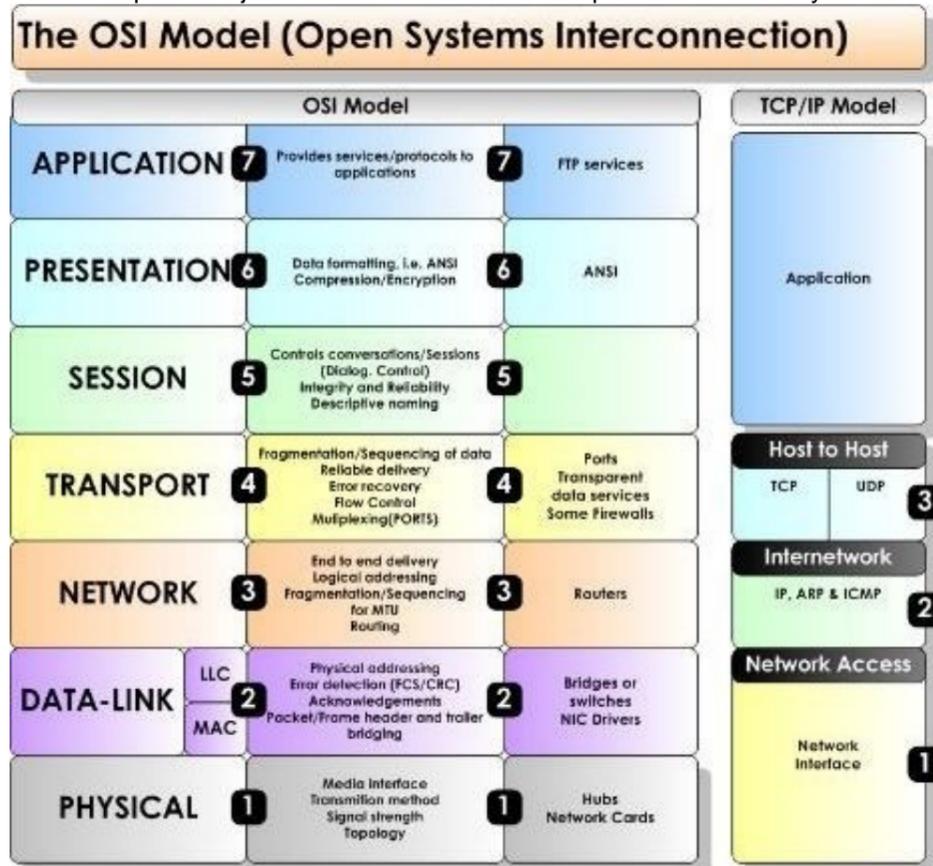
**NEW QUESTION 39**

Which OSI layer header contains the address of a destination host that is on another network?

- A. application
- B. session
- C. transport
- D. network
- E. data link
- F. physical

**Answer: D**

**Explanation:** Only network address contains this information. To transmit the packets the sender uses network address and datalink address. But the layer 2 address represents just the address of the next hop device on the way to the sender. It is changed on each hop. Network address remains the same.



**NEW QUESTION 42**

Which protocol uses a connection-oriented service to deliver files between end systems?

- A. TFTP
- B. DNS
- C. FTP
- D. SNMP
- E. RIP

**Answer: C**

**Explanation:** TCP is an example of a connection-oriented protocol. It requires a logical connection to be established between the two processes before data is exchanged. The connection must be maintained during the entire time that communication is taking place, then released afterwards. The process is much like a telephone call, where a virtual circuit is established--the caller must know the person's telephone number and the phone must be answered-- before the message can be delivered. TCP/IP is also a connection-oriented transport with orderly release. With orderly release, any data remaining in the buffer is sent before the connection is terminated. The release is accomplished in a three-way handshake between client and server processes. The connection-oriented protocols in the OSI protocol suite, on the other hand, do not support orderly release. Applications perform any handshake necessary for ensuring orderly release. Examples of services that use connection-oriented transport services are telnet, rlogin, and ftp.

**NEW QUESTION 46**

Which two characteristics describe the access layer of the hierarchical network design model? (Choose two.)

- A. layer 3 support
- B. port security
- C. redundant components
- D. VLANs
- E. PoE

**Answer: BD**

**Explanation:** Access layer

The main purpose of the access layer is to provide direct connection to devices on the network and controlling which devices are allowed to communicate over it. The access layer interfaces with end devices, such as PCs, printers, and IP phones, to provide access to the rest of the network. The access layer can include routers, switches, bridges, hubs, and wireless access points (AP).

Switch features in the Access layer:

- ? Port security
- ? VLANs
- ? Fast Ethernet/Gigabit Ethernet
- ? Power over Ethernet (PoE)
- ? Link aggregation
- ? Quality of Service (QoS)

References: <http://www.ciscopath.com/content/61/> [http://www.mcmcse.com/cisco/guides/hierarchical\\_model.shtml](http://www.mcmcse.com/cisco/guides/hierarchical_model.shtml)

**NEW QUESTION 47**

What are two common TCP applications? (Choose two.)

- A. TFTP
- B. SMTP
- C. SNMP
- D. FTP
- E. DNS

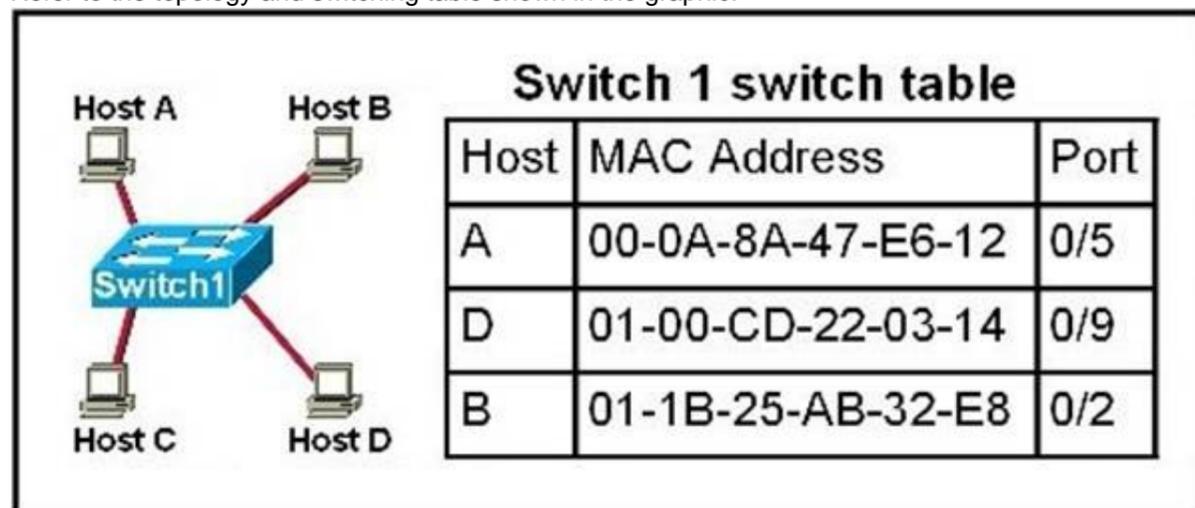
**Answer:** BD

**Explanation:** SMTP uses TCP port 25, while FTP uses TCP ports 20 and 21.

Reference: <http://pentestlab.wordpress.com/2012/03/05/common-tcpip-ports/>

**NEW QUESTION 48**

Refer to the topology and switching table shown in the graphic.



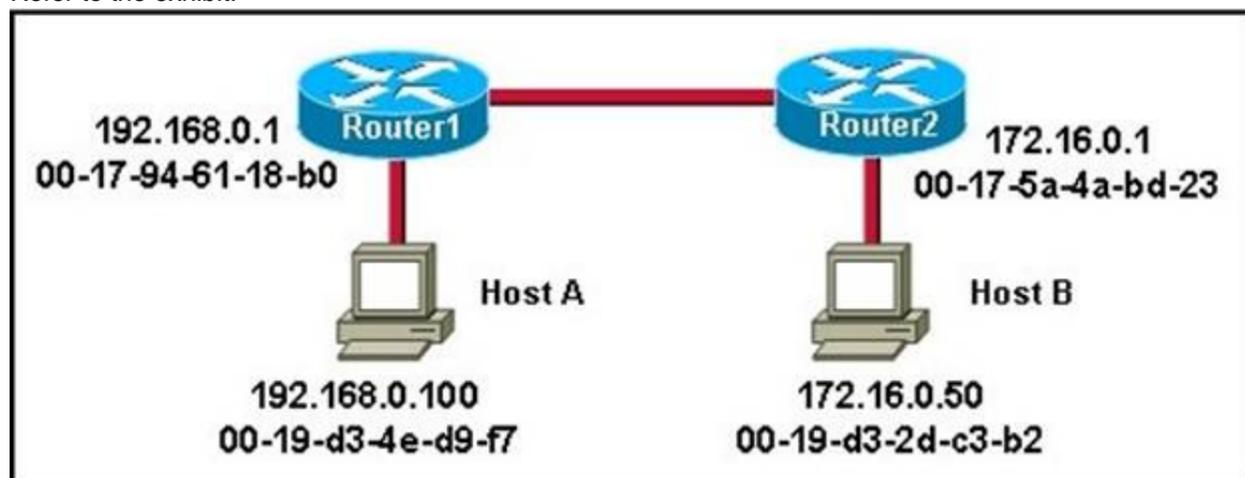
Host B sends a frame to Host C. What will the switch do with the frame?

- A. Drop the frame
- B. Send the frame out all ports except port 0/2
- C. Return the frame to Host B
- D. Send an ARP request for Host C
- E. Send an ICMP Host Unreachable message to Host B
- F. Record the destination MAC address in the switching table and send the frame directly to Host C

**Answer:** B

**NEW QUESTION 52**

Refer to the exhibit.



Host A is sending a packet to Host B for the first time. What destination MAC address will Host A use in the ARP request?

- A. 192.168.0.1
- B. 172.16.0.50
- C. 00-17-94-61-18-b0

- D. 00-19-d3-2d-c3-b2
- E. ff-ff-ff-ff-ff
- F. 255.255.255.255

**Answer:** E

**Explanation:** For the initial communication, Host A will send a broadcast ARP (all F's) to determine the correct address to use to reach the destination. ARP sends an Ethernet frame called an ARP request to every host on the shared link-layer legmen. The Ethernet header includes the source host MAC address and a destination address of all Fs representing a broadcast frame. The ARP request contains the sender's MAC and IP address and the target (destination) IP address. The target's MAC address is set to all 0s.

ARP Request

Reference: <http://www.technicalhowto.com/protocols/arp/arp.html>

#### NEW QUESTION 55

Which two statements describe the operation of the CSMA/CD access method? (Choose two.)

- A. In a CSMA/CD collision domain, multiple stations can successfully transmit data simultaneously.
- B. In a CSMA/CD collision domain, stations must wait until the media is not in use before transmitting.
- C. The use of hubs to enlarge the size of collision domains is one way to improve the operation of the CSMA/CD access method.
- D. After a collision, the station that detected the collision has first priority to resend the lost data.
- E. After a collision, all stations run a random backoff algorithm
- F. When the backoff delay period has expired, all stations have equal priority to transmit data.
- G. After a collision, all stations involved run an identical backoff algorithm and then synchronize with each other prior to transmitting data.

**Answer:** BE

**Explanation:** Ethernet networking uses Carrier Sense Multiple Access with Collision Detect (CSMA/CD), a protocol that helps devices share the bandwidth evenly without having two devices transmit at the same time on the network medium. CSMA/CD was created to overcome the problem of those collisions that occur when packets are transmitted simultaneously from different nodes. And trust me, good collision management is crucial, because when a node transmits in a CSMA/CD network, all the other nodes on the network receive and examine that transmission. Only bridges and routers can effectively prevent a transmission from propagating throughout the entire network! So, how does the CSMA/CD protocol work? Like this: when a host wants to transmit over the network, it first checks for the presence of a digital signal on the wire. If all is clear (no other host is transmitting), the host will then proceed with its transmission. But it doesn't stop there. The transmitting host constantly monitors the wire to make sure no other hosts begin transmitting. If the host detects another signal on the wire, it sends out an extended jam signal that causes all nodes on the segment to stop sending data (think, busy signal). The nodes respond to that jam signal by waiting a while before attempting to transmit again. Backoff algorithms determine when the colliding stations can retransmit. If collisions keep occurring after 15 tries, the nodes attempting to transmit will then time out.

#### NEW QUESTION 56

To what type of port would a cable with a DB-60 connector attach?

- A. Serial port
- B. Console port
- C. Ethernet port
- D. Fibre optic port

**Answer:** A

**Explanation:** Serial Connection



cl\_3\_dte\_male



cl\_2\_dce

The picture on the left shows a V.35 DTE cable with a male DB60 connector and a male standard 34-pin Winchester-type connector. The right picture shows a V.35 DCE serial cable with a male DB60 connector and a female 34-pin Winchester-type connector. As you probably guessed already, the male connector of the DTE cable is attached to the DCE cable's female connector, this is depicted in the picture below. This is known as a back-to-back connection, and 'simulates' a WAN link. In a real world setup, the DTE cable's male connector typically connects to a port on a CSU/DSU provided by a service provider (i.e. telco), which in turn connects to a CSU/DSU at another location, thru a T1 link for example. The DB60 connector connects to a Serial interface on a router.



cl\_4\_malefemale

Reference: [http://www.techexams.net/techlabs/ccna/lab\\_hardware.shtml](http://www.techexams.net/techlabs/ccna/lab_hardware.shtml)

#### NEW QUESTION 61

How does TCP differ from UDP? (Choose two.)

- A. TCP provides best effort delivery.
- B. TCP provides synchronized communication.
- C. TCP segments are essentially datagrams.
- D. TCP provides sequence numbering of packets.
- E. TCP uses broadcast delivery.

**Answer:** BD

**Explanation:** Because TCP is a connection-oriented protocol responsible for ensuring the transfer of a datagram from the source to destination machine (end-to-end communications), TCP must receive communications messages from the destination machine to acknowledge receipt of the datagram. The term virtual circuit is usually used to refer to the handshaking that goes on between the two end machines, most of which are simple acknowledgment messages (either confirmation of receipt or a failure code) and datagram sequence numbers.

Rather than impose a state within the network to support the connection, TCP uses synchronized state between the two endpoints. This synchronized state is set up as part of an initial connection process, so TCP can be regarded as a connection-oriented protocol. Much of the protocol design is intended to ensure that each local state transition is communicated to, and acknowledged by, the remote party.

Reference: [http://en.wikibooks.org/wiki/Communication\\_Networks/TCP\\_and\\_UDP\\_Protocols](http://en.wikibooks.org/wiki/Communication_Networks/TCP_and_UDP_Protocols)

#### NEW QUESTION 65

On a Cisco switch, which protocol determines if an attached VoIP phone is from Cisco or from another vendor?

- A. RTP
- B. TCP
- C. CDP
- D. UDP

**Answer:** C

**Explanation:** The Cisco Unified IP Phone uses CDP to communicate information such as auxiliary VLAN ID, per port power management details, and Quality of Service (QoS) configuration information with the Cisco Catalyst switch.

Cisco Discovery Protocol (CDP) is a proprietary protocol designed by Cisco to help administrators collect information about both locally attached and remote devices. By using CDP, you can gather hardware and protocol information about neighbor devices, which is useful info for troubleshooting the network.

CDP messages are generated every 60 seconds as multicast messages on each of its active interfaces.

The information shared in a CDP packet about a Cisco device includes the following: Name of the device configured with the hostname command  
IOS software version

Hardware capabilities, such as routing, switching, and/or bridging  
Hardware platform, such as 2600, 2950, or 1900

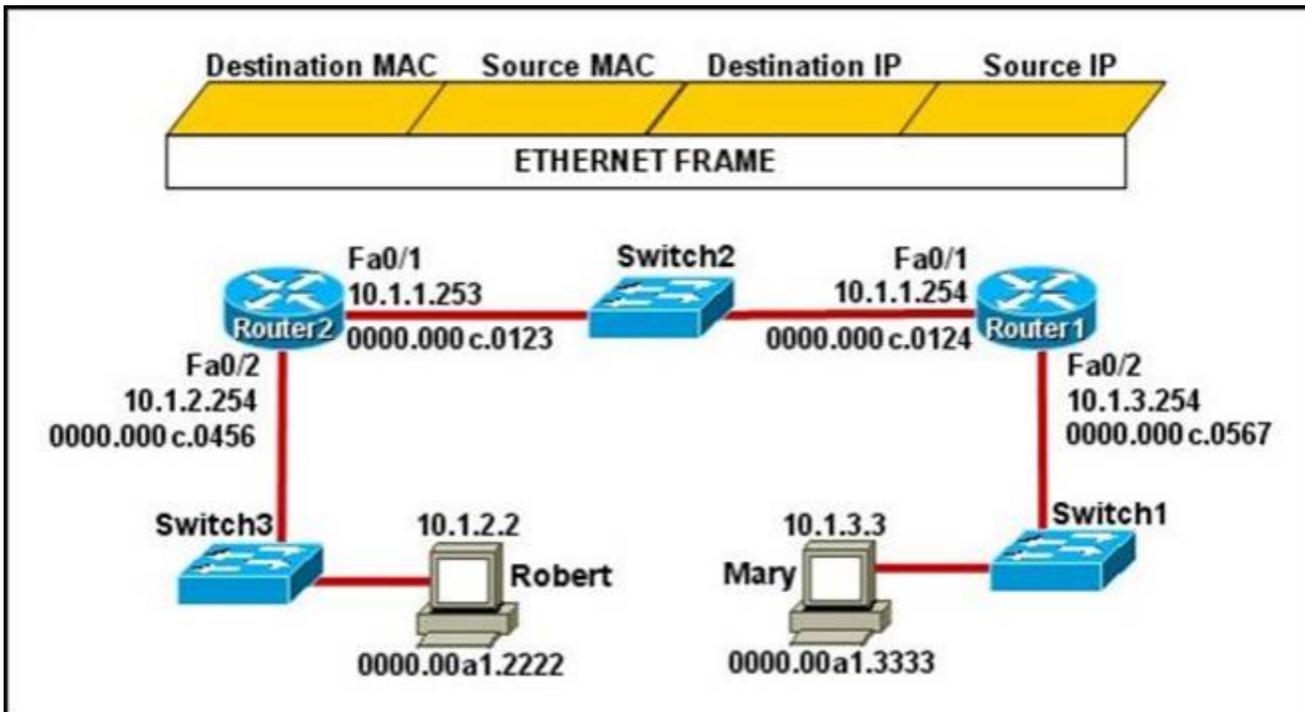
The layer-3 address(es) of the device

The interface the CDP update was generated on

Reference: <http://computernetworkingnotes.com/cisco-devices-administration-and-configuration/cisco-discoveryprotocol.html>

#### NEW QUESTION 69

Refer to the exhibit.



Mary is sending an instant message to Robert. The message will be broken into a series of packets that will traverse all network devices. What addresses will populate these packets as they are forwarded from Router1 to Router2?

- A.
 

Destination MAC	Source MAC	Destination IP	Source IP
0000.00a1.2222	0000.00a1.3333	10.1.2.2	10.1.3.3
- B.
 

Destination MAC	Source MAC	Destination IP	Source IP
0000.000c.0123	0000.000c.0124	10.1.2.2	10.1.3.3
- C.
 

Destination MAC	Source MAC	Destination IP	Source IP
0000.000c.0123	0000.000c.0124	10.1.1.253	10.1.1.254
- D.
 

Destination MAC	Source MAC	Destination IP	Source IP
0000.00a1.2222	0000.00a1.3333	10.1.1.253	10.1.1.254
- E.
 

Destination MAC	Source MAC	Destination IP	Source IP
0000.000c.0456	0000.000c.0567	10.1.2.2	10.1.3.3

- A. Option A
- B. Option B
- C. Option C
- D. Option D
- E. Option E

**Answer:** B

**Explanation:** The Source and Destination IP address is not going to change. Host 1 IP address will stay as being the source IP and the Host 2 IP address will stay the destination IP address. Those two are not going to change.

For the MAC address it is going to change each time it goes from one hope to another. (Except switches... they don't change anything)

Frame leaving HOST 1 is going to have a source MAC of Host 1 and a destination MAC of Router 1.

Router 1 is going to strip that info off and then will make the source MAC address of Router1's exiting interface, and making Router2's interface as the destination MAC address.

Then the same will happen... Router2 is going to change the source/destination info to the source MAC being the Router2 interface that it is going out, and the destination will be Host2's MAC address.

**NEW QUESTION 73**

A switch receives a frame on one of its ports. There is no entry in the MAC address table for the destination MAC address. What will the switch do with the frame?

- A. drop the frame
- B. forward it out of all ports except the one that received it
- C. forward it out of all ports
- D. store it until it learns the correct port

**Answer: B**

**Explanation:** Understanding this concept is prime for understanding that when switch receives the data frame from the host not having the MAC address already in the MAC table, it will add the MAC address to the source port on the MAC address table and sends the data frame. If the switch already has the MAC address in its table for the destination, it will forward the frame directly to the destination port. If it was not already in its MAC table, then they frame would have been flooded out all ports except for the port that it came from.

**NEW QUESTION 78**

Refer to the exhibit.

Instructions

This item contains several questions that you must answer. You can view these questions by clicking on the corresponding button to the left. Changing questions can be accomplished by clicking the numbers to the left of each question. In order to complete the questions, you will need to refer to the Exhibit.

To gain access to the Exhibit, click on the Exhibit button at the bottom of the screen. When you have finished viewing the Exhibit, you can return to your questions by clicking on the Questions button to the left.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

Scenario

Refer to the Exhibit. As the first step in verifying a local host configuration, a network technician issues the **ipconfig /all** command on a computer. Use the results of the command to answer the five questions shown on the Questions tab.

Exhibit

C:\WINNT\system32\cmd.exe

```

Connection-specific DNS Suffix . : cisco.com
Description . . . . . : Intel(R) PRO/1000 MT Mobile

Physical Address. . . . . : 00-0D-60-FD-F0-34
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IP Address. . . . . : 172.15.236.227
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 172.15.236.1
DHCP Server . . . . . : 172.15.3.2
DNS Servers . . . . . : 10.4.8.1
                       : 10.5.2.22
Primary WINS Server . . . . . : 10.69.2.87
Secondary WINS Server . . . . . : 10.69.235.228
Lease Obtained . . . . . : Monday, June 11, 2007 9:26:45 AM
Lease Expires . . . . . : Thursday, June 14, 2007 9:26:45 AM

Ethernet adapter Local Area Connection:

Media State . . . . . : Cable Disconnected
Description . . . . . : Cisco Systems Wireless LAN Adapter

Physical Address. . . . . : 00-0E-9B-48-86-2A
                
```

What two things can the technician determine by successfully pinging from this computer to the IP address 172.16.236.1? (Choose two)

- A. The network card on the computer is functioning correctly.
- B. The default static route on the gateway router is correctly configured.
- C. The correct default gateway IP address is configured on the computer.
- D. The device with the IP address 172.16.236.1 is reachable over the network.
- E. The default gateway at 172.16.236.1 is able to forward packets to the internet.

**Answer:** AD

**Explanation:** The source and destination addresses are on the same network therefore, a default gateway is not necessary for communication between these two addresses.

#### NEW QUESTION 82

Which address type does a switch use to make selective forwarding decisions?

- A. Source IP address
- B. Destination IP address
- C. Source and destination IP address
- D. Source MAC address
- E. Destination MAC address

**Answer:** E

**Explanation:** Switches analyze the destination MAC to make its forwarding decision since it is a layer 2 device. Routers use the destination IP address to make forwarding decisions.

#### NEW QUESTION 85

What does a host on an Ethernet network do when it is creating a frame and it does not have the destination address?

- A. Drops the frame
- B. Sends out a Layer 3 broadcast message
- C. Sends a message to the router requesting the address
- D. Sends out an ARP request with the destination IP address

**Answer:** D

**Explanation:** In this case, it will send out an ARP request for MAC address of the destination IP (assuming it doesn't already have it in its table) and then address it to the destination's MAC address.

#### NEW QUESTION 86

How many simultaneous Telnet sessions does a Cisco router support by default?

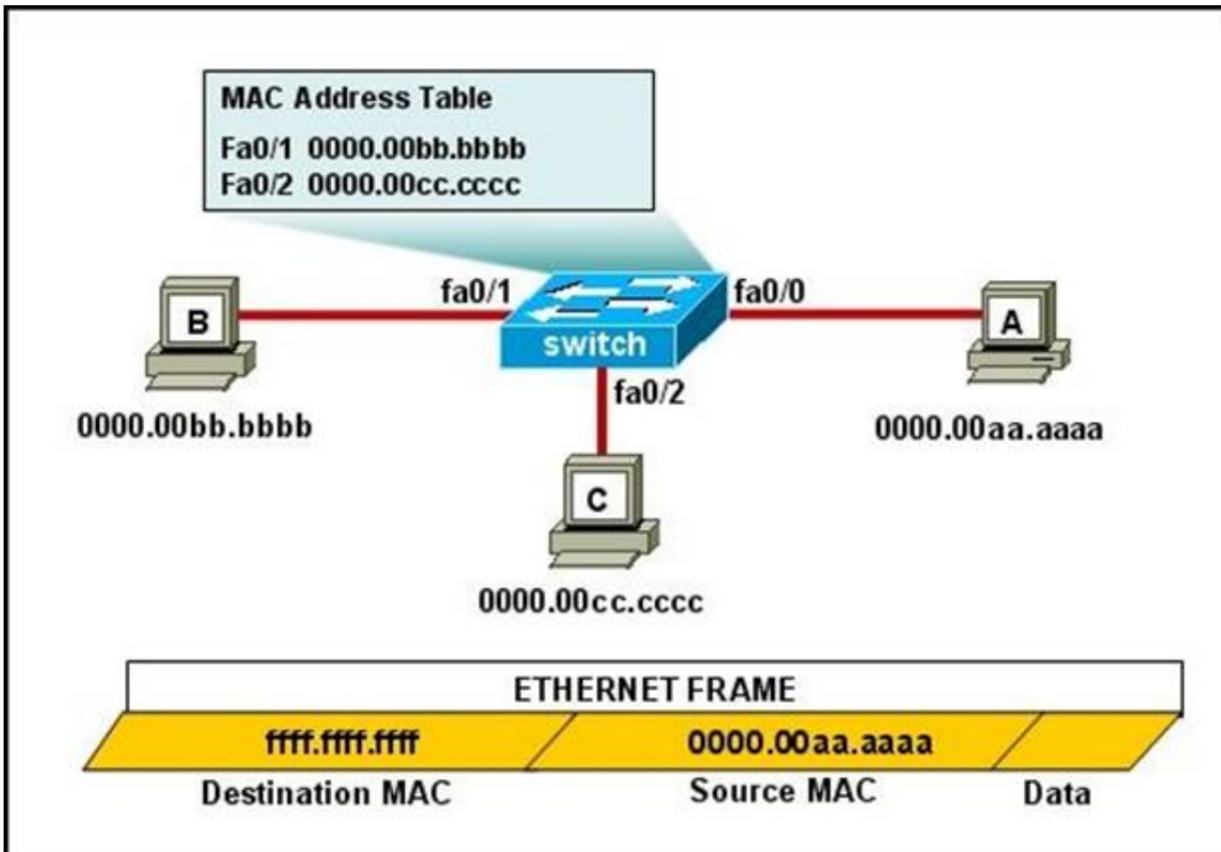
- A. 1
- B. 2
- C. 3
- D. 4
- E. 5
- F. 6

**Answer:** E

**Explanation:** By default, Cisco routers support virtual terminal interfaces 0-4 (5 total) which are used for telnet sessions.

#### NEW QUESTION 88

Refer to the exhibit.



The MAC address table is shown in its entirety. The Ethernet frame that is shown arrives at the switch. What two operations will the switch perform when it receives this frame? (Choose two.)

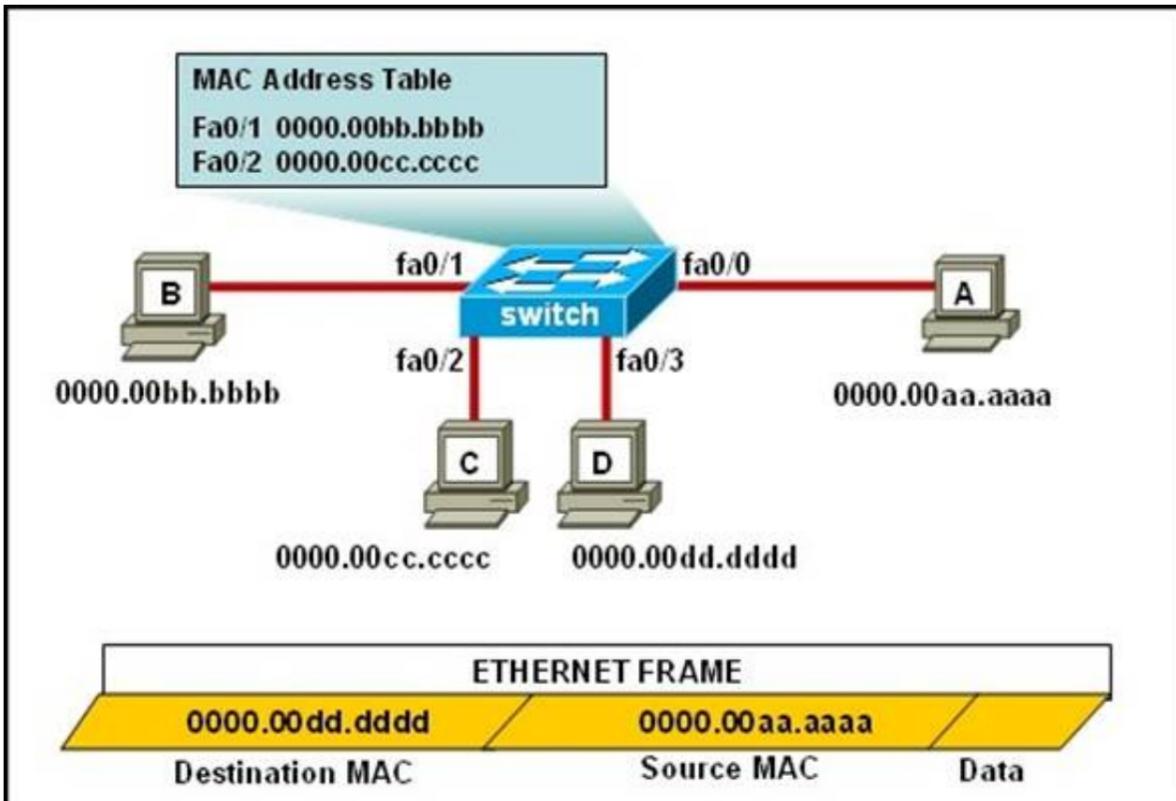
- A. The switch will not forward a frame with this destination MAC address.
- B. The MAC address of 0000.00aa.aaaa will be added to the MAC Address Table.
- C. The MAC address of ffff.ffff.ffff will be added to the MAC address table.
- D. The frame will be forwarded out of all the active switch ports except for port fa0/0.
- E. The frame will be forwarded out of fa0/0 and fa0/1 only.
- F. The frame will be forwarded out of all the ports on the switch.

Answer: BD

Explanation: If the switch already has the MAC address in its table for the destination, it will forward the frame directly to the destination port. If it was not already in its MAC table, then they frame would have been flooded out all ports except for the port that it came from.

NEW QUESTION 91

Refer to the exhibit.



The ports that are shown are the only active ports on the switch. The MAC address table is shown in its entirety. The Ethernet frame that is shown arrives at the switch.

What two operations will the switch perform when it receives this frame? (Choose two.)

- A. The MAC address of 0000.00aa.aaaa will be added to the MAC address table.
- B. The MAC address of 0000.00dd.dddd will be added to the MAC address table.
- C. The frame will be forwarded out of port fa0/3 only.
- D. The frame will be forwarded out of fa0/1, fa0/2, and fa0/3.
- E. The frame will be forwarded out of all the active ports.

Answer: AD

**Explanation:** If the switch already has the MAC address in its table for the destination, it will forward the frame directly to the destination port. If it was not already in its MAC table, then they frame would have been flooded out all ports except for the port that it came from. It will also add the MAC address of the source device to its MAC address table

#### NEW QUESTION 96

A switch has 48 ports and 4 VLANs. How many collision and broadcast domains exist on the switch (collision, broadcast)?

- A. 4, 48
- B. 48, 4
- C. 48, 1
- D. 1, 48
- E. 4, 1

**Answer:** B

**Explanation:** A switch uses a separate collision domain for each port, and each VLAN is a separate broadcast domain.

Topic 3, Routing Fundamentals

#### NEW QUESTION 98

Which option is a valid IPv6 address?

- A. 2001:0000:130F::099a::12a
- B. 2002:7654:A1AD:61:81AF:CCC1
- C. FEC0:ABCD:WXYZ:0067::2A4
- D. 2004:1:25A4:886F::1

**Answer:** D

**Explanation:** IPv6 Address Notation

IPv6 addresses are denoted by eight groups of hexadecimal quartets separated by colons in between them.

Following is an example of a valid IPv6 address: 2001:cdba:0000:0000:0000:0000:3257:9652

Any four-digit group of zeroes within an IPv6 address may be reduced to a single zero or altogether omitted.

Therefore, the following IPv6 addresses are similar and equally valid: 2001:cdba:0000:0000:0000:0000:3257:9652

2001:cdba:0:0:0:0:3257:9652

2001:cdba::3257:9652

Reference: <http://www.ipv6.com/articles/general/IPv6-Addressing.htm>

#### NEW QUESTION 101

Which IP addresses are valid for hosts belonging to the 10.1.160.0/20 subnet? (Choose three.)

- A. 10.1.168.0
- B. 10.1.176.1
- C. 10.1.174.255
- D. 10.1.160.255
- E. 10.1.160.0
- F. 10.1.175.255

**Answer:** ACD

**Explanation:** All IP address in IP ranges between: 10.1.160.1 and 10.1.175.254 are valid as shown below

Address: 10.1.160.0 00001010.00000001.1010 0000.00000000

Netmask: 255.255.240.0 = 20 11111111.11111111.1111 0000.00000000

Wildcard: 0.0.15.255 00000000.00000000.0000 1111.11111111

Which implies that:

Network: 10.1.160.0/20 00001010.00000001.1010 0000.00000000

HostMin: 10.1.160.1 00001010.00000001.1010 0000.00000001

HostMax: 10.1.175.254 00001010.00000001.1010 1111.11111110

Broadcast: 10.1.175.255 00001010.00000001.1010 1111.11111111

#### NEW QUESTION 106

Which parameter or parameters are used to calculate OSPF cost in Cisco routers?

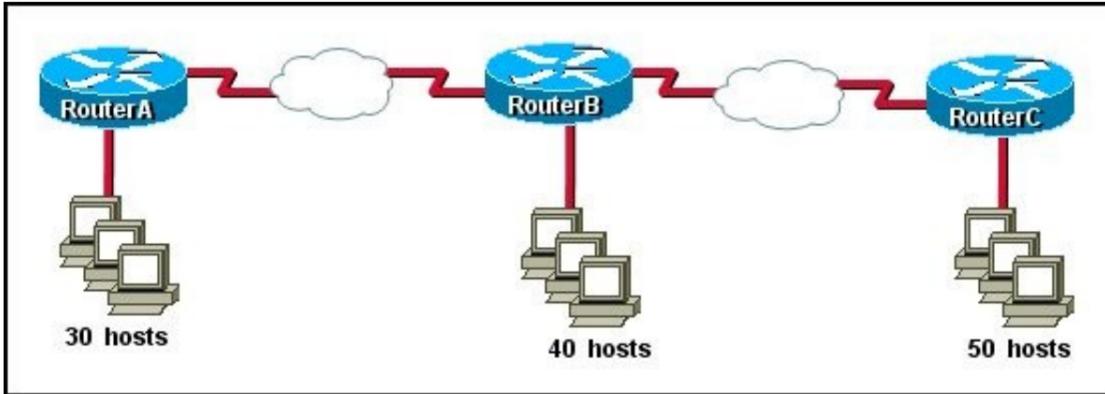
- A. Bandwidth
- B. Bandwidth and Delay
- C. Bandwidth, Delay, and MTU
- D. Bandwidth, MTU, Reliability, Delay, and Load

**Answer:** A

**Explanation:** The well-known formula to calculate OSPF cost is Cost = 108/ Bandwidth

#### NEW QUESTION 110

Refer to the exhibit.



The internetwork is using subnets of the address 192.168.1.0 with a subnet mask of 255.255.255.224. The routing protocol in use is RIP version 1. Which address could be assigned to the FastEthernet interface on RouterA?

- A. 192.168.1.31
- B. 192.168.1.64
- C. 192.168.1.127
- D. 192.168.1.190
- E. 192.168.1.192

Answer: D

**Explanation:** Subnet mask 255.255.255.224 with CIDR of /27 which results in 32 hosts per. 192.168.1.31 is the broadcast address for subnet '0' 192.168.1.64 is the network address for subnet '2' 192.168.1.127 is the broadcast address for subnet '3' 192.168.1.192 is the network address for subnet '6'

Subnet	Network Address	Starting Host	End Host	Broadcast	Netmask
0	192.168.1.0	192.168.1.1	192.168.1.30	192.168.1.31	255.255.255.224
1	192.168.1.32	192.168.1.33	192.168.1.62	192.168.1.63	255.255.255.224
2	192.168.1.64	192.168.1.65	192.168.1.94	192.168.1.95	255.255.255.224
3	192.168.1.96	192.168.1.97	192.168.1.126	192.168.1.127	255.255.255.224
4	192.168.1.128	192.168.1.129	192.168.1.158	192.168.1.159	255.255.255.224
5	192.168.1.160	192.168.1.161	192.168.1.190	192.168.1.191	255.255.255.224
6	192.168.1.192	192.168.1.193	192.168.1.222	192.168.1.223	255.255.255.224
7	192.168.1.224	192.168.1.225	192.168.1.254	192.168.1.255	255.255.255.224

**NEW QUESTION 114**

Which statements describe the routing protocol OSPF? (Choose three.)

- A. It supports VLSM.
- B. It is used to route between autonomous systems.
- C. It confines network instability to one area of the network.
- D. It increases routing overhead on the network.
- E. It allows extensive control of routing updates.
- F. It is simpler to configure than RIP v2.

Answer: ACE

**Explanation:** Routing overhead is the amount of information needed to describe the changes in a dynamic network topology. All routers in an OSPF area have identical copies of the topology database and the topology database of one area is hidden from the rest of the areas to reduce routing overhead because fewer routing updates are sent and smaller routing trees are computed and maintained (allow extensive control of routing updates and confine network instability to one area of the network).

**NEW QUESTION 115**

Which command can you use to manually assign a static IPV6 address to a router interface?

- A. ipv6 address PREFIX\_1::1/64
- B. ipv6 autoconfig 2001:db8:2222:7272::72/64
- C. ipv6 autoconfig
- D. ipv6 address 2001:db8:2222:7272::72/64

Answer: D

**Explanation:** An example of configuring IPv6 on an interface is shown below: Router(config)# interface fastethernet 0/1 Router(config-if)# ipv6 address 3000::2222:1/64

**NEW QUESTION 118**

What is the OSPF default frequency, in seconds, at which a Cisco router sends hello packets on a multi-access network?

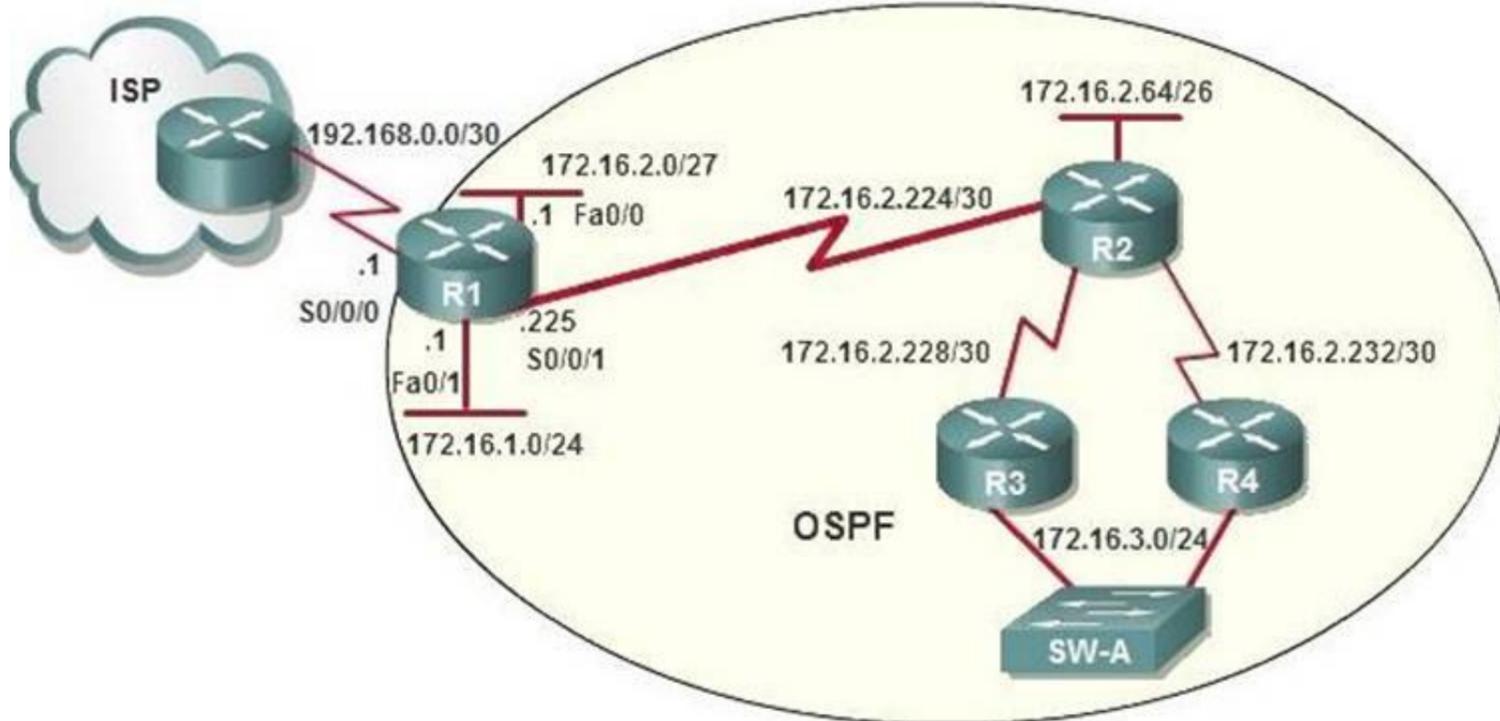
- A. 10
- B. 40
- C. 30
- D. 20

Answer: A

Explanation: On broadcast multiaccess and point-to-point links, the default is 10 seconds. On NBMA, the default is 30 seconds.

**NEW QUESTION 121**

After the network has converged, what type of messaging, if any, occurs between R3 and R4?



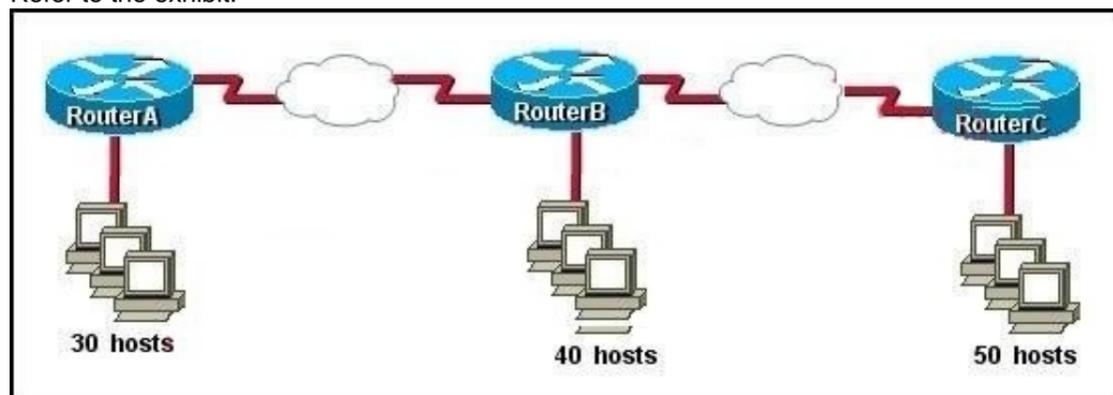
- A. No messages are exchanged
- B. Hellos are sent every 10 seconds.
- C. The full database from each router is sent every 30 seconds.
- D. The routing table from each router is sent every 60 seconds.

Answer: B

Explanation: HELLO messages are used to maintain adjacent neighbors so even when the network is converged, hellos are still exchanged. On broadcast and point-to-point links, the default is 10 seconds, on NBMA the default is 30 seconds. Although OSPF is a link-state protocol the full database from each router is sent every 30 minutes (not seconds) therefore, C and D are not correct.

**NEW QUESTION 122**

Refer to the exhibit.



The enterprise has decided to use the network address 172.16.0.0. The network administrator needs to design a classful addressing scheme to accommodate the three subnets, with 30, 40, and 50 hosts, as shown. What subnet mask would accommodate this network?

- A. 255.255.255.192
- B. 255.255.255.224
- C. 255.255.255.240
- D. 255.255.255.248
- E. 255.255.255.252

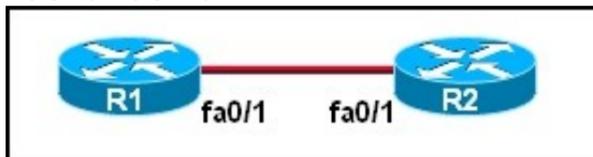
Answer: A

Explanation: Subnet mask A i.e. 255.255.255.192 with CIDR of /26 which means 64 hosts per subnet which are sufficient to accommodate even the largest subnet of 50 hosts.

Net Bits	Subnet Mask	Total-Address Per Subnet
/20	255.255.240.0	4096
/21	255.255.248.0	2048
/22	255.255.252.0	1024
/23	255.255.254.0	512
/24	255.255.255.0	256
/25	255.255.255.128	128
/26	255.255.255.192	64
/27	255.255.255.224	32
/28	255.255.255.240	16
/29	255.255.255.248	8
/30	255.255.255.252	4

**NEW QUESTION 127**

Refer to the exhibit.



The two routers have had their startup configurations cleared and have been restarted. At a minimum, what must the administrator do to enable CDP to exchange information between R1 and R2?

- A. Configure the router with the cdp enable command.
- B. Enter no shutdown commands on the R1 and R2 fa0/1 interfaces.
- C. Configure IP addressing and no shutdown commands on both the R1 and R2 fa0/1 interfaces.
- D. Configure IP addressing and no shutdown commands on either of the R1 or R2 fa0/1 interfaces.

**Answer: B**

**Explanation:** If the no shut down commands are not entered, then CDP can exchange information between the two routers. By default, all Cisco device interfaces and ports are shut down and need to be manually enabled.

**NEW QUESTION 132**

Which address are OSPF hello packets addressed to on point-to-point networks?

- A. 224.0.0.5
- B. 172.16.0.1
- C. 192.168.0.5
- D. 223.0.0.1
- E. 254.255.255.255

**Answer: A**

**Explanation:** Why does the show ip ospf neighbor Command Reveal Neighbors in the Init State?  
[http://www.cisco.com/en/US/tech/tk365/technologies\\_tech\\_note09186a0080093f11.shtml](http://www.cisco.com/en/US/tech/tk365/technologies_tech_note09186a0080093f11.shtml) OSPF hello packets have a destination address of 224.0.0.5 (the all ospf routers multicast address).

**NEW QUESTION 135**

Which two commands will display the current IP address and basic Layer 1 and 2 status of an interface? (Choose two.)

- A. router#show version
- B. router#show ip interface
- C. router#show protocols
- D. router#show controllers
- E. router#show running-config

Answer: BC

**Explanation:** The outputs of "show protocols" and "show ip interface" are shown below:

Global values:Internet Protocol routing is enabledSerial0/0 is up, line protocol is downInternet address is 10.1.1.1/30Serial0/1 is up, line protocol is downInternet address is 209.65.200.225/30Serial0/2 is up, line protocol is downSerial0/3 is up, line protocol is downNVI0 is up, line protocol is upInterface is unnumbered. Using address of NVI0 (0.0.0.0)Loopback0 is up, line protocol is upInternet address is 10.1.10.1/32Loopback1 is up, line protocol is upInternet address is 10.1.2.1/27Loopback6 is up, line protocol is up  
 Serial0/0 is up, line protocol is downInternet address is 10.1.1.1/30Broadcast address is 255.255.255.255Address determined by non-volatile memoryMTU is 1500 bytesHelper address is not setDirected broadcast forwarding is disabledMulticast reserved groups joined: 224.0.0.5Outgoing access list is not setInbound access list is not setProxy ARP is enabledLocal Proxy ARP is disabledSecurity level is defaultSplit horizon is disabledICMP redirects are always sentICMP unreachable are always sentICMP mask replies are never sentIP fast switching is enabledIP fast switching on the same interface is enabledIP Flow switching is disabledIP CEF switching is disabledIP Feature Fast switching turbo vectorIP multicast fast switching is enabledIP multicast distributed fast switching is disabledIP route-cache flags are FastRouter Discovery is disabledIP output packet accounting is disabledIP access violation accounting is disabledTCP/IP header compression is disabledRTP/IP header compression is disabledPolicy routing is disabledNetwork address translation is enabled, interface in domain insideBGP Policy Mapping is disabledWCCP Redirect outbound is disabledWCCP Redirect inbound is disabledWCCP Redirect exclude is disabled

**NEW QUESTION 136**

Given an IP address of 192.168.1.42 255.255.255.248, what is the subnet address?

- A. 192.168.1.8/29
- B. 192.168.1.32/27
- C. 192.168.1.40/29
- D. 192.168.1.16/28
- E. 192.168.1.48/29

Answer: C

**Explanation:** 248 mask uses 5 bits (1111 1000)

42 IP in binary is (0010 1010)

The base subnet therefore is the lowest binary value that can be written without changing the output of an AND operation of the subnet mask and IP...

1111 1000 AND

0010 1010 equals

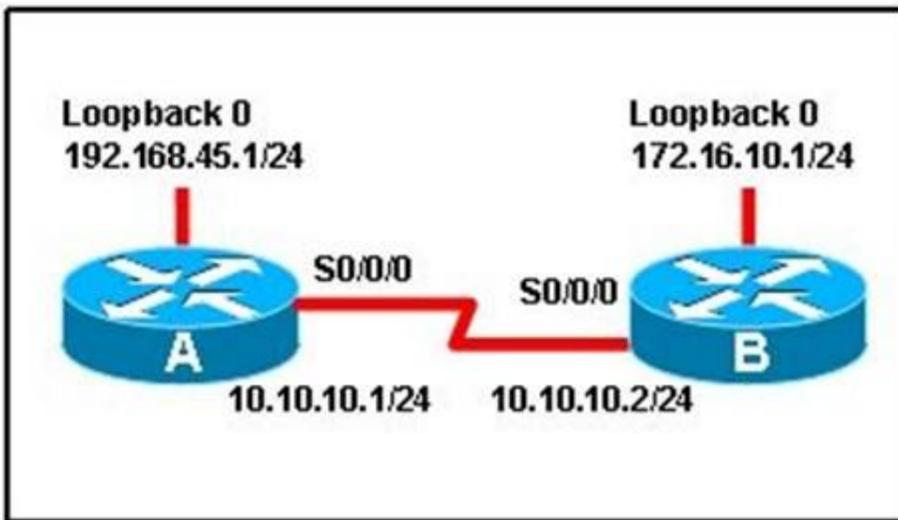
0010 1000 - which is .40

/24 is standard class C mask.

Adding the 5 bits from the .248 mask gives /29

**NEW QUESTION 137**

Refer to the exhibit.



When running OSPF, what would cause router A not to form an adjacency with router B?

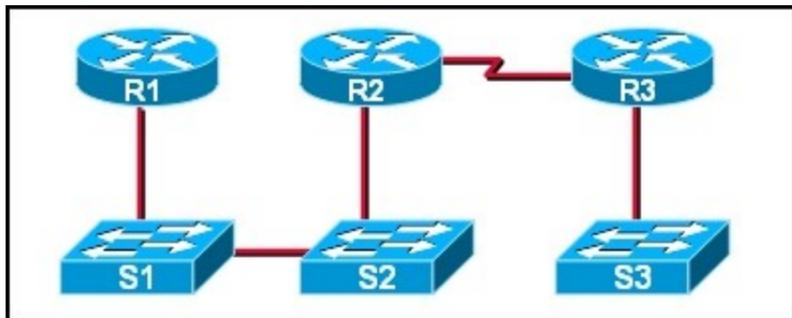
- A. The loopback addresses are on different subnets.
- B. The values of the dead timers on the routers are different.
- C. Route summarization is enabled on both routers.
- D. The process identifier on router A is different than the process identifier on router B.

Answer: B

**Explanation:** To form an adjacency (become neighbor), router A & B must have the same Hello interval, Dead interval and AREA numbers

**NEW QUESTION 142**

Refer to the exhibit.



If CDP is enabled on all devices and interfaces, which devices will appear in the output of a show cdp neighbors command issued from R2?

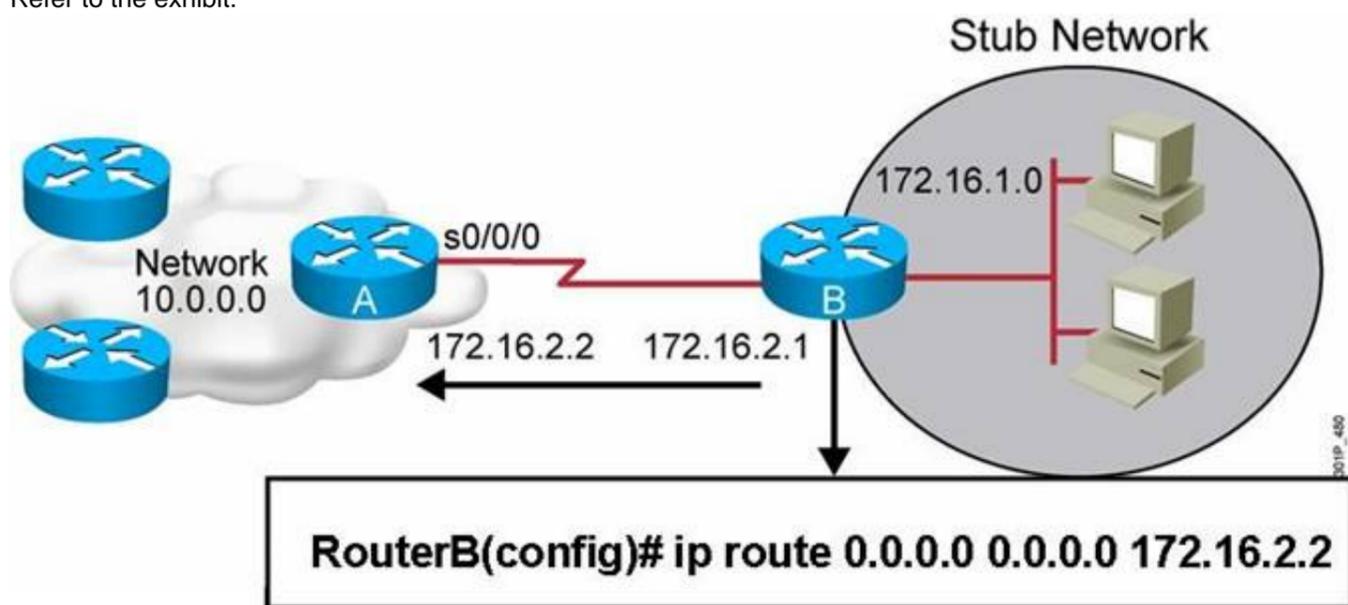
- A. R2 and R3
- B. R1 and R3
- C. R3 and S2
- D. R1, S1, S2, and R3
- E. R1, S1, S2, R3, and S3

Answer: C

**Explanation:** ACisco device enabled with CDP sends out periodic interface updates to a multicast address in order to make itself known to neighbors. Since it is a layer two protocol, these packets are not routed. So the devices detected would be immediate connected neighbors.

**NEW QUESTION 143**

Refer to the exhibit.



Which two statements are correct? (Choose two.)

- A. This is a default route.
- B. Adding the subnet mask is optional for the ip route command.
- C. This will allow any host on the 172.16.1.0 network to reach all known destinations beyond RouterA.
- D. This command is incorrect, it needs to specify the interface, such as s0/0/0 rather than an IP address.
- E. The same command needs to be entered on RouterA so that hosts on the 172.16.1.0 network can reach network 10.0.0.0.

Answer: AC

**Explanation:** This is obviously the default route which is set between the routers and since it is entered in such a manner that it ensures connectivity between the stub network and any host lying beyond RouterA.

**NEW QUESTION 144**

What OSPF command, when configured, will include all interfaces into area 0?

- A. network 0.0.0.0 255.255.255.255 area 0
- B. network 0.0.0.0 0.0.0.0 area 0
- C. network 255.255.255.255 0.0.0.0 area 0
- D. network all-interfaces area 0

Answer: A

**Explanation:** Example 3-1 displays OSPF with a process ID of 1 and places all interfaces configured with an IP address in area 0. The network command network 0.0.0.0 255.255.255.255 area 0 dictates that you do not care (255.255.255.255) what the IP address is, but if an IP address is enabled on any interface, place it in area 0.

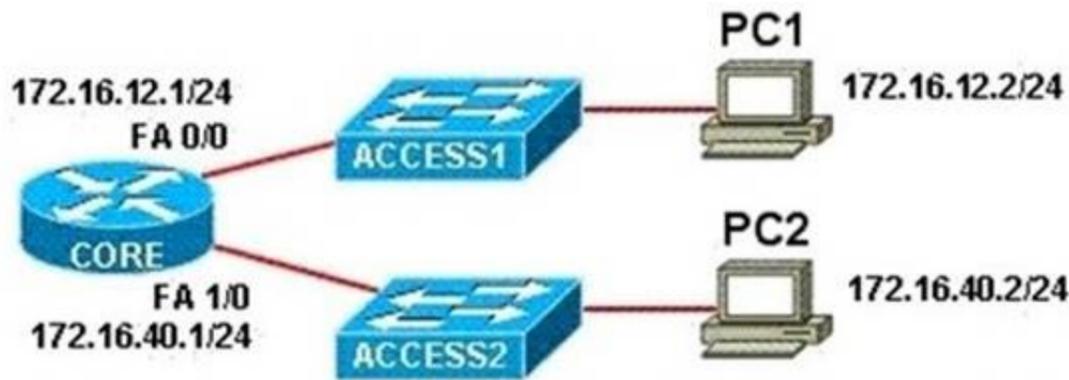
Example 3-1 Configuring OSPF in a Single Area

```
router ospf 1
network 0.0.0.0 255.255.255.255 area 0
```

Reference: <http://www.ciscopress.com/articles/article.asp?p=26919&seqNum=3>

**NEW QUESTION 149**

Refer to the exhibit.



```

CORE# show arp
Protocol Address           Age (min)  Hardware Addr   Type   Interface
Internet 172.16.12.1          -          0001.4210.3BA9  ARPA   FastEthernet0/0
Internet 172.16.12.2          0          0010.111A.7AB0  ARPA   FastEthernet0/0
Internet 172.16.40.1          -          00D0.FF59.4A85  ARPA   FastEthernet1/0
Internet 172.16.40.2          0          00E0.80B7.EAB1  ARPA   FastEthernet1/0
CORE#
    
```

PC1 pings PC2. What three things will CORE router do with the data that is received from PC1? (Choose three.)

- A. The data frames will be forwarded out interface FastEthernet0/1 of CORE router.
- B. The data frames will be forwarded out interface FastEthernet1/0 of CORE router.
- C. CORE router will replace the destination IP address of the packets with the IP address of PC2.
- D. CORE router will replace the MAC address of PC2 in the destination MAC address of the frames.
- E. CORE router will put the IP address of the forwarding FastEthernet interface in the place of the source IP address in the packets.
- F. CORE router will put the MAC address of the forwarding FastEthernet interface in the place of the source MAC address.

**Answer:** BDF

**Explanation:** The router will forward the frames out the interface toward the destination – B is correct. Since the router will have the end station already in its MAC table as seen by the “show arp” command, it will replace the destination MAC address to that of PC2 – D is correct. The router will then replace the source IP address to 172.16.40.1 – E is correct.

**NEW QUESTION 151**

How many bits are contained in each field of an IPv6 address?

- A. 24
- B. 4
- C. 8
- D. 16

**Answer:** D

**Explanation:** One of the key advantages IPv6 brings is the exponentially larger address space. The following will outline the basic address architecture of IPv6. 128-bit-long addresses represented in hexadecimal format:  
 Uses CIDR principles: prefix/prefix length x:x:x:x:x:x/x, where x is a 16-bit hex field. The last 64 bits are used for the interface ID  
[http://www.cisco.com/en/US/technologies/tk648/tk872/technologies\\_white\\_paper0900aecd\\_8026003d.pdf](http://www.cisco.com/en/US/technologies/tk648/tk872/technologies_white_paper0900aecd_8026003d.pdf)

**NEW QUESTION 154**

A network administrator is troubleshooting the OSPF configuration of routers R1 and R2. The routers cannot establish an adjacency relationship on their common Ethernet link.

```

R1: Ethernet0 is up, line protocol is up
    Internet address 192.168.1.2/24, Area 0
    Process ID 1, Router ID 192.168.31.33, Network Type BROADCAST, Cost: 10
    Transmit Delay is 1 sec, State DR, Priority 1
    Designated Router (ID) 192.168.31.33, Interface address 192.168.1.2
    No backup designated router on this network
    Timer intervals configured, Hello 5, Dead 20, Wait 20, Retransmit 5

R2: Ethernet0 is up, line protocol is up
    Internet address 192.168.1.1/24, Area 0
    Process ID 2, Router ID 192.168.31.11, Network Type BROADCAST, Cost: 10
    Transmit Delay is 1 sec, State DR, Priority 1
    Designated Router (ID) 192.168.31.11, Interface address 192.168.1.1
    No backup designated router on this network
    Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    
```

The graphic shows the output of the show ip ospf interface e0 command for routers R1 and R2. Based on the information in the graphic, what is the cause of this problem?

- A. The OSPF area is not configured properly.
- B. The priority on R1 should be set higher.

- C. The cost on R1 should be set higher.
- D. The hello and dead timers are not configured properly.
- E. A backup designated router needs to be added to the network.
- F. The OSPF process ID numbers must match.

**Answer:** D

**Explanation:** In OSPF, the hello and dead intervals must match and here we can see the hello interval is set to 5 on R1 and 10 on R2. The dead interval is also set to 20 on R1 but it is 40 on R2.

**NEW QUESTION 157**

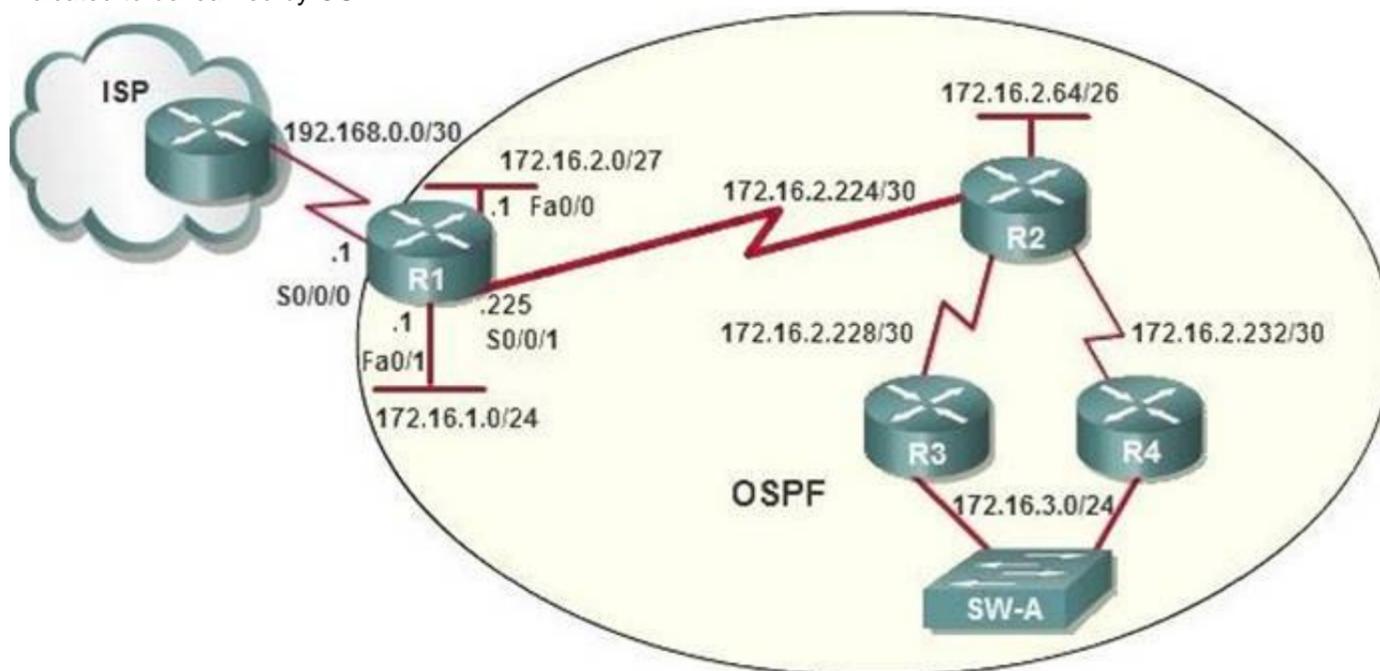
Which IP address is a private address?

- A. 12.0.0.1
- B. 168.172.19.39
- C. 172.20.14.36
- D. 172.33.194.30
- E. 192.169.42.34

**Answer:** C

**NEW QUESTION 158**

OSPF is configured using default classful addressing. With all routers and interfaces operational, how many networks will be in the routing table of R1 that are indicated to be learned by OSPF?



- A. 2
- B. 3
- C. 4
- D. 5
- E. 6
- F. 7

**Answer:** C

**Explanation:** Although OSPF is configured using default classful addressing but OSPF is a link-state routing protocol so it will always send the subnet mask of each network in their advertised routes. Therefore R1 will learn the the complete subnets. Four networks list below will be in the routing table of R1:+

172.16.2.64/30+ 172.16.2.228/30+ 172.16.2.232/30+ 172.16.3.0/24

Note: Other networks will be learned as "Directly connected" networks (marked with letter "C")

**NEW QUESTION 162**

What is the network address for the host with IP address 192.168.23.61/28?

- A. 192.168.23.0
- B. 192.168.23.32
- C. 192.168.23.48
- D. 192.168.23.56
- E. 192.168.23.60

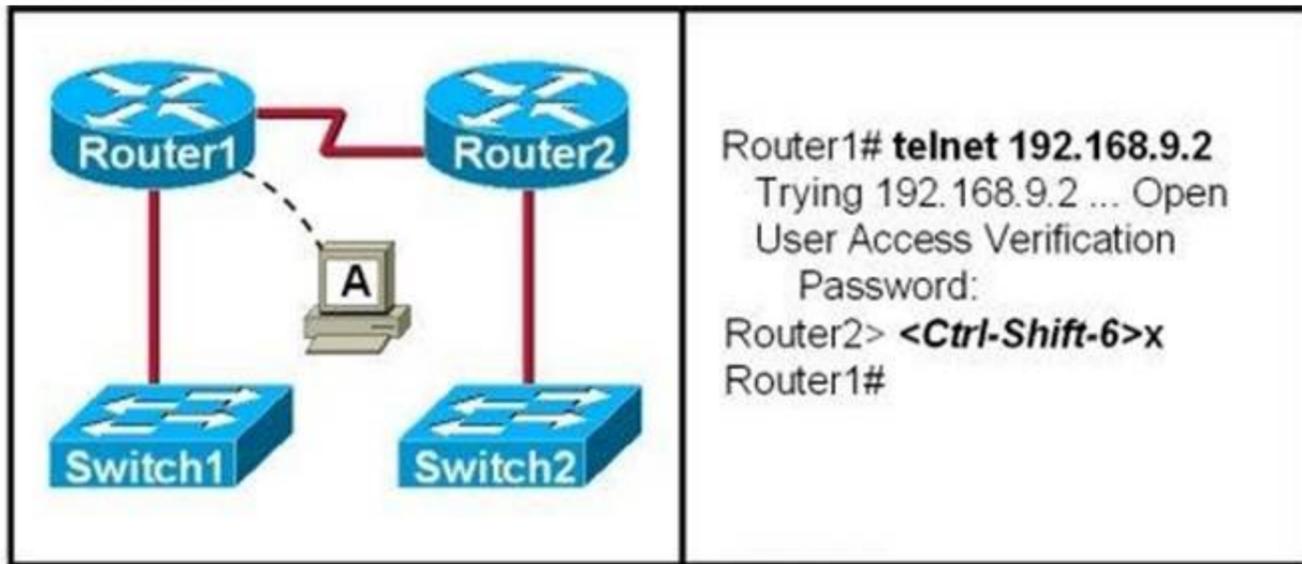
**Answer:** C

**Explanation:** Convert bit-length prefix to quad-dotted decimal representation, then from it find the number of bits used for subnetting you can find previously calculated number of subnets by separating subnets each having value of last bit used for subnet masking Find that your IP address is in which subnet, that subnet's first address is network address and last address is broadcast address.

Based on above steps the answer is option C

**NEW QUESTION 163**

Refer to the exhibit.



If the resume command is entered after the sequence that is shown in the exhibit, which router prompt will be displayed?

- A. Router1>
- B. Router1#
- C. Router2>
- D. Router2#

**Answer: C**

**Explanation:** After resuming the telnet session by using the Enter key after it has been suspended, it will resume back to the telnet session so it will be back to the router2> prompt.

**NEW QUESTION 164**

Why do large OSPF networks use a hierarchical design? (Choose three.)

- A. to decrease latency by increasing bandwidth
- B. to reduce routing overhead
- C. to speed up convergence
- D. to confine network instability to single areas of the network
- E. to reduce the complexity of router configuration
- F. to lower costs by replacing routers with distribution layer switches

**Answer: BCD**

**Explanation:** OSPF implements a two-tier hierarchical routing model that uses a core or backbone tier known as area zero (0). Attached to that backbone via area border routers (ABRs) are a number of secondary tier areas.

The hierarchical approach is used to achieve the following:

- ? Rapid convergence because of link and/or switch failures
- ? Deterministic traffic recovery
- ? Scalable and manageable routing hierarchy, reduced routing overhead.

**NEW QUESTION 169**

What information can be used by a router running a link-state protocol to build and maintain its topological database? (Choose two.)

- A. hello packets
- B. SAP messages sent by other routers
- C. LSAs from other routers
- D. beacons received on point-to-point links
- E. routing tables received from other link-state routers
- F. TTL packets from designated routers

**Answer: AC**

**Explanation:** Reference 1:

<http://www.ciscopress.com/articles/article.asp?p=24090&seqNum=4>

Link state protocols, sometimes called shortest path first or distributed database protocols, are built around a well-known algorithm from graph theory, E. W.

Dijkstra's shortest path algorithm. Examples of link state routing protocols are:

Open Shortest Path First (OSPF) for IP

The ISO's Intermediate System to Intermediate System (IS-IS) for CLNS and IP DEC's DNA Phase V

Novell's NetWare Link Services Protocol (NLSP)

Although link state protocols are rightly considered more complex than distance vector protocols, the basic functionality is not complex at all:

1. Each router establishes a relationship—an adjacency—with each of its neighbors.
2. Each router sends link state advertisements (LSAs), some
3. Each router stores a copy of all the LSAs it has seen in a database. If all works well, the databases in all routers should be identical.
4. The completed topological database, also called the link state database, describes a graph of the internetwork. Using the Dijkstra algorithm, each router calculates the shortest path to each network and enters this information into the route table.

OSPF Tutorial

### NEW QUESTION 172

An administrator must assign static IP addresses to the servers in a network. For network 192.168.20.24/29, the router is assigned the first usable host address while the sales server is given the last usable host address.

Which of the following should be entered into the IP properties box for the sales server?

- A. IP address: 192.168.20.14 Subnet Mask: 255.255.255.248 Default Gateway: 192.168.20.9
- B. IP address: 192.168.20.254 Subnet Mask: 255.255.255.0 Default Gateway: 192.168.20.1
- C. IP address: 192.168.20.30 Subnet Mask: 255.255.255.248 Default Gateway: 192.168.20.25
- D. IP address: 192.168.20.30 Subnet Mask: 255.255.255.240 Default Gateway: 192.168.20.17
- E. IP address: 192.168.20.30 Subnet Mask: 255.255.255.240 Default Gateway: 192.168.20.25

**Answer: C**

**Explanation:** With network 192.168.20.24/29 we have:

Increment: 8 (/29 = 255.255.255.248 = 11111000 for the last octet) Network address: 192.168.20.24 (because 24 = 8 \* 3)

Broadcast address: 192.168.20.31 (because 31 = 24 + 8 - 1)

Therefore the first usable IP address is 192.168.20.25 (assigned to the router) and the last usable IP address is 192.168.20.30 (assigned to the sales server). The IP address of the router is also the default gateway of the sales server.

### NEW QUESTION 176

What does administrative distance refer to?

- A. the cost of a link between two neighboring routers
- B. the advertised cost to reach a network
- C. the cost to reach a network that is administratively set
- D. a measure of the trustworthiness of a routing information source

**Answer: D**

**Explanation:** Reference: [http://www.cisco.com/en/US/tech/tk365/technologies\\_tech\\_note09186a0080094195.shtml](http://www.cisco.com/en/US/tech/tk365/technologies_tech_note09186a0080094195.shtml)

Administrative distance is the feature that routers use in order to select the best path when there are two or more different routes to the same destination from two different routing protocols. Administrative distance defines the reliability of a routing protocol. Each routing protocol is prioritized in order of most to least reliable (believable) with the help of an administrative distance value.

Administrative distance is the first criterion that a router uses to determine which routing protocol to use if two protocols provide route information for the same destination. Administrative distance is a measure of the trustworthiness of the source of the routing information. The smaller the administrative distance value, the more reliable the protocol.

### NEW QUESTION 178

Which command is used to display the collection of OSPF link states?

- A. show ip ospf link-state
- B. show ip ospf lsa database
- C. show ip ospf neighbors
- D. show ip ospf database

**Answer: D**

**Explanation:** The "show ip ospf database" command displays the link states. Here is an example: Here is the lsa database on R2.

```
R2#show ip ospf database
OSPF Router with ID (2.2.2.2) (Process ID 1) Router Link States (Area 0)
Link ID ADV Router Age Seq# Checksum Link count 2.2.2.2 2.2.2.2 793 0x80000003 0x004F85 2
10.4.4.4 10.4.4.4 776 0x80000004 0x005643 1
```

### NEW QUESTION 183

```
111.111.111 111.111.111.111 755 0x80000005 0x0059CA 2
133.133.133.133 133.133.133.133 775 0x80000005 0x00B5B1 2
Net Link States (Area 0)
Link ID ADV Router Age Seq# Checksum 10.1.1.1 111.111.111.111 794 0x80000001 0x001E8B
10.2.2.3 133.133.133.133 812 0x80000001 0x004BA9
10.4.4.1 111.111.111.111 755 0x80000001 0x007F16
10.4.4.3 133.133.133.133 775 0x80000001 0x00C31F
```

102.

Which statement describes the process ID that is used to run OSPF on a router?

- A. It is globally significant and is used to represent the AS number.
- B. It is locally significant and is used to identify an instance of the OSPF database.
- C. It is globally significant and is used to identify OSPF stub areas.
- D. It is locally significant and must be the same throughout an area.

**Answer: B**

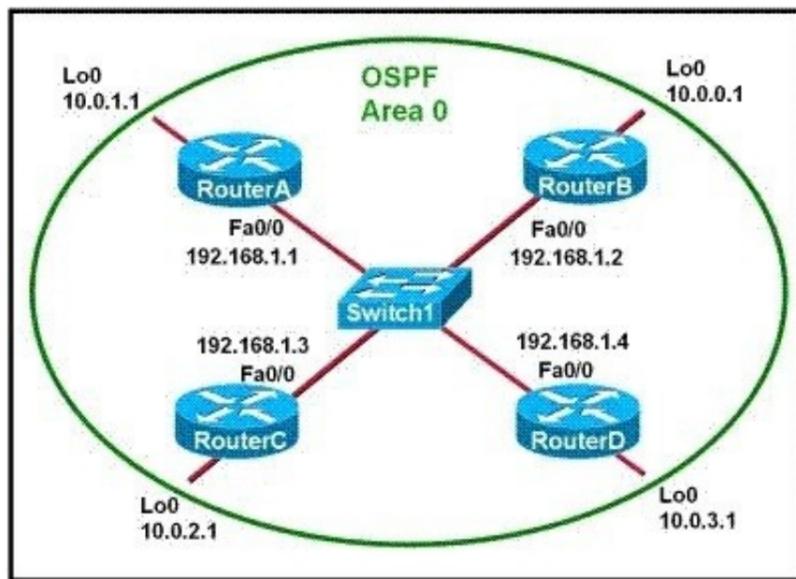
**Explanation:** The IP addresses 133.6.5.4 and 190.6.5.4 are both valid Class B addresses when a default mask is in use.

The Class B default mask is 255.255.0.0 and the range of valid addresses is 128.0.0.0- 191.255.255.255.

The IP address 10.6.8.35 is a Class A address. The Class A default mask is 255.0.0.0 and the range of valid addresses is 1.0.0.0 - 127.255.255.255, with the exception of the range

**NEW QUESTION 184**

Refer to the exhibit.



Which two statements are true about the loopback address that is configured on RouterB? (Choose two.)

- A. It ensures that data will be forwarded by RouterB.
- B. It provides stability for the OSPF process on RouterB.
- C. It specifies that the router ID for RouterB should be 10.0.0.1.
- D. It decreases the metric for routes that are advertised from RouterB.
- E. It indicates that RouterB should be elected the DR for the LAN.

**Answer: BC**

**Explanation:** A loopback interface never comes down even if the link is broken so it provides stability for the OSPF process (for example we use that loopback interface as the router-id) - 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.  
 -> The loopback interface will be chosen as the router ID of RouterB -

**NEW QUESTION 186**

Refer to the exhibit.

```
RouterD# show ip interface brief
Interface      IP-Address      OK? Method Status Protocol
FastEthernet0/0 192.168.5.3    YES manual up      up
FastEthernet0/1 10.1.1.2       YES manual up      up
Loopback0      172.16.5.1     YES NVRAM up      up
Loopback1      10.154.154.1  YES NVRAM up      up
```

Given the output for this command, if the router ID has not been manually set, what router ID will OSPF use for this router?

- A. 10.1.1.2
- B. 10.154.154.1
- C. 172.16.5.1
- D. 192.168.5.3

**Answer: C**

**Explanation:** The highest IP address of all loopback interfaces will be chosen -> Loopback 0 will be chosen as the router ID.

**NEW QUESTION 191**

Which three approaches can be used while migrating from an IPv4 addressing scheme to an IPv6 scheme? (Choose three)

- A. static mapping of IPv4 address to IPv6 addresses
- B. configuring IPv4 tunnels between IPv6 islands
- C. use DHCPv6 to map IPv4 addresses to IPv6 addresses
- D. use proxying and translation (NAT-PT) to translate IPv6 packets into IPv4 packets
- E. configure IPv6 directly
- F. enable dual-stack routing

**Answer: BDF**

**Explanation:** Connecting IPv6 islands with tunnels  
 An IPv6 island is a network made of IPv6 links directly connected by IPv6 routers. In the early days of IPv6 deployment, there are many IPv6 islands. IPv6 in IPv4 tunnels are used to connect those islands together. In each island, one (or more) dual stack routers are designated to encapsulate and decapsulate IPv6 packets within IPv4 packets. Different mechanisms have been developed to manage tunnels: automatic tunnels, configured tunnels, tunnel brokers, 6over4, 6to4, ...  
 Reference 2:  
<http://www.petri.co.il/ipv6-transition.htm>  
 Network Address Translation - Protocol Translation (NAT-PT)  
 The NAT-PT method enables the ability to either statically or dynamically configure a translation of a IPv4 network address into an IPv6 network address and vice versa. For those familiar with more typically NAT implementations, the operation is very similar but includes a protocol translation function. NAT-PT also ties in an Application Layer Gateway (ALG) functionality that converts Domain Name System (DNS) mappings between protocols.

#### Dual Stack

The simplest approach when transitioning to IPv6 is to run IPv6 on all of the devices that are currently running IPv4. If this is something that is possible within the organizational network, it is very easy to implement.

However, for many organizations, IPv6 is not supported on all of the IPv4 devices; in these situations other methods must be considered.

Reference: <http://www.opus1.com/ipv6/howdoitransitiontoipv6.html>

#### NEW QUESTION 195

Which two of these statements are true of IPv6 address representation? (Choose two.)

- A. There are four types of IPv6 addresses: unicast, multicast, anycast, and broadcast.
- B. A single interface may be assigned multiple IPv6 addresses of any type.
- C. Every IPv6 interface contains at least one loopback address.
- D. The first 64 bits represent the dynamically created interface ID.
- E. Leading zeros in an IPv6 16 bit hexadecimal field are mandatory.

**Answer:** BC

**Explanation:** A single interface may be assigned multiple addresses of any type (unicast, anycast, multicast).

Every IPv6-enabled interface must contain at least one loopback and one link-local address.

Optionally, every interface can have multiple unique local and global addresses. IPv6 host addresses can be assigned in multiple ways:

Static configuration Stateless autoconfiguration DHCPv6

When IPv6 is used over Ethernet networks, the Ethernet MAC address can be used to generate the 64-bit interface ID for the host. This is called the EUI-64 address.

Since MAC addresses use 48 bits, additional bits must be inserted to fill the 64 bits required.

Reference: [http://www.cisco.com/en/US/technologies/tk648/tk872/technologies\\_white\\_paper0900aecd8026003d.pdf](http://www.cisco.com/en/US/technologies/tk648/tk872/technologies_white_paper0900aecd8026003d.pdf)

#### NEW QUESTION 198

OSPF routing uses the concept of areas. What are the characteristics of OSPF areas? (Choose Three.)

- A. Each OSPF area requires a loopback interface to be configured.
- B. Areas may be assigned any number from 0 to 65535.
- C. Area 0 is called the backbone area.
- D. Hierarchical OSPF networks do not require multiple areas.
- E. Multiple OSPF areas must connect to area 0.
- F. Single area OSPF networks must be configured in area 1.

**Answer:** BCE

**Explanation:** Definition of OSPF areas: An OSPF network may be structured, or subdivided, into routing areas to simplify administration and optimize traffic and resource utilization. Areas are identified by 32-bit numbers, expressed either simply in decimal, or often in octet-based dot-decimal notation, familiar from IPv4 address notation.

See discussion following Cisco Learning discussion. <https://learningnetwork.cisco.com/message/90832>

#### NEW QUESTION 200

Which three statements are correct about RIP version 2? (Choose three)

- A. It uses broadcast for its routing updates.
- B. It supports authentication.
- C. It is a classless routing protocol.
- D. It has a lower default administrative distance than RIP version 1.
- E. It has the same maximum hop count as RIP version 1.
- F. It does not send the subnet mask any updates.

**Answer:** BCE

**Explanation:** A and E are correct according to the theory of RIP.

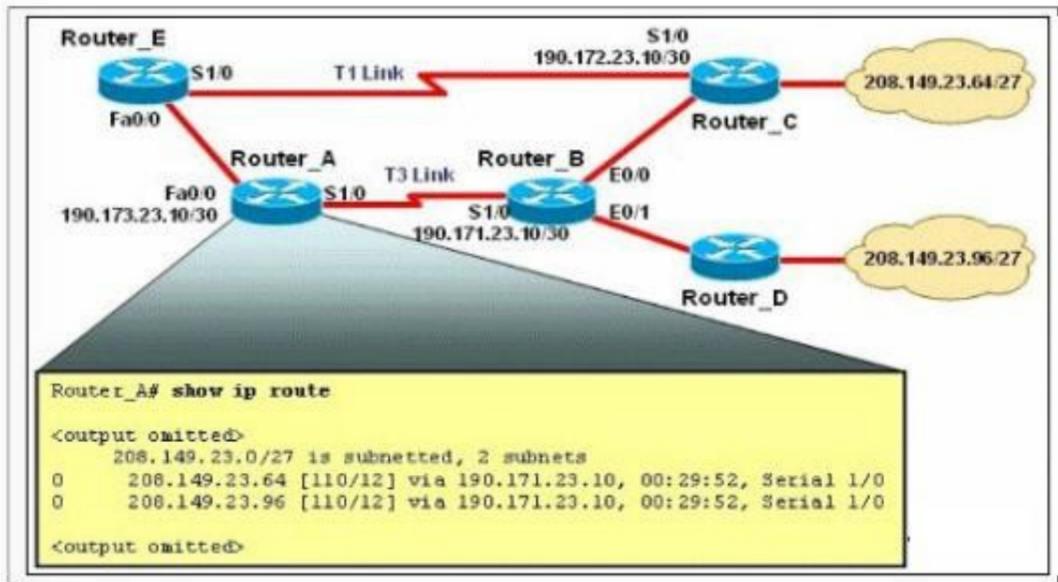
RIP version 1 updates are broadcasts, and RIP version 2 updates are multicast to 224.0.0.9 -> B is not correct.

RIP v1 is a classful routing protocol but RIP v2 is a classless routing protocol -> C is correct.

RIPv1 and RIPv2 have the same default administrative distance of 120 -> D is not correct. RIPv2 is a classless routing protocol so it does send the subnet mask in updates -> F is not correct.

#### NEW QUESTION 203

Refer to the exhibit.



The network is converged. After link-state advertisements are received from Router\_A, what information will Router\_E contain in its routing table for the subnets 208.149.23.64 and 208.149.23.96?

- A. 208.149.23.64[110/13] via 190.173.23.10, 00:00:07, FastEthernet0/0 208.149.23.96[110/13] via 190.173.23.10, 00:00:16, FastEthernet0/0
- B. 208.149.23.64[110/1] via 190.172.23.10, 00:00:07, Serial1/0 208.149.23.96[110/3] via 190.173.23.10, 00:00:16, FastEthernet0/0
- C. 208.149.23.64[110/13] via 190.173.23.10, 00:00:07, Serial1/0 208.149.23.96[110/13] via 190.173.23.10, 00:00:16, Serial1/0
- D. 208.149.23.64[110/3] via 190.172.23.10, 00:00:07, Serial1/0 208.149.23.96[110/3] via 190.173.23.10, 00:00:16, Serial1/0

Answer: A

**Explanation:** Router\_E learns two subnets subnets 208.149.23.64 and 208.149.23.96 via Router\_A through FastEthernet interface. The interface cost is calculated with the formula 108 / Bandwidth. For FastEthernet it is 108 / 100 Mbps = 108 / 100,000,000 = 1. Therefore the cost is 12 (learned from Router\_A) + 1 = 13 for both subnets ->

The cost through T1 link is much higher than through T3 link (T1 cost = 108 / 1.544 Mbps = 64; T3 cost = 108 / 45 Mbps = 2) so surely OSPF will choose the path through T3 link -> Router\_E will choose the path from Router\_A through FastEthernet0/0, not Serial1/0.

In fact, we can quickly eliminate answers B, C and D because they contain at least one subnet learned from Serial1/0 -> they are surely incorrect.

**NEW QUESTION 204**

Which command enables IPv6 forwarding on a Cisco router?

- A. ipv6 host
- B. ipv6 unicast-routing
- C. ipv6 local
- D. ipv6 neighbor

Answer: B

**Explanation:** Enabling IPv6 on Cisco IOS Software Technology <http://www.ciscopress.com/articles/article.asp?p=31948&seqNum=4>

The first step of enabling IPv6 on a Cisco router is the activation of IPv6 traffic forwarding to forward unicast IPv6 packets between network interfaces. By default, IPv6 traffic forwarding is disabled on Cisco routers.

The ipv6 unicast-routing command is used to enable the forwarding of IPv6 packets between interfaces on the router. The syntax for this command is as follows: Router(config)#ipv6 unicast-routing The ipv6 unicast-routing command is enabled on a global basis.

**NEW QUESTION 208**

A router has learned three possible routes that could be used to reach a destination network. One route is from EIGRP and has a composite metric of 20514560. Another route is from OSPF with a metric of 782. The last is from RIPv2 and has a metric of 4. Which route or routes will the router install in the routing table?

- A. the OSPF route
- B. the EIGRP route
- C. the RIPv2 route
- D. all three routes
- E. the OSPF and RIPv2 routes

Answer: B

**Explanation:** When one route is advertised by more than one routing protocol, the router will choose to use the routing protocol which has lowest Administrative Distance. The Administrative

Distances of popular routing protocols are listed below:

Route Source	Administrative Distance
Directly Connected	0
Static	1
EIGRP	90
EIGRP Summary route	5
OSPF	110
RIP	120

**NEW QUESTION 209**

What is the subnet address of 172.16.159.159/22?

- A. 172.16.0.0
- B. 172.16.128.0
- C. 172.16.156.0
- D. 172.16.159.0
- E. 172.16.159.128
- F. 172.16.192.0

**Answer:** C

**Explanation:** Converting to binary format it comes to 11111111.11111111.1111100.00000000 or 255.255.252.0 Starting with 172.16.0.0 and having increment of 4 we get.

**NEW QUESTION 212**

The command ip route 192.168.100.160 255.255.255.224 192.168.10.2 was issued on a router. No routing protocols or other static routes are configured on the router. Which statement is true about this command?

- A. The interface with IP address 192.168.10.2 is on this router.
- B. The command sets a gateway of last resort for the router.
- C. Packets that are destined for host 192.168.100.160 will be sent to 192.168.10.2.
- D. The command creates a static route for all IP traffic with the source address 192.168.100.160.

**Answer:** C

**Explanation:** With 160 it's actually network address of /27 so any address within the range of .160-.191 network will be sent to 192.168.10.2

Topic 4, Infrastructure Services

**NEW QUESTION 214**

The network administrator is using a Windows PC application that is called putty.exe for remote communication to a switch for network troubleshooting. Which two protocols could be used during this communication? (Choose two.)

- A. SNMP
- B. HTTP
- C. Telnet
- D. RMON
- E. SSH

**Answer:** CE

**Explanation:** PuTTY is a free implementation of Telnet and SSH for Windows and Unix platforms, and is used to connect to Cisco and other networking devices using SSH or Telnet.

**NEW QUESTION 218**

DRAG DROP

Various protocols are listed on the left. On the right are applications for the use of those protocols. Drag the protocol on the left to an associated function for that protocol on the right. (Not all options are used.)

Various protocols are listed on the left. On the right are applications for the use of those protocols. Drag the protocol on the left to an associated function for that protocol on the right. (Not all options are used.)

ICMP	A PC sends packets to the default gateway IP address the first time since the PC turned on.
DHCP	The network administrator is checking basic IP connectivity from a workstation to a server.
RARP	The TCP/IP protocol stack must find an IP address for packets destined for a URL.
UDP	A network device will automatically assign IP addresses to workstations.
DNS	
ARP	

**Answer:**

**Explanation:**

Various protocols are listed on the left. On the right are applications for the use of those protocols. Drag the protocol on the left to an associated function for that protocol on the right. (Not all options are used.)

ICMP	ARP
DHCP	ICMP
RARP	DNS
UDP	DHCP
DNS	
ARP	

**NEW QUESTION 221**

What does the "Inside Global" address represent in the configuration of NAT?

- A. the summarized address for all of the internal subnetted addresses
- B. the MAC address of the router used by inside hosts to connect to the Internet
- C. a globally unique, private IP address assigned to a host on the inside network
- D. a registered address that represents an inside host to an outside network

**Answer:** D

**Explanation:** NAT: Local and Global Definitions [http://www.cisco.com/en/US/tech/tk648/tk361/technologies\\_tech\\_note09186a0080094837.shtml](http://www.cisco.com/en/US/tech/tk648/tk361/technologies_tech_note09186a0080094837.shtml)

Cisco defines these terms as:

Inside local address—The IP address assigned to a host on the inside network. This is the address configured as a parameter of the computer OS or received via dynamic address allocation protocols such as DHCP. The address is likely not a legitimate IP address assigned by the Network Information Center (NIC) or service provider.

Inside global address—A legitimate IP address assigned by the NIC or service provider that represents one or more inside local IP addresses to the outside world.

Outside local address—The IP address of an outside host as it appears to the inside network. Not necessarily a legitimate address, it is allocated from an address space routable on the inside.

Outside global address—The IP address assigned to a host on the outside network by the host owner.

The address is allocated from a globally routable address or network space.

These definitions still leave a lot to be interpreted. For this example, this document redefines these terms by first defining local address and global address. Keep in mind that the terms inside and outside are NAT definitions. Interfaces on a NAT router are defined as inside or outside with the NAT configuration commands, ip nat inside destination and ip nat outside source . Networks to which these interfaces connect can then be thought of as inside networks or outside networks, respectively.

Local address—A local address is any address that appears on the inside portion of the network.

Global address—A global address is any address that appears on the outside portion of the network.

**NEW QUESTION 223**

A network administrator cannot connect to a remote router by using SSH. Part of the show interfaces command is shown.

```
router#show interfaces
```

```
Serial0/1/0 is up, line protocol is down
```

At which OSI layer should the administrator begin troubleshooting?

- A. physical
- B. data link
- C. network
- D. transport

**Answer:** B

**Explanation:** <https://learningnetwork.cisco.com/thread/12389>

I think the indication here is "Serial 0 is up, line protocol is down". What causes this indication? Correct me if I am wrong. When you have this indication, a cable unplugged is

not a correct answer. If you check the output of your "show interface serial 0" command again, you should notice it as "Serial 0 is down, line protocol is down.

Under the "show ip int brief" you should see status = down and protocol = down as opposed to up, down. Because you disconnected the cable, layer 1 will go down, which is indicated by the serial 0 down status. The line protocol status is for layer 2. So, a cable unplugged is not a correct answer to "Serial 0 is up, line protocol is down". Up/down means that the physical layer is OK, but there is a problem with the data link link (line protocol).

**NEW QUESTION 225**

What is the best practice when assigning IP addresses in a small office of six hosts?

- A. Use a DHCP server that is located at the headquarters.
- B. Use a DHCP server that is located at the branch office.
- C. Assign the addresses by using the local CDP protocol.
- D. Assign the addresses statically on each node.

**Answer:** D

**Explanation:** Its best to use static addressing scheme where the number of systems is manageable rather than using a dynamic method such as DHCP as it is easy to operate and manage.

#### NEW QUESTION 228

The ip helper-address command does what?

- A. assigns an IP address to a host
- B. resolves an IP address from a DNS server
- C. relays a DHCP request across networks
- D. resolves an IP address overlapping issue

**Answer:** C

**Explanation:** <http://cisco.net.com/tcpip/dhcp/107-how-to-use-ip-helper-address-to-connect-remote-dhcp-server.html>

When the DHCP client sends the DHCP request packet, it doesn't have an IP address. So it uses the all-zeroes address, 0.0.0.0, as the IP source address. And it doesn't know how to reach the DHCP server, so it uses a general broadcast address, 255.255.255.255, for the destination.

So the router must replace the source address with its own IP address, for the interface that received the request. And it replaces the destination address with the address specified in the ip helper-address command. The client device's MAC address is included in the payload of the original DHCP request packet, so the router doesn't need to do anything to ensure that the server receives this information. The router then relays the DHCP request to the DHCP server.

#### NEW QUESTION 231

How many addresses will be available for dynamic NAT translation when a router is configured with the following commands?

```
Router(config)#ip nat pool TAME 209.165.201.23 209.165.201.30 netmask 255.255.255.224
```

```
Router(config)#ip nat inside source list 9 pool TAME
```

- A. 7
- B. 8
- C. 9
- D. 10
- E. 24
- F. 32

**Answer:** B

**Explanation:** 209.165.201.23 to 209.165.201.30 provides for 8 addresses.

#### NEW QUESTION 233

##### Instructions

For both the Router and the Switch the simulated console mode needs to start and remain in enabled mode.

RouterA and SwitchA have been configured to operate in a private network which will connect to the Internet. You have been asked to review the configuration prior to cabling and implementation.

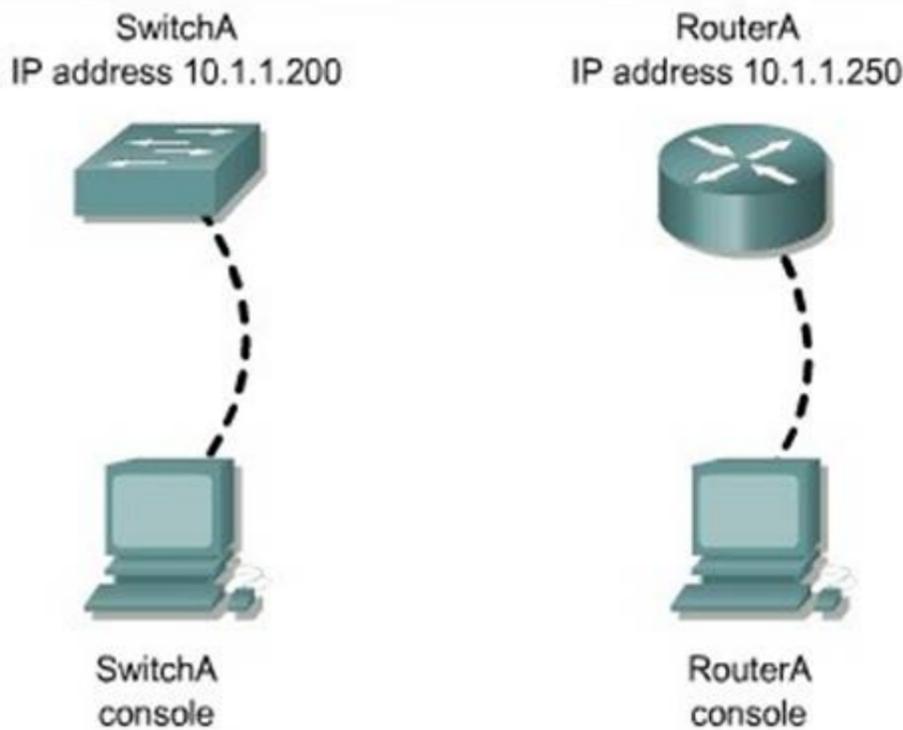
This task requires the use of various IOS commands to access and inspect the running configuration of RouterA and SwitchA. No configuration changes are necessary.

You will connect to RouterA and SwitchA via the console devices that are attached to each.

There are 4 multiple-choice questions with this task. Be sure to answer all of them before leaving this item. In order to score the maximum points you will need to have accessed both SwitchA and RouterA.

**NOTE:** The configuration command has been disabled for both the router and switch in this simulation.

Topology



Select two options which are security Issues which need to be modified before RouterA is used? (Choose two.)

- A. unencrypted weak password is configured to protect privilege mode
- B. inappropriate wording in banner message
- C. the virtual terminal lines have a weak password configured
- D. virtual terminal lines have a password, but it will not be used
- E. configuration supports un-secure web server access

Answer: BD

NEW QUESTION 236

Refer to the exhibit.

The diagram shows two routers, Rtr3 and Rtr1, connected via their serial interfaces s0/0 and s1/1 respectively. Below the diagram is the output of the 'show run' command for both routers.

```

Rtr3# show run
Building configuration...
<output omitted>
interface Serial0/0
ip address 172.16.5.2 255.255.255.252
no ip proxy-arp
encapsulation ppp
mtu 1496
<output omitted>
Rtr3#

Rtr1# show run
Building configuration
<output omitted>
interface Serial1/1
ip address 172.16.5.1 255.255.255.252
no ip proxy-arp
mtu 1496
<output omitted>
Rtr1#
    
```

A network administrator is troubleshooting a connectivity problem on the serial interfaces. The output from the show interfaces command on both routers shows that the serial interface is up, line protocol is down. Given the partial output for the show running-config in the exhibit, what is the most likely cause of this problem?

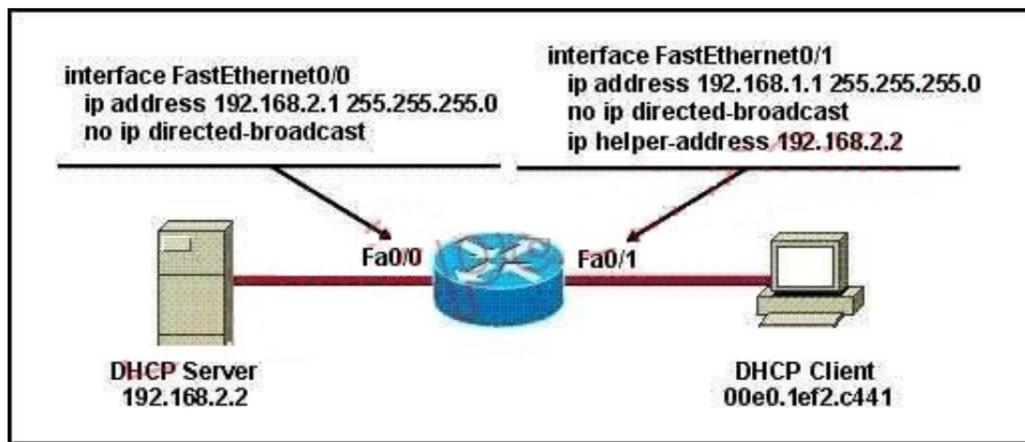
- A. The serial cable is bad.
- B. The MTU is incorrectly configured.
- C. The Layer 2 framing is misconfigured.
- D. The IP addresses are not in the same subnet.

Answer: C

**Explanation:** Here we see that Rtr3 is configured to use PPP encapsulation, but Rtr1 has not been configured for any kind of encapsulation. The default on Cisco router serial interfaces is HDLC, not PPP, so there is an encapsulation mismatch.

NEW QUESTION 238

Refer to the exhibit.



The DHCP settings have recently been changed on the DHCP server and the client is no longer able to reach network resources. What should be done to correct this situation?

- A. Verify that the DNS server address is correct in the DHCP pool.
- B. Ping the default gateway to populate the ARP cache.
- C. Use the tracert command on the DHCP client to first determine where the problem is located.
- D. Clear all DHCP leases on the router to prevent address conflicts.
- E. Issue the ipconfig command with the /release and /renew options in a command window.

**Answer:** E

**Explanation:** A PC will retain its DHCP assigned IP address until the lease time expires, which often times is 24 hours or more. When changes are made to the DHCP server, the client should issue the ipconfig/release and then ipconfig/renew commands to obtain a new IP address lease.

#### NEW QUESTION 240

##### Instructions

For both the Router and the Switch the simulated console mode needs to start and remain in enabled mode.

RouterA and SwitchA have been configured to operate in a private network which will connect to the Internet. You have been asked to review the configuration prior to cabling and implementation.

This task requires the use of various IOS commands to access and inspect the running configuration of RouterA and SwitchA. No configuration changes are necessary.

You will connect to RouterA and SwitchA via the console devices that are attached to each.

There are 4 multiple-choice questions with this task. Be sure to answer all of them before leaving this item. In order to score the maximum points you will need to have accessed both SwitchA and RouterA.

**NOTE:** The configuration command has been disabled for both the router and switch in this simulation.

Topology

SwitchA  
 IP address 10.1.1.200



SwitchA  
 console

RouterA  
 IP address 10.1.1.250



RouterA  
 console

Which two of the following are true regarding the configuration of RouterA? (Choose two.)

- A. At least 5 simultaneous remote connections are possible
- B. Only telnet protocol connections to RouterA are supported
- C. Remote connections to RouterA using telnet will succeed
- D. Console line connections will nevertime out due to inactivity
- E. Since DHCP is not used on Fa0/1 there is not a need to use the NAT protocol

Answer: AC

NEW QUESTION 242

Instructions \_ □

You can click on the grey buttons below to view the different windows.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

The "Tab" key and most commands that use the "Control" or "Escape" keys are not supported and are not necessary to complete this simulation.

---

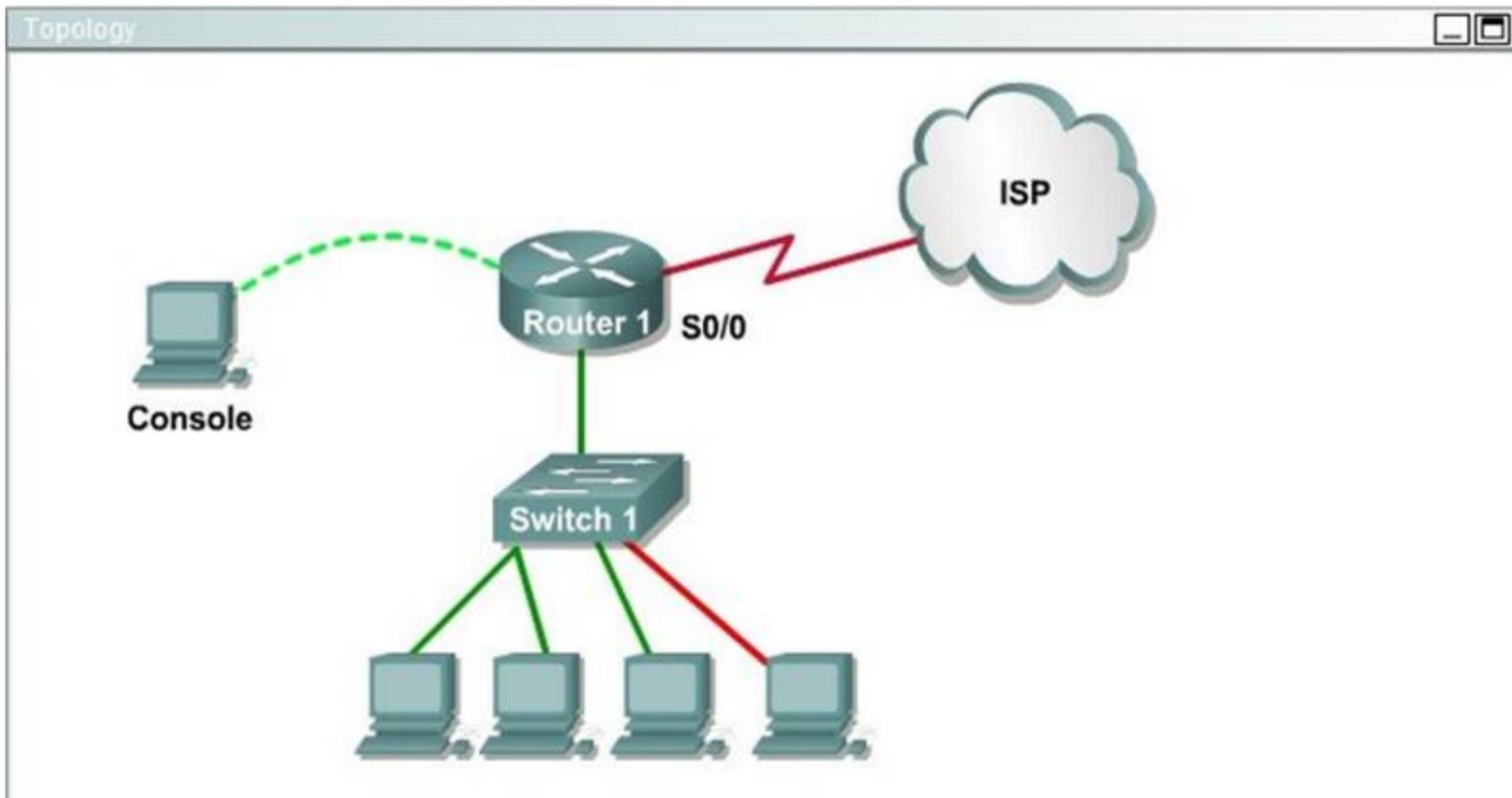
Scenario \_ □

This task requires the use of various **show** commands from the CLI of Router1 to answer four multiple-choice questions. This task does **not** require any configuration.

**NOTE:** The show running-configuration and the show startup-configuration commands have been disabled in this simulation.

To access the multiple-choice questions, click on the numbered boxes on the right of the top panel.

There are 4 multiple-choice questions with this task. Be sure to answer all 4 questions before leaving this item.



R1

```
Press RETURN to get started!  
Router1>
```

What is the subnet broadcast address of the LAN connected to Router1?

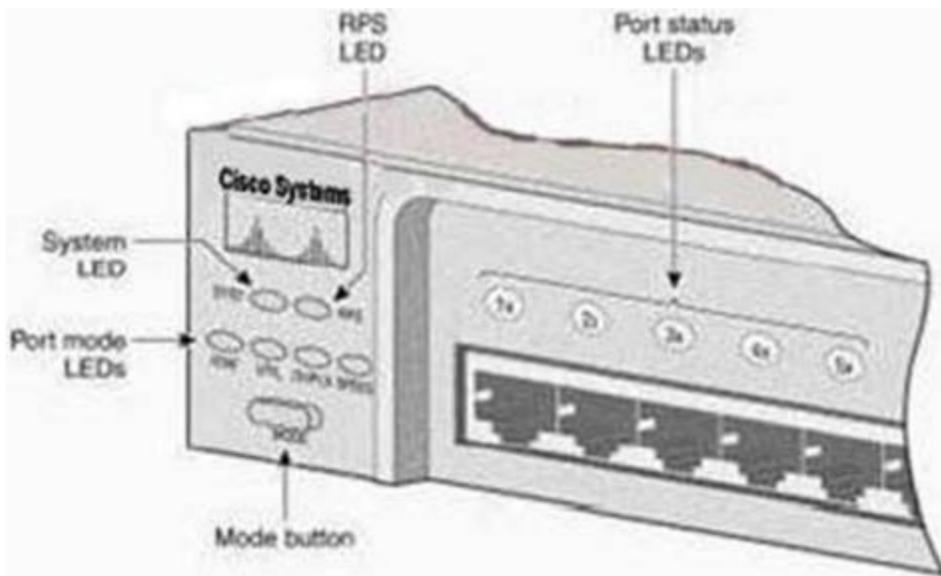
- A. 192.168.8.15
- B. 192.168.8.31
- C. 192.168.8.63
- D. 192.168.8.127

**Answer:** A

**Explanation:** The IP address assigned to FA0/1 is 192.168.8.9/29, making 192.168.8.15 the broadcast address.

**NEW QUESTION 246**

Refer to the exhibit.



After the power-on-self test (POST), the system LED of a Cisco 2950 switch turns amber. What is the status of the switch?

- A. The POST was successful.
- B. The switch has a problem with the internal power supply and needs an external power supply to be attached.
- C. POST failed and there is a problem that prevents the operating system from being loaded.
- D. The switch has experienced an internal problem but data can still be forwarded at a slower rate.
- E. The switch passed POST, but all the switch ports are busy.

**Answer: C**

**Explanation:** [http://www.cisco.com/en/US/products/hw/switches/ps607/products\\_tech\\_note09186a00801\\_25913.shtml](http://www.cisco.com/en/US/products/hw/switches/ps607/products_tech_note09186a00801_25913.shtml)

Each time you power up the switch, eight Power-On Self Tests (POSTs) run automatically. POSTs check the most important system components before the switch begins to forward packets. When the switch begins the POST, the port status LEDs display amber for two seconds, and then display green. As each test runs, the port status LEDs go out. 1x is the first to go out. The port status LEDs for ports 2x through 8x go out sequentially as the system completes a test. When the POST completes successfully, the port status LEDs go out. This indicates that the switch is operational. If a test fails, the port status LED associated with the test displays amber. The system LED also displays amber.  
 Not E: From Cisco IOS Software Release 11.2(8.5) SA6 onwards, the port and system LEDs both remain amber after a POST failure. In the earlier Cisco IOS Software Releases, only the LEDs of failed linked ports remained amber.

**NEW QUESTION 251**

Refer to the exhibit.

```

Finance# show interfaces fastEthernet 0/2
FastEthernet0/2 is down, line protocol is down (notconnect)
Hardware is Fast Ethernet, address is 0017.596d.2a02
Description: To Central Fa0/0
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 100Mb/s
input flow-control is off, output flow-control is unsupported
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:03, output 00:00:00, output hang never
Last clearing of "show interface" counters never
<output omitted>
    
```

An administrator replaced the 10/100 Mb NIC in a desktop PC with a 1 Gb NIC and now the PC will not connect to the network. The administrator began troubleshooting on the switch. Using the switch output shown, what is the cause of the problem?

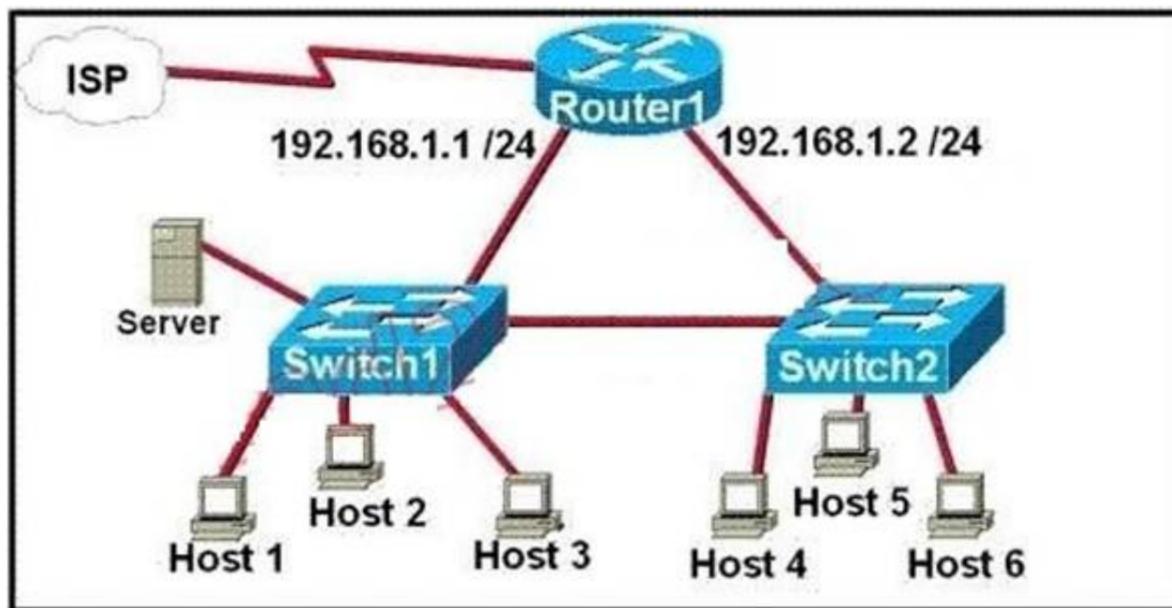
- A. Speed is set to 100Mb/s.
- B. Input flow control is off.
- C. Encapsulation is set to ARPA.
- D. The port is administratively down.
- E. The counters have never been cleared.

**Answer: A**

**Explanation:** For PC to switch connectivity, the speed settings must match. In this case, the 1 Gb NIC will not be able to communicate with a 100Mb fast Ethernet interface, unless the 1Gb NIC can be configured to connect at 100Mb.

**NEW QUESTION 255**

Refer to the exhibit.



A network technician is asked to design a small network with redundancy. The exhibit represents this design, with all hosts configured in the same VLAN. What conclusions can be made about this design?

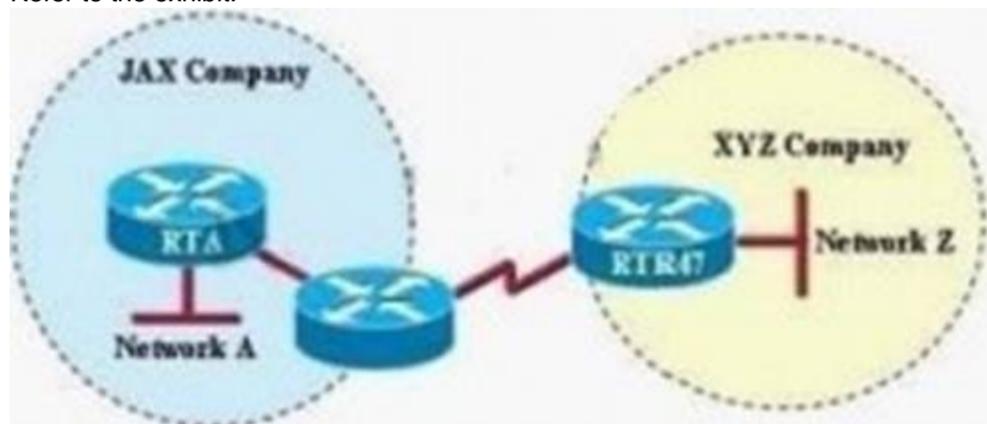
- A. This design will function as intended.
- B. Spanning-tree will need to be used.
- C. The router will not accept the addressing scheme.
- D. The connection between switches should be a trunk.
- E. The router interfaces must be encapsulated with the 802.1Q protocol.

**Answer:** C

**Explanation:** The proposed addressing scheme is on the same network. Cisco routers will not allow you to assign two different interfaces to be on the same IP subnet.

**NEW QUESTION 260**

Refer to the exhibit.



A person is trying to send a file from a host on Network A of the JAX Company to a server on Network Z of the XYZ Company. The file transfer fails. The host on Network A can communicate with other hosts on Network A.

Which command, issued from router RTA, would be the most useful for troubleshooting this problem?

- A. show flash:
- B. show history
- C. show version
- D. show interfaces
- E. show controllers serial

**Answer:** D

**Explanation:** The most useful thing to check on RTA would be the show interfaces command to see if the interface toward the WAN link is up. The most likely scenario is that the local LAN interface is up, but the other interface toward the XYZ company is down.

**NEW QUESTION 264**

Instructions

For both the Router and the Switch the simulated console mode needs to start and remain in enabled mode.

RouterA and SwitchA have been configured to operate in a private network which will connect to the Internet. You have been asked to review the configuration prior to cabling and implementation.

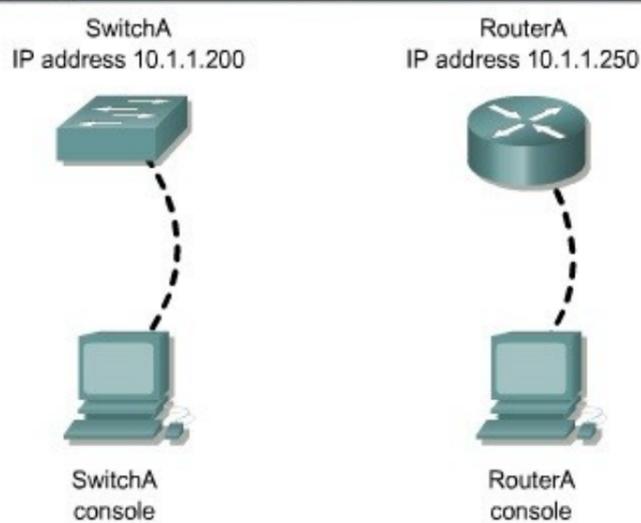
This task requires the use of various IOS commands to access and inspect the running configuration of RouterA and SwitchA. No configuration changes are necessary.

You will connect to RouterA and SwitchA via the console devices that are attached to each.

There are 4 multiple-choice questions with this task. Be sure to answer all of them before leaving this item. In order to score the maximum points you will need to have accessed both SwitchA and RouterA.

NOTE: The configuration command has been disabled for both the router and switch in this simulation.

Topology



Select three options which are security issues with the current configuration of SwitchA. (Choose three.)

- A. Privilege mode is protected with an unencrypted password
- B. Inappropriate wording in banner message
- C. Virtual terminal lines are protected only by a password requirement
- D. Both the username and password are weak
- E. Telnet connections can be used to remotely manage the switch
- F. Cisco user will be granted privilege level 15 by default

Answer: ABD

NEW QUESTION 268

Refer to the exhibit.

```
HQ# configure terminal
HQ(config)# interface fastethernet 0/0
HQ(config-if)# ip address 192.168.1.17 255.255.255.0
HQ(config-if)# no shutdown
HQ(config-if)# interface serial 0/0
HQ(config-if)# ip address 192.168.1.65 255.255.255.240
HQ(config-if)# no shutdown
% 192.168.1.0 overlaps with FastEthernet0/0
```

After configuring two interfaces on the HQ router, the network administrator notices an error message. What must be done to fix this error?

- A. The serial interface must be configured first.
- B. The serial interface must use the address 192.168.1.2
- C. The subnet mask of the serial interface should be changed to 255.255.255.0
- D. The subnet mask of the FastEthernet interface should be changed to 255.255.255.240
- E. The address of the FastEthernet interface should be changed to 192.168.1.66

Answer: D

**Explanation:** The IP address 192.168.1.17 255.255.255.0 specifies that the address is part of the 192.168.1.0/24 subnet  
 24 mask bits = 255.255.255.0  
 28 mask bits = 255.255.255.240

192.168.1.0/24 subnet has a host range of 192.168.1.1 to 192.168.1.254 (0 being network and 255 being broadcast)  
 192.168.1.17/28 subnet has a host range of 192.168.1.17 to 192.168.1.30 (16 being network and 31 being broadcast)  
 192.168.1.65/28 subnet has a host range of 192.168.1.65 - 192.168.1.78 (64 being network and 79 being broadcast)  
 if fa0/0 was left as /24, you can see that the host range includes the host range of 192.168.1.64/28 which conflicts. Simply speaking, you can't overlap the subnets.  
 By changing the subnet mask of fa0/0 to 255.255.255.240, these networks would no longer overlap.

**NEW QUESTION 270**

An administrator has connected devices to a switch and, for security reasons, wants the dynamically learned MAC addresses from the address table added to the running configuration.  
 What must be done to accomplish this?

- A. Enable port security and use the keyword sticky.
- B. Set the switchport mode to trunk and save the running configuration.
- C. Use the switchport protected command to have the MAC addresses added to the configuration.
- D. Use the no switchport port-security command to allow MAC addresses to be added to the configuration.

**Answer:** A

**Explanation:** [http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/configuration/guide/port\\_sec.pdf](http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/configuration/guide/port_sec.pdf)

One can configure MAC addresses to be sticky. These can be dynamically learned or manually configured, stored in the address table, and added to the running configuration. If these addresses are saved in the configuration file, the interface does not need to dynamically relearn them when the switch restarts, hence enabling security as desired.

**NEW QUESTION 274**

The following commands are entered on the router:  
 Burbank(config)# enable secret fortress Burbank(config)# line con 0 Burbank(config-line)# login  
 Burbank(config-line)# password n0way1n Burbank(config-line)# exit  
 Burbank(config)# service password-encryption  
 What is the purpose of the last command entered?

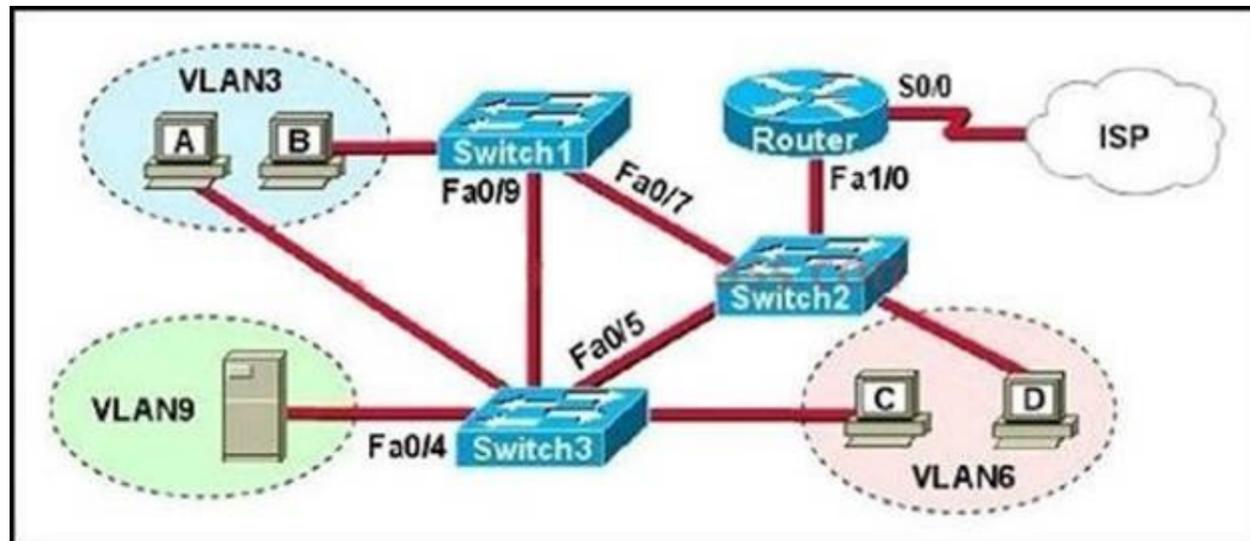
- A. to require the user to enter an encrypted password during the login process
- B. to prevent the vty, console, and enable passwords from being displayed in plain text in the configuration files
- C. to encrypt the enable secret password
- D. to provide login encryption services between hosts attached to the router

**Answer:** B

**Explanation:** Certain types of passwords, such as Line passwords, by default appear in clear text in the configuration file. You can use the service password-encryption command to make them more secure. Once this command is entered, each password configured is automatically encrypted and thus rendered illegible inside the configuration file (much as the Enable/Enable Secret passwords are). Securing Line passwords is doubly important in networks on which TFTP servers are used, because TFTP backup entails routinely moving config files across networks—and config files, of course, contain Line passwords.

**NEW QUESTION 276**

Refer to the exhibit.



A problem with network connectivity has been observed. It is suspected that the cable connected to switch port Fa0/9 on Switch1 is disconnected. What would be an effect of this cable being disconnected?

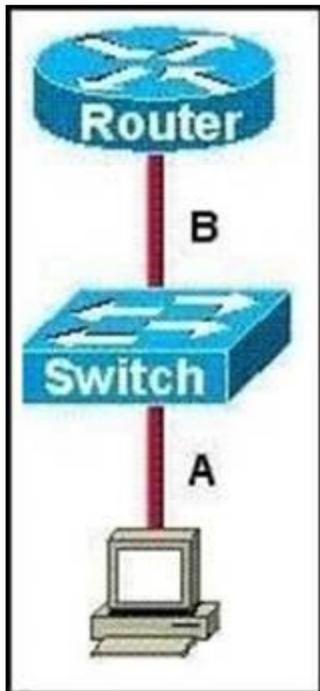
- A. Host B would not be able to access the server in VLAN9 until the cable is reconnected.
- B. Communication between VLAN3 and the other VLANs would be disabled.
- C. The transfer of files from Host B to the server in VLAN9 would be significantly slower.
- D. For less than a minute, Host B would not be able to access the server in VLAN9. Then normal network function would resume.

**Answer:** D

**Explanation:** Because Switch1 has multiple redundant links in this network, traffic would not work for less than a minute, and then it would get rerouted along the longer path to the host. The 1 minute outage would be the length of time it takes STP to converge.

**NEW QUESTION 278**

Refer to the exhibit.



The two connected ports on the switch are not turning orange or green. What would be the most effective steps to troubleshoot this physical layer problem? (Choose three.)

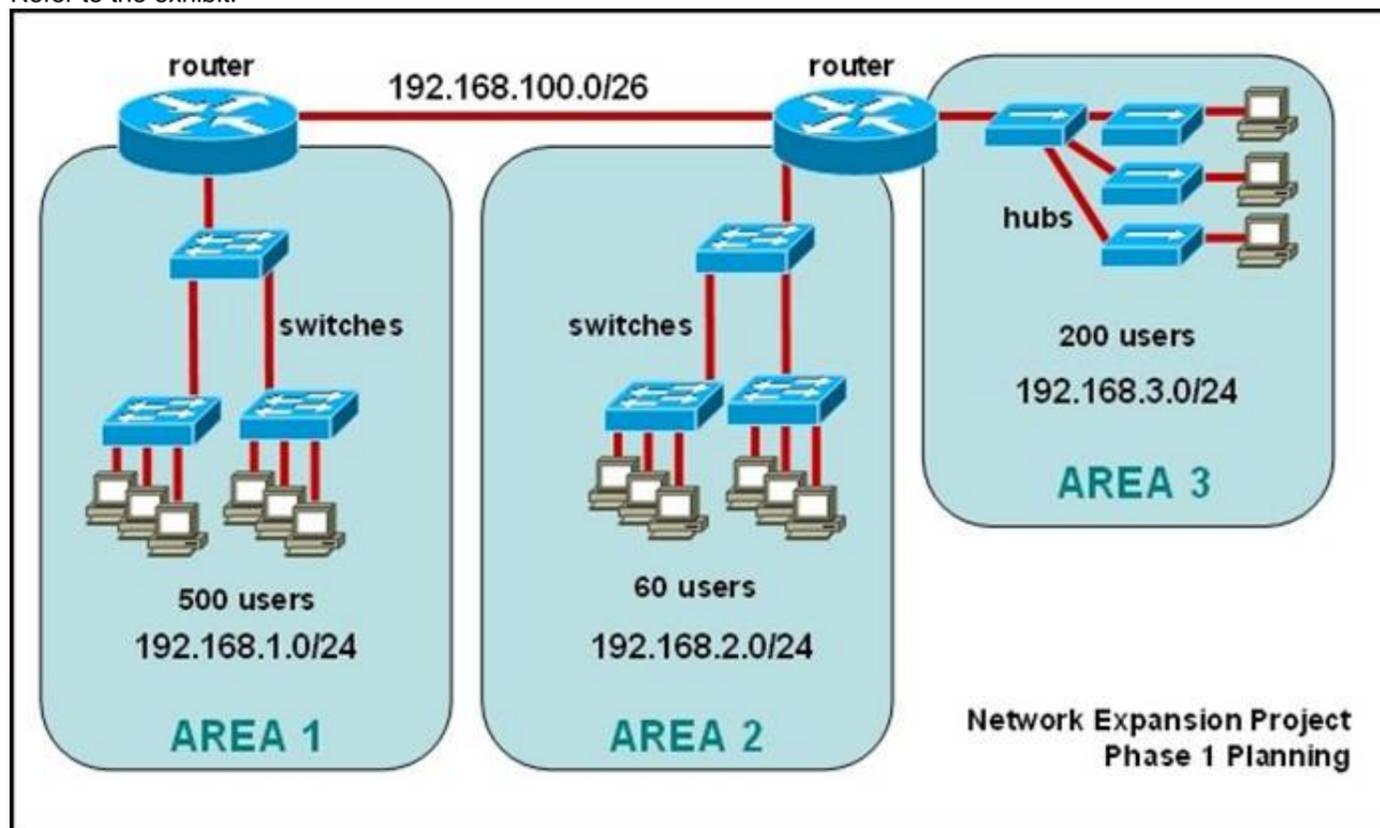
- A. Ensure that the Ethernet encapsulations match on the interconnected router and switch ports.
- B. Ensure that cables A and B are straight-through cables.
- C. Ensure cable A is plugged into a trunk port.
- D. Ensure the switch has power.
- E. Reboot all of the devices.
- F. Reseat all cables.

**Answer:** BDF

**Explanation:** The ports on the switch are not up indicating it is a layer 1 (physical) problem so we should check cable type, power and how they are plugged in.

**NEW QUESTION 281**

Refer to the exhibit.



The junior network support staff provided the diagram as a recommended configuration for the first phase of a four-phase network expansion project. The entire network expansion will have over 1000 users on 14 network segments and has been allocated this IP address space.

**Answer:**

**NEW QUESTION 282**

What is the purpose of the switchport command?

```
Switch(config-if)# switchport port-security maximum 1
Switch(config-if)# switchport port-security mac-address 0018.DE8B.4BF8
```

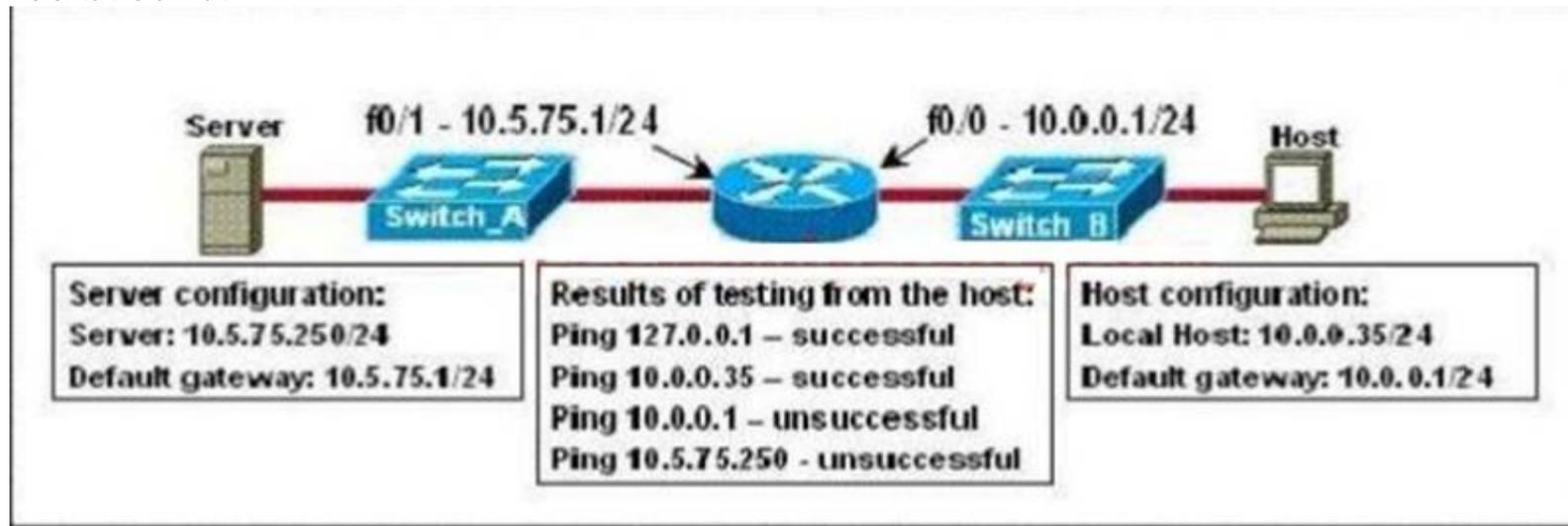
- A. It ensures that only the device with the MAC address 0018.DE8B.4BF8 will be able to connect to the port that is being configured.
- B. It informs the switch that traffic destined for MAC address 0018.DE8B.4BF8 should only be sent to the port that is being configured.
- C. It will act like an access list and the port will filter packets that have a source or destination MAC of 0018.DE8B.4BF8.
- D. The switch will shut down the port of any traffic with source MAC address of 0018.DE8B.4BF8.

Answer: A

**Explanation:** The first command configures the maximum number of secure MAC addresses on a port to one. The next command specifies that MAC addresses that are allowed with port security; in this case it is just the one single device MAC. If any other device connects on that port the port will be shut down by the port security feature.

**NEW QUESTION 284**

Refer to the exhibit.



A technician is troubleshooting a host connectivity problem. The host is unable to ping a server connected to Switch\_A. Based on the results of the testing, what could be the problem?

- A. A remote physical layer problem exists.
- B. The host NIC is not functioning.
- C. TCP/IP has not been correctly installed on the host.
- D. A local physical layer problem exists.

Answer: D

**Explanation:** Here we see that the host is able to ping its own loopback IP address of 127.0.0.1 and it's own IP address of 10.0.0.35, so we know that the NIC is functioning and that the host's TCP/IP stack is OK. However, it is not able to ping the IP address of its local default gateway, so we know that there is a local cabling problem between the switch and the router.

**NEW QUESTION 285**

**Instructions**

You can click on the grey buttons below to view the different windows.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

The "Tab" key and most commands that use the "Control" or "Escape" keys are not supported and are not necessary to complete this simulation.

---

**Scenario**

This task requires the use of various **show** commands from the CLI of Router1 to answer four multiple-choice questions. This task does **not** require any configuration.

**NOTE:** The show running-configuration and the show startup-configuration commands have been disabled in this simulation.

To access the multiple-choice questions, click on the numbered boxes on the right of the top panel.

There are 4 multiple-choice questions with this task. Be sure to answer all 4 questions before leaving this item.

Topology

R1

```
Press RETURN to get started!  
Router1>
```

What is the bandwidth on the WAN interface of Router 1?

- A. 16 Kbit/sec
- B. 32 Kbit/sec
- C. 64 Kbit/sec
- D. 128 Kbit/sec
- E. 512 Kbit/sec
- F. 1544 Kbit/sec

**Answer:** A

**Explanation:** Use the "show interface s0/0" to see the bandwidth set at 16 Kbit/sec.

The show interface s0/0 command results will look something like this and the bandwidth will be represented by the "BW" on the fourth line as seen below where BW equals 1544 Kbits/sec.

```
R2#show interface serial 0/0 Serial0/0 is up, line protocol is down Hardware is GT96K Serial  
Internet address is 10.1.1.5/30  
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 uses.
```

#### NEW QUESTION 289

A receiving host has failed to receive all of the segments that it should acknowledge. What can the host do to improve the reliability of this communication session?

- A. decrease the window size
- B. use a different source port for the session
- C. decrease the sequence number
- D. obtain a new IP address from the DHCP server
- E. start a new session using UDP

**Answer:**

A

**Explanation:** The Window bit in the header determines the number of segments that can be sent at a time. This is done to avoid overwhelming the destination. At the start of the session the window is small but it increases over time. The destination host can also decrease the window to slow down the flow. Hence the window is called the sliding window. When the source has sent the number of segments allowed by the window, it cannot send any further segments till an acknowledgement is received from the destination. On networks with high error rates or issues, decreasing the window size can result in more reliable transmission, as the receiver will need to acknowledge fewer segments. With a large window size, the sender will need to resend all the frames if a single one is not received by the receiver.

**NEW QUESTION 292**

If a host experiences intermittent issues that relate to congestion within a network while remaining connected, what could cause congestion on this LAN?

- A. half-duplex operation
- B. broadcast storms
- C. network segmentation
- D. multicasting

**Answer:** B

**Explanation:** A broadcast storm can consume sufficient network resources so as to render the network unable to transport normal traffic.

**NEW QUESTION 294**

Refer to the exhibit.

```
Router# configure terminal
Router(config)# hostname Router1
Router1(config)# enable secret sanfran
Router1(config)# enable password cisco
Router1(config)# line vty 0 4
Router1(config-line)# password sanjose
Router1(config-line)#
```

The network administrator made the entries that are shown and then saved the configuration. From a console connection, what password or password sequence is required for the administrator to access privileged mode on Router1?

- A. cisco
- B. sanfran
- C. sanjose
- D. either cisco or sanfran
- E. either cisco or sanjose
- F. sanjose and sanfran

**Answer:** B

**Explanation:** The enable secret password takes precedence over the enable password, so sanfran will be used.

**NEW QUESTION 299**

CORRECT TEXT

**Topology**

**Instructions**

To configure the router (Apopka) click on the console host icon that is connected to a router by a serial console cable (shown in the diagram as a dashed black line).

You can click on the buttons below to view the different windows.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

The "Tab" key and most commands that use the "Control" or "Escape" keys are not supported and are not necessary to complete this simulation. The **help** command does not display all commands of the help system.

**Scenario**

Central Florida Widgets recently installed a new router in their Apopka office. Complete the network installation by performing the initial router configurations and configuring RIP v2 routing using the router command line interface (CLI) on the Apopka router.

Configure the router per the following requirements:

- Name of the router is **Apopka**
- Enable-secret password is **ish555ana**
- The password to access user EXEC mode using the console is **New2Rtr**
- The password to allow telnet access to the router is **str090us**
- IPv4 addresses must be configured as follows:
  - Ethernet network **209.165.201.0 /27** - router has **second** assignable host address in subnet.
  - Serial network is **192.0.2.128 /28** - router has **last** assignable host address in the subnet.
- Interfaces should be enabled.
- Routing protocol is **RIPv2**.

**Answer:**

**Explanation:** Router>enable

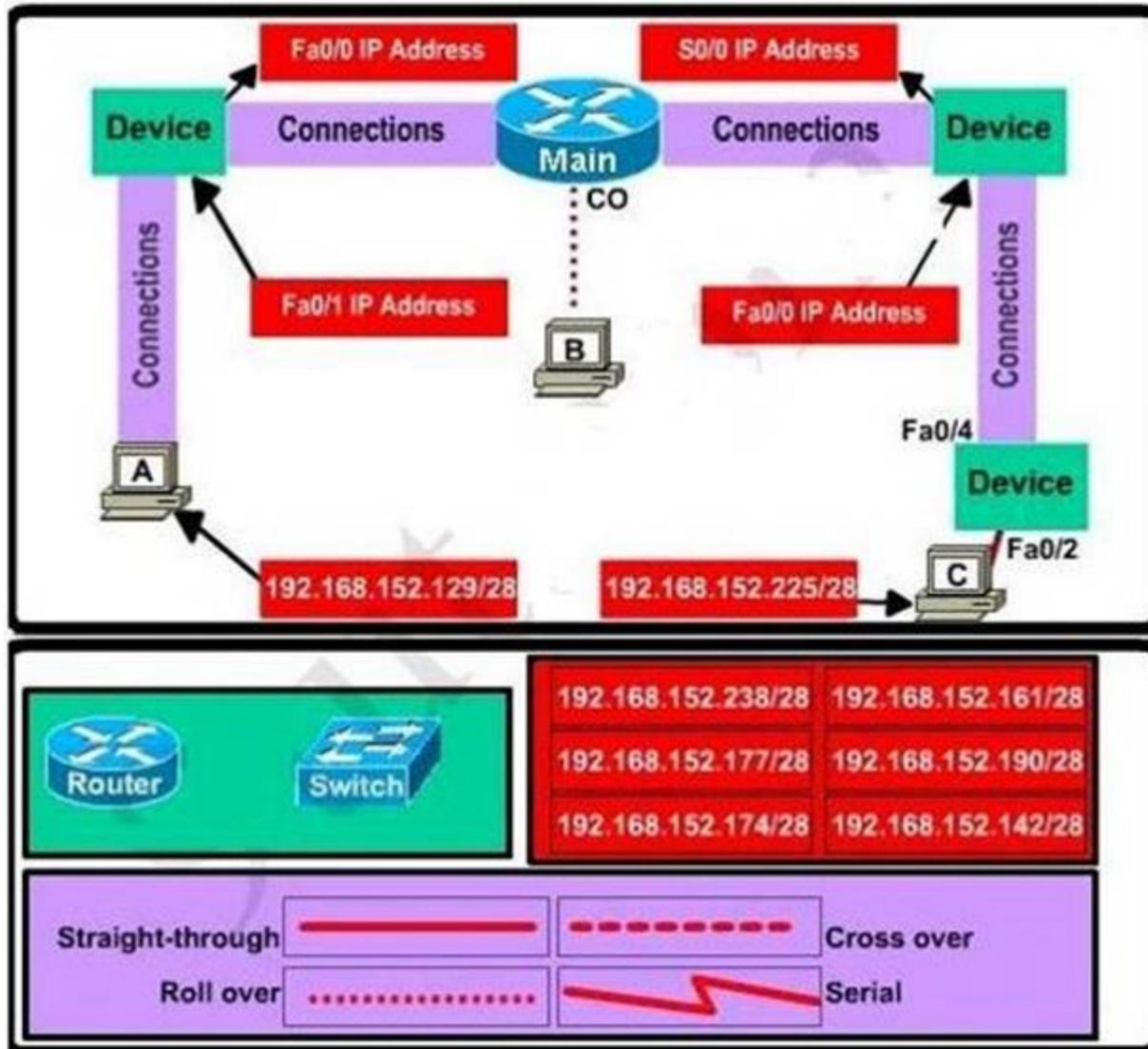
```
Router#config terminal
Router(config)#hostname Apopka
2) Enable-secret password (cisco10):
Apopka(config)#enable secret cisco10
3) Set the console password to RouterPass:
Apopka(config)#line console 0
Apopka(config-line)#password RouterPass
Apopka(config-line)#login
Apopka(config-line)#exit
4) Set the Telnet password to scan90:
Apopka(config)#line vty 0 4
Apopka(config-line)#password scan90
Apopka(config-line)#login
Apopka(config-line)#exit
5) Configure Ethernet interface (on the right) of router Apopka:
The subnet mask of the Ethernet network 209.165.201.0 is 27. From this subnet mask, we can find out the increment by converting it into binary form, that is /27 = 1111 1111.1111 1111.1111 1110 0000. Pay more attention to the last bit 1 because it tells us the increment, using the formula:
Increment = 2place of the last bit 1 (starts counting from 0, from right to left), in this case increment = 25 = 32. Therefore:
Increment: 32
Network address: 209.165.201.0
Broadcast address: 209.165.201.31 (because 209.165.201.32 is the second subnetwork, so the previous IP - 209.165.201.31 - is the broadcast address of the first subnet).
-> The second assignable host address of this subnetwork is 209.165.201.2/27 Assign the second assignable host address to Fa0/0 interface of Apopka router:
Apopka(config)#interface Fa0/0
Apopka(config-if)#ip address 209.165.201.2 255.255.255.224 Apopka(config-if)#no shutdown
Apopka(config-if)#exit
6) Configure Serial interface (on the left) of router Apopka:
Using the same method to find out the increment of the Serial network: Serial network 192.0.2.128/28:
Increment: 16 (/28 = 1111 1111.1111 1111.1111 1111 0000)
Network address: 192.0.2.128 (because 8 * 16 = 128 so 192.0.2.128 is also the network address of this subnet)
Broadcast address: 192.0.2.143
-> The last assignable host address in this subnet is 192.0.2.142/28.
Assign the last assignable host address to S0/0/0 interface of Apopka router: Apopka(config)#interface S0/0/0 (or use interface S0/0 if not successful)
Apopka(config-if)#ip address 192.0.2.142 255.255.255.240
Apopka(config-if)#no shutdown Apopka(config-if)#exit
7) Configure RIP v2 routing protocol: Apopka(config)#router rip Apopka(config-router)#version 2
Apopka(config-router)#network 209.165.201.0
Apopka(config-router)#network 192.0.2.128 Apopka(config-router)#end
Save the configuration:
Apopka#copy running-config startup-config
Finally, you should use the ping command to verify all are working properly!
```

**NEW QUESTION 303**

**CORRECT TEXT**

This topology contains 3 routers and 1 switch. Complete the topology.  
 Drag the appropriate device icons to the labeled Device  
 Drag the appropriate connections to the locations labeled Connections. Drag the appropriate IP addresses to the locations labeled IP address (Hint: use the given host addresses and Main router information) To remove a device or connection, drag it away from the topology.  
 Use information gathered from the Main router to complete the configuration of any additional routers.

No passwords are required to access the Main router. The config terminal command has been disabled for the HQ router. The router does not require any configuration.



Configure each additional router with the following:  
 Configure the interfaces with the correct IP address and enable the interfaces. Set the password to allow console access to consolepw  
 Set the password to allow telnet access to telnetpw  
 Set the password to allow privilege mode access to privpw  
 Not E: Because routes are not being added to the configurations, you will not be able to ping through the internetwork.  
 All devices have cable autosensing capabilities disabled. All hosts are PC's

**Answer:**

**Explanation:** Specify appropriate devices and drag them on the "Device" boxes  
 For the device at the bottom-right box, we notice that it has 2 interfaces Fa0/2 and Fa0/4; moreover the link connects the PC on the right with the device on the bottom-right is a straight-through link -> it is a switch  
 The question stated that this topology contains 3 routers and 1 switch -> two other devices are routers  
 Place them on appropriate locations as following:  
 (Host D and host E will be automatically added after placing two routers. Click on them to access neighboring routers)  
 Specify appropriate connections between these devices:  
 + The router on the left is connected with the Main router through FastEthernet interfaces: use a crossover cable  
 + The router on the right is connected with the Main router through Serial interfaces: use a serial cable  
 + The router on the right and the Switch: use a straight-through cable  
 + The router on the left and the computer: use a crossover cable  
 (To remember which type of cable you should use, follow these tips:  
 - To connect two serial interfaces of 2 routers we use serial cable  
 - To specify when we use crossover cable or straight-through cable, we should remember:  
 Group 1: Router, Host, Server  
 Group 2: Hub, Switch  
 One device in group 1 + One device in group 2: use straight-through cable  
 Two devices in the same group: use crossover cable  
 For example, we use straight-through cable to connect switch to router, switch to host, hub to host, hub to server... and we use crossover cable to connect switch to switch, switch to hub, router to router, host to host.)  
 Assign appropriate IP addresses for interfaces:  
 From Main router, use show running-config command.  
 (Notice that you may see different IP addresses in the real CCNA exam, the ones shown above are just used for demonstration)  
 From the output we learned that the ip address of Fa0/0 interface of the Main router is 192.168.152.177/28. This address belongs to a subnetwork which has:  
 Increment: 16 (/28 = 255.255.255.240 or 1111 1111.1111 1111.1111 1111.1111 0000)  
 Network address: 192.168.152.176 (because 176 = 16 \* 11 and 176 < 177)  
 Broadcast address: 192.168.152.191 (because 191 = 176 + 16 - 1)  
 And we can pick up an ip address from the list that belongs to this subnetwork:  
 192.168.152.190 and assign it to the Fa0/0 interface the router on the left  
 Use the same method for interface Serial0/0 with an ip address of 192.168.152.161 Increment: 16  
 Network address: 192.168.152.160 (because 160 = 16 \* 10 and 160 < 161)  
 Broadcast address: 192.168.152.175 (because 176 = 160 + 16 - 1)  
 -> and we choose 192.168.152.174 for Serial0/0 interface of the router on the right Interface Fa0/1 of the router on the left  
 IP (of the computer on the left) : 192.168.152.129/28 Increment: 16  
 Network address: 192.168.152.128 (because 128 = 16 \* 8 and 128 < 129)  
 Broadcast address: 192.168.152.143 (because 143 = 128 + 16 - 1)

-> we choose 192.168.152.142 from the list Interface Fa0/0 of the router on the right  
 IP (of the computer on the left) : 192.168.152.225/28 Increment: 16  
 Network address: 192.168.152.224 (because  $224 = 16 * 14$  and  $224 < 225$ )  
 Broadcast address: 192.168.152.239 (because  $239 = 224 + 16 - 1$ )  
 -> we choose 192.168.152.238 from the list  
 Let's have a look at the picture below to summarize  
 Configure two routers on the left and right with these commands: Router1 = router on the left  
 Assign appropriate IP addresses to Fa0/0 & Fa0/1 interfaces: Router1>enable  
 Router1#configure terminal Router1(config)#interface fa0/0  
 Router1(config-if)#ip address 192.168.152.190 255.255.255.240 Router1(config-if)#no shutdown  
 Router1(config-if)#interface fa0/1  
 Router1(config-if)#ip address 192.168.152.142 255.255.255.240 Router1(config-if)#no shutdown  
 Set passwords (configure on two routers)  
 + Console password: Router1(config-if)#exit Router1(config)#line console 0  
 Router1(config-line)#password consolepw Router1(config-line)#login  
 Router1(config-line)#exit  
 + Telnet password: Router1(config)#line vty 0 4 Router1(config-line)#password telnetpw Router1(config-line)#login Router1(config-line)#exit  
 + Privilege mode password: Router1(config)#enable password privpw Save the configuration: Router1(config)#exit  
 Router1#copy running-config startup-config  
 Configure IP addresses of Router2 (router on the right) Router2>enable  
 Router2#configure terminal Router2(config)#interface fa0/0  
 Router2(config-if)#ip address 192.168.152.238 255.255.255.240 Router2(config-if)#no shutdown  
 Router2(config-if)#interface serial0/0  
 Router2(config-if)#ip address 192.168.152.174 255.255.255.240 Router2(config-if)#no shutdown  
 Then set the console, telnet and privilege mode passwords for Router2 as we did for Router1, remember to save the configuration when you finished.

Topic 7, Mix Questions A

### NEW QUESTION 305

Configuration of which option is required on a Cisco switch for the Cisco IP phone to work?

- A. PortFast on the interface
- B. the interface as an access port to allow the voice VLAN ID
- C. a voice VLAN ID in interface and global configuration mode
- D. Cisco Discovery Protocol in global configuration mode

**Answer: B**

**Explanation:** When you connect an IP phone to a switch using a trunk link, it can cause high CPU utilization in the switches. As all the VLANs for a particular interface are trunked to the phone, it increases the number of STP instances the switch has to manage. This increases the CPU utilization. Trunking also causes unnecessary broadcast / multicast / unknown unicast traffic to hit the phone link.

In order to avoid this, remove the trunk configuration and keep the voice and access VLAN configured along with Quality of Service (QoS). Technically, it is still a trunk, but it is called a Multi-VLAN Access Port (MVAP). Because voice and data traffic can travel through the same port, you should specify a different VLAN for each type of traffic. You can configure a switch port to forward voice and data traffic on different VLANs. Configure IP phone ports with a voice VLAN configuration. This configuration creates a pseudo trunk, but does not require you to manually prune the unnecessary VLANs.

The voice VLAN feature enables access ports to carry IP voice traffic from an IP phone. You can configure a voice VLAN with the "switchport voice vlan ..." command under interface mode. The full configuration is shown below:

```
Switch(config)#interface fastethernet0/1 Switch(config-if)#switchport mode access Switch(config-if)#switchport access vlan 10 Switch(config-if)#switchport voice vlan 20 Reference:
```

<http://www.cisco.com/c/en/us/support/docs/switches/catalyst-4500-series-switches/69632-configuring-cat-ip-ph>

Configure the Switch Port to Carry Both Voice and Data Traffic

When you connect an IP phone to a switch using a trunk link, it can cause high CPU utilization in the switches. As all the VLANs for a particular interface are trunked to the phone, it increases the number of STP instances the switch has to manage. This increases the CPU utilization. Trunking also causes unnecessary broadcast / multicast / unknown unicast traffic to hit the phone link.

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The voice VLAN feature enables access ports to carry IP voice traffic from an IP phone. The voice VLAN feature is disabled by default. The Port Fast feature is automatically enabled when voice VLAN is configured. When you disable voice VLAN, the Port Fast feature is not automatically disabled.

### NEW QUESTION 306

Which statement about a router on a stick is true?

- A. Its data plane router traffic for a single VLAN over two or more switches.
- B. It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs on the same subnet.
- C. It requires the native VLAN to be disabled.
- D. It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs.

**Answer: D**

**Explanation:** <https://www.freecnaworkbook.com/workbooks/ccna/configuring-inter-vlan-routing-router-on-a-stick>

### NEW QUESTION 307

When a router makes a routing decision for a packet that is received from one network and destined to another, which portion of the packet does it replace?

- A. Layer 2 frame header and trailer
- B. Layer 3 IP address

- C. Layer 5 session
- D. Layer 4 protocol

**Answer:** A

**Explanation:** Router Switching Function (1.2.1.1)

A primary function of a router is to forward packets toward their destination. This is accomplished by using a switching function, which is the process used by a router to accept a packet on one interface and forward it out of another interface. A key responsibility of the switching function is to encapsulate packets in the appropriate data link frame type for the outgoing data link.

**NOTE**

In this context, the term “switching” literally means moving packets from source to destination and should not be confused with the function of a Layer 2 switch. After the router has determined the exit interface using the path determination function, the router must encapsulate the packet into the data link frame of the outgoing interface.

What does a router do with a packet received from one network and destined for another network? The router performs the following three major steps:

Step 1. De-encapsulates the Layer 3 packet by removing the Layer 2 frame header and trailer.

Step 2. Examines the destination IP address of the IP packet to find the best path in the routing table.

Step 3. If the router finds a path to the destination, it encapsulates the Layer 3 packet into a new Layer 2 frame and forwards the frame out the exit interface.

#### NEW QUESTION 311

Which statement about the inside interface configuration in a NAT deployment is true?

- A. It is defined globally
- B. It identifies the location of source addresses for outgoing packets to be translated using access or route maps.
- C. It must be configured if static NAT is used
- D. It identifies the public IP address that traffic will use to reach the internet.

**Answer:** B

**Explanation:** This module describes how to configure Network Address Translation (NAT) for IP address conservation and how to configure inside and outside source addresses. This module also provides information about the benefits of configuring NAT for IP address conservation.

NAT enables private IP internetworks that use nonregistered IP addresses to connect to the Internet. NAT operates on a device, usually connecting two networks, and translates the private (not globally unique) addresses in the internal network into legal addresses before packets are forwarded onto another network. NAT can be configured to advertise to the outside world only one address for the entire network. This ability provides additional security by effectively hiding the entire internal network behind that one address.

NAT is also used at the enterprise edge to allow internal users access to the Internet and to allow Internet access to internal devices such as mail servers.

#### NEW QUESTION 316

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