# Pass4Sure 640-802 v7.58

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Exam Code: 640-802, Name: Cisco Certified Network Associate

**Details**

Exam Information
- All Volumes
- Total questions: 458
- Current Version: 7.58

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- Volume Exam Description and Topics
- Volume Topic 1 - Describe how a network works
- Volume Topic 2 - VLANs and Interswitch
- Volume Topic 3 - IP addressing scheme and IP Services
- Volume Topic 4 - Basic router operation and Routing
- Volume Topic 5 - Cisco's Wireless Technologies(WLAN☐
- Volume Topic 6 - Identify Network Security
- Volume Topic 7 - NAT and ACLs
- Volume Topic 8 - Wide Area Networks (WAN)
- Volume Topic 9 – Pass4sure Network Case
- Automatic Volume
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Exam Description and Topics

Exam Description

The 640-802 Cisco Certified Network Associate (CCNA) is the composite exam associated with the Cisco Certified Network Associate certification. Candidates can prepare for this exam by taking the Interconnecting Cisco Networking Devices Part 1 (ICND1) v1.0 and the Interconnecting Cisco Networking Devices Part 2 (ICND2) v1.0 courses. This exam tests a candidate's knowledge and skills required to install, operate, and troubleshoot a small to medium size enterprise branch network. The topics include connecting to a WAN; implementing network security; network types; network media; routing and switching fundamentals; the TCP/IP and OSI models; IP addressing; WAN technologies; operating and configuring IOS devices; extending switched networks with VLANs; determining IP routes; managing IP traffic with access lists; establishing point-to-point connections; and establishing Frame Relay connections.

Exam Topics

The following topics are general guidelines for the content likely to be included on the Cisco Certified Network Associate exam. However, other related topics may also appear on any specific delivery of the exam. In order to better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

Topic 1 - Describe how a network works (56 Questions)
Describe the purpose and functions of various network devices
Select the components required to meet a network specification
Use the OSI and TCP/IP models and their associated protocols to explain how data flows in a network
Describe common networked applications including web applications
Describe the purpose and basic operation of the protocols in the OSI and TCP models
Describe the impact of applications (Voice Over IP and Video Over IP) on a network
Interpret network diagrams
Determine the path between two hosts across a network
Describe the components required for network and Internet communications
Identify and correct common network problems at layers 1, 2, 3 and 7 using a layered model approach
Differentiate between LAN/WAN operation and features

Topic 2 - Configure, verify and troubleshoot a switch with VLANs and interswitch communications (120 Questions)
Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts
Explain the technology and media access control method for Ethernet networks

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Topic 1 - Describe how a network works (56 Questions)

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Mark for Review

As the network administrator of Pass4sure.com, you have been assigned the task of designing a new Pass4sure internetwork. So you need to consider selecting suitable network device, Which statement is true regarding the use of switches and hubs for network connectivity?

A. Hubs can filter frames.

B. Using hubs can increase the amount of bandwidth available to hosts.

C. Switches take less time to process frames than hubs take.

D. Switches do not forward broadcasts.

E. Switches increase the number of collision domains in the network.

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## Answer & Explanation

### Correct Answer

E

### Explanations

A hub is a broadcast domain and a collision domain, while a switch is a broadcast domain, each interface is a collision domain. The switch is a device of data link layer, forwards and floods data frames based on the MAC address. The hub adopts the shared bandwidth working mode, while the switch adopts dedicated bandwidth.

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Which of the following are true regarding bridges and switches? (Choose two.)

- [ ] A. Bridges are faster than switches because they have fewer ports.
- [ ] B. A switch is a multiport bridge.
- [ ] C. Bridges and switches learn MAC addresses by examining the source MAC address of each frame received.
- [ ] D. A bridge will forward a broadcast but a switch will not.

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- D. A bridge will forward a broadcast but a switch will not.

## Answer & Explanation

### Correct Answer

B C

### Explanations

Bridge is a Layer2 device, which is designed to create two or more LAN segments. Each segment is an independent collision domain. Bridge is also created to provide more available bandwidth, Its purpose is to filter the LAN traffic, making local traffic be in the local area, and those directed to other parts of the LAN (sub) be forwarded there. Each NIC on each device has a unique MAC address. Bridge will record the MAC address of each port and then make forwarding decisions based on this MAC address table.
Switch is a device of the data link layer, it combines multiple physical LAN segments into a large network.. Similar to bridge, the switch will transfer and flood the communication frames based on the MAC address. Because the switching process is performed in hardware, the switching speed of the switch is faster than that of a bridge performed by software. Regarding each switching port as a mini-bridge, then each switching port will work as an independent bridge to provide full medium's bandwidth to each host.
The number of ports of bridges and switches are the same as that of collision domains. All ports are in the same broadcast domain.

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Both bridges and switches are being used throughout the Pass4sure LAN. Which of the following statements are true regarding bridges and switches in this network? (Choose three)

- A. Switches are primarily software based while bridges are hardware based.
- B. Both bridges and switches forward Layer 2 broadcasts.
- C. Bridges define broadcast domains while switches define collision domains.
- D. Switches have a higher number of ports than most bridges.
- E. Bridges are frequently faster than switches.
- F. Both bridges and switches make forwarding decisions based on Layer 2 addresses.

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## Answer & Explanation

### Correct Answer

B D F

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As a network administrator, you will need to decide on the appropriate network devices to use. Which of the following correctly describes the roles of devices in a WAN? (Choose three)

- A. A CSU/DSU terminates a digital local loop.
- B. A CSU/DSU terminates an analog local loop.
- C. A modem terminates a digital local loop.
- D. A modem terminates an analog local loop.
- E. A router is commonly considered a DTE device.

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- E. A router is commonly considered a DTE device.

## Answer & Explanation

### Correct Answer

A D E

### Explanations

A CSU/DSU (Channel Service Unit/Data Service Unit) is a digital-interface device used to connect a Data Terminal Equipment device or DTE, such as a router, to a digital circuit. Modems can be used over any means of transmitting analog signals.
In general the PC and the router are used as DTE, the MODEM and CSU/DSUare used as DCE.
http://www.cisco.com/en/US/docs/routers/access/800/805/hardware/installation/guide/serial.html

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Which two of the following are advantages of Layer 2 Ethernet switches over hubs? (Choose two.)

- [ ] A. To increase the size of broadcast domains
- [ ] B. To filter frames according to MAC addresses
- [ ] C. To allow simultaneous frame transmissions
- [ ] D. To increase the maximum length of UTP cabling between devices

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- D. To increase the maximum length of UTP cabling between devices

## Answer & Explanation

### Correct Answer

B C

### Explanations

A hub is a broadcast domain and a collision domain, while a switch is a broadcast domain, each interface is a collision domain. The switch is a device of data link layer, forwards and floods data frames based on the MAC address. The hub adopts the shared bandwidth working mode, while the switch adopts dedicated bandwidth.

A half duplex connection is where only one device can send or receive at a time. A full duplex connection is where both devices can send and receive at the same time.

Thus, if you have a 100Mb half-duplex connection, only sending at 100Mb OR receiving at 100Mb can happen at the same time. If you have a 100Mb full duplex connection, you can effectively get 200Mb out of the link because you could be sending 100Mb and receiving 100Mb at the same time.

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Which of the following correctly describe the various functions of a router? (Choose two)

- [ ] A. packet switching
- [ ] B. access list control
- [ ] C. path selection
- [ ] D. VLAN membership assignment

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Mark for Review

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- D. VLAN membership assignment

## Answer & Explanation

### Correct Answer

A C

### Explanations

(1) Intercept datagrams sent to remote network segments between networks, playing a translated role .

(2) Select the most reasonable route to guide communications. In order to achieve this function, the router will check the routing table based on certain routing communication protocol, and the routing table lists all the nodes contained in the entire internet , the path conditions between nodes and transmission costs associated with them. If a specific node has more than one path, then select the optimal path based on pre-determined specifications. Because a variety of network segments and their mutual connection situations may change, the routing information needs to be updated in time, which is completed by timing update or updating according to changes determined by the routing information protocol used. Each router in the network dynamically updates its routing table according to this rule to maintain effective routing information.

(3) When forwarding datagrams, in order to facilitate transferring datagrams between networks, routers will divide large data packets into appropriate sized data packets according to pre-determined specifications, and those appropriate sized data packets will be turned into their original form when reaching the destination.

(4) Multi-protocol routers can connect and use network segments of different communication protocols , they can be used as communication connecting platforms of network segments of different communication protocols.

(5) The main task of router is to guide the communications to the destination network, and then reach the addresses of the specific node station. Another function is completed through the decomposition of internet address. For example, assign parts of the network address to specific network, subnet and a group of regional nodes , while the rest can be used to specify the particular station of subnet. Hierarchical addressing allows routers to store addressing information of networks with many node stations.

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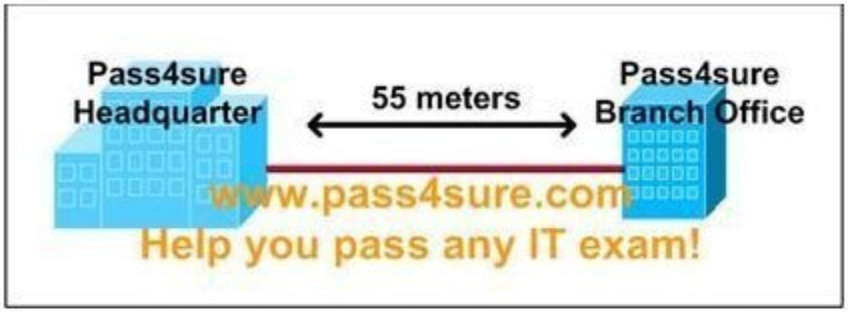
Mark for Review

Part of the Pass4sure WAN is shown below:




Two buildings on the Los Angeles campus of a small company must be connected to use Ethernet with a bandwidth of at least 100 Mbps. The company is concerned about possible problems from voltage potential differences between the two buildings. Which media type should be used for the connection?

- A. UTP cable
- B. STP cable
- C. coaxial cable
- D. fiber optic cable

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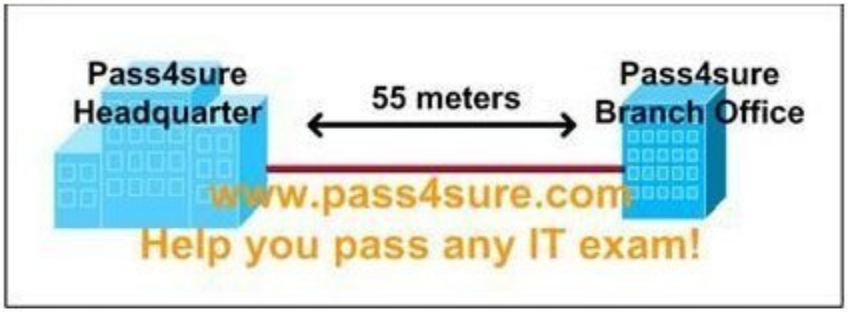


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- A. UTP cable
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- C. coaxial cable
- D. fiber optic cable

## Answer & Explanation

### Correct Answer

D

### Explanations

Current Ethernet technology typically comes via either copper UTP or fiber cables. In this scenario the distance between the buildings is only 55 meters so either copper or fiber could be used, as the distance limitation for 100M UTP Ethernet is 100 meters. However, fiber would be a better fit as it is not prone to errors that could occur due to the voltage potential differences. Because fiber is a dielectric material, it's not susceptible to electrical interference. FO-product vendors also claim that fiber systems make secure communications easier. Interference immunity and lack of emissions are givens in FO systems and in the fiber medium itself.

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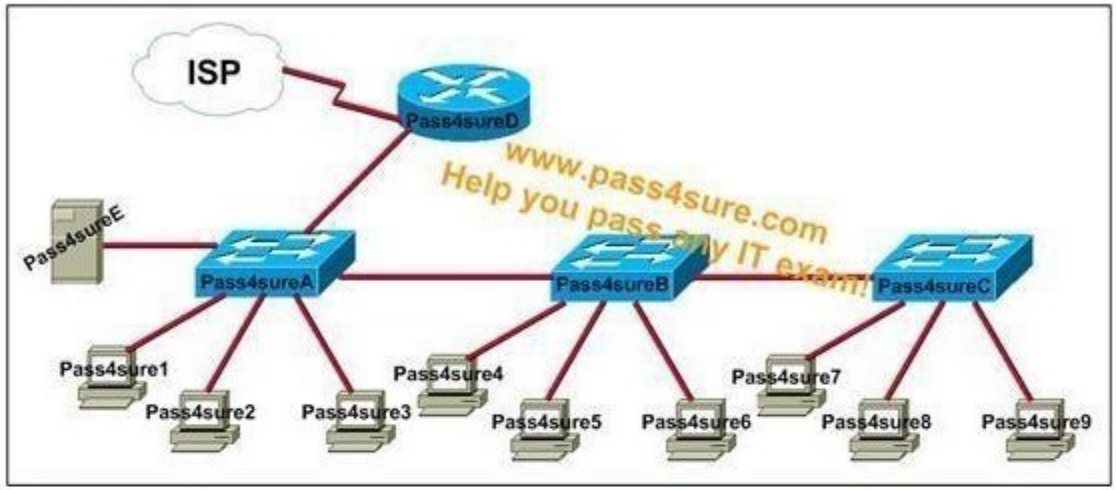
Mark for Review

Part of the Pass4sure network is shown below:




You work as a network technician for Pass4sure and are responsible for this network. Pass4sure is concerned about unauthorized access to the Pass4sureE server. The Pass4sure1, Pass4sure2, Pass4sure6 and Pass4sure9 PCs should be the only computers with access to the Pass4sureE server. What two technologies should be implemented to help prevent unauthorized access to this server? (Choose two)

- A. access lists
- B. STP
- C. wireless LANs
- D. VLANs

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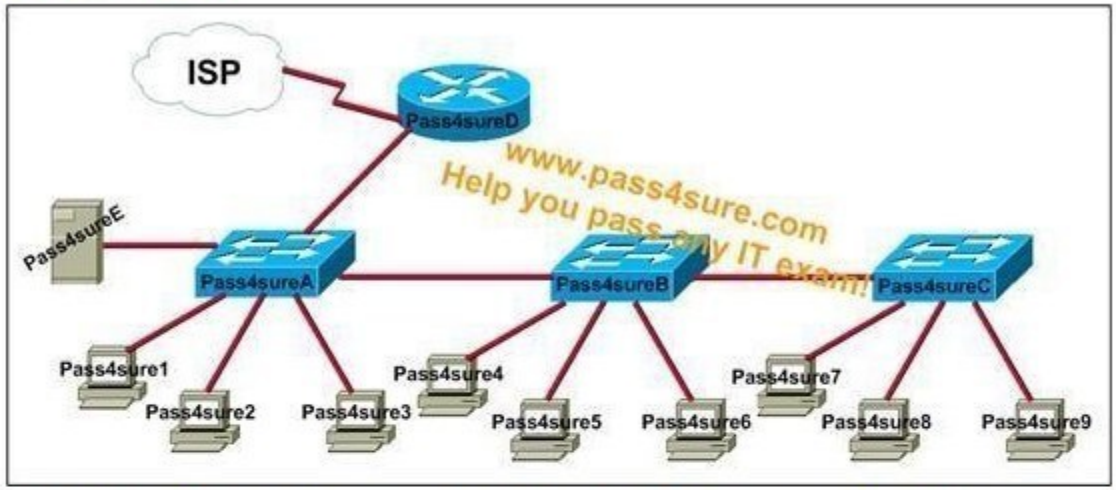


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- D. VLANs

## Answer & Explanation

### Correct Answer

A D

### Explanations

VLANs are created to provide the segmentation services traditionally provided by routers in LAN configurations.
Access Control List permission systems restrict access based on verifying membership in static permission lists.
So, we just need implement the VLAN and ACL technologies.

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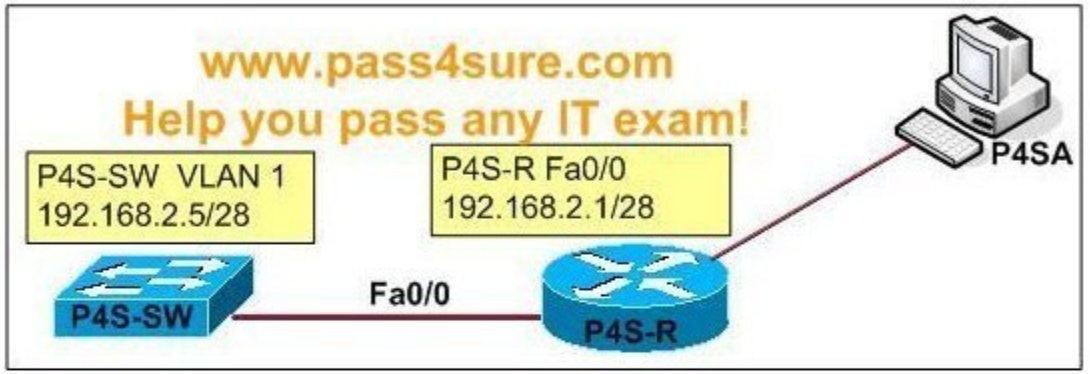
Mark for Review

Refer to the exhibit. P4SA must be able to telnet to switch P4S-SW through router P4S-R for management purposes. What must be configured for this connection to be successful?




A. VLAN 1 on P4S-R

B. default gateway on P4S-SW

C. IP routing on P4S-SW

D. cross-over cable connecting P4S-SW and P4S-R

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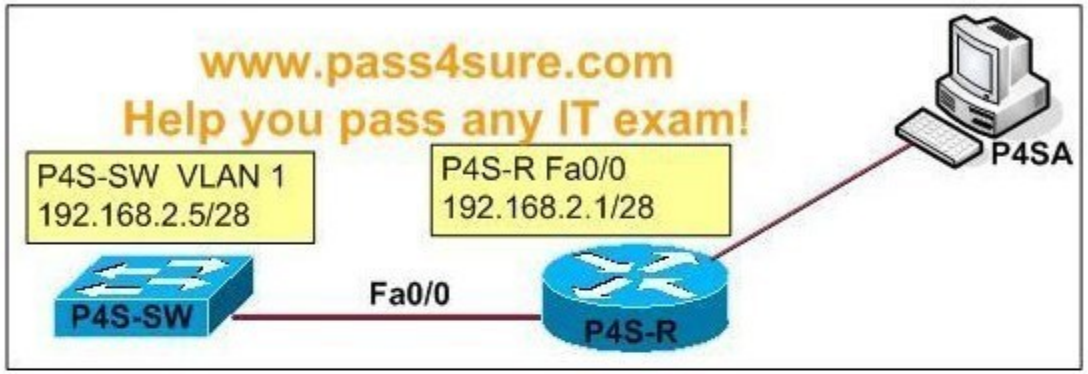


- A. VLAN 1 on P4S-R
- B. default gateway on P4S-SW
- C. IP routing on P4S-SW
- D. cross-over cable connecting P4S-SW and P4S-R

## Answer & Explanation

### Correct Answer

B

### Explanations

Default gateway refers to router default gateway, which is used to realize access between vlans. When a router receives a destination unknown address packet, it will be sent to the default gateway (such as a router's interface) if default gateway exists, otherwise the packet will be discarded.

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Mark for Review

CDP is being used throughout the Pass4sure network. What are two reasons why the Pass4sure network administrator would use CDP? (Choose two)

- A. to determine the status of network services on remote device
- B. to verify the type of cable interconnecting two devices
- C. to obtain VLAN information from directly connected switches
- D. to verify Layer 2 connectivity between two devices when Layer 3 fails
- E. to obtain the IP address of a connected device in order to telnet to the device

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- E. to obtain the IP address of a connected device in order to telnet to the device

## Answer & Explanation

### Correct Answer

D E

### Explanations

Cisco Discovery Protocol (CDP) is primarily used to obtain protocol addresses of neighboring devices and discover the platform of those devices. CDP can also be used to show information about the interfaces your router uses. CDP is an independent media protocol and runs on all Cisco-manufactured devices including routers, bridges, access servers, and switches. It should be noted that CDP is a protocol which works on the layer2. By default, multicast advertise is sent every 60 seconds to 01-00-0 c-cc-cc-cc as the destination address . When reaching the holdtime of 180 seconds , if not receiving the advertise from neighboring devices yet, the information of neighboring devices will be cleared.

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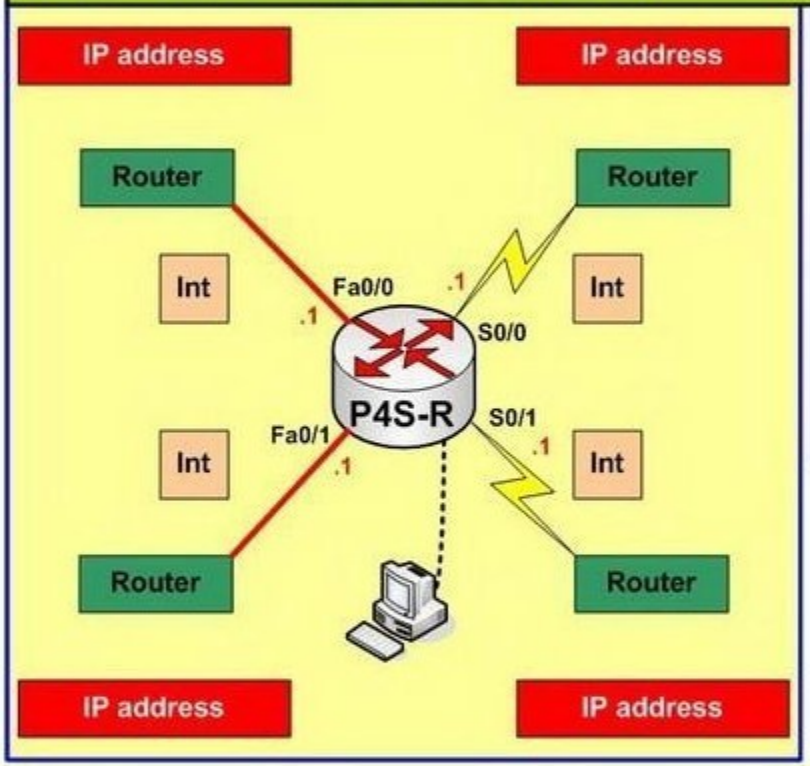
Mark for Review

Drag Drop

You have been hired by Specialty Hardware Incorporated to document the layout of the network. Complete the following tasks:? Complete the network topology shown in the graphic by dragging the labels below with the appropriate router types, interface types, and IP addresses to the graphic . Find the information you need by using the router console attached to the P4S-R router.



```
P4S-R# show cdp neighbor
...
Device ID      Local Interface   Holdtme   Capability   Platform   Port ID
Birmingham        Fas 0/0           151       R S          2514       E1
Relmap            Fas 0/1           150       R S          2621       Fa0/0
Boaz              Ser 0/0           137       R S          2501       S0
Atlanta           Ser 0/1           126       R S          2620       S0/1
```

```
P4S-R# show run
!
interface FastEthernet0/0
 ip address 192.168.237.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 192.168.107.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0
 ip address 192.168.66.1 255.255.255.0
!
interface Serial0/1
 ip address 192.168.220.1 255.255.255.0
!
```

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Mark for Review

## Correct Answer

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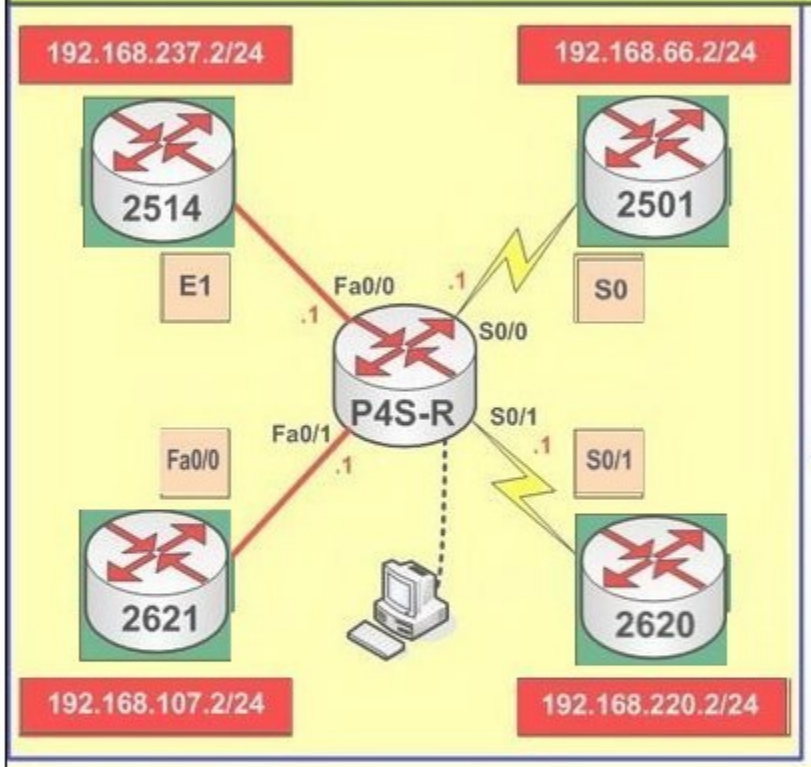

P4S-R# show cdp neighbor
...

| Device ID | Local Interface | Holdtme | Capability | Platform | Port ID |
|---|---|---|---|---|---|
| Birmingham | Fas 0/0 | 151 | R S | 2514 | E1 |
| Relmap | Fas 0/1 | 150 | R S | 2621 | Fa0/0 |
| Boaz | Ser 0/0 | 137 | R S | 2501 | S0 |
| Atlanta | Ser 0/1 | 126 | R S | 2620 | S0/1 |

```
P4S-R# show run
!
interface FastEthernet0/0
 ip address 192.168.237.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 192.168.107.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0
 ip address 192.168.66.1 255.255.255.0
!
interface Serial0/1
 ip address 192.168.220.1 255.255.255.0
!
```

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## Explanations

No more information available

As a CCNA candidate, you need to know OSI model very well, a packet is the protocol data unit for which layer of the OSI model?

- A. data link
- B. session
- C. presentation
- D. network

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Mark for Review

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- A. data link
- B. session
- C. presentation
- D. network

## Answer & Explanation

### Correct Answer

D

### Explanations

PDU, Protocol Data Unit, is a kind of communication data unit, bit for Data layer, frame for data link layer, PDU for network layer, and message for transport layer.

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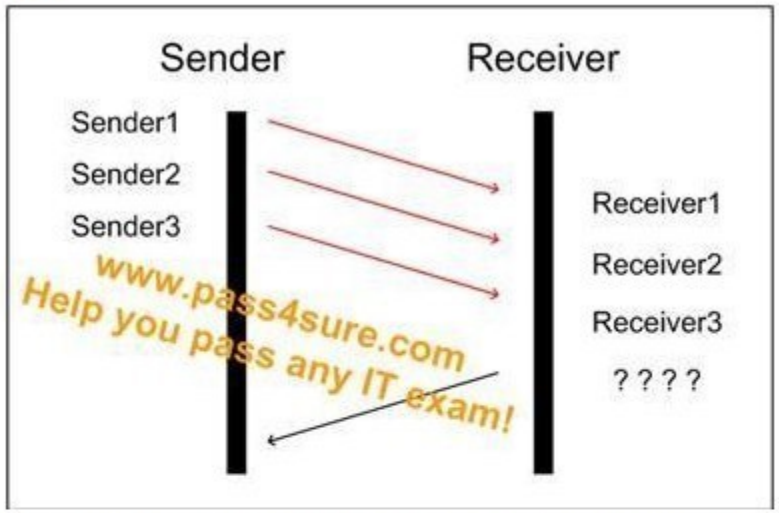
Mark for Review

A TCP/IP transfer is diagrammed in the exhibit.




A window size of three has been negotiated for this transfer. Which message will be returned from the receiver to the sender as part of this TCP/IP transfer?

- A. send ACK 1-3
- B. send ACK 3
- C. send ACK 4
- D. send ACK 4-6

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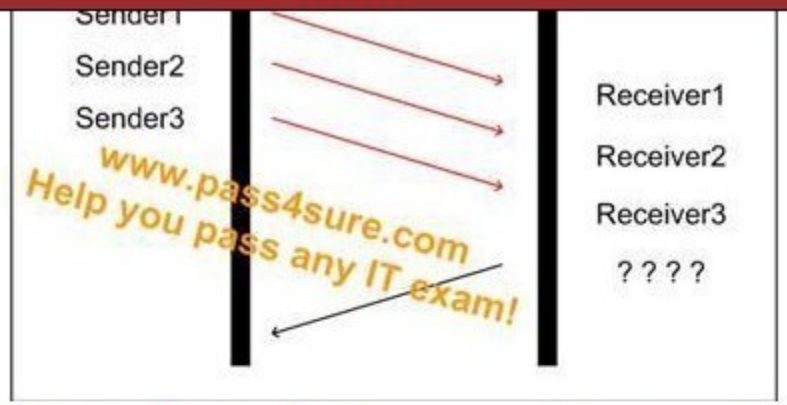


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- B. send ACK 3
- C. send ACK 4
- D. send ACK 4-6

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the TCP/IP handshake protocol.
To establish a reliable connection, TCP uses a three-way handshake.
The first handshake: When establishing connection, the client sends a SYN to the server and enters into the SYN_SEND status, waiting for the acknowledgement of server.
The second handshake: In response, the server replies with a SYN-ACK after receiving SYN packet, now the server enters into the SYN_RECV status.
The third handshake: The client sends an ACK back to the server when receiving SYN-ACK packet. Both the client and the server enter the ESTABLISHED status, finishing the three-way handshake.
Upon the completion of the three-way handshake, data transfer begins.

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As data passes downward through the layers of the OSI model, it is encapsulated into various formats. Which of the following is the correct order of encapsulation?

- A. Bit, packet, frame, segment
- B. Bit, frame, packet, segment
- C. Segment, packet, frame, bit
- D. Segment, frame, packet, bit

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C. Segment, packet, frame, bit

D. Segment, frame, packet, bit

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the OSI encapsulation process.
The functions and features of each OSI layer
1. Physical Layer
Its function is to transmit BIT signals. Representative device: Hub.
2. Data link layer:
It contains two sub-layers: LLC and MAC. LLC is responsible for communicating with the network layer. MAC is responsible for controlling the physical layer. Representative device: Switch.
3. Network layer
Its function is to establish and maintain the routing table and is responsible for packet transmission.
Representative device: Router
4. Transport layer
This layer is responsible for the application data segmentation, establishment of end-to-end connection and providing reliable or unreliable data transfer services to the upper layers.
5. Session layer
The Session Layer controls the dialogues (connections) between computers. It establishes, manages and terminates the connections between the local and remote application.
6. Representation layer
The Presentation Layer provides solutions to data representation and translation. It is the coordinator of man-computer communication,such as converting binary code to ASCII coded.
7. Application layer
This layer is the communication interface of man-machine.Typical applications are FTP and HTTP.
OSI Encapsulation
Encapsulation is the top-down process of adding control information as it passes through the layered model from top to bottom.
Each layer may add a Header and a Trailer to its PDU as it proceeds through the layers
Application ☐segment ☐packet ☐frame ☐bit

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Mark for Review

Refer to the exhibit. The partial frame in the graphic represents select header information within a frame arriving at a destination host. What can be determined from this information?

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 000d.56ad.a313 | 000a.8a47.e612 | 192.168.14.1 | 192.168.14.2 | 23 | 42335 | 1 | 0 |

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A. The source host is a Telnet server.

B. This frame contains the first segment in a Telnet session.

C. The Layer 2 address of the source host is 192.168.14.2.

D. The local host has received 42,335 bytes from the remote host as a part of this conversation.

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B. This frame contains the first segment in a Telnet session.

C. The Layer 2 address of the source host is 192.168.14.2.

D. The local host has received 42,335 bytes from the remote host as a part of this conversation.

## Answer & Explanation

### Correct Answer

B

### Explanations

From the chart above, we can may source and destination MAC, source and destination IP address, dialog port number, and so on. telnet port number is 23. so this is a frame information concerning TELNET.

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Which of the following correctly describe steps in the OSI data encapsulation process? (Choose two)

- A. The presentation layer translates bits into voltages for transmission across the physical link.
- B. The transport layer divides a data stream into segments and adds reliability and flow control information.
- C. Packets are created when the network layer adds Layer 3 addresses and control information to a segment.
- D. The data link layer adds physical source and destination addresses and an FCS to the segment.

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Answer & Explanation

**Correct Answer**

B C

**Explanations**

The Application Layer (Layer 7) refers to communications services to applications and is the interface between the network and the application. Examples include: Telnet, HTTP, FTP, Internet browsers, NFS, SMTP gateways, SNMP, X.400 mail, and FTAM.

The Presentation Layer (Layer 6) defining data formats, such as ASCII text, EBCDIC text, binary, BCD, and JPEG. Encryption also is defined as a presentation layer service. Examples include: JPEG, ASCII, EBCDIC, TIFF, GIF, PICT, encryption, MPEG, and MIDI.

The Session Layer (Layer 5) defines how to start, control, and end communication sessions. This includes the control and management of multiple bidirectional messages so that the application can be notified if only some of a series of messages are completed. This allows the presentation layer to have a seamless view of an incoming stream of data. The presentation layer can be presented with data if all flows occur in some cases. Examples include: RPC, SQL, NFS, NetBios names, AppleTalk ASP, and DECnet SCP

The Transport Layer (Layer 4) defines several functions, including the choice of protocols. The most important Layer 4 functions are error recovery and flow control. The transport layer may provide for retransmission, i.e., error recovery, and may use flow control to prevent unnecessary congestion by attempting to send data at a rate that the network can accommodate, or it might not, depending on the choice of protocols. Multiplexing of incoming data for different flows to applications on the same host is also performed. Reordering of the incoming data stream when packets arrive out of order is included. Examples include: TCP, UDP, and SPX.

The Network Layer (Layer 3) defines end-to-end delivery of packets and defines logical addressing to accomplish this. It also defines how routing works and how routes are learned; and how to fragment a packet into smaller packets to accommodate media with smaller maximum transmission unit sizes. Examples include: IP, IPX, AppleTalk DDP, and ICMP. Both IP and IPX define logical addressing, routing, the learning of routing information, and end-to-end delivery rules. The IP and IPX protocols most closely match the OSI network layer (Layer 3) and are called Layer 3 protocols because their functions most closely match OSI's Layer 3.

The Data Link Layer (Layer 2) is concerned with getting data across one particular link or medium. The data link protocols define delivery across an individual link. These protocols are necessarily concerned with the type of media in use. Examples include: IEEE 802.3/802.2, HDLC, Frame Relay, PPP, FDDI, ATM, and IEEE 802.5/802.2.

The Physical Layer (Layer 1) deals with the physical characteristics of the transmission medium. Connectors, pins, use of pins, electrical currents, encoding, and light modulation are all part of different physical layer specifications. Examples includes: EIA/TIA-232, V.35, EIA/TIA-449, V.24, RJ-45, Ethernet, 802.3, 802.5, FDDI, NRZI, NRZ, and B8ZS.

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As a teacher in Cisco academe, you need to describe the various types of flow control to your students. Which of the following are types of flow control that can be used in a network? (Choose three)

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

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Mark for Review

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

## Answer & Explanation

### Correct Answer

A C D

### Explanations

Buffering, including receive buffer and send buffer, is a temporary data storage area. Windowing is used for flow control, to prevent the flooding of data from sending end to receiving end, and thus avoid over flow of receiving end buffer. The size of window use packet byte as a unit, not packet amount. Windowing belongs to TCP flow control. Supported by monitoring network communications loading, congestion avoiding mechanism is able to predict and avoid congestion of common network bottlenecks point. With the use of complex algorithms (rather than simply discarding Tail Drop) to discard the packet, switches can avoid congestion.

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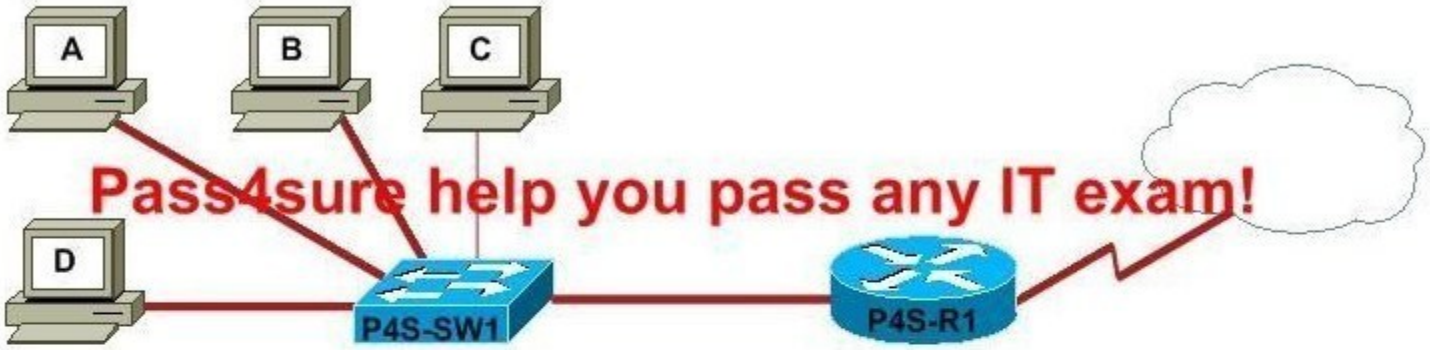
Mark for Review

The switch in the graphic has a default configuration and the MAC table is completely populated. Also, this network is working normally. The graphic represents selected header information in a frame leaving host A. What can be drawn from this information?

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| Destination | Source | Destination | Source |
|---|---|---|---|
| FFFF.FFFF.FFFF | 000a.8a47.e612 | 192.168.14.1 | 192.168.14.2 |

A. The switch P4S-SW1 will only send this frame to the attached router P4S-R1 interface.

B. The host A MAC address is FFFF.FFFF.FFFF.

C. The router P4S-R1 will send the packet in this frame to the Internet.

D. In this LAN, all devices except host A will pass the packet to Layer 3.

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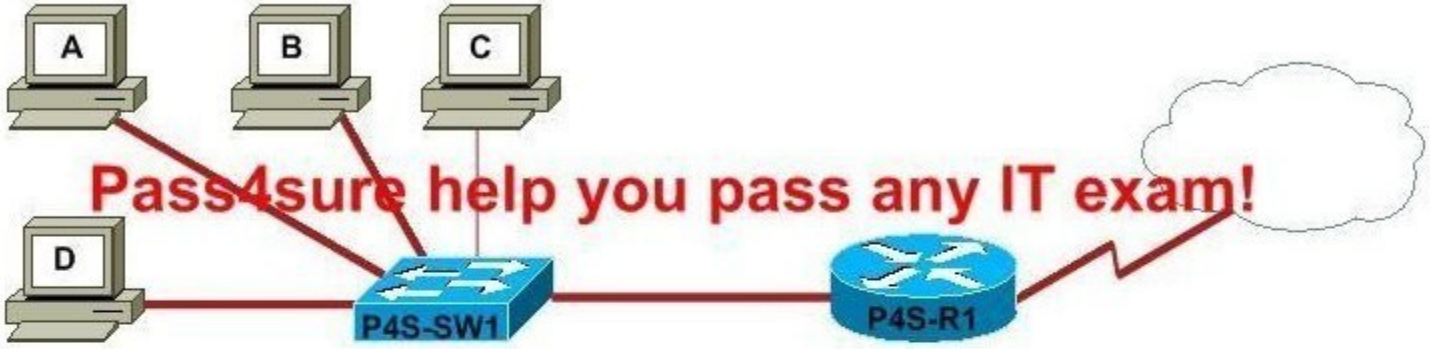
The switch in the graphic has a default configuration and the MAC table is completely populated. Also, this network is working normally. The graphic represents selected header information in a frame leaving host A. What can be drawn from this information?

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| Destination | Source | Destination | Source |
|---|---|---|---|
| FFFF.FFFF.FFFF | 000a.8a47.e612 | 192.168.14.1 | 192.168.14.2 |

A. The switch P4S-SW1 will only send this frame to the attached router P4S-R1 interface.

B. The host A MAC address is FFFF.FFFF.FFFF.

C. The router P4S-R1 will send the packet in this frame to the Internet.

D. In this LAN, all devices except host A will pass the packet to Layer 3.

## Answer & Explanation

### Correct Answer

D

### Explanations

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FFFF.FFFF.FFFF is a broadcast address, the switch will flood this packet, while the router will discard it.

Mark for Review

Refer to the exhibit. The partial frame shown in the exhibit displays select header information as it arrives at the destination host.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 000d.56ad.a313 | 000a.8a47.e612 | 192.168.14.1 | 192.168.14.2 | 23 | 42335 | 1 | 0 |

Which graphic represents the correct header information in the responding frame returned to the remote host?

A.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 010a.1b57.e785 | 000d.56ad.a313 | 192.168.14.1 | 192.168.14.2 | 23 | 42335 | 0 | 1 |

B.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 010a.1b57.e785 | 000d.56ad.a313 | 192.168.14.1 | 192.168.14.2 | 23 | 42336 | 1 | 1 |

C.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 010a.1b57.a313 | 000d.56ad.ae785 | 192.168.14.1 | 192.168.14.2 | 42335 | 23 | 0 | 1 |

D.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 000a.8a47.e612 | 000d.56ad.a313 | 192.168.14.2 | 192.168.14.1 | 42335 | 23 | 1 | 1 |

Click here to input the answer.

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FFFF.FFFF.FFFF is a broadcast address, the switch will flood this packet, while the router will discard it.

Mark for Review

Which graphic represents the correct header information in the responding frame returned to the remote host?

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| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 010a.1b57.e785 | 000d.56ad.a313 | 192.168.14.1 | 192.168.14.2 | 23 | 42335 | 0 | 1 |

B.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 010a.1b57.e785 | 000d.56ad.a313 | 192.168.14.1 | 192.168.14.2 | 23 | 42336 | 1 | 1 |

C.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 010a.1b57.a313 | 000d.56ad.ae785 | 192.168.14.1 | 192.168.14.2 | 42335 | 23 | 0 | 1 |

D.

| Destination | Source | Destination | Source | Destination | Source | SYN | ACK |
|---|---|---|---|---|---|---|---|
| 000a.8a47.e612 | 000d.56ad.a313 | 192.168.14.2 | 192.168.14.1 | 42335 | 23 | 1 | 1 |

Click here to input the answer.

## Answer & Explanation

### Correct Answer

D

### Explanations

On the basis of the layer3 information of the datagram header provided in the subject, remote devices and destination devices are in the same network segment. So , when remote devices reply to this data, the source and the destination address of layer2 information will transfer order, so do the layer3 and layer4 information.

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Mark for Review

Data Encapsulation is a process of taking one Protocol Data Unit (PDU) and enveloping it within a set of protocol header and trailer. Assume that you are a network technician, when a frame departs from the Layer3 equipment, can you tell me why the Data Link Layer encapsulation information is changed after entering the device? (Choose two.)

- A. The data format has changed from analog to digital.
- B. The WAN encapsulation type has changed.
- C. The source and destination hosts are in the same subnet.
- D. The source and destination MAC addresses have changed.

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- C. The source and destination hosts are in the same subnet.
- D. The source and destination MAC addresses have changed.

## Answer & Explanation

### Correct Answer

B D

### Explanations

When the data packet passes a Layer 3 device, the source mac address will change, if the Layer 3 device connects to different WANs, the information of WANs will also change.

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Mrs. pass4sure has opened two Internet Explorer windows on her local PC Pass4sure6. She uses them to simultaneously access the local web server Pass4sureC at the time to browse WWW documents on the intranet. What mechanism makes the data to end up in the correct Internet Explorer window?

A. The OSI application layer tracks the conversations and directs them to the correct browser.

B. The IP Source addresses of the packets will be used to direct the data to the correct browser window.

C. The browser track the data by the URL.

D. The TCP port numbers are used to direct the data to the correct application window.

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## Answer & Explanation

### Correct Answer

D

### Explanations

The Application Layer (Layer 7) refers to communications services to applications and is the interface between the network and the application. Examples include: Telnet, HTTP, FTP, Internet browsers, NFS, SMTP gateways, SNMP, X.400 mail, and FTAM.

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Mark for Review

Please study the diagram carefully, and then drag and drop the network user application to the appropriate description of its primary use. (Not all options are used.)

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## Answer & Explanation

### Correct Answer

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### Explanations

No more information available

Mark for Review

As a CCNA candidate, you will be expected to know the OSI model very well.
Why does the data communication industry use the layered OSI reference model? (Choose two.)

- A. It divides the network communication process into smaller and simpler components, thus aiding component development, design, and troubleshooting.
- B. It provides a means by which changes in functionality in one layer require changes in other layers.
- C. It supports the evolution of multiple competing standards, and thus provides business opportunities for equipment manufacturers.
- D. It encourages industry standardization by defining what functions occur at each layer of the model.

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- D. It encourages industry standardization by defining what functions occur at each layer of the model.

## Answer & Explanation

### Correct Answer

A D

### Explanations

The Open Systems Interconnection Basic Reference Model (OSI Reference Model or OSI Model) is an abstract description for layered communications and computer network protocol design. It was developed as part of the Open Systems Interconnection (OSI) initiative. In its most basic form, it divides network architecture into seven layers which, from top to bottom, are the Application, Presentation, Session, Transport, Network, Data-Link, and Physical Layers. It is therefore often referred to as the OSI Seven Layer Model.
A layer is a collection of conceptually similar functions that provide services to the layer above it and receives service from the layer below it. For example, a layer that provides error-free communications across a network provides the path needed by applications above it, while it calls the next lower layer to send and receive packets that make up the contents of the path.

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Mark for Review

At which OSI layer is a logical path created between two host systems named Router1 and Router2 on the Pass4sure LAN?

- A. transport
- B. session
- C. network
- D. Application

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Mark for Review

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## Answer & Explanation

### Correct Answer

C

### Explanations

The Network Layer (Layer 3) defines end-to-end delivery of packets and defines logical addressing to accomplish this. It also defines how routing works and how routes are learned; and how to fragment a packet into smaller packets to accommodate media with smaller maximum transmission unit sizes. Examples include: IP, IPX, AppleTalk DDP, and ICMP. Both IP and IPX define logical addressing, routing, the learning of routing information, and end-to-end delivery rules. The IP and IPX protocols most closely match the OSI network layer (Layer 3) and are called Layer 3 protocols because their functions most closely match OSI's Layer 3.

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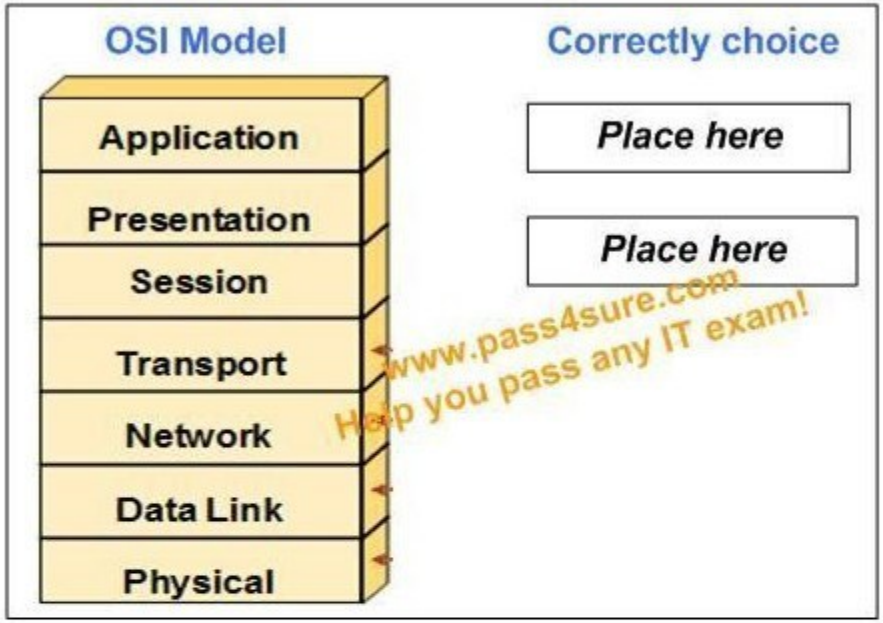
Mark for Review

As a CCNA candidate, you are required to have a firm understanding of the OSI model. At which layers of the OSI model do Wide Area Networks operate? Please drag the items to the proper locations.

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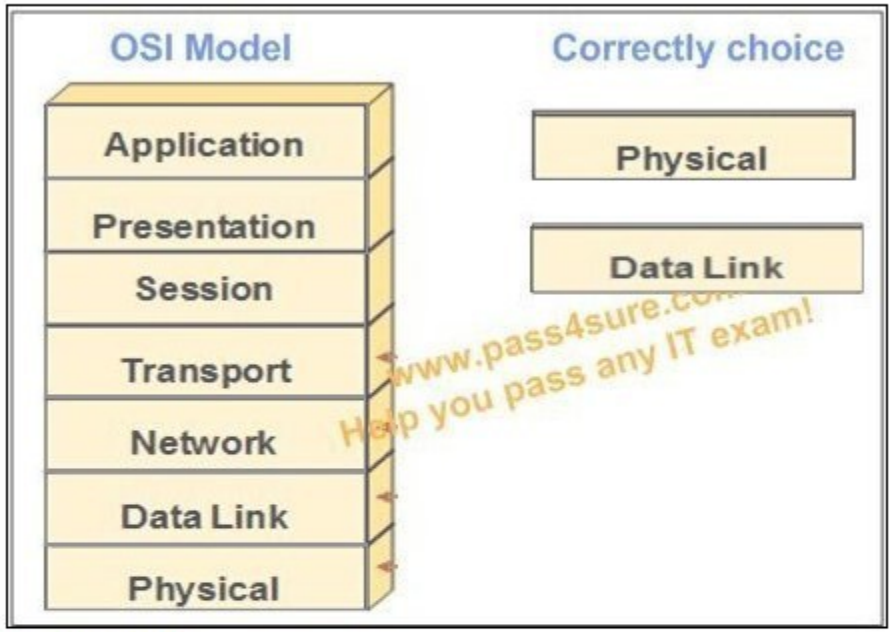
Mark for Review

## Answer & Explanation

### Correct Answer




### Explanations

This question is to examine the primary functions of each layer in the OSI model.

Physical Layer

The physical layer provides DTE (Data Terminal Equipment) with the data transmission path. This path can be a physical media or can also be formed by connecting a number of physical media. A complete data transmission process includes activating physical connection, transmitting data and terminating physical connection. The so-called activation is to establish connection between two communication DTEs to form a path no matter how many physical media are involved in.

Data transmission.The physical layer must form an entity suitable for and serving for data transmission. First, the entify must ensure the data can be transmitted correctly. Second, the entity must provide sufficient bandwidth to reduce the congestion over communications channels.The methods of data transmission can satify the requirements for point-to-point, point-to-multipoint, serial or parallel, half-duplex or full duplex, synchronous or asynchronous transmission.

Data link layer

The Data Link Layer provides the functional and procedural means to transfer data between network entities, which can be accomplished by itself.

This layer has the following primary functions:

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**Explanations**

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Data link layer

The Data Link Layer provides the functional and procedural means to transfer data between network entities, which can be accomplished by itself.

This layer has the following primary functions:

1.Link connection establishment, release and separation.

2.Frame delimitation and synchronization

The protocol data unit delivered by the data link layer is frame.The length of the frame and the interface will vary depending on different protocols. Anyhow, the frame must be delimited.

3.Sequential control refers to controlling the sequence of sending and receiving frames.

4.Error detection and recovery, link identification and flow control etc.

Error detection uses square code and cyclic code to detect the error codes over the communication channel, while the frame loss is detected by sequence number.The restoration of all kinds of errors are accomplished by feedback resending technology.

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As the Pass4sure network administrator, you have configured an inbound access list on a serial interface to deny packet entry for TCP and UDP ports 21, 23 and 25.

Allow all other types traffic through the Pass4sure network, What types of packets will be permitted by this ACL? (Choose three.)

- A. SMTP
- B. Telnet
- C. FTP
- D. DNS
- E. HTTP
- F. POP3

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- B. Telnet
- C. FTP
- D. DNS
- E. HTTP
- F. POP3

## Answer & Explanation

### Correct Answer

D E F

### Explanations

The most often used port numbers of TCP/UDP are as follows:
The port numbers of TCP:

| | |
|---|---|
| 20 | FTP data |
| 21 | FTP control |
| 23 | Telnet |
| 25 | SMTP |
| 53 | DNS |
| 80 | WWW |
| 100 | POP3 |

The port numbers of UDP

| | |
|---|---|
| 53 | DNS |
| 69 | TFTP |
| 161 | SNMP |

Note: DNS uses TCP to perform Zone Transfers and UDP to query name.

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The ACL created on the router denied the traffic from the ports 21□23□25, thus allowing these three types of traffic such as DNS, POP3, HTTP to cross .

Mark for Review

As a CCNA candidate, you will be expected to know the OSI model very well. Acknowledgements, sequencing, and flow control are characteristics of which OSI layer?

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

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Mark for Review

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

## Answer & Explanation

### Correct Answer

C

### Explanations

Layer 2 data link layer: This layer implements data sub-frame and deals with flow control. The layer also designates topology and provides hardware addressing;
Layer 3 network layer: This layer creates links between two nodes by addressing, including the routing and data trunking through interconnected network;
Layer 4 transport layer: routine data transmission, connected or non-connected, Includes full-duplex or half-duplex, flow control and error recovery services;
Layer 5 Session Layer: create links in-between two nodes. This service includes the establishment connection in manners of half-duplex or full-duplex, although full-duplex can be dealt with in layer 4.

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Which of the following protocols uses both TCP and UDP ports?

- A. FTP
- B. SMTP
- C. Telnet
- D. DNS

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Mark for Review

Which of the following protocols uses both TCP and UDP ports?

- A. FTP
- B. SMTP
- C. Telnet
- D. DNS

## Answer & Explanation

### Correct Answer

D

### Explanations

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The port numbers of TCP:

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The port numbers of UDP

| | |
|---|---|
| 53 | DNS |
| 69 | TFTP |
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Note: DNS uses TCP to perform Zone Transfers and UDP to query name.

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Which of the following services use UDP? (Choose three.)

- [ ] A. DNS
- [ ] B. Telnet
- [ ] C. SNMP
- [ ] D. TFTP

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Mark for Review

Which of the following services use UDP? (Choose three.)

- A. DNS
- B. Telnet
- C. SNMP
- D. TFTP

## Answer & Explanation

### Correct Answer

A C D

### Explanations

Common TCP/UDP ports:
TCP ports:

| | |
|---|---|
| 20 | FTP data |
| 21 | FTP control |
| 23 | Telnet |
| 25 | SMTP |
| 53 | DNS |
| 80 | WWW |
| 100 | POP3 |

UDP ports:

| | |
|---|---|
| 53 | DNS |
| 69 | TFTP |
| 161 | SNMP |

Note: DNS use TCP for regional transmission, and use UDP for name inquiry.

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Mark for Review

Which of the following services use TCP? (Choose three.)

- [ ] A. SMTP
- [ ] B. SNMP
- [ ] C. FTP
- [ ] D. HTTP

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Mark for Review

Which of the following services use TCP? (Choose three.)

- A. SMTP
- B. SNMP
- C. FTP
- D. HTTP

## Answer & Explanation

### Correct Answer

A C D

### Explanations

TCP (Transmission Control Protocol) is a transport layer protocol which is connection-oriented, reliable, and based on byte-stream, usually stated by IETF RFC 793.
SMTP (Simple Mail Transfer Protocol): SMTP is a protocol that offers reliable and valid e-mail transmission.
FTP (File Transfer Protocol): it is used for two-way transmission of control document On the Internet. It is also an application. Users are able to connect their PC to all servers operating FTP protocol all over the world, access a large number of programs and information.
HTTP (HyperText Transfer Protocol) is used to send the WWW data. For further information, please refer to RFC2616. HTTP protocol uses the request/response model. Client send a request to server, which contains request methods, URI, protocol version, and message structure, similar to MIME, which contains request modifier, customer information and content. Server use state as a response, relevant content includes message protocol agreement, success or error code, server information, entity meta-information and entity content if possible.

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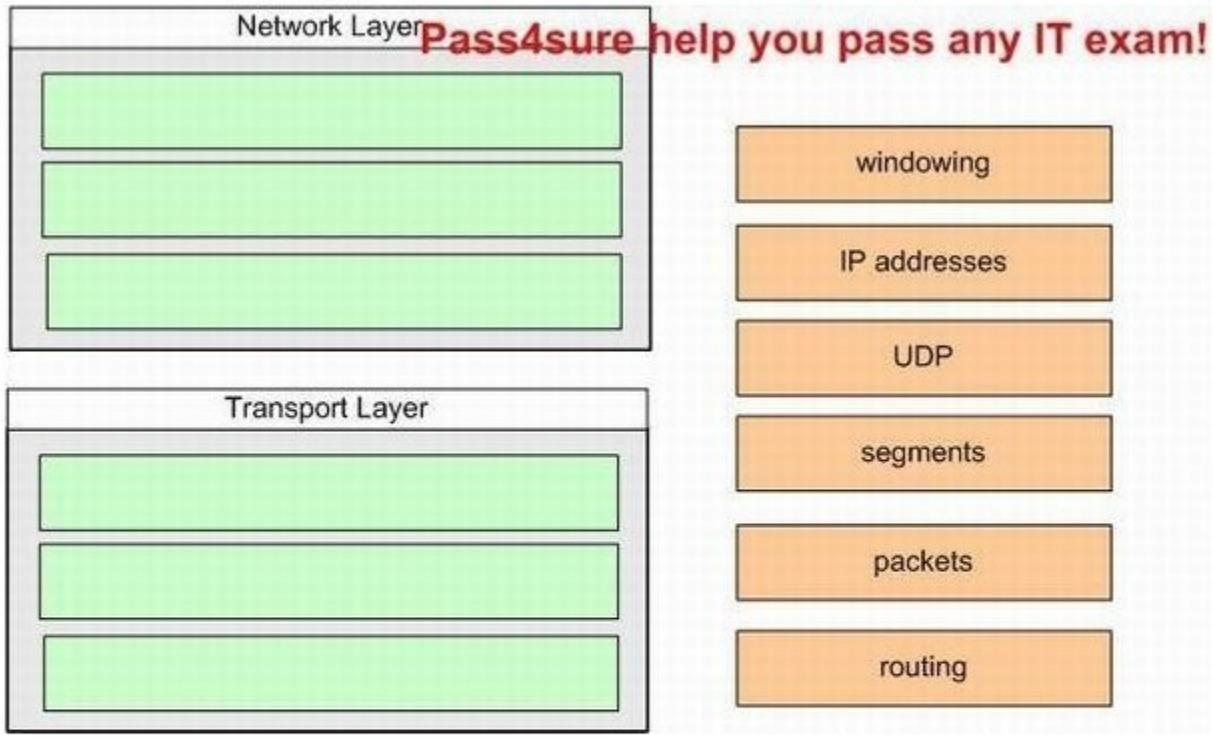
Mark for Review

The left describes OSI layers, while the right provides some terms.
Drag the items on the right to the proper locations.

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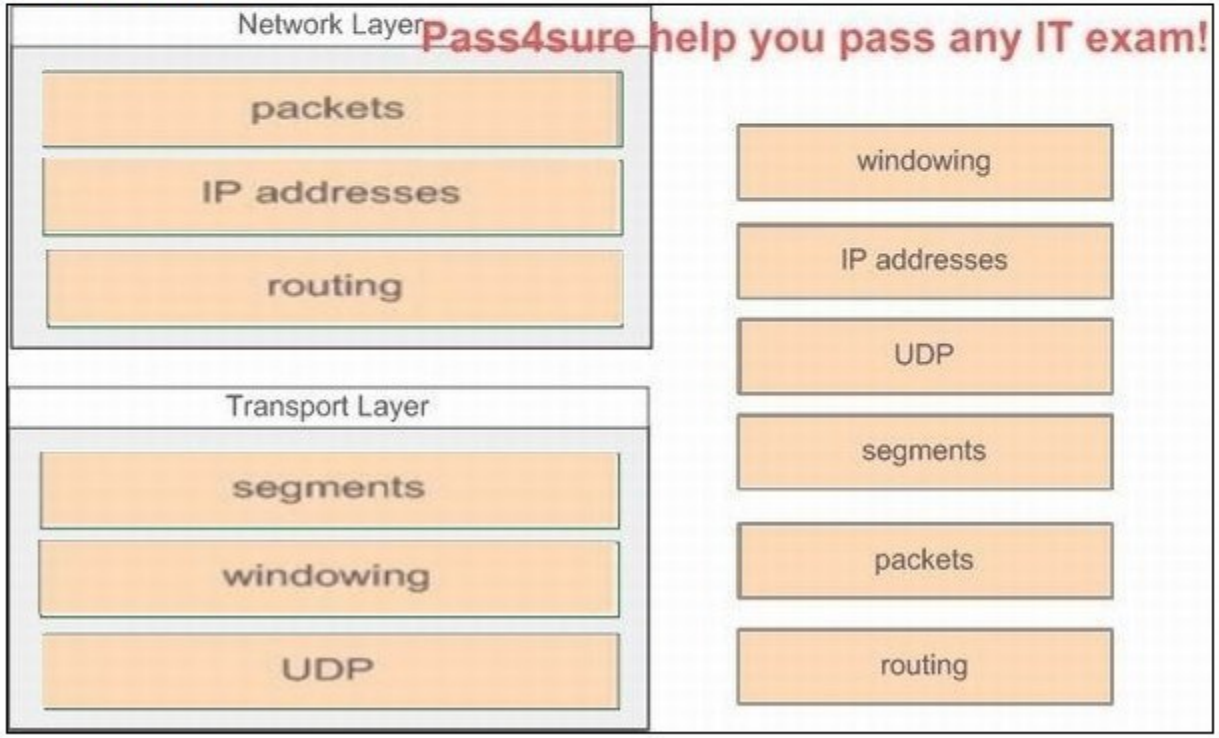
segments

packets

routing

## Answer & Explanation

### Correct Answer

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### Explanations

No more information available

Mark for Review

On the serial interface of a router, an inbound access list is configured to deny all traffic from UDP and TCP ports 21, 23, and 25. All other traffic is permitted. Based on this information, which types of traffic will be allowed through this interface?(choose three)

- A. SMTP
- B. DNS
- C. POP3
- D. HTTP

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Mark for Review

On the serial interface of a router, an inbound access list is configured to deny all traffic from UDP and TCP ports 21, 23, and 25. All other traffic is permitted. Based on this information, which types of traffic will be allowed through this interface?(choose three)

- A. SMTP
- B. DNS
- C. POP3
- D. HTTP

## Answer & Explanation

### Correct Answer

B C D

### Explanations

The most often used ports of TCP/UDP are as follows:
The port number of TCP:

| | |
|---|---|
| 20 | FTP data |
| 21 | FTP control |
| 23 | Telnet |
| 25 | SMTP |
| 53 | DNS |
| 80 | WWW |
| 100 | POP3 |

The port number of UDP :

| | |
|---|---|
| 53 | DNS |
| 69 | TFTP |
| 161 | SNMP |

The ACL created on the router denied the traffic from the ports 21□23□25, thus allowing these three types of traffic such as DNS, POP3, HTTP to cross .

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Mark for Review

It is known that the OSI model has seven layers. Can you tell me at which layers of the OSI model WANs operate? (Choose two.)

- [ ] A. datalink layer
- [ ] B. session layer
- [ ] C. transport layer
- [ ] D. physical layer

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Mark for Review

It is known that the OSI model has seven layers. Can you tell me at which layers of the OSI model WANs operate? (Choose two.)

- A. datalink layer
- B. session layer
- C. transport layer
- D. physical layer

## Answer & Explanation

### Correct Answer

A D

### Explanations

WAN works at both Layer1 and Layer2 of the OSI model, for example, Frame-relay and ATM operate at Layer 2 of the OSI model.

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Mark for Review

Your company has installed IP phones. Both the phones and the office computers connect to the same device. The phone traffic and the office computer data traffic must be on different networks to ensure maximum throughput for the phone data. Which network device can be best connected to the phones and computers, and which technology will be performed on this device? (Choose two.)

- A. hub
- B. router
- C. switch
- D. VLAN

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- A. hub
- B. router
- C. switch
- D. VLAN

## Answer & Explanation

### Correct Answer

C D

### Explanations

Both the company's voice equipment(IP phones) and office equipment (computers) connect to the same device. The phone traffic and the office computer data traffic must be on different networks to ensure maximum throughput for the phone data. You can configure VLAN on switch to differentiate these two different data traffics.

VLAN is a network technology that can logically group networks so that the network location of users is no longer so tightly coupled to their physical location. VLAN can be used to control broadcast storm, improve network security and simplify the complicated network management.

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The corporate head office of Pass4sure has a teleconferencing system that uses VOIP (voice over IP) technology. This system uses UDP as the transport for the data transmissions. If these UDP datagrams arrive at their destination out of sequence, what will happen?

A. UDP will send an ICMP Information Request to the source host.

B. UDP will pass the information in the datagrams up to the next OSI layer in the order that they arrive.

C. UDP will drop the datagrams.

D. UDP will use the sequence numbers in the datagram headers to reassemble the data in the correct order.

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C. UDP will drop the datagrams.

D. UDP will use the sequence numbers in the datagram headers to reassemble the data in the correct order.

## Answer & Explanation

### Correct Answer

B

### Explanations

VOIP systems utilize UDP because it is faster and uses less overhead. In addition, the reliable transport mechanism used in TCP is useless to VOIP because if a packet gets dropped and needs to be resent, it will be already too late.
UDP provides a service for applications to exchange messages. Unlike TCP, UDP is connectionless and provides no reliability, no windowing, and no reordering of the received data. However, UDP provides some functions of TCP, such as data transfer, segmentation, and multiplexing using port numbers, and it does so with fewer bytes of overhead and with less processing required. UDP data transfer differs from TCP data transfer in that no reordering or recovery is accomplished. Applications that use UDP are tolerant of lost data, or they have some application mechanism to recover data loss.

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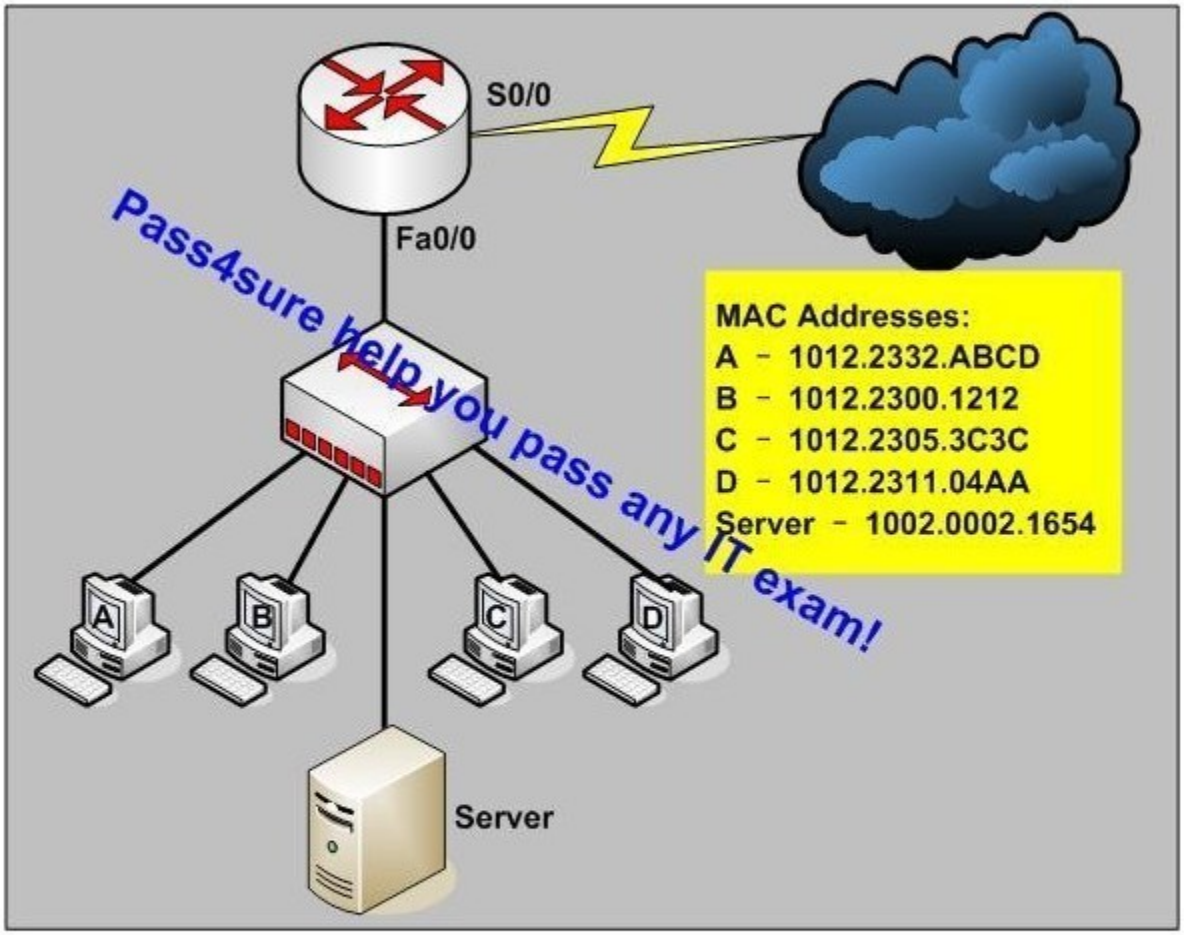
Mark for Review

You work as a network engineer, study the exhibit carefully. Host B is actively communicating through Ethernet with the server. Host A has frames to send to the Internet. How will host A proceed?

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- A. Host A will listen and transmit when there is no traffic on the segment.
- B. Host A will immediately begin transmitting because the destination is different.
- C. Host A must wait for the server to reply to host B before transmitting.
- D. Host A can send its frames at any time because it will be sending them through the router.

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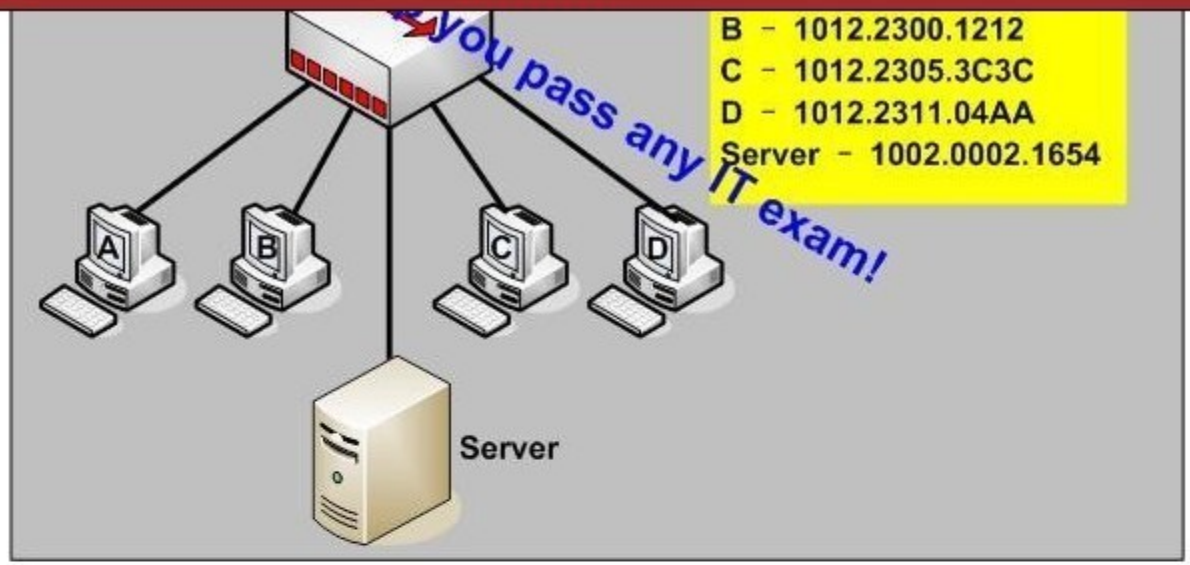


A. Host A will listen and transmit when there is no traffic on the segment.

B. Host A will immediately begin transmitting because the destination is different.

C. Host A must wait for the server to reply to host B before transmitting.

D. Host A can send its frames at any time because it will be sending them through the router.

## Answer & Explanation

### Correct Answer

A

### Explanations

The objective of this subject is to examine the examinee's understanding of CSMA/CD:
Ethernet is a type of LAN medium which works at the data link layer. Ethernet sends information by use of CSMA/CD(Carrier Sense Multiple Access/Collision Detection) in the shared environment. In the traditional or the hub-based Ethernet environment, only one NIC can successfully send frames at a certain moment. However, all NICs can listen before transmitting at the same time. Before transmitting frames, NIC will check to see whether the cable is busy, if there are no data frames being transmitted on cable, NIC will send its own frames ,otherwise it will not transmit frames until the completion of the previous transmission.
In this example , PC and server are connected to one hub. Therefore, PCA will listen first before sending data frames.

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Mark for Review

Part of the Pass4sure WAN is shown below:

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Based on the information shown above, the router Pass4sure2 displays knowledge of a route to network 172.16.0.0/16. The actual network number at headquarters is 172.16.1.0/24. Why does the network number show as it does in the routing table?

A. The Pass4sure2 router has a static route configured for the 172.16.0.0/16 network.

B. The routing protocol on the Pass4sure1 router is using automatic route summarization.

C. The Pass4sure2 router is configured to summarize to classful boundaries.

D. The routing protocol that is forwarding this route only sends classful updates.

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Mark for Review

Part of the Pass4sure WAN is shown below:

Based on the information shown above, the router Pass4sure2 displays knowledge of a route to network 172.16.0.0/16. The actual network number at headquarters is 172.16.1.0/24. Why does the network number show as it does in the routing table?

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- B. The routing protocol on the Pass4sure1 router is using automatic route summarization.
- C. The Pass4sure2 router is configured to summarize to classful boundaries.
- D. The routing protocol that is forwarding this route only sends classful updates.

## Answer & Explanation

### Correct Answer

B

### Explanations

From show ip route we know that the 172.16.0.0/16 learnt from 192.168.2.157 is a summary route.

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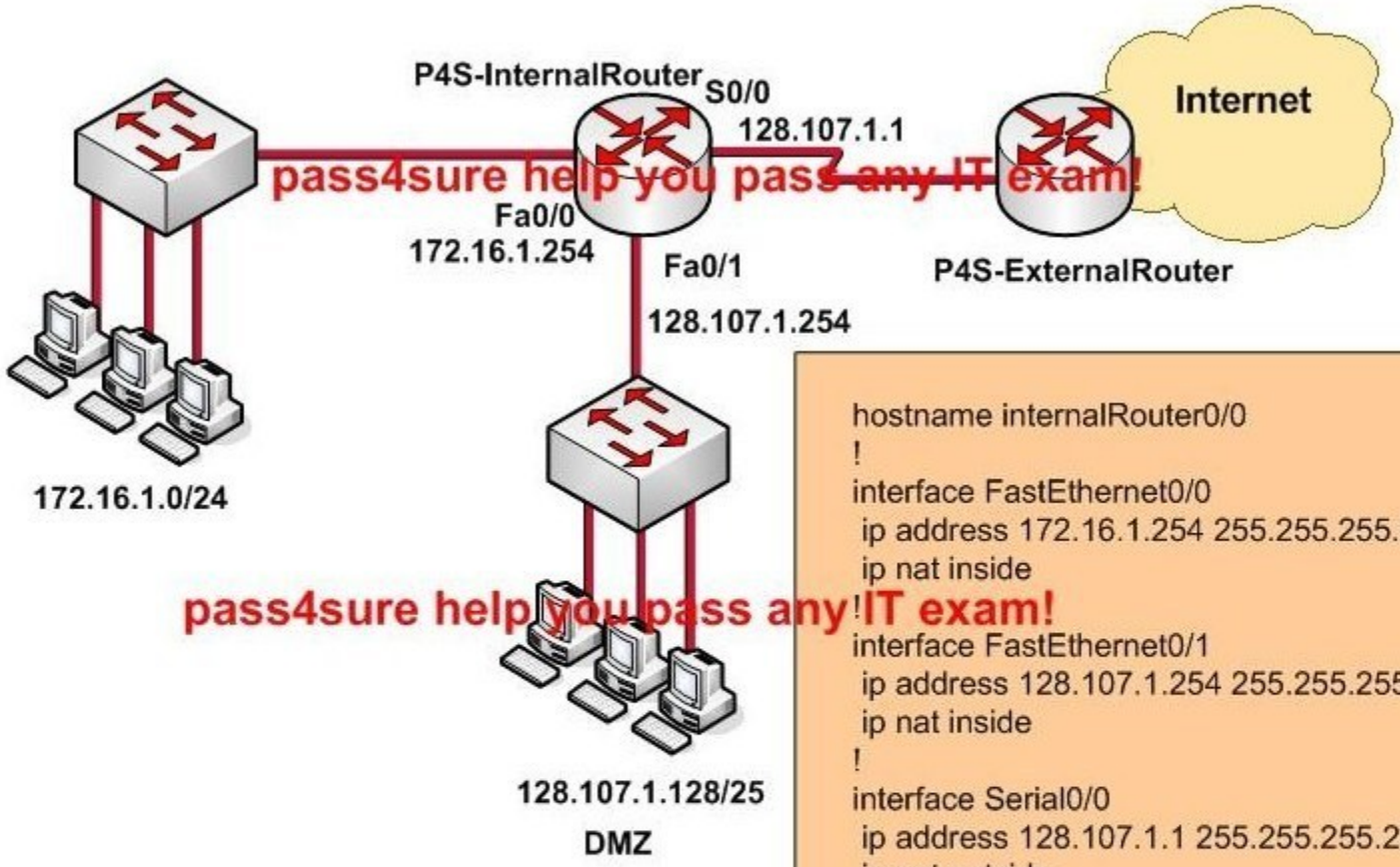
Mark for Review

As a new employee, you have prepared the configuration document for the following exhibition. According to this diagram, can you tell me which two of the following options are correct about the scheduled configuration for interface fa0/1? (Choose two.)

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```
hostname internalRouter0/0
!
interface FastEthernet0/0
 ip address 172.16.1.254 255.255.255.0
 ip nat inside
!
interface FastEthernet0/1
 ip address 128.107.1.254 255.255.255.128
 ip nat inside
!
interface Serial0/0
 ip address 128.107.1.1 255.255.255.252
 ip nat outside
!
ip nat inside source list 1 interface Serial0/0 overload
!
ip route 0.0.0.0 0.0.0.0 Serial0/0
!
access-list 1 permit 172.16.1.0 0.0.0.255
access-list 1 permit 128.107.1.128 0.0.0.127
```

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Mark for Review

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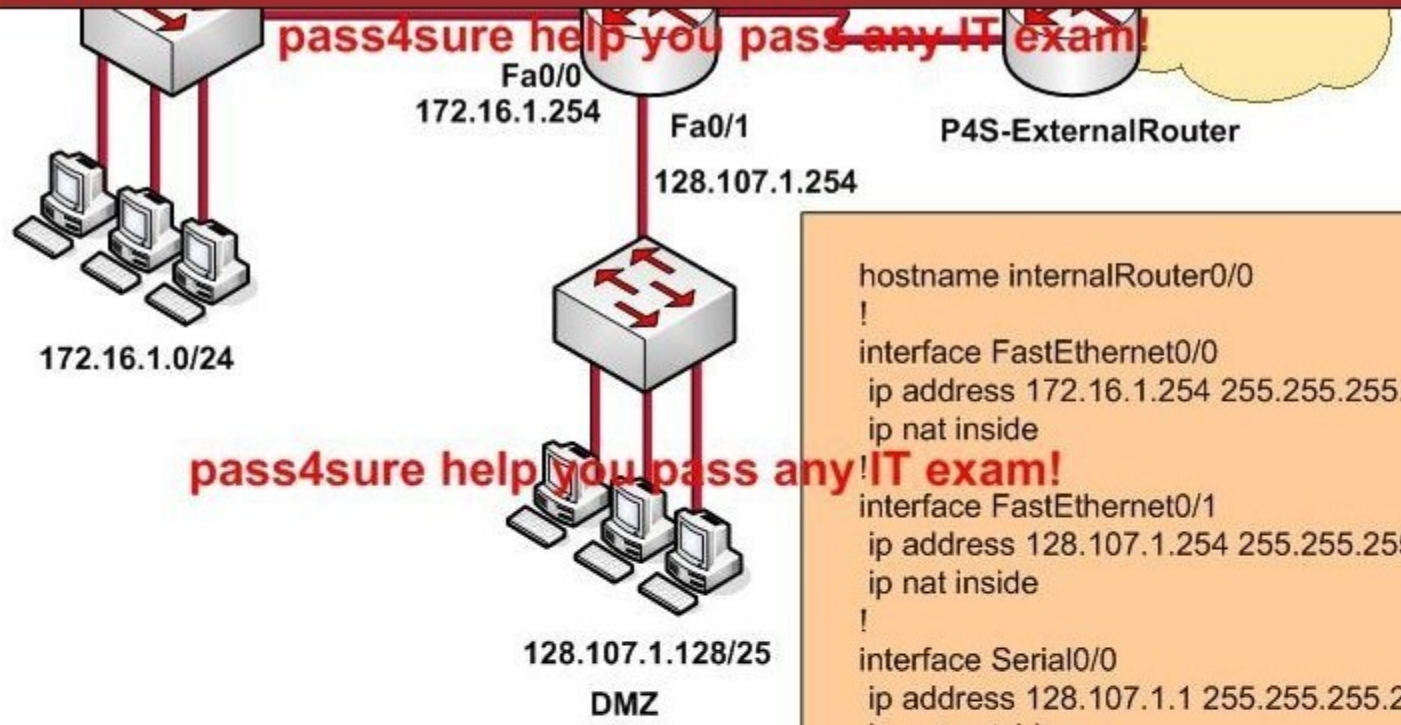


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```
hostname internalRouter0/0
!
interface FastEthernet0/0
 ip address 172.16.1.254 255.255.255.0
 ip nat inside
!
interface FastEthernet0/1
 ip address 128.107.1.254 255.255.255.128
 ip nat inside
!
interface Serial0/0
 ip address 128.107.1.1 255.255.255.252
 ip nat outside
!
ip nat inside source list 1 interface Serial0/0 overload
!
ip route 0.0.0.0 0.0.0.0 Serial0/0
!
access-list 1 permit 172.16.1.0 0.0.0.255
access-list 1 permit 128.107.1.128 0.0.0.127
```

- A. The fa0/1 IP address is invalid for the IP subnet on which it resides.
- B. Address translation on fa0/1 is not required for DMZ Devices to access the Internet.
- C. The two FastEthernet interfaces will require NAT configured on two outside serial interfaces.
- D. Internet hosts may not initiate connections to DMZ Devices through the configuration that is shown.

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128.107.1.128/25

DMZ

```
!
interface FastEthernet0/1
 ip address 128.107.1.254 255.255.255.128
 ip nat inside
!
interface Serial0/0
 ip address 128.107.1.1 255.255.255.252
 ip nat outside
!
ip nat inside source list 1 interface Serial0/0 overload
!
ip route 0.0.0.0 0.0.0.0 Serial0/0
!
access-list 1 permit 172.16.1.0 0.0.0.255
access-list 1 permit 128.107.1.128 0.0.0.127
```

- A. The fa0/1 IP address is invalid for the IP subnet on which it resides.
- B. Address translation on fa0/1 is not required for DMZ Devices to access the Internet.
- C. The two FastEthernet interfaces will require NAT configured on two outside serial interfaces.
- D. Internet hosts may not initiate connections to DMZ Devices through the configuration that is shown.

## Answer & Explanation

### Correct Answer

B D

### Explanations

The address configured on DMZ device is 128.107.1.128/225 which belongs to the public address. NAT is not required for Public address DMZ to directly access the Internet.

NAT can be configured to translate Internal IP address into external registered IP address, which effectively hides the internal IP addresses and prevents the invasion of the external network. Port mapping is needed if external network wants to access the internal hosts.

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Mark for Review

Part of the Pass4sure network is shown below:

After HostA pings HostB, which entry will be in the ARP cache of HostA to support this transmission? Please study the entry exhibit shown above carefully, which is true?

Entry exhibit

C A.

| Interface Address | Physical Address | Type |
|---|---|---|
| 192.168.4.7 | 0010.5a0c.feae | dynamic |

C B.

| Interface Address | Physical Address | Type |
|---|---|---|
| 192.168.4.7 | 000f.2480.8916 | dynamic |

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Mark for Review

B.

| Interface Address | Physical Address | Type |
|---|---|---|
| 192.168.4.7 | 000f.2480.8916 | dynamic |

C.

| Interface Address | Physical Address | Type |
|---|---|---|
| 192.168.6.2 | 0010.5a0c.feae | dynamic |

D.

| Interface Address | Physical Address | Type |
|---|---|---|
| 192.168.6.1 | 000f.2480.8916 | dynamic |

Click here to input the answer.

## Answer & Explanation

### Correct Answer

D

### Explanations

ARP is short for Address Resolution Protocol, which is a protocol that will transform the IP address into the physical address. Mapping from the IP address to the physical address has two modes: table mode and non-table mode. ARP will map the layer3 address to the layer2 MAC address.

ARP working principles: When host A wants to send datagram to host B, it will check its ARP table first, if it locates the MAC address corresponding to the IP address of host B , host A will transmit data; if not, host A will send an ARP request (with the IP address Ia and the physical address Pa of the host A) to ask host B whose IP address is Ib to reply its physical address Pb .

All hosts including host B on the network will receive this ARP request, but only host B can identify its IP address, so it sends back an APR reply which contains the MAC address of host B. When receiving the reply from host B, host A will update its ARP cache and send data using this MAC address. Therefore, the ARP table is basic for the network communication and this cache is dynamic.

In this example, because the both sides participating in the communication belong to different network segments and ARP information is broadcast being not able to cross the router, Host A needs to send data to the gateway which is the F0/0 interface of the router, at this time , the ARP table of host A will record the information of interface F0/0 whose address is the destination MAC address.

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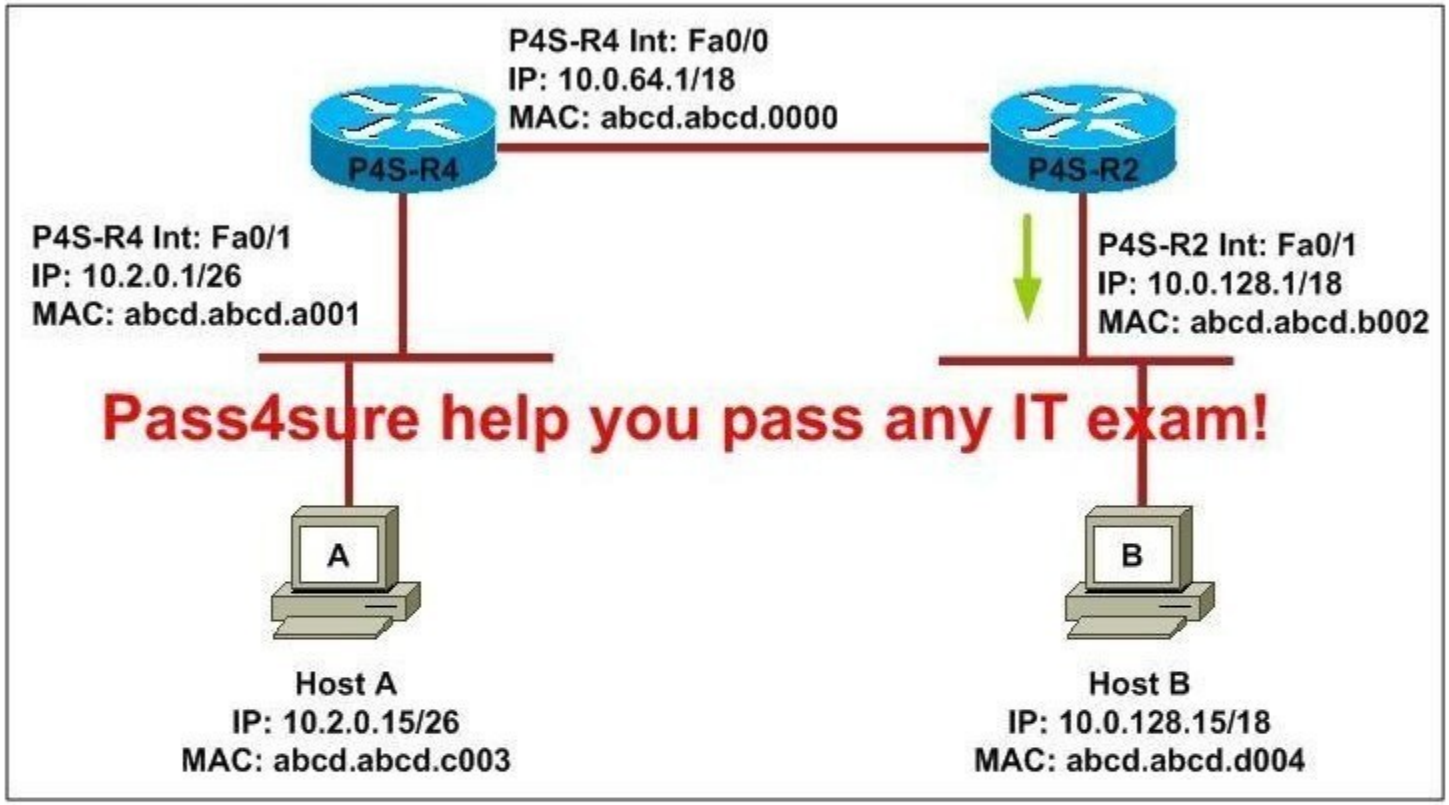
Mark for Review

Study the following exhibit carefully, Host A can ping Host B successfully. When the frame leaves from P4S-R2 to host B, which source MAC address and source IP address are included in the frame?




- A. abcd.abcd.a001
- B. abcd.abcd.b002
- C. 10.0.64.1
- D. 10.2.0.15

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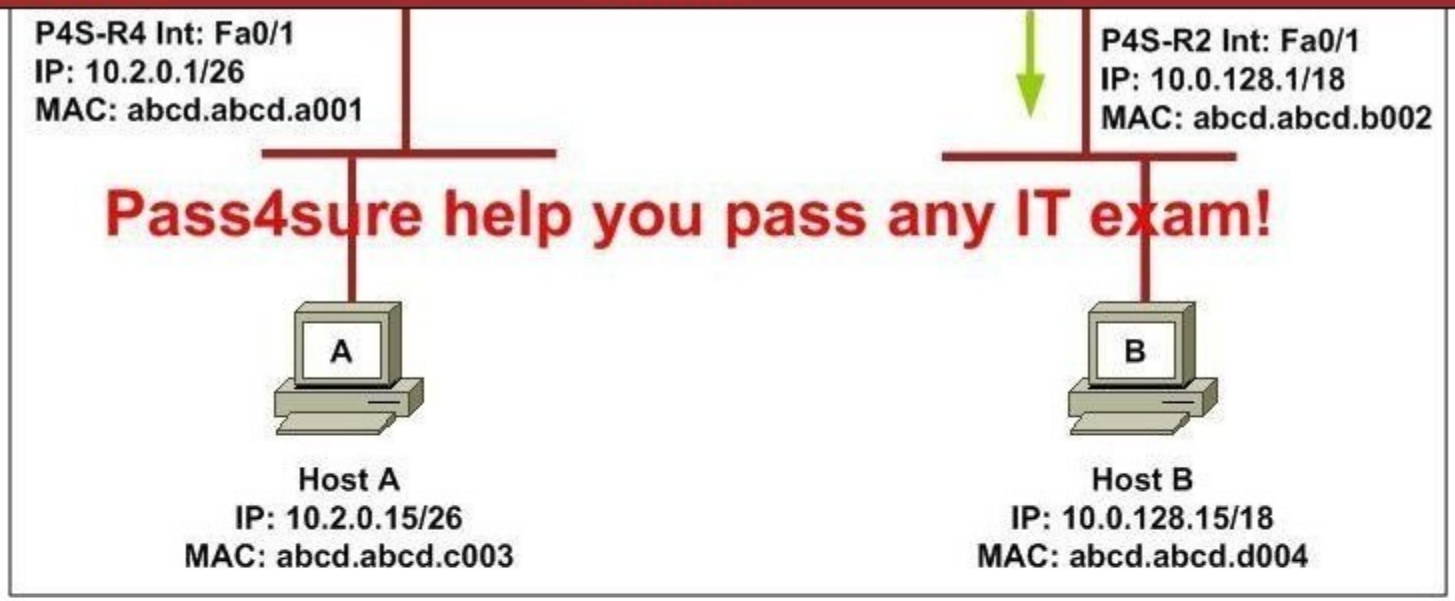


- A. abcd.abcd.a001
- B. abcd.abcd.b002
- C. 10.0.64.1
- D. 10.2.0.15

## Answer & Explanation

### Correct Answer

B D

### Explanations

Host use ARP to learn the MAC address of other devices in current subnet, but a router is needed when forwarding to other subnet. Cisco IOS software uses a proxy ARP (RFC 1027) to inform host without routing information host MAC address of other networks or sub-net. Look at the Figure above, the router receives ARP request, if the requested host and host sending the ARP request are connected to different interface, and all the routes in routers heading for this host will pass through other interface, router will generate a proxy ARP response data packet, pointing out its own local MAC address. In this way, the host sends ARP request will send packets to the router, which again will forward it to the destination host.

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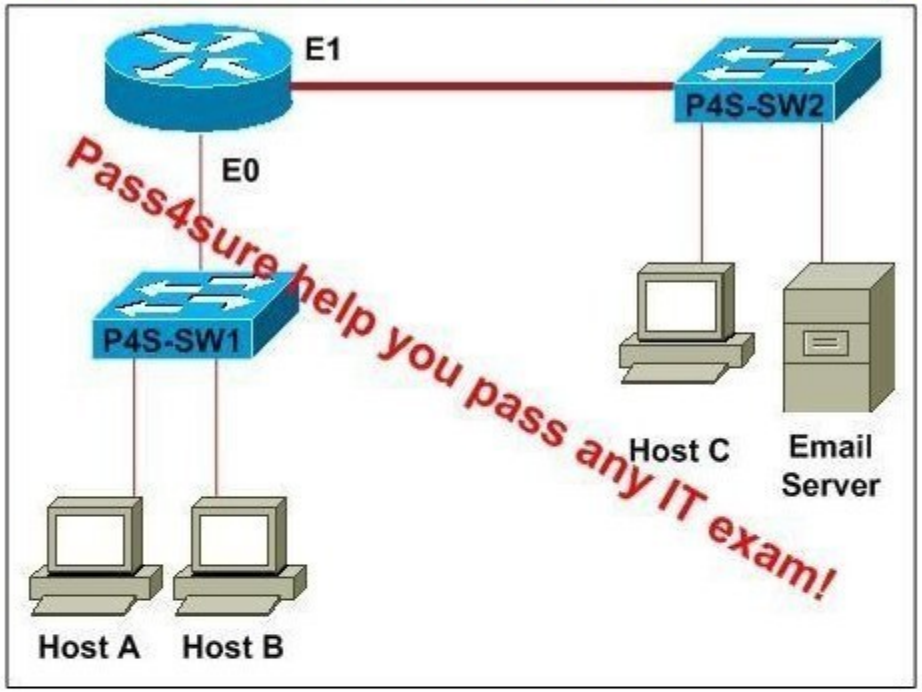
Mark for Review

Refer to the following exhibit, which destination addresses will Host A use to send data to Host C? (Choose two.)

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- A. the Host C MAC address
- B. the IP address of the router's E0 interface
- C. the Host C IP address
- D. the MAC address of the router's E0 interface

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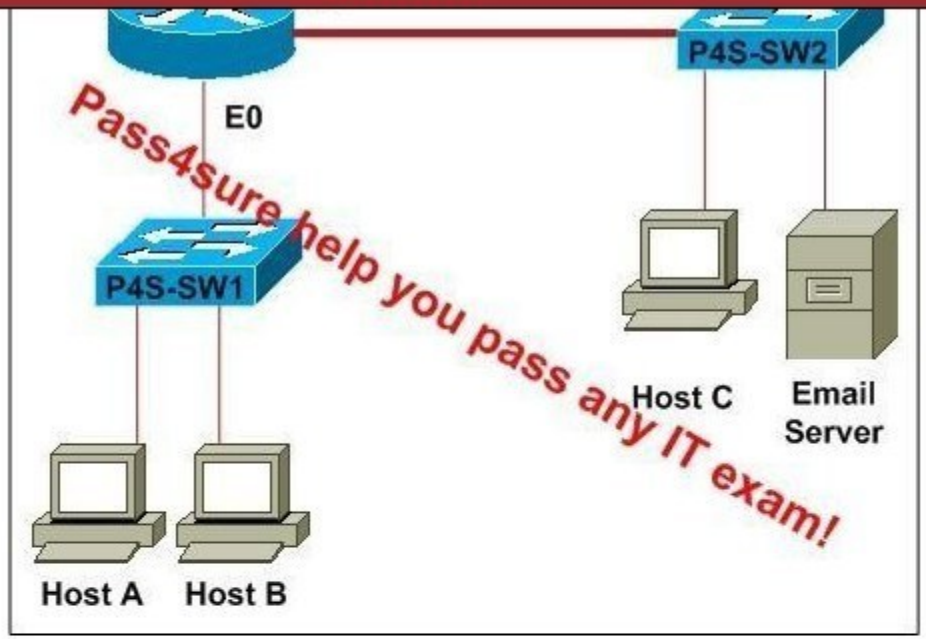


- [ ] A. the Host C MAC address
- [ ] B. the IP address of the router's E0 interface
- [ ] C. the Host C IP address
- [ ] D. the MAC address of the router's E0 interface

## Answer & Explanation

### Correct Answer

C D

### Explanations

When Host A sends data to Host C
Source IP: Host A IP address
Destination IP: Host C IP address
Source MAC: Host C MAC address
Destination MAC: MAC address of the router's E0 interface

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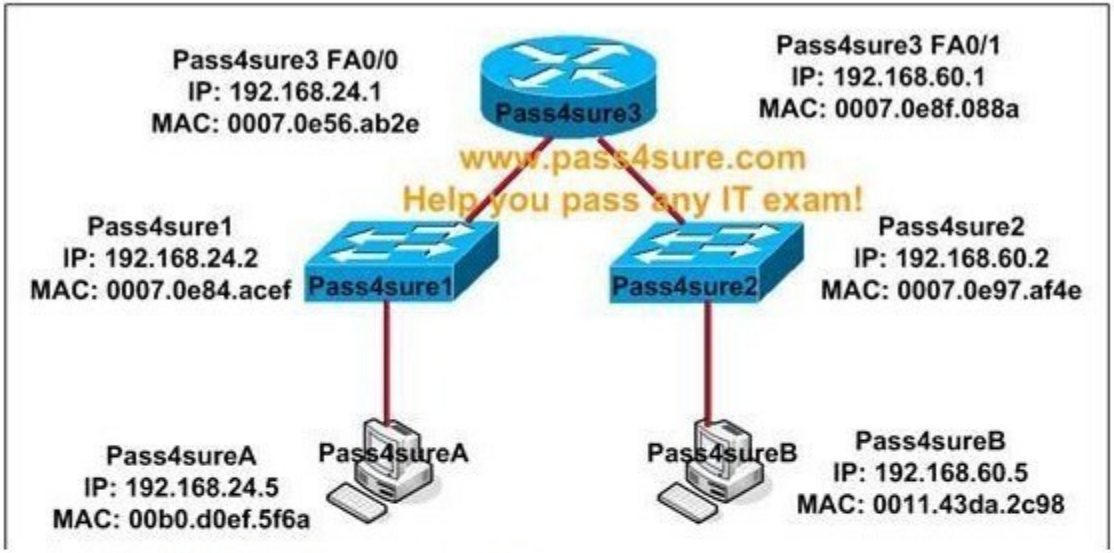
Mark for Review

Refer to the following exhibit:




Please study the exhibit shown above carefully and answer the following question:

what is the correct addressing for a frame and packet received by Host Pass4sureB from Host Pass4sureA?

A. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e8f.088a
Destination IP: 192.168.60.5
Source IP: 192.168.24.5

B. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e8f.088a
Destination IP: 192.168.60.5
Source IP: 192.168.60.1

C. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e97.af4e
Destination IP: 192.168.60.5
Source IP: 192.168.60.2

D. Destination MAC: 0011.43da.2c98

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Please study the exhibit shown above carefully and answer the following question:

what is the correct addressing for a frame and packet received by Host Pass4sureB from Host Pass4sureA?

A. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e8f.088a
Destination IP: 192.168.60.5
Source IP: 192.168.24.5

B. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e8f.088a
Destination IP: 192.168.60.5
Source IP: 192.168.60.1

C. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e97.af4e
Destination IP: 192.168.60.5
Source IP: 192.168.60.2

D. Destination MAC: 0011.43da.2c98
Source MAC: 00b0.d0ef.5f6a
Destination IP: 192.168.60.5
Source IP: 192.168.24.5

## Answer & Explanation

### Correct Answer

A

### Explanations

With ARP host learns that the current subnet has no MAC address of other devices, but needs a router to go to other subnet. Cisco IOS software uses a proxy ARP (RFC 1027 definition) to help the host with no routing selection information to obtain the MAC address of other networks or subnet. Therefore, the destination IP address and MAC in the frame are IP and MAC address of Pass4sureB, the source MAC is MAC of Pass4sure1, and IP address is of Pass4sureA.

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Mark for Review

Refer to the exhibit. Host P4S-A needs to send data to Host P4S-B. Which Layer 2 and Layer 3 destination addresses will be used to send the data from Host P4S-A to Host P4S-B?

- A. 192.168.60.5 and 0011.43da.2c98
- B. 192.168.60.5 and 0007.0e56.ab2e
- C. 192.168.24.1 and 0007.0e56.ab2e
- D. 192.168.24.2 and 0007.0e84.acef

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Mark for Review

Refer to the exhibit. Host P4S-A needs to send data to Host P4S-B. Which Layer 2 and Layer 3 destination addresses will be used to send the data from Host P4S-A to Host P4S-B?

- A. 192.168.60.5 and 0011.43da.2c98
- B. 192.168.60.5 and 0007.0e56.ab2e
- C. 192.168.24.1 and 0007.0e56.ab2e
- D. 192.168.24.2 and 0007.0e84.acef

## Answer & Explanation

### Correct Answer

B

### Explanations

When Host P4S-A send data to Host P4S-B, because it is communication across subnet, it is necessary to use router. Host A launches ARP request to Router P4S-R, because P4S-R is connected to network 192.168.60.0, thus responds to ARP, and use its own Fa0/0 as destination MAC address. So destination address is 192.168.60.5, and MAC address is MAC address of Fa0/0.

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Mark for Review

Refer to the exhibit. Both switches are using a default configuration. Which two destination addresses will P4S-D use to send data to P4S-A? (Choose two.)

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- A. the IP address of P4S-A
- B. the IP address of P4S-D
- C. the MAC address of P4S-A
- D. the MAC address of P4S-D
- E. the MAC address of the Fa0/0 interface of the P4S-R router
- F. the MAC address of the Fa0/1 interface of the P4S-R router

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- A. the IP address of P4S-A
- B. the IP address of P4S-D
- C. the MAC address of P4S-A
- D. the MAC address of P4S-D
- E. the MAC address of the Fa0/0 interface of the P4S-R router
- F. the MAC address of the Fa0/1 interface of the P4S-R router

## Answer & Explanation

### Correct Answer

A F

### Explanations

When Host P4S-D send data to Host P4S-A, because it is communication across subnet, it is necessary to use router. Host P4S-D launches ARP request to Router P4S-R, because P4S-R is connected to network P4S-A, thus responds to ARP, and use its own Fa0/1 as destination MAC address. So destination address is IP of P4S-A, and MAC address is MAC of Fa0/1.

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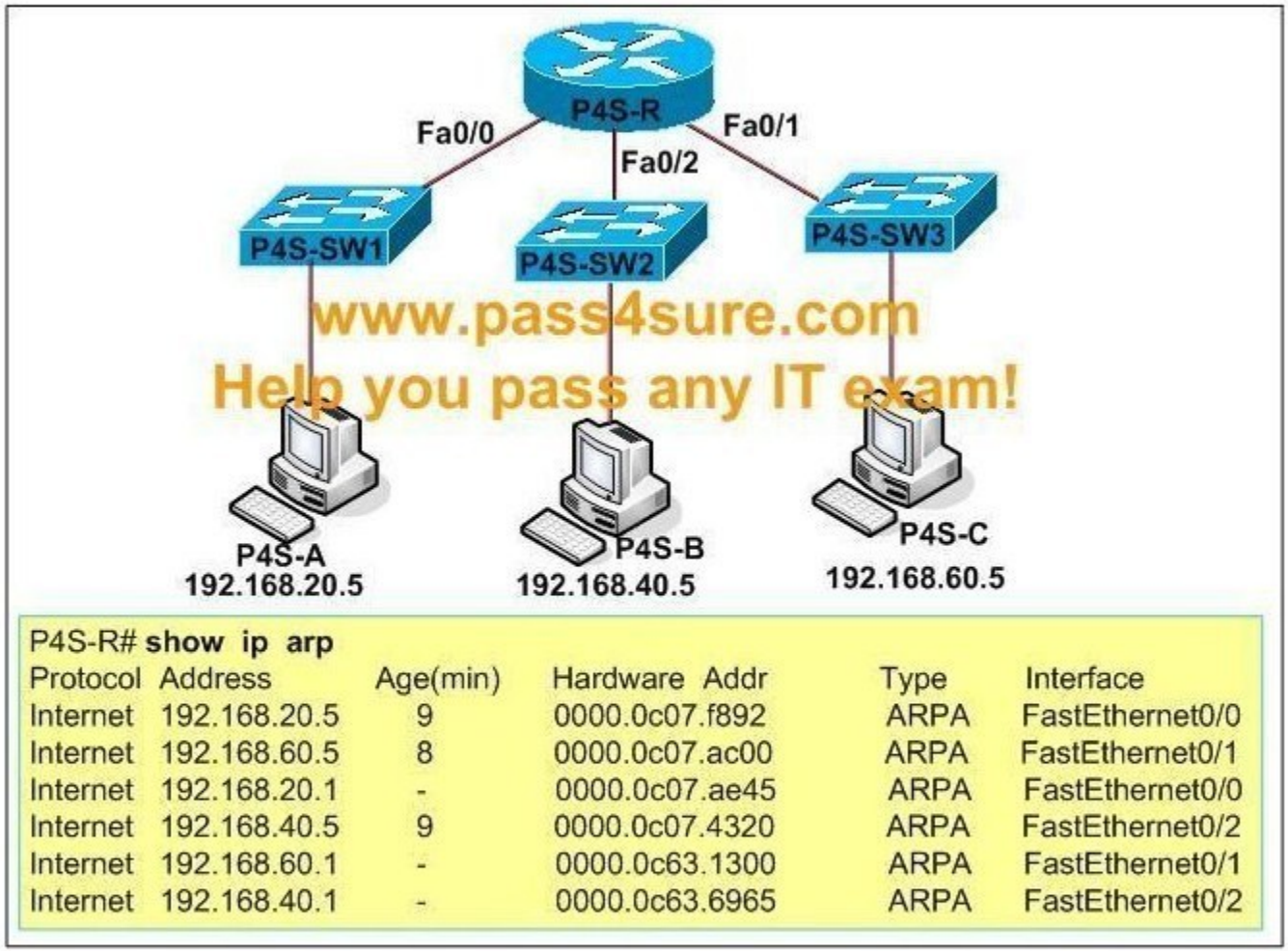
Mark for Review

Refer to the exhibit. Host P4S-A is to send data to Host P4S-B. How will P4S-B handle the data frame received from Host P4S-A? (Choose three.)




P4S-R# **show ip arp**

| Protocol | Address | Age(min) | Hardware Addr | Type | Interface |
|---|---|---|---|---|---|
| Internet | 192.168.20.5 | 9 | 0000.0c07.f892 | ARPA | FastEthernet0/0 |
| Internet | 192.168.60.5 | 8 | 0000.0c07.ac00 | ARPA | FastEthernet0/1 |
| Internet | 192.168.20.1 | - | 0000.0c07.ae45 | ARPA | FastEthernet0/0 |
| Internet | 192.168.40.5 | 9 | 0000.0c07.4320 | ARPA | FastEthernet0/2 |
| Internet | 192.168.60.1 | - | 0000.0c63.1300 | ARPA | FastEthernet0/1 |
| Internet | 192.168.40.1 | - | 0000.0c63.6965 | ARPA | FastEthernet0/2 |

- A. P4S-R will strip off the source MAC address and replace it with the MAC address on the forwarding FastEthernet interface.
- B. P4S-R will strip off the source IP address and replace it with the IP address on the forwarding FastEthernet interface.
- C. P4S-R will strip off the destination MAC address and replace it with the MAC address of Host P4S-B
- D. P4S-R will forward the data frame out interface FastEthernet0/2.

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P4S-R# **show ip arp**

| Protocol | Address | Age(min) | Hardware Addr | Type | Interface |
|---|---|---|---|---|---|
| Internet | 192.168.20.5 | 9 | 0000.0c07.f892 | ARPA | FastEthernet0/0 |
| Internet | 192.168.60.5 | 8 | 0000.0c07.ac00 | ARPA | FastEthernet0/1 |
| Internet | 192.168.20.1 | - | 0000.0c07.ae45 | ARPA | FastEthernet0/0 |
| Internet | 192.168.40.5 | 9 | 0000.0c07.4320 | ARPA | FastEthernet0/2 |
| Internet | 192.168.60.1 | - | 0000.0c63.1300 | ARPA | FastEthernet0/1 |
| Internet | 192.168.40.1 | - | 0000.0c63.6965 | ARPA | FastEthernet0/2 |

- A. P4S-R will strip off the source MAC address and replace it with the MAC address on the forwarding FastEthernet interface.
- B. P4S-R will strip off the source IP address and replace it with the IP address on the forwarding FastEthernet interface.
- C. P4S-R will strip off the destination MAC address and replace it with the MAC address of Host P4S-B
- D. P4S-R will forward the data frame out interface FastEthernet0/2.

## Answer & Explanation

### Correct Answer

A C D

### Explanations

When Host P4S-A send data to Host P4S-B, because it is communication across subnet, Host A has no route to access Host B. Host A launches ARP request, when P4S-R receives the request, it will check its own MAC address table, and return an ARP to Host P4S-A. P4S-R will replace frame source MAC address with Fa0/2 MAC address, and replace destination MAC address with Host P4S-B MAC address, before it forwards data to Host P4S-B.

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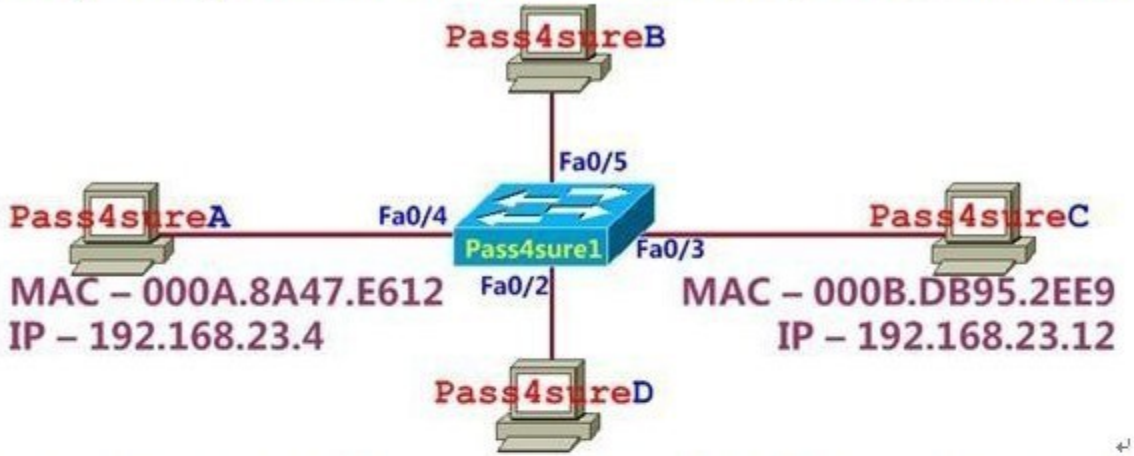
Mark for Review

On a network of one pass4sure department, there are four PCs connected to a switch, as shown in the following figure:




After the switch Pass4sure1 restarts, Pass4sureA ( the host on the left ) sends the first frame to Pass4sureC (the host on the right ).what the first thing should the switch do ?

- A. Pass4sure1 will add 192.168.23.12 to the switching table.
- B. Pass4sure1 will add 192.168.23.4 to the switching table.
- C. Pass4sure1 will add 000A.8A47.E612 to the switching table.
- D. Pass4sure1 will add 000B.DB95.2EE9 to the switching table.

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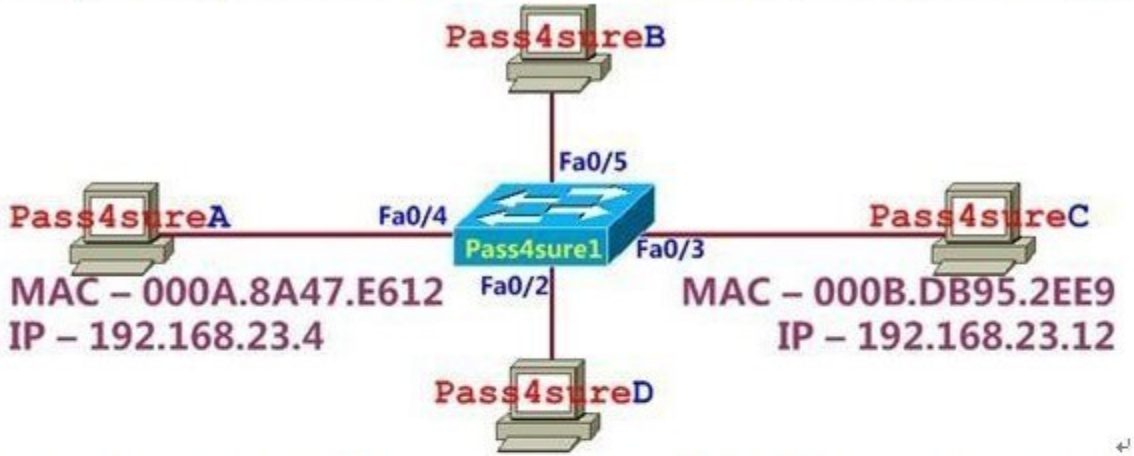
Mark for Review

On a network of one pass4sure department, there are four PCs connected to a switch, as shown in the following figure:

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B. Pass4sure1 will add 192.168.23.4 to the switching table.

C. Pass4sure1 will add 000A.8A47.E612 to the switching table.

D. Pass4sure1 will add 000B.DB95.2EE9 to the switching table.

## Answer & Explanation

### Correct Answer

C

### Explanations

When the switch restarts, its MAC address table is empty. When the frame sent by Pass4sureA to Pass4sureC is across the switch, the switch will learn the source MAC address, if the destination MAC address can't be matched, the frame will be flooded out of all forwarding ports in its VLAN (except the port it was received on). Accordingly,the switch has added the MAC address 000A.8A47.E612 of Pass4sureA to its own switching table in the first step.

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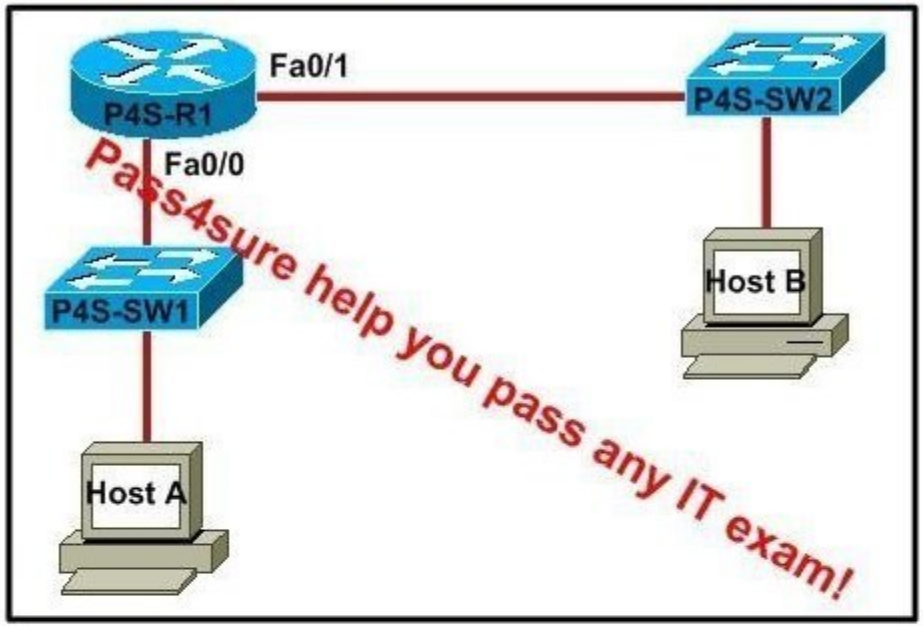
Mark for Review

Which destination addresses will be used by Host A to send data to Host B according to the exhibit? (Choose two.)




- A. the MAC address of P4S-SW1
- B. the MAC address of HostB
- C. the IP address of HostB
- D. the MAC address of P4S-R1 Fa0/0

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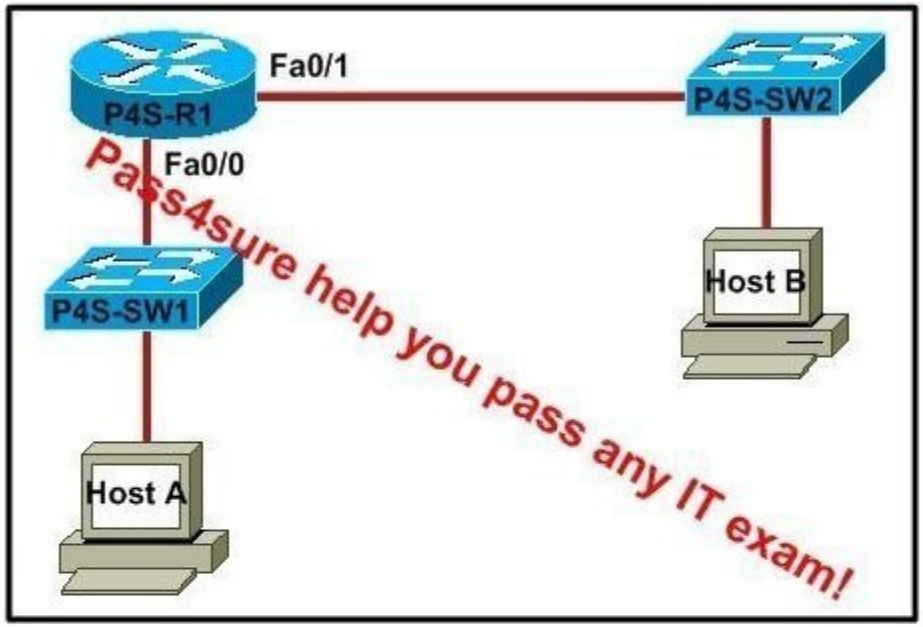
Mark for Review

Which destination addresses will be used by Host A to send data to Host B according to the exhibit? (Choose two.)




- A. the MAC address of P4S-SW1
- B. the MAC address of HostB
- C. the IP address of HostB
- D. the MAC address of P4S-R1 Fa0/0

## Answer & Explanation

### Correct Answer

C D

### Explanations

Before sending data, host A will perform ARP, P4S-R1will reply using Host B mac address to replace fa0/0 mac address, so Host A will use the fao/o mac address as its destination address to send data, while the destination IP address will still be host B IP.

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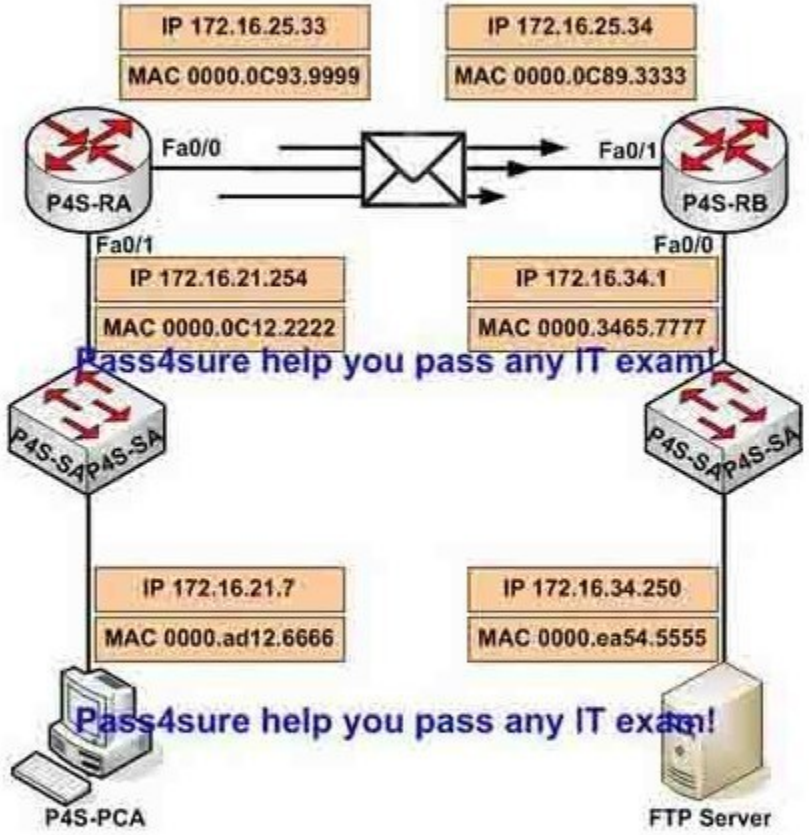
Mark for Review

Refer to the exhibit.P4S-PCA is sending packets to the FTP server.Consider the packets as they leave P4S-RA interface Fa0/0 forwards P4S-RB.Drag the correct frame and packet address to their place in the table.

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**Target**

| Source MAC | Source IP |
|---|---|
| Destination MAC | Destination IP |

**Source**

| | |
|---|---|
| IP 172.16.34.250<br>MAC 0000.ea54.5555 | IP 172.16.21.254<br>MAC 0000.0C12.2222 |
| IP 172.16.25.34<br>MAC 0000.0C89.3333 | IP 172.16.34.1<br>MAC 0000.3465.7777 |
| IP 172.16.25.33<br>MAC 0000.0C93.9999 | IP 172.16.21.7<br>MAC 0000.ad12.6666 |

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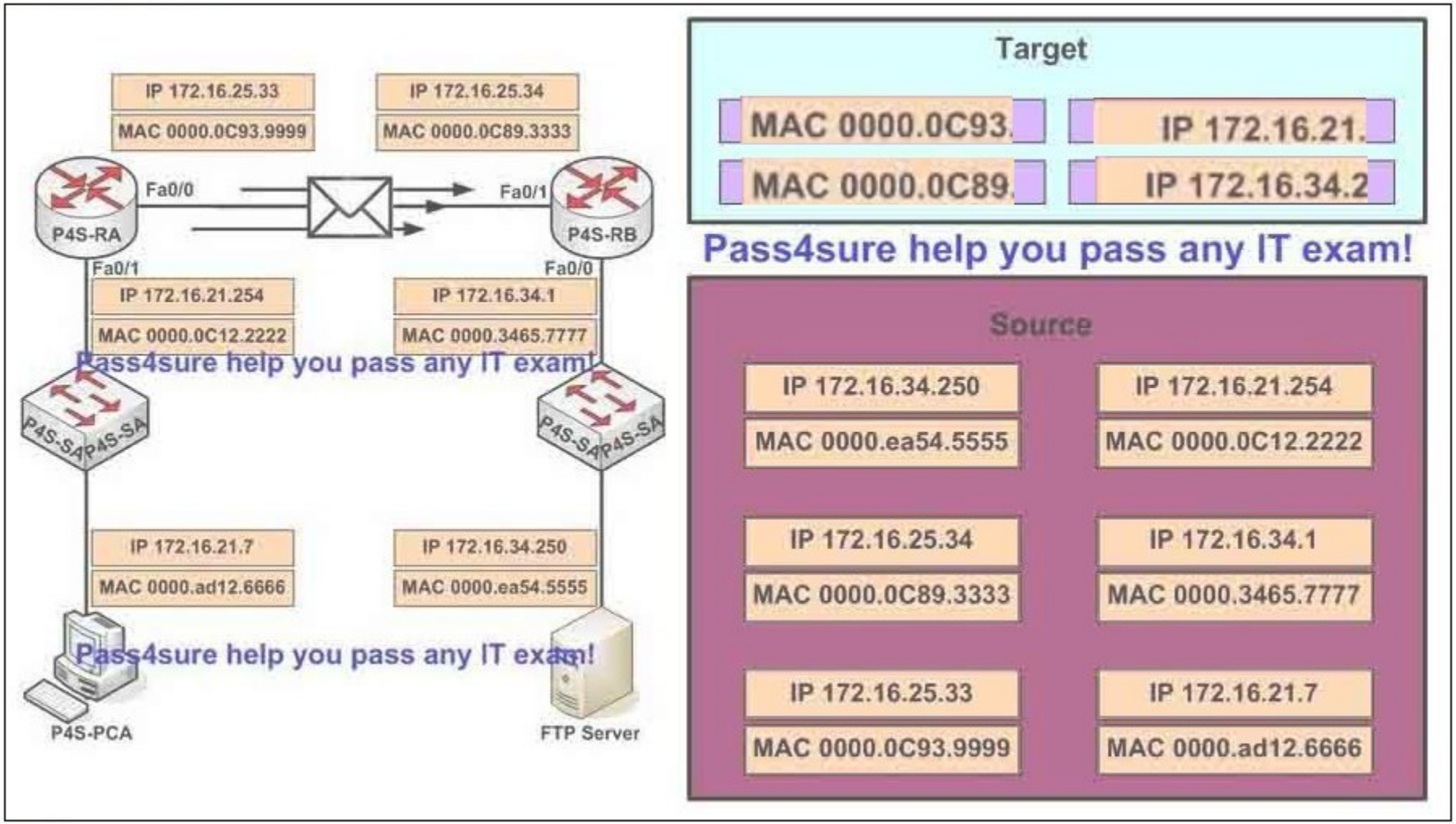
Mark for Review

## Answer & Explanation

### Correct Answer



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### Explanations

When transmitting data packets, the source IP address will not change, while the source mac address and the destination mac address will change while passing the devices, the source mac is the port mac of the sender, the destination mac is the port mac of the next hop device.

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Mark for Review

The Pass4sure network topology is shown below:

You work as a network engineer at Pass4sure.com. The topology of the Pass4sure.com network is displayed in the exhibit. Host Pass4sure1 has established a connection with the HTTP server attached to interface E0 of the Pass4sureB router.

Which of the following statements describe the information contained in protocol data units sent from host Pass4sure1 to this server? (Select three)

- A. The destination port number in a segment header will have a value of 80.
- B. The destination port in a segment header will have a unique value greater than or equal to 1024.
- C. The destination address of a frame will be the MAC address of the HTTP server interface.
- D. The destination address of a frame will be the MAC address of the E0 interface of the Pass4sureA router.
- E. The destination address of a packet will be the address of the E0 interface of the Pass4sureA router.
- F. The destination IP address of a packet will be the IP address of the network interface of the HTTP server.

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You work as a network engineer at Pass4sure.com. The topology of the Pass4sure.com network is displayed in the exhibit. Host Pass4sure1 has established a connection with the HTTP server attached to interface E0 of the Pass4sureB router.

Which of the following statements describe the information contained in protocol data units sent from host Pass4sure1 to this server? (Select three)

- A. The destination port number in a segment header will have a value of 80.
- B. The destination port in a segment header will have a unique value greater than or equal to 1024.
- C. The destination address of a frame will be the MAC address of the HTTP server interface.
- D. The destination address of a frame will be the MAC address of the E0 interface of the Pass4sureA router.
- E. The destination address of a packet will be the address of the E0 interface of the Pass4sureA router.
- F. The destination IP address of a packet will be the IP address of the network interface of the HTTP server.

## Answer & Explanation

### Correct Answer

A D F

### Explanations

The exhibit shows the communications between the Host Pass4sure1 and the HTTP Server. The port number of the HTTP server is 80, HTTP Server is connected to the E0 interface of the Router Pass4sureB , so, the IP address is the IP address of E0 interface . Before sending data packets to the HTTP server, the Host Pass4sure1 will first send ARP request, the E0 interface of Pass4sureA will receive this broadcast ARP information, but it will not forward this broadcast information, so ARP request is still unreachable. Meanwhile, Pass4sureA knows the IP address of the HTTP Server which is its destination, so it will use its E0 interface to reply, that is the proxy ARP reply, at this time ,the MAC address is the MAC address of E0 interface of Pass4sureA .

Proxy ARP: Proxy ARP is evolved from ARP . If a computer without configuring the default gateway wants to communicate with computers of other networks, when receiving ARP request from the source computer , the gateway will use its own MAC address and the IP address of the destination computer to reply to the source computer.

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Mark for Review

The Pass4sure WAN connection is shown below:

Based on this diagram shown above, which two devices can be used to complete the connection between the WAN router at the customer site and the service provider? (Choose two.)

- A. multiplexer
- B. ATM switch
- C. PVC
- D. WAN switc
- E. CSU/DSU
- F. modem

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Mark for Review

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- B. ATM switch
- C. PVC
- D. WAN switc
- E. CSU/DSU
- F. modem

## Answer & Explanation

**Correct Answer**

E F

**Explanations**

Only CSU/DSU and modem can achieve the connection of router to WAN.

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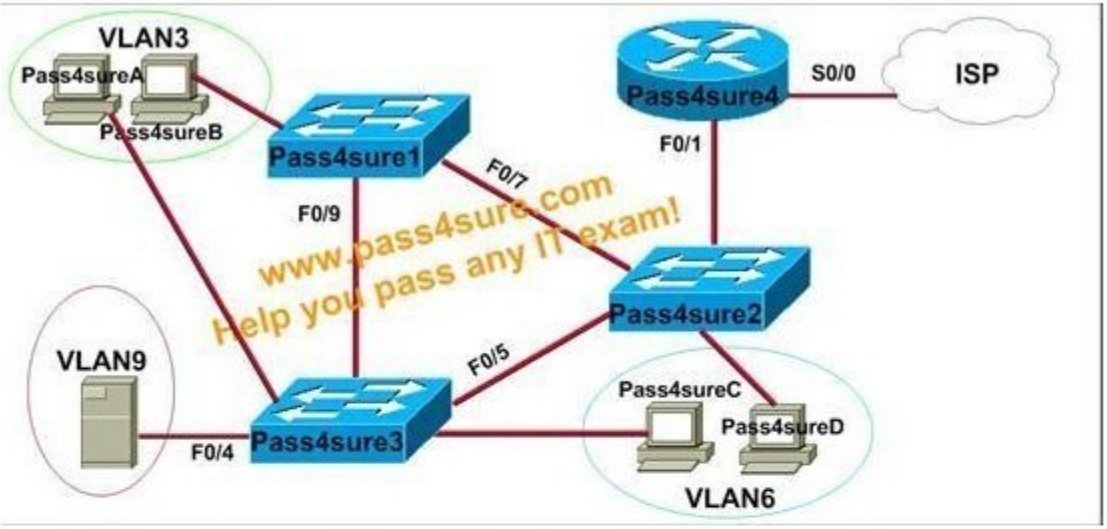
Mark for Review

The Pass4sure network is shown below:




As an administrator, you have studied the exhibit carefully and found a problem with network connectivity. It is suspected that the cable connected to switch port Fa0/9 on Switch Pass4sure1 is disconnected. What would be an effect of this cable being disconnected?

A. Communication between VLAN3 and the other VLANs would be disabled.

B. Pass4Sure B would not be able to access the server in VLAN9 until the cable is reconnected.

C. The transfer of files from Pass4Sure B to the server in VLAN9 would be significantly slower.

D. For less than a minute, Pass4Sure B would not be able to access the server in VLAN9. Then normal network function would resume.

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Mark for Review

The Pass4sure network is shown below:

As an administrator, you have studied the exhibit carefully and found a problem with network connectivity. It is suspected that the cable connected to switch port Fa0/9 on Switch Pass4sure1 is disconnected. What would be an effect of this cable being disconnected?

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- B. Pass4Sure B would not be able to access the server in VLAN9 until the cable is reconnected.
- C. The transfer of files from Pass4Sure B to the server in VLAN9 would be significantly slower.
- D. For less than a minute, Pass4Sure B would not be able to access the server in VLAN9. Then normal network function would resume.

## Answer & Explanation

### Correct Answer

D

### Explanations

There is a loop existing between switches, so a port will be blocked if running STP.As we can see from the figure, the port f0/9 is blocked, which resulted in the loss of connectivity. In normal situation, the election of spanning three will cost 50 seconds at least.In the process of election, Pass4sureB can't visit the server in VLAN 9.

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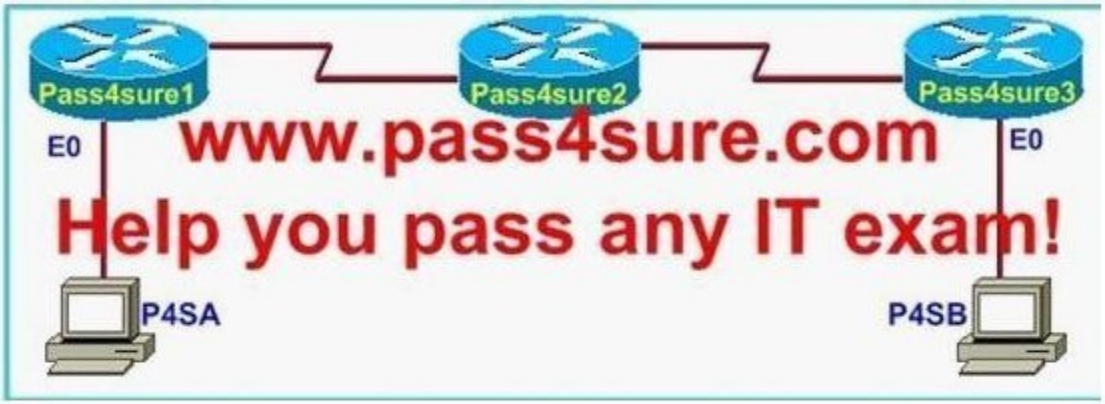
Mark for Review

P4SA is trying to communicate with P4SB. The e0 interface on Pass4sure3 is down. Which of the following are true? (Choose two.)




- A. Pass4sure3 will use ICMP to inform P4SA that P4SB cannot be reached.
- B. Pass4sure3 will use ICMP to inform Pass4sure2 that P4SB cannot be reached.
- C. Pass4sure3 will use ICMP to inform P4SA, Pass4sure1, and Pass4sure2 that P4SB cannot be reached.
- D. Pass4sure3 will send a Destination Unreachable message type.

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Mark for Review

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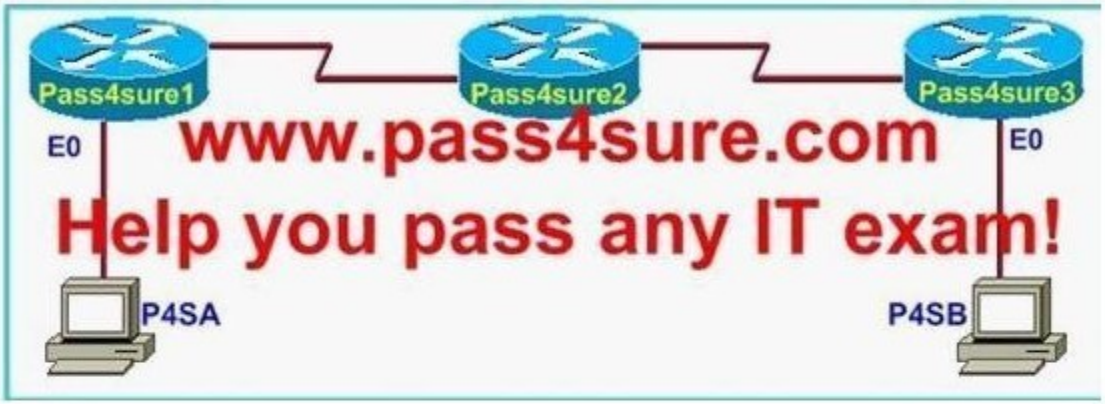


- A. Pass4sure3 will use ICMP to inform P4SA that P4SB cannot be reached.
- B. Pass4sure3 will use ICMP to inform Pass4sure2 that P4SB cannot be reached.
- C. Pass4sure3 will use ICMP to inform P4SA, Pass4sure1, and Pass4sure2 that P4SB cannot be reached.
- D. Pass4sure3 will send a Destination Unreachable message type.

## Answer & Explanation

### Correct Answer

A D

### Explanations

ICMP is an abbreviation of "Internet Control Message Protocol" (Internet Control Message Protocol). It is a sub-protocol of TCP/IP protocol, used for control message transmission among IP host and routers. Control message is network message such as network connected or unconnected, host accessible or inaccessible, route available or unavailable. Although these control messages do not transmit user data, they play an important role in the user data transmission.

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Mark for Review

Refer to the exhibit. The two connected ports on the P4S-S 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 P4S-R and P4S-S ports.
- B. Ensure that cables A and B are straight-through cables.
- C. Reseat all cables.
- D. Ensure the P4S-S has power.

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Mark for Review

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- C. Reseat all cables.
- D. Ensure the P4S-S has power.

## Answer & Explanation

**Correct Answer**

B C D

**Explanations**

Straight-through cables are used to connect hosts to a switch (or hub) and routers to a switch (or hub).

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Mark for Review

The above describes some categories, while the below provides their corresponding router output lines.
Drag the above items to the proper locations.

Layer 2 problem

Port disabled

Port operational

Layer 1 problem

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Serial0/1 is up, line protocol is up

Serial0/1 is up, line protocol is down

Serial0/1 is down, line protocol is down

Serial0/1 is administrator down, line protocol is down

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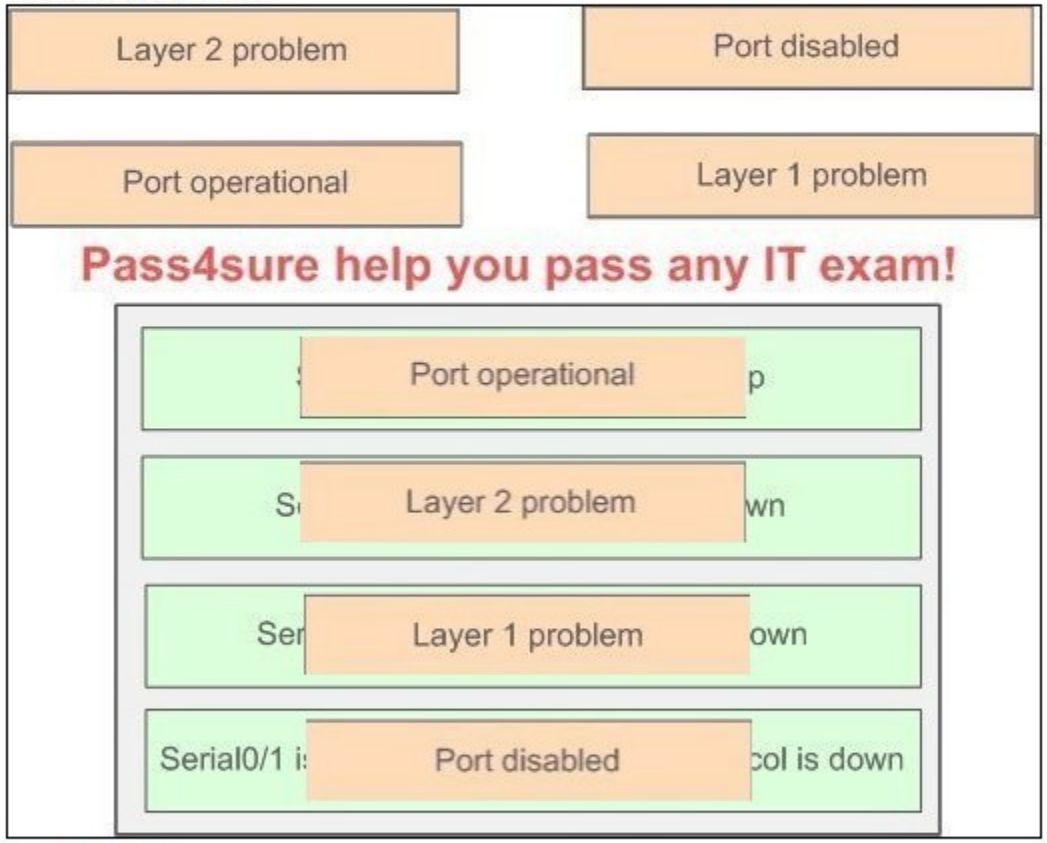
Mark for Review

Serial0/1 is administrator down, line protocol is down

## Answer & Explanation

### Correct Answer




### Explanations

1. serial0/0 up, line protocol is up The interface is up and the line protocol is up
2. serial0/0 down, line protocol is down The interface is down and there is something wrong with the physical layer
3. serial0/0 up, line protocol is down The interface is up, but the encapsulation format is not matching, clock rate issues
4. serial0/0 is administrator down, line protocol is down The interface is down

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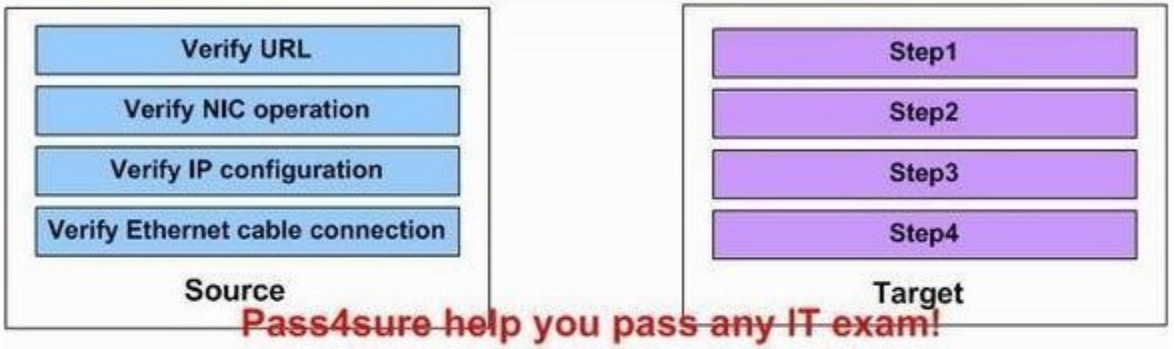
Exhibit:

A user is unable to connect to the Internet. Based on the layered approach to troubleshooting and beginning with the lowest layer.Follow the guide and drag the contents to relevant modules

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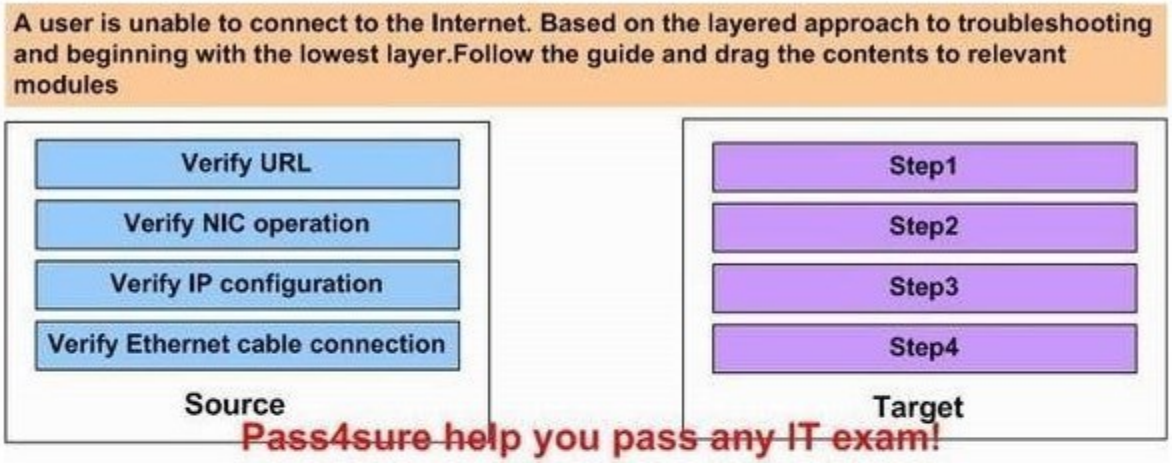
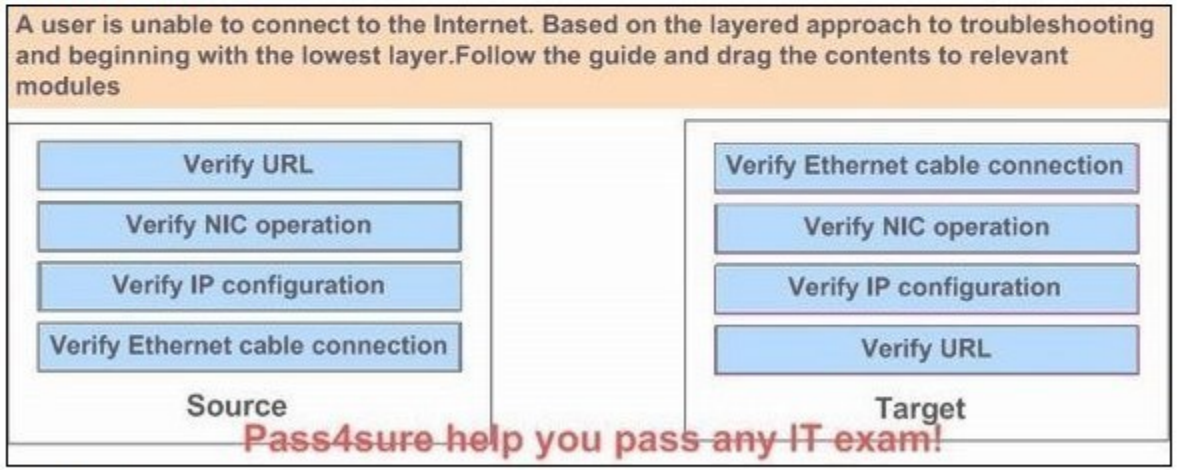
Mark for Review

Exhibit:




## Answer & Explanation

### Correct Answer




### Explanations

This question requires troubleshooting and beginning with the lowest layer. Cable belongs to the physical layer, NIC belongs to the Data Link Layer, IP belongs to the network layer, URL belongs to the application layer.

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Mark for Review

Which three types of layer 2 encapsulation are used by the WAN and differ from the LAN?(Choose three)

- A. HDLC
- B. Ethernet
- C. Token bus
- D. PPP
- E. CSMA/CD
- F. Frame Relay

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Mark for Review

Which three types of layer 2 encapsulation are used by the WAN and differ from the LAN?(Choose three)

- A. HDLC
- B. Ethernet
- C. Token bus
- D. PPP
- E. CSMA/CD
- F. Frame Relay

## Answer & Explanation

### Correct Answer

A D F

### Explanations

On each WAN link, data is encapsulated into frame before being transmitted over the WAN link. In order to implement the accurate protocol, it is required to configure the correct type of layer2 encapsulation. The selection of the protocol depends on the WAN technology and the communication devices being used.
Common Layer 2 encapsulation protocols are HDCL, PPP and Frame Relay.

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Topic 2 - Configure, verify and troubleshoot a switch with VLANs and interswitch communications (120 Questions)

Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts
Explain the technology and media access control method for Ethernet networks
Explain network segmentation and basic traffic management concepts
Explain basic switching concepts and the operation of Cisco switches
Perform and verify initial switch configuration tasks including remote access management
Verify network status and switch operation using basic utilities (including: ping, traceroute, telnet, SSH, arp, ipconfig), SHOW _DEBUG commands
Identify, prescribe, and resolve common switched network media issues, configuration issues, auto negotiation, and switch hardware failures
Describe enhanced switching technologies (including: VTP, RSTP, VLAN, PVSTP, 802.1q)
Describe how VLANs create logically separate networks and the need for routing between them
Configure, verify, and troubleshoot VLANs
Configure, verify, and troubleshoot trunking on Cisco switches
Configure, verify, and troubleshoot interVLAN routing
Configure, verify, and troubleshoot VTP
Configure, verify, and troubleshoot RSTP operation
Interpret the output of various show and debug commands to verify the operational status of a Cisco switched network.
Implement basic switch security (including: port security, trunk access, management vlan other than vlan1, etc.)

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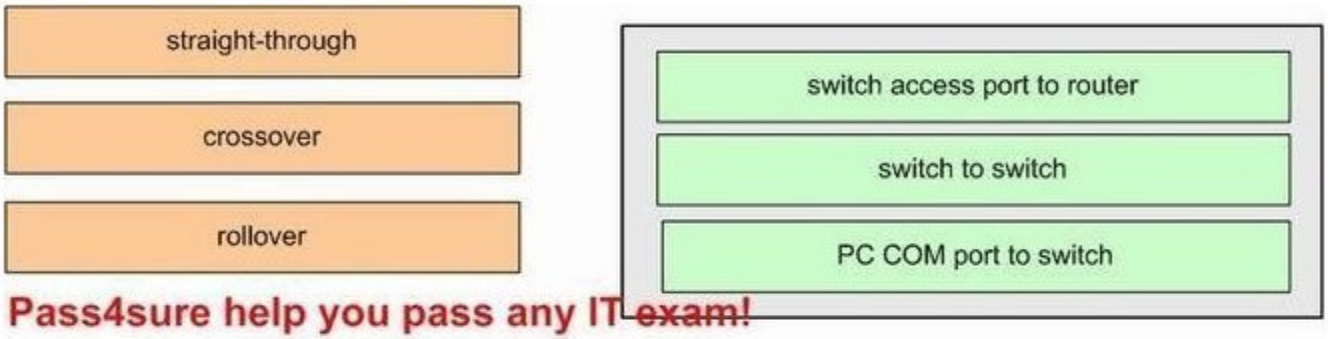
Mark for Review

The left describes the types of cables, while the right describes the purposes of the cables.
Drag the items on the left to the proper locations. (Not all items can be used.)

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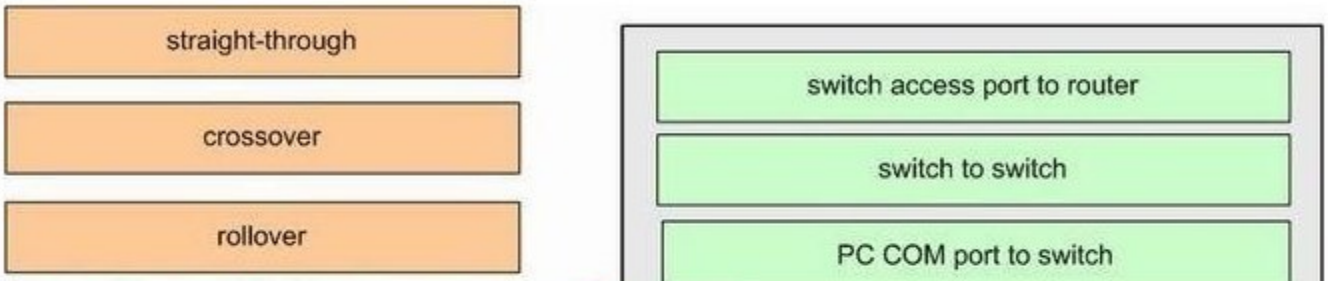
Mark for Review

The left describes the types of cables, while the right describes the purposes of the cables.
Drag the items on the left to the proper locations. (Not all items can be used.)

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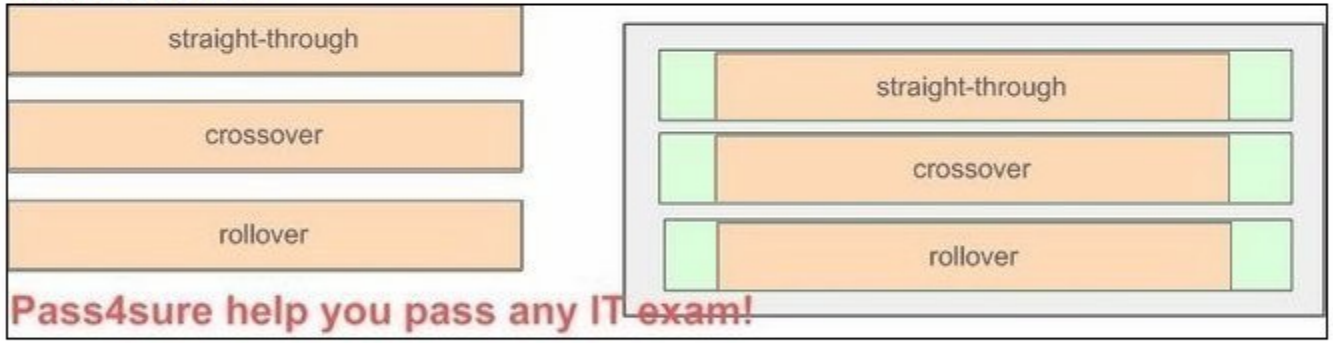
## Answer & Explanation

### Correct Answer

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### Explanations

Crossover cable is used to connect the same devices. Straight-through cable is used to connect different devices

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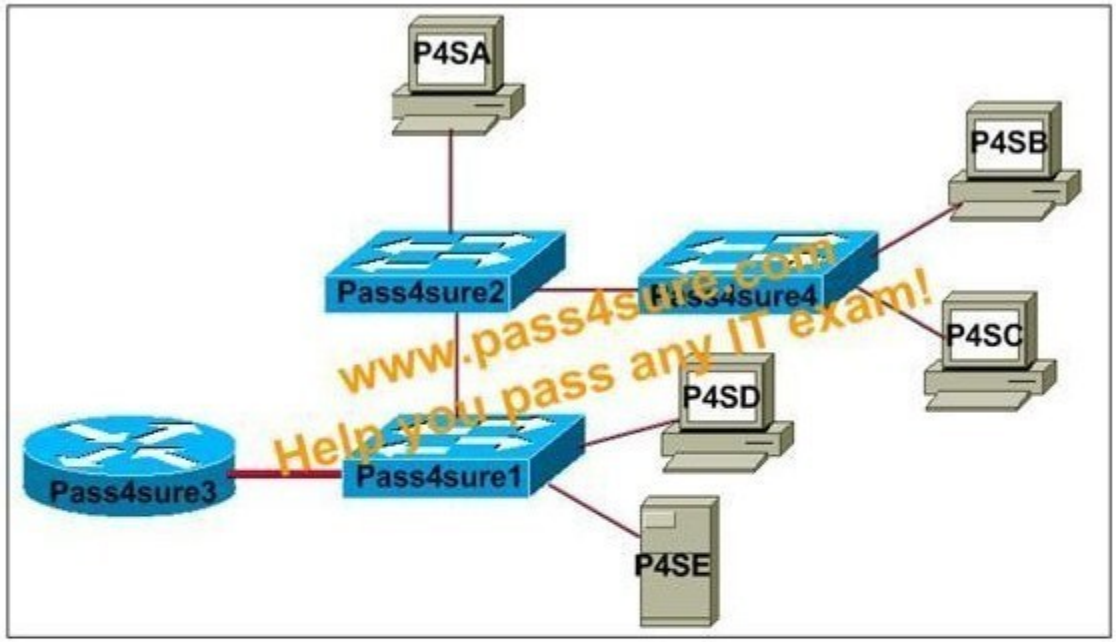
Mark for Review

You work as a network technician at Pass4sure.com. Please study the exhibit carefully. Host P4SA has been added to the network. Which type of cable should be used between Switch Pass4sure2 and host P4SA?

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- A. crossover cable
- B. rollover cable
- C. straight-through cable
- D. console cable

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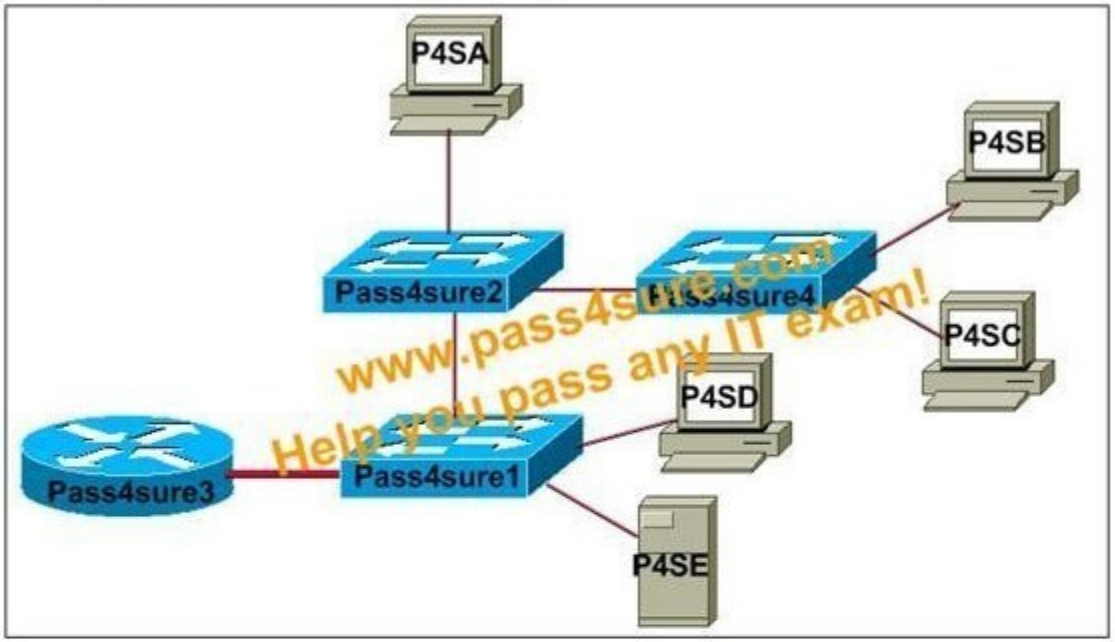
Mark for Review

type of cable should be used between Switch Pass4sure2 and host P4SA?

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- A. crossover cable
- B. rollover cable
- C. straight-through cable
- D. console cable

## Answer & Explanation

### Correct Answer

C

### Explanations

The same layer devices use crossover cable to connect, which is to connect two computers; different layer devices use straight-through cable to connect, which is to connect network devices and computers or network devices and network devices; rollover cable is used to connect host and the com interface of router.

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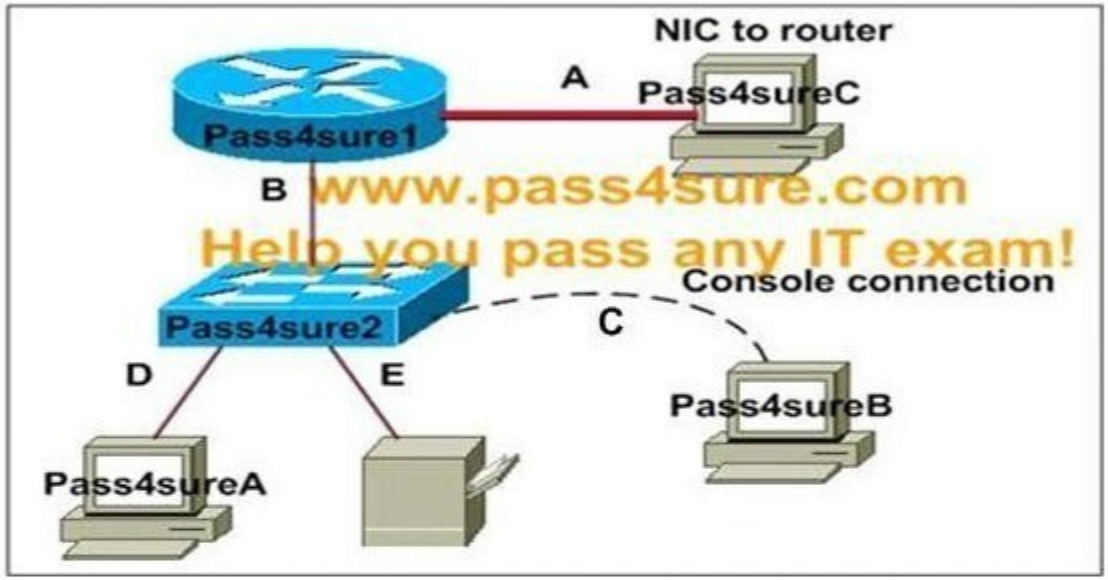
Mark for Review

You work as a network technician at Pass4sure.com. Please study the exhibit carefully. What types of cables are recommended to make the connections that are shown?




A. A-rollover
B-straight-through
C-straight-through
D-rollover
E-crossover

B. A-straight-through
B-straight-through
C-rollover
D-straight-through
E-straight-through

C. A-straight-through
B-crossover
C-rollover
D-straight-through
E-straight-through

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A. A-rollover
B-straight-through
C-straight-through
D-rollover
E-crossover

B. A-straight-through
B-straight-through
C-rollover
D-straight-through
E-straight-through

C. A-straight-through
B-crossover
C-rollover
D-straight-through
E-straight-through

D. A-crossover
B-straight-through
C-rollover
D-straight-through
E-straight-through

## Answer & Explanation

### Correct Answer

D

### Explanations

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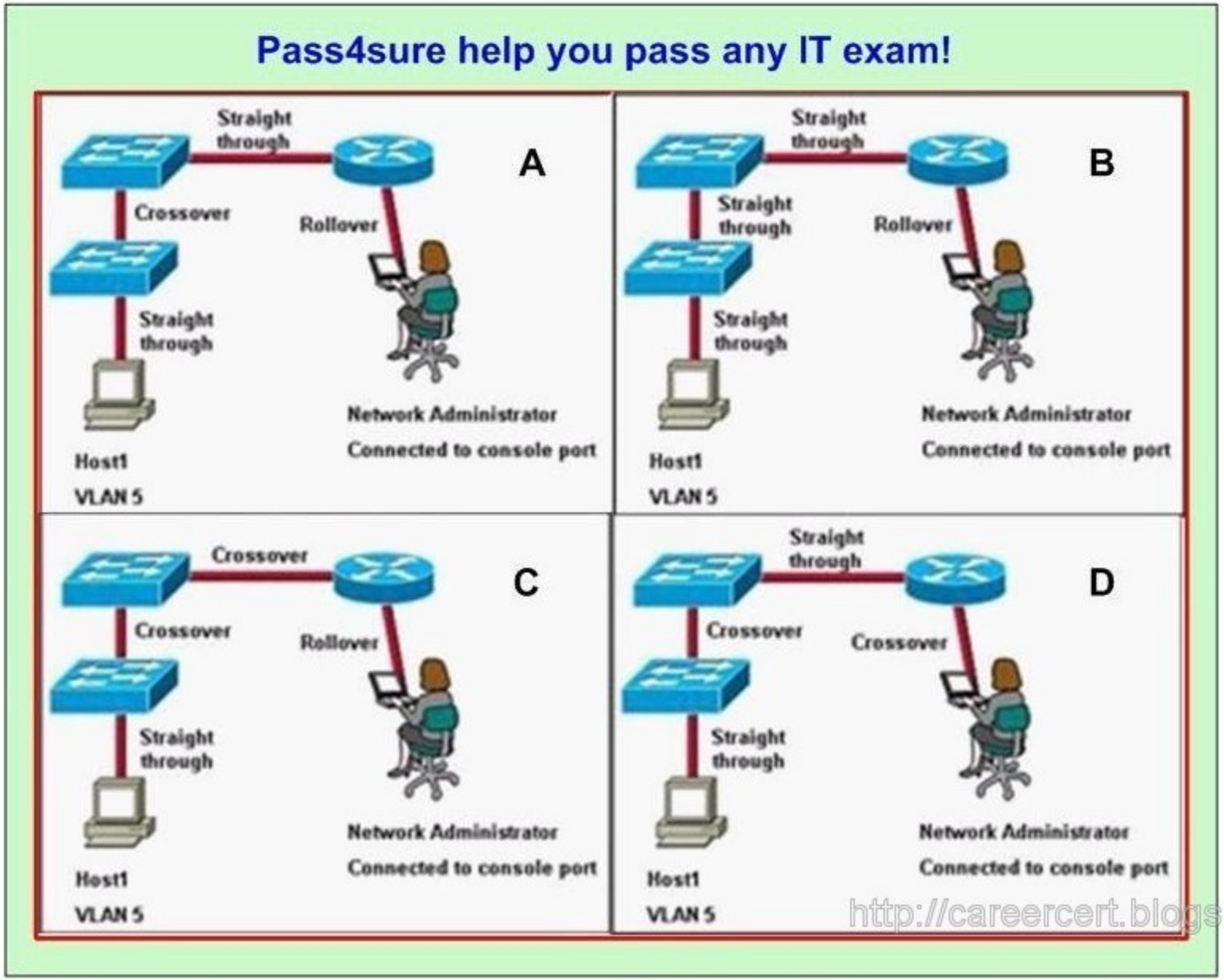
Crossover is used to connect two hosts; straight-through is to connect network devices and hosts, or network devices and network devices; rollover is mainly used to connect workstations and COM interface of network devices.

Mark for Review

Refer to the exhibit. Assuming none of the switches autoconfigure, which of the topologies are properly cabled to allow the administrator to ping Host1 from the router?

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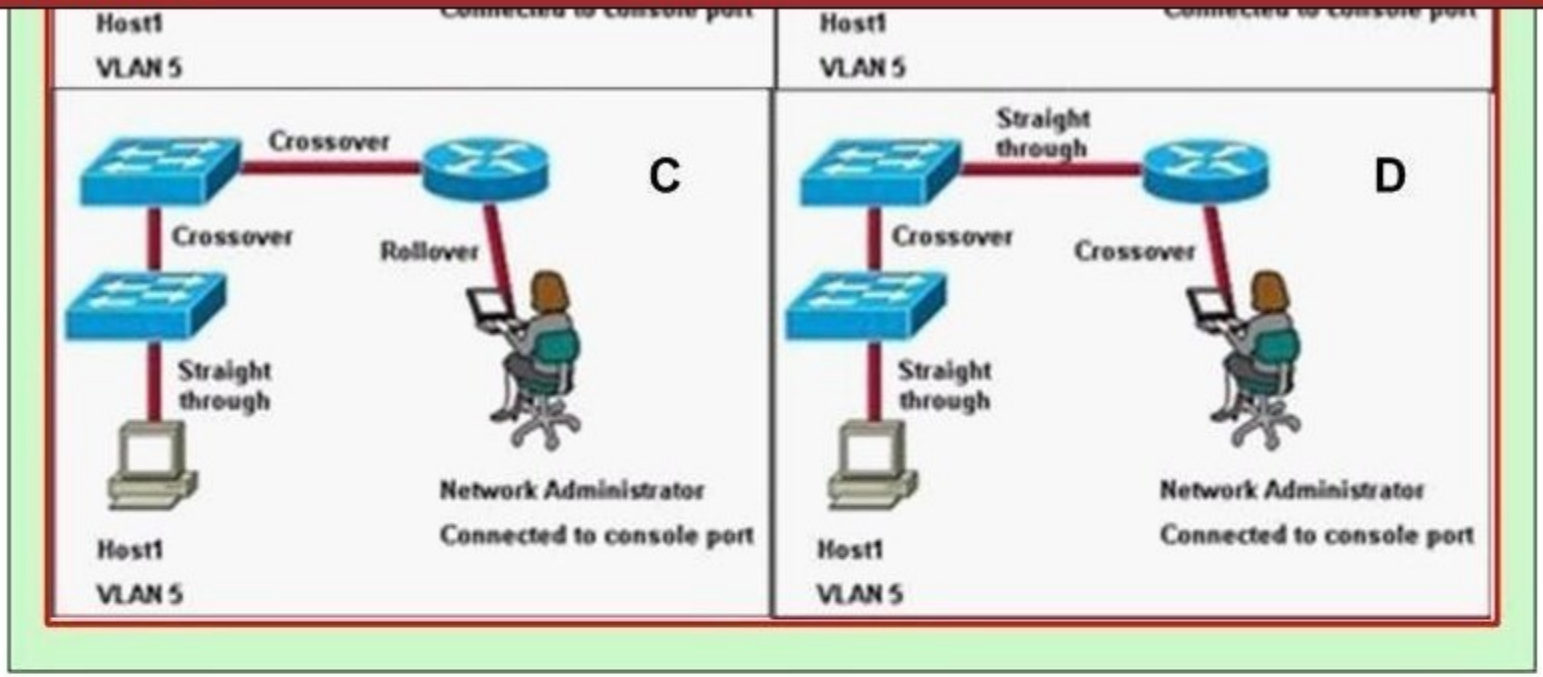


A. A

B. B

C. C

D. D

## Answer & Explanation

### Correct Answer

A

### Explanations

When connecting other devices to a switch, such as a router or workstations, a straight through cable is used. The only exception to this rule is when you are connecting another switch to a switch, in which case a cross over cable should be used. For a serial connection to another router or to a WAN, a serial cable should be used. Finally, when connecting directly to the console port of a Cisco device, a rollover cable should be used. This cable is also commonly referred to as a console cable.

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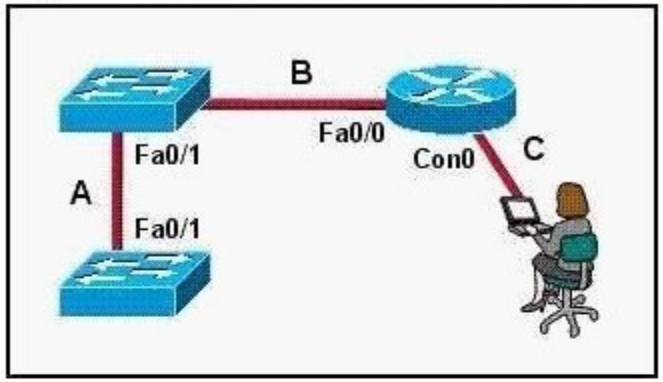
Mark for Review

Which set of terms correctly identifies the cable types shown in the exhibit? Assume that none of the switches autoconfigure.




A. A: straight-through
B: straight-through
C: rollover

B. A: crossover
B: crossover
C: rollover

C. A: crossover
B: straight-through
C: straight-through

D. A: crossover
B: straight-through
C: rollover

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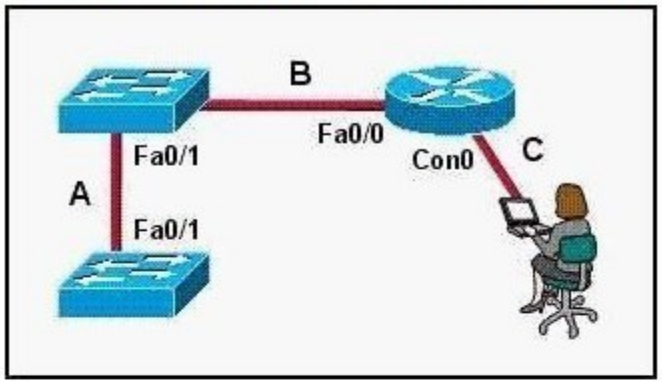
Mark for Review




A. A: straight-through
B: straight-through
C: rollover

B. A: crossover
B: crossover
C: rollover

C. A: crossover
B: straight-through
C: straight-through

D. A: crossover
B: straight-through
C: rollover

## Answer & Explanation

### Correct Answer

D

### Explanations

For Ethernet, use crossover cable for connection between DTE devices or connection from DCE to DCE devices; use straight-through cable for connection from DTE to DCE. DCE device is a hub or switch. Rollover cable is not used to connect Ethernet, which is used to connect host and port com of the router. The cable to connect console port is known as console cable.

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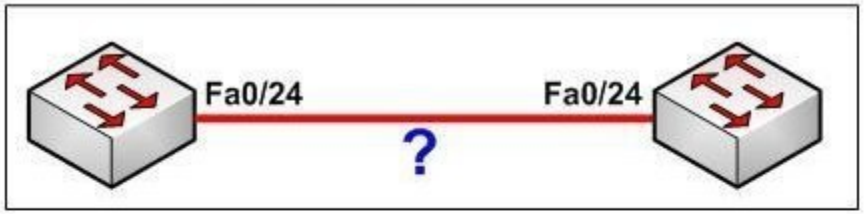
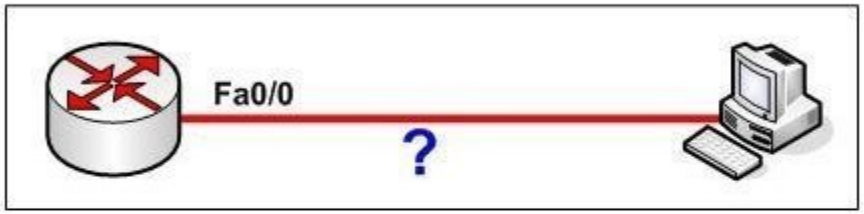
Mark for Review

choose suitable connecting cables for the following two network equipment connection graphs.

QA




QB




A. QA --- Crossover
QB --- Crossover

B. QA --- straight-through
QB --- Crossover

C. QA --- Crossover
QB --- straight-through

D. QA --- straight-through
QB --- straight-through

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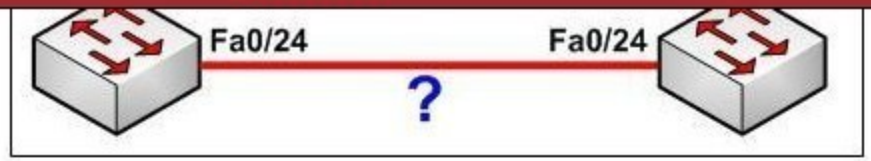
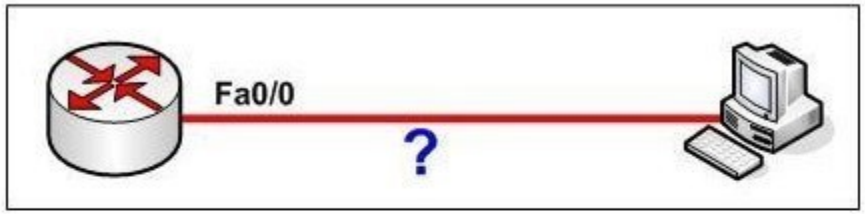
Mark for Review

QA




QB




A. QA --- Crossover
QB --- Crossover

B. QA --- straight-through
QB --- Crossover

C. QA --- Crossover
QB --- straight-through

D. QA --- straight-through
QB --- straight-through

## Answer & Explanation

### Correct Answer

A

### Explanations

Devices of the same layer are connected by crossover cable, while devices of different layers are connected by straight-through cable.
Router ------ Crossover ------- Router
Router ------ Crossover ------- PC
Router ------ straight-through ------- Switch
Switch ------ straight-through ------- PC
Switch ------ Crossover ------- Switch
In addition, types of cables for special interfaces are used depending on the actual situations.

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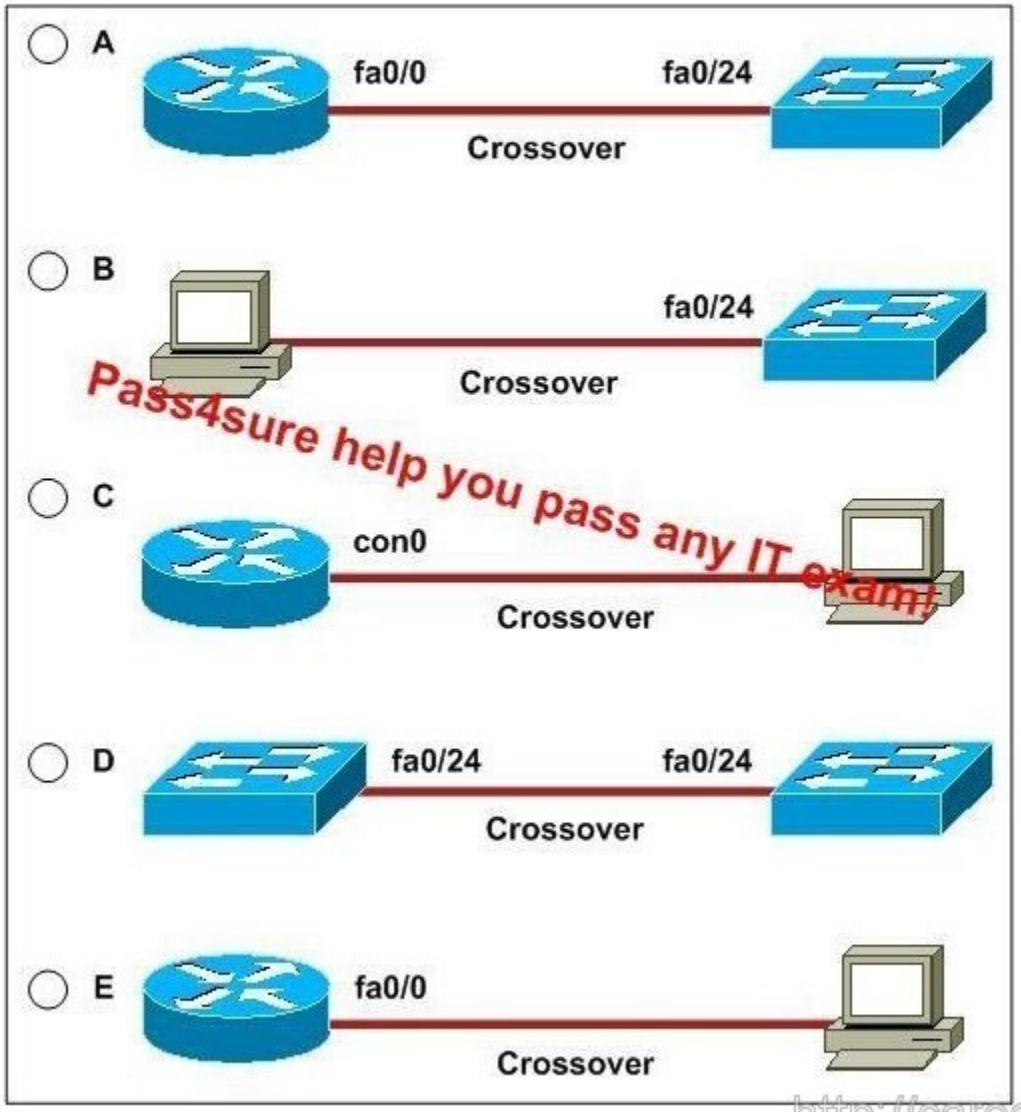
Mark for Review

Twisted pair cabling is a form of wiring in which two conductors are twisted together for the purposes of canceling out electromagnetic interference (EMI) from external sources. Refer to the following topologies, which two use the appropriate twisted-pair cables? (Choose two)

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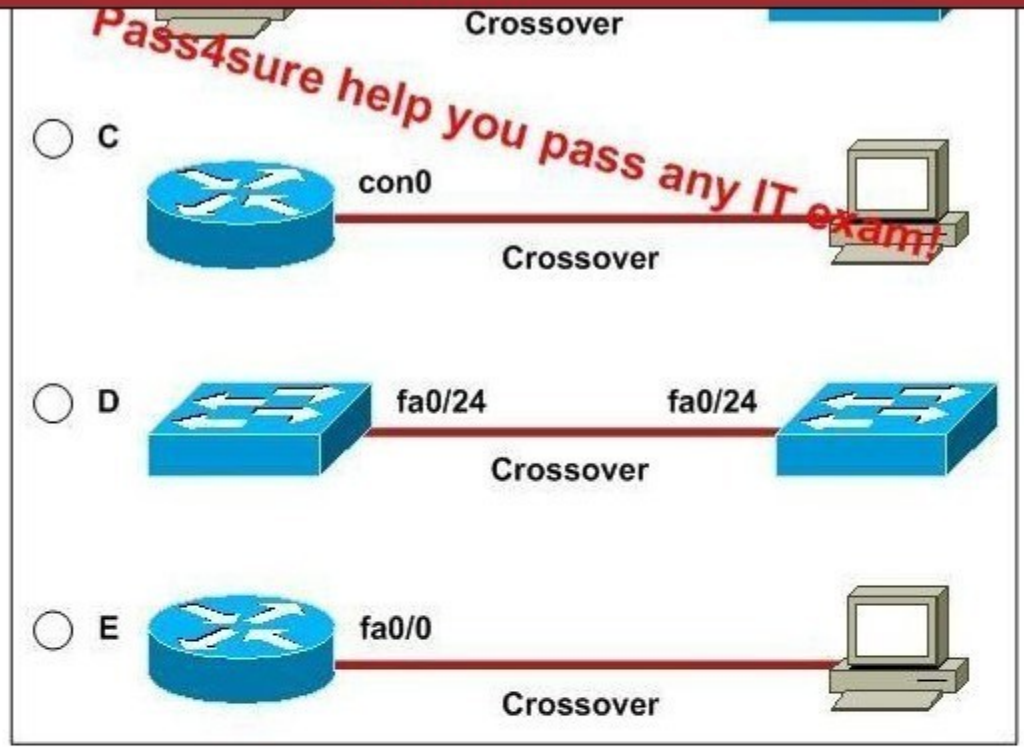
Click here to input the answer.

Mark for Review




Click here to input the answer.

## Answer & Explanation

### Correct Answer

D,E

### Explanations

Devices of the same layer are connected by crossover cable, while devices of different layers are connected by straight-through cable.
Router ------ Crossover ------- Router
Router ------ Crossover ------- PC
Router ------ straight-through ------- Switch
Switch ------ straight-through ------- PC
Switch ------ Crossover ------- Switch
In addition, types of cables for special interfaces are used depending on the actual situations.

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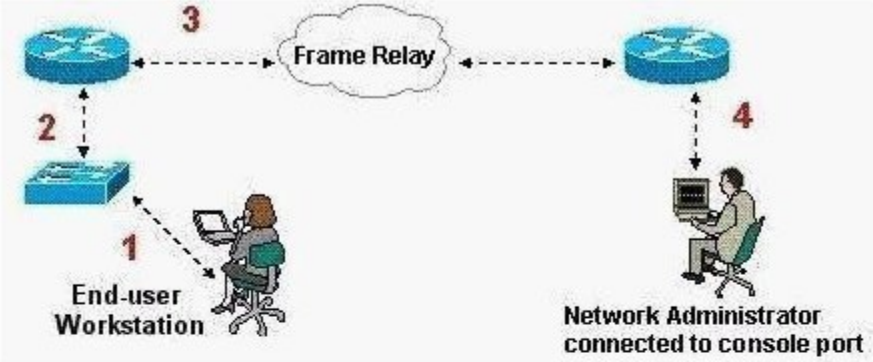
Mark for Review

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

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Mark for Review

A. 1 - Ethernet crossover cable
2 - Ethernet straight-through cable
3 - fiber optic cable
4 - rollover cable

B. 1 - Ethernet straight-through cable
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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

## Answer & Explanation

### Correct Answer

B

### Explanations

When connecting other devices to a switch, such as a router or workstations, a straight through cable is used. The only exception to this rule is when you are connecting another switch to a switch, in which case a cross over cable should be used. For a serial connection to another router or to a WAN, a serial cable should be used. Finally, when connecting directly to the console port of a Cisco device, a rollover cable should be used. This cable is also commonly referred to as a console cable.

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Which one of the following statements is the media access method that Gigabit Ethernet uses?

- A. CSMA/CD
- B. CSMA/CA
- C. token passing
- D. point-to-point

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Mark for Review

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- A. CSMA/CD
- B. CSMA/CA
- C. token passing
- D. point-to-point

## Answer & Explanation

### Correct Answer

A

### Explanations

The Carrier Sense Multiple Access (CSMA) with Collision Detection (CD) protocol is used to control access to the shared Ethernet medium. A switched network (e.g. Fast Ethernet) may use a full duplex mode giving access to the full link speed when used between directly connected NICs, Switch to NIC cables, or Switch to Switch cables.

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Mark for Review

As the Pass4sure network administrator, you want to upgrade the Pass4sure LAN so that all ports operate in full duplex mode. Which is true following regarding about full-duplex Ethernet when comparing to half-duplex Ethernet?

A. Full-duplex Ethernet uses two wires to send and receive. Half-duplex Ethernet uses one wire to send and receive.

B. Full-duplex Ethernet consists of a shared cable segment. Half-duplex Ethernet provides a point-to-point link.

C. Full-duplex Ethernet can provide higher throughput than can half-duplex Ethernet of the same bandwidth.

D. Full-duplex Ethernet uses a loopback circuit to detect collisions. Half-duplex Ethernet uses a jam signal.

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D. Full-duplex Ethernet uses a loopback circuit to detect collisions. Half-duplex Ethernet uses a jam signal.

## Answer & Explanation

### Correct Answer

C

### Explanations

Full-duplex mode: when data sending and receiving split stream, and transmit through two different transmission lines, both communication sides are able to send and receive at the same time, this kind of transmission is called full-duplex;
Half duplex manner: If a single transmission line is used both for sending and receiving, although the data can be transmitted in two directions, but the two sides can not simultaneously send and receive data, such transmission is half-duplex.
CSMA/CD is used to detect whether conflict protocol exists in half-duplex Ethernet. It is a half-duplex Ethernet work mode.
Full-duplex mode will use two links to distinguish between send and receive action, and thus avoid conflict domain.
To use full-duplex, the following requirements are required:
1. P2P Link, or point-to-point connection;
2. Both nodes support full-duplex;
3. Close conflict detection (CSMA/CD).

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How does replacing a hub with a switch affect CSMA/CD behavior in an Ethernet network?

- A. It effectively eliminates collisions.
- B. In increases the size of the collision domain by allowing more devices to be connected at once.
- C. It decreases the amount of time that a jam signal must be sent to reach all network devices.
- D. It reduces the total amount of bandwidth available to each device.

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Mark for Review

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D. It reduces the total amount of bandwidth available to each device.

## Answer & Explanation

### Correct Answer

A

### Explanations

If all network segments in the Ethernet connect with repeaters, because they can not avoid conflict, they remain in the same conflict domain. Switches can be used effectively prevent conflict, but not HUB. Because switch can choose route using physical address, each of its port is a conflict domain. But HUB has no such ability, it will only send out the received data through broadcast, which will easily cause broadcasting storm. All of its ports are in a single conflict domain.

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What are the objectives of the Ethernet protocol using physical addresses? (Choose two.)

- [ ] A. to uniquely identify devices at Layer 2
- [ ] B. to differ a Layer 2 frame from a Layer 3 packet
- [ ] C. to create a priority system to determine which device gets to transmit first
- [ ] D. to allow communication between different devices on the same network

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Mark for Review

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- B. to differ a Layer 2 frame from a Layer 3 packet
- C. to create a priority system to determine which device gets to transmit first
- D. to allow communication between different devices on the same network

## Answer & Explanation

### Correct Answer

A D

### Explanations

In computing, a physical address, also real address, or binary address, is the memory address that is electronically (in the form of binary number) presented on the computer address bus circuitry in order to enable the data bus to access a particular storage cell of main memory.

In a computer with virtual memory, the term physical address is used mostly to differentiate from a virtual address. In particular, in computers utilizing memory management unit (MMU) to translate memory addresses, the virtual and physical address refer to address before and after MMU translation, respectively.

In computer networking, physical address is sometimes a synonym of MAC address. The address is actually used on network's data link layer, not on physical layer, as the name would suggest.

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Mark for Review

When you consider half-duplex and full-duplex Ethernet, what are unique for half-duplex Ethernet? (Choose two.)

- [ ] A. Half-duplex Ethernet operates in a shared collision domain
- [ ] B. Half-duplex Ethernet operates in an exclusive broadcast domain.
- [ ] C. Half-duplex Ethernet has efficient throughput.
- [ ] D. Half-duplex Ethernet has lower effective throughput.

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Mark for Review

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- B. Half-duplex Ethernet operates in an exclusive broadcast domain.
- C. Half-duplex Ethernet has efficient throughput.
- D. Half-duplex Ethernet has lower effective throughput.

## Answer & Explanation

### Correct Answer

A D

### Explanations

Half-duplex refers to that at any time of the communication process, data can be transmitted not only from A to B, but also from B to A, but transmission can be performed only in one direction. Delay will occur for data transmission in Half-duplex mode.
A good example for half-duplex would be single-plank bridge which allows one person to cross this bridge at each end , but only in one direction at a time.
The differences between full-duplex and half-duplex:
1.Half-duplex mode adopts CSMA/CD□carrier sense multiple access with collision detection□.The traditional shared LAN adopted Half-duplex mode ,resulting in collision on cable.
2.Full-duplex mode can be applied to point-to-point Ethernet connection and Fast Ethernet connection, because they use different lines of twisted pair cable, there will be no collision.

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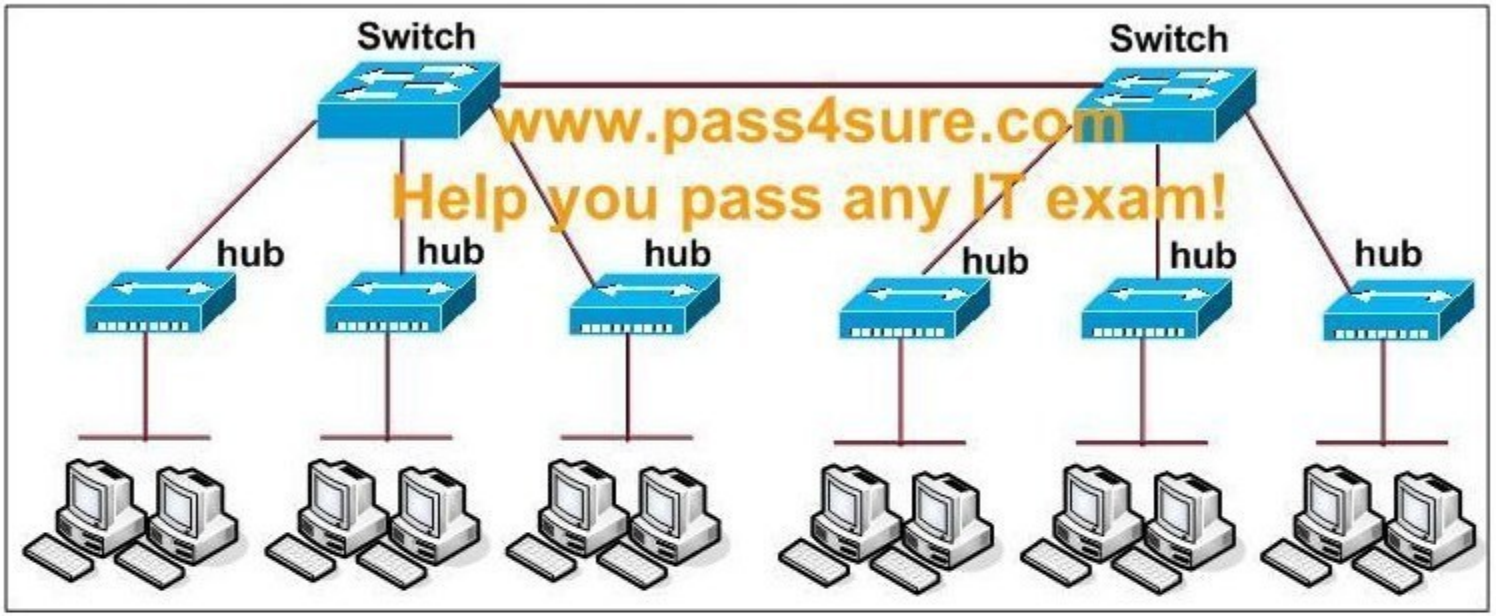
Mark for Review

Both Switches and Hubs are used in the Pass4sure network, please study the exhibit carefully, how many broadcast domains are shown in the graphic assuming only the default VLAN is configured on the switches?




- A. one
- B. two
- C. six
- D. twelve

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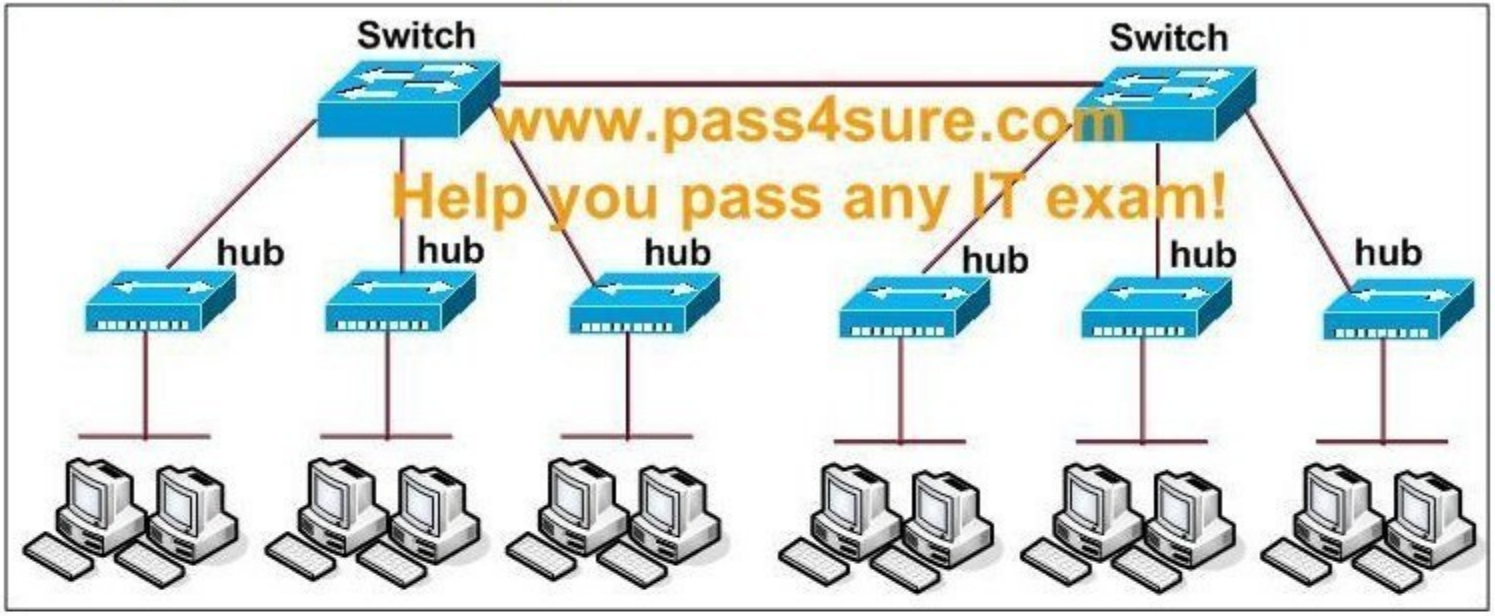


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- A. one
- B. two
- C. six
- D. twelve

## Answer & Explanation

### Correct Answer

A

### Explanations

VLAN (Virtual Local Area Network) technology is to solve the problem that switches can't limit broadcast within the LAN interconnection. This technology can divide a LAN into more logical LAN- VLAN, each VLAN is a broadcast domain, the communication between the hosts within a VLAN is like that of the hosts in a LAN, while the communication can't be achieved between VLANs directly. Thus the broadcast datagram is limited within a LAN. Based on the network structure shown in the above figure, there is only one default VLAN for two switches, so they are in the same broadcast domain and can communicate with each other.

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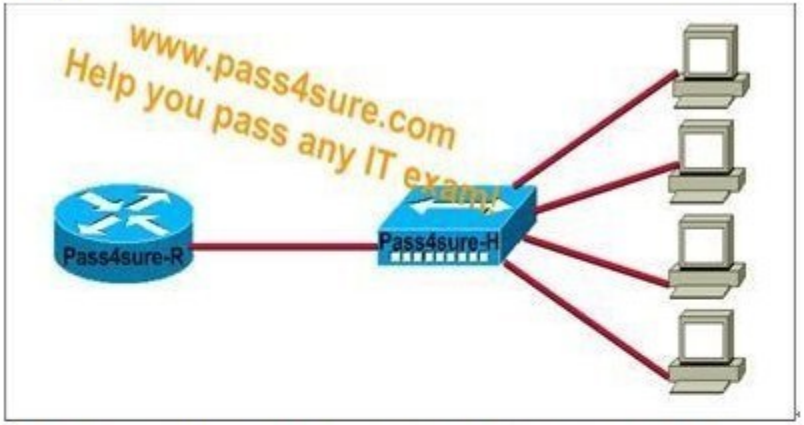
Mark for Review

Please study the exhibit shown above carefully:




Based on the information shown above, what two results would occur if the Pass4sure-H hub were to be replaced with a switch that is configured with one Ethernet VLAN? (Choose two.)

- A. The number of broadcast domains would increase.
- B. The number of collision domains would decrease.
- C. The number of collision domains would increase.
- D. The number of broadcast domains would remain the same.

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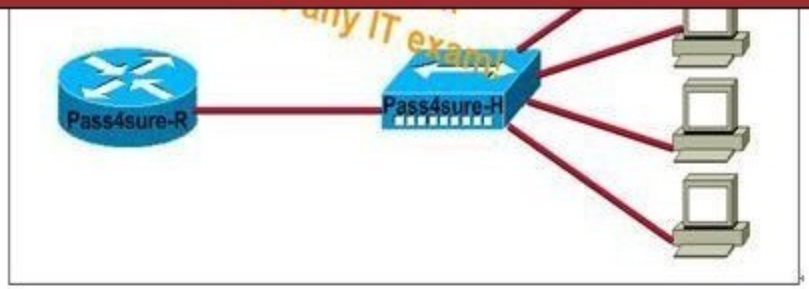


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- A. The number of broadcast domains would increase.
- B. The number of collision domains would decrease.
- C. The number of collision domains would increase.
- D. The number of broadcast domains would remain the same.

## Answer & Explanation

### Correct Answer

C D

### Explanations

Basically, a collision domain is a network segment that allows normal network traffic to flow back and forth. In the old days of hubs, this meant you had a lot of collisions, and the old CSMA/CD would be working overtime to try to get those packets re-sent every time there was a collision on the wire (since ethernet allows only one host to be transmitting at once without there being a traffic jam). With switches, you break up collision domains by switching packets bound for other collision domains. These days, since we mostly use switches to connect computers to the network, you generally have one collision domain to a PC.

Broadcast domains are exactly what they imply: they are network segments that allow broadcasts to be sent across them. Since switches and bridges allow for broadcast traffic to go unswitched, broadcasts can traverse collision domains freely. Routers, however, don't allow broadcasts through by default, so when a broadcast hits a router (or the perimeter of a VLAN), it doesn't get forwarded. The simple way to look at it is this way: switches break up collision domains, while routers (and VLANs) break up collision domains and broadcast domains. Also, a broadcast domain can contain multiple collision domains, but a collision domain can never have more than one broadcast domain associated with it.

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Mark for Review

Pass4sure1 is a switch in the Pass4sure network. Why will Pass4sure1 never learn the broadcast address?

A. Broadcasts only network layer addressing.

B. Broadcast addresses use an incorrect format for the switching table.

C. A broadcast address will never be the source address of a frame.

D. A broadcast frame is never forwarded by a switch.

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Mark for Review

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A. Broadcasts only network layer addressing.

B. Broadcast addresses use an incorrect format for the switching table.

C. A broadcast address will never be the source address of a frame.

D. A broadcast frame is never forwarded by a switch.

## Answer & Explanation

### Correct Answer

C

### Explanations

Switches build the MAC address table by listening to incoming frames and examining the source MAC address in the frame. Broadcast addresses are not source addresses in the broadcasts.

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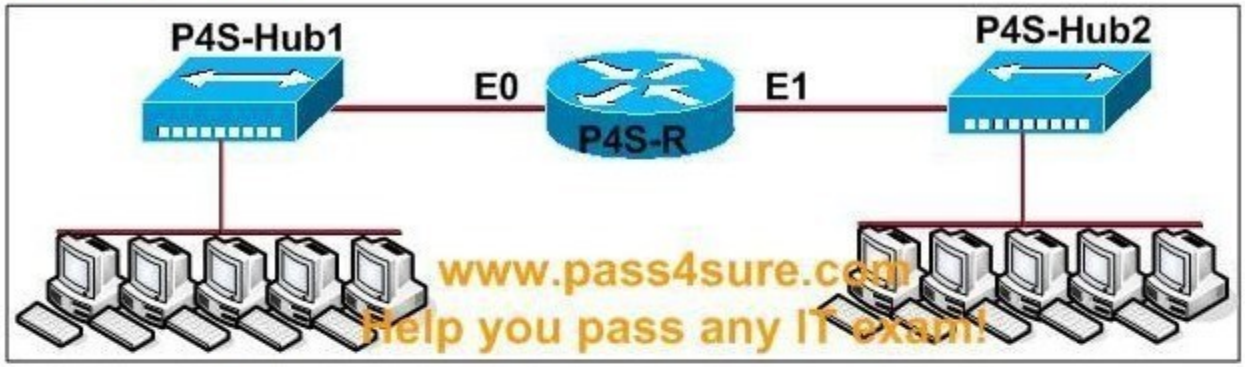
Mark for Review

Part of the Pass4sure network is shown below:




Please study the exhibit shown above carefully, how many collision domains are shown?

- A. one
- B. two
- C. three
- D. four

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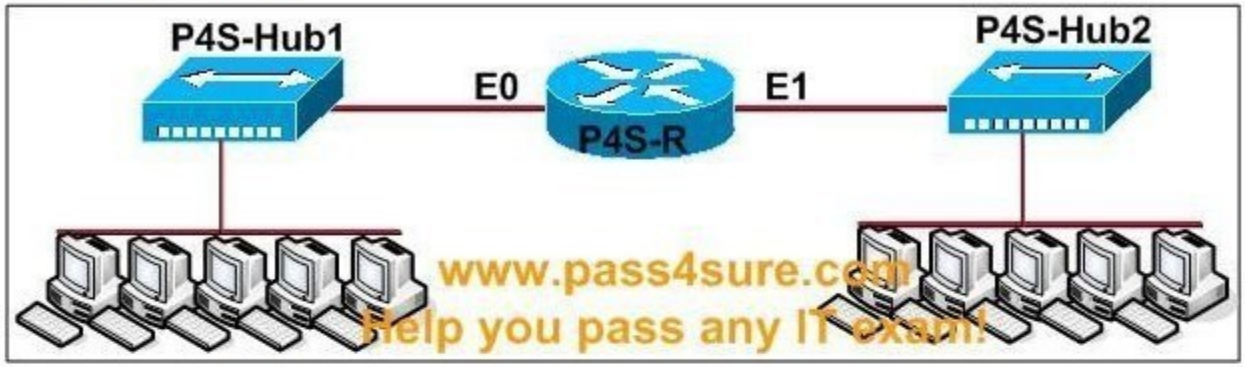
Mark for Review

Part of the Pass4sure network is shown below:




Please study the exhibit shown above carefully, how many collision domains are shown?

- A. one
- B. two
- C. three
- D. four

## Answer & Explanation

### Correct Answer

B

### Explanations

The router can separate a broadcast domain, but the hub can't. The router in the above figure has two interfaces E0 and E1, so there are two collision domains.

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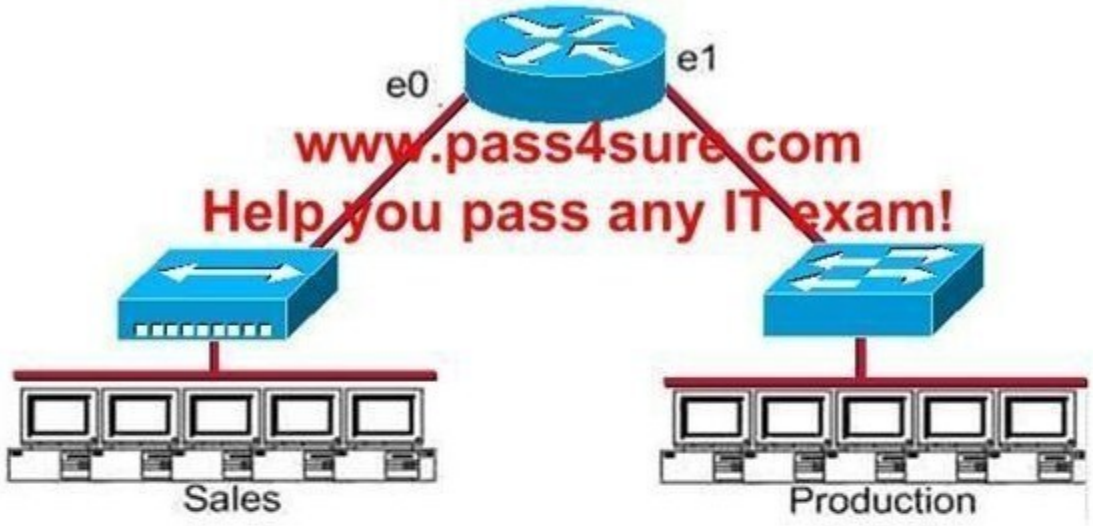
Mark for Review

Within the Pass4sure office, The Sales and Production networks are separated by a router as shown in the diagram below:




What are the proper statements?. (Choose two)

- A. There are 2 broadcast domains in the network.
- B. There are 8 broadcast domains in the network.
- C. There are 9 broadcast domains in the network.
- D. There are 4 collision domains in the network.
- E. There are 5 collision domains in the network.
- F. There are 7 collision domains in the network.

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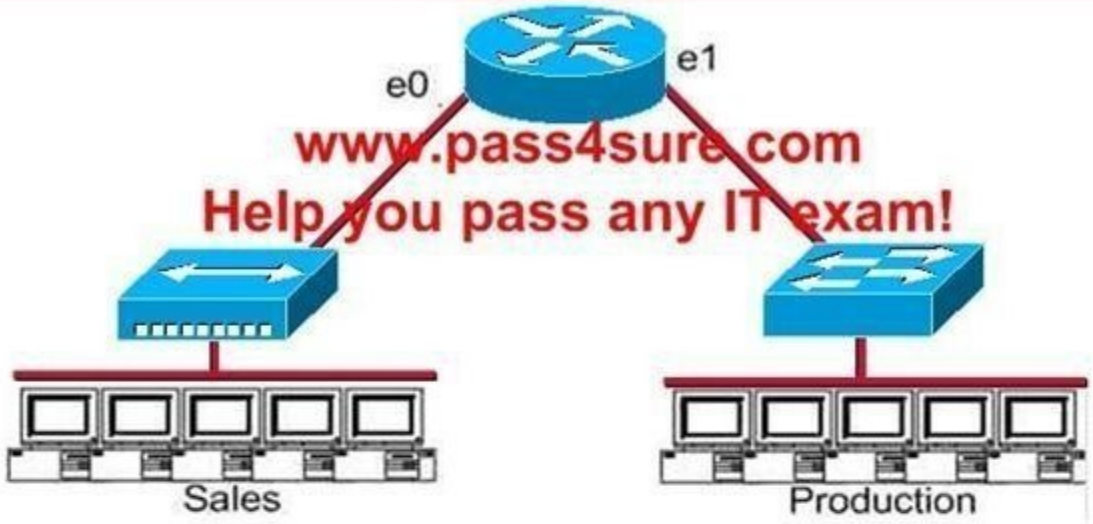
Mark for Review

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What are the proper statements?. (Choose two)

- A. There are 2 broadcast domains in the network.
- B. There are 8 broadcast domains in the network.
- C. There are 9 broadcast domains in the network.
- D. There are 4 collision domains in the network.
- E. There are 5 collision domains in the network.
- F. There are 7 collision domains in the network.

## Answer & Explanation

### Correct Answer

A F

### Explanations

This question is to examine the problems of broadcast domain and collision domain. A hub represents only one collision domain and only one broadcast domain, while a switch is a broadcast domain and each interface of the switch is a collision domain. It is obvious that there are two broadcast domains and seven collision domains in this question.

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The Pass4sure network administrator wants to use a router named Pass4sure1 to segment the local network. What are some of the advantages of using Pass4sure1 to segment the network? (Choose two)

- A. Filtering can occur based on Layer 3 information.
- B. Routers generally cost less than switches.
- C. Broadcasts are eliminated.
- D. Broadcasts are not forwarded across the router.

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Mark for Review

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- C. Broadcasts are eliminated.
- D. Broadcasts are not forwarded across the router.

## Answer & Explanation

### Correct Answer

A D

### Explanations

The router will never forward the broadcast packet, each interface of the router is a separate broadcast domain. The router has two primary advantages:
1.By default, the router will never forward broadcasts.
2.The router can filter the network layer-based data traffic.

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Mark for Review

In which circumstance are multiple copies of the same unicast frame likely to be transmitted in the Pass4sure Switched LAN?

A. when upper-layer protocols require high reliability

B. after broken links are re-established

C. during high traffic periods

D. in an improperly implemented redundant topology

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Mark for Review

In which circumstance are multiple copies of the same unicast frame likely to be transmitted in the Pass4sure Switched LAN?

- A. when upper-layer protocols require high reliability
- B. after broken links are re-established
- C. during high traffic periods
- D. in an improperly implemented redundant topology

## Answer & Explanation

### Correct Answer

D

### Explanations

A redundant topology eliminates single points of failure, but it also causes broadcast storms, multiple frame copies, and MAC address table instability problems. Multiple Frame Copies--when a new switch is added, the other switches may not have learned its correct MAC address. The host may send a unicast frame to the new switch. The frame is sent through several paths at the same time. The new switch will receive several copies of the frame. This causes MAC database instability. MAC database instability results when multiple copies of a frame arrive on different ports of a switch. Layer 2 has no mechanism to stop the loop. This is the main reason for the Spanning Tree Protocol(STP) IEEE 802.1d which was developed to prevent routing loops. If multiple connections between switches are created for redundancy purposes, network loops can occur in an improperly designed topology. Spanning Tree Protocol (STP) is used to stop network loops while still permitting redundancy.

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Mark for Review

As a pass4sure trainee you are required to set the default gateway on a Cisco switch to the IP address of 192.168.1.115. Which IOS command should you use?

A. pass4sure(config)# ip route-default 192.168.1.115

B. pass4sure(config)# ip default-gateway 192.168.1.115

C. pass4sure(config)# ip route 192.168.1.115 0.0.0.0

D. pass4sure(config)# ip default-network 192.168.1.115

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Mark for Review

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B. pass4sure(config)# ip default-gateway 192.168.1.115

C. pass4sure(config)# ip route 192.168.1.115 0.0.0.0

D. pass4sure(config)# ip default-network 192.168.1.115

## Answer & Explanation

### Correct Answer

B

### Explanations

The ip default-gateway command should only be used when ip routing is disabled on the Cisco router.
Router(config)# ip default-gateway ip_address

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A Catalyst 2950 needs to be reconfigured. What steps will ensure that the old configuration is erased?

- A. Modify the configuration register.
- B. Restart the switch.
- C. Erase the running configuration.
- D. Delete the VLAN database.

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Mark for Review

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- C. Erase the running configuration.
- D. Delete the VLAN database.

## Answer & Explanation

**Correct Answer**

B D

**Explanations**

No more information available

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Mark for Review

What is the function of the command switchport trunk native vlan 999 on a Cisco Catalyst switch?

A. It blocks VLAN 1 traffic from passing on the trunk.

B. It designates VLAN 999 for untagged traffic.

C. It creates a VLAN 99 interface.

D. It designates VLAN 1 as the default for all unknown tagged traffic.

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Mark for Review

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C. It creates a VLAN 99 interface.

D. It designates VLAN 1 as the default for all unknown tagged traffic.

## Answer & Explanation

### Correct Answer

B

### Explanations

Switch(config-if)# switchport trunk native vlan vlan_ID
Native vlan is regarded by switch as vlan 1(can be modified) by default, all ports belong to vlan1 before dividing vlan.
If the data frame is not tagged, it will be sent by switch to the native vlan by default, if the tagged vlan ID is the native vlan ID, the switch will first remove the tag and then forward the data frame.
Such mechanism will lead to a potential safety problem: If the native vlans of two switches connected with each other are different , the exchange of visits between vlans can be achieved. So, in practice , it is not needed to use native vlan, but to set up an unused vlan such as vlan 999.

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A Pass4sure Ethernet switch receives a unicast frame with a destination MAC that is listed in the switch table. How will the switch do with the frame?

- A. The switch will return a copy of the frame out the source port.
- B. The switch will forward the frame to a specific port.
- C. The switch will forward the frame to all ports except the port on which it was received.
- D. The switch will not forward unicast frames.

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Mark for Review

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C. The switch will forward the frame to all ports except the port on which it was received.

D. The switch will not forward unicast frames.

## Answer & Explanation

### Correct Answer

B

### Explanations

When a switch receives a unicast frame with a destination MAC that is not listed in the switch table, the switch will flood this unicast frame out of all forwarding ports except the port that the frame was received on.

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Mark for Review

What does a Layer 2 switch use to decide where to forward a received frame?

- A. source switch port
- B. destination IP address
- C. destination port address
- D. destination MAC address

## Answer & Explanation

### Correct Answer

D

### Explanations

Switches use port address table to find locations of the receiving station. When a port receives a frame, switch will first study and then forward. Switches will check destination MAC addresses on the frame head, and search for the corresponding entries in port address table. If matching entry is found, switch will forward the frame from the designated port. If the port is the same port that receives this frame (sending and receiving stations are connected to the same port), switch will discard the frame. If no entry is found, or destination MAC address is broadcast address or multi-cast address, switch will flood out the frame from all the rest ports.

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How is an EUI-64 format interface ID created from a 48-bit MAC address?

- A. by appending 0xFF to the MAC address
- B. by prefixing the MAC address with 0xFFEE
- C. by prefixing the MAC address with 0xFF and appending 0xFF to it
- D. by inserting 0xFFFE between the upper three bytes and the lower three bytes of the MAC address

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Mark for Review

How is an EUI-64 format interface ID created from a 48-bit MAC address?

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C. by prefixing the MAC address with 0xFF and appending 0xFF to it

D. by inserting 0xFFFE between the upper three bytes and the lower three bytes of the MAC address

## Answer & Explanation

### Correct Answer

D

### Explanations

According to RFCs, we insert 0xFFFE in the middle of the interface identifier in order to convert an 48-bit MAC address to the modified EUI-64 format. EUI-64 defines a method to create a IEEE EUI-64 identifier from an IEEE 48bit MAC identifier. This is to insert two octets, with Hexadecimal values of 0xFF and 0xFE, in the middle of the 48 bit MAC.

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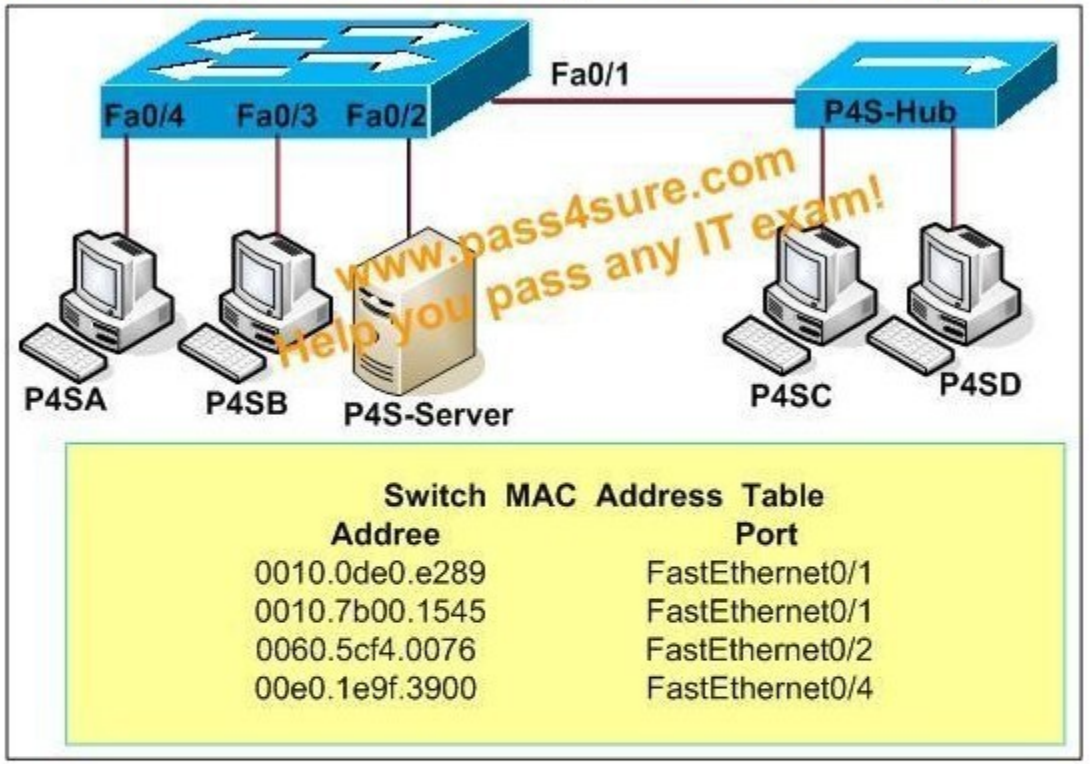
Mark for Review

Refer to the exhibit. Why does the switch have two MAC addresses assigned to the FastEthernet 0/1 port in the switch address table?




Switch MAC Address Table

| Addree | Port |
|---|---|
| 0010.0de0.e289 | FastEthernet0/1 |
| 0010.7b00.1545 | FastEthernet0/1 |
| 0060.5cf4.0076 | FastEthernet0/2 |
| 00e0.1e9f.3900 | FastEthernet0/4 |

A. Data from two of the devices connected to the switch has been sent to Host P4SC.

B. Data from Host P4SC and Host P4SD has been received by switch port FastEthernet 0/1.

C. Either Host P4SC or Host P4SD has just had the NIC replaced.

D. Host P4SC and Host P4SD are on two different VLANs.

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Switch MAC Address Table

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| 0060.5cf4.0076 | FastEthernet0/2 |
| 00e0.1e9f.3900 | FastEthernet0/4 |

A. Data from two of the devices connected to the switch has been sent to Host P4SC.

B. Data from Host P4SC and Host P4SD has been received by switch port FastEthernet 0/1.

C. Either Host P4SC or Host P4SD has just had the NIC replaced.

D. Host P4SC and Host P4SD are on two different VLANs.

## Answer & Explanation

### Correct Answer

B

### Explanations

The reason that switches are able to send data packets directly to destination node, rather than send data packets to all nodes like hub using broadcasting, is that Switch is able to identify network card MAC address that connected to network nodes, andplace them to MAC address table. The MAC address table is stored in switch cache, when sending data to destination address, switch will search for the node location of this MAC address in the MAC address table, and then send directly to the node in this location.

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You are a network administrator of your company. You want to configure a switch using a virtual terminal connection from locations outside of the local LAN. Which requirements must be met to configure the switch from a remote location? (Choose two.)

- A. Configure the switch with an IP address, subnet mask, and default gateway.
- B. Connect the switch console port to the Ethernet LAN.
- C. The switch must be reachable through a port connected to its management VLAN.
- D. Configure the switch as an SNMP agent.

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Mark for Review

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- C. The switch must be reachable through a port connected to its management VLAN.
- D. Configure the switch as an SNMP agent.

## Answer & Explanation

### Correct Answer

A C

### Explanations

For a Cisco switch to be reachable from remote locations, it must have an IP address, subnet mask, and default gateway assigned. Communication with the switch management interfaces is through the switch IP address.The IP address is associated with the management VLAN, which by default is VLAN 1.

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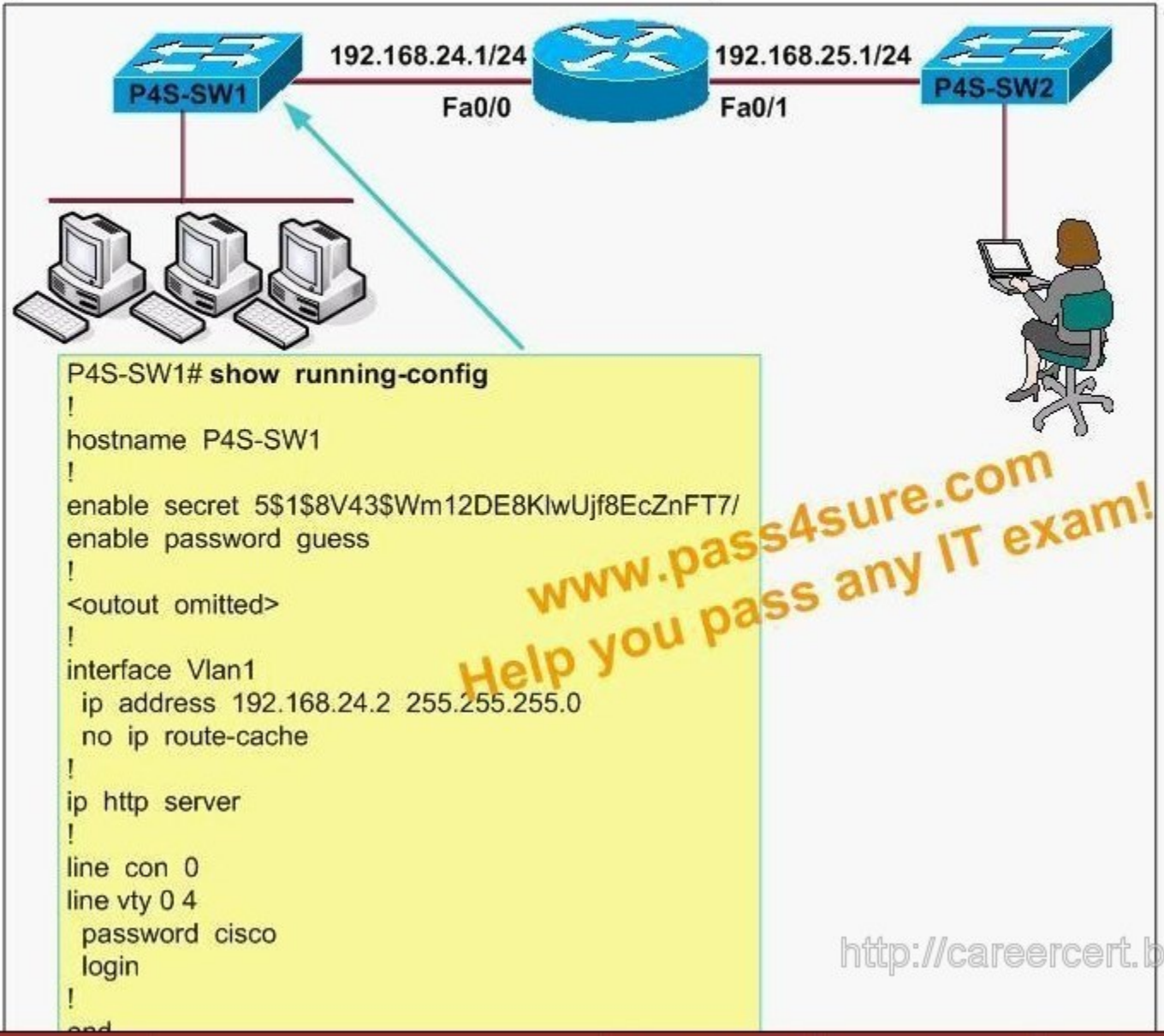
Mark for Review

The network administrator cannot connect to P4S-SW1 over a Telnet session, although the hosts attached to P4S-SW1 can ping the interface Fa0/0 of the router. Given the information in the graphic and assuming that the router and P4S-SW2 are configured properly, which of the following commands should be issued on P4S-SW1 to correct this problem?

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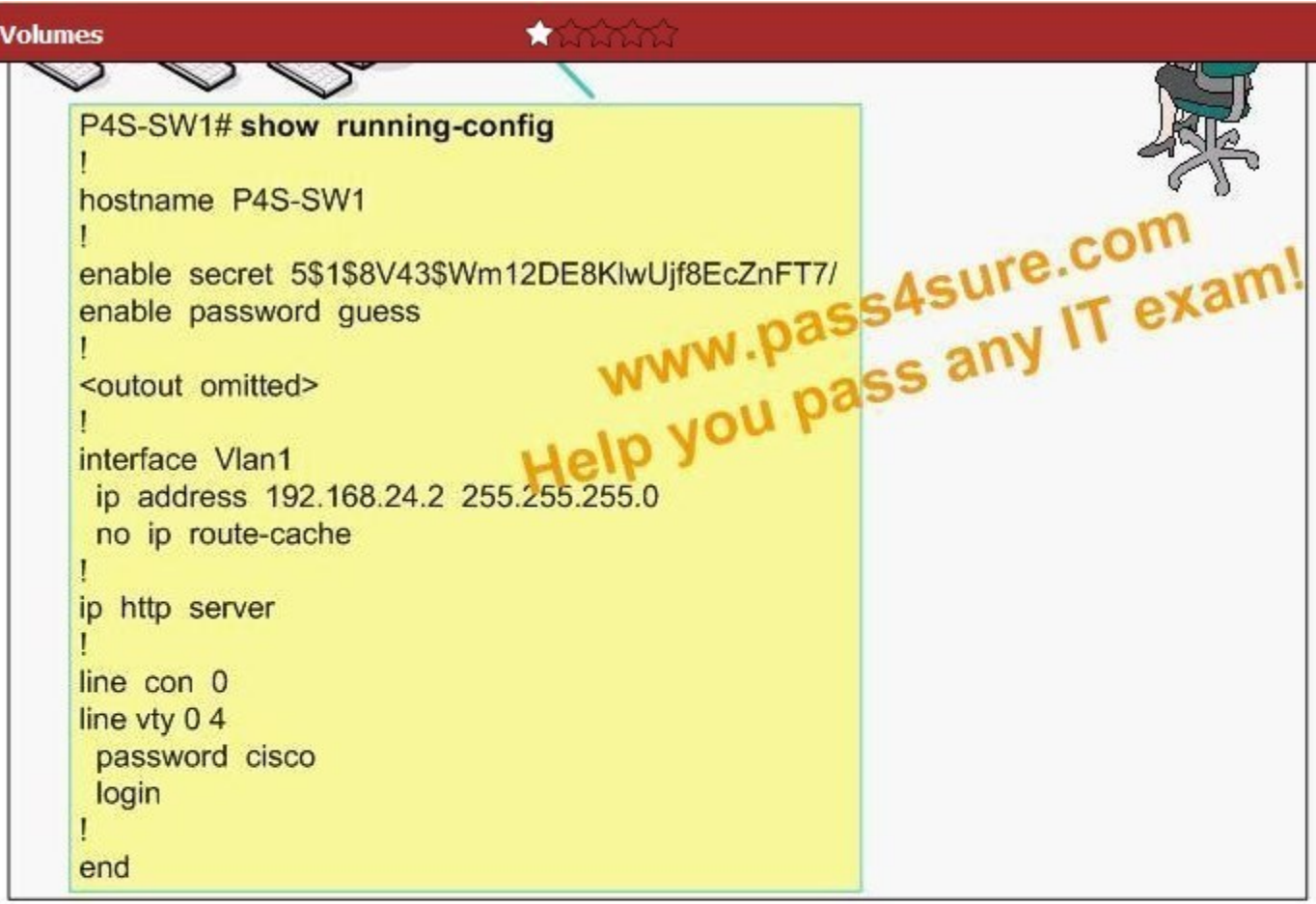
Mark for Review

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A. P4S-SW1(config)# line con0
P4S-SW1(config-line)# password cisco
P4S-SW1(config-line)#login

B. P4S-SW1(config)# interface fa0/1
P4S-SW1(config-if)# ip address 192.168.24.3 255.255.255.0

C. P4S-SW1(config)# ip default-gateway 192.168.24.1

D. P4S-SW1(config)# interface fa0/1
P4S-SW1(config-if)# duplex full
P4S-SW1(config-if)# speed 100

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Mark for Review

```
 ip address 192.168.24.2 255.255.255.0
 no ip route-cache
!
ip http server
!
line con 0
line vty 0 4
 password cisco
 login
!
end
```

A. P4S-SW1(config)# line con0
P4S-SW1(config-line)# password cisco
P4S-SW1(config-line)#login

B. P4S-SW1(config)# interface fa0/1
P4S-SW1(config-if)# ip address 192.168.24.3 255.255.255.0

C. P4S-SW1(config)# ip default-gateway 192.168.24.1

D. P4S-SW1(config)# interface fa0/1
P4S-SW1(config-if)# duplex full
P4S-SW1(config-if)# speed 100

## Answer & Explanation

### Correct Answer

C

### Explanations

To route traffic to other vlans, we need to enter the IP address of the next-hop router interface that is directly connected to the switch where a default gateway is being configured. The default gateway receives IP packets with unresolved destination IP addresses from the switch.
Once the default gateway is configured, the switch will have connectivity to the remote networks with which a host needs to communicate.

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Mark for Review

Refer to the exhibit. The lines of P4S-SWX are configured as shown. Which statement correctly describes the effect of this configuration?

```
P4S-SWX# show running-config
!
<outout omitted>
!
line con 0
line vty 0 4
  password dangerous
  login
  transport input telnet
line vty 5 15
  login
!
end
```

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- A. The Telnet protocol is supported only on lines 0 through 4.
- B. A password challenge protects all virtual terminal lines.
- C. The console line cannot be used until it is configured.
- D. The SSH protocol is supported on lines 5 through 15.

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Mark for Review

Refer to the exhibit. The lines of P4S-SWX are configured as shown. Which statement correctly describes the effect of this configuration?

```
P4S-SWX# show  running-config
!
<outout  omitted>
!
line  con  0
line  vty  0  4
  password  dangerous
  login
  transport  input  telnet
line  vty  5  15
  login
!
end
```

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A. The Telnet protocol is supported only on lines 0 through 4.

B. A password challenge protects all virtual terminal lines.

C. The console line cannot be used until it is configured.

D. The SSH protocol is supported on lines 5 through 15.

## Answer & Explanation

### Correct Answer

B

### Explanations

According to the information about show running-config above, we can see that the switch has been configured with VTP password protection, the password is dangerous.
The "transport input x" command, where x is the protocol that you want to allow, such as Telnet. The command allows the granularity of permitting only certain protocols to cross the asynchronous lines.

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Mark for Review

A simple Pass4sure network is displayed in the diagram below:

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When PC1 sends an ARP requests for the MAC address of PC2, network performance slows dramatically, and the Pass4sure switches detect an unusually high number of broadcast frames. What is the most likely cause of this?

- A. The PCs are in two different VLANs.
- B. The portfast feature is not enabled on all switch ports.
- C. Spanning Tree Protocol is not running on the switches.
- D. PC1 is up and is not able to respond to the request.

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When PC1 sends an ARP requests for the MAC address of PC2, network performance slows dramatically, and the Pass4sure switches detect an unusually high number of broadcast frames. What is the most likely cause of this?

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C. Spanning Tree Protocol is not running on the switches.

D. PC1 is up and is not able to respond to the request.

## Answer & Explanation

### Correct Answer

C

### Explanations

In the question,PC1 sends a broadcast ARP request. When the ARP request is forwarded to the switch Pass4sure2, Pass4sure2 floods the ARP request out of all forwarding ports except the port connected to PC1. After receiving this request, Pass4sure1 also floods it, thus a broadcast loop forms and the network performance slows dramatically. The Spanning Tree Protocol (STP) can ensure a loop-free topology for any bridged LAN. Here, STP has not been configured, so the loop can't be blocked.

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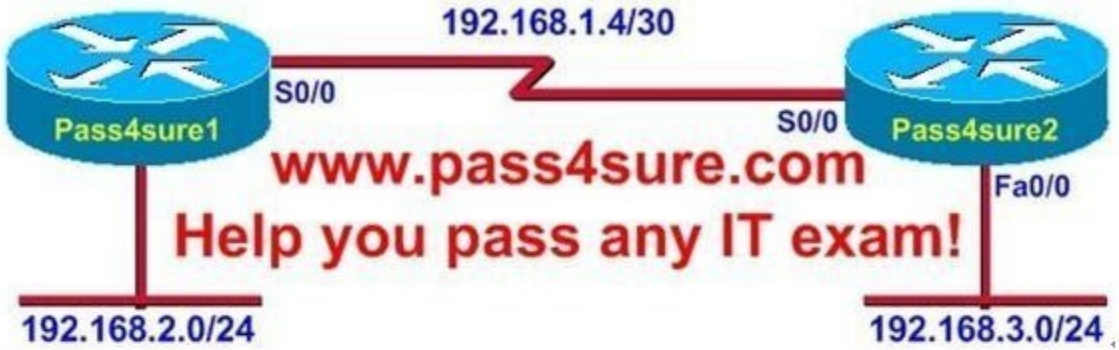
Mark for Review

Part of the Pass4sure network is shown below:




Pass4sure1 configuration exhibit:

```
Pass4sure1# show ip interface brief
```

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| Interface | IP-Address | OK? | Method | Status | Protocol |
|---|---|---|---|---|---|
| FastEthernet0/0 | 192.168.2.1 | YES | manual | up | up |
| Serial0/0 | 192.168.1.5 | YES | manual | up | down |
| Serial0/1 | unassigned | YES | manual | administratively down | down |

In this Pass4sure network segment shown above, hosts in network 192.168.2.0 are unable to reach hosts in network 192.168.3.0. Based on the output from Router Pass4sure1, what are two possible reasons for the failure? (Choose two)

- A. The cable that is connected to S1/0 on Pass4sure1 is faulty.
- B. Interface S1/0 on Pass4sure2 is administratively down.
- C. Interface S1/0 on Pass4sure1 is configured with an incorrect subnet mask.
- D. The IP address that is configured on S1/0 of Pass4sure2 is not in the correct subnet.
- E. Interface S0/0 on Pass4sure1 is not receiving a clock signal from the CSU/DSU.
- F. The encapsulation that is configured on S0/0 of Pass4sure2 does not match the encapsulation that is configured on S0/0 of Pass4sure1.

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## Answer & Explanation

### Correct Answer

E F

### Explanations

Based on the information provided in the exhibit, we know that Serial0/0 is up, line protocol is down, under normal circumstances there are three states:

1. serial0/0 up, line protocol is up The interface is up and the line protocol is up
2. serial0/0 down, line protocol is down The interface is down and there is something wrong with the physical layer.
3. serial0/0 up, line protocol is down The interface is up, but the encapsulation format is not matching ,clock rate issues

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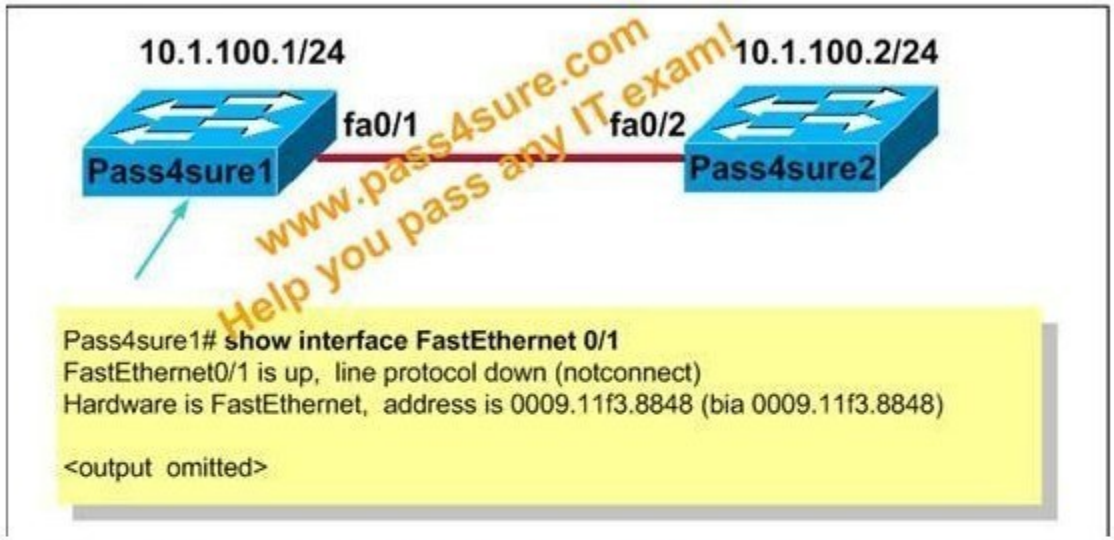
Mark for Review

Part of the Pass4sure network is shown below:




Based on the information shown above, the network administrator has verified that a functioning cable connects Pass4sure1 and Pass4sure2. From the output that is shown, what two pieces of information can the administrator validly conclude? (Choose two.)

- A. Using a source MAC address of 0009.11f3.8848, Pass4sure2 is sending frames to Pass4sure1.
- B. Interface fa0/1 on Pass4sure1 is in a shutdown state.
- C. The status of fa0/2 should be checked on Pass4sure2.
- D. There is likely to be an IP address issue on Pass4sure1 fa0/1.
- E. The interface is functional at OSI Layer 1.

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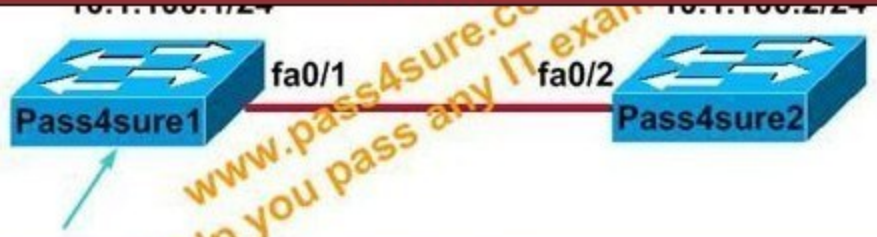
Mark for Review

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```
Pass4sure1# show interface FastEthernet 0/1
FastEthernet0/1 is up,  line protocol down (notconnect)
Hardware is FastEthernet,  address is 0009.11f3.8848 (bia 0009.11f3.8848)

<output  omitted>
```

Based on the information shown above, the network administrator has verified that a functioning cable connects Pass4sure1 and Pass4sure2. From the output that is shown, what two pieces of information can the administrator validly conclude? (Choose two.)

- A. Using a source MAC address of 0009.11f3.8848, Pass4sure2 is sending frames to Pass4sure1.
- B. Interface fa0/1 on Pass4sure1 is in a shutdown state.
- C. The status of fa0/2 should be checked on Pass4sure2.
- D. There is likely to be an IP address issue on Pass4sure1 fa0/1.
- E. The interface is functional at OSI Layer 1.

## Answer & Explanation

### Correct Answer

C E

### Explanations

FastEthernet0/1 is up, line protocol down (not connect) indicate that the physical layer has been activated, but layer 2 data link protocol has not been activated. This involves data link layer, it view from the connecting end to maintain activation information (information used to confirm the connectivity available between two devices), here shows the problem of clock frequency (maintain activation information) or frame Packaging types. Maybe the devices in the opposite end are not configured with clock frequency, or package type configuration is not consistent.

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Mark for Review

The output of Pass4sure1 switch is shown below:

```
Pass4sure1# show mac-address-table
Dynamic Addresses Count: 19
Secure Addresses (User-defined) Count: 0
Static Addresses (User-defined) Count: 0
System Self Addresses Count: 41
Total MAC addresses: 50
Non-static Addresses Table:
Destination Address      AddressType     VLAN     Destinaton Port
-----------------------  -------------   ------   --------------------
0010.0de0.e289           Dynamic         1        FastEthernet0/1
0010.7b00.1540           Dynamic         2        FastEthernet0/5
0010.7b00.1545           Dynamic         2        FastEthernet0/5
0060.5cf4.0076           Dynamic         1        FastEthernet0/1
0060.5cf4.0077           Dynamic         3        FastEthernet0/1
0060.5cf4.1315           Dynamic         1        FastEthernet0/1
0060.70cb.f301           Dynamic         2        FastEthernet0/1
0060.70cb.3f01           Dynamic         5        FastEthernet0/2
00e0.1e42.9978           Dynamic         4        FastEthernet0/1
00e0.1e9f.3900           Dynamic         3        FastEthernet0/1
0060.70cb.33f1           Dynamic         6        FastEthernet0/3
0060.70cb.103f           Dynamic         6        FastEthernet0/4

<output omitted>

Pass4sure1# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID        Local Interface     Holdtime     Capability     Platform     Port ID
Switch2          Fas 0/1             157          S              1950-12      Fas 0/1
Switch3          Fas 0/2             143          S              1950-12      Fas 0/5

Pass4sure1#
```

Based on the information shown above. Which of the following correctly describe the interfaces on Switch Pass4sure1? (Choose two.)

- A. Multiple devices are connected directly to FastEthernet0/1.
- B. A hub is connected directly to FastEthernet0/5.
- C. FastEthernet0/1 is connected to a host with multiple network interface cards.

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Mark for Review

```
00e0.1e42.9978          Dynamic        4          FastEthernet0/1
00e0.1e9f.3900          Dynamic        3          FastEthernet0/1
0060.70cb.33f1          Dynamic        6          FastEthernet0/3
0060.70cb.103f          Dynamic        6          FastEthernet0/4

<output omitted>

Pass4sure1# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
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Switch2          Fas 0/1             157          S              1950-12      Fas 0/1
Switch3          Fas 0/2             143          S              1950-12      Fas 0/5

Pass4sure1#
```

Based on the information shown above. Which of the following correctly describe the interfaces on Switch Pass4sure1? (Choose two.)

- A. Multiple devices are connected directly to FastEthernet0/1.
- B. A hub is connected directly to FastEthernet0/5.
- C. FastEthernet0/1 is connected to a host with multiple network interface cards.
- D. Interface FastEthernet0/2 has been disabled.
- E. FastEthernet0/1 is configured as a trunk link.

## Answer & Explanation

### Correct Answer

B E

### Explanations

Carefully observe the information given after command show. Fa0/1 is connected to Switch2, seven MAC addresses correspond to Fa0/1, and these MAC are in different VLAN. From this we know that Fa0/1 is the trunk interface.

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From the information given by show cdp neighbors we find that there is no Fa0/5 in CDP neighbor. However, F0/5 corresponds to two MAC addresses in the same VLAN. Thus we know that Fa0/5 is connected to a Hub.

Mark for Review

Exhibit:

```
Pass4sure# show ip interface brief

Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/1        unassigned      YES manual up                    up
FastEthernet0/2        unassigned      YES manual up                    up

<output omitted>

GigabitEthernet1/1     unassigned      YES manual down                  down
GigabitEthernet1/1     unassigned      YES manual down                  down
Vlan1                  192.168.1.100   YES manual administratively down down
```

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You work as a network technician for Pass4sure and are responsible for this network. You are unable to connect remotely to a device and initiate a console session. So you use the command "show ip interface brief" on Pass4sure switch, and the output is shown above. Why did the remote connection fail?

- A. The switch Pass4sure does not have a management IP address assigned.
- B. VLAN1 is shut down.
- C. The switch Pass4sure needs to have a clock rate entered on one of its interfaces.
- D. The Gigabit Ethernet interfaces are not up

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Mark for Review

Exhibit:

```
Pass4sure# show ip interface brief

Interface              IP-Address      OK? Method Status                Protocol
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FastEthernet0/2        unassigned      YES manual up                    up

<output omitted>

GigabitEthernet1/1     unassigned      YES manual down                  down
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B. VLAN1 is shut down.

C. The switch Pass4sure needs to have a clock rate entered on one of its interfaces.

D. The Gigabit Ethernet interfaces are not up

## Answer & Explanation

### Correct Answer

B

### Explanations

According to the output of the command show ip interface brief,we can see that the status of VLAN1 is administratively down, which represents that the interface is shutdown. You can use the command no shutdown to enable the interface.

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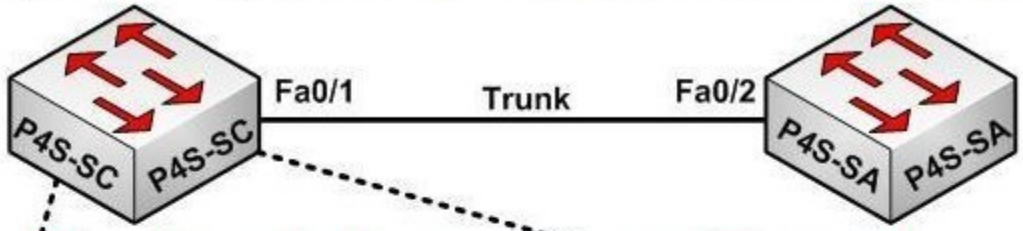
Mark for Review

Refer to the exhibit. Given this output for P4S-SC, what should the network administrator's next action be?

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```
P4S-SC# show interface fa0/1
FastEthernet0/1 is up, line protocol is up (connected)
    Hardware is Fast Ethernet, address is 0013.8030.5e83
    MTU 1500 bytes, BW 100000 Kbit, DLY 100 uses,
        reliability 255/255, txload 14/255, rxload 14/255
    Encaplulation ARPA, loopback not set
    Keepalive set (10 sec)
    Full-duplex, 100Mb/s, media type is 10/100BaseTX
    input flow-control is off, output flow-control is unsupportted
    Text omitted
    5 minute input rate 364000 bits/sec, 344 packets/sec
    5 minute output rate 367000 bits/sec, 338 packets/sec
        16973 packets input, 2400313 bytes, 0 no buffer
        Received 1244 broadcasts (0 multicast)
        0 runts, 3 giants, 0 throttles
        741 input errors, 738 CRC, 0 frame, 0overrun, 0 ignored
        0 input packets with dribble condition detected
        16420 packets output, 2375034 bytes, 0 underruns
    Text omitted
```

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A. Check the trunk encapsulation mode for P4S-SC's fa0/1 port.

Mark for Review

```
      reliability 255/255, txload 14/255, rxload 14/255
Encaplulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 100Mb/s, media type is 10/100BaseTX
input flow-control is off, output flow-control is unsupportted
Text omitted
5 minute input rate 364000 bits/sec, 344 packets/sec
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     0 runts, 3 giants, 0 throttles
     741 input errors, 738 CRC, 0 frame, 0overrun, 0 ignored
     0 input packets with dribble condition detected
     16420 packets output, 2375034 bytes, 0 underruns
Text omitted
```

A. Check the trunk encapsulation mode for P4S-SC's fa0/1 port.

B. Check the duplex mode for P4S-SC's fa0/1 port.

C. Check the duplex mode for P4S-SA's fa0/2 port.

D. Check the trunk encapsulation mode for P4S-SA's fa0/2 port.

## Answer & Explanation

### Correct Answer

C

### Explanations

According to the output information of show interface fa0/1, we can see that "741 input errors,738 CRC" indicates that there are many FCS check errors. However, based on the information of "FastEthernet0/1 is up, line protocol is up", we know that layer1 and layer2 works normally, thus, it can be concluded that this error may be caused by duplex mismatch, and this port is duplex and works correctly, the failure must be occurred on the opposite port.The direct port connected to fa0/1 on P4S-SC is P4S-SA'fa0/2 port. It is necessary to check the duplex mode for this port.

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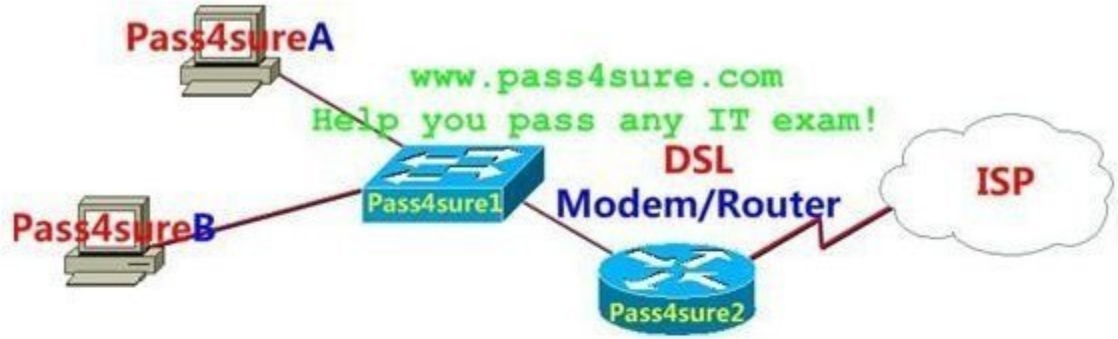
Mark for Review

Network topology exhibit:




Output exhibit:

```
C:\arp -a
Interface:192.168.1.95 --- 0x2
  Internet Address    Phycical Address      Type
  192.168.1.254       00-60-0f-2e-14-c6     dynamic
```

You work as a network technician at Pass4sure and you issued the arp -a command from a host named Pass4sureA as shown above.

The user of host Pass4sureA wants to ping the DSL modem/router at 192.168.1.254. Based on the Host Pass4sureA ARP table that is shown in the exhibit, what will host Pass4sureA do?

- A. send a unicast ARP packet to the DSL modem/router
- B. send unicast ICMP packets to the DSL modem/router
- C. send Layer 3 broadcast packets to which the DSL modem/router responds
- D. send a Layer 2 broadcast that is received by pass4sure2, the switch, and the DSL modem/router

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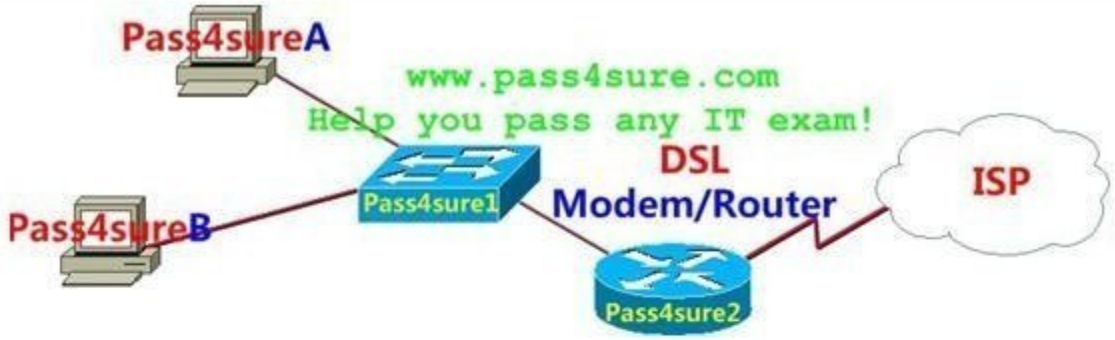
Mark for Review




Output exhibit:
C:\arp -a
Interface:192.168.1.95 --- 0x2

| Internet Address | Phycical Address | Type |
|---|---|---|
| 192.168.1.254 | 00-60-0f-2e-14-c6 | dynamic |

You work as a network technician at Pass4sure and you issued the arp -a command from a host named Pass4sureA as shown above.

The user of host Pass4sureA wants to ping the DSL modem/router at 192.168.1.254. Based on the Host Pass4sureA ARP table that is shown in the exhibit, what will host Pass4sureA do?

- A. send a unicast ARP packet to the DSL modem/router
- B. send unicast ICMP packets to the DSL modem/router
- C. send Layer 3 broadcast packets to which the DSL modem/router responds
- D. send a Layer 2 broadcast that is received by pass4sure2, the switch, and the DSL modem/router

## Answer & Explanation

### Correct Answer

B

### Explanations

ARP entries concerned with 192.168.1.254 can be found in the ARP table. So, hosts here merely need to send unicast ICMP packets to the DSL modem/router.

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The output of switch Pass4sure is shown below:

```
Pass4sure(config)# interface  fa0/0
Pass4sure(config-if)# switchport  access  vlan  2
```

Which of the following correctly describe the configuration of the pass4sure switch interface? (Choose two)

- A. The switchport belongs only to VLAN 2
- B. Interface fa0/0 will be in both VLAN 1 (by default) and VLAN 2
- C. The exhibit shows interface fa0/0 to be dynamically mapped to VLAN 2
- D. A network host can be connected to this interface.

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Mark for Review

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```
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- C. The exhibit shows interface fa0/0 to be dynamically mapped to VLAN 2
- D. A network host can be connected to this interface.

## Answer & Explanation

### Correct Answer

A D

### Explanations

According to the configuration command displayed above, we can see that port fa0/0 is configured to be in VLAN2.
An access port belongs to and carries the traffic of only one VLAN. Traffic is both received and sent in native formats with no VLAN tagging whatsoever. Anything arriving on an access port is simply assumed to belong to the VLAN assigned to the port. So, that port connected to host is a member of one particular VLAN and always on access mode.

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The system LED is amber on a Cisco Catalyst 2950 series switch. What does this indicate?

- A. The system is malfunctioning.
- B. The system is not powered up.
- C. The system is powered up and operational.
- D. The system is forwarding traffic.

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Mark for Review

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- A. The system is malfunctioning.
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- C. The system is powered up and operational.
- D. The system is forwarding traffic.

## Answer & Explanation

### Correct Answer

A

### Explanations

When the switch begins POST, the system LED is off. If POST completes successfully, the LED turns green. If POST fails, the LED turns amber.

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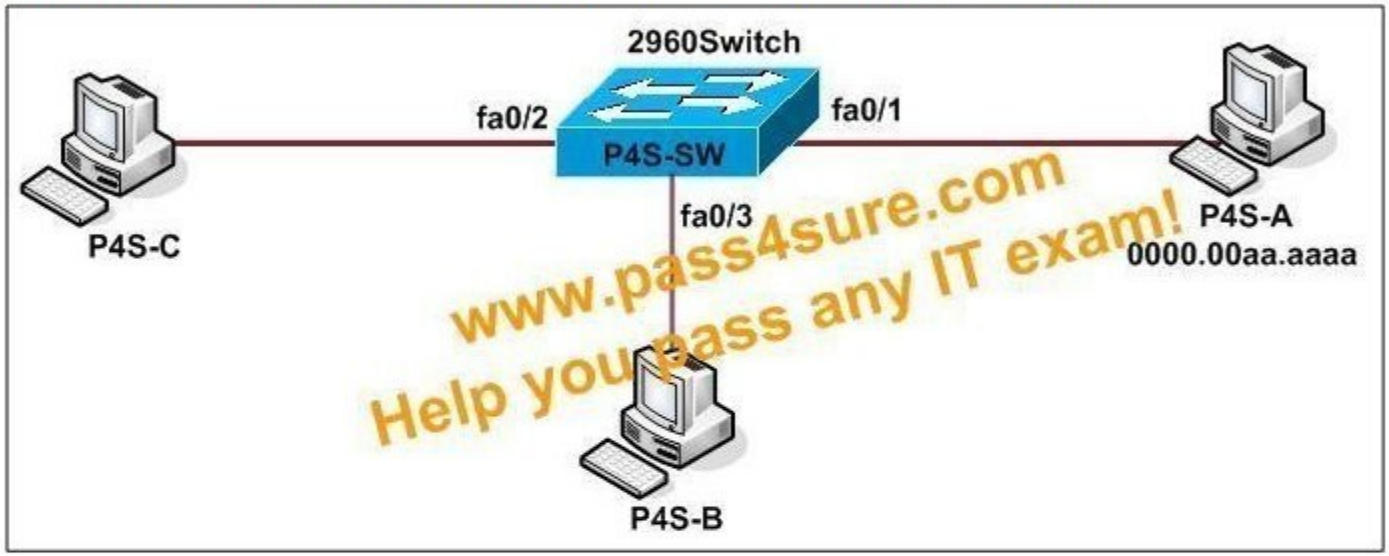
Mark for Review

Refer to the exhibit. This command is executed on 2960Switch:

P4S-SW(config)# mac-address-table static 0000.00aa.aaaa vlan 10 interface fa0/1

Which two of these statements correctly identify results of executing the command? (Choose two.)

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- A. Port security is implemented on the fa0/1 interface.
- B. MAC address 0000.00aa.aaaa does not need to be learned by this switch.
- C. Only MAC address 0000.00aa.aaaa can source frames on the fa0/1 segment.
- D. MAC address 0000.00aa.aaaa will be listed in the MAC address table for interface fa0/1 only.

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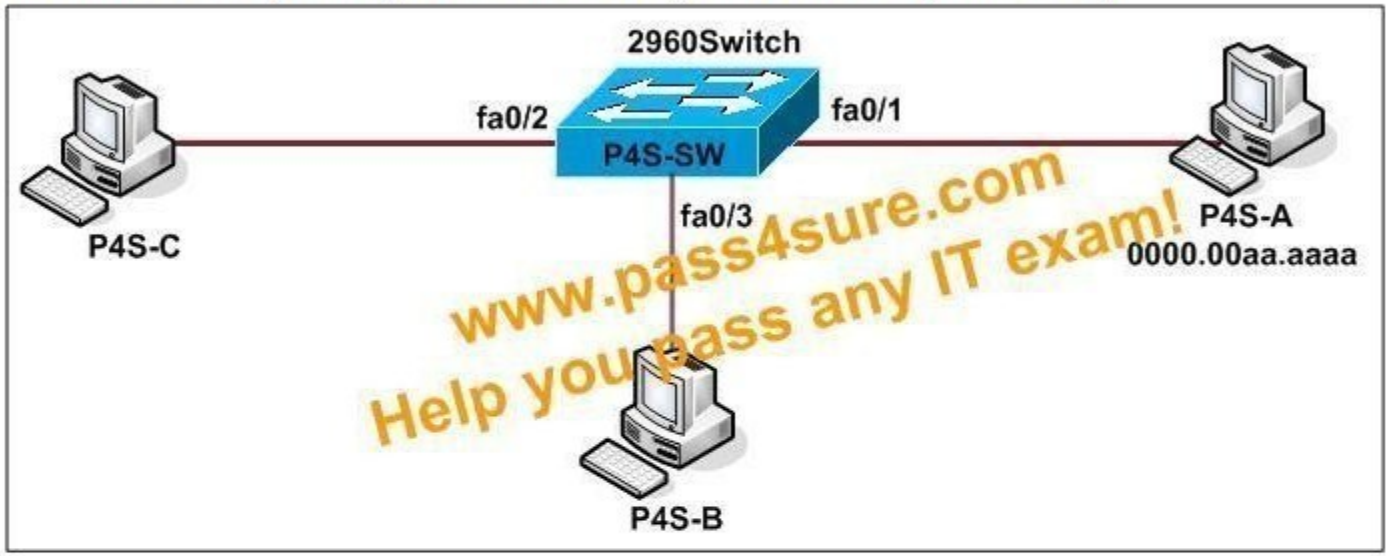
Mark for Review

Refer to the exhibit. This command is executed on 2960Switch:

P4S-SW(config)# mac-address-table static 0000.00aa.aaaa vlan 10 interface fa0/1

Which two of these statements correctly identify results of executing the command? (Choose two.)

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- A. Port security is implemented on the fa0/1 interface.
- B. MAC address 0000.00aa.aaaa does not need to be learned by this switch.
- C. Only MAC address 0000.00aa.aaaa can source frames on the fa0/1 segment.
- D. MAC address 0000.00aa.aaaa will be listed in the MAC address table for interface fa0/1 only.

## Answer & Explanation

**Correct Answer**

B D

**Explanations**

(config)#mac-address-table static mac_addr {vlan vlan_id} [interface int1 [int2 ... int15]]
This command is to configure restricted static MAC address.

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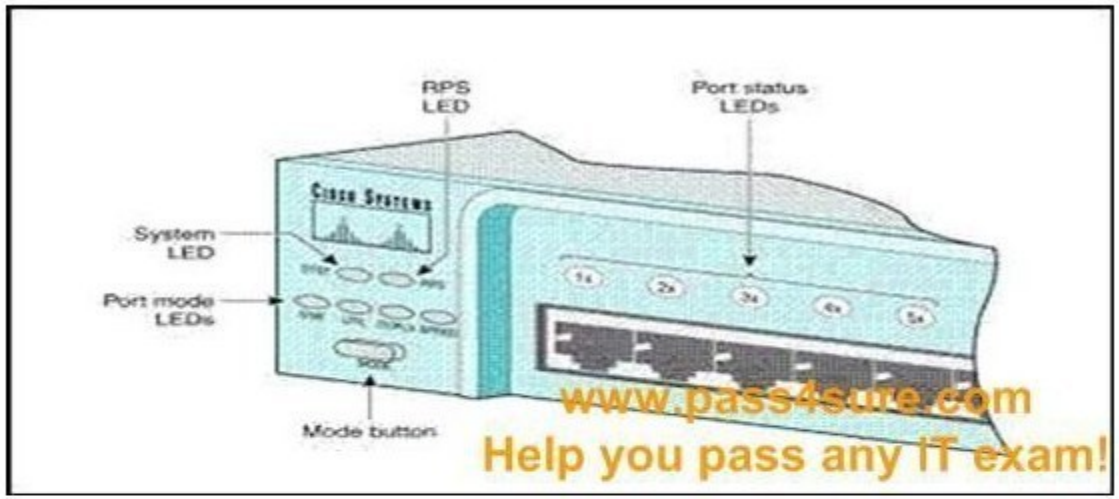
Mark for Review

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 of the switch from being loaded.

D. The switch has experienced an internal problem but data can still be forwarded at a slower rate.

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Mark for Review

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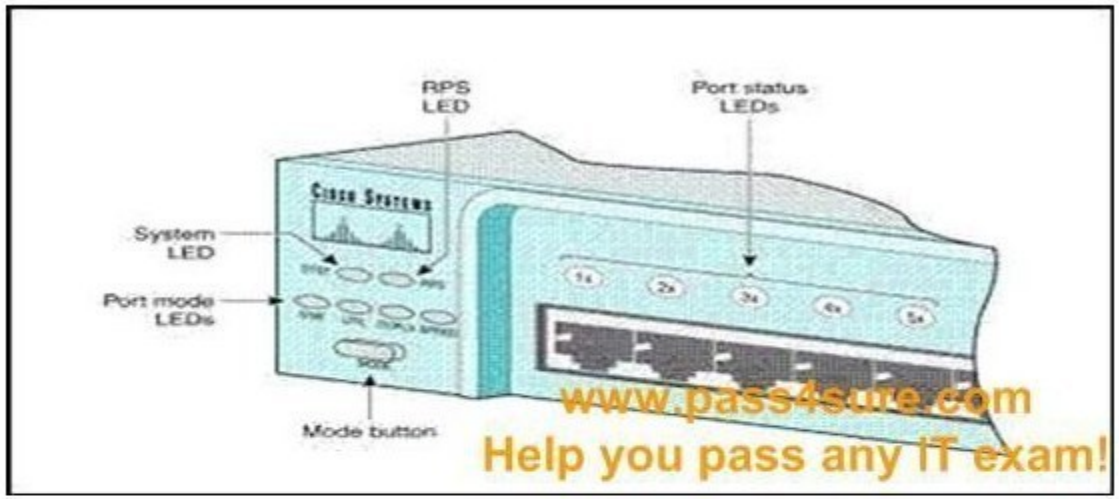


A. The POST was successful.

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 of the switch from being loaded.

D. The switch has experienced an internal problem but data can still be forwarded at a slower rate.

## Answer & Explanation

### Correct Answer

C

### Explanations

When switch is connected to power and conduct Self Test, LED lights turn to Amber, this tells us of POST failure. POST failure is a fatal error; it means the switch does not work.

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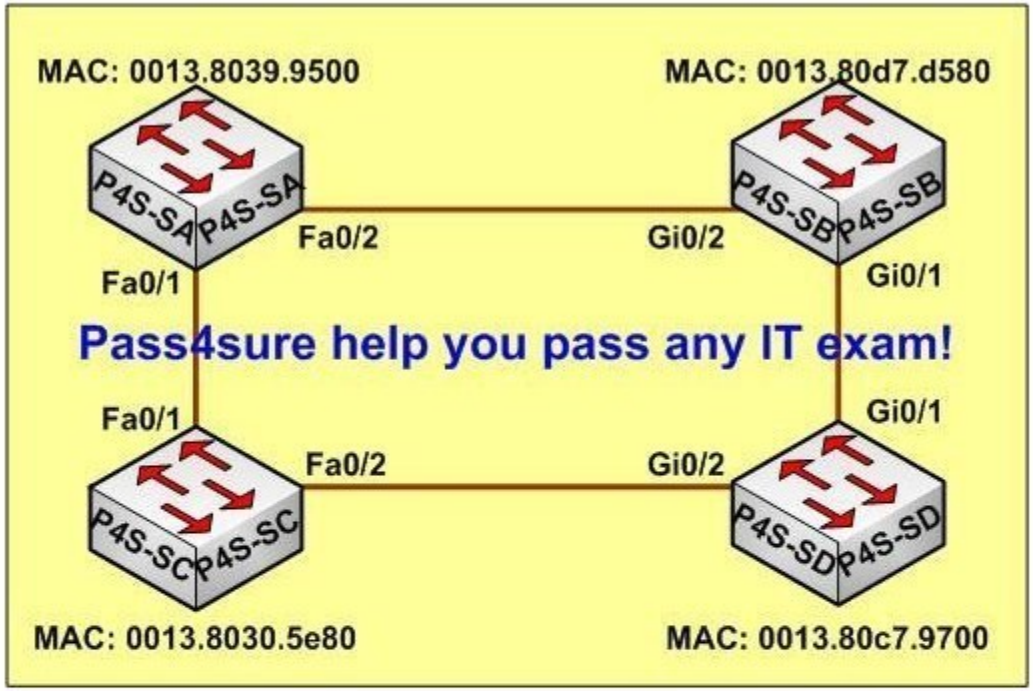
Mark for Review

Study the exhibit carefully. Each of these four Pass4sure switches has been configured with a hostname, as well as being configured to run RSTP. No other configuration changes have been made. Which switch will have only one forwarding interface?




- A. P4S-SA
- B. P4S-SB
- C. P4S-SC
- D. P4S-SD

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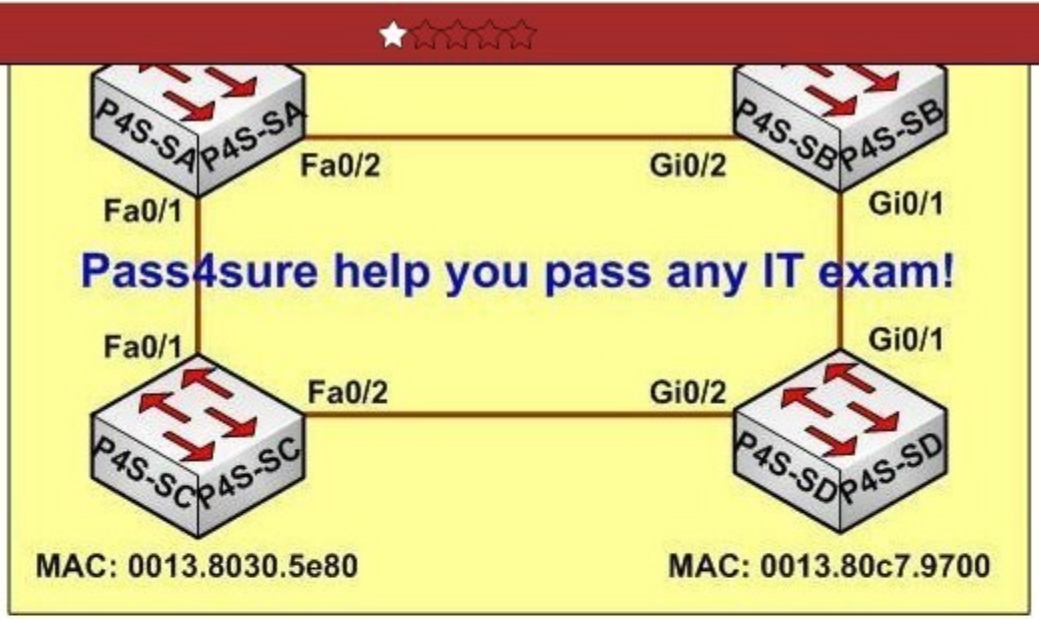
Mark for Review




A. P4S-SA

B. P4S-SB

C. P4S-SC

D. P4S-SD

## Answer & Explanation

### Correct Answer

B

### Explanations

1. Judge the root bridge. The election of the root bridge is based on the bridge ID. Bridge ID = Bridge priority + Bridge MAC address. By default, the bridge priority value is 32768. And you can judge the root bridge only by bridge MAC address .The root bridge of this subject is P4S-SC.
2. Identify the root port. After electing the root bridge, it is needed to select a port of each switch in this network used to reach the root bridge, this port is known as root port (RP) . The port that is nearest to the root bridge is RP of non-root bridge. In this subject, ports F0 / 1 of P4S-SA, G0 / 1 of P4S-SB and G0 / 2 of P4S-SD are RPs.

According to the choice of STP, you will eventually find that a port on P4S-SB will be blocked ,that is Gi0 / 2.

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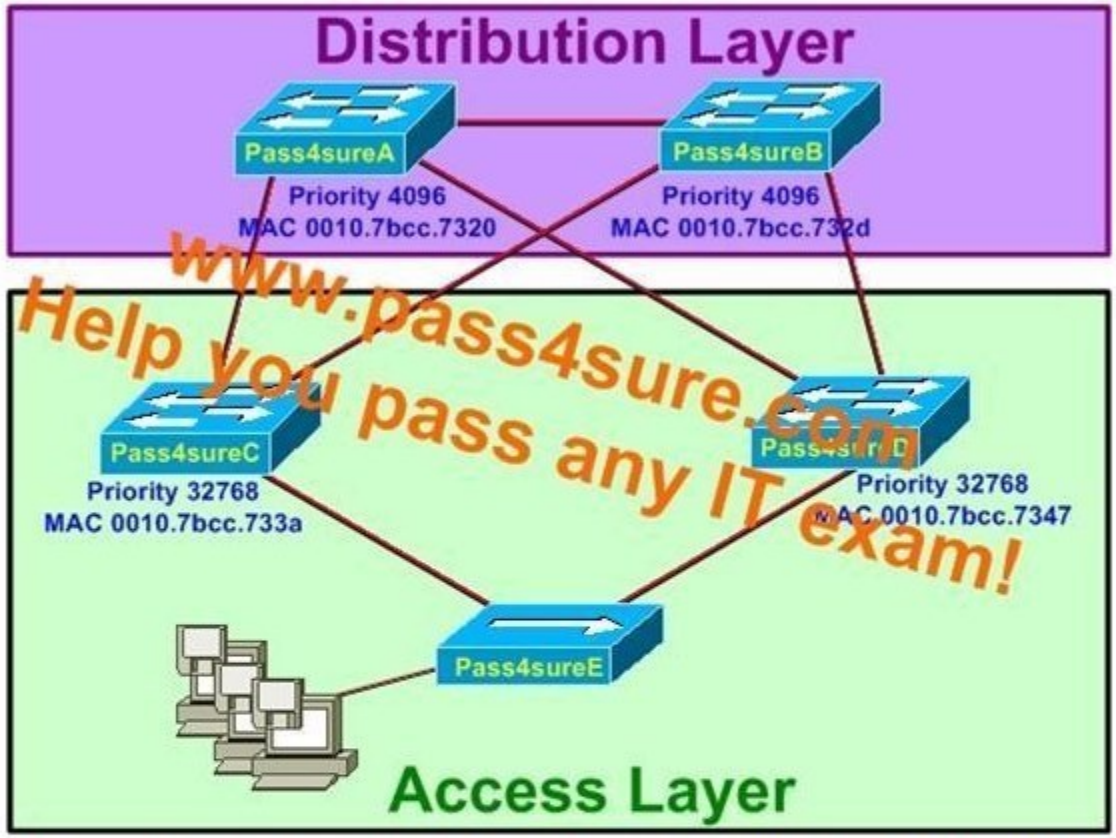
Mark for Review

Part of the Pass4sure switched LAN is shown below:




Based on the information show above, which device will provide the spanning-tree designated port role for the Pass4sure network segment that services the printers?

- A. Switch Pass4sureA
- B. Hub Pass4sureE
- C. Switch Pass4sureC
- D. Switch Pass4sureB

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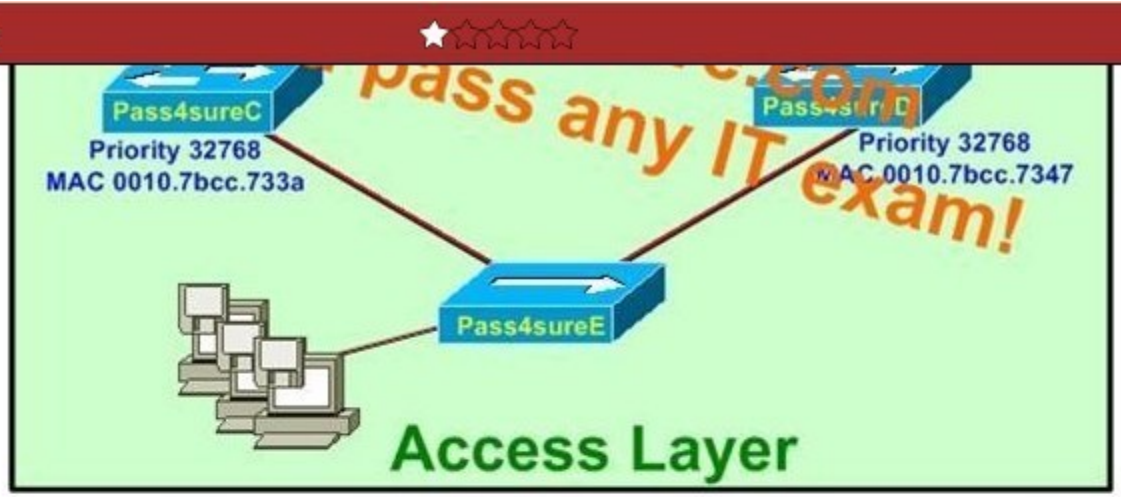


Based on the information show above, which device will provide the spanning-tree designated port role for the Pass4sure network segment that services the printers?

- A. Switch Pass4sureA
- B. Hub Pass4sureE
- C. Switch Pass4sureC
- D. Switch Pass4sureB

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is about Spanning-tree election problem. First, we should elect root bridge, which can be achieved by comparing bridge ID, the switch with the lowest ID will be the Root Bridge, bridge ID = bridge priority+ MAC address. As we can see from the figure, switch Pass4sureA is the root bridge. The selection of the root port consists simply of going through all the ports and selecting the one with the best priority vector. If more than one port happens to share the same best priority vector, the local port with the lowest assigned port ID is selected. As the exhibit above does not provide the link bandwidth, we can't compare the root cost. Next , it is required to select the DP (Designated port). Each link needs a DP. First, compare the cost, if the costs are the same, then compare bridge priority, still the smaller will be selected. Based on the exhibit displayed, we can discover the DP on each link, while the DP on the link connecting the Printers is Switch Pass4sureC, because it has the smallest MAC address.

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A virtual LAN, commonly known as a VLAN, is a group of hosts with a common set of requirements that communicate as if they were attached to the Broadcast domain, regardless of their physical location. Which three of the following items are objectives to designate ports to VLANs on a switch? (Choose three.)

- A. to allow more devices to connect to the network
- B. to isolate broadcast traffic
- C. to logically group hosts according to function
- D. to increase network security

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Mark for Review

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- A. to allow more devices to connect to the network
- B. to isolate broadcast traffic
- C. to logically group hosts according to function
- D. to increase network security

## Answer & Explanation

### Correct Answer

B C D

### Explanations

VLAN has the following advantages:
1.Restrict broadcast domain. That is to say each VLAN is a Broadcast domain, which saves bandwidth and improves the network performance.
2.Enhance the LAN security. Datagrams in different VLANs transmit separately, that is to say users in one VLAN can't directly communicate with users in other VLANs, if they want to communicate, devices such as routers and layer3 switches are required.
3. Establish a virtual working group flexibly. VLAN can group different users into different working team regardless of their physical location,which makes network establishment and maintenance more flexible.
VLAN belongs to the Data Link Layer, subnet is implemented at the network layer,so VLANs across different subnets can not communicate with each other even if they have the same name.

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If you are a network administrator, how will you explain VTP configuration to a new technician? (Choose three.)

- [ ] A. In the VTP client mode, a switch is unable to update its local VLAN database.
- [ ] B. Configure a trunk link between the switches to forward VTP updates.
- [ ] C. In the VTP server mode, a switch is able to update a switch in the VTP transparent mode.
- [ ] D. In the VTP transparent mode, a switch will forward the received updates to other switches.

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Mark for Review

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- C. In the VTP server mode, a switch is able to update a switch in the VTP transparent mode.
- D. In the VTP transparent mode, a switch will forward the received updates to other switches.

## Answer & Explanation

### Correct Answer

A B D

### Explanations

VTP operates in one of three modes:
Server - In this VTP mode you can create, remove, and modify VLANs. You can also set other configuration options like the VTP version and also turn on/off VTP pruning for the entire VTP domain. VTP servers advertise their VLAN configuration to other switches in the same VTP domain and synchronize their VLAN configuration with other switches based on messages received over trunk links. VTP server is the default mode. The VLANs information are stored on NVRAM and they are not lost after a reboot.
Client - VTP clients behave the same way as VTP servers, but you cannot create, change, or delete VLANs on the local device. In VTP client mode, VLAN configurations are not saved in NVRAM.
Transparent - When you set the VTP mode to transparent, then the switches do not participate in VTP. A VTP transparent switch will not advertise its VLAN configuration and does not synchronize its VLAN configuration based on received messages. VLANS can be created, changed or deleted when in transparent mode. In VTP version 2, transparent switches do forward VTP messages that they receive out their trunk ports.

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A Pass4sure switch is configured with all ports assigned to VLAN 2. In addition, all ports are configured as full-duplex FastEthernet. What is the effect of adding switch ports to a new VLAN on this switch?

- A. The additions will create more collisions domains.
- B. An additional broadcast domain will be created.
- C. More bandwidth will be required than was needed previously.
- D. IP address utilization will be more efficient.

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Mark for Review

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## Answer & Explanation

### Correct Answer

B

### Explanations

VLAN (Virtual Local Area Network) technology is to solve the problem that switches can't limit broadcast within the LAN interconnection. This technology can divide a LAN into more logical LAN- VLAN, each VLAN is a broadcast domain, the communication between the hosts within a VLAN is like that of the hosts in a LAN, while the communication can't be achieved between VLANs directly. Thus the broadcast datagram is limited within a LAN. So, creating a new VLAN on switch is the same as adding a new broadcast domain.

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Mark for Review

Which of the protocols operates at Layer 2 of the OSI model, and is used to maintain a loop-free network?

A. RIP

B. STP

C. IGRP

D. VTP

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Mark for Review

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B. STP

C. IGRP

D. VTP

## Answer & Explanation

### Correct Answer

B

### Explanations

A Layer 2 switch, which functions as a transparent bridge, offers no additional links for redundancy purposes. To add redundancy, a second switch must be added. Now two switches offer the transparent bridging function in parallel. LAN designs with redundant links introduce the possibility that frames might loop around the network forever. These looping frames would cause network performance problems. For example, when the switches receive an unknown unicast, both will flood the frame out all their available ports, including the ports that link to the other switch, resulting in what is known as a bridging loop, as the frame is forwarded around and around between two switches. This occurs because parallel switches are unaware of each other. The Spanning Tree Protocol (STP), which allows the redundant LAN links to be used while preventing frames from looping around the LAN indefinitely through those redundant links, was developed to overcome the possibility of bridging loops. It enables switches to become aware of each other so that they can negotiate a loop-free path through the network. Loops are discovered before they are opened for use, and redundant links are shut down to prevent the loops from forming. STP is communicated between all connected switches on a network. Each switch executes the Spanning-Tree Algorithm (STA) based on information received from other neighboring switches. The algorithm chooses a reference point in the network and calculates all the redundant paths to that reference point. When redundant paths are found, STA picks one path to forward frames with and disables or blocks forwarding on the other redundant paths. STP computes a tree structure that spans all switches in a subnet or network. Redundant paths are placed in a blocking or standby state to prevent frame forwarding. The switched network is then in a loop-free condition. However, if a forwarding port fails or becomes disconnected, the STA will run again to recompute the Spanning-Tree topology so that blocked links can be reactivated.

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Mark for Review

As the Pass4sure network administrator, You need to configure two Pass4sure switched to exchange VLAN information. Which protocol provides a method of sharing VLAN configuration information between these two switches?

- A. VTP
- B. VLSM
- C. 802.1Q
- D. STP

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- B. VLSM
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- D. STP

## Answer & Explanation

### Correct Answer

A

### Explanations

VLAN Trunking Protocol (VTP) is Cisco level 2 information transfer protocol, mainly controls the VLANs add, delete, and rename within network. VTP reduce the management services in switch network. When a user prepares to configure new VLAN for VTP server, he may implement VLAN distribution through all the switches, to avoid identical VLAN configuration. VTP is a Cisco private protocol, which support the majority of Cisco Catalyst Series products.

Through VTP, all switches within its domain have a clear idea of all the VLANs, except when VTP can create extra traffic. At this time, all unknown unicast and broadcast spread throughout the VLAN, making all the switches in the network receive all broadcasts, even if no user is connected in the VLAN, the situation is no exception. And VTP Pruning is able remove the extra traffic.

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Which three of the following are reasons for assigning ports to VLANs on a switch? (Choose three.)

- A. to permit more devices to connect to the network
- B. to isc
- C. to logically group hosts on the basis of function
- D. to increase network security

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## Answer & Explanation

**Correct Answer**

B C D

**Explanations**

No more information available

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Mark for Review

What is the purpose of Spanning Tree Protocol?

- A. to prevent routing loops
- B. to create a default route
- C. to provide multiple gateways for hosts
- D. to maintain a loop-free Layer 2 network topology

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Mark for Review

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- B. to create a default route
- C. to provide multiple gateways for hosts
- D. to maintain a loop-free Layer 2 network topology

## Answer & Explanation

### Correct Answer

D

### Explanations

STP (Spanning Tree protocol) is able to overcome transparent bridge in network redundancy. Through the use of non-loop path, STP is able to avoid and eliminate network loops. It may locate the loop and cut off link redundancy.

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Which three of the following are advantages of VLANs? (Choose three.)

- [ ] A. VLANs create broadcast domains in switched networks.
- [ ] B. VLANs offer a low-latency internetworking alternative to routed networks.
- [ ] C. VLANs allow access to network services on the basis of department, not physical location.
- [ ] D. VLANs are able to greatly simplify adding, moving, or changing hosts on the network.

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## Answer & Explanation

### Correct Answer

A C D

### Explanations

VLANs establish broadcast domains in switched networks, so by virtue of having the option to create many efficient broadcast domains, congestion is reduced and network throughput is greatly enhanced. VLANs allow networks to be divided by department or resource needs, rather then by physical location. When people move departments, leave a department, or join a department, administration is easy and convenient with a few keystrokes.

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Which three features are of VLAN arrangements? (Choose three.)

- A. VLANs typically reduce the number of collision domains.
- B. A Layer 3 device is required to establish connectivity between VLANs.
- C. Each VLAN utilizes a separate address space.
- D. A switch maintains a separate bridging table for each VLAN.

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Which two of these statements regarding RSTP are correct? (Choose two.)

- [ ] A. RSTP cannot operate with PVST+.
- [ ] B. RSTP defines new port roles.
- [ ] C. RSTP defines no new port states.
- [ ] D. RSTP is compatible with the original IEEE 802.1D STP.

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## Answer & Explanation

### Correct Answer

B D

### Explanations

When network topology changes, rapid spanning tree protocol (IEEE802.1W, referred to as RSTP) will speed up significantly the speed to re-calculate spanning tree. RSTP not only defines the role of other ports: alternative port and backup port, but also defines status of 3 ports: discarding status, learning status, forwarding status.

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Which two benefits can be obtained by using VTP in a switching environment? (Choose two.)

- [ ] A. Allowing frames from multiple VLANs to use a single interface.
- [ ] B. Allowing switches to read frame tags.
- [ ] C. Maintaining VLAN consistency across a switched network.
- [ ] D. Allowing VLAN information to be automatically propagated throughout the switching environment.

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## Answer & Explanation

### Correct Answer

C D

### Explanations

VTP sends messages between trunked switches to maintain VLANs on these switches in order to properly trunk. VTP messages are exchanged between switches within a common VTP domain. If the domain name is different, the switch simply ignores the packet. If the name is the same then it checks by a revision number. If the revision number of an update received on a client or server VTP switch is higher than the previous revision, then the new configuration is applied. Otherwise, the configuration is ignored. When new Ind devices are added to a VTP domain, revision numbers should be reset on the entire domain to prevent conflicts. Utmost caution is advised when dealing with VTP topology changes, logical or physical. Exchanges of VTP information can be controlled by passwords. You need to put the same password on every switch for it to work.

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Which three benefits are of VLANs? (Choose three.)

- A. To increase the size of collision domains.
- B. To allow logical grouping of users by function.
- C. To enhance network security.
- D. To increase the number of broadcast domains while decreasing the size of the broadcast domains.

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Mark for Review

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## Answer & Explanation

### Correct Answer

B C D

### Explanations

A virtual LAN, commonly known as a VLAN, is a group of hosts with a common set of requirements that communicate as if they were attached to the Broadcast domain, regardless of their physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same network switch. Network reconfiguration can be done through software instead of physically relocating devices. VLANs are created to provide the segmentation services traditionally provided by routers in LAN configurations. VLANs address issues such as scalability, security, and network management. Routers in VLAN topologies provide broadcast filtering, security, address summarization, and traffic flow management. By definition, switches may not bridge IP traffic between VLANs as it would violate the integrity of the VLAN broadcast domain.

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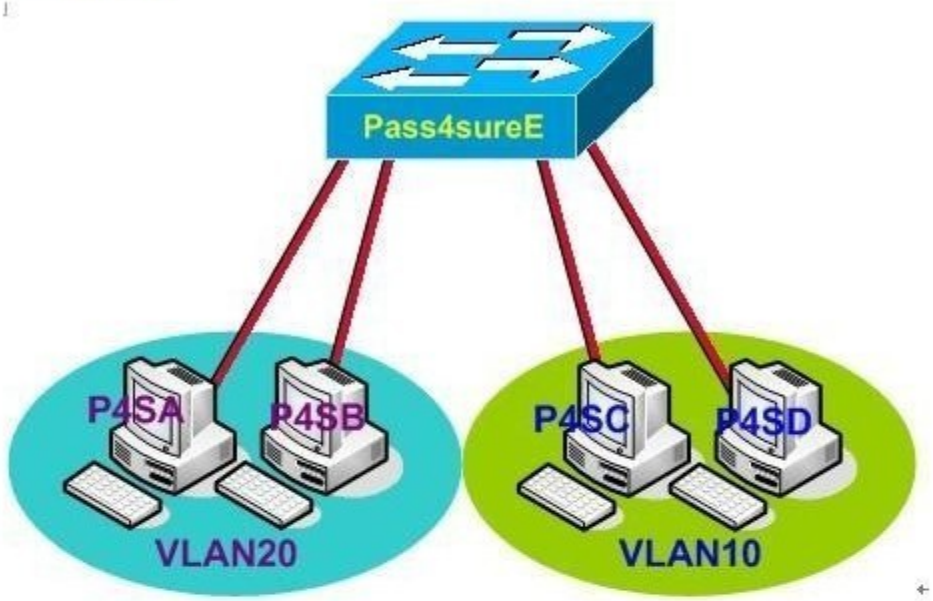
Mark for Review

Two VLANs are connected to a switch as follows:




In this Pass4sure network segment, hosts on the same VLAN can communicate with each other but are unable to communicate with hosts on different VLANs. What is needed to allow communication between these two Pass4sure VLANs?

A. a switchs with an access link that is configured between the switches

B. a router with an IP address on the physical interface that is connected to the switch

C. a switch with a trunk link that is configured between the switches

D. a router with subinterfaces configured on the physical interface that is connected to the switch

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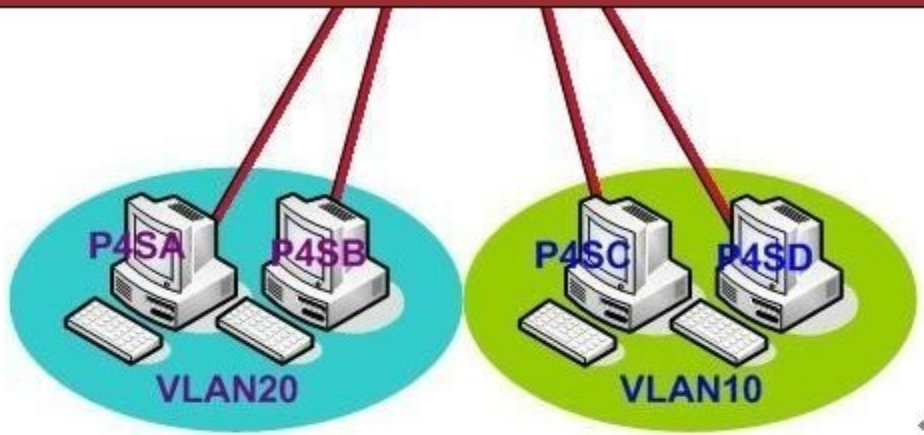


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C. a switch with a trunk link that is configured between the switches

D. a router with subinterfaces configured on the physical interface that is connected to the switch

## Answer & Explanation

### Correct Answer

D

### Explanations

Different VLANs can't communicate with each other , they can communicate with the help of Layer3 router. Hence ,it is needed to connect a router to a switch , then make the sub-interface on the router to connect to the switch, establishing Trunking links to achieve communications of devices which belong to different VLANs.

When using VLANs in networks that have multiple interconnected switches, you need to use VLAN trunking between the switches. With VLAN trunking, the switches tag each frame sent between switches so that the receiving switch knows to what VLAN the frame belongs. End user devices connect to switch ports that provide simple connectivity to a single VLAN each. The attached devices are unaware of any VLAN structure.

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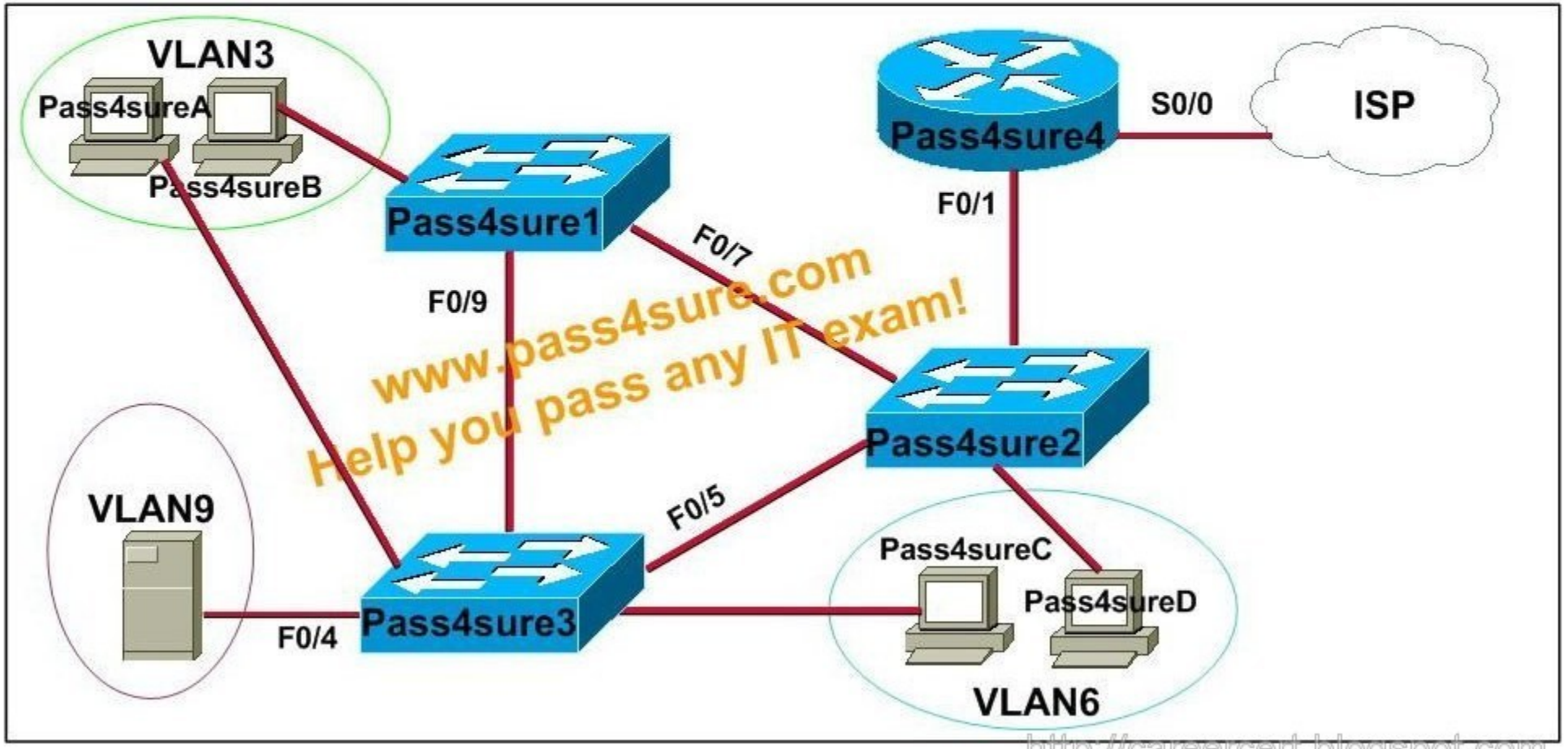
Mark for Review

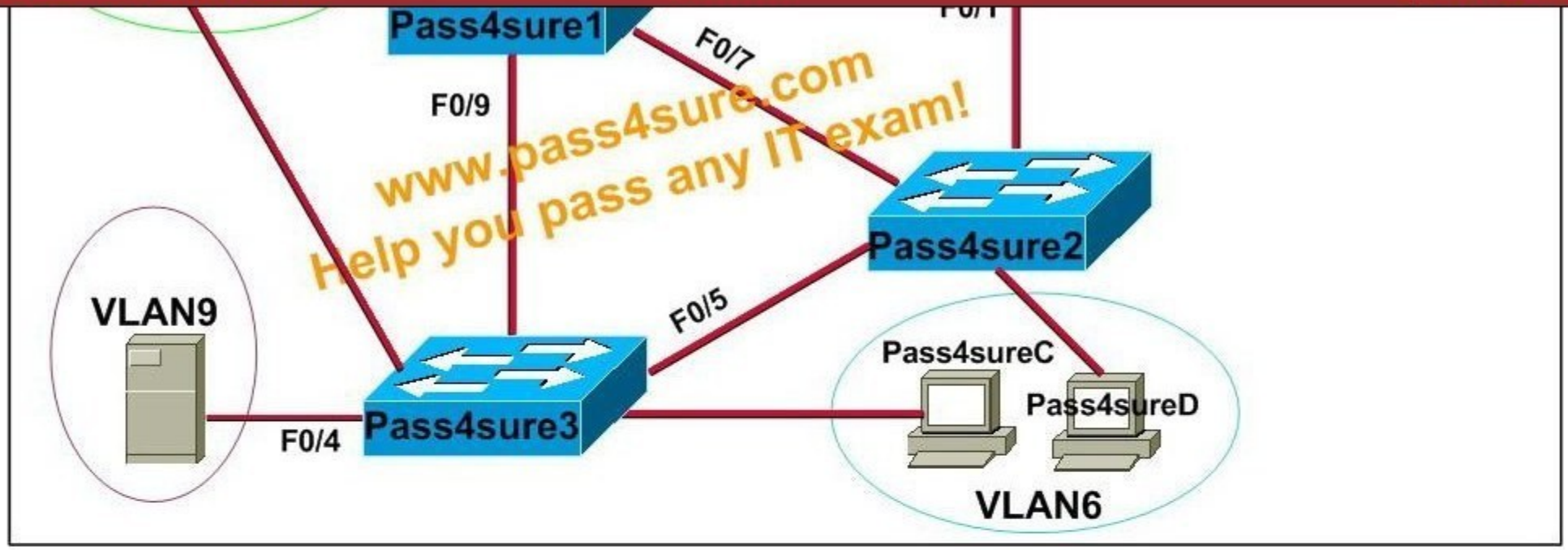
Refer to the exhibit. A technician is investigating a problem with the network that is shown. The router is a 2800 model and all switches are 2950 models. These symptoms have been observed:

- All of the user hosts can access the Internet.
- None of the user hosts can access the server located in VLAN 9.
- All of the hosts can ping each other.

What could cause these symptoms?




A. Interface Fa0/4 on Pass4sure3 is down.




A. Interface Fa0/4 on Pass4sure3 is down.

B. Interface S0/0 on the Pass4sure4 is down.

C. Interface Fa1/0 on the Pass4sure4 is down.

D. Trunking is not enabled on the link between Pass4sure1 and Pass4sure3.

## Answer & Explanation

### Correct Answer

A

### Explanations

According to the information provided in the question, we know that none of the user hosts can access the server located in VLAN 9. All of the hosts can ping each other and can access the Internet. Because the hosts and the server are in different VLANs, they must communicated with the help of router's routing functions.If the Pass4sure3's Fa0/4 port is down, the hosts can communicate with the server in VLAN9.

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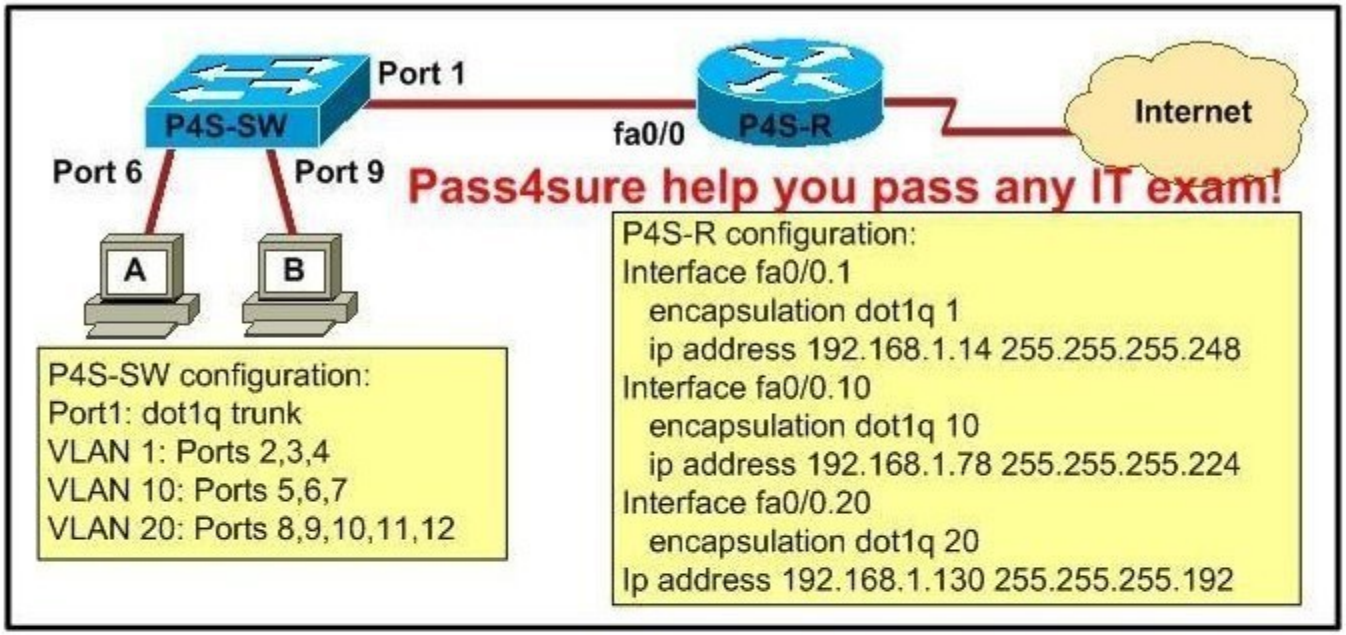
Mark for Review

Study the following exhibit carefully, two new hosts should be added to P4S-SW. Which three values can be used to configure these hosts? (Choose three.)




- A. host A IP address: 192.168.1.79
- B. host B default gateway: 192.168.1.129
- C. host A default gateway: 192.168.1.78
- D. host B IP address: 192.168.1.190

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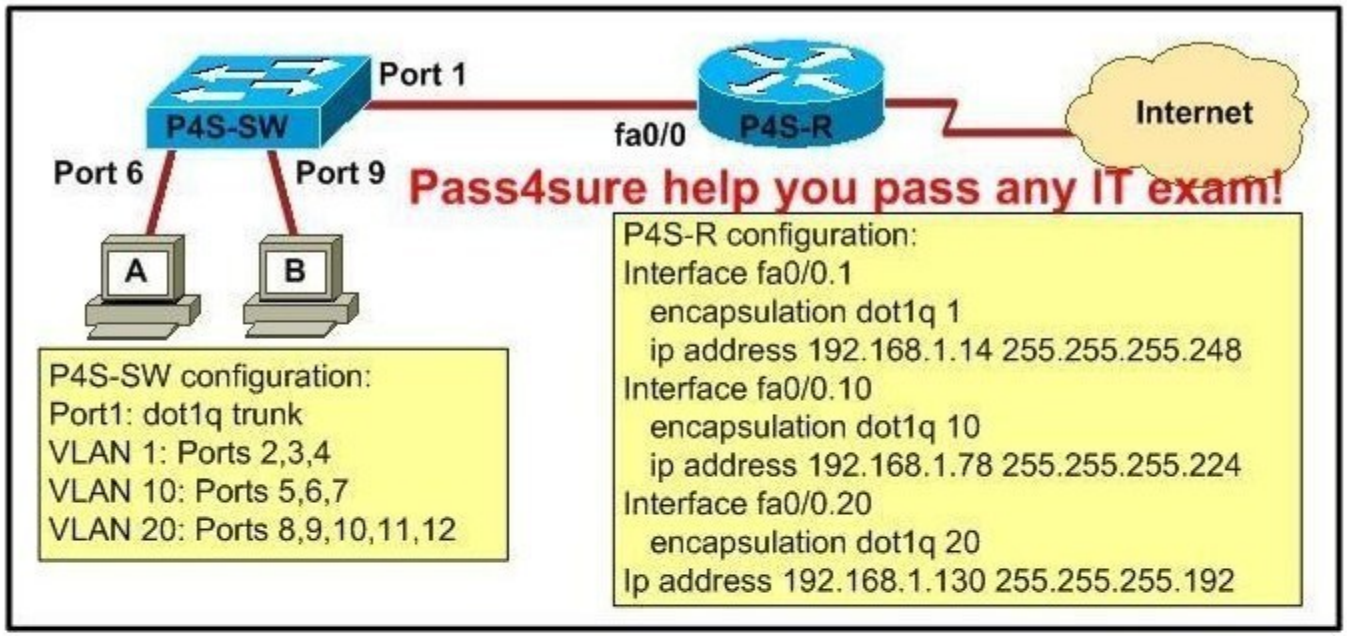
Mark for Review

hosts? (Choose three.)

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- C. host A default gateway: 192.168.1.78
- D. host B IP address: 192.168.1.190

## Answer & Explanation

### Correct Answer

A C D

### Explanations

In this question, host A and host B are placed in different Vlans and they communicate with outside through P4S-R. On the switch, ports are put in different vlans, you must see clearly host A and host B correspond to which port separately, then you will know which vlan they belong to. Host A corresponds to port 6 and vlan 10, Host B corresponds to port 9 and vlan 20, the addresses of the same vlan must be on the same network segment.

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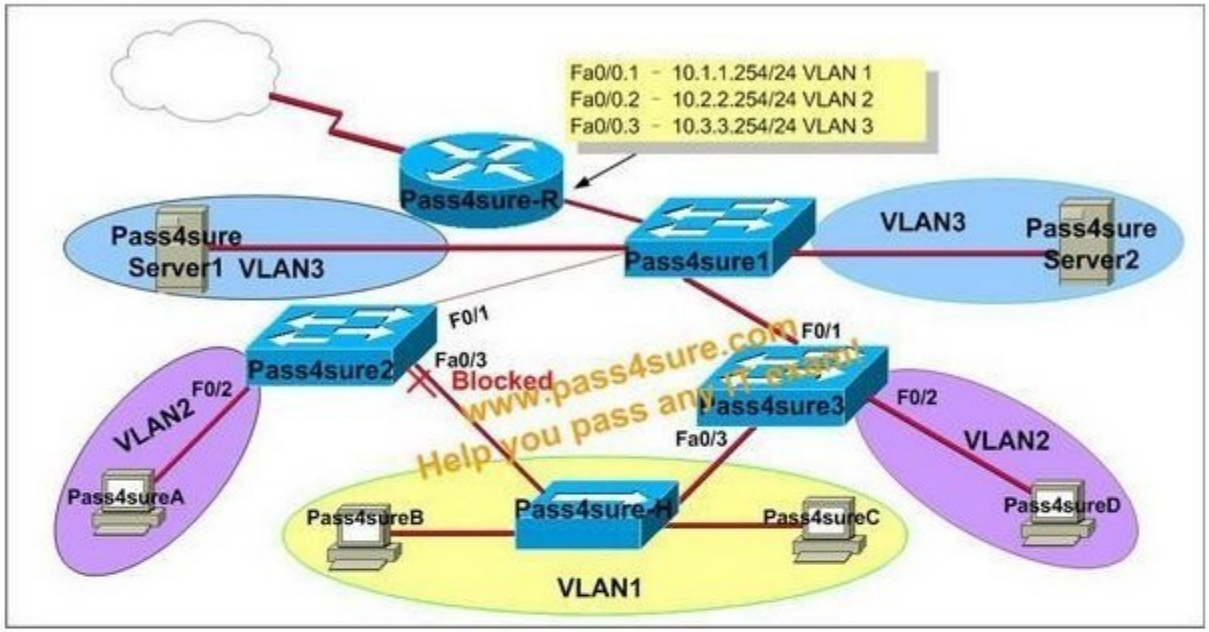
Mark for Review

The part of Pass4sure network is shown below:




According to the diagram, which of the following is true about the internetwork?

- A. Pass4sure2 is the root bridge.
- B. Spanning Tree is not running.
- C. No collisions can occur in traffic between Pass4sureB and Pass4sureC.
- D. Pass4sureD and Pass4sure Server 1 are in the same network.
- E. If Fa0/0 is down on Pass4sure-R, Pass4usreA cannot access Pass4sure Server 1

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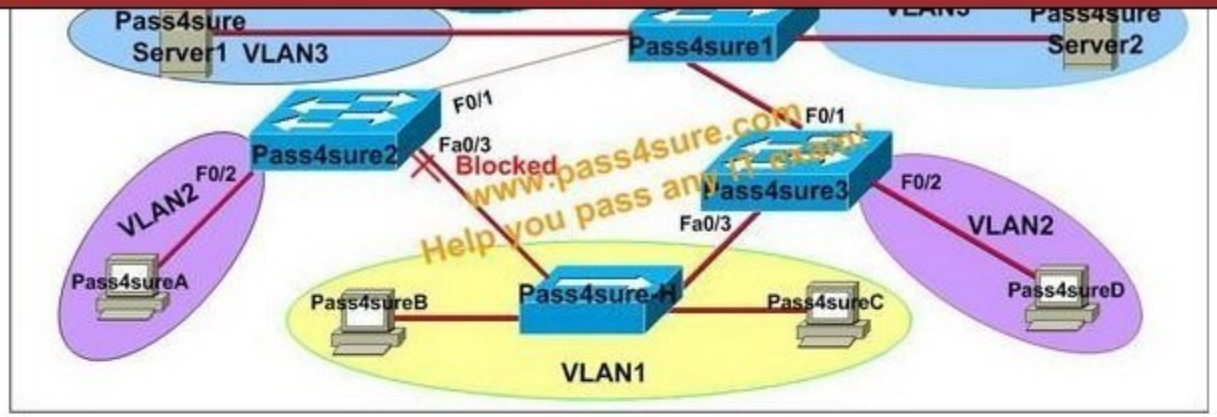


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D. Pass4sureD and Pass4sure Server 1 are in the same network.

E. If Fa0/0 is down on Pass4sure-R, Pass4usreA cannot access Pass4sure Server 1

## Answer & Explanation

### Correct Answer

E

### Explanations

This question involves the communication between many switches in different VLANs. There is a loop between switches, while the spanning tree blocks one port located on the non-root bridge, so Pass4sure2 won't be the root bridge. Pass4sureDand the server are in the same VLAN, so they are not in the same network. A hub is a broadcast domain and a big collision domain, Pass4sureBcollides with Pass4sureC . Pass4sureA and the server are in different VLANs, they can communicate with each other with the help of Pass4sure-R's Fa0/0 port, so if this port is down, Pass4sureAcan't communicate with server 1. In the same way, communication between Pass4sureC and server 2 can be achieved through the port Fa0/0 on Pass4sure-R, if Pass4sure3's Fa0/1 port is down, the spanning tree election will repeat again, the previous blocked port will forward data, and Pass4sureCwill transmit data through Pass4sure2, the connectivity between Pass4sureC and server 2 will not get lost.

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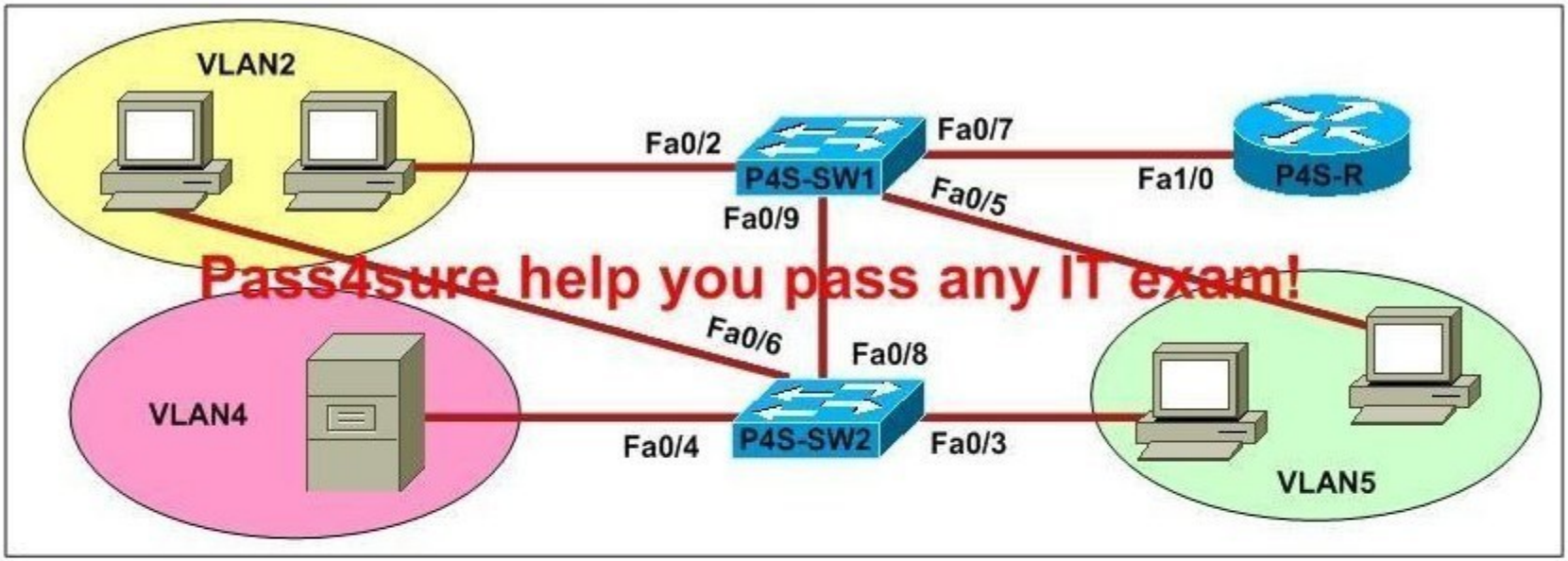
Mark for Review

The following exhibit describes the operation of the P4S company. The server in VLAN 4 offers the required resources to support the user hosts in the other VLANs. Which interfaces are access ports? (Choose three.)




- A. P4S-SW1 - Fa 0/2
- B. P4S-R - Fa 1/0
- C. P4S-SW2 - Fa 0/3
- D. P4S-SW2 - Fa 0/4

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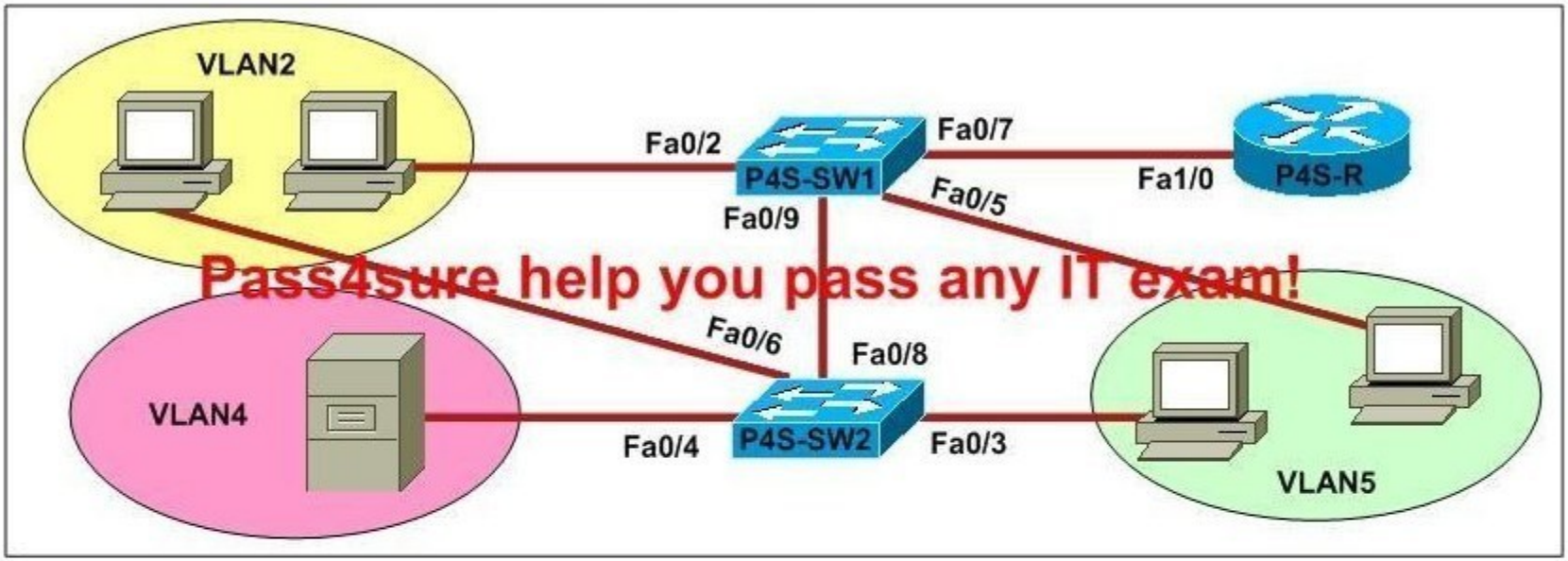


- A. P4S-SW1 - Fa 0/2
- B. P4S-R - Fa 1/0
- C. P4S-SW2 - Fa 0/3
- D. P4S-SW2 - Fa 0/4

## Answer & Explanation

**Correct Answer**

A C D

**Explanations**

If a port only needs one vlan, the port will be the access port when communicating.

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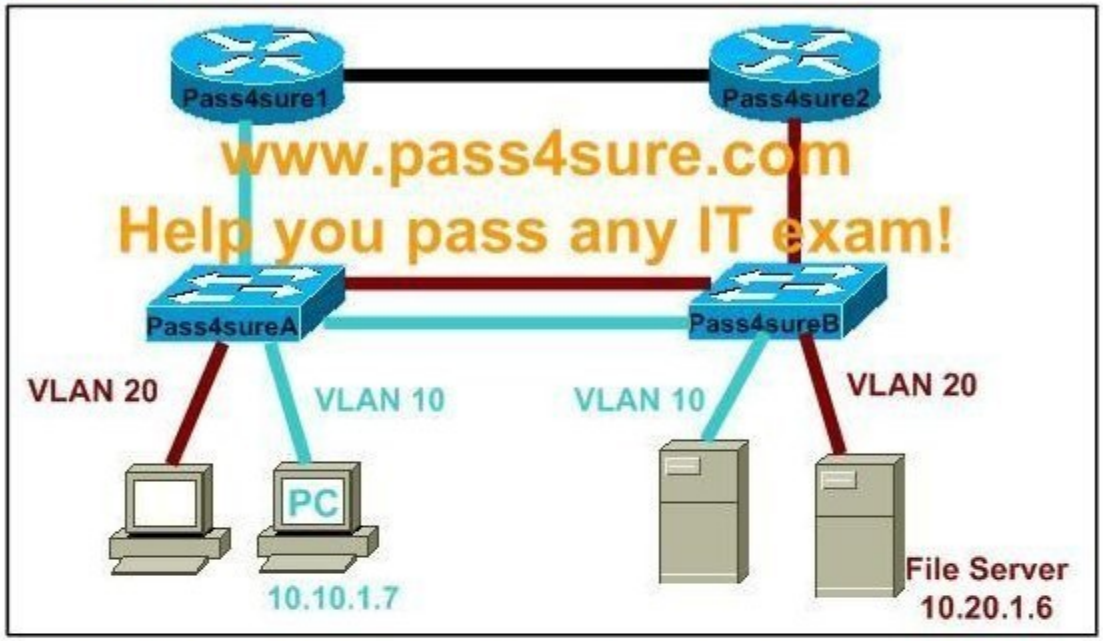
Mark for Review

The Pass4sure network topology is shown below:




You work as a network technician for Pass4sure and are responsible for this network. You are evaluating the efficiency of the current network design. RIPv2 is enabled on all Layer 3 devices in the network. What network devices participate in passing traffic from the PC at 10.10.1.7 to File Server at 10.20.1.6 in the order that they will forward traffic from source to destination?

- A. Pass4sureA, Pass4sureB
- B. Pass4sureA, Pass4sure1, Pass4sureA, Pass4sureB
- C. Pass4sureA, Pass4sureB, Pass4sure2, Pass4sureB
- D. Pass4sureA, Pass4sure1, Pass4sure2, Pass4sureB

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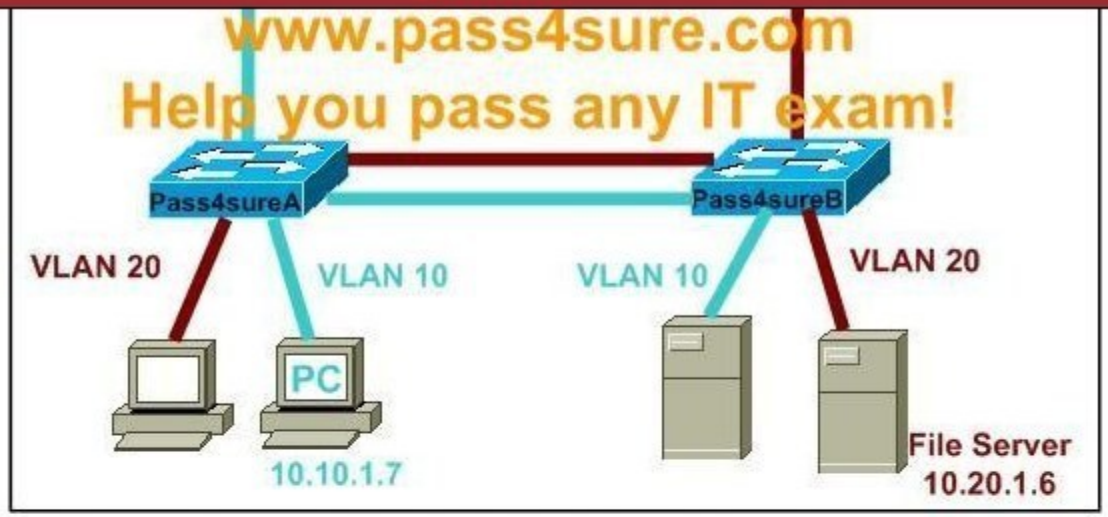
Mark for Review

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- A. Pass4sureA, Pass4sureB
- B. Pass4sureA, Pass4sure1, Pass4sureA, Pass4sureB
- C. Pass4sureA, Pass4sureB, Pass4sure2, Pass4sureB
- D. Pass4sureA, Pass4sure1, Pass4sure2, Pass4sureB

## Answer & Explanation

### Correct Answer

D

### Explanations

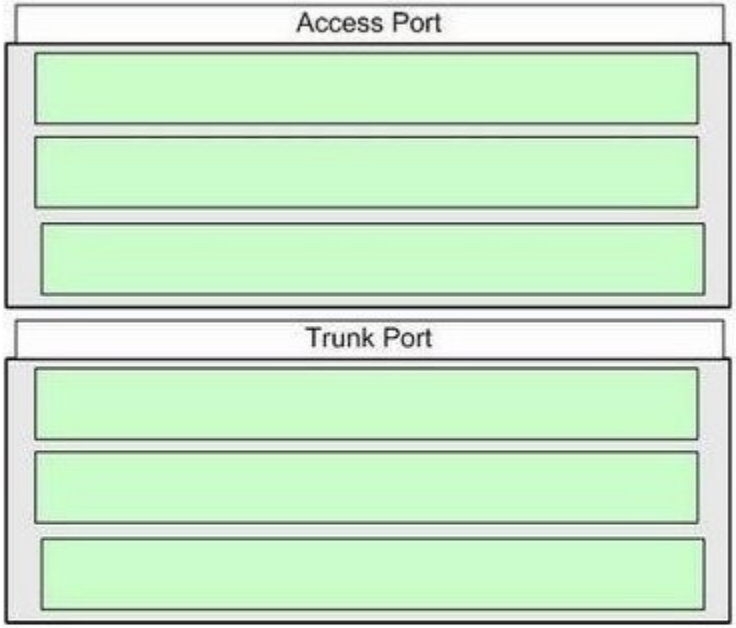
When data sending from the PC having 10.10.1.7 IP address to PC 10.20.1.6 goes through Switch Pass4sureA, Router Pass4sure1, Router Pass4sure2, Switch Pass4sureB.

Gateway of PC 10.10.1.7 is the router Pass4sure1's Ethernet IP. So when sending the data it goes to gateway through Pass4sureA switch. When packet reached to Pass4sure1 router it forwards to Pass4sure2 router based on routing table. Then Router Pass4sure2 forwards the packets to Pass4sureB switch.

http://careerzet.blogspot.com

Mark for Review

The left describes the types of switch ports, while the right describes the features.
Drag the options on the right to the proper locations.




- carries traffic for a multiple VLAN
- carries traffic for a single VLAN
- uses a straight-through cable to connect a device
- Facilitatcs interVLAN communications when connected to a Layer 3 device
- uses 802.1q to identify traffic from different VLANs
- connects an end-user workstation to a switch

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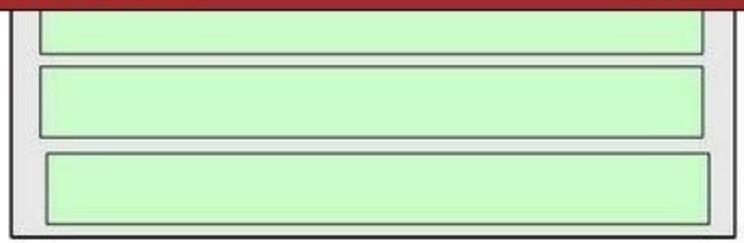
Mark for Review



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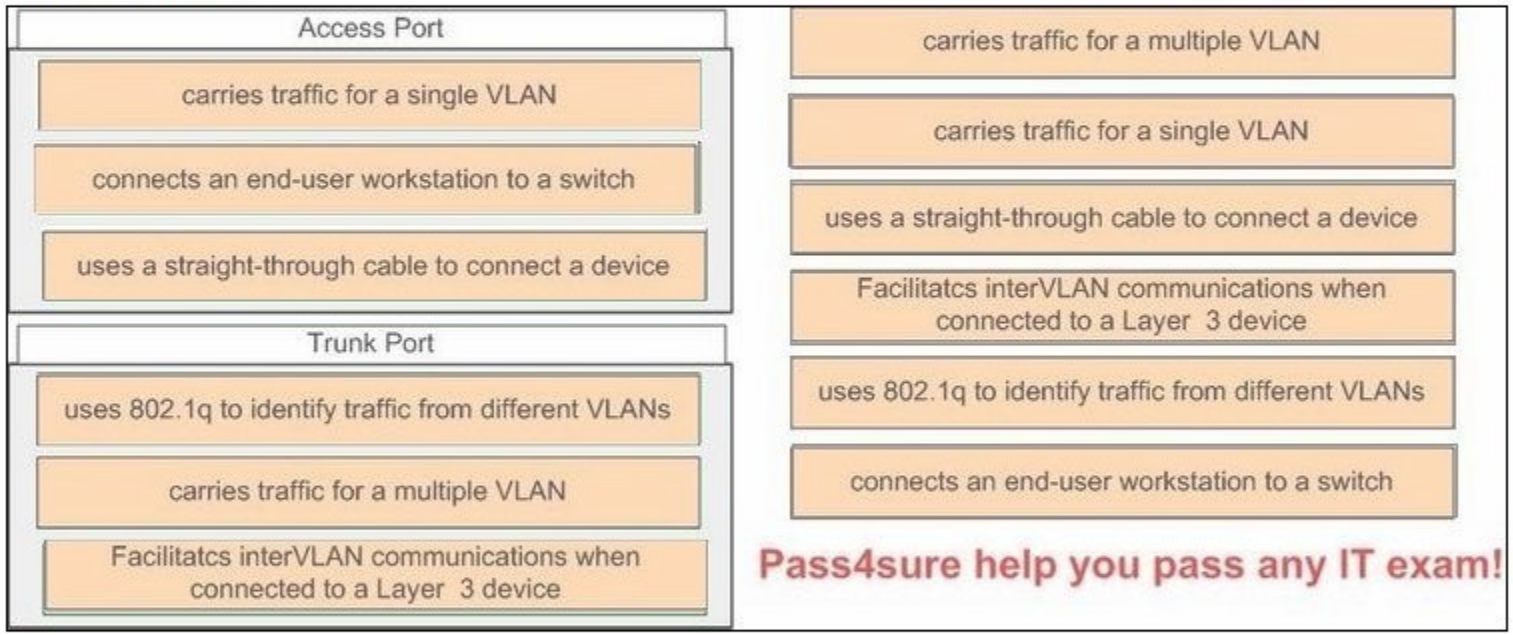
## Answer & Explanation

### Correct Answer




### Explanations

Trunking
VLANs are local to each switch's database, and VLAN information is not passed between switches.
Trunk links provide VLAN identification for frames traveling between switches.
Cisco switches have two Ethernet trunking mechanisms: ISL and IEEE 802.1Q.
Certain types of switches can negotiate trunk links.
Trunks carry traffic from all VLANs to and from the switch by default but can be configured to carry only specified VLAN traffic.
Trunk links must be configured to allow trunking on each end of the link.

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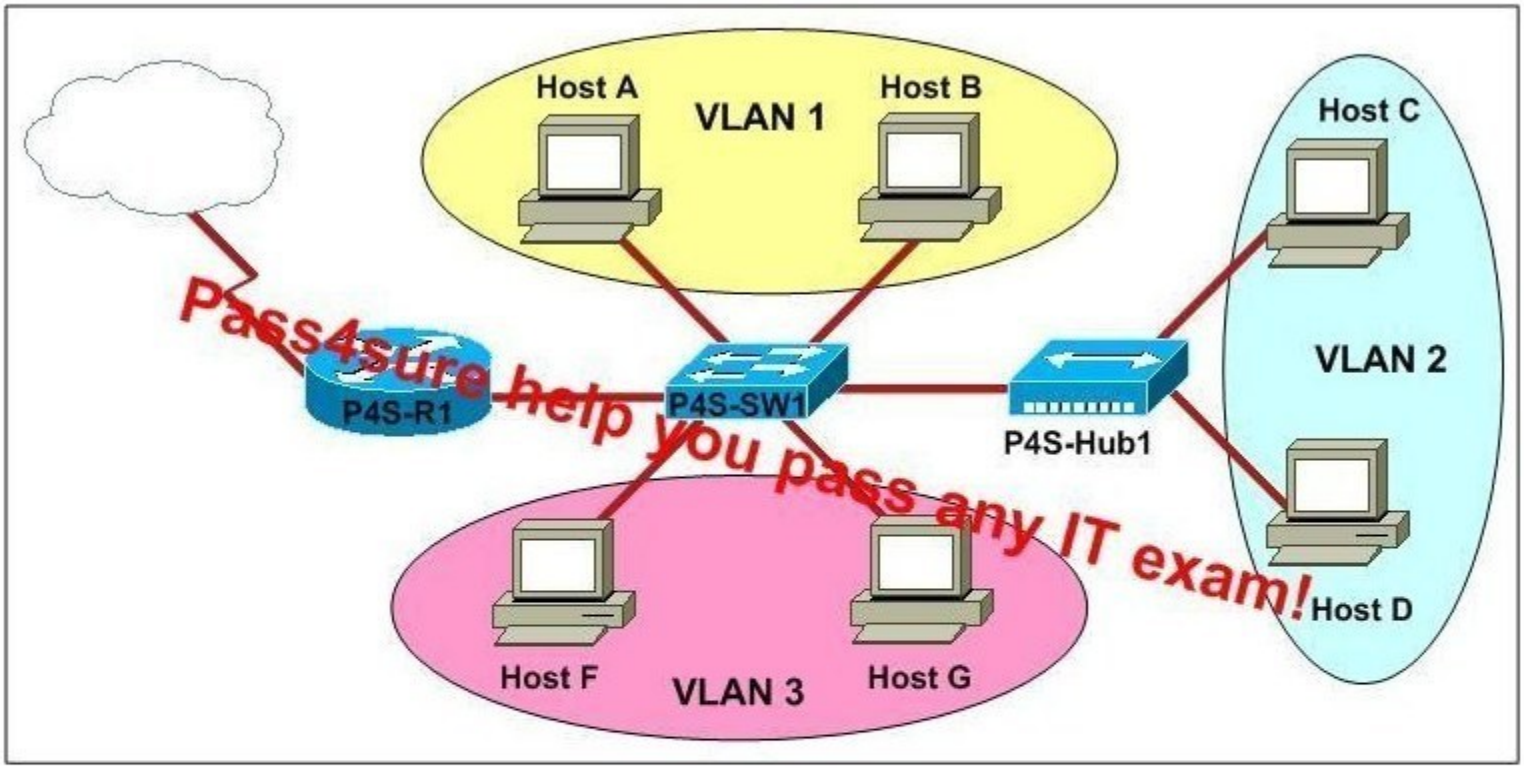
Mark for Review

Which three descriptions are true about the P4S-R1 port configuration and the P4S-SW1 port configuration as displayed in the topology? (Choose three.)




- A. The P4S-SW1 port connected to P4S-Hub1 has been configured as full duplex.
- B. The P4S-R1 port connected to P4S-SW1 has been configured to use subinterfaces.
- C. The P4S-SW1 port connected to Host B has been configured as an access port.
- D. The P4S-SW1 port connected to P4S-R1 has been configured as a trunking port.

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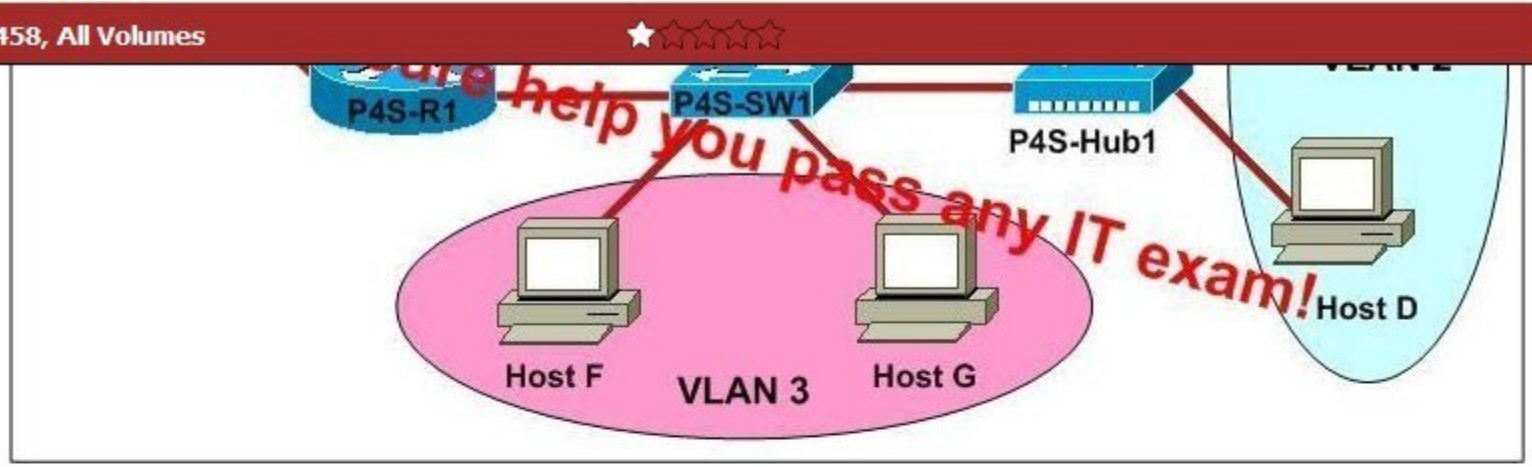


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- A. The P4S-SW1 port connected to P4S-Hub1 has been configured as full duplex.
- B. The P4S-R1 port connected to P4S-SW1 has been configured to use subinterfaces.
- C. The P4S-SW1 port connected to Host B has been configured as an access port.
- D. The P4S-SW1 port connected to P4S-R1 has been configured as a trunking port.

## Answer & Explanation

### Correct Answer

B C D

### Explanations

There are two types of links in switched network:
Access link or access port belongs to a single VLAN and frames will be forwarded only to this VLAN. Access link often provides connection between switches, between switches and PCs or other devices. In the above figure, the port connecting P4S-SW1to Host B should be configured as access port.
Trunk link or trunk port is by default a member of all the VLANs that exist on the switch and carry traffic for all those VLANs between the switches, between switches and routers or specific servers. In this question, the port connecting P4S-SW1 to P4S-R1 should be configured as the trunk port.
The main difference between trunk link and access link is that switch will send some VLAN information out through trunk link instead of access link.
In the exhibit above, the communication between VLANs must be accomplished with the help of P4S-R1's routing functions. A sub-interface is a division of one physical interface into multiple logical interfaces.

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Which three of these statements regarding 802.1Q trunking are correct? (Choose three.)

- A. 802.1Q native VLAN frames are untagged by default.
- B. 802.1Q trunking ports can also be secure ports.
- C. 802.1Q trunks can use 10 Mb/s Ethernet interfaces.
- D. 802.1Q trunks should have native VLANs that are the same at both ends.

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Mark for Review

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- C. 802.1Q trunks can use 10 Mb/s Ethernet interfaces.
- D. 802.1Q trunks should have native VLANs that are the same at both ends.

## Answer & Explanation

### Correct Answer

A C D

### Explanations

By default, 802.1Q trunk defined Native VLAN in order to forward unmarked frame. Switches can forward Layer 2 frame from Native VLAN on unmarked trunks port. Receiver switches will transmit all unmarked packets to Native VLAN. Native VLAN is the default VLAN configuration of port. Note: for the 802.1Q trunk ports between two devices, the same Native VLAN configuration is required on both sides of the link. If the Native VLAN in 802.1Q trunk ports on same trunk link is properly configured, it could lead to layer 2 loops. The 802.1Q trunk link transmits VLAN information through Ethernet.

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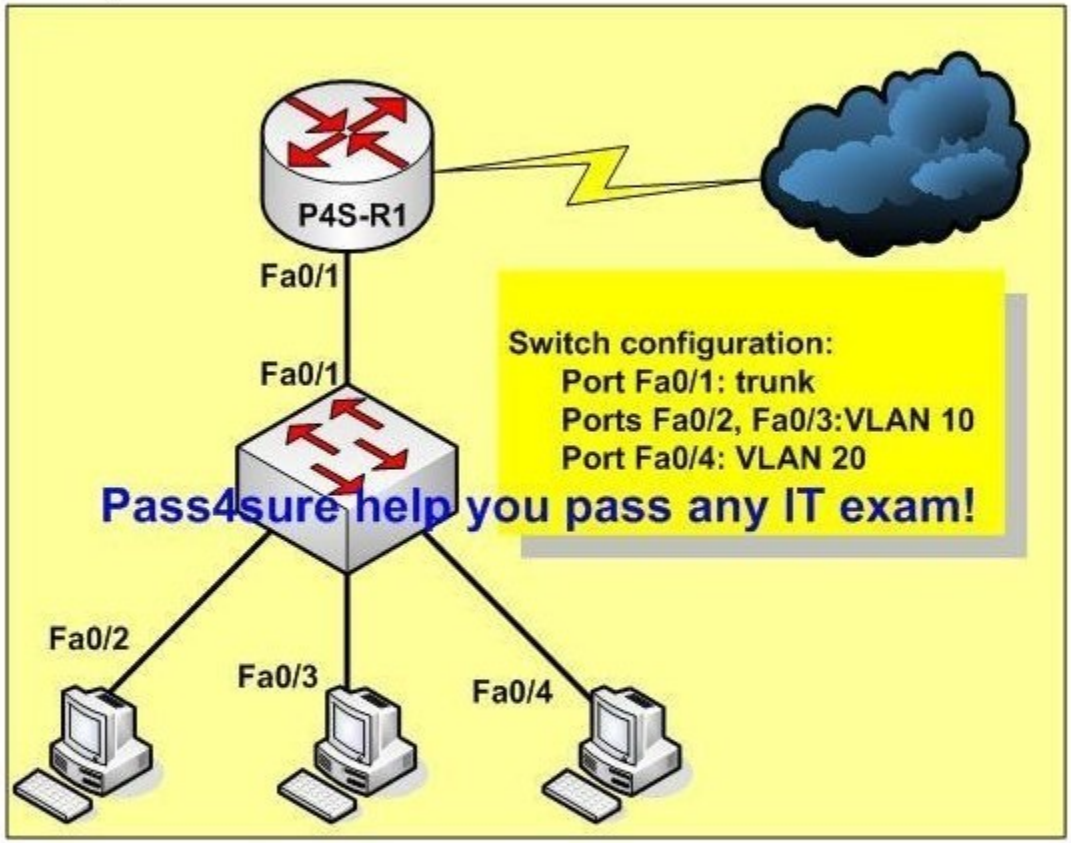
Mark for Review

Refer to the topology and configuration information shown in the graphic. The P4S-R1 has been configured to provide communication between the VLANs. Which IOS commands are required to configure switch port fa0/1 to establish a link with router P4S-R1 using the IEEE standard protocol? (Choose three.)




- A. Switch(config)# interface fastethernet 0/1
- B. Switch(config-if)# switchport trunk encapsulation dot1q
- C. Switch(config-if)# switchport mode trunk
- D. Switch(config-if)# switchport access vlan 1

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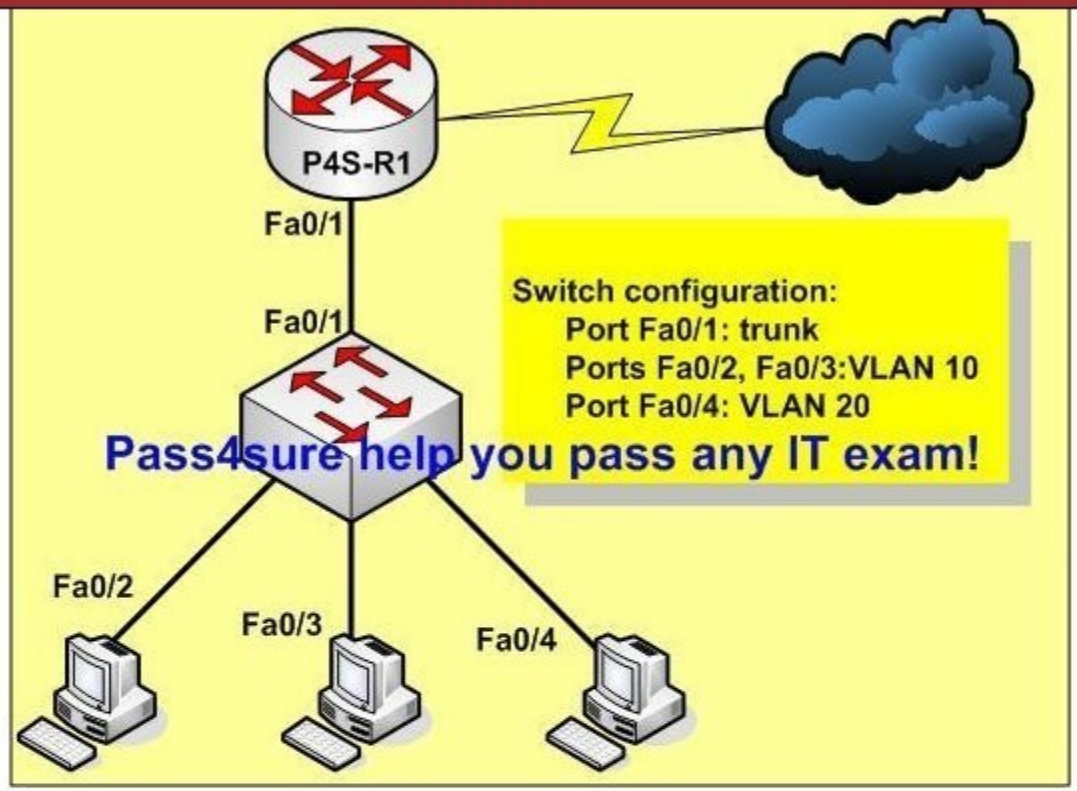
Mark for Review




- A. Switch(config)# interface fastethernet 0/1
- B. Switch(config-if)# switchport trunk encapsulation dot1q
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- D. Switch(config-if)# switchport access vlan 1

## Answer & Explanation

**Correct Answer**

A B C

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**Explanations**

Enable trunk on Fa0/1 interface of the router P4S-R1.

Which two needs should be satisfied in order to configure the VLAN trunking protocol to communicate VLAN information between two switches? (Choose two.)

- A. A rollover cable should connect the two switches together.
- B. Set the same VTP management domain name of both switches.
- C. Set all ports on both the switches as access ports.
- D. Configure one of the two switches as a VTP server.

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Mark for Review

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- D. Configure one of the two switches as a VTP server.

## Answer & Explanation

### Correct Answer

B D

### Explanations

VLAN Trunking Protocol (VTP) is a Cisco proprietary Layer 2 messaging protocol that manages the addition, deletion, and renaming of VLANs on a network-wide basis. Virtual Local Area Network (VLAN) Trunk Protocol (VTP) reduces administration in a switched network. When you configure a new VLAN on one VTP server, the VLAN is distributed through all switches in the domain. This reduces the need to configure the same VLAN everywhere. To do this VTP carries VLAN information to all the switches in a VTP domain. VTP advertisements can be sent over ISL, 802.1q, IEEE 802.10 and LANE trunks. VTP traffic is sent over the management VLAN (VLAN1), so all VLAN trunks must be configured to pass VLAN1. VTP is available on most of the Cisco Catalyst Family products.

VTP operates in one of three modes:

Server - In this VTP mode you can create, remove, and modify VLANs. You can also set other configuration options like the VTP version and also turn on/off VTP pruning for the entire VTP domain. VTP servers advertise their VLAN configuration to other switches in the same VTP domain and synchronize their VLAN configuration with other switches based on messages received over trunk links. VTP server is the default mode. The VLANs information are stored on NVRAM and they are not lost after a reboot.

Client - VTP clients behave the same way as VTP servers, but you cannot create, change, or delete VLANs on the local device. In VTP client mode, VLAN configurations are not saved in NVRAM.

Transparent - When you set the VTP mode to transparent, then the switches do not participate in VTP. A VTP transparent switch will not advertise its VLAN configuration and does not synchronize its VLAN configuration based on received messages. VLANS can be created, changed or deleted when in transparent mode. In VTP version 2, transparent switches do forward VTP messages that they receive out their trunk ports.

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As a network technician , do you know which are valid modes for a switch port used as a VLAN trunk? (Choose three.)

- [ ] A. forwarding
- [ ] B. auto
- [ ] C. on
- [ ] D. desirable

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Mark for Review

As a network technician , do you know which are valid modes for a switch port used as a VLAN trunk? (Choose three.)

- A. forwarding
- B. auto
- C. on
- D. desirable

## Answer & Explanation

### Correct Answer

B C D

### Explanations

Configuring a link as trunk mode can be achieved through the following negotiation modes: auto, desirable and on; or you can statically designate a link as trunk.

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Mark for Review

Which interface commands would you enter on a Catalyst 2900 switch, if your goal was to bring all VLAN traffic to another directly connected switch?(Choose two)

- A. Switch(config-if)# vlan all
- B. Switch(config-if)# switchport trunk encapsulation dot1q
- C. Switch(config-if)# switchport access vlan all
- D. Switch(config-if)# switchport mode trunk

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Mark for Review

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- C. Switch(config-if)# switchport access vlan all
- D. Switch(config-if)# switchport mode trunk

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to examine the trunk link problem.
The question requires the switch to share VLAN information with another switch directly connected to it, so a trunk link must be established between them. In brief, the objective of a trunk is to encapsulate data packet with VLAN tag marked and then transmit packet to another switch trunk port, finally, decapsulate the data packet and send it to the corresponding VLAN port. Two encapsulation protocols: dot1q is a standard encapsulation mode, which can be implemented between different vendors; while ISL is a private Cisco protocol, which can be deployed between switches.

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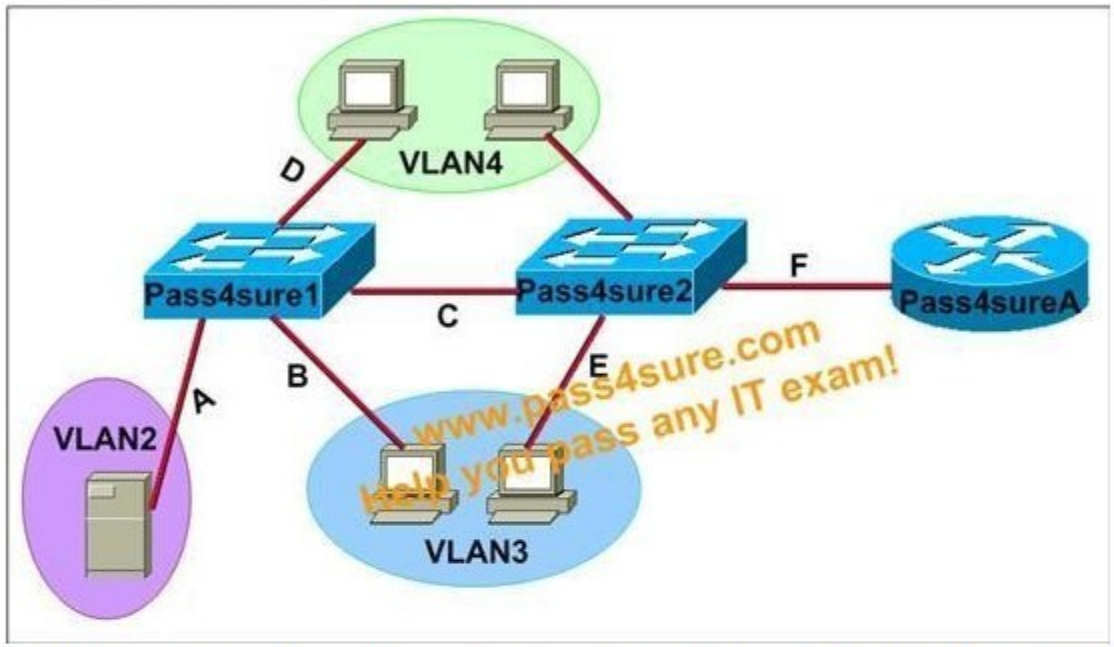
Mark for Review

A Pass4sure office's network topology is shown below:




As the Pass4sure network administrator, you need to configure the Pass4sure switches and Pass4sure routers the graphic so that the hosts in VLAN3 and VLAN4 can communicate with the enterprise server in VLAN2. Which two Ethernet segments would need to be configured as trunk links? (Choose two.)

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F

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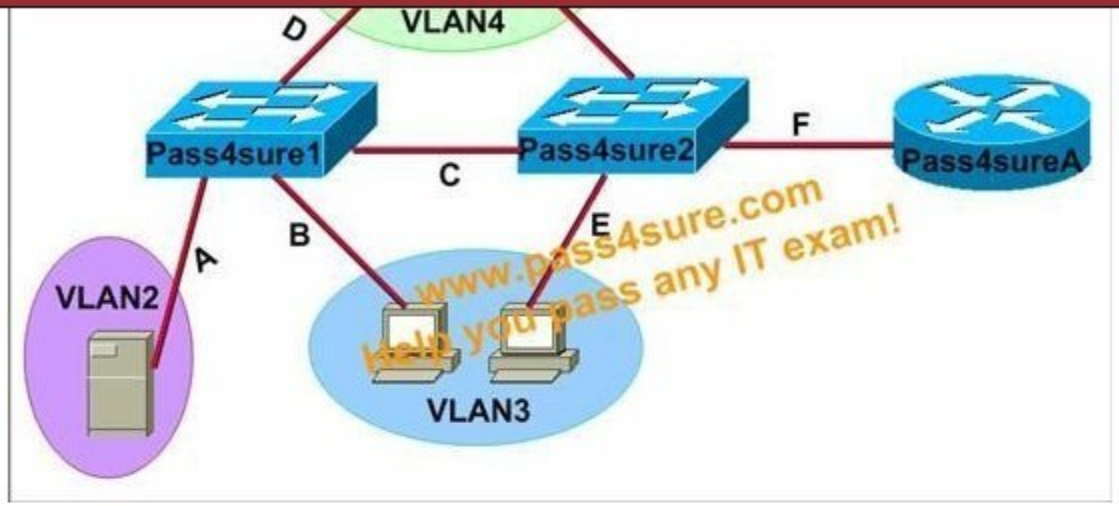


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- A. A
- B. B
- C. C
- D. D
- E. E
- F. F

## Answer & Explanation

### Correct Answer

C F

### Explanations

As we can see from the topology above, this is a typical single-arm routing configuration. In this situation, it is necessary to configure a trunk link between switches , between router and its directly connected device.

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Mark for Review

As the Pass4sure network administrator, you are required to redesign the network. You choice a new Pass4sure switch to install into an existing LAN and a new VTP trunk is set up with an existing switch. Which VLANs will be allowed on this new trunk?

A. By default, all defined VLANs are allowed on the trunk.

B. Each single VLAN, or VLAN range, must be specified with the vlan dataBased command.

C. Each single VLAN, or VLAN range, must be specified with the switch port mode command.

D. Each single VLAN, or VLAN range, must be specified with the vtp domain command.

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D. Each single VLAN, or VLAN range, must be specified with the vtp domain command.

## Answer & Explanation

### Correct Answer

A

### Explanations

Trunk is a kind of port aggregating protocol, mainly used to undertake multi-VLAN flux link. Thus the device in the newly designed network allows only default vlan and vlans that are defined to be allowed on this trunk.

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A new trunk has been configured on a switch in the Pass4sure LAN. By default, which VLANs are allowed over this trunk link?

- A. no VLANs
- B. all VLANs
- C. only VLANs 1 - 64
- D. only the VLANs that are specified when creating the trunk

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Mark for Review

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## Answer & Explanation

### Correct Answer

B

### Explanations

When a trunk interconnects switches, the trunk link can transmit some or all VLAN information across links. If switches are not connected by trunk link, by default, only VLAN1 information can be exchanged over the link.

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Which two benefits are of VLAN Trunking Protocol? (Choose two.)

- A. VTP permits a single switch port to carry information to more than one VLAN.
- B. VTP permits physically redundant links when preventing switching loops.
- C. VTP allows switches to automatically share VLAN configuration information to simplify switch administration.
- D. VTP can limit configuration errors by keeping VLAN naming consistent across the VTP domain.

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Mark for Review

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- D. VTP can limit configuration errors by keeping VLAN naming consistent across the VTP domain.

## Answer & Explanation

### Correct Answer

C D

### Explanations

VTP has the following benefits:
1.VTP keeps VLAN configuration consistency across the network (all switches in a network use the same set of VLAN database).
2.VLANs are trunked over mixed media.
3.Accurate tracking and monitoring of VLANs.
4.Dynamic reporting of added VLANs across the network.

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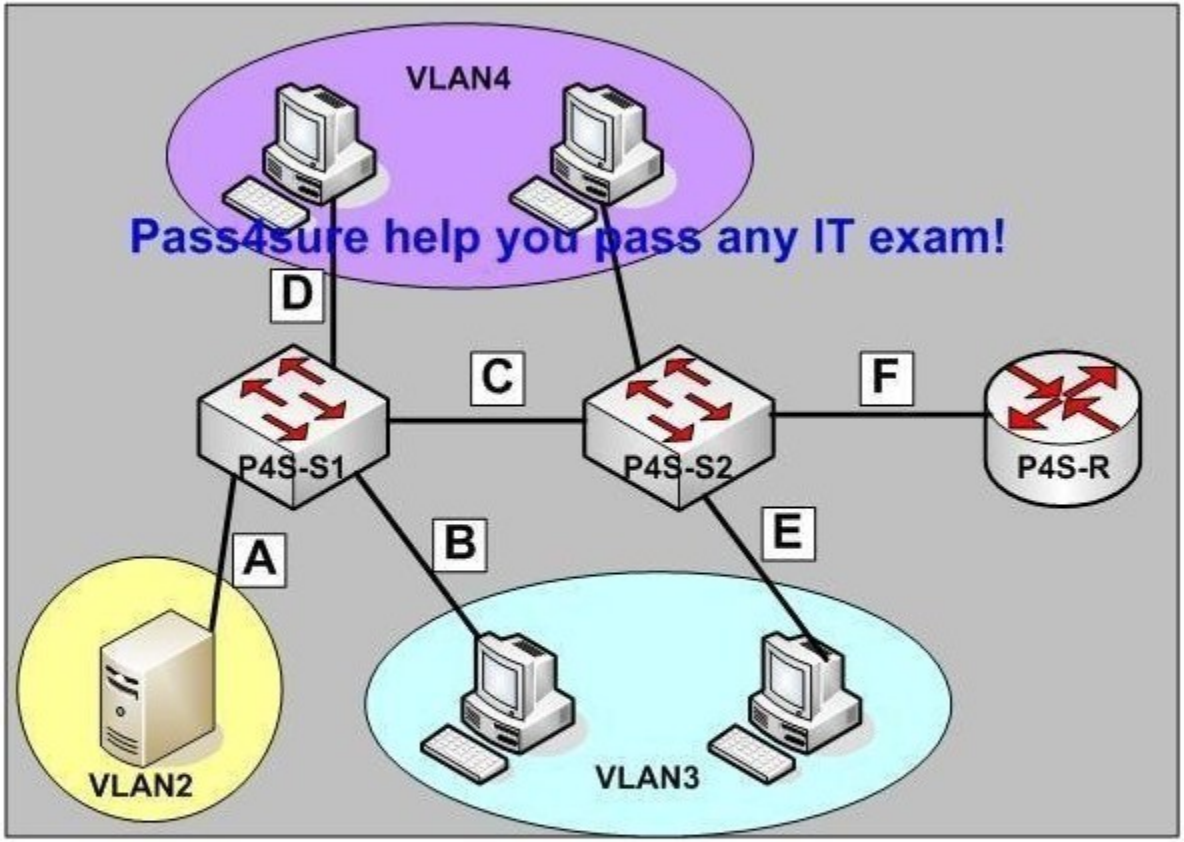
Mark for Review

Study the exhibit carefully. A pass4sure network engineer needs to configure the switches and P4S-R in the graphic so that the hosts in VLAN3 and VLAN4 can communicate with the enterprise server in VLAN2. Which two Ethernet segments would need to be configured as trunk links? (Choose two.)




- A. A
- B. B
- C. C
- D. F

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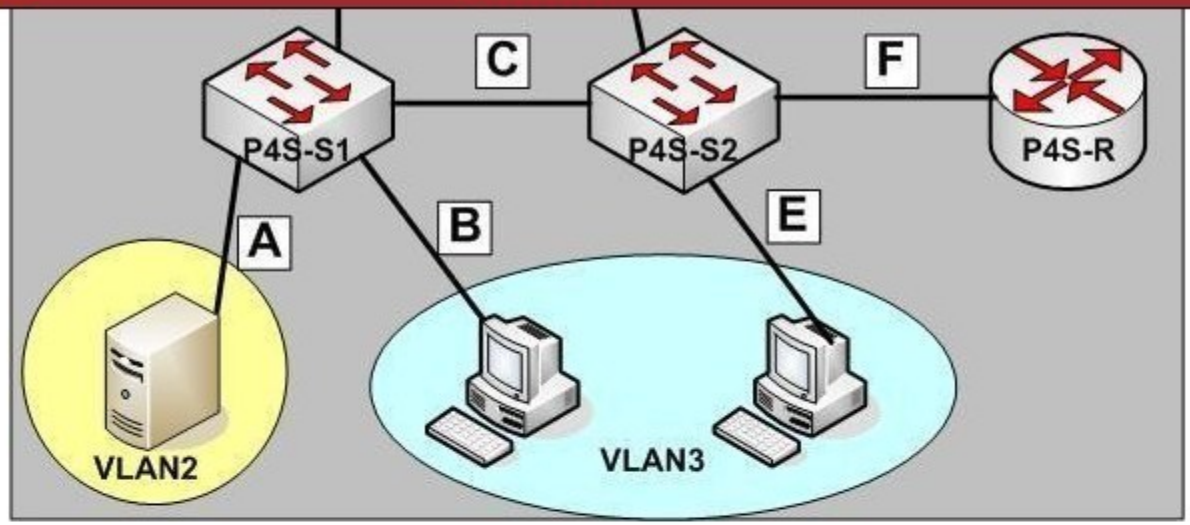


- A. A
- B. B
- C. C
- D. F

## Answer & Explanation

### Correct Answer

C D

### Explanations

TRUNK means the aggregation of ports, which combines two or more physical ports into a logical path to increase bandwidth between switches and network nodes by setting up configuration software, combining bandwidth of these ports to provide ports with multifold bandwidth. Trunk is an encapsulation technology, it is a point-to-point link whose two ends can be both switches or a switch and a router or a host and a switch or both routers. Port-based aggregation (Trunk) function allows for parallel connection through two or more ports between switches, switches and routers, hosts and switches or routers and transferring simultaneously to provide higher bandwidth, greater throughput to improve the entire network capacity.

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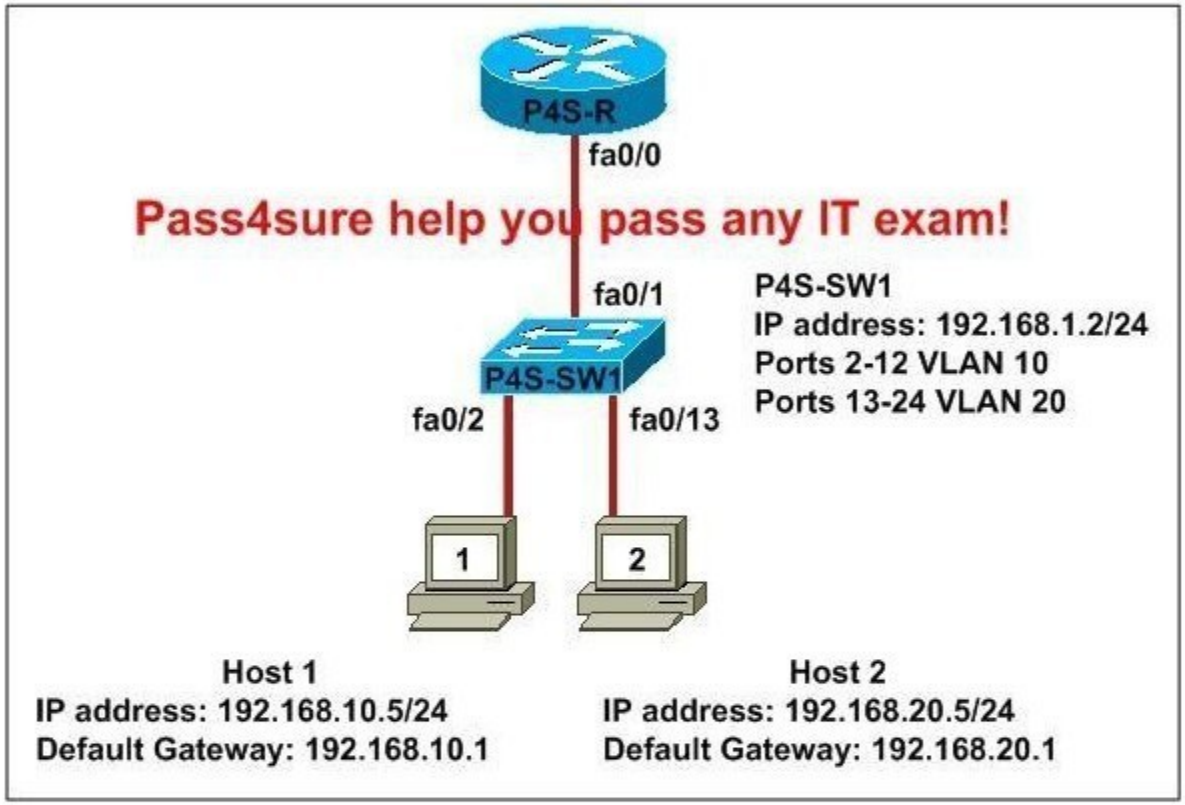
In this subject, when members of VLAN3 and VLAN4 want to access the server of VLAN2, it is needed to enable trunk on the interface of the proper device .

Mark for Review

Which commands should be configured on the 2950 switch P4S-SW1 and the router P4S-R to allow communication between host 1 and host 2? (Choose two.)




A. P4S-R(config)# interface fastethernet 0/0
P4S-R(config-if)# ip address 192.168.1.1 255.255.255.0
P4S-R(config-if)# no shut down

B. P4S-R(config)# interface fastethernet 0/0
P4S-R(config-if)# no shut down
P4S-R(config)# interface fastethernet 0/0.1
P4S-R(config-subif)# encapsulation dot1q 10
P4S-R(config-subif)# ip address 192.168.10.1 255.255.255.0
P4S-R(config)# interface fastethernet 0/0.2
P4S-R(config-subif)# encapsulation dot1q 20

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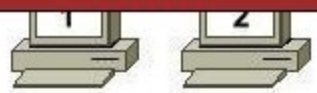

| Host 1 | Host 2 |
|---|---|
| IP address: 192.168.10.5/24 | IP address: 192.168.20.5/24 |
| Default Gateway: 192.168.10.1 | Default Gateway: 192.168.20.1 |

A. P4S-R(config)# interface fastethernet 0/0
P4S-R(config-if)# ip address 192.168.1.1 255.255.255.0
P4S-R(config-if)# no shut down

B. P4S-R(config)# interface fastethernet 0/0
P4S-R(config-if)# no shut down
P4S-R(config)# interface fastethernet 0/0.1
P4S-R(config-subif)# encapsulation dot1q 10
P4S-R(config-subif)# ip address 192.168.10.1 255.255.255.0
P4S-R(config)# interface fastethernet 0/0.2
P4S-R(config-subif)# encapsulation dot1q 20
P4S-R(config-subif)# ip address 192.168.20.1 255.255.255.0

C. P4S-SW1(config)# vlan database
P4S-SW1(config-vlan)# vtp domain XYZ
P4S-SW1(config-vlan)# vtp server

D. P4S-SW1(config)# interface fastethernet 0/1
P4S-SW1(config-if)# switchport mode trunk

## Answer & Explanation

### Correct Answer

B D

### Explanations

P4S-R is a single-arm router, providing communications between multiple vlans, interface enables sub-interface, each vlan has a sub-interface which is configured a vlan address to communicate, while the port corresponding to fa0/1 on P4S-SW1 must be the trunk port.

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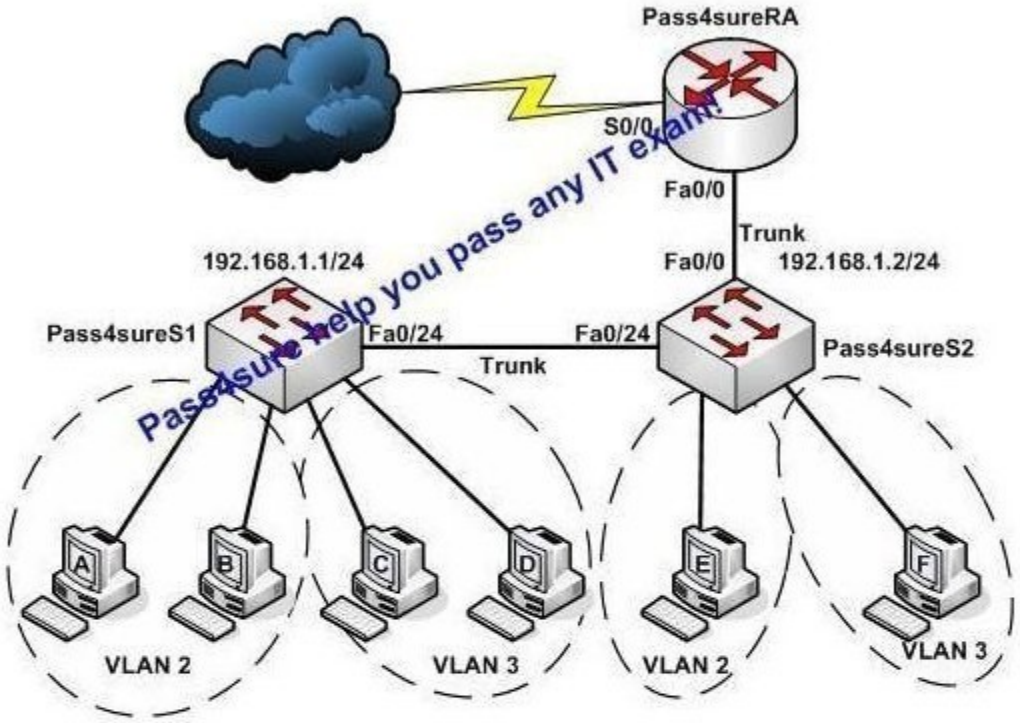
Mark for Review

Refer to the exhibit. Which two statements are true about interVLAN routing in the topology that is shown in the exhibit? (Choose two.)

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- A. Host E and host F use the same IP gateway address.
- B. Pass4sureRA and Pass4sureS2 should be connected via a crossover cable
- C. Pass4sureRA will not play a role in communications between host A and host D.
- D. The FastEthernet 0/0 interface on Pass4sureRA must be configured with subinterfaces.
- E. Pass4sureRA needs more LAN interfaces to accommodate the VLANs that are shown in the exhibit.
- F. The FastEthernet 0/0 interface on Pass4sureRA and Pass4sureS2 trunk ports must be configured using the same encapsulation type.

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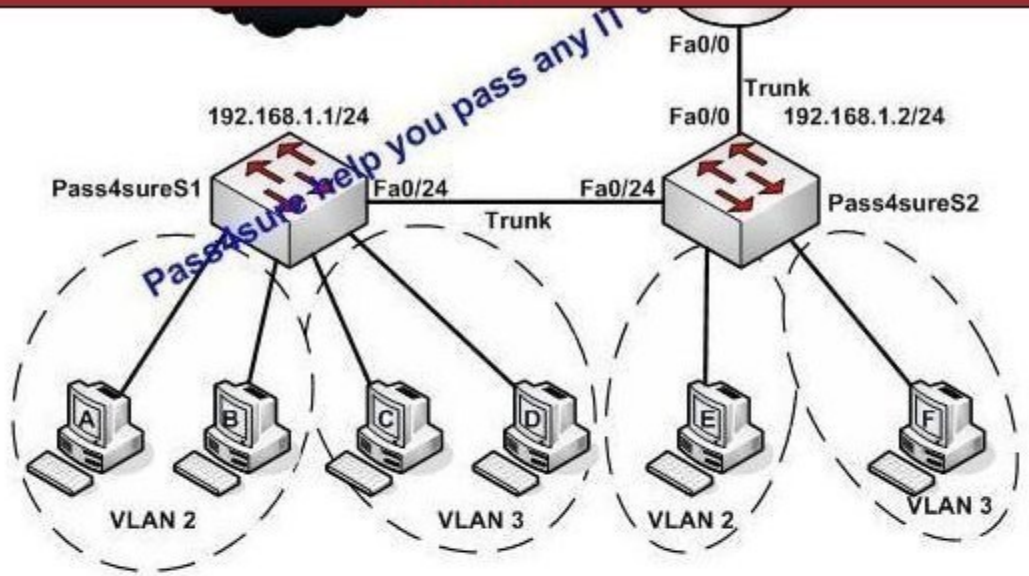
Mark for Review




- A. Host E and host F use the same IP gateway address.
- B. Pass4sureRA and Pass4sureS2 should be connected via a crossover cable
- C. Pass4sureRA will not play a role in communications between host A and host D.
- D. The FastEthernet 0/0 interface on Pass4sureRA must be configured with subinterfaces.
- E. Pass4sureRA needs more LAN interfaces to accommodate the VLANs that are shown in the exhibit.
- F. The FastEthernet 0/0 interface on Pass4sureRA and Pass4sureS2 trunk ports must be configured using the same encapsulation type.

## Answer & Explanation

### Correct Answer

D F

### Explanations

Different VLANs can't communicate with each other, it is needed to configure sub-interface between the router and the switch and set up trunk link , requiring matched encapsulation type.

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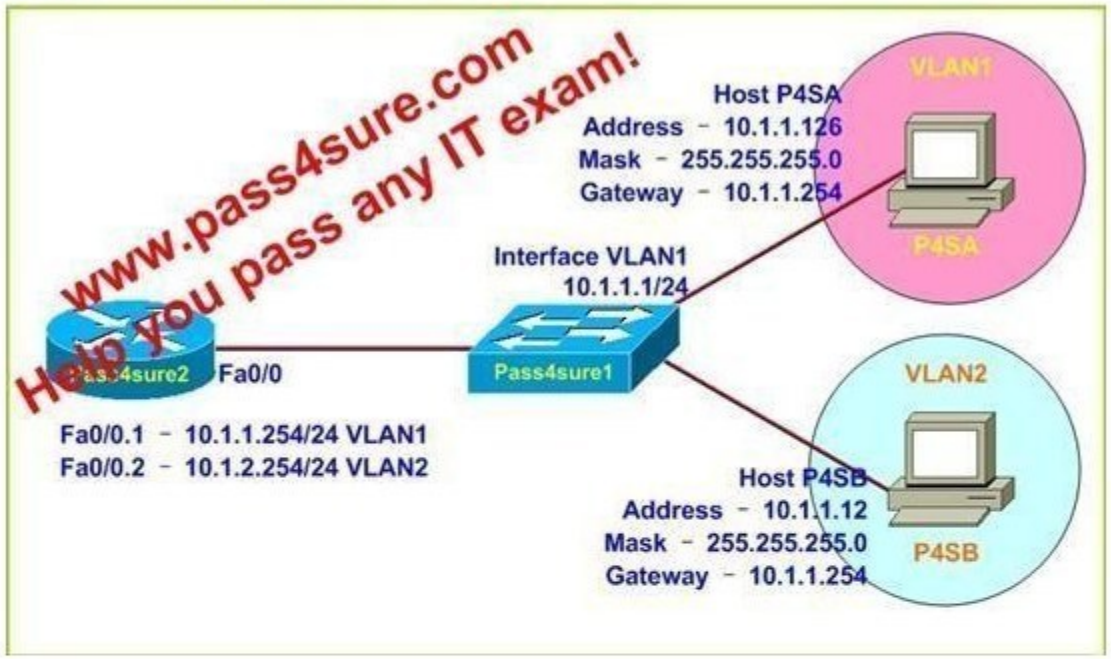
Mark for Review

Two Pass4sure hosts reside in different VLANs as shown below:




The Pass4sure network shown in the diagram above is experiencing connectivity problems. Which of the following will correct the problems? (Choose two.)

- A. Configure the IP address of P4SA as 10.1.2.2.
- B. Configure the gateway on P4SB as 10.1.2.254.
- C. Configure the gateway on P4SA as 10.1.1.1.
- D. Configure the IP address of P4SB as 10.1.2.2.

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The Pass4sure network shown in the diagram above is experiencing connectivity problems. Which of the following will correct the problems? (Choose two.)

- A. Configure the IP address of P4SA as 10.1.2.2.
- B. Configure the gateway on P4SB as 10.1.2.254.
- C. Configure the gateway on P4SA as 10.1.1.1.
- D. Configure the IP address of P4SB as 10.1.2.2.

## Answer & Explanation

### Correct Answer

B D

### Explanations

The switch pass4sure1 is configured with two VLANs: VLAN1 and VLAN2.
The IP information of member P4SA in VLAN1 is as follows:
Address : 10.1.1.126
Mask : 255.255.255.0
Gateway : 10.1.1.254
The IP information of member P4SB in VLAN2 is as follows:
Address : 10.1.1.12
Mask : 255.255.255.0
Gateway : 10.1.1.254
The configuration of sub-interface on router Pass4sure2 is as follows:
Fa0/0.1 -- 10.1.1.254/24 VLAN1
Fa0/0.2 -- 10.1.2.254/24 VLAN2
It is obvious that the configurations of the gateways of members in VLAN2 and the associated network segments are wrong. The layer3 addressing information of P4SB should be modified as follows:
Address : 10.1.2.X
Mask : 255.255.255.0
Gateway : 10.1.2.254

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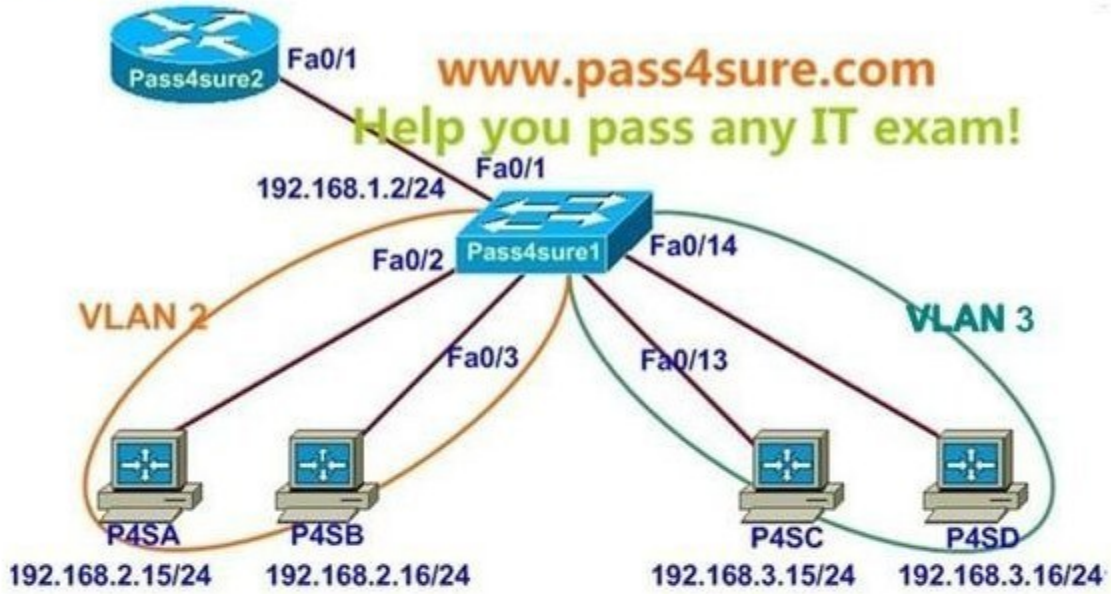
Mark for Review

Part of the Pass4sure WAN is shown below:




Pass4sure2 configuration exhibit:

```
Pass4sure2#show ip route
    C  192.168.1.0/24 is directly connected to Fa0/1.1
    C  192.168.2.0/24 is directly connected to Fa0/1.2
```

Pass4sure network administrator has created a new VLAN on Pass4sure1 and added host P4SC and host P4SD. This administrator has properly configured switch interfaces FastEthernet0/13 through FastEthernet0/14 to be members of the new VLAN. However, after the network administrator completed the configuration, host P4SA could communicate with host P4SB, but host P4SA could not communicate with host P4SC or host P4SD. Which commands are required to resolve this problem?

A. Pass4sure2(config)# interface fastethernet 0/1.3
Pass4sure2(config-if)# encapsulation dot1q 3
Pass4sure2(config-if)# ip address 192.168.3.1 255.255.255.0

B. Pass4sure2 (config)# router rip
Pass4sure2 (config-router)# network 192.168.5.0
Pass4sure2 (config-router)# network 192.168.3.0

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Mark for Review

Pass4sure network administrator has created a new VLAN on Pass4sure1 and added host P4SC and host P4SD. This administrator has properly configured switch interfaces FastEthernet0/13 through FastEthernet0/14 to be members of the new VLAN. However, after the network administrator completed the configuration, host P4SA could communicate with host P4SB, but host P4SA could not communicate with host P4SC or host P4SD. Which commands are required to resolve this problem?

A. Pass4sure2(config)# interface fastethernet 0/1.3
Pass4sure2(config-if)# encapsulation dot1q 3
Pass4sure2(config-if)# ip address 192.168.3.1 255.255.255.0

B. Pass4sure2 (config)# router rip
Pass4sure2 (config-router)# network 192.168.5.0
Pass4sure2 (config-router)# network 192.168.3.0
Pass4sure2 (config-router)# network 192.168.8.0

C. Pass4sure1# vlan database
Pass4sure1 (vlan)# vtp v2-mode
Pass4sure1 (vlan)# vtp password pass4sure
Pass4sure1 (vlan)# vtp server

D. Pass4sure1 (config)# interface fastethernet 0/15
Pass4sure1 (config-if)# switchport mode trunk
Pass4sure1 (config-if)# switchport trunk encapsulation dot1q

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the communication between VLANs. All hosts can't communicate with each other because they are in different VLANs although they are connected to the same switch. Here, we should make use of trunk and layer3 routing functions, encapsualte trunk between the switch and the router, which allows for layer 2 communications between switches. As the two VLANs are divided into different segments, it is necessary to use the router's routing functions to achieve layer3 accessible. The detailed operation: the gateway address of the host in VLAN can be designated as the address of the sub-interface which connects the router and this VLAN, thus the data packet in VLAN will be sent to the gateway and be forwarded by the gateway. Given the segment of the sub-interface on the router and the IP address of the interface connecting VLAN2 and the router, so the remained segment is for VLAN3, we should divide a sub-interface on the router into VLAN3 and assign an IP address of another segment to it.

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Mark for Review

The VTP status of two Pass4sure devices is displayed below:

| Pass4sure1#show vtp status | |
|---|---|
| VTP version | :2 |
| Configuration Revision | :0 |
| Maximum VLANs supported locally | :64 |
| Number of existing VLANs | :5 |
| VTP Operating Mode | :Server |
| VTP Domain Name | :London |
| VTP Pruning Mode | :Disabled |
| VTP V2 Mode | :Disabled |
| VTP Traps Generation | :Disabled |

| Pass4sure2#show vtp status | |
|---|---|
| VTP version | :2 |
| Configuration Revision | :0 |
| Maximum VLANs supported locally | :64 |
| Number of existing VLANs | :5 |
| VTP Operating Mode | :Server |
| VTP Domain Name | :Madrid |
| VTP Pruning Mode | :Disabled |
| VTP V2 Mode | :Disabled |
| VTP Traps Generation | :Disabled |

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You work as a network technician at Pass4sure and you have configured two switches, named Pass4sure1 and Pass4sure2 to use VTP. However, the switches are not sharing VTP messages. Given the command output shown in the graphic above, why are these switches not sharing VTP messages?

- A. The VTP operating mode is not correctly configured.
- B. VTP pruning mode is disabled.
- C. The VTP domain name is not correctly configured.
- D. The VTP version is not correctly configured.

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Mark for Review

The VTP status of two Pass4sure devices is displayed below:

| Pass4sure1#show vtp status | | Pass4sure2#show vtp status | |
|---|---|---|---|
| VTP version | :2 | VTP version | :2 |
| Configuration Revision | :0 | Configuration Revision | :0 |
| Maximum VLANs supported locally | :64 | Maximum VLANs supported locally | :64 |
| Number of existing VLANs | :5 | Number of existing VLANs | :5 |
| VTP Operating Mode | :Server | VTP Operating Mode | :Server |
| VTP Domain Name | :London | VTP Domain Name | :Madrid |
| VTP Pruning Mode | :Disabled | VTP Pruning Mode | :Disabled |
| VTP V2 Mode | :Disabled | VTP V2 Mode | :Disabled |
| VTP Traps Generation | :Disabled | VTP Traps Generation | :Disabled |

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You work as a network technician at Pass4sure and you have configured two switches, named Pass4sure1 and Pass4sure2 to use VTP. However, the switches are not sharing VTP messages. Given the command output shown in the graphic above, why are these switches not sharing VTP messages?

A. The VTP operating mode is not correctly configured.

B. VTP pruning mode is disabled.

C. The VTP domain name is not correctly configured.

D. The VTP version is not correctly configured.

## Answer & Explanation

### Correct Answer

C

### Explanations

1.According to the information provided in the question, we know that the switches are not sharing VTP messages.We need to check VTP status.
2.Check VTP domain name, switches within the same domain can learn from each other.
Check VTP mode, the VTP learning process must occur with a server mode existence. The Server is the default mode.
According to the information provided in the exhibit, it can be seen that the two switches have different VTP domains. Domains Name of Pass4sure1 is London, Domain Name of Pass4sure2 is Madrid.

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Mark for Review

The Pass4sure network administrator has issued the "VTP password PASS4SURE" command on a Cisco device. What is the purpose of this command?

A. It is used to validate the sources of VTP advertisements sent between switches.

B. It is used to access the VTP server to make changes to the VTP configuration.

C. It allows VTP server to exist in the same domain, each configured with different passwords.

D. It is the password required when promoting a switch from VTP client mode to VTP server mode.

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Mark for Review

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C. It allows VTP server to exist in the same domain, each configured with different passwords.

D. It is the password required when promoting a switch from VTP client mode to VTP server mode.

## Answer & Explanation

### Correct Answer

A

### Explanations

VTP password is used to authenticate the VTP members in the same VTP domain. When VTP Server sends VTP advertise to VTP client, it is required that the VTP domain name of the VTP server and the VTP client agree with VTP password.
VTP: VTP is organized into management domains or areas with common VLAN requirements. A switch can belong to only one VTP domain. Switches in different VTP domains do not share VTP information. Switches in a VTP domain advertise several attributes to their domain neighbors. Each advertisement contains information about the VTP management domain, VTP configuration revision number, known VLANs, and specific VLAN parameters.
The VTP process begins with VLAN creation on a switch called a VTP server. VTP floods advertisements throughout the VTP domain every 5 minutes, or whenever there is a change in VLAN configuration. The VTP advertisement includes a configuration revision number, VLAN names and numbers, and information about which switches have ports assigned to each VLAN. By configuring the details on one or more VTP server and propagating the information through advertisements, all switches configuration know the names and numbers of all VLANs.

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Mark for Review

Which of the following descriptions on the advantages of application of VTP to pass4sure is correct?

A. VTP allows routing between VLANs.

B. VTP allows physically redundant links while preventing switching loops.

C. VTP allows a single port to carry information to more than one VLAN.

D. VTP allows switches to share VLAN configuration information.

## Answer & Explanation

### Correct Answer

D

### Explanations

Administration of network environments that consists of many interconnected switches is complicated. Cisco has developed a propriety solution to manage VLANs across such networks using the VLAN Trunking Protocol (VTP) to exchange VLAN configuration information between switches. VTP uses Layer 2 trunk frames to exchange VLAN information so that the VLAN configuration stays consistent throughout a network. VTP also manages the additions, deletions, and name changes of VLANs across multiple switches from a central point, minimizing misconfigurations and configuration inconsistencies that can cause problems, such as duplicate VLAN names or incorrect VLANtype settings.

VTP is organized into management domains or areas with common VLAN requirements. A switch can belong to only one VTP domain. Switches in different VTP domains do not share VTP information. Switches in a VTP domain advertise several attributes to their domain neighbors. Each advertisement contains information about the VTP management domain, VTP configuration revision number, known VLANs, and specific VLAN parameters.

The VTP process begins with VLAN creation on a switch called a VTP server. VTP floods advertisements throughout the VTP domain every 5 minutes, or whenever there is a change in VLAN configuration. The VTP advertisement includes a configuration revision number, VLAN names and numbers, and information about which switches have ports assigned to each VLAN. By configuring the details on one or more VTP server and propagating the information through advertisements, all switches configuration know the names and numbers of all VLANs.

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Mark for Review

The Pass4sure network topology is shown below:

The output of Pass4sure1 exhibit:

```
Pass4sure1# show vtp status
VTP  version: 2
Configuration  Revision:  240
Maximum VLANS supported locally:  1005
Number of existing VLANS:  33
VTP Operating Mode:  Server
VTP Domain Name:  Lab_Network
VTP pruning Mode:  Enabled

<output  omitted>
```

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The output of Pass4sure2 exhibit:

```
Pass4sure2# show vtp status
VTP  version: 2
Configuration  Revision:  0
Maximum VLANS supported locally:  1005
Number of existing VLANS:  17
VTP Operating Mode:  Transparent
VTP Domain Name:  Lab_Network
VTP pruning Mode:  Enabled

<output  omitted>
```

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The output of Pass4sure3 exhibit:

```
Pass4sure3# show vtp status
VTP  version: 2
Configuration  Revision:  247
Maximum VLANS supported locally:  250
```

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Mark for Review

```
VTP pruning Mode: Enabled

<output omitted>
```

The output of Pass4sure2 exhibit:

```
Pass4sure2# show vtp status
VTP version: 2
Configuration Revision: 0
Maximum VLANS supported locally: 1005
Number of existing VLANS: 17
VTP Operating Mode: Transparent
VTP Domain Name: Lab_Network
VTP pruning Mode: Enabled

<output omitted>
```

The output of Pass4sure3 exhibit:

```
Pass4sure3# show vtp status
VTP version: 2
Configuration Revision: 247
Maximum VLANS supported locally: 250
Number of existing VLANS: 30
VTP Operating Mode: Client
VTP Domain Name: Lab_Network
VTP pruning Mode: Enabled

<output omitted>
```

Based on the information shown above, the network administrator has discovered that the VLAN configuration of Pass4sure3 is not synchronized with the rest of the switched network. Why is Pass4sure3 not receiving VTP updates?

- A. Pass4sure3 should be operating in VTP server mode to receive VTP updates.
- B. Pass4sure2 is not relaying VTP advertisements to Pass4sure3.
- C. Pass4sure2 should be operating in VTP server or client mode to relay VTP updates.
- D. Pass4sure3 has a revision number higher than that being advertised.

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```
Pass4sure3# show vtp status
VTP  version: 2
Configuration  Revision:  247
Maximum VLANS supported locally:  250
Number of existing VLANS:  30
VTP Operating Mode:  Client
VTP Domain Name:  Lab_Network
VTP pruning Mode:  Enabled

<output  omitted>
```

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Based on the information shown above, the network administrator has discovered that the VLAN configuration of Pass4sure3 is not synchronized with the rest of the switched network. Why is Pass4sure3 not receiving VTP updates?

A. Pass4sure3 should be operating in VTP server mode to receive VTP updates.

B. Pass4sure2 is not relaying VTP advertisements to Pass4sure3.

C. Pass4sure2 should be operating in VTP server or client mode to relay VTP updates.

D. Pass4sure3 has a revision number higher than that being advertised.

## Answer & Explanation

### Correct Answer

D

### Explanations

VTP revision number is to indicate the modified version that VTP configured is a 32-bit value, which begins with 0. If VLAN information changes, the revision number will plus 1 until 4294967295. Then circulate and then return 0, re-start and increase.

When the monitoring switch receives notices bigger than the revision number they stored, this notice will override the stored VLAN information, and thus it is very important to set the added revision number of the switch to default 0.

To set the revision number to default 0, the following methods may be used:

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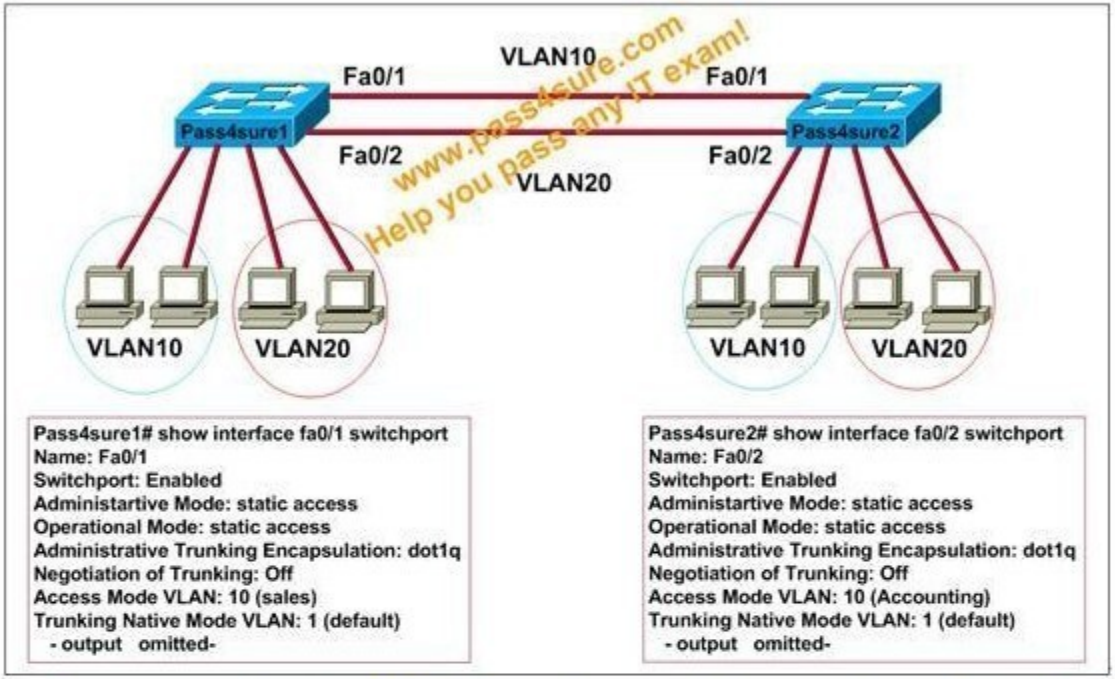
1> change the mode of switch VTP to transparent mode, and then return to the server mode
2> make changes to switch VTP domain name, and revert to the original domain name

Mark for Review

The Pass4sure network topology is shown below:

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An organization connects two locations, supporting two VLANs, through two switches as shown. Inter-VLAN communication is not required. The network is working properly and there is full connectivity. The organization needs to add additional VLANs, so it has been decided to implement VTP. Both switches are configured as VTP servers in the same VTP domain. VLANs added to Pass4sure1 are not learned by Pass4sure2. Based on this information and the partial configurations in the exhibit, what is the problem?

A. Pass4sure2 should be configured as a VTP client.

B. VTP is Cisco proprietary and requires a different trunking encapsulation.

C. A router is required to route VTP advertisements between the switches.

D. STP has blocked one of the links between the switches, limiting connectivity.

E. The links between the switches are access links.

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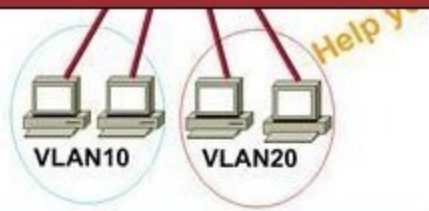
Mark for Review




Pass4sure1# show interface fa0/1 switchport
Name: Fa0/1
Switchport: Enabled
Administartive Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dot1q
Negotiation of Trunking: Off
Access Mode VLAN: 10 (sales)
Trunking Native Mode VLAN: 1 (default)
- output omitted-

Pass4sure2# show interface fa0/2 switchport
Name: Fa0/2
Switchport: Enabled
Administartive Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dot1q
Negotiation of Trunking: Off
Access Mode VLAN: 10 (Accounting)
Trunking Native Mode VLAN: 1 (default)
- output omitted-

An organization connects two locations, supporting two VLANs, through two switches as shown. Inter-VLAN communication is not required. The network is working properly and there is full connectivity. The organization needs to add additional VLANs, so it has been decided to implement VTP. Both switches are configured as VTP servers in the same VTP domain. VLANs added to Pass4sure1 are not learned by Pass4sure2. Based on this information and the partial configurations in the exhibit, what is the problem?

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C. A router is required to route VTP advertisements between the switches.

D. STP has blocked one of the links between the switches, limiting connectivity.

E. The links between the switches are access links.

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to examine the trunk problem. In the above figure, the two switches Pass4sure1and Pass4sure2 can't share VLAN information. According to the output information of show interface fa0/1 switchport, we can see that Operational Mode is static access, that's the problem. In order to share VLAN information, we need to configure the current mode as trunk mode.

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Mark for Review

What are two results of entering the Switch(config)# vtp mode client command on a Catalyst switch? (Choose two.)

- A. The switch will ignore VTP summary advertisements.
- B. The switch will forward VTP summary advertisements.
- C. The switch will process VTP summary advertisements.
- D. The switch will originate VTP summary advertisements.

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Mark for Review

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- B. The switch will forward VTP summary advertisements.
- C. The switch will process VTP summary advertisements.
- D. The switch will originate VTP summary advertisements.

## Answer & Explanation

### Correct Answer

B C

### Explanations

Server Mode Once VTP is configured on a Cisco switch, the default mode used is Server Mode. In any given VTP management domain, at least one switch must be in Server Mode. When in Server Mode, a switch can be used to add, delete, and modify VLANs, and this information will be passed to all other switches in the VTP management domain.

Client Mode When a switch is configured to use VTP Client Mode, it is simply the recipient of any VLANs added, deleted, or modified by a switch in Server Mode within the same management domain. A switch in VTP client mode cannot make any changes to VLAN information.

Transparent Mode A switch in VTP Transparent Mode will pass VTP updates received by switches in Server Mode to other switches in the VTP management domain, but will not actually process the contents of these messages. When individual VLANs are added, deleted, or modified on a switch running in transparent mode, the changes are local to that particular switch only, and are not passed to other switches in the VTP management domain.

Based on the roles of each VTP mode, the use of each should be more or less obvious. For example, if you had 15 Cisco switches on your network, you could configure each of them to be in the same VTP management domain. Although each could theoretically be left in the default Server Mode, it would probably be easier to leave only one switch in this configuration, and then configure all remaining switches for VTP Client Mode. Then, when you need to add, delete, or modify a VLAN, that change can be carried out on the VTP Server Mode switch and passed to all Client Mode switches automatically. In cases where you need a switch to act in a relatively standalone manner, or dont want it to propagate information about its configured VLANs, use Transparent Mode.

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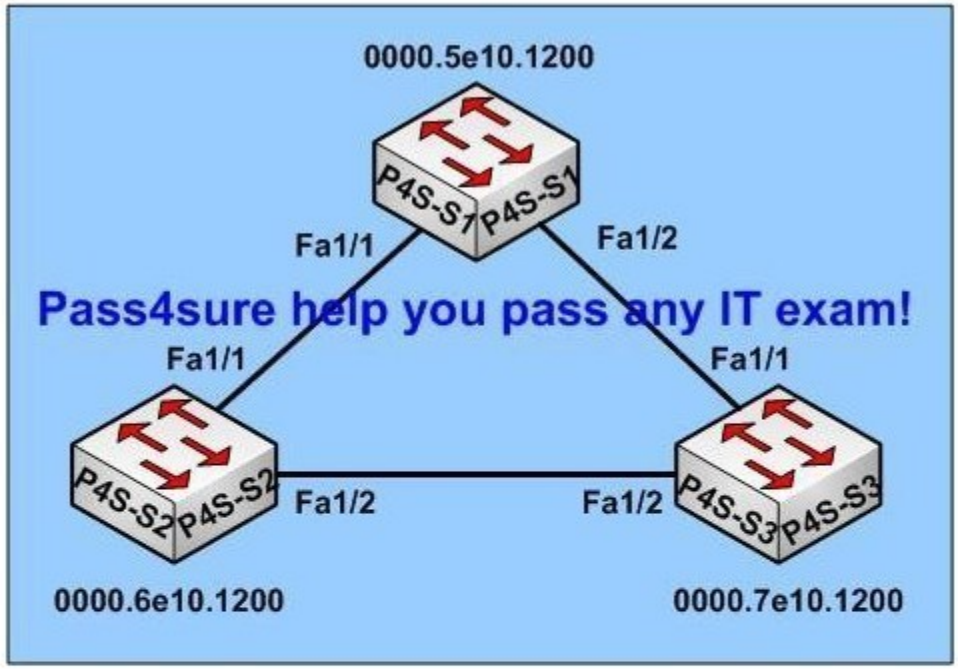
Mark for Review

Refer to the exhibit. All switches have the default STP configuration and all links are Fast Ethernet. Which port on which switch will Spanning Tree place in blocking mode?




A. P4S-S1 - Port Fa1/1

B. P4S-S1 - Port Fa1/2

C. P4S-S2 - Port Fa1/2

D. P4S-S3 - Port Fa1/2

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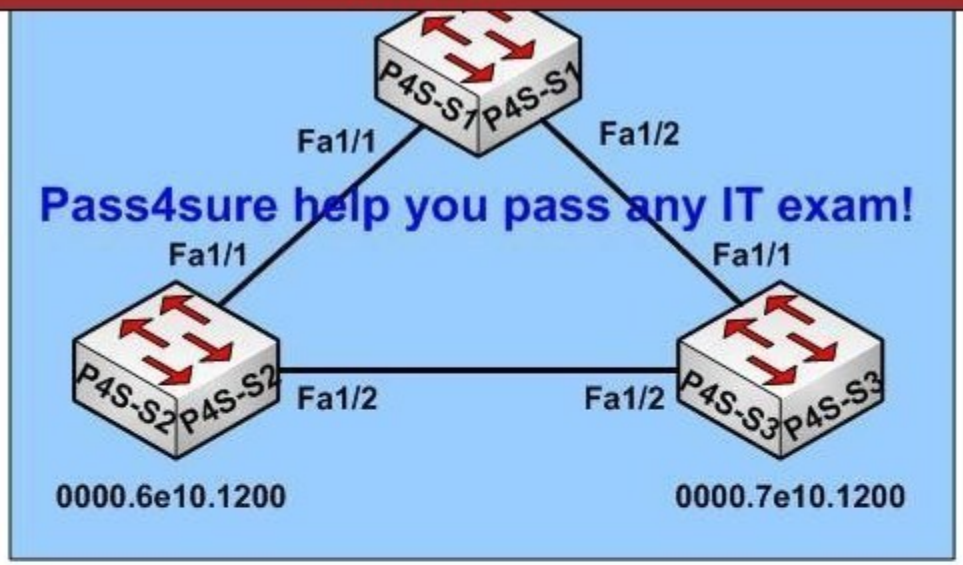


A. P4S-S1 - Port Fa1/1

B. P4S-S1 - Port Fa1/2

C. P4S-S2 - Port Fa1/2

D. P4S-S3 - Port Fa1/2

## Answer & Explanation

### Correct Answer

D

### Explanations

1. Judge the root bridge. The election of the root bridge is based on the bridge ID. Bridge ID = Bridge priority + Bridge MAC address. By default, the bridge priority value is 32768. And you can judge the root bridge only by bridge MAC address .The root bridge of this subject is P4S-S1.
2. Identify the root port. After electing the root bridge, it is needed to select a port of each switch in this network used to reach the root bridge, this port is known as root port (RP) . The port that is nearest to the root bridge is RP of non-root bridge. In this subject, ports F1/1 of P4S-S2, F1/1 of P4S-S3 are RPs.

According to the choice of STP, you will eventually find that a port on P4S-S3 will be blocked, that is F1/2.

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Mark for Review

A network administrator needs to force a high-performance switch that is located in the MDF to become the root bridge for a redundant path switched network. What can be done to ensure that this switch assumes the role of the Root Bridge?

A. Assign the switchs a higher MAC address than the other switches in the network have.

B. Establish a direct links from the switchs to all other switches in the network.

C. Configure the switchs so that it has lower priority than other switches in the network.

D. Configure the switch for full-duplex operation and configure the other switches for half-duplex operation.

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## Answer & Explanation

### Correct Answer

C

### Explanations

For all switches in a network to agree on a loop-free topology, a common frame of reference must exist. This reference point is called the Root Bridge. The Root Bridge is chosen by an election process among all connected switches. Each switch has a unique Bridge ID that it uses to identify itself to other switches. The Bridge ID is an 8-byte value. 2 bytes of the Bridge ID is used for a Bridge Priority field, which is the priority or weight of a switch in relation to all other switches. The other 6 bytes of the Bridge ID is used for the MAC Address field, which can come from the Supervisor module, the backplane, or a pool of 1024 addresses that are assigned to every Supervisor or backplane depending on the switch model. This address is hardcoded, unique, and cannot be changed.

The election process begins with every switch sending out BPDUs with a Root Bridge ID equal to its own Bridge ID as well as a Sender Bridge ID. The latter is used to identify the source of the BPDU message. Received BPDU messages are analyzed for a lower Root Bridge ID value. If the BPDU message has a Root Bridge ID of the lower value than the switch's own Root Bridge ID, it replaces its own Root Bridge ID with the Root Bridge ID announced in the BPDU. If two Bridge Priority values are equal, then the lower MAC address takes preference. The switch is then nominates the new Root Bridge ID in its own BPDU messages although it will still identify itself as the Sender Bridge ID. Once the process has converged, all switches will agree on the Root Bridge until a new switch is added.

The Root Bridge election is based on the idea that one switch is chosen as a common reference point, and all other switches choose ports that are closest to the Root. The Root Bridge election is also based on the idea that the Root Bridge can become a central hub that interconnects other legs of the network. Therefore, the Root Bridge can be faced with heavy switching loads in its central location. If heavy loads of traffic are expected to pass through the Root Bridge, the slowest switch is not the ideal candidate. Furthermore, only one Root Bridge is elected. This is thus not fault tolerant. To overcome these problems, you should set a Root Bridge in a determined fashion, and set a secondary Root Bridge in case of primary Root Bridge failure. The Root Bridge and the secondary Root Bridge should be placed near the center of the network.

To configure a CLI-based Catalyst switch to become the Root Bridge, use the following command to modify the Bridge Priority value so that a switch can be given a lower Bridge ID value to win a Root Bridge election:
Switch (enable) set spantree priority bridge_priority [ vlan ]
Alternatively, you can use the following command:
Switch (enable) set spantree root [ secondary ] [ vlan_list ]
[ dia diameter ] [ hello hello_time ]
This command is a macro that executes several other commands. The result is a more direct and automatic way to force one switch to

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Mark for Review

## Explanations

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Switch (enable) set spantree root [ secondary ] [ vlan_list ]
[ dia diameter ] [ hello hello_time ]
This command is a macro that executes several other commands. The result is a more direct and automatic way to force one switch to become the Root Bridge. Actual Bridge Priorities are not given in the command. Rather, the switch will modify STP values according to the current values in use within the active network. To configure an IOS-based Catalyst switch to become the Root Bridge, use the following command to modify the Bridge Priority value so that a switch can be given a lower Bridge ID value to win a Root Bridge election:
Switch (config)# spanning-tree [ vlan vlan_list ] priority bridge_priority

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Mark for Review

Given the output of the Floor3 switch shown above, which statement best describes the operation of this switch?

```
Floor3# show vtp status
    VTP Version                     : 2
    Configuration Revision          : 1
    Maximum VLANs supported locally : 250
    Number of existing VLANs        : 8
    VTP Operating Mode              : Client
    VTP Domain Name                 : XYZ
    VTP Pruning Mode                : Disabled
    VTP V2 Mode                     : Disabled
    VTP Traps Generation            : Disabled
```

A. VTP is disabled on this switchs.

B. The switchs can create, change, and delete VLANs.

C. The switch learns VLAN information but does not save it to NVRAM.

D. The switchs can create VLANs locally but will not forward this information to other switches.

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Mark for Review

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- B. The switchs can create, change, and delete VLANs.
- C. The switch learns VLAN information but does not save it to NVRAM.
- D. The switchs can create VLANs locally but will not forward this information to other switches.

## Answer & Explanation

### Correct Answer

C

### Explanations

On the basis of the exhibit, we know that the switch Floor3 is configured with VTP and the VTP Mode is Client mode.
Client mode : Client mode is a passive listening mode. Switches listens to VTP advertisements from other switches and modify their VLAN configurations accordingly but does not save it to NVRAM. Thus the administrator is not allowed to create, change, or delete any VLANs. If other switches are in the management domain, a new switch should be configured for client mode operation. In this way, the switch will learn any existing VTP information from a server. If this switch will be used as a redundant server, it should start out in client mode to learn all VTP information from reliable sources. If the switch was initially configured for server mode instead, it might propagate incorrect information to the other domain switches. Once the switch has learned the current VTP information, it can be reconfigured for server mode.

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On your company LAN, the failure of the power supply resulted in the malfunction of the switch. So, the switch is replaced with a Cisco Catalyst 2950 series switch. Which action will you take to make this new switch be the root bridge on the network?

A. Reduce the bridge priority value.

B. Increase the VTP revision number for the domain.

C. Reduce the root path cost on the switch ports.

D. Assign the switch an IP address with the lowest value.

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Mark for Review

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C. Reduce the root path cost on the switch ports.

D. Assign the switch an IP address with the lowest value.

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the STP root bridge election mechanism. The election of the root bridge can be achieved by comparing Bridge ID, while Bridge-id= bridge priority + MAC address, the smallest will be selected. So if you want a switch to be the root bridge, first, lower its bridge ID.

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Mark for Review

Examine the following diagram carefully, the switch was not selected as the root bridge for VLAN1, why?

```
P4S-SW# show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID     Priority    20481
              Address     0008.217a.5800
              Cost        38
              Port        1 (FastEthernet0/1)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     0008.205e.6600
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time 300
```

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| Interface | Role | Sts | Cost | Prio.Nbr | Type |
|---|---|---|---|---|---|
| Fa0/1 | Root | FWD | 19 | 128.1 | P2p |
| Fa0/4 | Desg | FWD | 38 | 128.1 | P2p |
| Fa0/11 | Altn | BLK | 57 | 128.1 | P2p |
| Fa0/13 | Desg | FWD | 38 | 128.1 | P2p |

- A. Its MAC address is higher than the elected root bridge.
- B. It has multiple interfaces connected to the root network segment.
- C. It is implementing RSTP while the elected root bridge is running 802.1d spanning tree.
- D. It has a higher bridge ID than the elected root bridge.

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Mark for Review

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- A. Its MAC address is higher than the elected root bridge.
- B. It has multiple interfaces connected to the root network segment.
- C. It is implementing RSTP while the elected root bridge is running 802.1d spanning tree.
- D. It has a higher bridge ID than the elected root bridge.

## Answer & Explanation

### Correct Answer

D

### Explanations

As we can see from the figure, the root bridge priority value is 20481 and MAC address is 0008.217a.5800; while the switch P4S-SW's priority value is 32769, it is obvious that its BID is bigger than the root bridge ID.

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Mark for Review

Refer to the following output shown on router Pass4sure2:

```
Pass4sure2# show vtp status
VTP Version                     :  2
Configuration Revision          :  0
Maximum VLANs supproted locally :  64
Number of existing VLANs        :  17
VTP Operating Mode              :  Transparent
VTP Domain Name                 :  ICND
VTP Pruning Mode                :  Disabled
VTP V2 Mode                     :  Disabled
VTP Traps Generation            :  Disabled
```

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The "show vtp status" command is executed on the Pass4sure2 switch as shown above. Based on this information, which statement is true for this switch?

A. The VLAN database is updated when VTP information is received from other switches.

B. The configuration revision number increments each time the VLAN database is updated.

C. The switch forwards VTP updates that are sent by other switches in the ICND domain.

D. The switch forwards its VLAN database to other switches in the ICND VTP domain.

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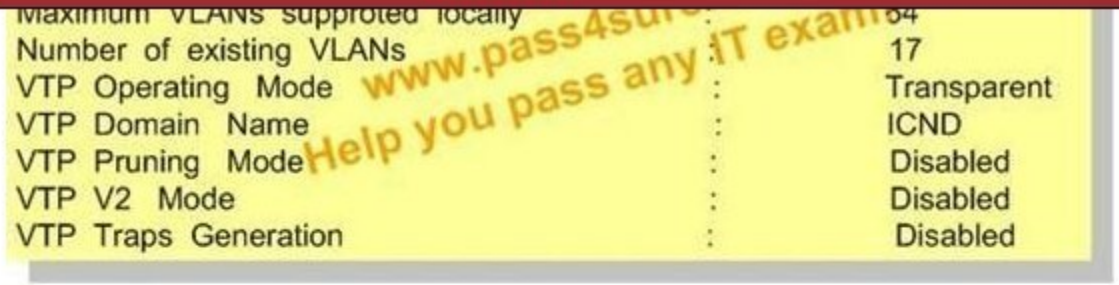


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The "show vtp status" command is executed on the Pass4sure2 switch as shown above. Based on this information, which statement is true for this switch?

- A. The VLAN database is updated when VTP information is received from other switches.
- B. The configuration revision number increments each time the VLAN database is updated.
- C. The switch forwards VTP updates that are sent by other switches in the ICND domain.
- D. The switch forwards its VLAN database to other switches in the ICND VTP domain.

## Answer & Explanation

### Correct Answer

C

### Explanations

VTP is organized into management domains or areas with common VLAN requirements. A switch can belong to only one VTP domain. Switches in different VTP domains do not share VTP information. Switches in a VTP domain advertise several attributes to their domain neighbors. Each advertisement contains information about the VTP management domain, VTP configuration revision number, known VLANs, and specific VLAN parameters.

From the output of the command "show vtp status"provided in the exhibit, we know that the VTP mode of Pass4sure2 is the transparent mode.

Transparent mode does not allow the switch to participate in VTP negotiations. Thus, a switch does not advertise its own VLAN configuration, and a switch does not synchronize its VLAN database with received advertisements. VLANs can still be created, deleted, and renamed on the transparent switch. However, they will not be advertised to other neighboring switches. VTP advertisements received by a transparent switch will be forwarded on to other switches on trunk links.

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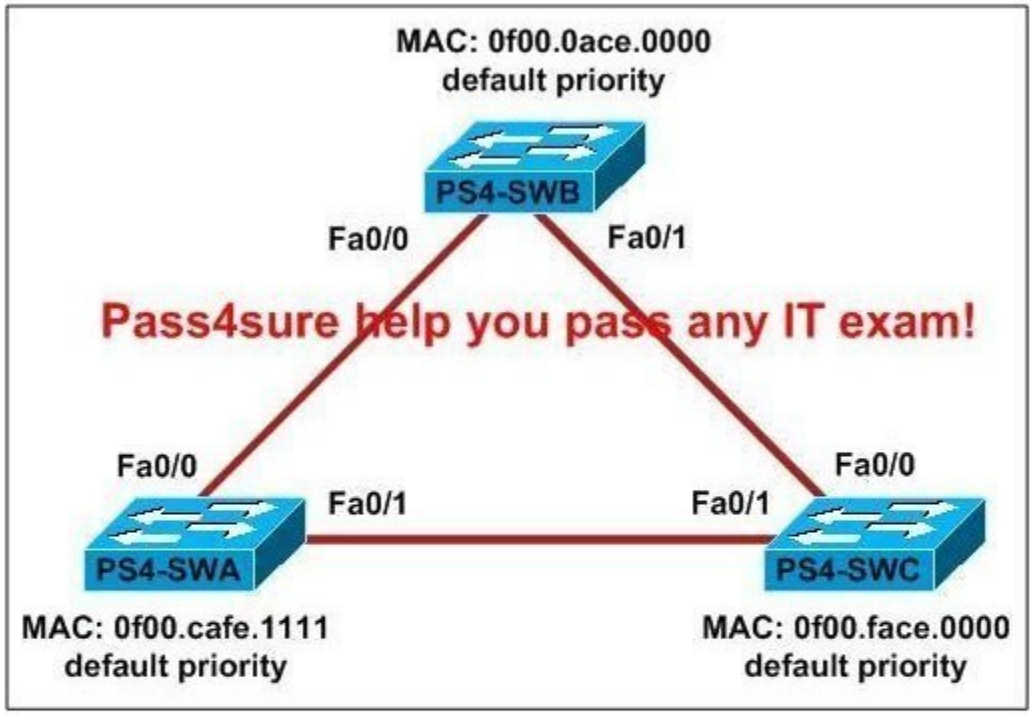
Mark for Review

According to the topology provided in the following exhibit, when all links are running at the same bandwidth, which ports will be STP designated ports? (Choose three.)




- A. P4S-SWA - Fa0/0
- B. P4S-SWA - Fa0/1
- C. P4S-SWB - Fa0/0
- D. P4S-SWB - Fa0/1

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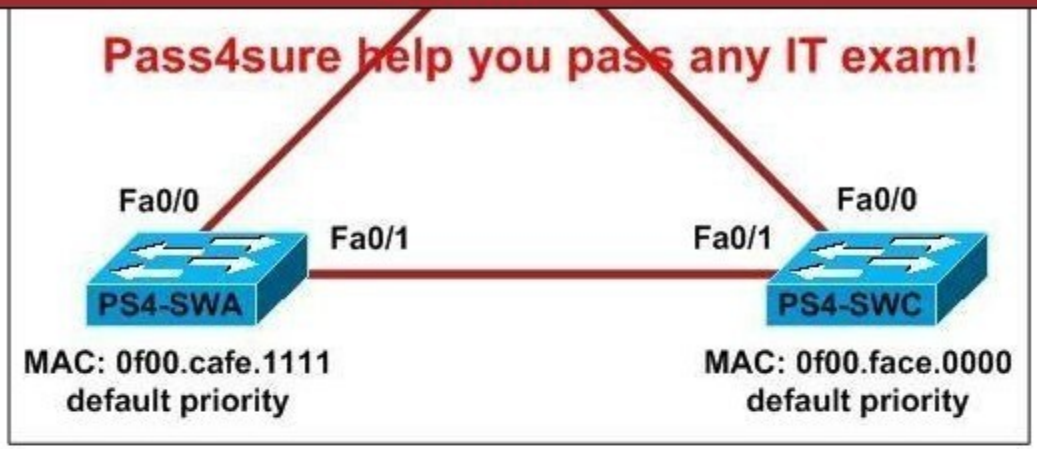


- A. P4S-SWA - Fa0/0
- B. P4S-SWA - Fa0/1
- C. P4S-SWB - Fa0/0
- D. P4S-SWB - Fa0/1

## Answer & Explanation

### Correct Answer

B C D

### Explanations

This question is to check the spanning tree election problem.
1.First, select the root bridge, which can be accomplished by comparing the bridge ID, the smallest will be selected. Bridge-id= bridge priority + MAC address. The three switches in the figure all have the default priority, so we should compare the MAC address, it is easy to find that P4S-SWB is the root bridge.
2.Select the root port on the non-root bridge, which can be completed through comparing root path cost. The smallest will be selected as the root port.
3.Next, select the Designated Port. First, compare the path cost, if the costs happen to be the same, then compare the BID, still the smallest will be selected. Each link has a DP. Based on the exhibit above, we can find DP on each link. The DP on the link between P4S-SWA and P4S-SWC is P4S-SWA'Fa0/1, because it has the smallest MAC address.
Note: Generally speaking, all ports on the root switches are DPs.

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Mark for Review

The output of Pass4sure switch is shown below:

```
Pass4sure# show spanning-tree vlan 30
VLAN0030
Spanning tree enabled protocol rstp
Root ID Priority 24606
Address 00d0.047b.2800
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 24606 (priority 24576 sys-id-ext 30)
Address 00d0.047b.2800
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface      Role    Sts    Cost    Prio.Nbr    Type
-----------    ------------   ------  ----------  ----------  ----------------
Fa1/1          Desg    FWD    4       128.1       p2p
Fa1/2          Desg    FWD    4       128.1       p2p
Fa1/3          Desg    FWD    4       128.257     p2p
```

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Which of the following correctly describe? (Choose three.)

- A. All ports will be in a state of discarding, learning, or forwarding.
- B. Thirty VLANs have been configured on this switch.
- C. The bridge priority is lower than the default value for spanning tree.
- D. All interfaces that are shown are on shared media.
- E. All designated ports are in a forwarding state.

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Mark for Review

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Spanning tree enabled protocol rstp
Root ID Priority 24606
Address 00d0.047b.2800
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 24606 (priority 24576 sys-id-ext 30)
Address 00d0.047b.2800
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface        Role  Sts  Cost  Prio.Nbr  Type
---------------- ----  ---  ----  --------  ----------
Fa1/1            Desg  FWD  4     128.1     p2p
Fa1/2            Desg  FWD  4     128.1     p2p
Fa1/3            Desg  FWD  4     128.257   p2p
```

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Which of the following correctly describe? (Choose three.)

- A. All ports will be in a state of discarding, learning, or forwarding.
- B. Thirty VLANs have been configured on this switch.
- C. The bridge priority is lower than the default value for spanning tree.
- D. All interfaces that are shown are on shared media.
- E. All designated ports are in a forwarding state.

## Answer & Explanation

### Correct Answer

A C E

### Explanations

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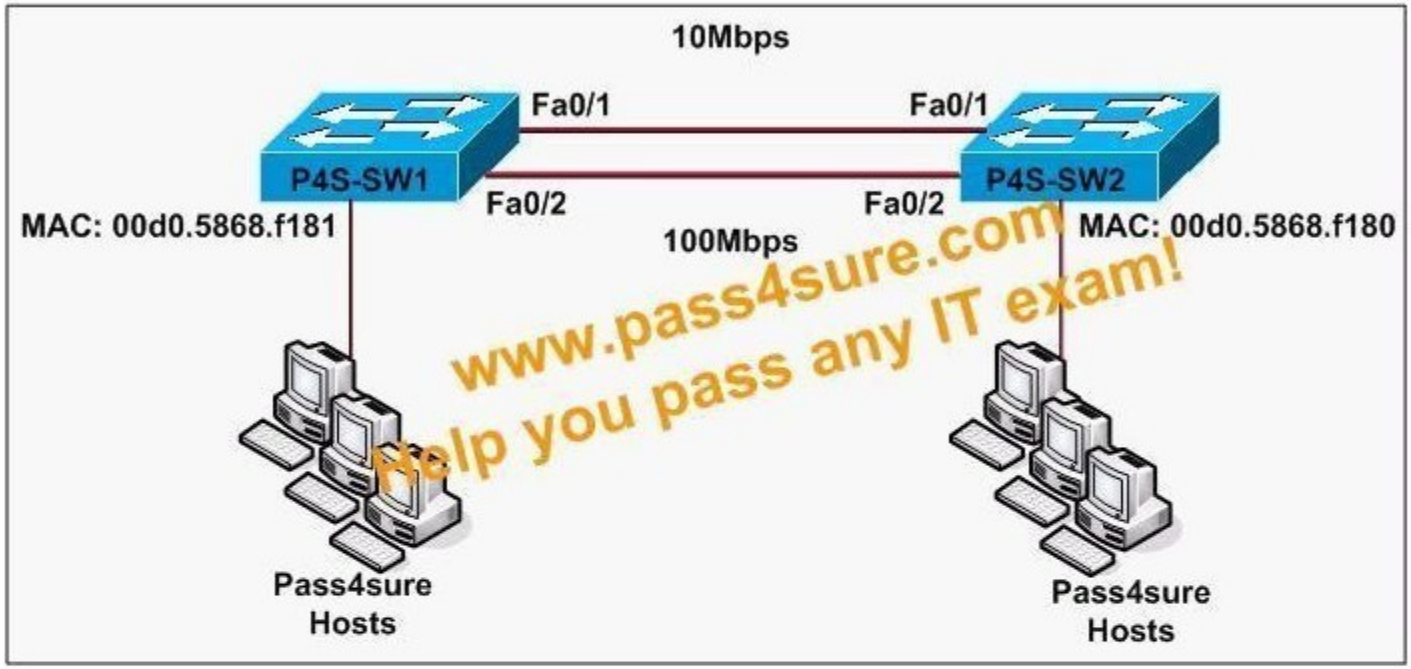
Root bridge election succeeds, switches stop flooding, and all ports have experienced discarding, learning or forwarding status. The default priority for the bridge is 32768; it shows in Role and Sts that all designated ports are in forward state.

Mark for Review

The exhibited network is stable and operating properly. Assuming that default STP configurations are running on both switches, which port will be in blocking mode?

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- A. Port Fa0/1 on P4S-SW1
- B. Port Fa0/2 on P4S-SW1
- C. Port Fa0/1 on P4S-SW2
- D. Port Fa0/2 on P4S-SW2

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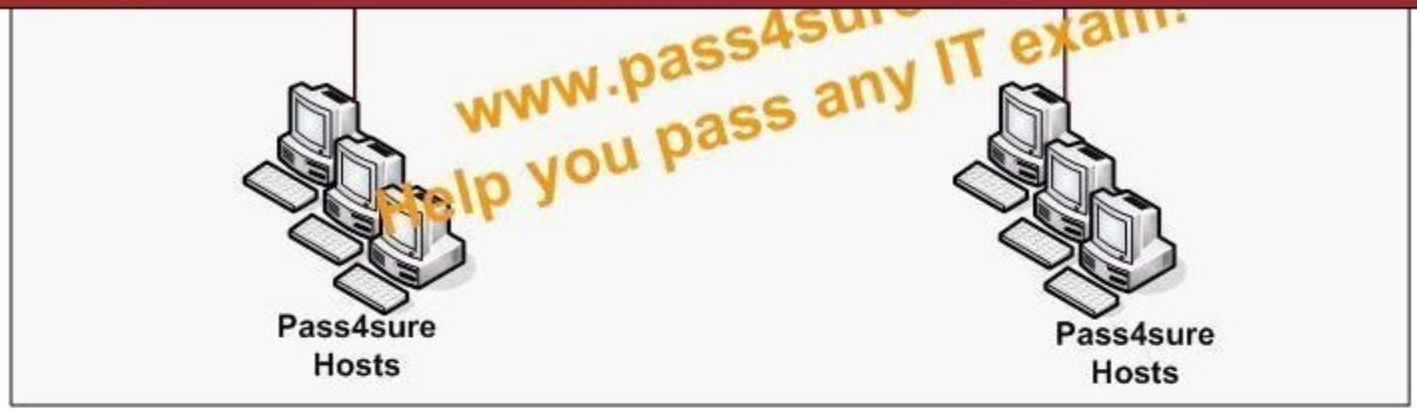


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- A. Port Fa0/1 on P4S-SW1
- B. Port Fa0/2 on P4S-SW1
- C. Port Fa0/1 on P4S-SW2
- D. Port Fa0/2 on P4S-SW2

## Answer & Explanation

### Correct Answer

A

### Explanations

First find out which switch port will become blocking mode through root-bridge election.

Root-bridge election:

Bridge ID = Bridge Priority + Bridge MAC address

The default bridge priority is 32,768. In this case, you only need to compare two switch MAC addresses. The MAC address of P4S-SW2 is the smallest one. Therefore it will be the root-bridge of this switching network.

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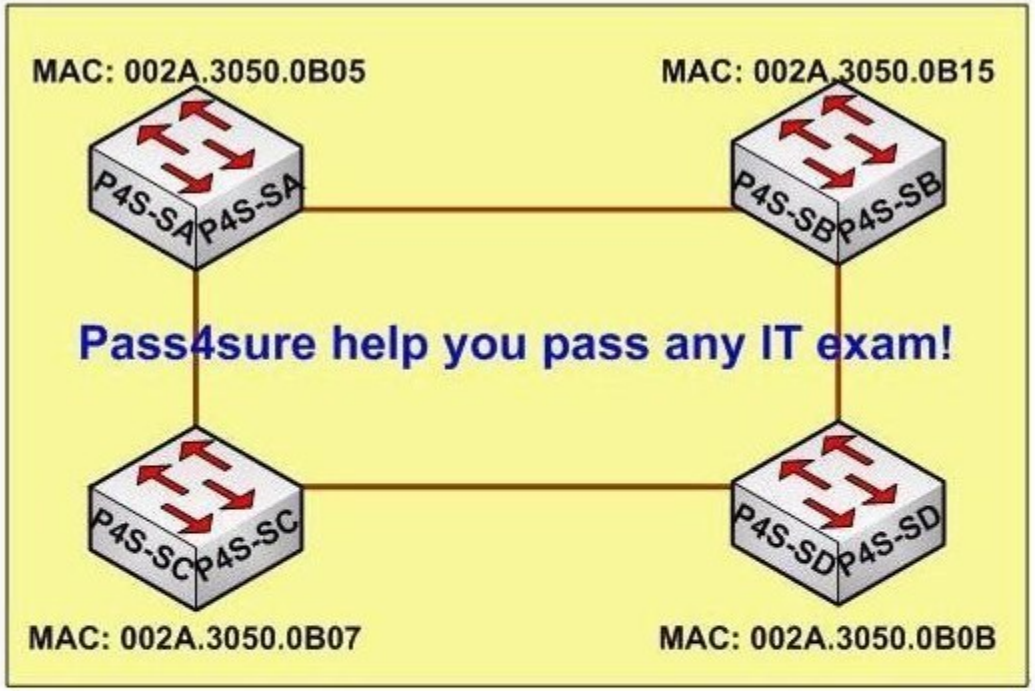
As a non-root bridge, an interface of P4S-SW1 will be blocked by STP. Compare the speed of the links that Fa0/1 and Fa0/2 connect, you'll find that the link that Fa0/1 connects needs much higher cost. Therefore Fa0/1 will be blocked.

Mark for Review

Refer to the exhibit. Three Cisco 2950 switches are set to their default priority settings. During the spanning-tree process, which switch will be elected as the root bridge?




- A. Switch P4S-SA
- B. Switch P4S-SB
- C. Switch P4S-SC
- D. Switch P4S-SD

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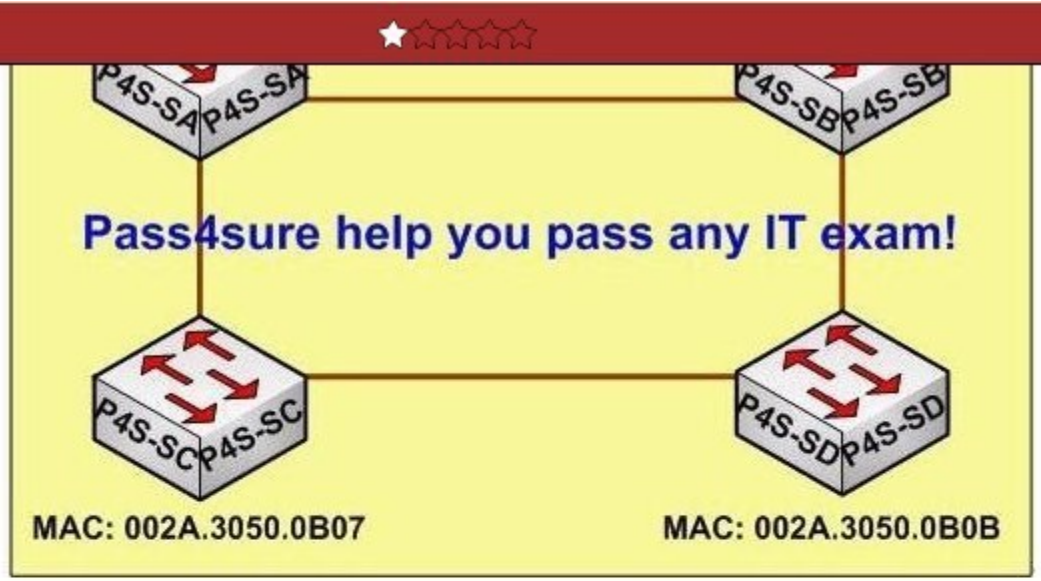


A. Switch P4S-SA

B. Switch P4S-SB

C. Switch P4S-SC

D. Switch P4S-SD

## Answer & Explanation

### Correct Answer

A

### Explanations

The first step of STP is root-bridge election. BPDU is used in this election process. When device advertises BPDU, it will put its own switch ID in BPDU. Switch ID is used for the election of root switch. Switch with a minimum switch ID is selected as root. Switch ID is composed of two components:

1. Switch Priority: the default priority on Cisco switches is 32,768 (two bytes in length)
2. Switches MAC address (6 bytes in length)

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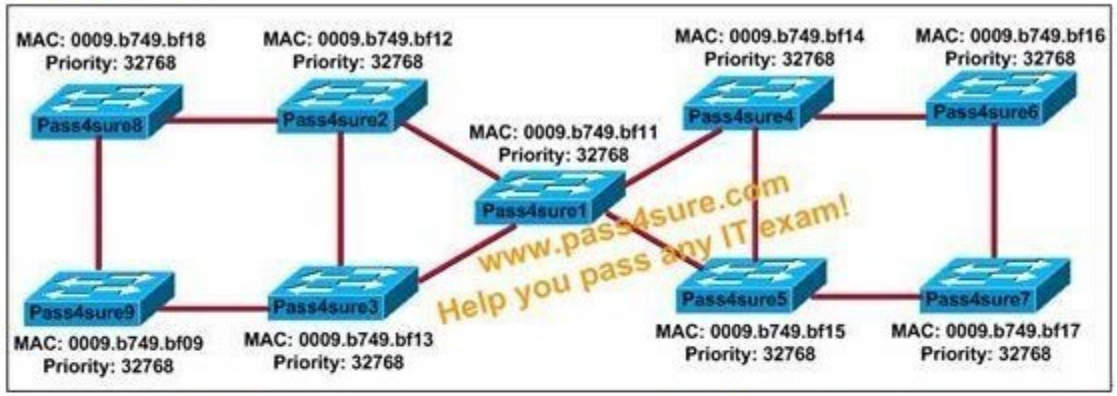
By default, the switch with the lowest MAC address in switching network will be root-bridge.

Mark for Review

A Pass4sure network topology is shown below:




Please study the exhibit shown above carefully, the switches on a campus network have been interconnected as shown. All of the switches are running Spanning Tree Protocol with its default settings. Unusual traffic patterns are observed and it is discovered that Pass4sure9 is the root bridge. Which change will ensure that Pass4sure1 will be selected as the root bridge instead of Pass4sure9?

A. Lower the bridge priority on Pass4sure1.

B. Physically replace Pass4sure9 with Pass4sure1 in the topology

C. Lower the bridge priority on Pass4sure9.

D. Disable spanning tree on Pass4sure9.

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Mark for Review

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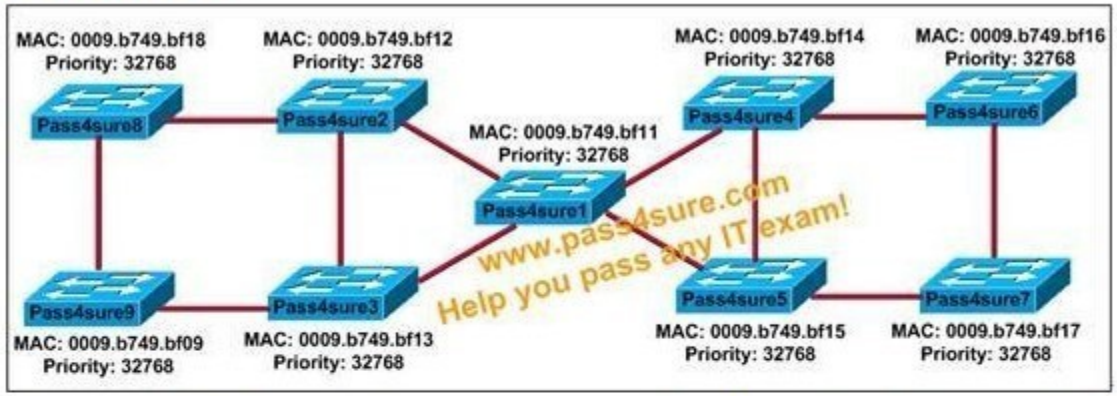


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- A. Lower the bridge priority on Pass4sure1.
- B. Physically replace Pass4sure9 with Pass4sure1 in the topology
- C. Lower the bridge priority on Pass4sure9.
- D. Disable spanning tree on Pass4sure9.

## Answer & Explanation

### Correct Answer

A

### Explanations

The election of the root bridge can be achieved by comparing Bridge ID, while Bridge-id= bridge priority + MAC address, the smallest will be selected. So if you want Pass4sure1 to be the root bridge, you merely need to lower its bridge ID.

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Mark for Review

Refer to the exhibit. Spanning Tree Protocol has created a loop-free logical topology in the Pass4sure network that is pictured. How many ports have been placed in the blocking mode?

- A. none
- B. one
- C. two
- D. three

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Mark for Review

Refer to the exhibit. Spanning Tree Protocol has created a loop-free logical topology in the Pass4sure network that is pictured. How many ports have been placed in the blocking mode?

- A. none
- B. one
- C. two
- D. three

## Answer & Explanation

### Correct Answer

C

### Explanations

In order to avoid and eliminate network loop, when startup STP, assume that the bridge priority and MAC of all switches are the same, elect P4S-S1 as root bridge. STP pass through the network topology inspection, first block the port that connecting P4S-S3 and P4S-S1; then block the port that connecting P4S-S4 and P4S-S3.

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Mark for Review

Refer to the exhibit. When the hosts boot, hosts that are connected to the P4S switches are having trouble getting a DHCP address from the Pass4sure DHCP server. Which STP feature could minimize the effects of STP convergence for the hosts?

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- A. port priority
- B. PortFast
- C. BID
- D. path cost

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Mark for Review

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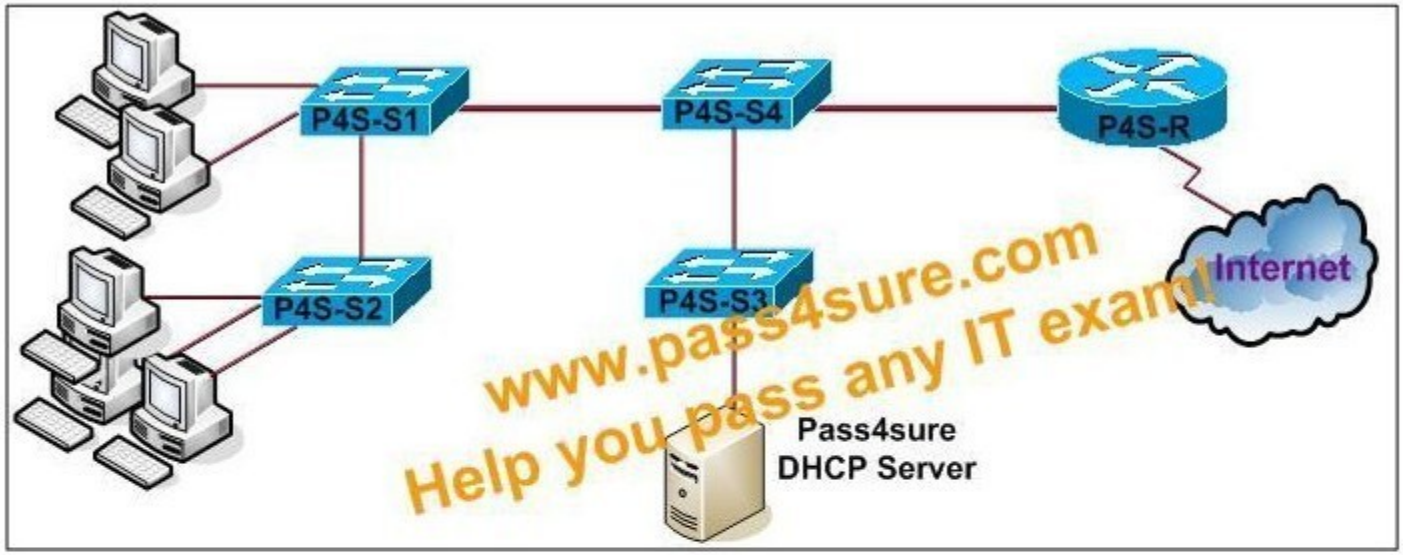


- A. port priority
- B. PortFast
- C. BID
- D. path cost

## Answer & Explanation

### Correct Answer

B

### Explanations

The purpose of PortFast is to shorten the time to access port and STP convergence. The advantages of PortFast are to prevent DHCP overtime, Novell login issue, Apple Talk address finding, and so on. In addition to the specific network design, it is generally used when accessing to ports. If startup PostFast when connecting to other switch ports, it may result in bridge loop.

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As a network technician in your company, you have just detected that a switch powered off and was inoperative. And your boss asked you to replace this switch with a Cisco Catalyst 2950 series switch. Then how to make sure this new switch is the root bridge on the network?

A. Lower the bridge priority number.

B. Increase the VTP revision number for the domain.

C. Lower the root path cost on the switch ports.

D. Assign the switch an IP address with the lowest value.

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Mark for Review

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- B. Increase the VTP revision number for the domain.
- C. Lower the root path cost on the switch ports.
- D. Assign the switch an IP address with the lowest value.

## Answer & Explanation

### Correct Answer

A

### Explanations

When selecting the root bridge, the lowest bridge priority number will be selected. If you want to select a switch as the root bridge, you can modify the Bridge priority number to the lowest.

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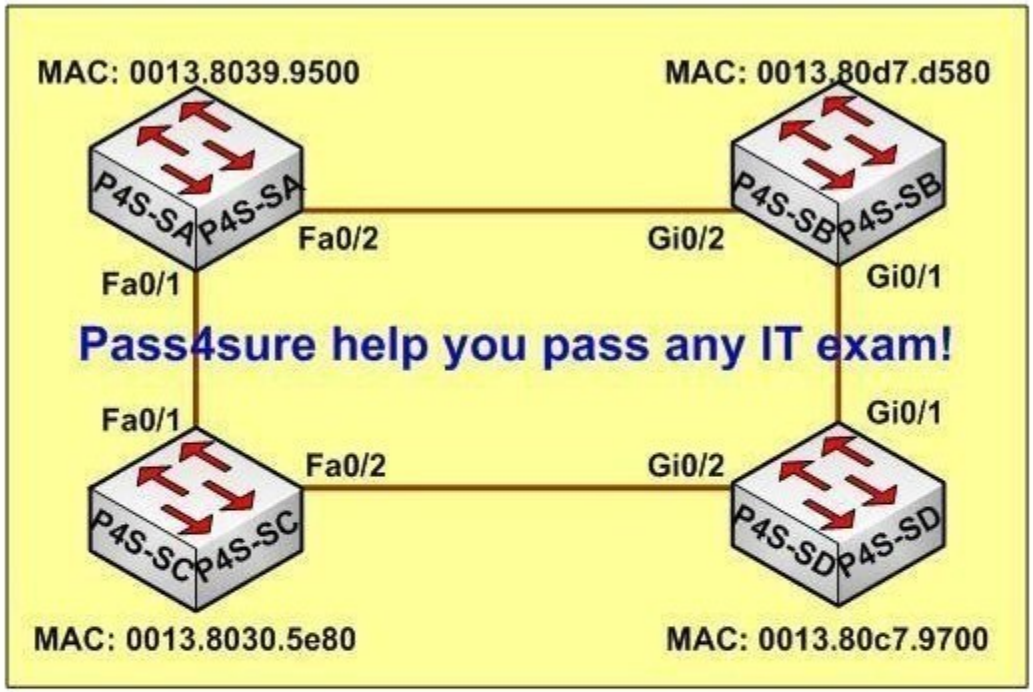
Mark for Review

Refer to the exhibit. Each of these four switches has been configured with a hostname, as well as being configured to run RSTP. No other configuration changes have been made. Which three of these show the correct RSTP port roles for the indicated switches and interfaces? (Choose three.)




- A. Switch P4S-SA, Fa0/2, designated
- B. Switch P4S-SA, Fa0/1, root
- C. Switch P4S-SB, Gi0/1, root
- D. Switch P4S-SD, Gi0/2, root

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A. Switch P4S-SA, Fa0/2, designated

B. Switch P4S-SA, Fa0/1, root

C. Switch P4S-SB, Gi0/1, root

D. Switch P4S-SD, Gi0/2, root

## Answer & Explanation

### Correct Answer

B C D

### Explanations

Root bridge Election: For all switches in a network to agree on a loop-free topology, a common frame of reference must exist. This reference point is called the Root Bridge. The Root Bridge is chosen by an election process among all connected switches. Each switch has a unique Bridge ID (also known as the bridge priority) that it uses to identify itself to other switches. The Bridge ID is an 8-byte value. 2 bytes of the Bridge ID is used for a Bridge Priority field, which is the priority or weight of a switch in relation to all other switches. The other 6 bytes of the Bridge ID is used for the MAC Address field, which can come from the Supervisor module, the backplane, or a pool of 1024 addresses that are assigned to every Supervisor or backplane depending on the switch model. This address is hardcoded, unique, and cannot be changed The election process begins with every switch sending out BPDUs with a Root Bridge ID equal to its own Bridge ID as well as a Sender Bridge ID. The latter is used to identify the source of the BPDU message. Received BPDU messages are analyzed for a lower Root Bridge ID value. If the BPDU message has a Root Bridge ID (priority) of the lower value than the switch's own Root Bridge ID, it replaces its own Root Bridge ID with the Root Bridge ID announced in the BPDU. If two Bridge Priority values are equal, then the lower MAC address takes preference.

Root Ports Election: The switches move on to selecting Root Ports. The Root Port of a bridge is the port that is closest to the Root Bridge in terms of Path Cost. Every non-Root Bridge must select one Root Port. Again, bridges use the concept of cost to measure closeness. As with some routing metrics, the measure of closeness using STP is not necessarily reflected by hop count. Specifically, bridges track what is referred to as Root Path Cost, which is the cumulative cost of all links to the Root Bridge.

Designated Ports Election: Once the Root Path Cost values have been computed, the Root Ports have been identified; however, all other links are still connected and could be active, leaving bridging loops. To remove the bridging loops, STP makes a final computation to identify one Designated Port on each network segment which would forward traffic to and from that segment. Switches choose a Designated Port based on the lowest cumulative Root Path Cost to the Root Bridge. All ports are still active and bridging loops are still possible. STP has a set of progressive states that each port must go through, regardless of the type or identification. These states will actively prevent loops from forming.

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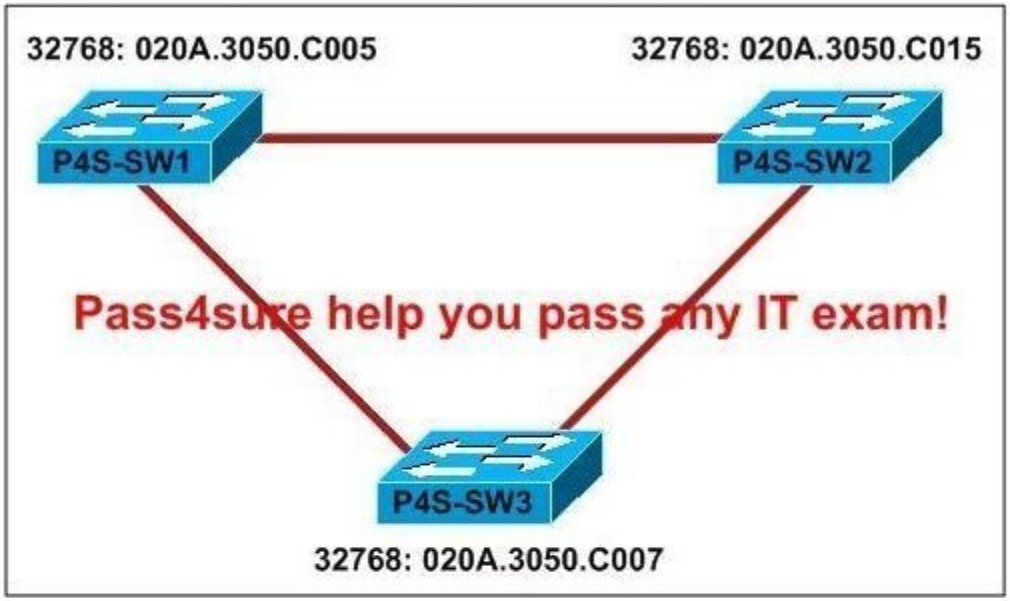
Mark for Review

How to ensure P4S-SW3 becomes the root bridge based on the following exhibit?




A. The MAC address on P4S-SW3 is configured to be higher than the MAC addresses of the P4S-SW1 and P4S-SW2.

B. The IP address on P4S-SW3 is configured to be higher than the IP addresses of P4S-SW1 and P4S-SW2.

C. The BID on P4S-SW3 is configured to be lower than the BIDs of P4S-SW1 and P4S-SW2.

D. A loopback interface on P4S-SW3 is configured with an IP address lower than any IP address on P4S-SW1 and P4S-SW2.

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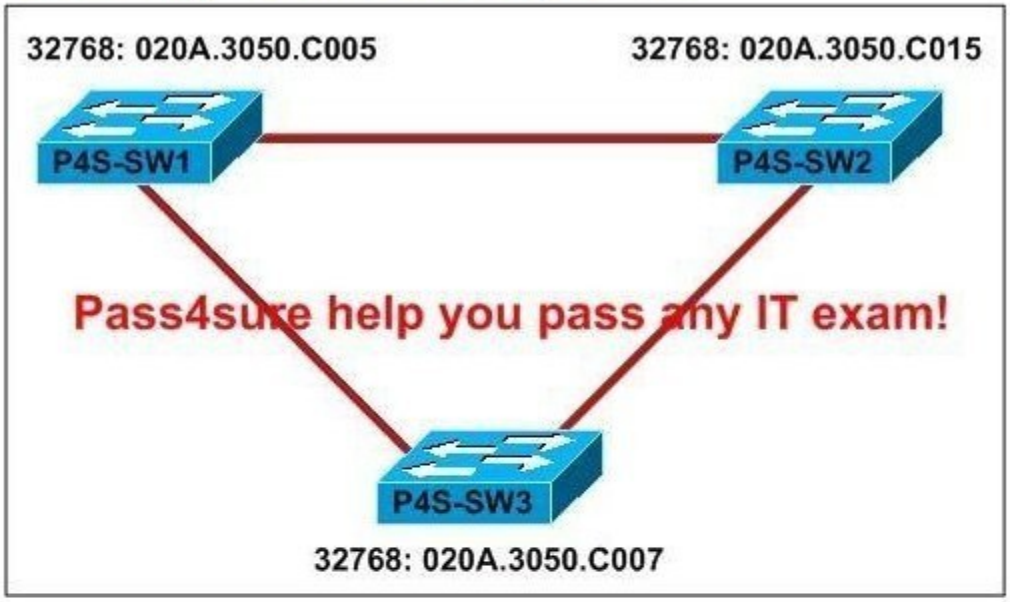
Mark for Review

How to ensure P4S-SW3 becomes the root bridge based on the following exhibit?




A. The MAC address on P4S-SW3 is configured to be higher than the MAC addresses of the P4S-SW1 and P4S-SW2.

B. The IP address on P4S-SW3 is configured to be higher than the IP addresses of P4S-SW1 and P4S-SW2.

C. The BID on P4S-SW3 is configured to be lower than the BIDs of P4S-SW1 and P4S-SW2.

D. A loopback interface on P4S-SW3 is configured with an IP address lower than any IP address on P4S-SW1 and P4S-SW2.

## Answer & Explanation

### Correct Answer

C

### Explanations

The election of the root bridge can be accomplished by comparing Bridge ID, while Bridge-id= bridge priority + MAC address, the smallest will be selected. So if you want P4S-SW3 to be the root bridge, you merely need to lower its bridge ID.

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Mark for Review

The above describes the Spanning-Tree Protocol port states, while the below describes their functions.
Drag the above items to the proper locations.

| | |
|---|---|
| frowarding | listening |
| blocking | learning |

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| |
|---|
| populating the MAC address table but not forwarding data frames |
| sending and receiving data frames |
| preparing to forward data frames without populating the MAC address table |
| preventing the use of looped paths |

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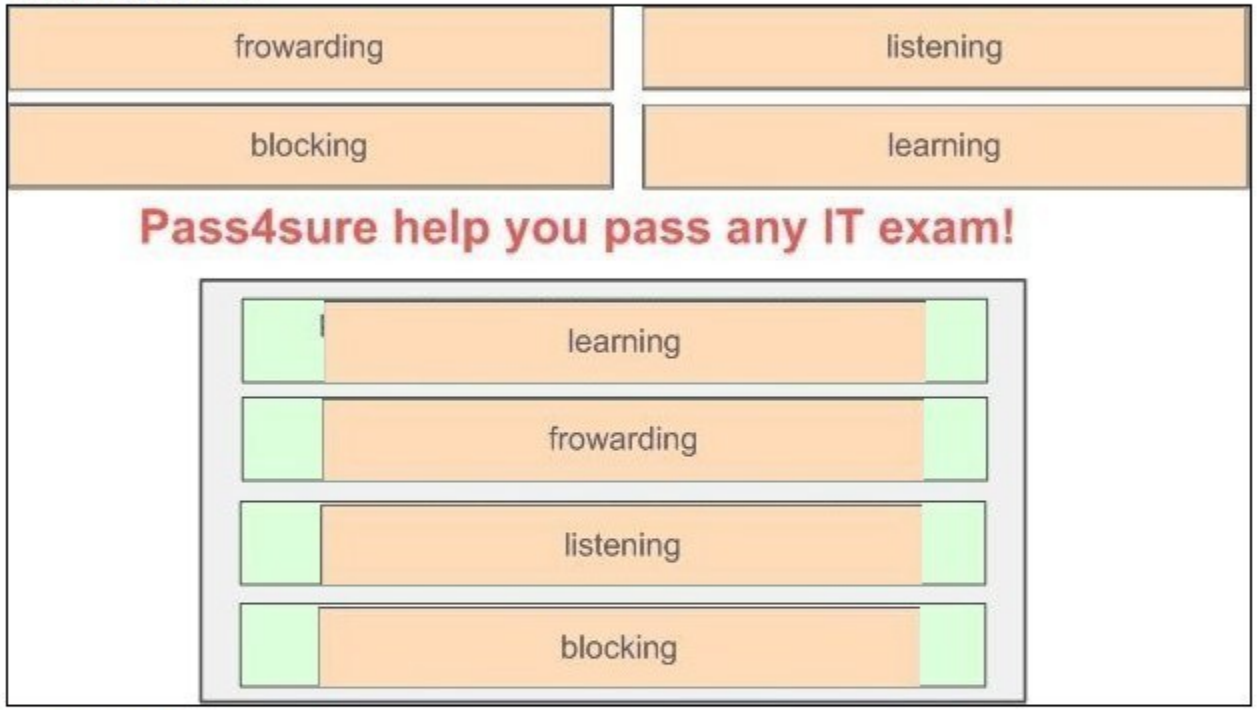
## Answer & Explanation

### Correct Answer




### Explanations

STP switch port states:
Blocking - A port that would cause a switching loop, no user data is sent or received but it may go into forwarding mode if the other links in use were to fail and the spanning tree algorithm determines the port may transition to the forwarding state. BPDU data is still received in blocking state.
Listening - The switch processes BPDUs and awaits possible new information that would cause it to return to the blocking state.
Learning - While the port does not yet forward frames (packets) it does learn source addresses from frames received and adds them to the filtering database (switching database)
Forwarding - A port receiving and sending data, normal operation. STP still monitors incoming BPDUs that would indicate it should return to the blocking state to prevent a loop.
Disabled - Not strictly part of STP, a network administrator can manually disable a port

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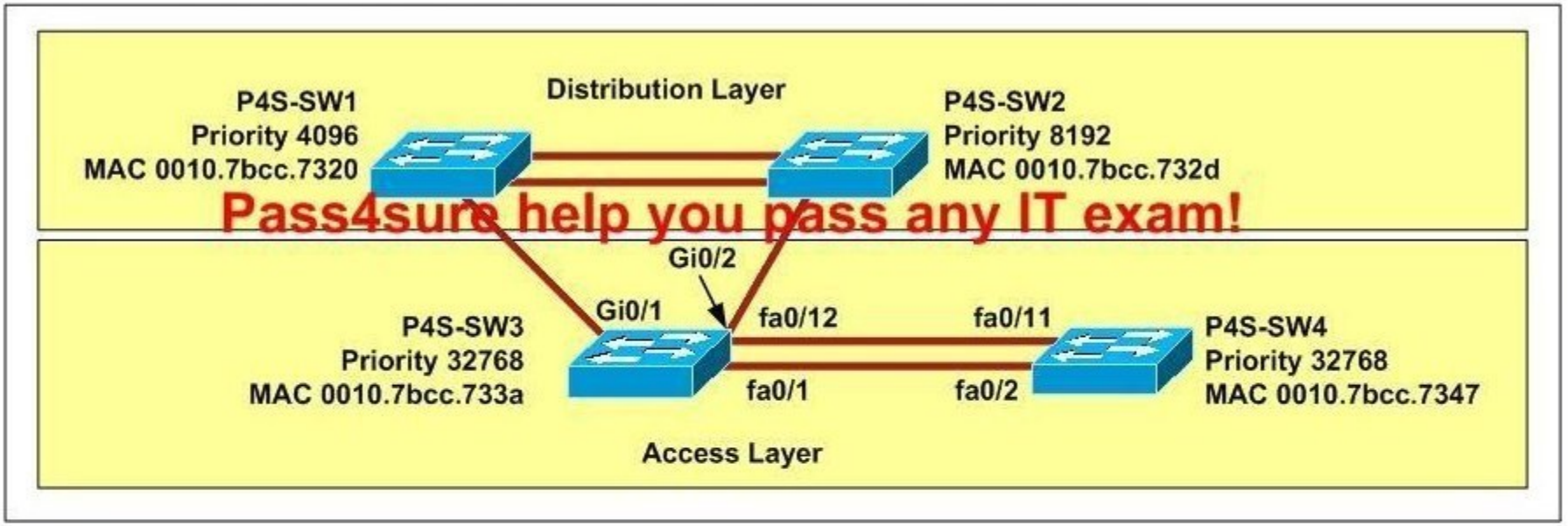
Mark for Review

Rapid Spanning Tree Protocol (RSTP; IEEE 802.1w) can be seen as an evolution of the 802.1D standard more than a revolution. In the last phase of an RSTP election process, which access layer switch port can assume the discarding role?




- A. P4S-SW3, port fa0/12
- B. P4S-SW4, port fa0/2
- C. P4S-SW4, port fa0/11
- D. P4S-SW3, port fa0/1

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Mark for Review

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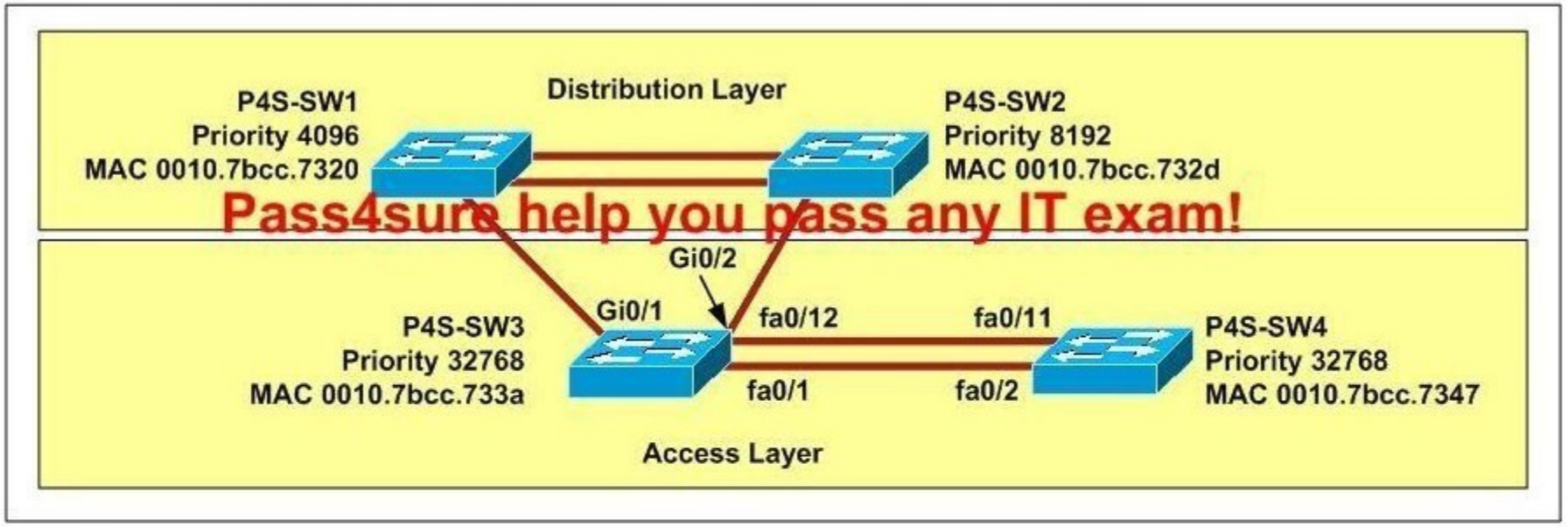


A. P4S-SW3, port fa0/12

B. P4S-SW4, port fa0/2

C. P4S-SW4, port fa0/11

D. P4S-SW3, port fa0/1

## Answer & Explanation

### Correct Answer

C

### Explanations

Selection of the designated ports. The ports on the root bridge are designated ports. The designated port should be the one that has the lowest path cost to the root bridge. If the ports have the same path cost, the lowest ID switch port will be the designated port. If the switch ports have the same ID, the lowest number port will be the designated port.

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You want to influence the root bridge selection within the Pass4sure LAN. Which two values are used by spanning tree protocol to elect a root bridge? (Choose two.)

- A. speed of the links
- B. bridge priority
- C. Router ID
- D. IP address
- E. MAC address

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Mark for Review

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- A. speed of the links
- B. bridge priority
- C. Router ID
- D. IP address
- E. MAC address

## Answer & Explanation

### Correct Answer

B E

### Explanations

The election of the root bridge can be accomplished by comparing Bridge ID, while Bridge-id= bridge priority + MAC address. So, the root bridge can be elected by comparing bridge priority and MAC address.

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Mark for Review

The following output was displayed on a Pass4sure device:

```
Pass4sure1# show mac address-table
  Dynamic Addresses Count                    3
  Secure Addresses (User-defined) Count:     0
  State Addressed (User-defined) Count:      0
  System Self Addresses Count:               41
  Total Mac addresses:                       50
  Non-static Address Table:
  Destination Address Address Type  VLAN    Destination Prot
  ------------------------------------------------------------------------
    0010.0de0.e289          Dynamic    1     FastEthernet0/1
    0010.7b00.1540          Dynamic    2     FastEthernet0/3
    0010.7b00.1545          Dynamic    2     FastEthernet0/2
```

Study the exhibit above. Switch-Pass4sure1 needs to send data to host with a MAC address of 00b0.d056.efa4. What will Switch-Pass4sure1 do with this data?

A. Pass4sure1 will send an ARP request out all its ports except the port from which the data originated.

B. Pass4sure1 will flood the data out all of its ports except the port from which the data originated.

C. Pass4sure1 will drop the data because it does not have an entry for that MAC address.

D. None of the above

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Mark for Review

The following output was displayed on a Pass4sure device:

```
Pass4sure1# show mac address-table
  Dynamic Addresses Count                    3
  Secure Addresses (User-defined) Count:     0
  State Addressed (User-defined) Count:      0
  System Self Addresses Count:               41
  Total Mac addresses:                       50
  Non-static Address Table:
  Destination Address Address Type  VLAN    Destination Prot
  ------------------------------------------------------------------------
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- B. Pass4sure1 will flood the data out all of its ports except the port from which the data originated.
- C. Pass4sure1 will drop the data because it does not have an entry for that MAC address.
- D. None of the above

## Answer & Explanation

### Correct Answer

B

### Explanations

Switch-Pass4sure1 needs to send data to host with a MAC address of 00b0.d056.efa4. After learning the destination address, this switch first checks its own MAC address table and does not find it. The switch will flood the data out when receiving unknown unicast, multicast and broadcast. So, Pass4sure1 floods the data out all of its ports except the port from which the data originate.

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You are a network administrator at pass4sure.com, in order to improve the security of pass4sure's switching network , refer to the following options. Which two methods are examples of implementing Layer 2 security on a Cisco switch? (Choose two.)

- A. disable trunk negotiation on the switch
- B. use only protected Telnet sessions to connect to the Cisco device
- C. configure a switch port host where appropriate
- D. enable HTTP access to the switch for security troubleshooting

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A C

**Explanations**

With the popularity and constantly deepening of network applications, the users' requirements for Layer 2 switches are not only limited to data forwarding performance and quality of service (QoS), but also philosophy of network security which is becoming an increasingly important consideration of networking products. How to filter user communications and ensure safe and effective data transmission? How to block the illegal users and make network work safely? How to execute secure network management and detect illegal users, illegal activities and security performance of remote network management information in time? The following methods can accomplish network Layer 2 security by working on switches.

Layer 2 filtering
Now , most new-style switches can achieve various filtering demands by establishing specifications . There are two modes to setup specifications: one is the MAC mode which can effectively achieve data isolation according to the source MAC address or the destination MAC address based on users' needs; the other is the IP mode(this mode does not belong to Layer2 filtering),which can filter data packets by use of the source IP, the destination IP, protocols, the source ports and the destination ports; the specifications established must be attached to the appropriate receiving or sending port so that when receiving or forwarding data on this port, the switch can filter data packets based on filtering rules and decide to transmit or discard.

802.1X is port-based access control
In order to prevent illegal users from accessing LAN and guarantee network security, port-based access control protocol 802.1X is widely used in both wired LAN or WLAN.

Traffic control
The traffic control of switches can prevent abnormal load of switch bandwidth caused by excessive traffic of broadcast data packets, multicast data packet or the wrong destination address of unicast data packet. The traffic control of switches can also improve the whole system performance and maintain security and stability of the network running.

SNMP v3 and SSH
SNMP v3 proposed completely new architecture, concentrating all SNMP standards of various versions together to enhance network management security. The security mode proposed by SNMP v3 is based on the User Security Mode, that is USM. SNMP v3 can effectively prevent non-authorized users from modifying, disguising and eavesdropping management information.

As for the remote network management through the Telnet, because the Telnet services have a fatal weakness - it transfers user name and password in the form of plaintext , so it is very easy to steal passwords for those people with ulterior motives. But by use of SSH to communicate, both user name and password are encrypted to effectively prevent eavesdropping the password ,in this way, network administrators can manage remote security network easily

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Mark for Review

You are a network administrator of your company. You are asked to configure 300 switch ports to accept traffic from only the currently attached host devices. Which method will you use to effectively configure MAC-level security on all these ports?

A. Configure show mac-address-table to identify the addresses related to each port and then input the commands on each switch for MAC address port-security.

B. Certify the MAC addresses visually and then telnet to the switches to input the command switchport-port security mac-address.

C. Configure the switchport port-security MAC address sticky command on all switch ports connected to end devices.

D. Make end users e-mail their MAC addresses and telnet to the switch to issue the command switchport-port security mac-address.

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## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the key points of port security: when you configure a port with the maximum number of security mac addresses, security addresses will be included in a table in the following way:
Use the command switchport port-security mac-address <mac address> to configure all mac addresses.
You can also dynamically configure security mac addresses using the connected device mac address.
You can configure the number of addresses and keep the dynamic configuration.
Note: If this port is shutdown, all the dynamic mac addresses will be removed. When reaching the maximum number, the mac addresses will be stored in an address table. Set the maximum number of the addresses to 1 and configure the address connected to the device to ensure the device can use the bandwidth of this port individually.
The parameter sticky is to obtain the address dynamically.

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Why would the Pass4sure network administrator configure port security on a new Pass4sure switch?

- A. to prevent unauthorized Telnet access to a switch port
- B. to protect the IP and MAC address of the switch and associated ports
- C. to prevent unauthorized hosts from accessing the LAN
- D. to limit the number of Layer 2 broadcasts on a particular switch port

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C. to prevent unauthorized hosts from accessing the LAN

D. to limit the number of Layer 2 broadcasts on a particular switch port

## Answer & Explanation

### Correct Answer

C

### Explanations

Network administrators can statically set up the legitimate MAC addresses which each port is allowed to connect through port security function to achieve device-level security authorization. Dynamic port security is set up to allow for the number of legitimate MAC addresses and regards the addresses learnt at a certain period as legitimate MAC addresses.
Through configuring Port Security to control the maximum number of MAC addresses across the port ,the MAC addresses learnt by port or cross port, handling with the access devices that exceed the number specified properly.
You can define the MAC addresses which will be allowed to access by ports through static manual configuration and switches learning automatically. The switch will learn the MAC addresses of new access devices until reaching the desired number of MAC addresses, the MAC addresses that exceed the desired number will be denied. After being restarted , the switch will learn again.
There are three methods to deal with the exceeded MAC addresses: Shutdown (shutdown port ); Protect (discard illegal traffic without alarm); Restrict (discard illegal traffic with alarm).

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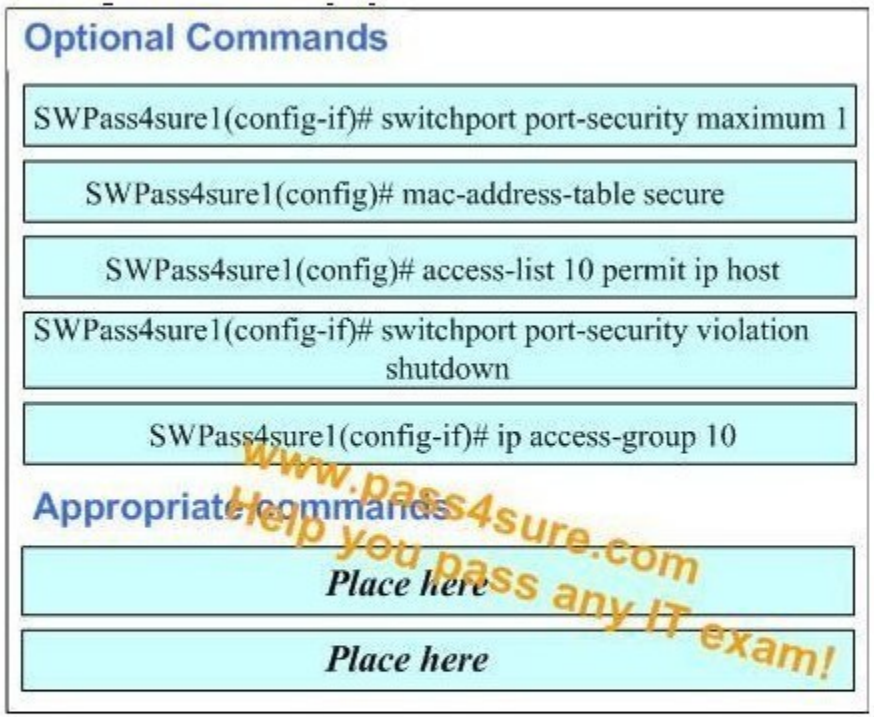
Mark for Review

As the Pass4sure network administrator, you are required to configure the network security policy, And the policy requires that only one host be permitted to attach dynamically to each switch interface. If that policy is violated, the interface should shut down. Which two commands must the network administrator configure on the 2950 Catalyst switch SWPass4sure1 to meet this policy? Please choose appropriate commands and drag the items to the proper locations.

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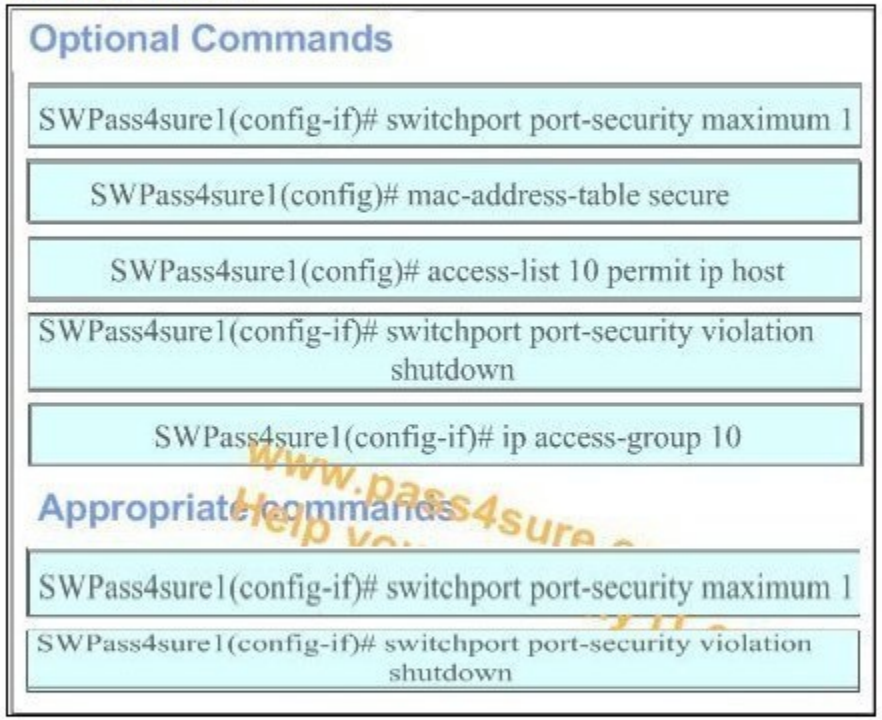
Mark for Review

Place here

## Answer & Explanation

### Correct Answer




### Explanations

Basically speaking, the function of Port Security is to remember the MAC address of the NIC connected to the switch port and allows this MAC address to use this port. If other NICs attempt to cross this port to connect to the switch, Port Security function will disable this port.

switchport port-security maximum {max # of MAC addresses allowed}: This parameter will allow each port to bind more MAC addresses, not only one.
switchport port-security violation {shutdown | restrict | protect}: This command tells the switch that how to deal with the situation when the number of MAC addresses accessed exceeds the desired maximum number. This port is disabled by default.

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Mark for Review

As the Pass4sure network administrator, you want to enhance the network security, which two passwords must be supplied in order to connect by Telnet to a properly secured Cisco switch and make changes to the device configuration? (Choose two.)

- A. tty password
- B. vty password
- C. aux password
- D. console password
- E. enable secret password

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Mark for Review

As the Pass4sure network administrator, you want to enhance the network security, which two passwords must be supplied in order to connect by Telnet to a properly secured Cisco switch and make changes to the device configuration? (Choose two.)

- A. tty password
- B. vty password
- C. aux password
- D. console password
- E. enable secret password

## Answer & Explanation

### Correct Answer

B E

### Explanations

VTY password is used for Telnet management to prevent Telnet access; enable secret password is to set the password to enter the privileged mode(non plaintext)

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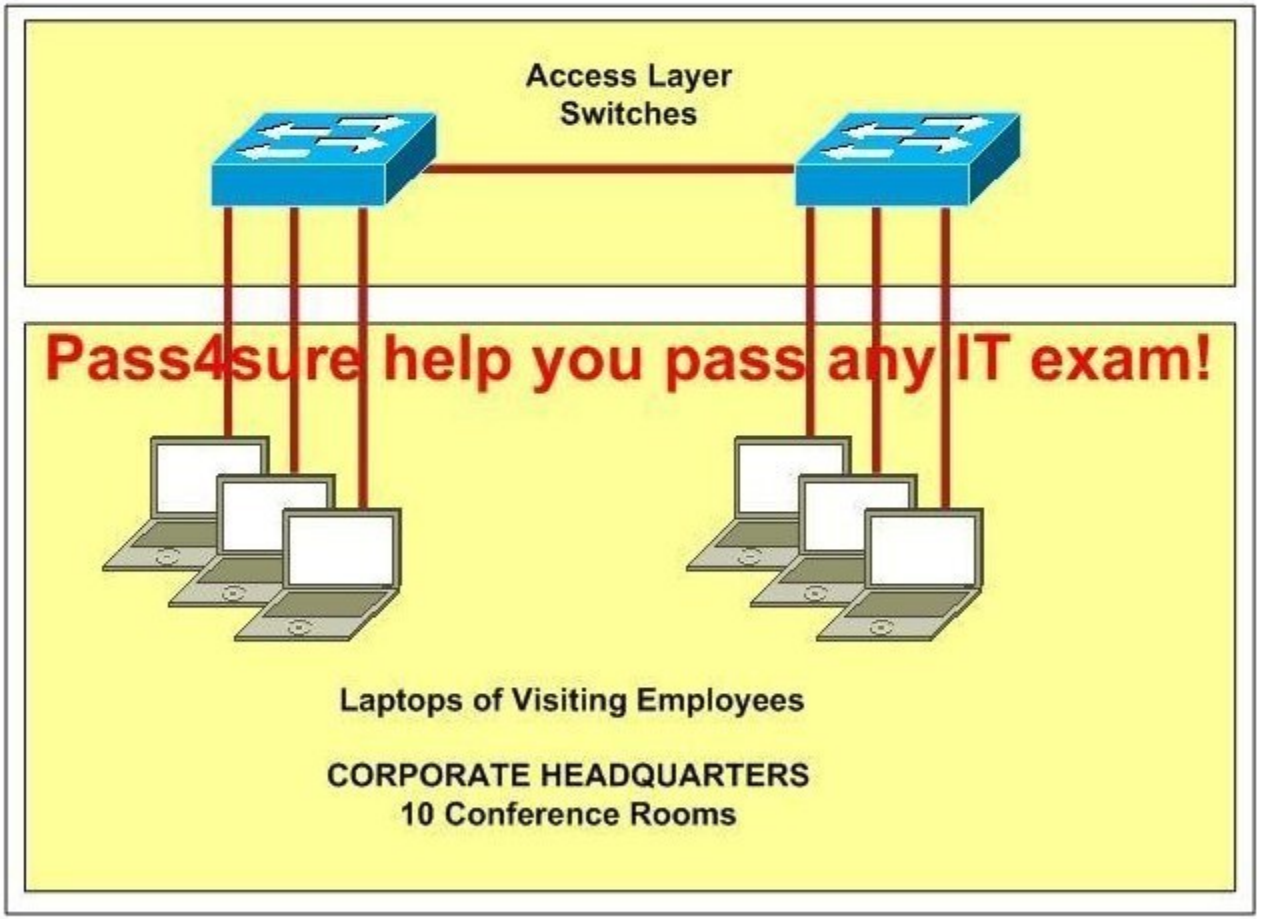
Mark for Review

Study the following exhibit carefully, several 2950 series switches are connected to the conference area of the corporate headquarters network. The switches offer two to three jacks per conference room to host laptop connections for employees to access the headquarters office. When large groups of employees come from other locations, the network administrator often finds that hubs have been connected to wall jacks in the conference area although the ports on the access layer switches were not intended to support multiple workstations.

What action should be taken to prevent access by multiple laptops through a single switch port and still leave the switch functional for its intended use?

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A. Execute Port Security on all interfaces and issue the port-security mac-address sticky command to limit access to a single MAC address.

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- A. Execute Port Security on all interfaces and issue the port-security mac-address sticky command to limit access to a single MAC address.
- B. Execute Port Security at global configuration mode and issue the port-security maximum 1 command to allow each switch only one attached hub.
- C. Configure static entries in the switch MAC address table to include the range of addresses used by visiting employees.
- D. Execute Port Security on all interfaces and issue the port-security maximum 1 command to limit port access to a single MAC address.

## Answer & Explanation

### Correct Answer

D

### Explanations

switchport port-security maximum is to configure the maximum number of secure MAC addresses allowed on this port, which is a secure management mechanism.

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Mark for Review

As the Pass4sure network administrator, which of the following is the reason you should configure port security on a switch?

A. To prevent unauthorized Telnet access to a switch port

B. To limit the number of layer 2 broadcasts on a particular switch port

C. To prevent unauthorized hosts from accessing the LAN

D. To block unauthorized access to the switch-management interfaces over common TCP ports

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C. To prevent unauthorized hosts from accessing the LAN

D. To block unauthorized access to the switch-management interfaces over common TCP ports

## Answer & Explanation

### Correct Answer

C

### Explanations

The objective of configuring port security on a switch is to prevent unauthorized hosts from accessing the LAN.

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Mark for Review

Which of the following will be the results by executing these commands?

P4S-SW(config-if)# switchport port-security
P4S-SW(config-if)# switchport port-security mac-address sticky

A. A MAC address which is dynamically learned is stored in the VLAN database.

B. A MAC address which is learned dynamically is stored in the running-configuration file.

C. MAC addresses configured statically are stored in the startup-configuration file after receiving frames from that address.

D. MAC addresses configured statically are stored in the running-configuration file after receiving frames from that address.

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B. A MAC address which is learned dynamically is stored in the running-configuration file.

C. MAC addresses configured statically are stored in the startup-configuration file after receiving frames from that address.

D. MAC addresses configured statically are stored in the running-configuration file after receiving frames from that address.

## Answer & Explanation

### Correct Answer

B

### Explanations

In the interface configuration mode, the command switchport port-security mac-address sticky enables sticky learning. When entering this command, the interface converts all the dynamic secure MAC addresses to sticky secure MAC addresses.
The sticky secure MAC addresses do not automatically become part of the configuration file, which is the startup configuration used each time the switch restarts. If you save the sticky secure MAC addresses in the configuration file, when the switch restarts, the interface does not need to relearn these addresses. If you do not save the configuration, they are lost.

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A network administrator wants to control which user hosts can access the network based on their MAC address. What will prevent workstations with unauthorized MAC addresses from connecting to the network through a switch?

- A. BPDU
- B. port security
- C. RSTP
- D. STP

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Mark for Review

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- A. BPDU
- B. port security
- C. RSTP
- D. STP

## Answer & Explanation

### Correct Answer

B

### Explanations

The most commonly used port security is the network traffic control and management based on MAC address, such as the MAC address and a specific port binding, MAC address number restrictions of specific port, or a specific port does not allow the frame flow of some MAC address.

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Mark for Review

The network security policy requires that only one host be permitted to attach dynamically to each switch interface. If that policy is violated, the interface should shut down. Which two commands the pass4sure network administrator must configure on the 2950 Catalyst switch P4S-S1 to meet this policy? (Choose two.)

- A. P4S-S1(config-if)# switchport port-security maximum 1
- B. P4S-S1(config)# mac-address-table secure
- C. P4S-S1(config)# access-list 10 permit ip host
- D. P4S-S1(config-if)# switchport port-security violation shutdown
- E. P4S-S1(config-if)# ip access-group 10

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Mark for Review

The network security policy requires that only one host be permitted to attach dynamically to each switch interface. If that policy is violated, the interface should shut down. Which two commands the pass4sure network administrator must configure on the 2950 Catalyst switch P4S-S1 to meet this policy? (Choose two.)

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- B. P4S-S1(config)# mac-address-table secure
- C. P4S-S1(config)# access-list 10 permit ip host
- D. P4S-S1(config-if)# switchport port-security violation shutdown
- E. P4S-S1(config-if)# ip access-group 10

## Answer & Explanation

### Correct Answer

A D

### Explanations

The command switchport port-security maximum 1 is to configure this port as the secure mode telling the switch to only allow one mac-address on the port.
The command Switchport port-security violation shutdown will be issued when a security violation is detected.

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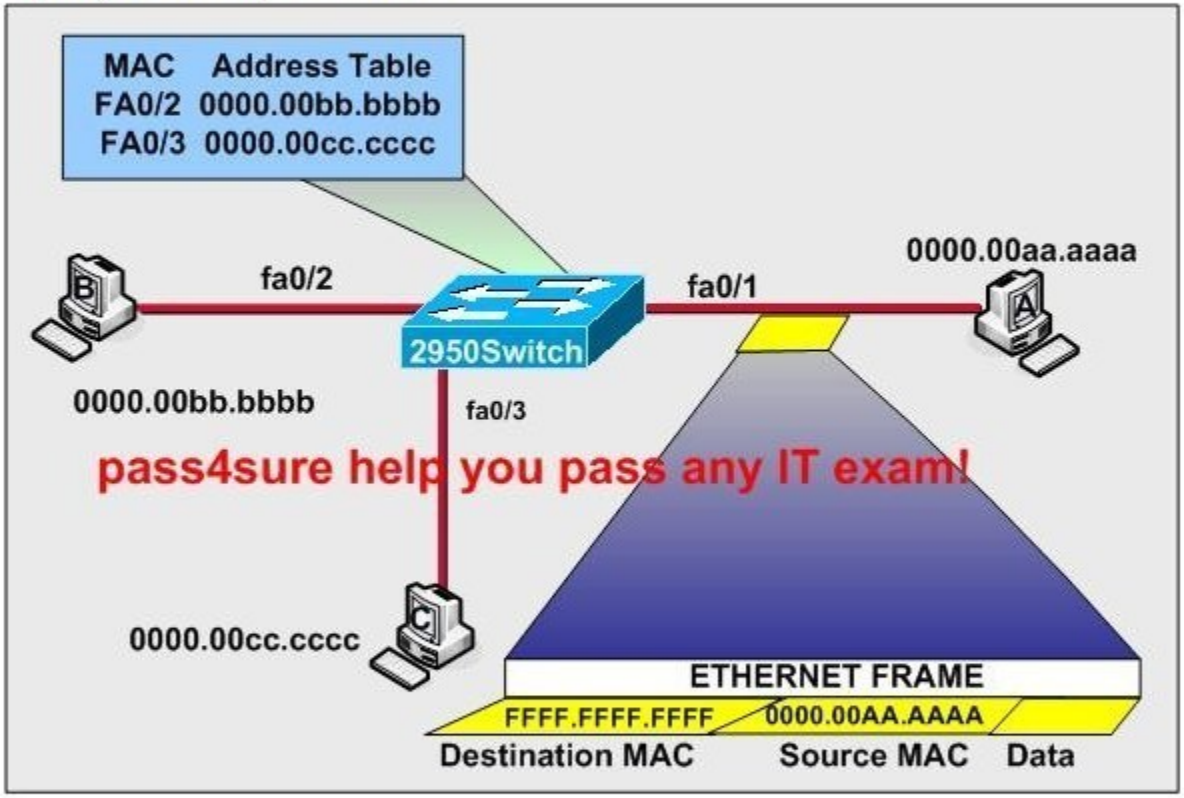
Mark for Review

Study the diagram below seriously, after issuing the following commands on interface fa0/1 of 2950Switch, what will happen when the displayed Ethernet frame reaching interface fa0/1 is received by 2950Switch? (Choose two.)

2950Switch(config-if)# switchport port-security
2950Switch(config-if)# switchport port-security mac-address sticky
2950Switch(config-if)# switchport port-security maximum 1




- A. This frame will be discarded when it is received by 2950Switch.
- B. Only host A will be allowed to transmit frames on fa0/1.
- C. The MAC address table will now have an additional entry of fa0/1 FFFF.FFFF.FFFF.
- D. All frames arriving on 2950Switch with a destination of 0000.00aa.aaaa will be forwarded out fa0/1.

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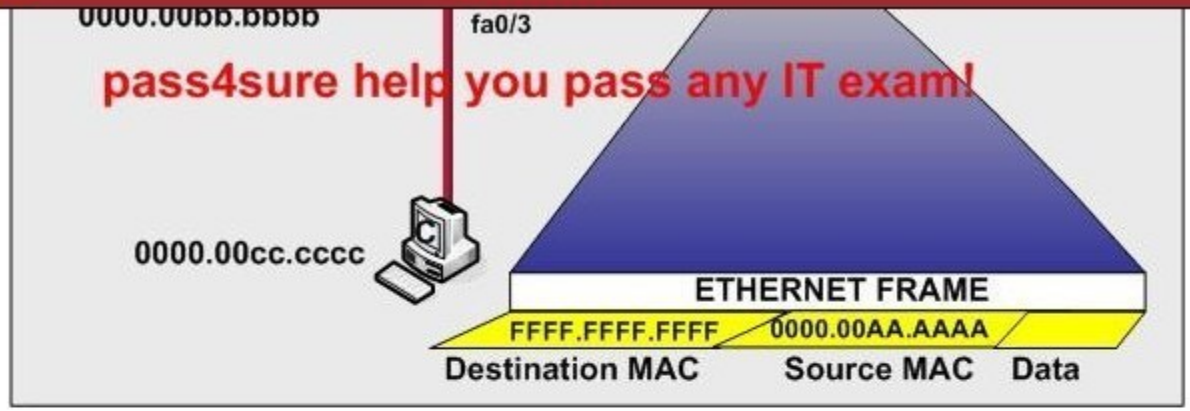


- A. This frame will be discarded when it is received by 2950Switch.
- B. Only host A will be allowed to transmit frames on fa0/1.
- C. The MAC address table will now have an additional entry of fa0/1 FFFF.FFFF.FFFF.
- D. All frames arriving on 2950Switch with a destination of 0000.00aa.aaaa will be forwarded out fa0/1.

## Answer & Explanation

### Correct Answer

B D

### Explanations

The configuration shown here is an example of port security, specifically port security using sticky addresses. You can use port security with dynamically learned and static MAC addresses to restrict a port's ingress traffic by limiting the MAC addresses that are allowed to send traffic into the port. When you assign secure MAC addresses to a secure port, the port does not forward ingress traffic that has source addresses outside the group of defined addresses. If you limit the number of secure MAC addresses to one and assign a single secure MAC address, the device attached to that port has the full bandwidth of the port.

Port security with sticky MAC addresses provides many of the same benefits as port security with static MAC addresses, but sticky MAC addresses can be learned dynamically. Port security with sticky MAC addresses retains dynamically learned MAC addresses during a link-down condition.

If you enter a write memory or copy running-config startup-config command, then port security with sticky MAC addresses saves dynamically learned MAC addresses in the startup-config file and the port does not have to learn addresses from ingress traffic after bootup or a restart.

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Mark for Review

You work as a network technician for Pass4sure Company, and you wants to ensure thatonly a single Pass4sure server can connect to port Fa0/1 on a Catalyst switch. The server is plugged into the switch Fa0/1 port and you are about to bring the server online. What can you do to ensure that only the MAC address of the Pass4sure server is allowed by switch port Fa0/1? (Choose two.)

- A. Employ a proprietary connector type on Fa0/1 that is incompatible with other host connectors.
- B. Configure port Fa0/1 to accept connections only from the static IP address of the Pass4sure server.
- C. Configure the MAC address of the server as a static entry associated with port Fa0/1.
- D. Bind the IP address of the server to its MAC address on the switch to prevent other hosts from spoofing the Pass4sure server IP address.
- E. Configure port security on Fa0/1 to reject traffic with a source MAC address other than that of the Pass4sure server.

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Mark for Review

You work as a network technician for Pass4sure Company, and you wants to ensure thatonly a single Pass4sure server can connect to port Fa0/1 on a Catalyst switch. The server is plugged into the switch Fa0/1 port and you are about to bring the server online. What can you do to ensure that only the MAC address of the Pass4sure server is allowed by switch port Fa0/1? (Choose two.)

- A. Employ a proprietary connector type on Fa0/1 that is incompatible with other host connectors.
- B. Configure port Fa0/1 to accept connections only from the static IP address of the Pass4sure server.
- C. Configure the MAC address of the server as a static entry associated with port Fa0/1.
- D. Bind the IP address of the server to its MAC address on the switch to prevent other hosts from spoofing the Pass4sure server IP address.
- E. Configure port security on Fa0/1 to reject traffic with a source MAC address other than that of the Pass4sure server.

## Answer & Explanation

### Correct Answer

C E

### Explanations

In order to ensure that the port f0/1 on the switch only forwards the server traffic, we can bond the mac address of server and the port address of the switch. Then configure the port security on f0/1 to filter other traffic except that of server.

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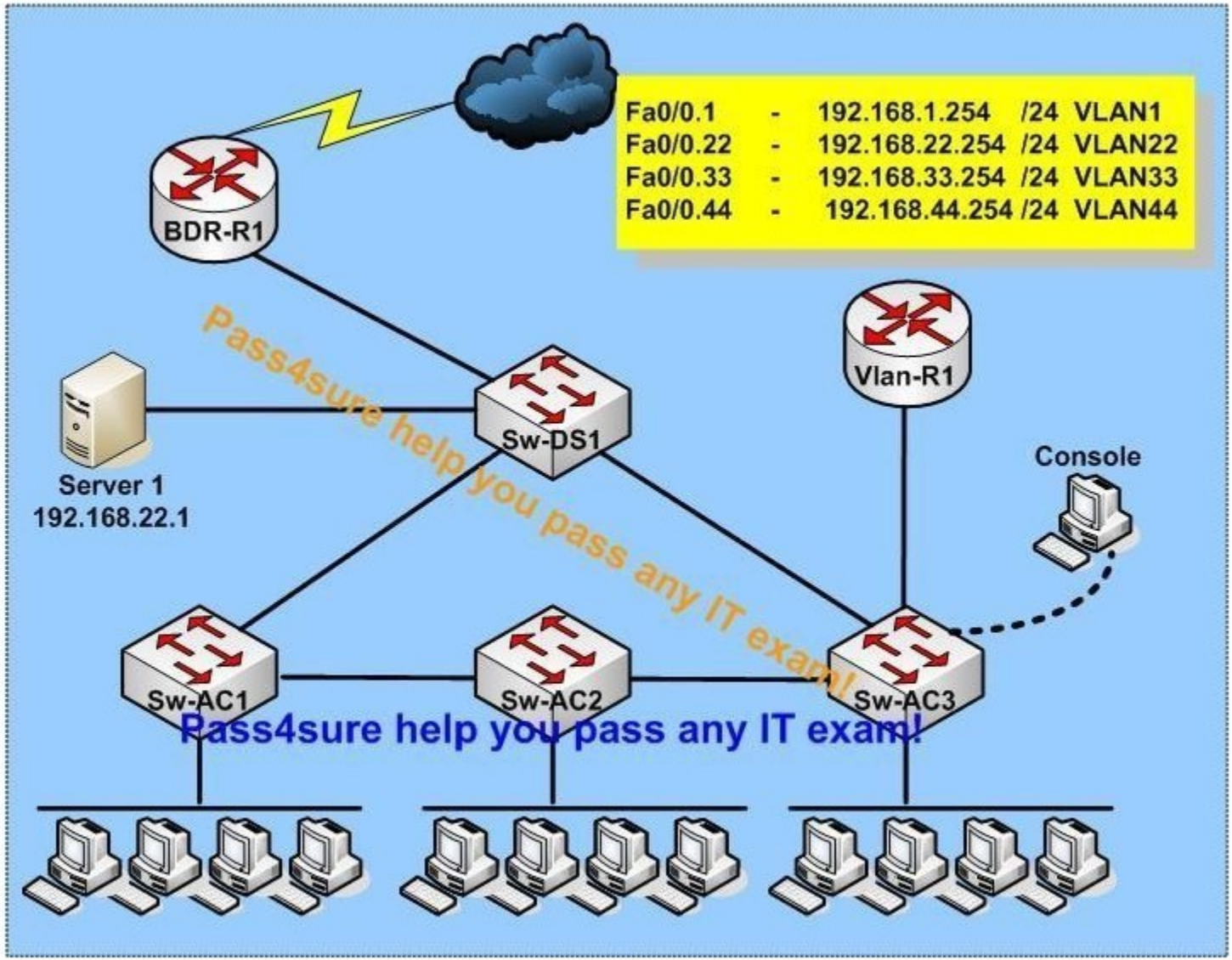
Mark for Review

Which switch is the root bridge for VLAN 1?




```
Sw-Ac3#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     0009.e8b2.c280
```

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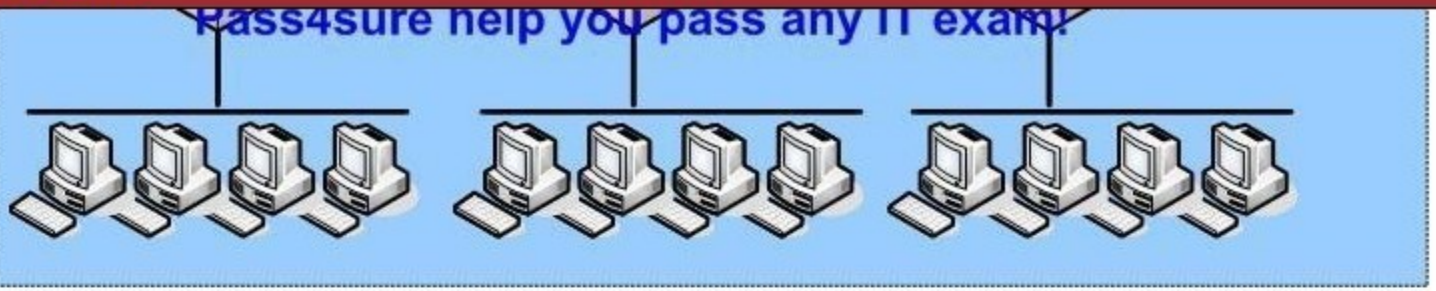

```
Sw-Ac3#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     0009.e8b2.c280
              Cost        19
              Port        12 (FastEthernet0/12)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     000f.2485.8900
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time 300

Interface        Role Sts  Cost      Prio.Nbr   Type
---------------------------------------------------------------------
Fa0/3            Desg FWD   19        128.3      P2p
Fa0/9            Desg FWD   19        128.9      P2p
Fa0/12           Root FWD   19        128.12     P2p
```

```
Sw-Ac3#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID        Local Intrfce     Holdtme    Capability  Platform     Port ID
Sw-DS1           Fas 0/12           130             S I  WS-C2950G-  Fas 0/12
Sw-AC2           Fas 0/9            176             S I  WS-C2950T-  Fas 0/9
VLAN-R1          Fas 0/3            152             R    2620         Fas 0/0.1
```

- A. Sw-DS1
- B. Sw-AC1
- C. Sw-AC2
- D. Sw-AC3

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Mark for Review

```
Sw-Ac3#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     0009.e8b2.c280
              Cost        19
              Port        12 (FastEthernet0/12)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     000f.2485.8900
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time 300

Interface        Role Sts  Cost      Prio.Nbr   Type
---------------------------------------------------------------------------
Fa0/3            Desg FWD   19        128.3      P2p
Fa0/9            Desg FWD   19        128.9      P2p
Fa0/12           Root FWD   19        128.12     P2p
```

```
Sw-Ac3#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID        Local Intrfce     Holdtme    Capability  Platform     Port ID
Sw-DS1           Fas 0/12           130             S I  WS-C2950G-  Fas 0/12
Sw-AC2           Fas 0/9            176             S I  WS-C2950T-  Fas 0/9
VLAN-R1          Fas 0/3            152             R    2620         Fas 0/0.1
```

- A. Sw-DS1
- B. Sw-AC1
- C. Sw-AC2
- D. Sw-AC3

## Answer & Explanation

### Correct Answer

A

### Explanations

No more information available

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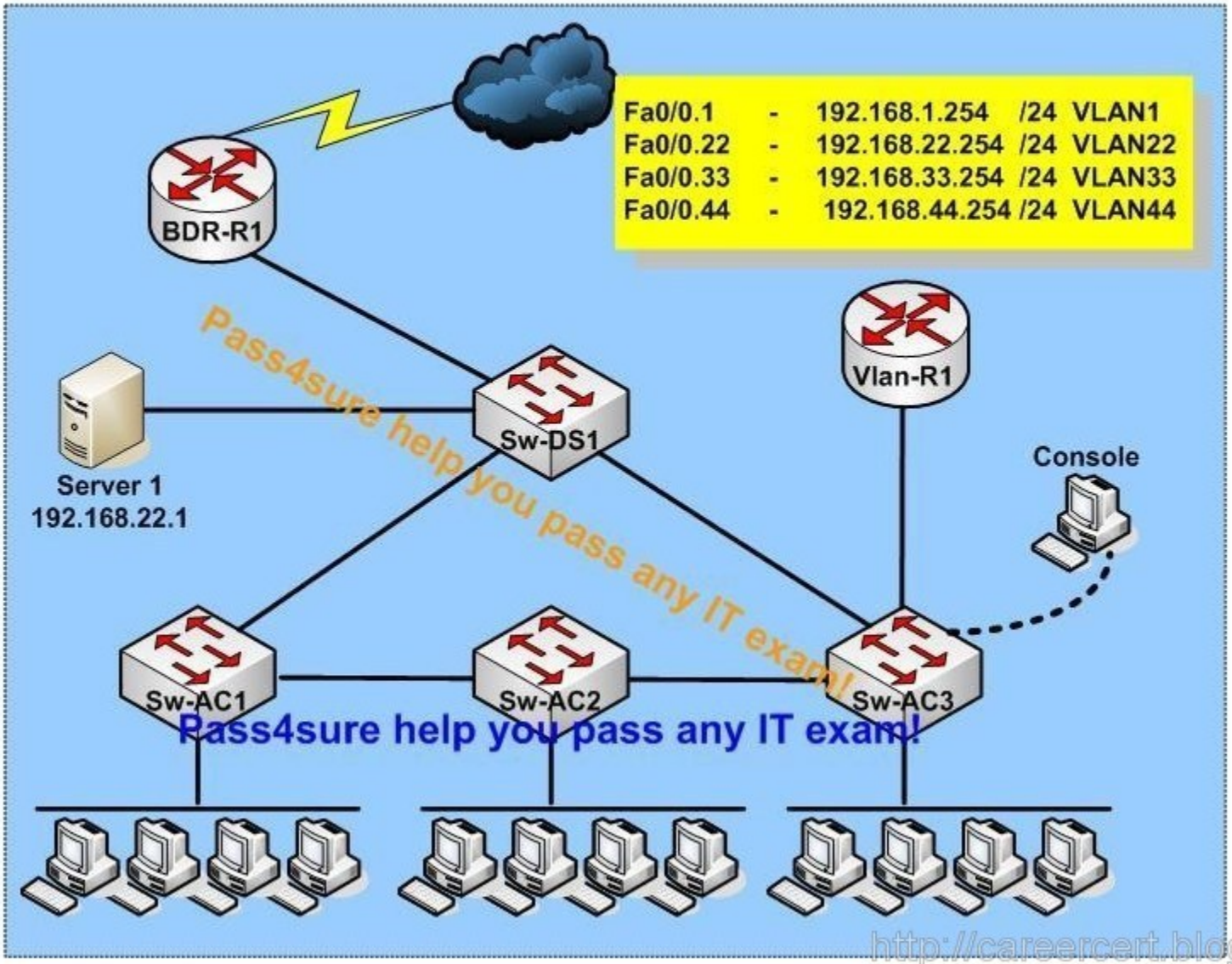
Mark for Review

Refer to the exhibit.SwX was taken out of the production network for maintenance.
It will be reconnected to the Fa0/16 port of Sw-AC3. What happens to the network when it is reconnected and a trunk exists between the two switches?




SwX#show vlan | SwX#show vtp stat

Mark for Review

SwX#show vlan | SwX#show vtp stat

```
SwX#show vlan
VLAN Name  Status   Ports
---- ----- -------- -------------------------------
1    default  active  Fa0/1, Fa0/2, Fa0/3
                      Fa0/4, Fa0/5, Fa0/6
                      Fa0/7, Fa0/8, Fa0/9
                     Fa0/10, Fa0/11, Fa0/12
                      Gi0/1, Gi0/2
2    students active
3    admin    active
4    faculty  active
```

```
SwX#  show vtp stat
VTP Version              : 2
Configuration Revision   : 6
Maximum VLANs supported locally : 250
Number of existing VLANs : 8
VTP Operating Mode       : Server
VTP Domain Name          : home-office
VTP Pruning Mode         : Disabled
VTP V2 Mode              : Disabled
VTP Traps Generation     : Disabled
MD5 digest               : 0xD8 0xD8 0x38 0x22
                           0x98 0xE3 0xAC 0x65
Configuration last modified by 0.0.0.0  at
                           3-28-99  01:24:88
```

Sw-AC3#show vtp stat

```
Sw-Ac3#show vtp status
VTP Version                     :  2
Configuration Revision          :  5
Maximum VLANs supported locally :  250
Number of existing VLANs        :  9
VTP Operating Mode              :  Client
VTP Domain Name                 :  home-office
VTP Pruning Mode                :  Disabled
VTP V2 Mode                     :  Disabled
VTP Traps Generation            :  Disabled
MD5 digest                      :  0xD8 0xD8 0x38 0x22 0x98 0xE3 0xAC 0x65
Configuration last modified by 192.168.1.249 at 3-2-93 21:29:08
Sw-Ac3#
```

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

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Mark for Review

```
Configuration Revision          :   5
Maximum VLANs supported locally :   250
Number of existing VLANs        :   9
VTP Operating Mode              :   Client
VTP Domain Name                 :   home-office
VTP Pruning Mode                :   Disabled
VTP V2 Mode                     :   Disabled
VTP Traps Generation            :   Disabled
MD5 digest                      :   0xD8 0xD8 0x38 0x22 0x98 0xE3 0xAC 0x65
Configuration last modified by 192.168.1.249 at 3-2-93 21:29:08
Sw-Ac3#
```

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              ---------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

A. All VLANs except the default VLAN will be removed from all switches.

B. All existing switches will have the students,admin,faculty,Servers,Management,Production,and no-where VLANs.

C. The VLANs Servers,Management,Production,and no-where will replace the VLANs on SwX.

D. The VLANs Servers,Managements,Production,and no-where will be removed from existing switches.

## Answer & Explanation

### Correct Answer

D

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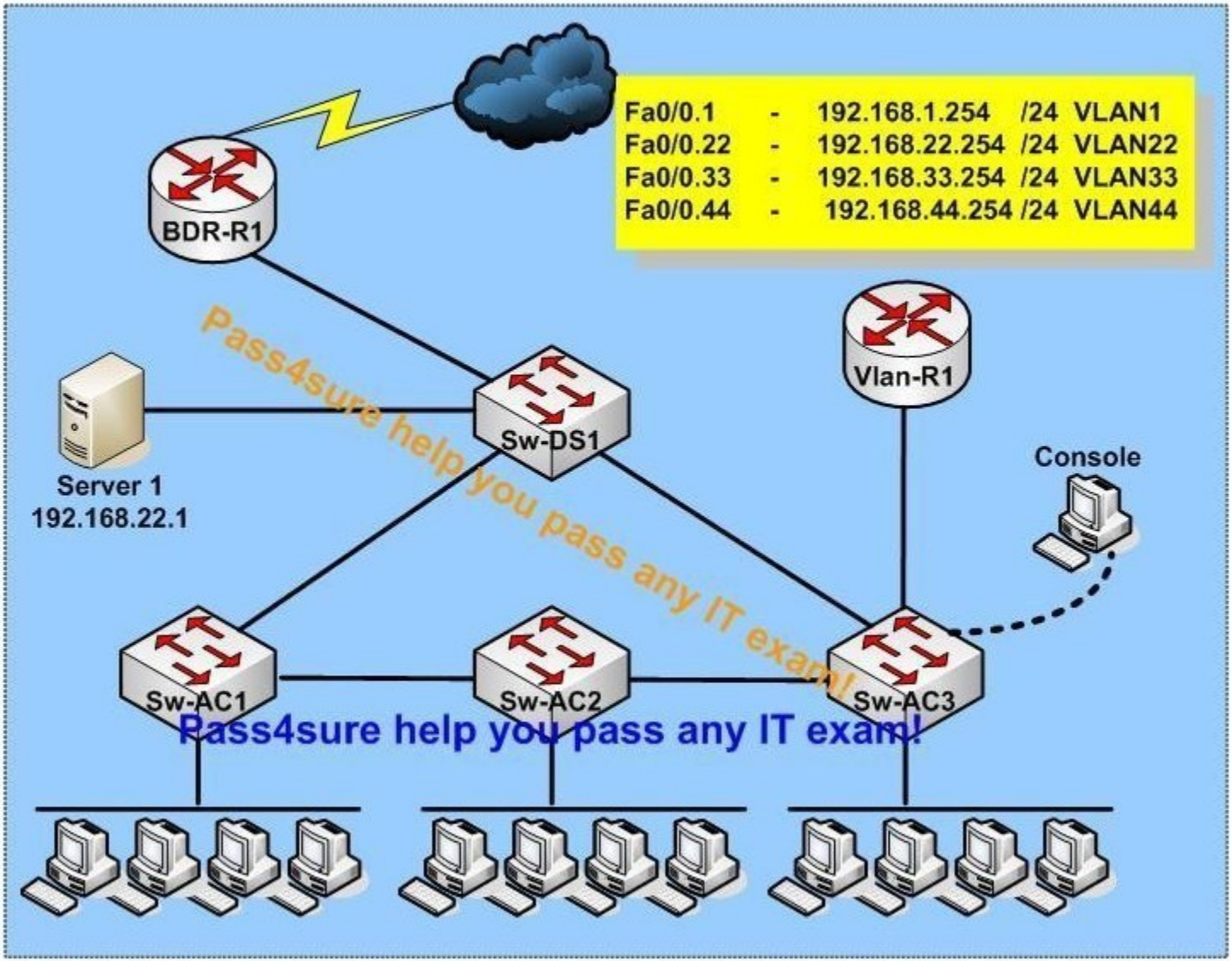
### Explanations

No more information available

Mark for Review

Out of which ports on Sw-AC3 will a frame be forwarded that has Source MAC address 0010.5a0c.fd86 and destination MAC address 000a.8a47.e612?(Choose three)




Sw-AC3#show mac-address-table

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Sw-Ac3#show mac-address-table
Mac Address Table

Mark for Review

Sw-AC3#show mac-address-table

```
Sw-Ac3#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    000f.2485.8900    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    0009.e8b2.c28c    DYNAMIC     Fa0/12
   1    000a.b7e9.8360    DYNAMIC     Fa0/3
   1    000f.2485.8b49    DYNAMIC     Fa0/9
  22    0009.e8b2.c28c    DYNAMIC     Fa0/12
  22    000a.b7e9.8360    DYNAMIC     Fa0/3
  22    0010.5a0c.ffba    DYNAMIC     Fa0/12
  33    0009.e8b2.c28c    DYNAMIC     Fa0/12
  33    000a.b7e9.8360    DYNAMIC     Fa0/3
  33    000c.ce8d.8860    DYNAMIC     Fa0/12
  33    0010.5a0c.fd86    DYNAMIC     Fa0/6
  33    0010.5a0c.feae    DYNAMIC     Fa0/12
  33    0010.5a0c.ff9f    DYNAMIC     Fa0/1
  44    0009.e8b2.c28c    DYNAMIC     Fa0/12
--More--
```

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                              Status    Ports
---- --------------------              --------- -------------------------------
1    default                           active    Fa0/16
22   Servers                           active
33   Management                        active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                        active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                          active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                 Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                 F0/22, Fa0/23, Fa0/24
                                                  Gi0/1, Gi0/2
```

Sw-AC3#show int trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status       Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

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A. Fa0/8

Mark for Review

```
33     0009.e8b2.c28c    DYNAMIC     Fa0/12
33     000a.b7e9.8360    DYNAMIC     Fa0/3
33     000c.ce8d.8860    DYNAMIC     Fa0/12
33     0010.5a0c.fd86    DYNAMIC     Fa0/6
33     0010.5a0c.feae    DYNAMIC     Fa0/12
33     0010.5a0c.ff9f    DYNAMIC     Fa0/1
44     0009.e8b2.c28c    DYNAMIC     Fa0/12
--More--
```

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              ---------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
```

Sw-AC3#show int trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status       Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

- A. Fa0/8
- B. Fa0/3
- C. Fa0/1
- D. Fa0/12

## Answer & Explanation

### Correct Answer

B C D

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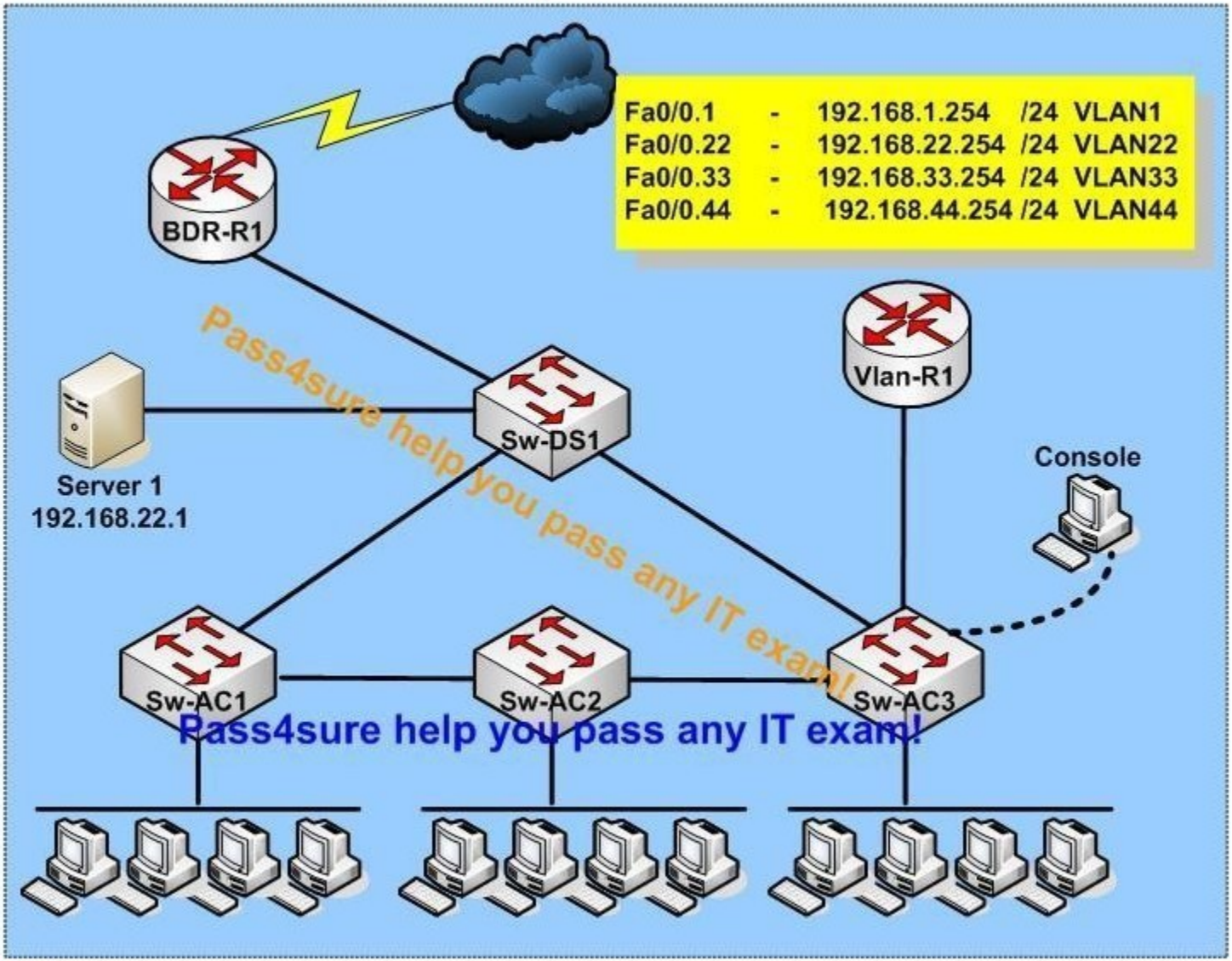
### Explanations

No more information available

Mark for Review

What ports on Sw-AC3 are operating as trunks?(Choose three)




Sw-AC3#show trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/3       on           802.1q         trunking      1
```

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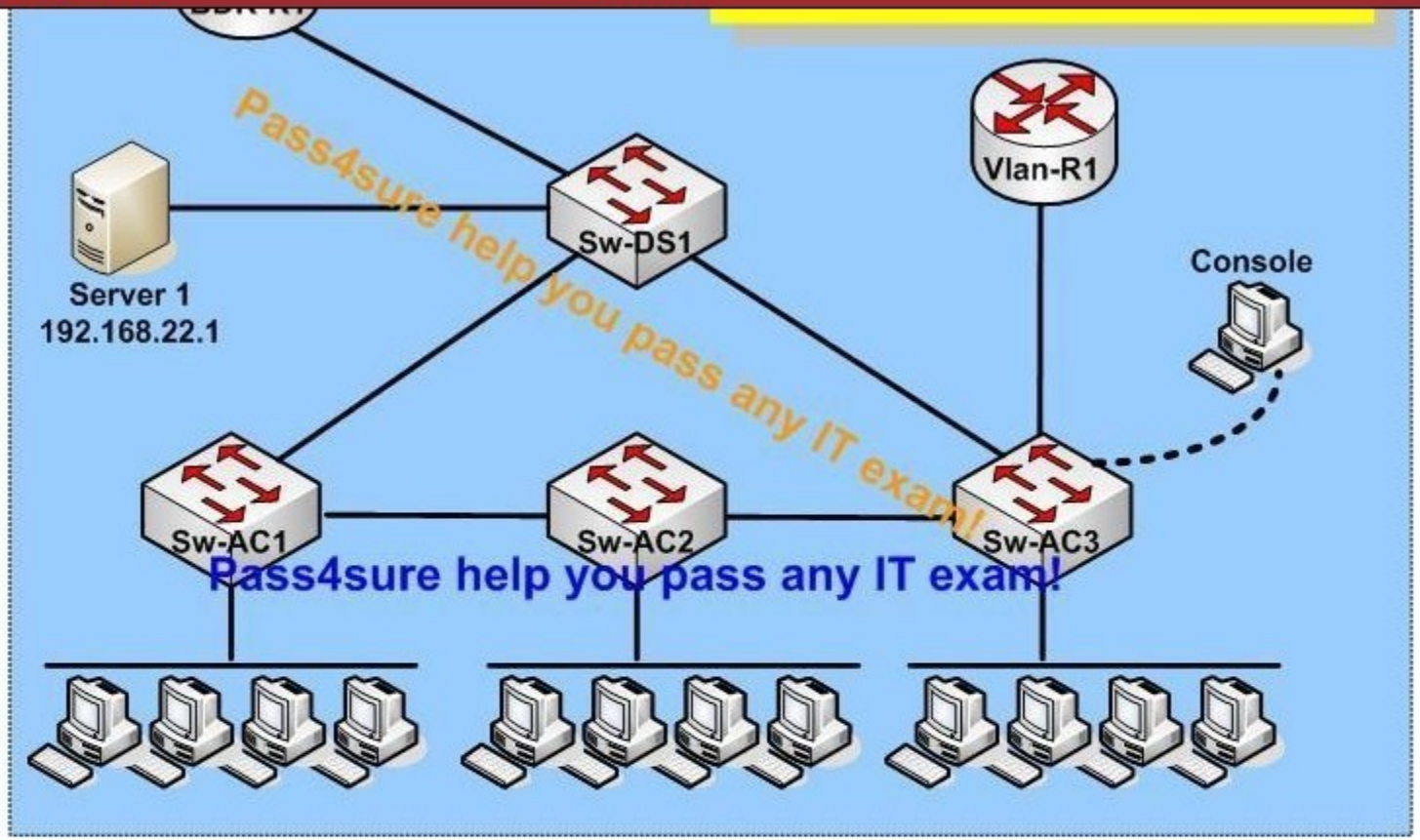
Mark for Review




Sw-AC3#show trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

- A. Fa0/3
- B. Fa0/9
- C. Fa0/1
- D. Fa0/12

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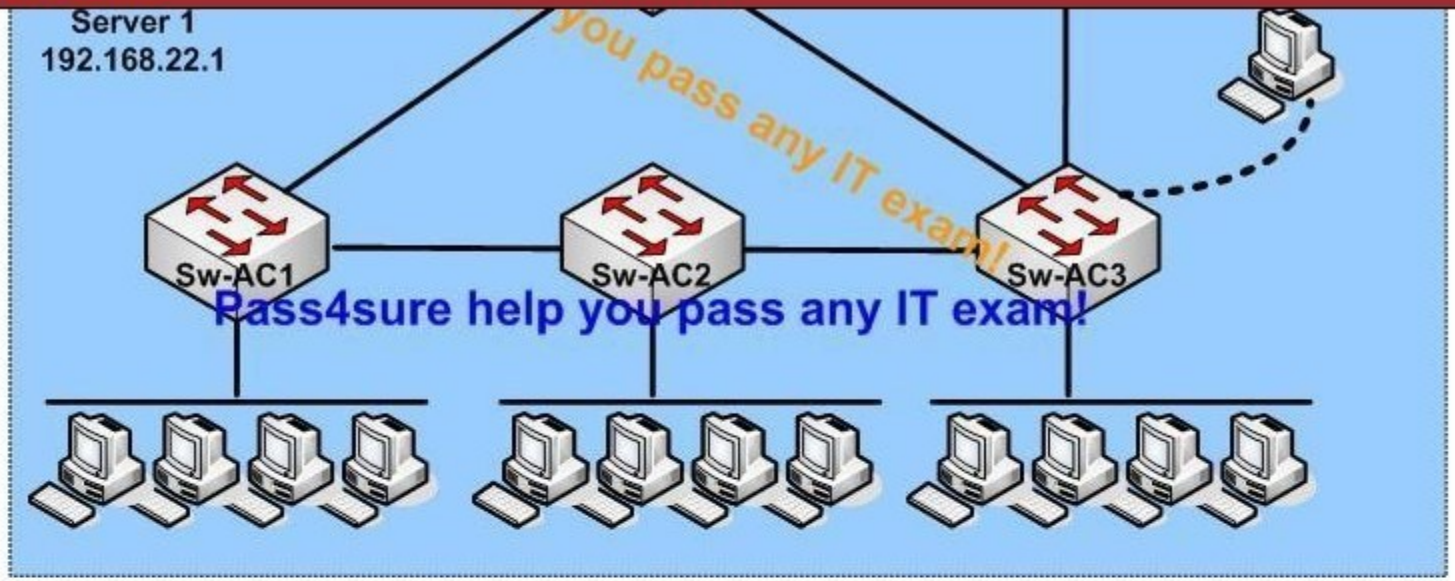


Sw-AC3#show trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

- A. Fa0/3
- B. Fa0/9
- C. Fa0/1
- D. Fa0/12

## Answer & Explanation

**Correct Answer**

A B D

**Explanations**

No more information available

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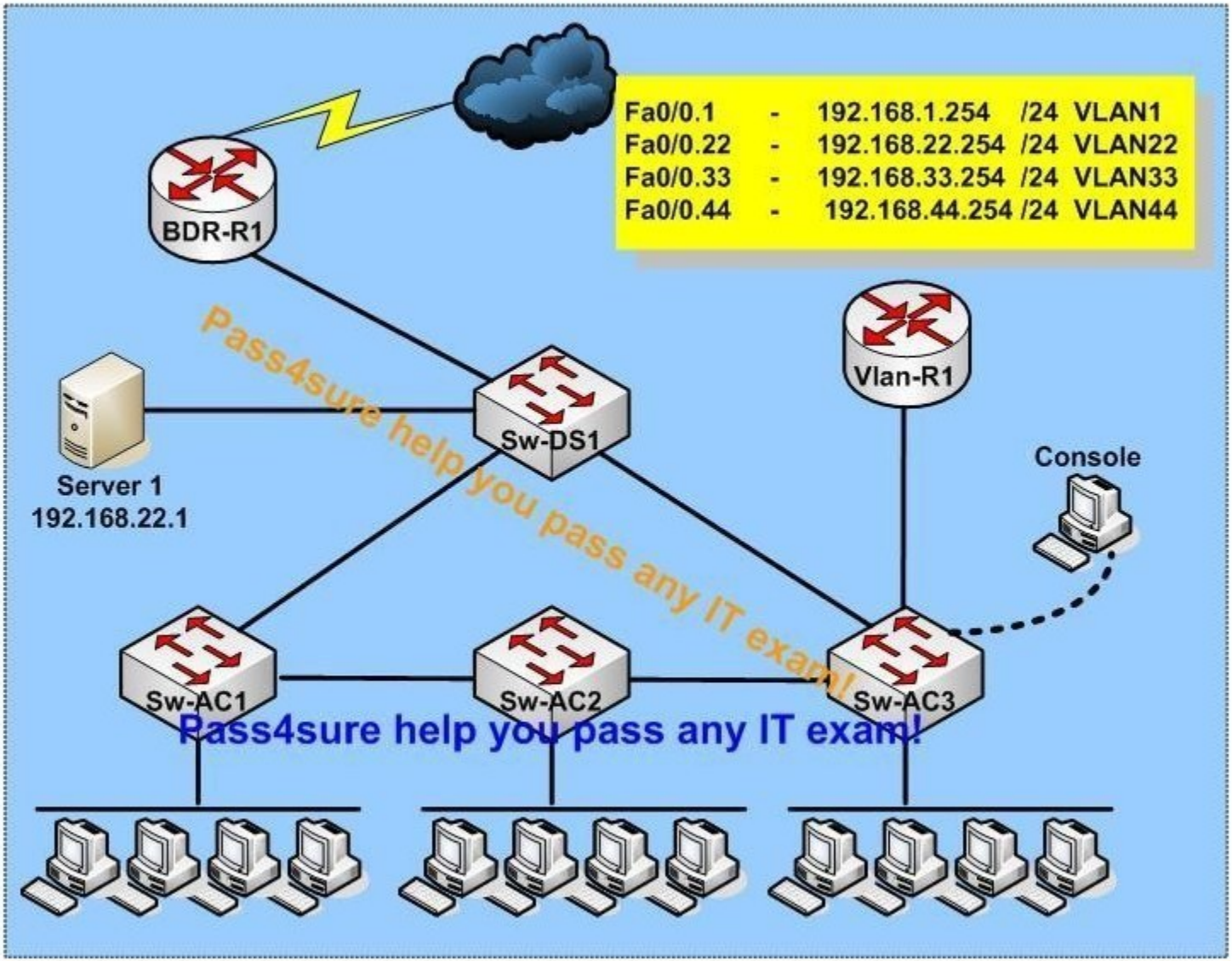
Mark for Review

What address should be configured as the default-gateway for the host connected to interface Fa0/4 of Sw-AC3?




Sw-AC3#show vlan

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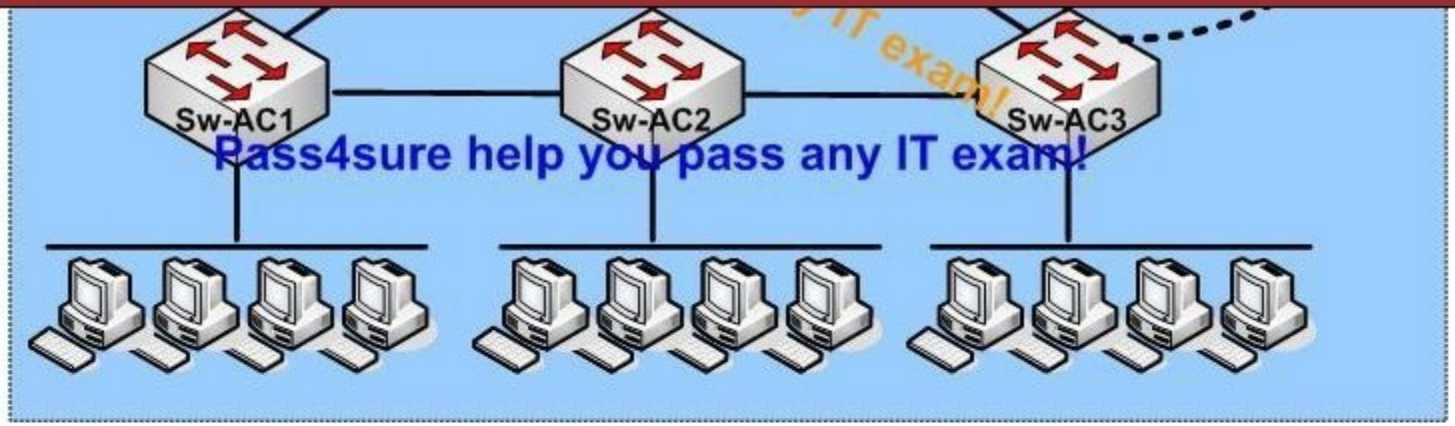
```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              --------- -------------------------------
```

Mark for Review




Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
```

- A. 192.168.1.254
- B. 192.168.22.254
- C. 192.168.44.254
- D. 192.168.33.254

## Answer & Explanation

### Correct Answer

C

### Explanations

No more information available

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Topic 3 - Implement an IP addressing scheme and IP Services to meet network requirements in a medium-size Enterprise branch office network. (37 Questions)

Describe the operation and benefits of using private and public IP addressing
Explain the operation and benefits of using DHCP and DNS
Configure, verify and troubleshoot DHCP and DNS operation on a router.(including: CLI/SDM)
Implement static and dynamic addressing services for hosts in a LAN environment
Calculate and apply an addressing scheme including VLSM IP addressing design to a network
Determine the appropriate classless addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment
Describe the technological requirements for running IPv6 in conjunction with IPv4 (including: protocols, dual stack, tunneling, etc).
Describe IPv6 addresses
Identify and correct common problems associated with IP addressing and host configurations

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What is the purpose of assigning an IP address to a switch?

- A. To provide local hosts with a default gateway address
- B. To allow remote management of the switch.
- C. To allow the switch to respond to ARP requests between two hosts
- D. To ensure that hosts on the same LAN can communicate with each other.

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Mark for Review

What is the purpose of assigning an IP address to a switch?

A. To provide local hosts with a default gateway address

B. To allow remote management of the switch.

C. To allow the switch to respond to ARP requests between two hosts

D. To ensure that hosts on the same LAN can communicate with each other.

## Answer & Explanation

### Correct Answer

B

### Explanations

Configuring an IP address for a switch is to facilitate remote management, such as telnet. Note: IP address must be set in the default VLAN1.

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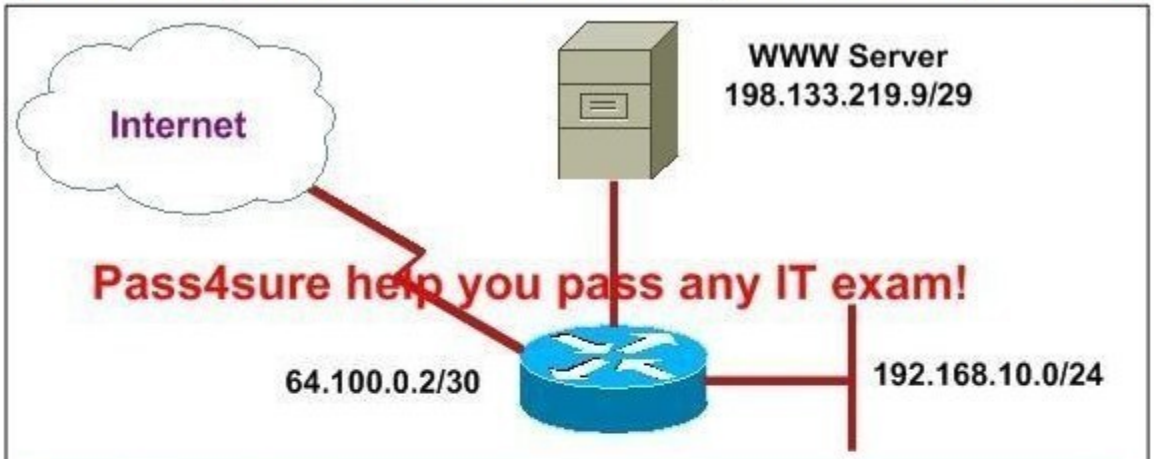
Mark for Review

What will happen after issuing the following commands on the router according to this exhibit? (Choose two)




```
<output omitted>
P4S-Gateway of last resort is 64.100.0.1 to network 0.0.0.0

  64.0.0.0/30 is subnetted, 1 subnets
C    64.100.0.0 is directly connected, Serial0/0
C  192.168.10.0/24 is directly connected, FastEthernet0/1
  198.133.219.0/29 is subnetted, 1 subnets
C    198.133.219.8 is directly connected, FastEthernet0/0
S* 0.0.0.0/0 [1/0] via 64.100.0.1
P4S-Gateway#
```

```
hostname P4S-Gateway
interface FastEthernet 0/0
 ip address 198.133.219.14 255.255.255.248
 no shutdown
interface FastEthernet 0/1
 ip address 192.168.10.254 255.255.255.0
 no shutdown
```

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Mark for Review

```
<output omitted>
P4S-Gateway of last resort is 64.100.0.1 to network 0.0.0.0

  64.0.0.0/30 is subnetted, 1 subnets
C   64.100.0.0 is directly connected, Serial0/0
C  192.168.10.0/24 is directly connected, FastEthernet0/1
  198.133.219.0/29 is subnetted, 1 subnets
C   198.133.219.8 is directly connected, FastEthernet0/0
S* 0.0.0.0/0 [1/0] via 64.100.0.1
P4S-Gateway#
```

```
hostname P4S-Gateway
interface FastEthernet 0/0
 ip address 198.133.219.14 255.255.255.248
 no shutdown
interface FastEthernet 0/1
 ip address 192.168.10.254 255.255.255.0
 no shutdown
interface Serial 0/0
 ip address 64.100.0.2 255.255.255.252
 no shutdown
ip route 0.0.0.0 0.0.0.0 64.100.0.1
```

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- A. Public IP addressing is deployed on the hosts which are on the LAN connected to FastEthernet 0/1.
- B. The address of the subnet segment with the WWW server is able to support seven more servers.
- C. The addressing scheme permits users on the Internet to visit the WWW server.
- D. Hosts on the LAN that is connected to FastEthernet 0/1 can't visit the Internet without address translation.

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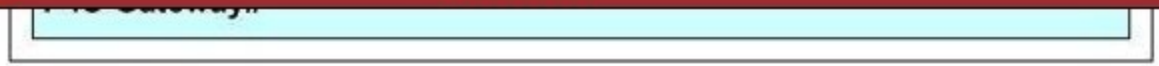

```
hostname P4S-Gateway
interface FastEthernet 0/0
 ip address 198.133.219.14 255.255.255.248
 no shutdown
interface FastEthernet 0/1
 ip address 192.168.10.254 255.255.255.0
 no shutdown
interface Serial 0/0
 ip address 64.100.0.2 255.255.255.252
 no shutdown
ip route 0.0.0.0 0.0.0.0 64.100.0.1
```

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- A. Public IP addressing is deployed on the hosts which are on the LAN connected to FastEthernet 0/1.
- B. The address of the subnet segment with the WWW server is able to support seven more servers.
- C. The addressing scheme permits users on the Internet to visit the WWW server.
- D. Hosts on the LAN that is connected to FastEthernet 0/1 can't visit the Internet without address translation.

## Answer & Explanation

### Correct Answer

C D

### Explanations

IP addresses are essential to TCP / IP communication, each computer connected to the network must have an IP address.
In the above figure, the WWW Sever is configured with a public address of 198.133.219.9/29, it is able to directly participate in the reciprocal visits of the Internet. While hosts on the LAN are using private addresses and can't visit the Internet without NAT. When private (internal) network sends packets through routers, private addresses will be converted into the valid IP addresses to satisfy the requirements for hosts on the LAN and internet communication.

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Which of the following describe private IP addresses? (Choose two.)

- [ ] A. addresses chosen by a company to communicate with the Internet
- [ ] B. addresses that cannot be routed through the public Internet
- [ ] C. addresses that can be routed through the public Internet
- [ ] D. a scheme to conserve public addresses
- [ ] E. addresses licensed to enterprises or ISPs by an Internet registry organization

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Mark for Review

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- B. addresses that cannot be routed through the public Internet
- C. addresses that can be routed through the public Internet
- D. a scheme to conserve public addresses
- E. addresses licensed to enterprises or ISPs by an Internet registry organization

## Answer & Explanation

### Correct Answer

B D

### Explanations

Private IP address can't be routable on the public Internet. It can be used in a single region. If a device with a private IP address wants to connect to the external network, it must use Network Address Translation (NAT) to convert the private ip address into public ip address. The external network only knows the final address (the translated address) instead of the private address.

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Which host addresses are members of networks that can be routed across the public Internet? (Choose three.)

- [ ] A. 172.16.223.125
- [ ] B. 172.64.12.29
- [ ] C. 198.234.12.95
- [ ] D. 212.193.48.254

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Mark for Review

Which host addresses are members of networks that can be routed across the public Internet? (Choose three.)

- A. 172.16.223.125
- B. 172.64.12.29
- C. 198.234.12.95
- D. 212.193.48.254

## Answer & Explanation

### Correct Answer

B C D

### Explanations

Private IP address can't be routable on the public Internet. The current internal private addresses are divided into the following classes:
Class A☐10.0.0.0--10.255.255.255
Class B☐172.16.0.0--172.31.255.255
Class C☐192.168.0.0--192.168.255.255

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Mark for Review

Which description is true regarding the operation of DHCP?

A. A DHCP client uses a gratuitous ARP to detect a DHCP server.

B. A DHCP server uses a gratuitous ARP to detect DHCP clients.

C. A DHCP client uses a ping to detect address conflicts.

D. A DHCP server uses a ping to detect address conflicts.

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D. A DHCP server uses a ping to detect address conflicts.

## Answer & Explanation

### Correct Answer

D

### Explanations

DHCP has two parts: DHCP client and DHCP server. The DHCP server manages a pool of IP addresses and information about client configuration parameters. The DHCP client will use the IP data assigned by server. When using DHCP to assign IP addresses on the LAN, DHCP server will use a ping to detect address conflicts.

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Mark for Review

In addition to assigning an IP address, Which of the following correctly describe regarding TCP/IP stack configuration features can DHCP provide?(Choose three.)

- A. default gateway
- B. DNS servers
- C. TFTP server
- D. FTP server
- E. subnet mask

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Mark for Review

In addition to assigning an IP address, Which of the following correctly describe regarding TCP/IP stack configuration features can DHCP provide?(Choose three.)

- A. default gateway
- B. DNS servers
- C. TFTP server
- D. FTP server
- E. subnet mask

## Answer & Explanation

### Correct Answer

A B E

### Explanations

Default gateway refers to router default gateway, which is used to realize access between vlans. When a router receives a destination unknown address packet, it will be sent to the default gateway (such as a router's interface) if default gateway exists, otherwise the packet will be discarded. DNS is Domain Name Server. The conversion between Domain names and IP addresses is called domain analysis, and DNS is the server to process domain analysis. IP addresses use network number and host number to mark network host, and only computers under the same network number can intercommunicate "directly", computers with different networks may intercommunicate only through Gateway. Thus IP networks are divided into smaller networks, known as subnet. Subnet mask is used to determine whether two IP addresses are in the same subnet, then only computers under the same subnet can intercommunicate "directly".

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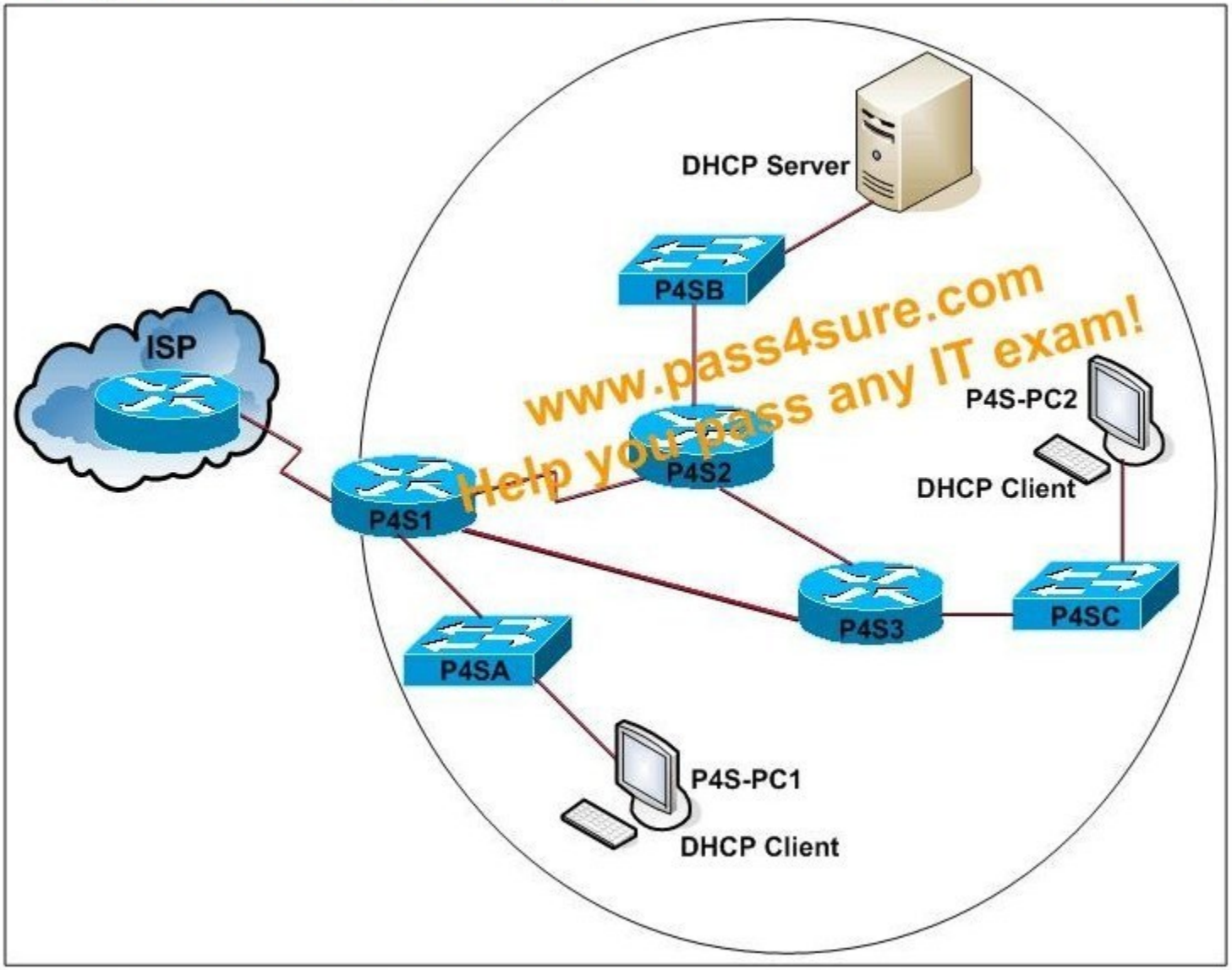
Mark for Review

Refer to the exhibit. Using the information shown, answer the question.

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All hosts in the networks have been operational for several hours when the DHCP server goes down. What happens to the hosts that have obtained service from the DHCP server?

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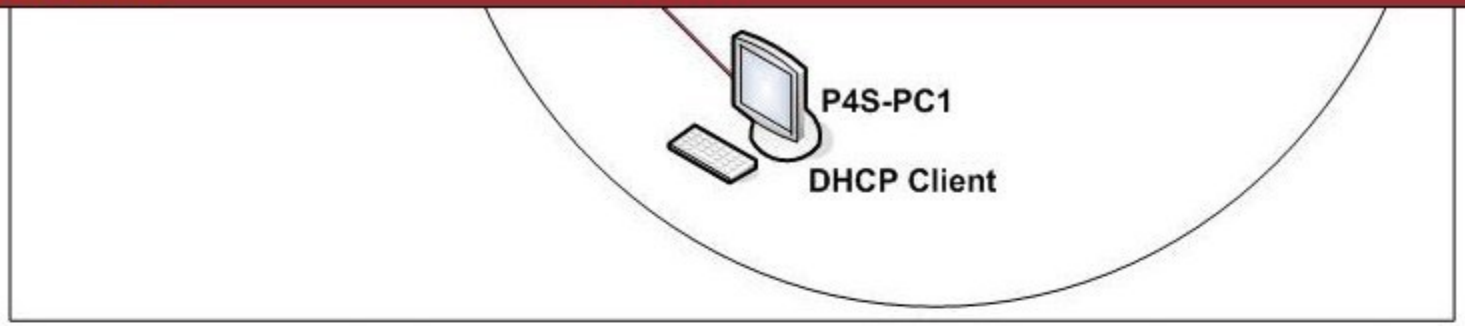
A. The hosts will not be able to communicate with any other hosts

Mark for Review




All hosts in the networks have been operational for several hours when the DHCP server goes down. What happens to the hosts that have obtained service from the DHCP server?

A. The hosts will not be able to communicate with any other hosts.

B. The hosts will continue to communicate normally for a period of time.

C. The hosts will be able to communicate with hosts outsides their own network

D. The hosts wll only be able to communicate with other hosts by IP address not by hostname

## Answer & Explanation

### Correct Answer

B

### Explanations

Dynamic Host Configuration Protocol (DHCP) is a protocol used by networked devices (clients) to obtain the parameters necessary for operation in an Internet Protocol network. This protocol reduces system administration workload, allowing devices to be added to the network with little or no manual configuration.

When a DHCP-configured client (be it a computer or any other network-aware device) connects to a network, the DHCP client sends a broadcast query requesting necessary information from a DHCP server. The DHCP server manages a pool of IP addresses and information about client configuration parameters such as the default gateway, the domain name, the DNS servers, other servers such as time servers, and so forth. Upon receipt of a valid request the server will assign the computer an IP address, a lease (the length of time for which the allocation is valid), and other IP configuration parameters, such as the subnet mask and the default gateway. The query is typically initiated immediately after booting and must be completed before the client can initiate IP-based communication with other hosts.

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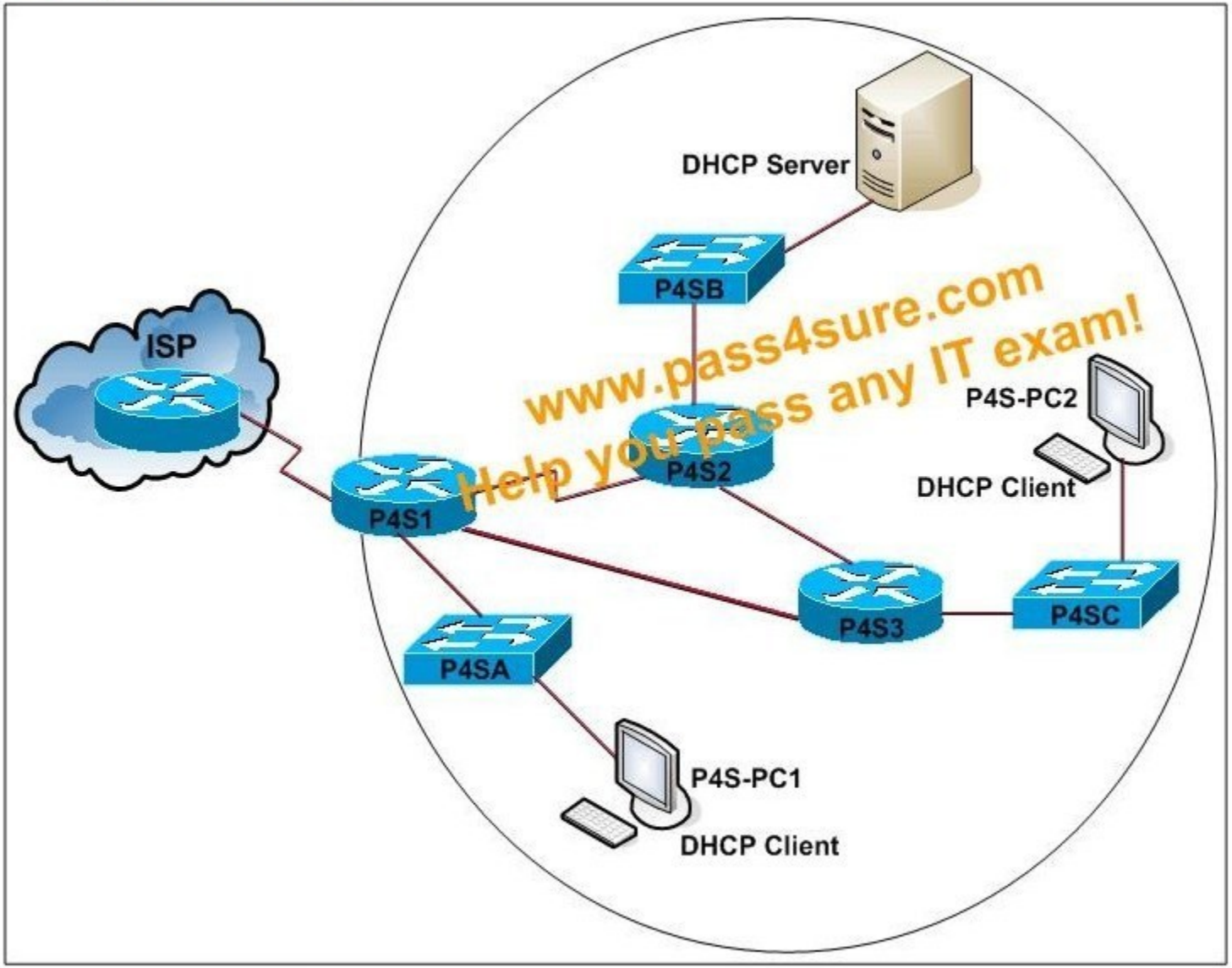
So, when the DHCP server is down, clients can be connected normally over a period of time until the expiration of the lease.

Mark for Review

Refer to the exhibit. Using the information shown.

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What is the purpose of the DHCP server?

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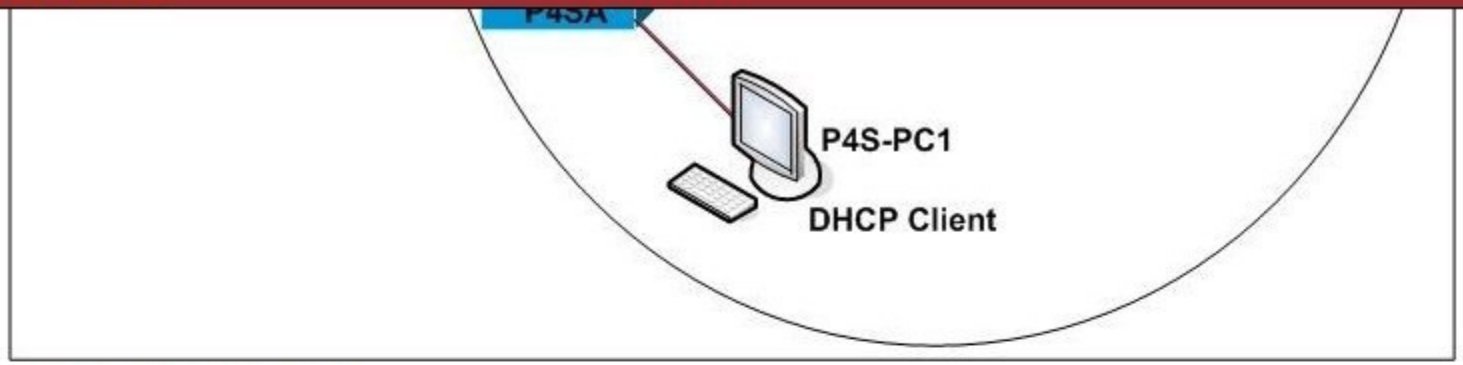
A. to provide storage for email




What is the purpose of the DHCP server?

- A. to provide storage for email
- B. to translate URLs to IP addresses
- C. to translate IPv4 addresses to MAC addresses
- D. to provide an IP configuration information to hosts

## Answer & Explanation

### Correct Answer

D

### Explanations

Dynamic Host Configuration Protocol (DHCP) is a protocol used by networked devices (clients) to obtain the parameters necessary for operation in an Internet Protocol network. This protocol reduces system administration workload, allowing devices to be added to the network with little or no manual configuration.

When a DHCP-configured client (be it a computer or any other network-aware device) connects to a network, the DHCP client sends a broadcast query requesting necessary information from a DHCP server. The DHCP server manages a pool of IP addresses and information about client configuration parameters such as the default gateway, the domain name, the DNS servers, other servers such as time servers, and so forth. Upon receipt of a valid request the server will assign the computer an IP address, a lease (the length of time for which the allocation is valid), and other IP configuration parameters, such as the subnet mask and the default gateway. The query is typically initiated immediately after booting and must be completed before the client can initiate IP-based communication with other hosts.

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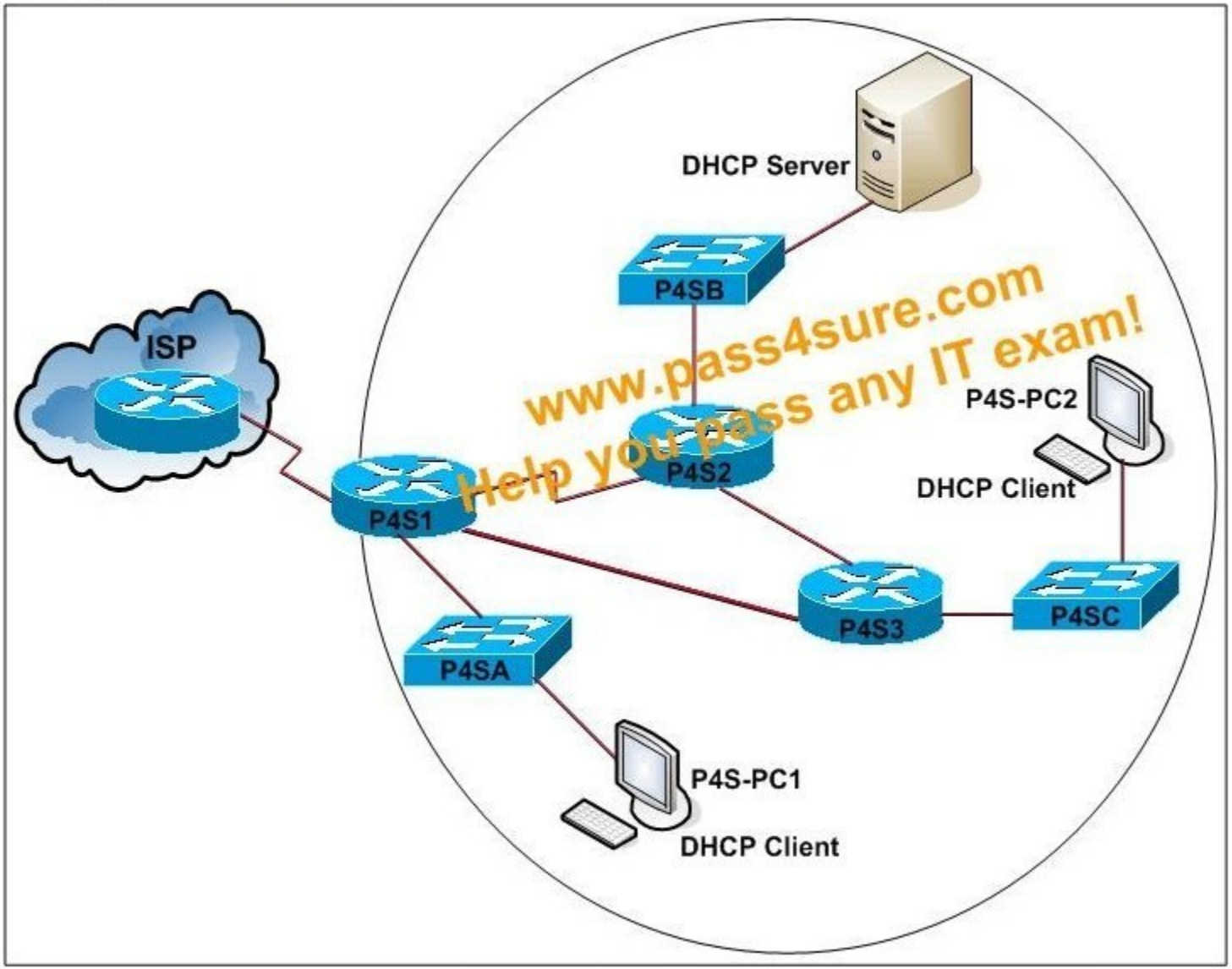
Mark for Review

Refer to the exhibit. Using the information shown

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How is the message sent from a P4S-PC2 when is first powers on and attempts to contact the DHCP Server?

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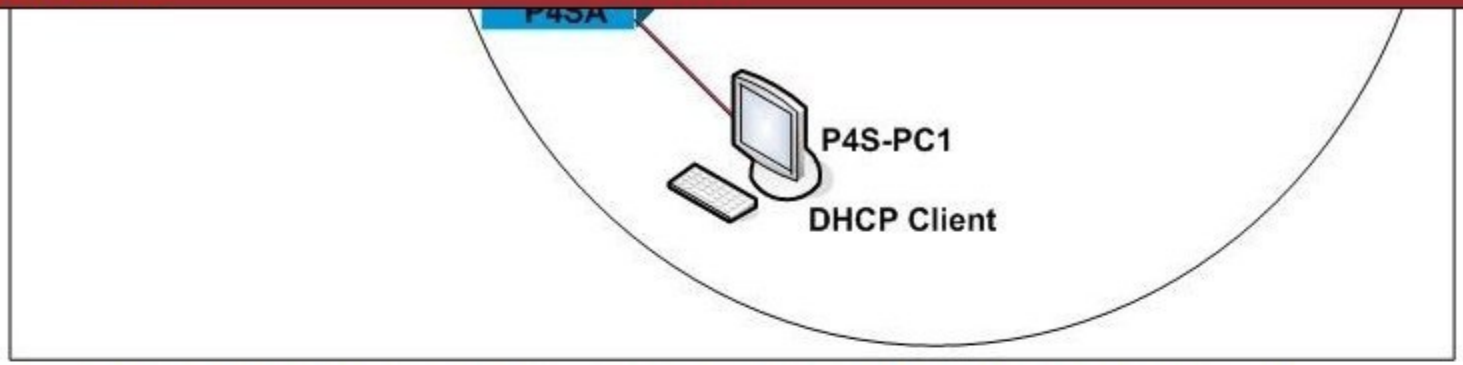
A. Layer 3 unicast




How is the message sent from a P4S-PC2 when is first powers on and attempts to contact the DHCP Server?

A. Layer 3 unicast

B. Layer 3 broadcast

C. Layer 3 multicast

D. Without any Layer 3 encapsulation

## Answer & Explanation

### Correct Answer

B

### Explanations

Dynamic Host Configuration Protocol (DHCP) is a protocol used by networked devices (clients) to obtain the parameters necessary for operation in an Internet Protocol network. This protocol reduces system administration workload, allowing devices to be added to the network with little or no manual configuration.

When a DHCP-configured client (be it a computer or any other network-aware device) connects to a network, the DHCP client sends a broadcast query requesting necessary information from a DHCP server. The DHCP server manages a pool of IP addresses and information about client configuration parameters such as the default gateway, the domain name, the DNS servers, other servers such as time servers, and so forth. Upon receipt of a valid request the server will assign the computer an IP address, a lease (the length of time for which the allocation is valid), and other IP configuration parameters, such as the subnet mask and the default gateway. The query is typically initiated immediately after booting and must be completed before the client can initiate IP-based communication with other hosts.

So, when the DHCP server is down, clients can be connected normally over a period of time until the expiration of the lease.

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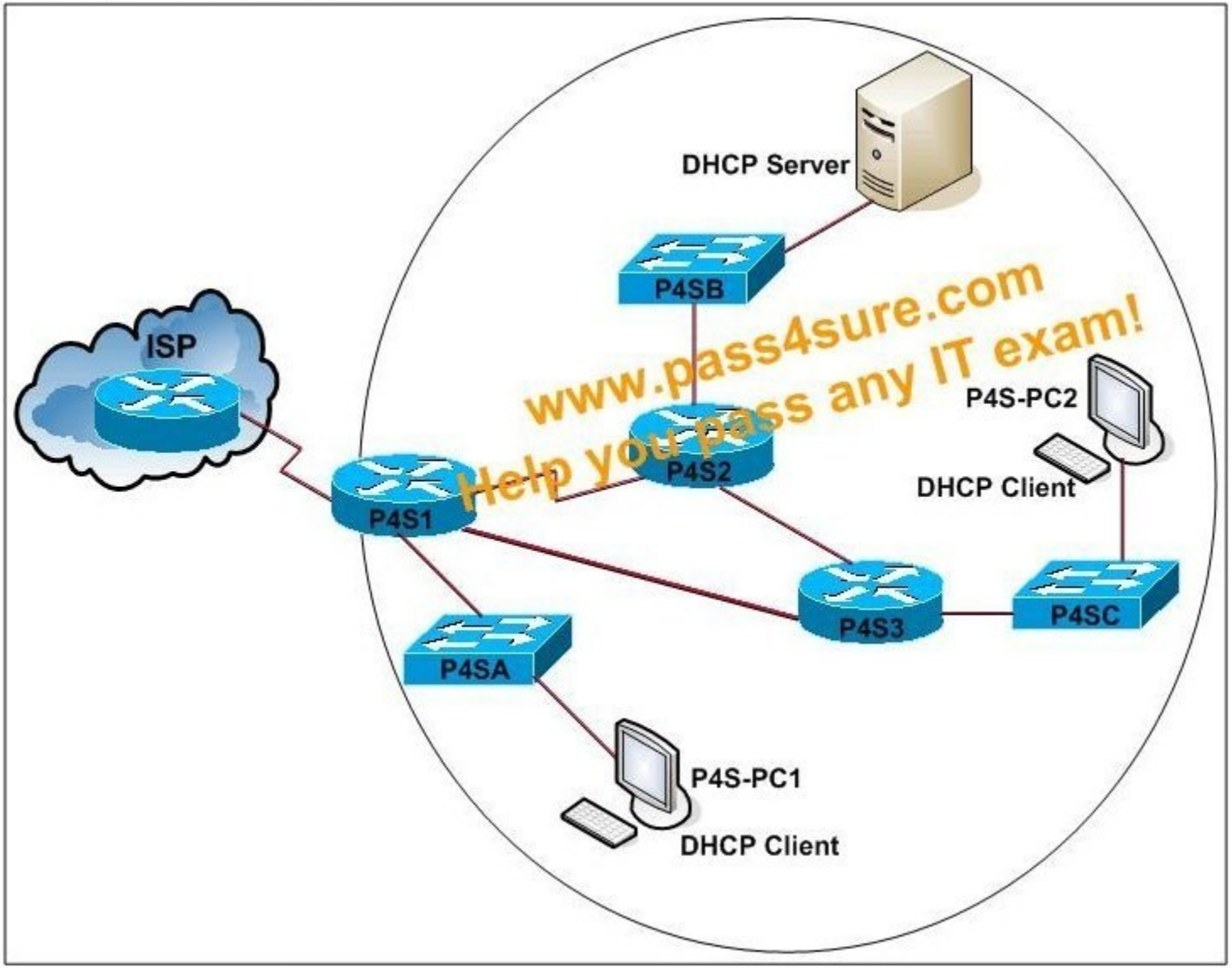
Mark for Review

Refer to the exhibit. Using the information shown

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What is the default behavior of P4S1 when P4S-PC1 requests service from DHCP server?

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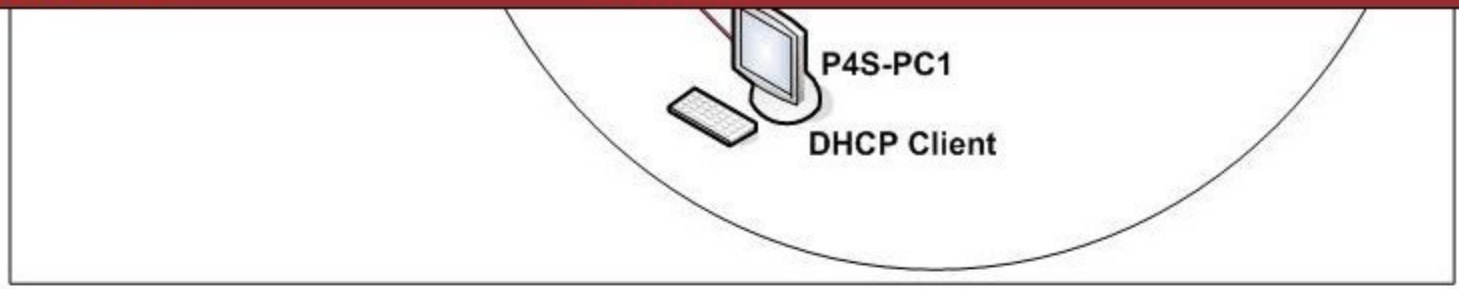
A. Drop the request.




What is the default behavior of P4S1 when P4S-PC1 requests service from DHCP server?

A. Drop the request.

B. Broadcast the request to P4S2 and P4S3

C. Forward the request to P4S2

D. Broadcast the request to P4S2, P4S3 and ISP

## Answer & Explanation

### Correct Answer

A

### Explanations

DHCP clients send request to DHCP Server in the form of broadcast, while routers will not forward broadcast, it will discard this request packet.

Dynamic Host Configuration Protocol (DHCP) is a protocol used by networked devices (clients) to obtain the parameters necessary for operation in an Internet Protocol network. This protocol reduces system administration workload, allowing devices to be added to the network with little or no manual configuration.

When a DHCP-configured client (be it a computer or any other network-aware device) connects to a network, the DHCP client sends a broadcast query requesting necessary information from a DHCP server. The DHCP server manages a pool of IP addresses and information about client configuration parameters such as the default gateway, the domain name, the DNS servers, other servers such as time servers, and so forth. Upon receipt of a valid request the server will assign the computer an IP address, a lease (the length of time for which the allocation is valid), and other IP configuration parameters, such as the subnet mask and the default gateway. The query is typically initiated immediately after booting and must be completed before the client can initiate IP-based communication with other hosts.

So, when the DHCP server is down, clients can be connected normally over a period of time until the expiration of the lease.

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Mark for Review

If a subnet mask is 255.255.255.224, which three addresses below could you assign to network hosts? (Choose three.)

- [ ] A. 217.63.12.192
- [ ] B. 92.11.178.93
- [ ] C. 134.178.18.56
- [ ] D. 192.168.16.87

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Mark for Review

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- A. 217.63.12.192
- B. 92.11.178.93
- C. 134.178.18.56
- D. 192.168.16.87

## Answer & Explanation

### Correct Answer

B C D

### Explanations

Network address is divided into three categories: host number, broadcast number and network number, 255.255.255.224 Each network address is composed of 32-bit (4-byte), if the fourth sect is the multiple of 32, it is a broadcast number.

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Mark for Review

Part of the Pass4sure Network is shown below:

You need to configure an IP address for workstation Pass4sureA. According to the information shown above, What IP address should be assigned to Workstation Pass4sureA?

- A. 192.168.1.159/28
- B. 192.168.1.160/28
- C. 192.168.1.145/28
- D. 192.168.1.143/28

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Mark for Review

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A. 192.168.1.159/28

B. 192.168.1.160/28

C. 192.168.1.145/28

D. 192.168.1.143/28

## Answer & Explanation

### Correct Answer

C

### Explanations

Because devices connected to the switch are in the same network segment, the IP address of Pass4sureA and IP address of router's Fa0/0 should be in the same segment. The address of Fa0/0 is 192.168.1.158/28, covering addresses range from 192.168.1.144 to 192.168.1.159, 192.168.1.144 is the network address, 192.168.1.159 is the broadcast address of this segment, so the available addresses are 192.168.1.145-192.168.1.158. According to the options, it is not difficult to find that only 192.168.1.145/28 fits within this range.

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Mark for Review

Assume that the subnet mask is /27 and subnet zero is usable, which three of the following IP addresses will be assigned to hosts? (Choose three.)

- A. 10.15.32.17
- B. 17.15.66.128
- C. 66.55.128.1
- D. 135.1.64.34

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Mark for Review

Assume that the subnet mask is /27 and subnet zero is usable, which three of the following IP addresses will be assigned to hosts? (Choose three.)

- A. 10.15.32.17
- B. 17.15.66.128
- C. 66.55.128.1
- D. 135.1.64.34

## Answer & Explanation

### Correct Answer

A C D

### Explanations

If the host ID is 0, it is a network number, if the host ID is 1, it is a broadcast number, both of them can't be used by the host.

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Mark for Review

If the subnet address is 192.168.20.19/28, which host addresses are valid on this subnet? (Choose two.)

- [ ] A. 192.168.20.29
- [ ] B. 192.168.20.31
- [ ] C. 192.168.20.17
- [ ] D. 192.168.20.0

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Mark for Review

If the subnet address is 192.168.20.19/28, which host addresses are valid on this subnet? (Choose two.)

- A. 192.168.20.29
- B. 192.168.20.31
- C. 192.168.20.17
- D. 192.168.20.0

## Answer & Explanation

### Correct Answer

A C

### Explanations

The network segment which 192.168.20.19/28 belongs to has the available address scope 192.168.20.17-192.168.20.30.

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Mark for Review

A Pass4sure network is shown in the exhibit below:

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Please study the exhibit shown above carefully, all of the Pass4sure routers in the Pass4sure network are configured with the IOS command "ip subnet-zero". Because of this, which network addresses should be used for Link Pass4sure and Network Pass4sure? (Choose two.)

- A. Link Pass4sure - 172.16.3.112/30
- B. Network Pass4sure - 172.16.3.128/25
- C. Network Pass4sure - 172.16.3.48/26
- D. Link Pass4sure - 172.16.3.0/30

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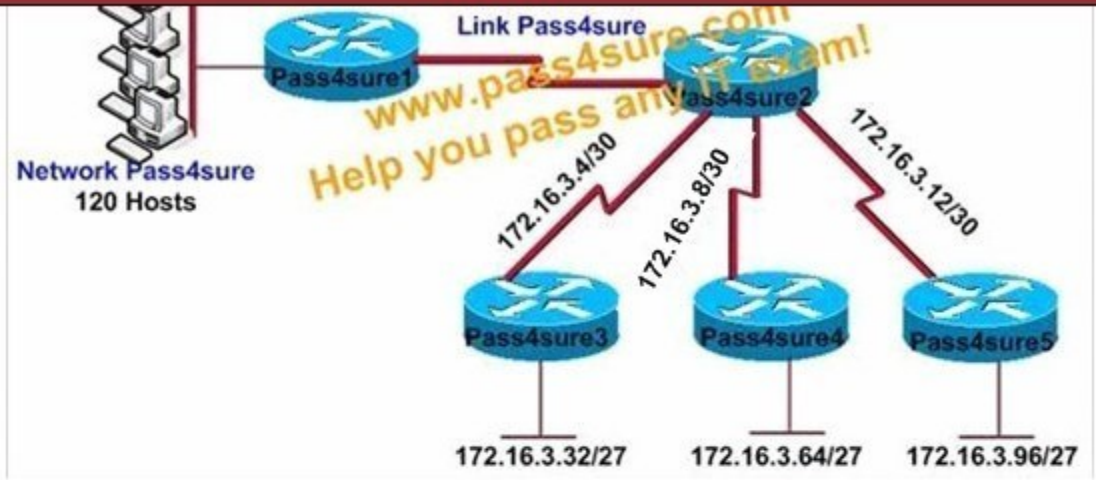


Please study the exhibit shown above carefully, all of the Pass4sure routers in the Pass4sure network are configured with the IOS command "ip subnet-zero". Because of this, which network addresses should be used for Link Pass4sure and Network Pass4sure? (Choose two.)

- A. Link Pass4sure - 172.16.3.112/30
- B. Network Pass4sure - 172.16.3.128/25
- C. Network Pass4sure - 172.16.3.48/26
- D. Link Pass4sure - 172.16.3.0/30

## Answer & Explanation

### Correct Answer

B D

### Explanations

One reserved subnet, the subnetthat has all binary 0s in the subnet field, is called the zero subnet.
Subnet zero, or the zero subnet, is numerically the first subnet, but it is one of the two reserved subnet numbers in a network. You can use the zero subnet on a Cisco router if you configure the global configuration command ip subnet-zero. For the purposes of answering questions on the exam about the number of valid subnets in a network, consider the zero subnet nusable. In real life, do not use the zero subnet if you do not have to.

If the subnet mask is 255.255.255.224, which of the following addresses can be assigned to network hosts? (Choose three)

- [ ] A. 15.234.118.63
- [ ] B. 92.11.178.93
- [ ] C. 134.178.18.56
- [ ] D. 192.168.16.87

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Mark for Review

If the subnet mask is 255.255.255.224, which of the following addresses can be assigned to network hosts? (Choose three)

- A. 15.234.118.63
- B. 92.11.178.93
- C. 134.178.18.56
- D. 192.168.16.87

## Answer & Explanation

**Correct Answer**

B C D

**Explanations**

If the host bits are 1, this is a broadcast address which can be applied to host.

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Mark for Review

How many subnets can be gained by subnetting 172.17.32.0/23 into a /27 mask, and how many usable host addresses will there be per subnet?

- A. 8 subnets, 31 hosts
- B. 8 subnets, 32 hosts
- C. 16 subnets, 30 hosts
- D. A Class B address can't be subnetted into the fourth octet.

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Mark for Review

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- C. 16 subnets, 30 hosts
- D. A Class B address can't be subnetted into the fourth octet.

## Answer & Explanation

**Correct Answer**

C

**Explanations**

Subnets:

1) New Subnet Mask - Original Subnet Mask
2) 27 - 23 = 4
3) 2^4 = 16

16 subnets

Hosts:

1) 32 - New Subnet Mask
2) 32 - 27 = 5
3) 2^5-2 = 30

30 hosts per subnet

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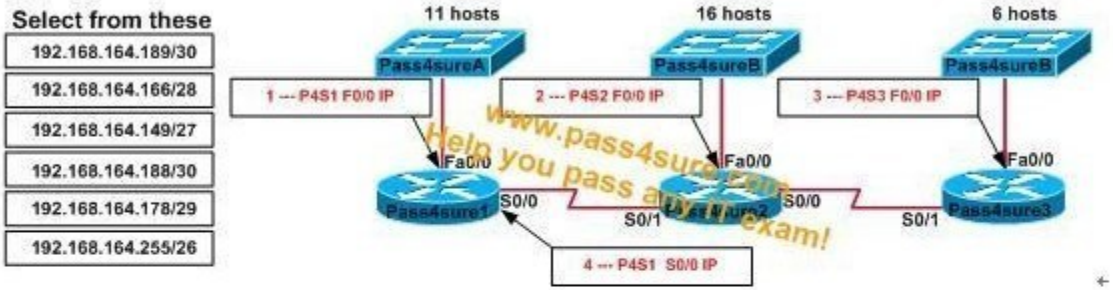
Mark for Review

After pass4sure company's network is re-designed , new topologies are as follows. Network administrators use the network address 192.168.164.0 and divide subnets for teams. After the completion of this task, network administrators will configure ip subnet - zero and use RIP v2 as the routing protocol.As a member of the networking team, you must address the network and at the same time conserver unused address for future growth. Based on this goal, please chose a correct answer for pass4sure company's subnet IP Configuration.




A. 192.168.164.189/30 --- 1
192.168.164.166/28 --- 2
192.168.164.149/27 --- 3
192.168.164.188/30 --- 4

B. 192.168.164.178/29 --- 1
192.168.164.188/30 --- 2
192.168.164.166/28 --- 3
192.168.164.255/26 --- 4

C. 192.168.166.255/28 --- 1
192.168.164.178/29 --- 2
192.168.164.255/26 --- 3
192.168.164.189/30 --- 4

D. 192.168.164.166/28 --- 1
192.168.164.149/27 --- 2
192.168.164.178/29 --- 3
192.168.164.189/30 --- 4

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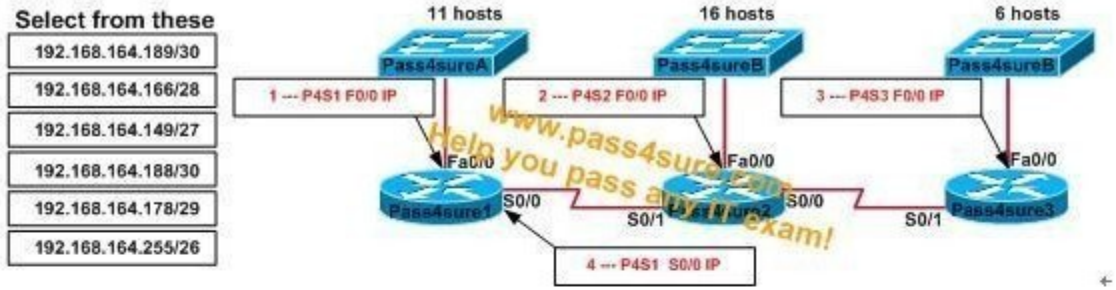
Mark for Review




A. 192.168.164.189/30 --- 1
192.168.164.166/28 --- 2
192.168.164.149/27 --- 3
192.168.164.188/30 --- 4

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192.168.164.188/30 --- 2
192.168.164.166/28 --- 3
192.168.164.255/26 --- 4

C. 192.168.166.255/28 --- 1
192.168.164.178/29 --- 2
192.168.164.255/26 --- 3
192.168.164.189/30 --- 4

D. 192.168.164.166/28 --- 1
192.168.164.149/27 --- 2
192.168.164.178/29 --- 3
192.168.164.189/30 --- 4

## Answer & Explanation

### Correct Answer

D

### Explanations

No more information available

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Mark for Review

A travel organization decides to design an IP addressing scheme to support a nationwide network. This organization wants a minimum of 300 sub-networks and a maximum of 50 host addresses per subnet. It has only one Class B address, which subnet masks can be used to support this addressing scheme? (Choose two.)

- A. 255.255.252.0
- B. 255.255.255.128
- C. 255.255.255.224
- D. 255.255.255.192

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Mark for Review

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- A. 255.255.252.0
- B. 255.255.255.128
- C. 255.255.255.224
- D. 255.255.255.192

## Answer & Explanation

### Correct Answer

B D

### Explanations

Subnetting is used to break the network into smaller more efficient subnets to prevent excessive rates of Ethernet packet collision in a large network. Such subnets can be arranged hierarchically, with the organization's network address space (see also Autonomous System) partitioned into a tree-like structure. Routers are used to manage traffic and constitute borders between subnets.
A routing prefix is the sequence of leading bits of an IP address that precede the portion of the address used as host identifier. In IPv4 networks, the routing prefix is often expressed as a "subnet mask", which is a bit mask covering the number of bits used in the prefix. An IPv4 subnet mask is frequently expressed in quad-dotted decimal representation, e.g., 255.255.255.0 is the subnet mask for the 192.168.1.0 network with a 24-bit routing prefix (192.168.1.0/24).

We can divide in two directions: Satisfy the network number or the host number, if the network number is 300, the network bit should not be less than nine (B), if the host number is 50, the host bit should not be less than six (D)

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Mark for Review

As the Pass4sure network administrator, you need to assigned an IP address of 172.16.112.1/20 to an Ethernet port on router, what is the maximum number of hosts allowed on this LAN subnet?

- A. 8190
- B. 4096
- C. 4094
- D. 2046

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- A. 8190
- B. 4096
- C. 4094
- D. 2046

## Answer & Explanation

### Correct Answer

C

### Explanations

The maximum IP subnets and maximum hosts are determined by subnet mask bit-count, the current assigned IP address is 172.16.112.1/20□the subnet bit-count is 20,so the maximum number of hosts allowed on this LAN subnet is (32-20=12) maximum number□2^12-2=4096-2=4094

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Mark for Review

A company with a Class C IP address has three routers : two Cisco routers and one non-Cisco router. All three routers are configured with RIP version 1. This company using the block of 198.133.219.0/24 plans to split the network into three smaller subnets and create the option of conserving addresses with VLSM. If the company needs 40 hosts in each subnet, how to do?

A. All routers should be converted to OSPF and use 198.133.219.16/28, 198.133.219.32/28, and 198.133.219.48/28 as the new subnetworks.

B. All routers should be converted to static routes and use 198.133.219.16/28, 198.133.219.32/28, and 198.133.219.48/28 as the new subnetworks.

C. All routers should be converted to EIGRP and use 198.133.219.64/26, 198.133.219.128/26, and 198.133.219.192/26 as the new subnetworks.

D. All routers should be converted to RIP version 2 and use 198.133.219.64/26, 198.133.219.128/26, and 198.133.219.192/26 as the new subnetworks.

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D. All routers should be converted to RIP version 2 and use 198.133.219.64/26, 198.133.219.128/26, and 198.133.219.192/26 as the new subnetworks.

## Answer & Explanation

### Correct Answer

D

### Explanations

This company implemented the routing protocol RIP version 1 at the start, but RIP version2 is the best choice for it due to small-scale, first, it needs less configuration when modifying, which will least affect the network; second, RIP version2 supports classless routing, fully satisfying the requirements.
Each subnet needs 40 hosts, so the host bit should not be less than 6, 2^6>40>2^5.

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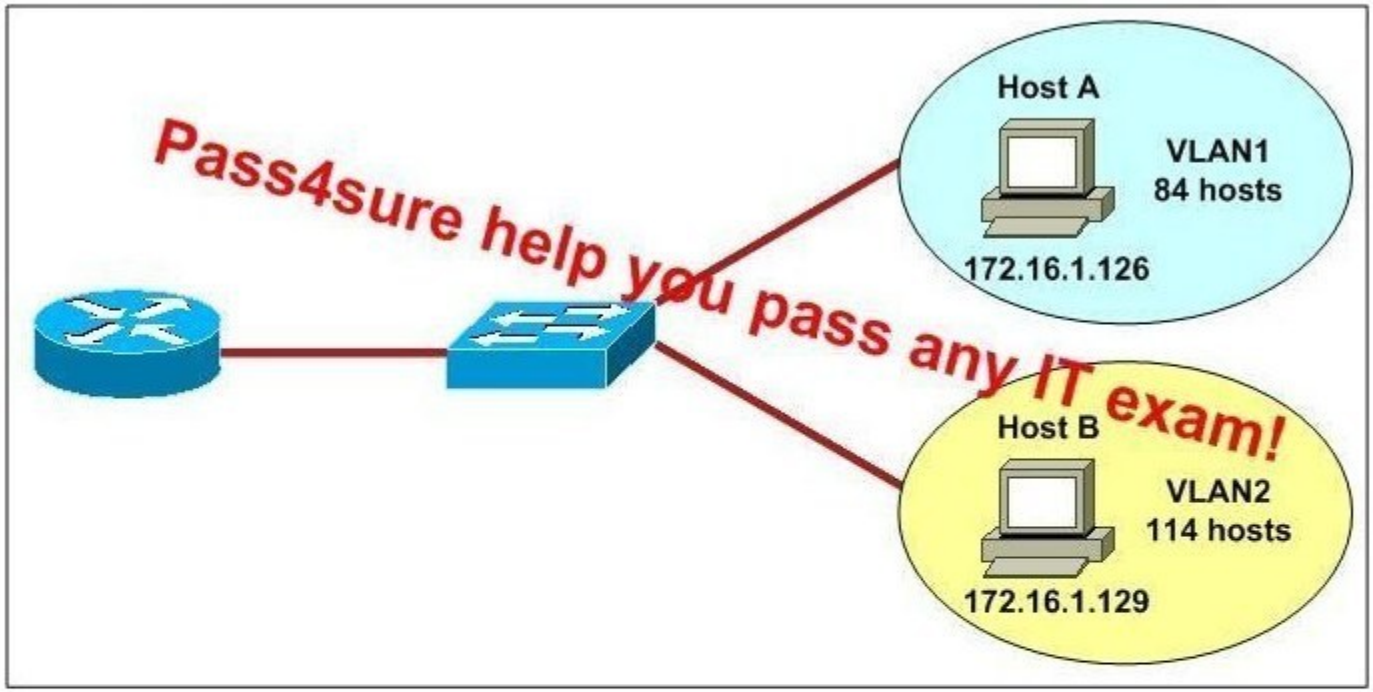
Mark for Review

On the basis of the following diagram, all hosts are connected with each other. Which descriptions are correct about the addressing scheme used in this network? (Choose three.)

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- A. The subnet mask in use is 255.255.255.192.
- B. The subnet mask in use is 255.255.255.128.
- C. The IP address 172.16.1.25 can be assigned to hosts in VLAN1
- D. The LAN interface of the router is configured with multiple IP addresses.

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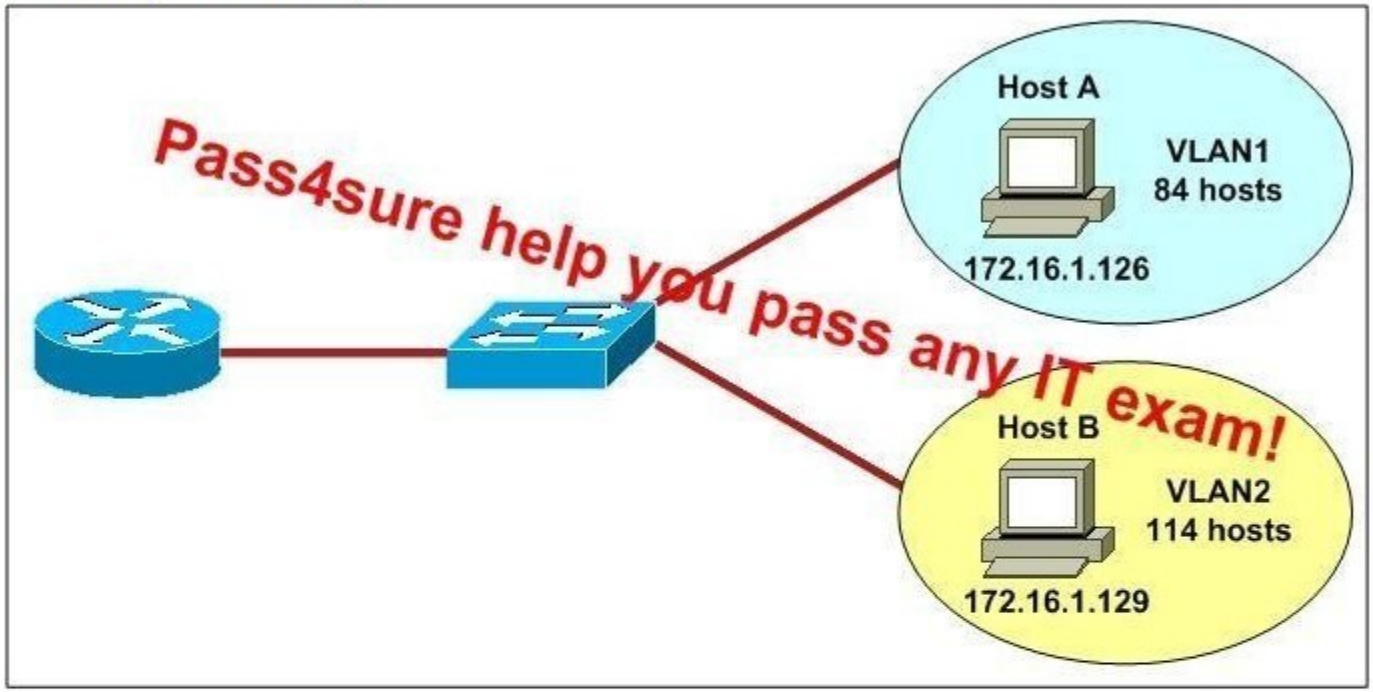


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- D. The LAN interface of the router is configured with multiple IP addresses.

## Answer & Explanation

**Correct Answer**

B C D

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**Explanations**

No more information available

Mark for Review

Which subnet mask would be appropriate for a network address range to be subnetted for up to eight LANs, with each LAN containing 5 to 26 hosts?\

- A. 0.0.0.240
- B. 255.255.255.252
- C. 255.255.255.224
- D. 255.255.255.240

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Mark for Review

Which subnet mask would be appropriate for a network address range to be subnetted for up to eight LANs, with each LAN containing 5 to 26 hosts?\

- A. 0.0.0.240
- B. 255.255.255.252
- C. 255.255.255.224
- D. 255.255.255.240

## Answer & Explanation

**Correct Answer**

C

**Explanations**

No more information available

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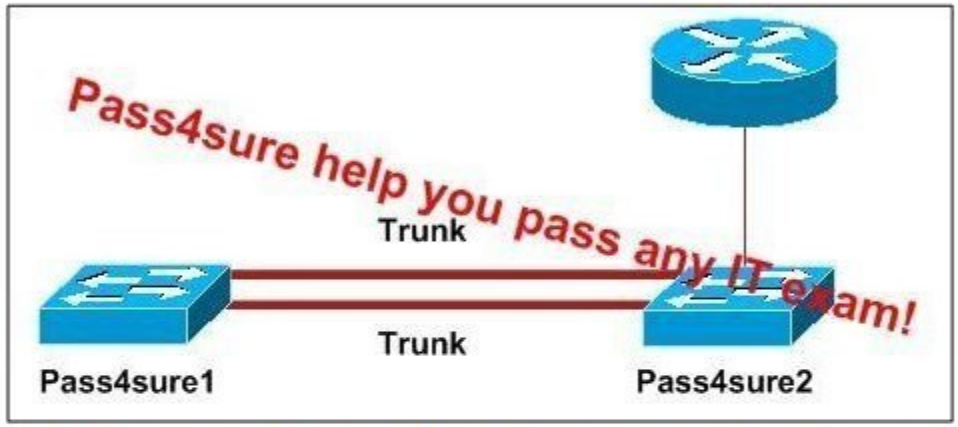
Mark for Review

Both the switches Pass4sure1 and Pass4sure2 presented in the diagram are Catalyst 2950s. The addressing scheme for each company site is as follows:

Router Ethernet port - 1st usable address
Pass4sure1 - 2nd usable address
Pass4sure2 - 3rd usable address




Which commands should be configured on Pass4sure2 to allow it to be managed remotely from any subnet on the network? (Choose three.)

A. Pass4sure2(config)# interface f0/0
Pass4sure2(config-if)# ip address 192.168.1.10 255.255.255.248

B. Pass4sure2(config)# interface vlan 1
Pass4sure2(config-if)# ip address 192.168.1.11 255.255.255.248

C. Pass4sure2(config)# line vty 0 4
Pass4sure2(config-line)# password cisco

D. Pass4sure2(config)# ip default-gateway 192.168.1.9

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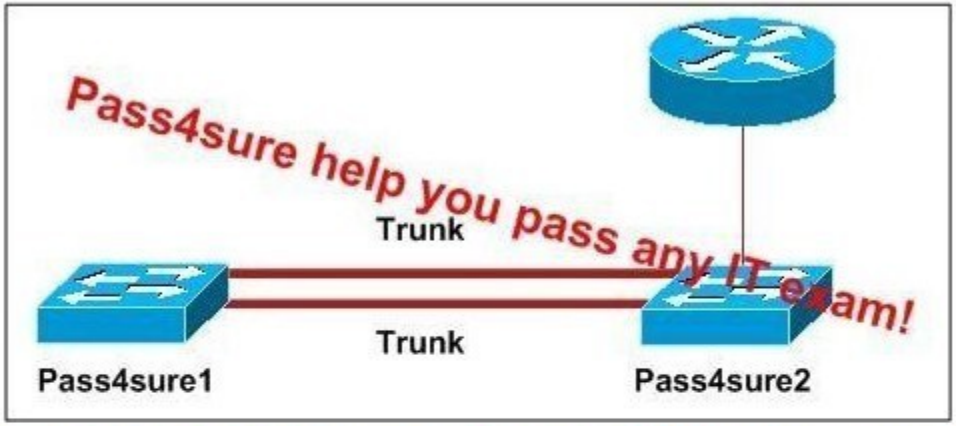
Mark for Review

Router Ethernet port - 1st usable address
Pass4sure1 - 2nd usable address
Pass4sure2 - 3rd usable address

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- A. Pass4sure2(config)# interface f0/0
  Pass4sure2(config-if)# ip address 192.168.1.10 255.255.255.248
- B. Pass4sure2(config)# interface vlan 1
  Pass4sure2(config-if)# ip address 192.168.1.11 255.255.255.248
- C. Pass4sure2(config)# line vty 0 4
  Pass4sure2(config-line)# password cisco
- D. Pass4sure2(config)# ip default-gateway 192.168.1.9

## Answer & Explanation

### Correct Answer

B C D

### Explanations

Configure administered address for a switch must be performed in Vlan. The remote management needs password. The terminal device must designate gateway to communicate with outside.

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CIDR is short for Classless Inter-Domain Routing. Which three of the following IP addresses belong to the CIDR block of 115.64.4.0/22? (Choose three.)

- A. 115.64.12.128
- B. 115.64.7.64
- C. 115.64.6.255
- D. 115.64.5.128

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Mark for Review

CIDR is short for Classless Inter-Domain Routing. Which three of the following IP addresses belong to the CIDR block of 115.64.4.0/22? (Choose three.)

- A. 115.64.12.128
- B. 115.64.7.64
- C. 115.64.6.255
- D. 115.64.5.128

## Answer & Explanation

### Correct Answer

B C D

### Explanations

CIDR is a new addressing scheme for the Internet which allows for more efficient allocation of IP addresses than the old Class A, B, and C address scheme. 115.64.4.1/22-115.64.7.254/22 belongs to the CIDR block of 115.64.4.0/22.

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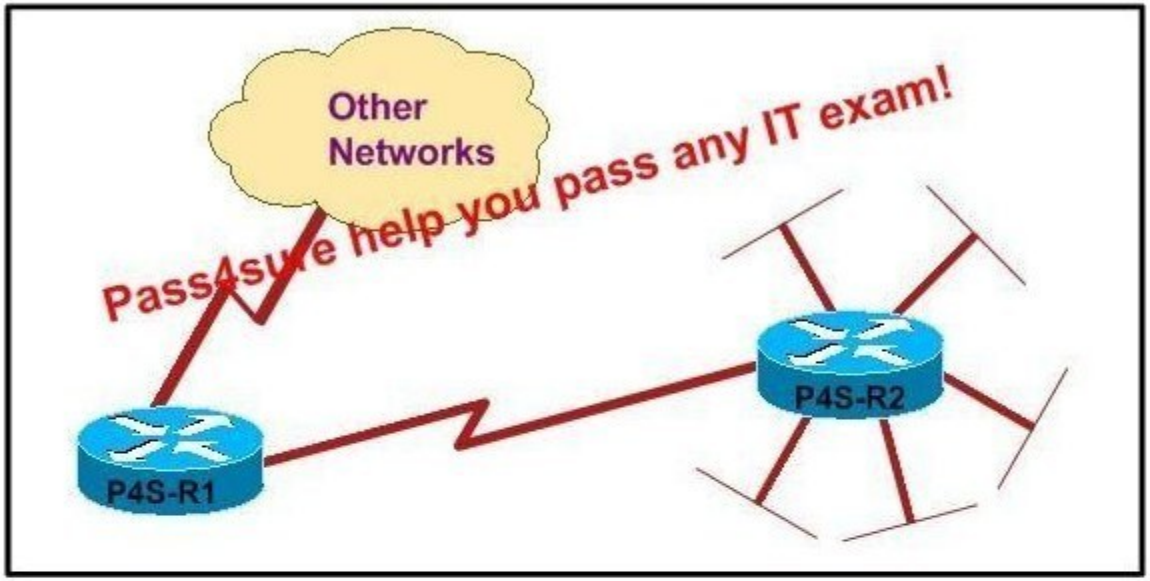
Mark for Review

On the basis of the following exhibit, which two packet destination addresses are to be sent by P4S-R1 to P4S-R2 after summarizing the networks connected to router P4S-R2 as a 192.168.176.0/21 route and then forwarding to P4S-R1? (Choose two.)




- A. 192.168.159.2
- B. 192.168.183.41
- C. 192.168.183.255
- D. 192.168.179.4

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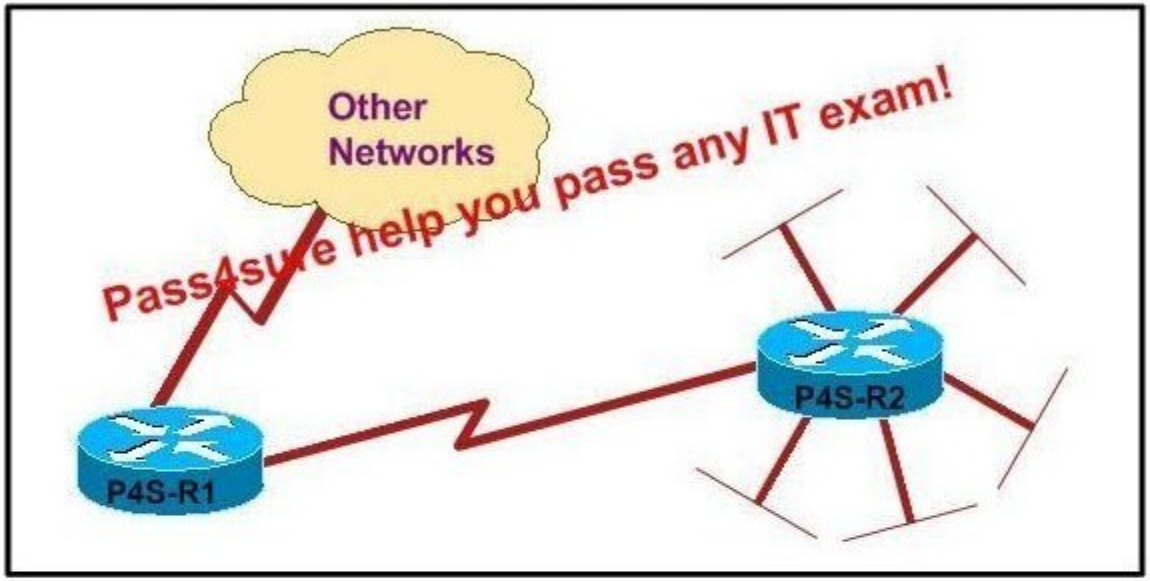
Mark for Review

On the basis of the following exhibit, which two packet destination addresses are to be sent by P4S-R1 to P4S-R2 after summarizing the networks connected to router P4S-R2 as a 192.168.176.0/21 route and then forwarding to P4S-R1? (Choose two.)




- A. 192.168.159.2
- B. 192.168.183.41
- C. 192.168.183.255
- D. 192.168.179.4

## Answer & Explanation

**Correct Answer**

B D

**Explanations**

The segment 192.168.176.0/21 contains all network addresses ranging from 192.168.176.1 to 192.168.191.255☐Except the host bits are all 1, because this is a broadcast address☐

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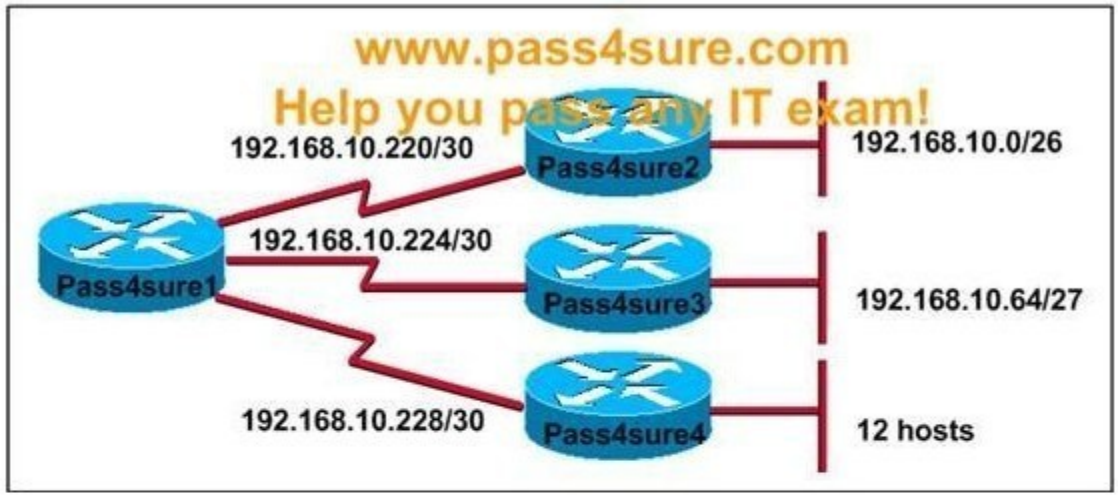
Mark for Review

The Pass4sure network is shown below:




A new subnet with 12 hosts has been added to the network. As the Pass4sure network, you will decide to scheme IP address, which subnet address should this network use to provide enough useable addresses while wasting the fewest addresses?

- A. 192.168.10.96/29
- B. 192.168.10.80/28
- C. 192.168.10.96/28
- D. 192.168.10.80/29

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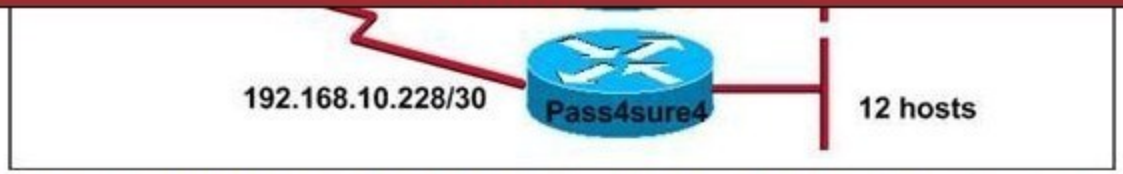


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A. 192.168.10.96/29

B. 192.168.10.80/28

C. 192.168.10.96/28

D. 192.168.10.80/29

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the VLSM knowledge.
VLSM can increase the bits of network number by borrowing part of the host number based on the classes of IP address.
1.How many subnets will be produced by the subnet mask you select?
2X-2: (subnet masks are often represented in dot-decimal form, usually a block of ones (1) followed by a block of 0s) x represents the mask bit, that is the block of ones (1).
2.How many hosts are available for each subnet?
2y-2 : y represents the host bit, that is the block of 0s.
2.The valid subnets: the valid subnet number=256-10
decimal subnet mask(block size or base number)
4. The broadcast address for each subnet is
broadcast address=next subnet number-1
5. The valid hosts for each subnet are addresses except all zeros and all ones.
The last valid host address=next subnet number-2 (broadcast address-1)
In order to satisfy the needs of this question, the mask is 32-4=28 to accommodate 12 hosts ( that is 2*4 =16). Because the address range used by 192.168.10.64/27 is 32-27=5, 2*5 =32 till 192.16.10.96/27, the new subnet must begin from 96.

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You have a class B network with a 255.255.255.0 mask. Which of the statements below are true of this network? (Choose two)

- [ ] A. There are 254 usable subnets.
- [ ] B. There are 256 usable hosts per subnet.
- [ ] C. There are 24 usable hosts per subnet.
- [ ] D. There are 254 usable hosts per subnet.

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Mark for Review

You have a class B network with a 255.255.255.0 mask. Which of the statements below are true of this network? (Choose two)

- A. There are 254 usable subnets.
- B. There are 256 usable hosts per subnet.
- C. There are 24 usable hosts per subnet.
- D. There are 254 usable hosts per subnet.

## Answer & Explanation

### Correct Answer

A D

### Explanations

The mask 255.255.255.0 shows it limits the subnet range to 1-255. Since 255 is broadcast address, so the actual range is 254.

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Mark for Review

After dividing the network 172.25.0.0 into eight equal subnets, which three IP addresses could be destined for hosts in the third subnet if the command ip subnet-zero is used on the router? (Choose three.)

- A. 172.25.78.243
- B. 172.25.98.16
- C. 172.25.72.0
- D. 172.25.94.255

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Mark for Review

After dividing the network 172.25.0.0 into eight equal subnets, which three IP addresses could be destined for hosts in the third subnet if the command ip subnet-zero is used on the router? (Choose three.)

- A. 172.25.78.243
- B. 172.25.98.16
- C. 172.25.72.0
- D. 172.25.94.255

## Answer & Explanation

### Correct Answer

A C D

### Explanations

The third subnet ranges from 172.25.64.0 to 172.25.91.254.

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Mark for Review

Part of the Pass4sure network is shown below:

The five Ethernet networks connected to router Pass4sure1 in the graphic have been summarized for router Pass4sure2 as 192.1.144.0/20. Based on this information, which of the following packet destination addresses will Pass4sure2 forward to Pass4sure1, according to this summary? (Choose two.)

- A. 192.1.159.2
- B. 192.1.1.144
- C. 192.1.138.41
- D. 192.1.151.254

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Mark for Review

Part of the Pass4sure network is shown below:

The five Ethernet networks connected to router Pass4sure1 in the graphic have been summarized for router Pass4sure2 as 192.1.144.0/20. Based on this information, which of the following packet destination addresses will Pass4sure2 forward to Pass4sure1, according to this summary? (Choose two.)

- A. 192.1.159.2
- B. 192.1.1.144
- C. 192.1.138.41
- D. 192.1.151.254

## Answer & Explanation

### Correct Answer

A D

### Explanations

This question is about route summary.
Example of route summary calculation
The routing table stores the following networks:
172.16.12.0/24
172.16.13.0/24

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## Answer & Explanation

### Correct Answer

A D

### Explanations

This question is about route summary.
Example of route summary calculation
The routing table stores the following networks:

172.16.12.0/24
172.16.13.0/24
172.16.14.0/24
172.16.15.0/24

Routing protocols summarize or aggregate routes based on shared network numbers within the network.To calculate the summarized route of the router, it is necessary to determine how many bits on the left of those addresses are the same. The steps are shown below:
Step one: Convert addresses to binary format and align them.
Step two: Find out the identical last bit of all addresses.
Step three:Calculate how many bits are the same.The summarized route is an IP address with a slash, which will be helpful.

172.16.12.0/24 = 172. 16. 000011 00.00000000
□□□□□□172.16.13.0/24 = 172. 16. 000011 01.00000000
□□□□□□172.16.14.0/24 = 172. 16. 000011 10.00000000
□□□□□□172.16.15.0/24 = 172. 16. 000011 11.00000000
□□□□□172.16.15.255/24 = 172. 16. 000011 11.11111111

The first 22 bits of IP addresses 172.16.12.0---172.16.15.255 are identical, so the best summarized route is 172.16.12.0/22.
Using route summary can reduce the routing items on the summarized router to decrease the memory occupied and network trfiic generated by routing protocol.

Route summary implementation:
a.The bits on the left of multiple addresses must be identical.
b.Routing protocol should select route according to the 32-bit IP address and the prefix length of the maximum 32 bit address.
c.Routing update must contain 32-bit IP address and the prefix length (subnet mask)
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According to the question, the summarized route is 192.1.144.0/20□so the subnet connected to Pass4sure1 should be the subnet following the 192.1.144.0/20 segment.

Mark for Review

As the network administrator of Pass4sure company, you have been assigned the task of designing a new Pass4sure Office internetwork. So you need to consider IP addressing scheme, Which two subnetworks would be included in the summarized address of 172.31.80.0 /20? (Choose two.)

- A. 172.31.17.4 /30
- B. 172.31.51.16 /30
- C. 172.31.92.0 /22
- D. 172.31.80.0 /22

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Mark for Review

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- A. 172.31.17.4 /30
- B. 172.31.51.16 /30
- C. 172.31.92.0 /22
- D. 172.31.80.0 /22

## Answer & Explanation

### Correct Answer

C D

### Explanations

30 bits IP network has relatively small quantities of addresses available, which can not meet the requirements of network design.

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Mark for Review

Which of the following best describes running both IPv4 and IPv6 on a router simultaneously?

- A. binary routing
- B. 4to6 routing
- C. 6to4 routing
- D. dual-stack routing

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Mark for Review

Which of the following best describes running both IPv4 and IPv6 on a router simultaneously?

A. binary routing

B. 4to6 routing

C. 6to4 routing

D. dual-stack routing

## Answer & Explanation

### Correct Answer

D

### Explanations

The knowledge point of this question is IPv6 address translation. At present, there are three transition mechanisms:
Dual-Stack
Tunneling
Translation
Dual-Stack allows users to use both IPv4 and IPv6, supporting both IPv4 and IPv6 while sharing most of the code.
Tunneling establishes communication by allowing two IPv6 hosts to use the existing IPv4 infrastructure to carry IPv6 packets. The current network protocols, such as WWW,FTP and Email, exist in IPv4 network. Transition mechanism will allow users on IPv6 network to access resources on IPv4,it is a vital technology.
However, using transition technology will lose the advanced features of IPv6, transition technology will resign when IPv6 protocol is fully utilized.

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Mark for Review

Which two of these statements are true of IPV6 address representation?(Choose two)

- A. The first 64 bits represent the dynamically created interface ID
- B. A single interface may be assigned multiple IPV6 addresses of any type
- C. Every IPV6 interface contains at least one loopback address.
- D. Leading zeros in an IPV6 16 bit hexadecimal field are mandatory.

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- D. Leading zeros in an IPV6 16 bit hexadecimal field are mandatory.

## Answer & Explanation

### Correct Answer

B C

### Explanations

The loopback of IPv6 functions the same as that of IPv4. The loopback address of IPv6 can't be configured on the physical interface. A data packet with IPv6 loopback address, no matter the address is the source address or the destination address, must stay on the network node which produces it, not the network link. IPv6 router can't forward data packets with IPv6 loopback address, no matter it is the source address or the destination address.

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Mark for Review

Which three of the following are IPv6 transition mechanisms? (Choose three.)

- [ ] A. 6to4 tunneling
- [ ] B. GRE tunneling
- [ ] C. ISATAP tunneling
- [ ] D. Teredo tunneling

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Mark for Review

Which three of the following are IPv6 transition mechanisms? (Choose three.)

- A. 6to4 tunneling
- B. GRE tunneling
- C. ISATAP tunneling
- D. Teredo tunneling

## Answer & Explanation

### Correct Answer

A C D

### Explanations

The key to a successful IPv6 transition is compatibility with the large installed base of IPv4 hosts and routers. Maintaining compatibility with IPv4 while deploying IPv6 will streamline the task of transitioning the Internet to IPv6. This specification defines a set of mechanisms that IPv6 hosts and routers may implement in order to be compatible with IPv4 hosts and routers.

The mechanisms in this document are designed to be employed by IPv6 hosts and routers that need to interoperate with IPv4 hosts and utilize IPv4 routing infrastructures. We eXPect that most nodes in the Internet will need such compatibility for a long time to come, and perhaps even indefinitely. However, IPv6 may be used in some environments where interoperability with IPv4 is not required. IPv6 nodes that are designed to be used in such environments need not use or even implement these mechanisms. The mechanisms specified here include:

- Dual IP layer (also known as Dual Stack): A technique for providing complete support for both Internet protocols -- IPv4 and IPv6 -- in hosts and routers.
- Configured tunneling of IPv6 over IPv4: Point-to-point tunnels made by encapsulating IPv6 packets within IPv4 headers to carry them over IPv4 routing infrastructures.
- IPv4-compatible IPv6 addresses: An IPv6 address format that employs embedded IPv4 addresses.
- Automatic tunneling of IPv6 over IPv4: A mechanism for using IPv4-compatible addresses to automatically tunnel IPv6 packets over IPv4 networks.

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Mark for Review

Which two descriptions are correct about characteristics of IPv6 unicast addressing? (Choose two.)

- A. Global addresses start with 2000::/3.
- B. Link-local addresses start with FF00::/10.
- C. Link-local addresses start with FE00:/12.
- D. There is only one loopback address and it is ::1.

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- C. Link-local addresses start with FE00:/12.
- D. There is only one loopback address and it is ::1.

## Answer & Explanation

### Correct Answer

A D

### Explanations

This question is to examine the knowledge of IPv6 unicast.
All global unicast addresses other than those that start with binary 000 have a 64-bit interface ID field (i.e., n + m = 64), formatted as described in section 2.5.1. Global unicast addresses that start with binary 000 have no such constraint on the size or structure of the interface ID field.
The unicast address 0:0:0:0:0:0:0:1 is called the loopback address.

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Mark for Review

Select the valid IPv6 addresses. (Choose all apply)

- [ ] A. ::
- [ ] B. ::192:168:0:1
- [ ] C. 2002:c0a8:101::42
- [ ] D. 2003:dead:beef:4dad:23:46:bb:101

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Mark for Review

C. 2002:c0a8:101::42

D. 2003:dead:beef:4dad:23:46:bb:101

## Answer & Explanation

### Correct Answer

A B C D

### Explanations

IPv6 addresses are normally written as eight groups of four hexadecimal digits, where each group is separated by a colon (:). For example, 2001:0db8:85a3:0000:0000:8a2e:0370:7334 is a valid IPv6 address. To shorten the writing and presentation of addresses, several simplifications to the notation are permitted.
Any leading zeros in a group may be omitted; thus, the given example becomes 2001:db8:85a3:0:0:8a2e:370:7334 One or any number of consecutive groups of 0 value may be replaced with two colons (::): 2001:db8:85a3::8a2e:370:7334
This substitution with double-colon may be performed only once in an address, because multiple occurrences would lead to ambiguity. For example, the illegal address notation 2001::FFD3::57ab, could represent
2001:0:0:0:0:FFD3:0:57ab
2001:0:0:0:FFD3:0:0:57ab
2001:0:0:FFD3:0:0:0:57ab and
2001:0:FFD3:0:0:0:0:57ab
Using the double-colon reduction the localhost (loopback) address, fully written as 0000:0000:0000:0000:0000:0000:0000:0001, may be reduced to ::1 and the undetermined IPv6 address (zero value), i.e., all bits are zero, is simply ::.
For example, the addresses below are all valid and equivalent:
2001:0db8:0000:0000:0000:0000:1428:57ab
2001:0db8:0000:0000:0000::1428:57ab
2001:0db8:0:0:0:0:1428:57ab
2001:0db8:0:0::1428:57ab
2001:0db8::1428:57ab
2001:db8::1428:57ab
The sequence of the last 4 bytes of the IPv6 address may optionally be written in dot-decimal notation, in the style of IPv4 addresses. This notation is convenient when working in a mixed (dual-stack) environment of IPv4 and IPv6 addresses, and IPv6 addresses are derived from IPv4 ones. The general form of the notation is x:x:x:x:x:x:d.d.d.d, where the x's are the 6 high-order groups of hexadecimal digits and the d's represent the decimal digit groups of the four low-order octets of the address. For example, ::ffff:12.34.56.78 is the same address as ::ffff:0c22:384e. Usage of this notation may not be widely supported.

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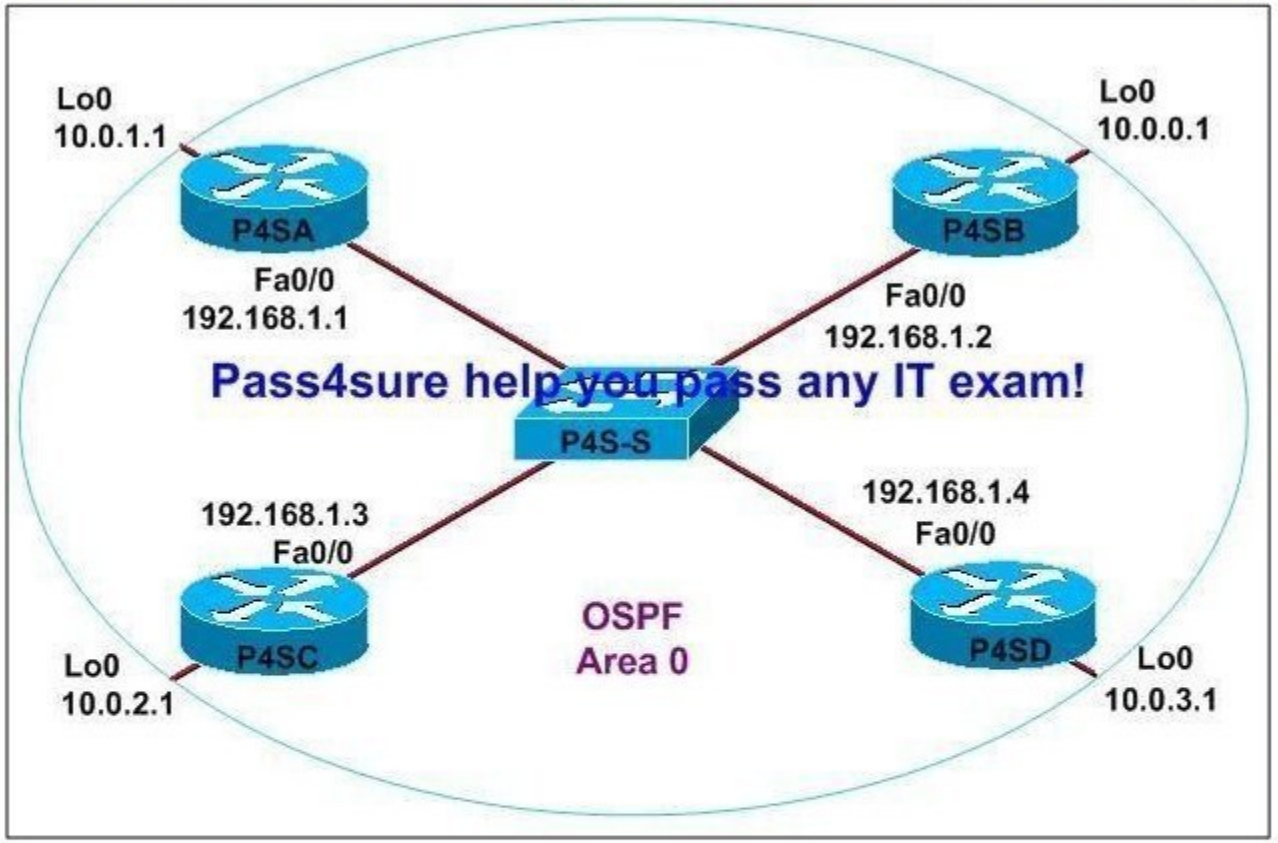
Mark for Review

Refer to the exhibit. Which two statements are true about the loopback address that is configured on P4SB? (Choose two.)




- A. It ensures that data will be forwarded by P4SB.
- B. It provides stability for the OSPF process on P4SB.
- C. It specifies that the router ID for P4SB should be 10.0.0.1.
- D. It decreases the metric for routes that are advertised from P4SB.

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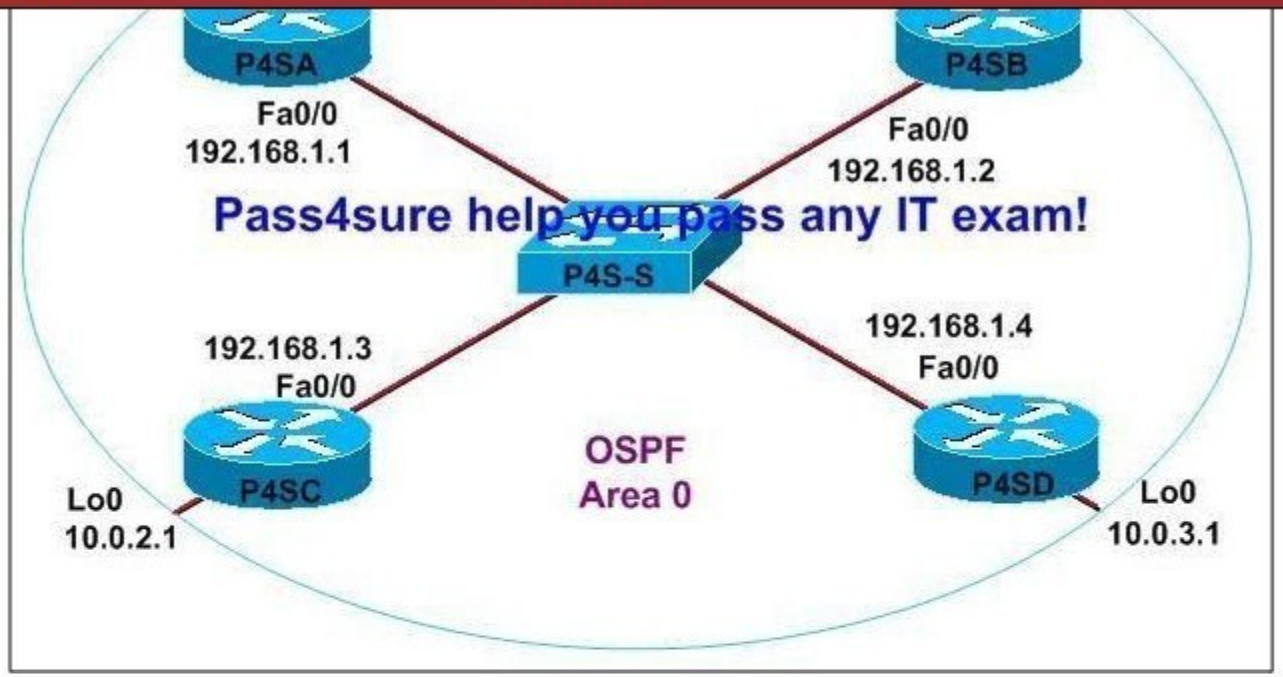


- A. It ensures that data will be forwarded by P4SB.
- B. It provides stability for the OSPF process on P4SB.
- C. It specifies that the router ID for P4SB should be 10.0.0.1.
- D. It decreases the metric for routes that are advertised from P4SB.

## Answer & Explanation

### Correct Answer

B C

### Explanations

If configure loopback interface on a router with OSPF , the router will use the IP address of this interface as OSPF ROUTER ID, although there may be larger IP address on the router (OSPF optimizes the larger IP address as ROUTER ID). Because the loopback interface will not be down and it is more stable than other interfaces, OSPF will choose the address of the loopback interface as the ROUTER ID and will use the larger address found first as the ROUTER ID.

http://caiferen.blogspot.com

Topic 4 - Configure, verify, and troubleshoot basic router operation and routing on Cisco devices (139 Questions)

Describe basic routing concepts (including: packet forwarding, router lookup process)
Describe the operation of Cisco routers (including: router bootup process, POST, router components)
Select the appropriate media, cables, ports, and connectors to connect routers to other network devices and hosts
Configure, verify, and troubleshoot RIPv2
Access and utilize the router to set basic parameters.(including: CLI/SDM)
Connect, configure, and verify operation status of a device interface
Verify device configuration and network connectivity using ping, traceroute, telnet, SSH or other utilities
Perform and verify routing configuration tasks for a static or default route given specific routing requirements
Manage IOS configuration files. (including: save, edit, upgrade, restore)
Manage Cisco IOS.
Compare and contrast methods of routing and routing protocols
Configure, verify, and troubleshoot OSPF
Configure, verify, and troubleshoot EIGRP
Verify network connectivity (including: using ping, traceroute, and telnet or SSH)
Troubleshoot routing issues
Verify router hardware and software operation using SHOW _DEBUG commands.
Implement basic router security

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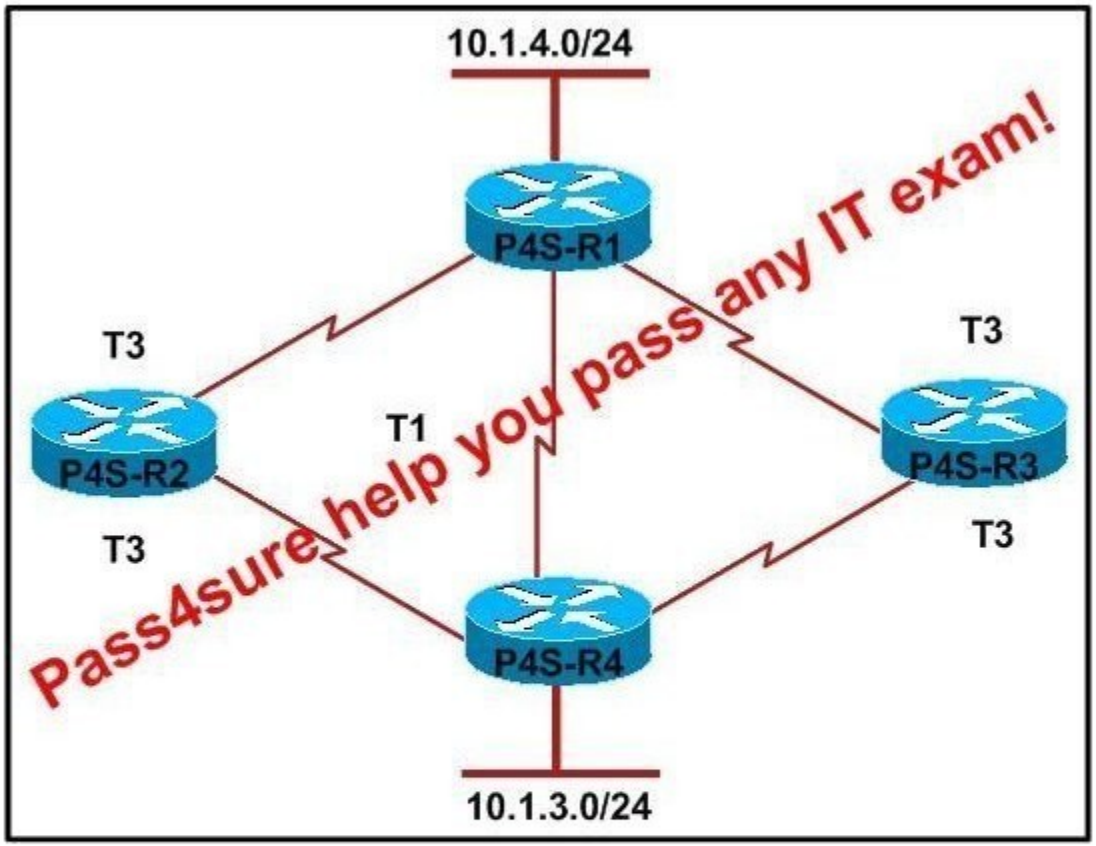
Mark for Review

Study the following exhibit carefully, can you tell me which three descriptions are correct about the ways used by the router P4S-R1 to choose a path to the 10.1.3.0/24 network when different routing protocols are deployed? (Choose three.)

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- A. When RIPv2 is the routing protocol, only the path (P4S-R1)-(P4S-R4) is to be installed into the routing table by default.
- B. When RIPv2 is the routing protocol, the equal cost paths (P4S-R1)-(P4S-R3)-(P4S-R4) and (P4S-R1)-(P4S-R2)-(P4S-R4) are to be installed in the routing table.
- C. If both EIGRP and OSPF are working on the network with their default configurations, the EIGRP paths will be installed in the routing table.
- D. By default, if EIGRP is the routing protocol, the equal cost paths (P4S-R1)-(P4S-R3)-(P4S-R4), and (P4S-R1)-(P4S-R2)-(P4S-R4) will be installed in the routing table.

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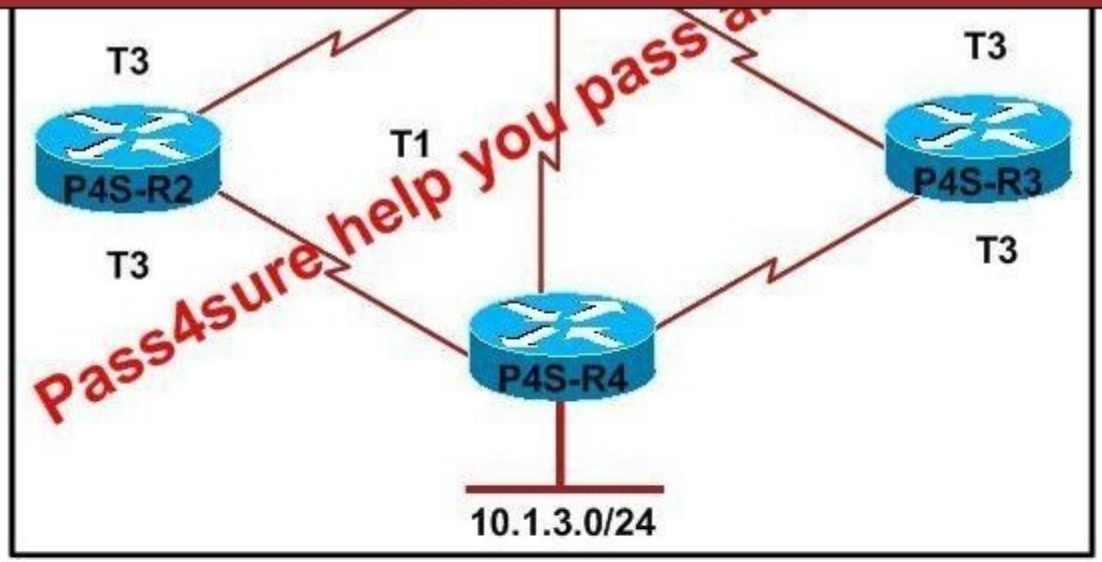


Pass4sure help you pass

- A. When RIPv2 is the routing protocol, only the path (P4S-R1)-(P4S-R4) is to be installed into the routing table by default.
- B. When RIPv2 is the routing protocol, the equal cost paths (P4S-R1)-(P4S-R3)-(P4S-R4) and (P4S-R1)-(P4S-R2)-(P4S-R4) are to be installed in the routing table.
- C. If both EIGRP and OSPF are working on the network with their default configurations, the EIGRP paths will be installed in the routing table.
- D. By default, if EIGRP is the routing protocol, the equal cost paths (P4S-R1)-(P4S-R3)-(P4S-R4), and (P4S-R1)-(P4S-R2)-(P4S-R4) will be installed in the routing table.

## Answer & Explanation

### Correct Answer

A C D

### Explanations

This question has two Testing Points: one is the concepts of the Distance Vector Routing Protocol and the link-state Routing Protocol, Distance Vector Routing Protocol only knows the next hop address, while the link-state Routing Protocol knows the infrastructure of the whole network; the other is the Administrative Distance, for the protocols running simultaneously, the lower Administrative Distance has the priority. Eigrp 90 has precedence over ospf 110.

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Mark for Review

As a CCNA candidate, you will be expected to know the POST process very well. A Cisco router is booting and has just completed the POST process. It is now ready to find and load an IOS image. What function does the router perform next?

A. It checks the configuration register.

B. It attempts to boot from a TFTP server.

C. It loads the first image file in flash memory.

D. It inspects the configuration file in NVRAM for boot instructions.

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B. It attempts to boot from a TFTP server.

C. It loads the first image file in flash memory.

D. It inspects the configuration file in NVRAM for boot instructions.

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to check the knowledge of Router Boot Process.
1. Carry out a power-on self-test (POST).
2. Load and boot microcode. (stored in ROM)
3. Find IOS image.
  a: Check the configuration register.
  b: Resolve the configuration files in NVRAM.
  c: By default, use the first file in flash.
  d: Try to boot from the network
  e□ RXBOOT
  f: ROMMON
4.Load the IOS image.
5.Find the configuration file □stored in NVRAM□
6.Load configuration file
If the configuration file is not found in the NVRAM, enter the Setup mode.
7.Operating normally

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Mark for Review

There are no boot system commands in the router configuration in NVRAM for router Pass4sure1. What is the fallback sequence that the router Pass4sure1 will use to find an IOS during reload?

A. TFTP server, Flash, NVRAM

B. NVRAM, TFTP server, ROM

C. ROM, NVRAM, TFTP server

D. Flash, TFTP server, ROM

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Mark for Review

There are no boot system commands in the router configuration in NVRAM for router Pass4sure1. What is the fallback sequence that the router Pass4sure1 will use to find an IOS during reload?

- A. TFTP server, Flash, NVRAM
- B. NVRAM, TFTP server, ROM
- C. ROM, NVRAM, TFTP server
- D. Flash, TFTP server, ROM

## Answer & Explanation

### Correct Answer

D

### Explanations

Cisco routers can boot Cisco IOS software from these locations:
1. Flash memory
2. TFTP server
3. ROM (not full Cisco IOS)

Multiple source options provide flexibility and fallback alternatives
Locating the Cisco IOS Software
Default boot sequence for Cisco IOS software:
1. NVRAM
2. Flash (sequential)
3. TFTP server (network boot)
4. ROM (partial IOS)

Note: boot system commands can be used to specify the primary IOS source and fallback sequences.
Booting up the router and locating the Cisco IOS
1. POST (power on self test)
2. Bootstrap code executed

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Which is the correct fallback sequence for loading the Cisco IOS?

- A. ROM, Flash, NVRAM
- B. ROM, TFTP server, Flash
- C. Flash, TFTP server, ROM
- D. Flash, NVRAM, RAM

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Mark for Review

Which is the correct fallback sequence for loading the Cisco IOS?

- A. ROM, Flash, NVRAM
- B. ROM, TFTP server, Flash
- C. Flash, TFTP server, ROM
- D. Flash, NVRAM, RAM

## Answer & Explanation

### Correct Answer

C

### Explanations

Cisco routers can boot Cisco IOS software from these locations:
1. Flash memory
2. TFTP server
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Booting up the router and locating the Cisco IOS
1. POST (power on self test)
2. Bootstrap code executed

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Mark for Review

During startup, router Pass4sure1 displays the following error message:

boot: cannot open "flash:" What will Pass4sure1 do next?

A. Because of damaged flash memory, the router will fail the POST.

B. It will attempt to locate the configuration file from a TFTP server. If this fails, it will initiate the setup dialog.

C. It will attempt to locate the IOS from a TFTP server. If this fails, it will load a limited IOS from ROM.

D. It will attempt to locate the IOS from a TFTP server. If this fails, it will initiate the setup dialog

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Mark for Review

During startup, router Pass4sure1 displays the following error message:

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D. It will attempt to locate the IOS from a TFTP server. If this fails, it will initiate the setup dialog

## Answer & Explanation

### Correct Answer

C

### Explanations

The Loading sequence of CISCO IOS is as follows:
Booting up the router and locating the Cisco IOS
1. POST (power on self test)
2. Bootstrap code executed
3. Check Configuration Register value (NVRAM) which can be modified using the config-register command
0 = ROM Monitor mode
1 = ROM IOS
2 - 15 = startup-config in NVRAM
4. Startup-config file: Check for boot system commands (NVRAM)
If boot system commands in startup-config
a. Run boot system commands in order they appear in startup-config to locate the IOS
b. [If boot system commands fail, use default fallback sequence to locate the IOS (Flash, TFTP, ROM)?]

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Mark for Review

What will a new Pass4sure router do during startup if a configuration file is not located in NVRAM?

A. It will search for the configuration file on a TFTP server and if no configuration file is found there, it will load a limited configuration file from ROM.

B. It will search for the configuration file in flash and if no configuration file is found there, it will enter the setup dialog.

C. It will search for the configuration file on a TFTP server and if no configuration file is found there, it will enter the setup dialog.

D. It will search for the configuration file in flash and if no configuration file is found there, it will load a limited configuration file from ROM.

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Mark for Review

What will a new Pass4sure router do during startup if a configuration file is not located in NVRAM?

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C. It will search for the configuration file on a TFTP server and if no configuration file is found there, it will enter the setup dialog.

D. It will search for the configuration file in flash and if no configuration file is found there, it will load a limited configuration file from ROM.

## Answer & Explanation

### Correct Answer

C

### Explanations

1. Routers will conduct self-inspection after startup;
2. when self-inspection is completed, first read BootStrap program in ROM for a preliminary procedure guide;
3. Then try to locate and read the full IOS image file. Here, the router will first search for IOS documents in FLASH, if found, then read the IOS document to guide the router;
4. If no IOS document is found, then the router will enter BOOT mode, and use the IOS document on TFTP. Or use TFTP / X-MODEM to send an IOS document to the router FLASH. Then restart the router, and the router will start in CLI mode.

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Mark for Review

Refer to the graphic. A network associate is planning to copy a new IOS image into the P4S1 router. This new image requires 8 MB of flash memory and 32 MB of RAM. How will the IOS proceed with the copy process?

```
P4S1# show flash
System flash directory
File Length Name/status
1 8760520 c4500-js-mz. 121-7b.bin
[8760584 bytes used, 16405240 available, 25165824 total]

24576K bytes of processor board System flash (Read/Write)
```

A. The new IOS will be copied into flash memory and the current image will remain.

B. IOS will issue an error message because flash memory is not large enough to hold the new image.

C. During the copy process, the current IOS image will be erased.

D. The current IOS image must be manually erased before IOS will allow the new image to be copied.

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C. During the copy process, the current IOS image will be erased.

D. The current IOS image must be manually erased before IOS will allow the new image to be copied.

## Answer & Explanation

### Correct Answer

A

### Explanations

Through the above chart we can see that the total space of current flash is 25 M, available space being 16 M, so 8M new image will be copied into the flash, while the original image will be preserved.

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Mark for Review

The left describes boot sequence, while the right describes the orders.
Drag the items on the left to the proper locations.

- If no configuration file is located, the setup dialog initiates
- The IOS is located and loaded based on boot system commands in NVRAM
- The power on self test executes
- The bootstrap loader in ROM executes
- The configuration file is loaded from NVRAM

| |
|---|
| Step 1 |
| Step 2 |
| Step 3 |
| Step 4 |
| Step 5 |

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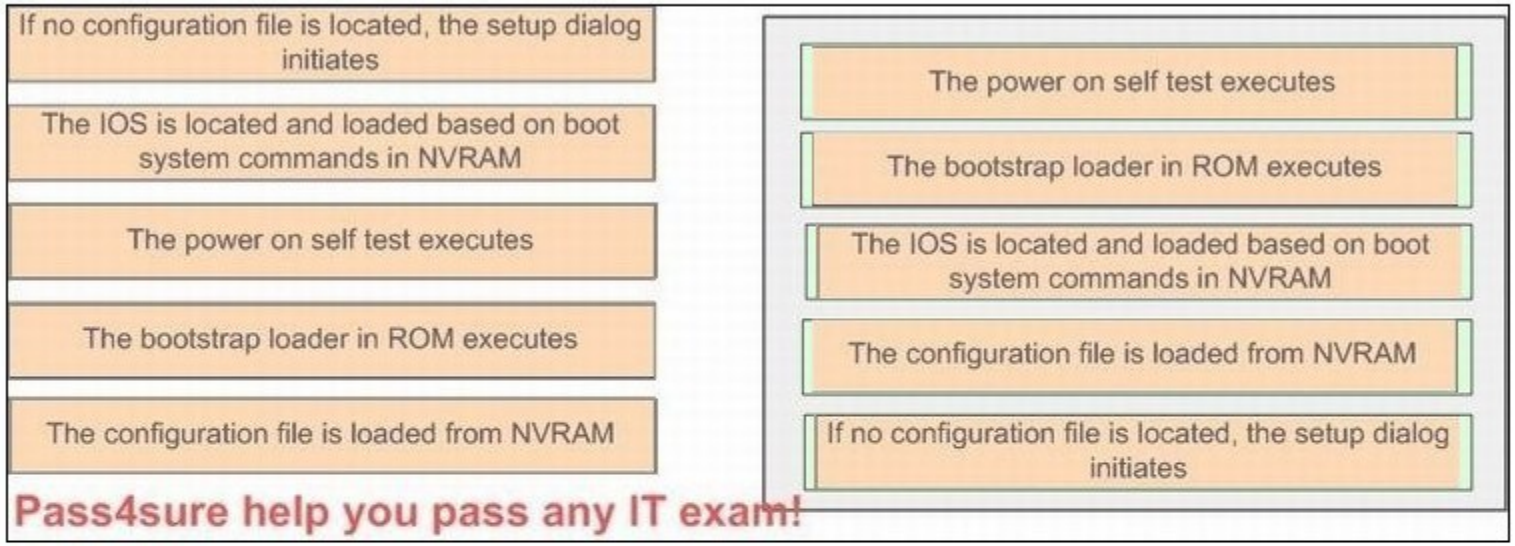
Mark for Review

## Answer & Explanation

### Correct Answer




### Explanations

This question is to check the knowledge of Router Boot Process.
1. Carry out a power-on self-test (POST).
2. Load and boot microcode. (stored in ROM)
3. Find IOS image.
   a: Check the configuration register.
   b: Resolve the configuration files in NVRAM.
   c: By default, use the first file in flash.
   d: Try to boot from the network
   e□ RXBOOT
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7.Operating normally

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Mark for Review

What will happen after changing the configuration register to 0x2142 and rebooting the router? (Choose two.)

- A. The IOS image will be ignored.
- B. The router will prompt to enter initial configuration mode.
- C. The configuration in flash memory will be booted.
- D. Any configuration entries in NVRAM will be ignored.

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Mark for Review

What will happen after changing the configuration register to 0x2142 and rebooting the router? (Choose two.)

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- C. The configuration in flash memory will be booted.
- D. Any configuration entries in NVRAM will be ignored.

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to check the knowledge of the recovery of the router's password. In normal situation, the configuration register's value is 0x2102□here it is 0x2142□that indicates that it is unnecessary to load startup-config file when rebooting. We can alter the value of the configuration register to change the way in which the router operates and boots. By default, the router will find and load the routing configuration file□startup-config file□stored in NVRAM. When recovering the password, it is necessary to boot the sixth bit of the configuration register to tell the router to ignore NVRAM content. The value of the configuration resister with the sixth bit booted is 0x2142.

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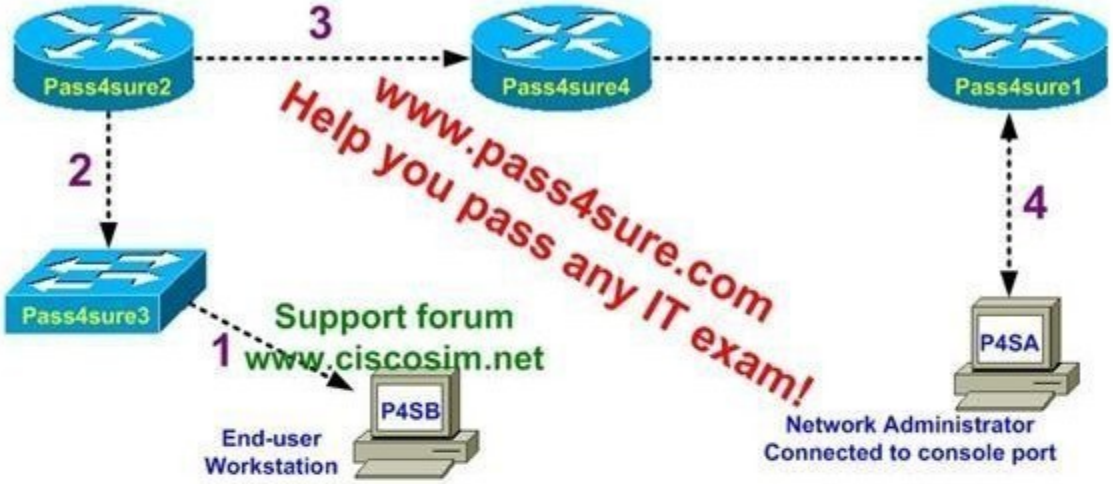
Mark for Review

Part of the Pass4sure network is shown below:




Based on the diagram shown above, 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 straight-through cable
2 - Ethernet crossover cable
3 - Serial cable
4 - Rollover cable

D. 1 - Ethernet rollover cable
2 - Ethernet crossover cable
3 - Serial cable
4 - Null modem cable

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Based on the diagram shown above, what kind of cable should be used to make each connection that is identified by the numbers shown?

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2 - Ethernet crossover cable
3 - Serial cable
4 - Rollover cable

D. 1 - Ethernet rollover cable
2 - Ethernet crossover cable
3 - Serial cable
4 - Null modem cable

## Answer & Explanation

### Correct Answer

B

### Explanations

For Ethernet, use crossover cable for connection between DTE devices or connection from DCE to DCE devices; use straight-through cable for connection from DTE to DCE. DCE device is a hub or switch. Rollover cable is not used to connect Ethernet, which is used to connect host and port com of the router. The cable to connect console port is known as console cable.

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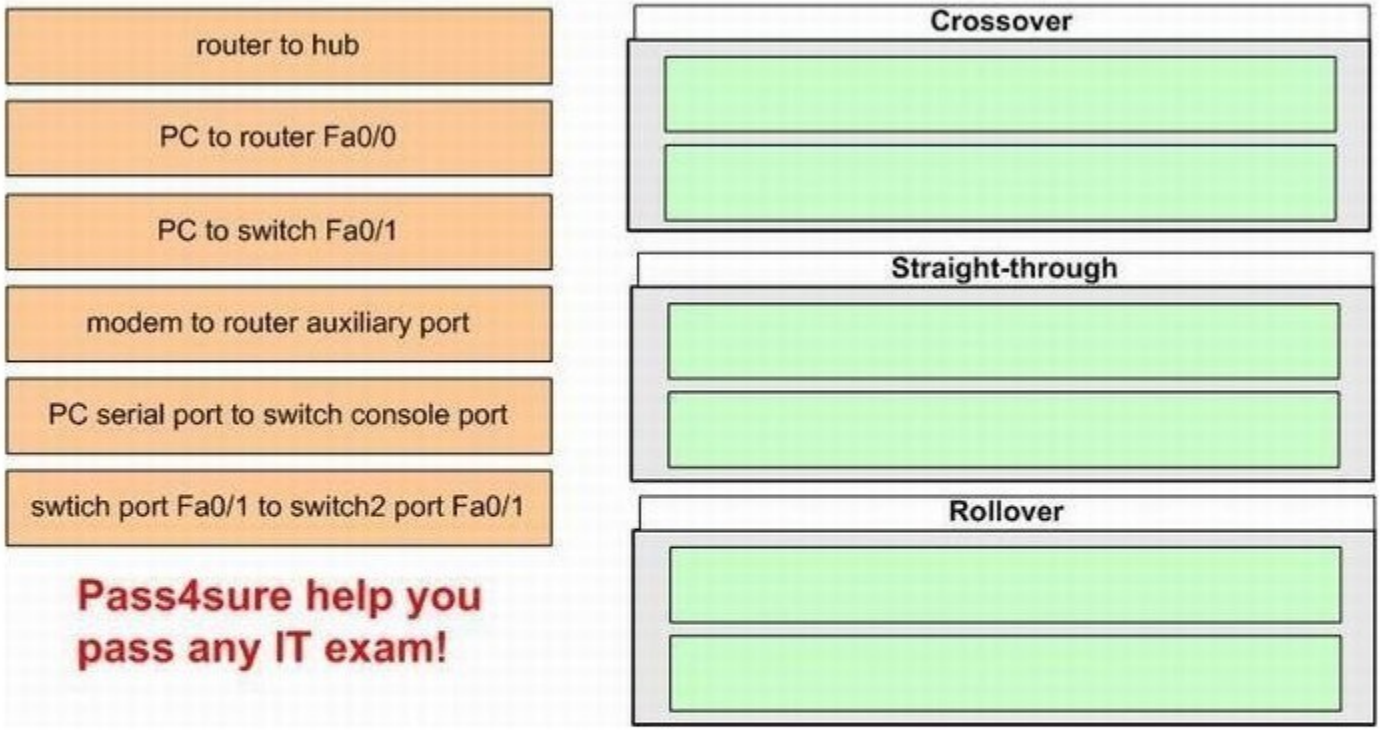
Mark for Review

The left describes some types of connections, while the right describes some types of cables.
Drag the items on the left to the proper locations.

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Mark for Review

swtich port Fa0/1 to switch2 port Fa0/1

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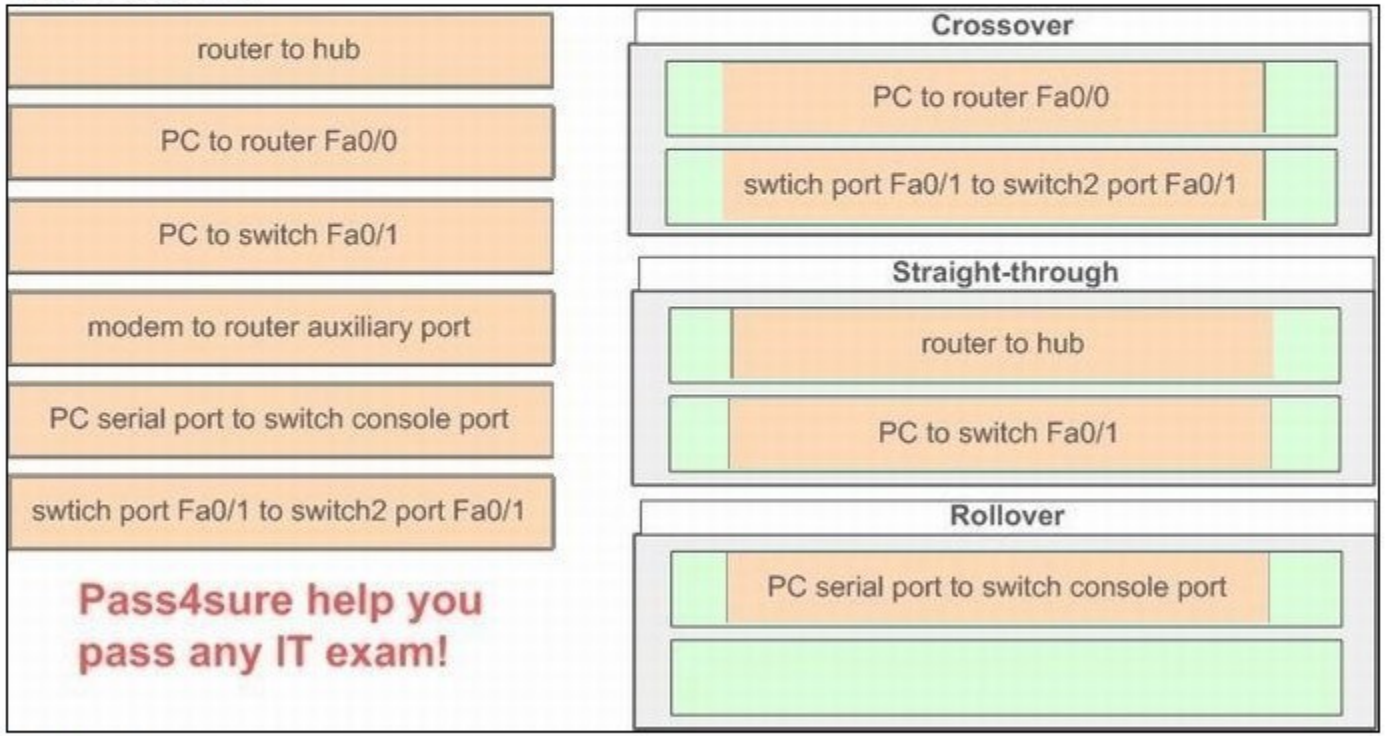
Rollover

## Answer & Explanation

### Correct Answer




### Explanations

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Mark for Review

The following output was shown on router P4S1:

```
R  10.10.10.8 [120/2] via  10.10.10.6,  00:00:25, Serial0/1
```

Based on the information shown above, what can be determined from the line of show ip route output shown in the exhibit? (Choose two)

- A. The 10.10.10.8 network is two hops away from this router.
- B. The next routing update can be expected in 35 seconds.
- C. The IP address 10.10.10.6 is configured on S0/1.
- D. This route is using the default administrative distance.

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Mark for Review

The following output was shown on router P4S1:

```
R  10.10.10.8 [120/2] via  10.10.10.6,  00:00:25, Serial0/1
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Based on the information shown above, what can be determined from the line of show ip route output shown in the exhibit? (Choose two)

- A. The 10.10.10.8 network is two hops away from this router.
- B. The next routing update can be expected in 35 seconds.
- C. The IP address 10.10.10.6 is configured on S0/1.
- D. This route is using the default administrative distance.

## Answer & Explanation

**Correct Answer**

A D

**Explanations**

The 120 in the RIP route is administrative distance; 2 is metric value, i.e. the route pass through 2 routers.

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The Routing Information Protocol (RIP) is a dynamic routing protocol used in local area networks. What is the default routing update period for RIPv2?

- A. 15 seconds
- B. 180 seconds
- C. 30 seconds
- D. 240 seconds

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Mark for Review

The Routing Information Protocol (RIP) is a dynamic routing protocol used in local area networks. What is the default routing update period for RIPv2?

- A. 15 seconds
- B. 180 seconds
- C. 30 seconds
- D. 240 seconds

## Answer & Explanation

### Correct Answer

C

### Explanations

The fact that RIP only records one route for each destination requires RIP to actively maintain the integrity of the routing tables, which can be achieved by asking all active RIP routers to broadcast contents of routing table to adjacent RIP routers in a fixed time interval. All received updated information automatically replaces the information included in the routing table.
RIP maintains routing table depending on three timers.
Update timer.
Routing-timeout timer.
Routing-refresh timer.
Update timer can be used to update initialized routing table on a node. Each RIP node only uses one update timer. On the contrary, both routing-timeout timer and routing-refresh timer are that each router maintains one.
RIP router triggers update every 30 seconds . Update timer is used to record the amount of time. Once the time is up, RIP node will produce a series of datagrams including its own routing table.
These datagrams are broadcast to each adjacent node. Therefore, each RIP router will receive update about every 30 seconds from each RIP adjacent node.

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Mark for Review

Part of the Pass4sure WAN is shown below:

The Pass4sure network shown in the exhibit above is running the RIP version 2. This network has converged, and the routers in this network are functioning properly. Then, the FastEthernet0/0 interface on router Pass4sure1 goes down. In which two ways will the routers in this network respond to this change? (Choose two)

- A. Routers Pass4sure2 and Pass4sure3 mark the route as inaccessible and will not accept any further routing updates from Pass4sure1 until their hold-down timers expire.
- B. All routers will reference their topology database to determine if any backup routes to the 192.168.1.0 network are known.
- C. Because of the split-horizon rule, router Pass4sure2 will be prevented from sending erroneous information to Pass4sure1 about connectivity to the 192.168.1.0 network.
- D. When router Pass4sure2 learns from Pass4sure1 that the link to the 192.168.1.0 network has been lost, Pass4sure2 will respond by sending a route back to Pass4sure1 with an infinite metric to the 192.168.1.0 network.

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Mark for Review

Part of the Pass4sure WAN is shown below:

The Pass4sure network shown in the exhibit above is running the RIP version 2. This network has converged, and the routers in this network are functioning properly. Then, the FastEthernet0/0 interface on router Pass4sure1 goes down. In which two ways will the routers in this network respond to this change? (Choose two)

- A. Routers Pass4sure2 and Pass4sure3 mark the route as inaccessible and will not accept any further routing updates from Pass4sure1 until their hold-down timers expire.
- B. All routers will reference their topology database to determine if any backup routes to the 192.168.1.0 network are known.
- C. Because of the split-horizon rule, router Pass4sure2 will be prevented from sending erroneous information to Pass4sure1 about connectivity to the 192.168.1.0 network.
- D. When router Pass4sure2 learns from Pass4sure1 that the link to the 192.168.1.0 network has been lost, Pass4sure2 will respond by sending a route back to Pass4sure1 with an infinite metric to the 192.168.1.0 network.

## Answer & Explanation

### Correct Answer

C D

### Explanations

After the network topology is changed , RIPv2 will send triggered update in the network .
The following are the key characteristics of RIPv2 pertaining to this question:
1. Split horizon - RIP doesn't advertise routes back out the interface in which they came. Or put another way, a router won't tell a neighbor about routes that the neighbor presumably already knows about. That would be silly, and could cause a loop in certain circumstances.
2. Triggered update - RIP will send an update out just a soon as the routing table changes. He won't wait for the Update timer to expire.
3. Route poisoning- RIP will tell other routers that a failed route is junk by advertising it with an infinite metric (which is 16 for RIP), effectively poisoning it.

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Mark for Review

The Pass4sure WAN is migrating from RIPv1 to RIPv2. Which three statements are correct about RIP version 2? (Choose three)

- A. It has the same maximum hop count as version 1.
- B. It has a lower default administrative distance than RIP version 1.
- C. It is a classless routing protocol.
- D. It uses broadcasts for its routing updates.
- E. It supports authentication.

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Mark for Review

A. It has the same maximum hop count as version 1.

B. It has a lower default administrative distance than RIP version 1.

C. It is a classless routing protocol.

D. It uses broadcasts for its routing updates.

E. It supports authentication.

## Answer & Explanation

### Correct Answer

A C E

### Explanations

RIPV1
RIPV1 is a classful routing protocol , it sends update packets which does not contain subnet mask information every 30 seconds , it does not support VLSM and performs border automatic route summary by default, it can't be shut down, so it does not support non-consecutive networks and authentication, it uses hop counts as metric, the administrative distance is 120. Each packet contains 25 routing information at most , and routing update is broadcast.

RIPV2
RIPV2 is a classless routing protocol, whose transmitted packets contain subnet mask information , it supports VLSM and enables the function of auto-summary . So , it is needed to manually shut down the function of auto-summary in order to send subnet information to the main network . RIPV2 only supports summarizing routing to the main network instead of summarizing different main networks. So it does not support CIDR. RIPV2 updates routing by use of the multicast address 224.0.0.9, only the corresponding multicast MAC address can reply to packets. Whether reply to packets and support authentication or not can be distinguished at the MAC layer.

Note : Refer to the classful routing protocol, when the subnet of the interface sending routing packets is in the same main network as the subnet associated with the packets, the router can transmit subnet information through this interface assuming that the interface and the subnet of packets use the same subnet mask.

What is the consecutive subnet:
Consecutive subnets belong to the same main network and use the same subnet mask, otherwise it is not. Using the manual summary command on the interface: ip summary-address rip to summarize subnet and subnet mask . RIP uses UDP(User Datagram Protocol)520 port to transmit routing update packets .

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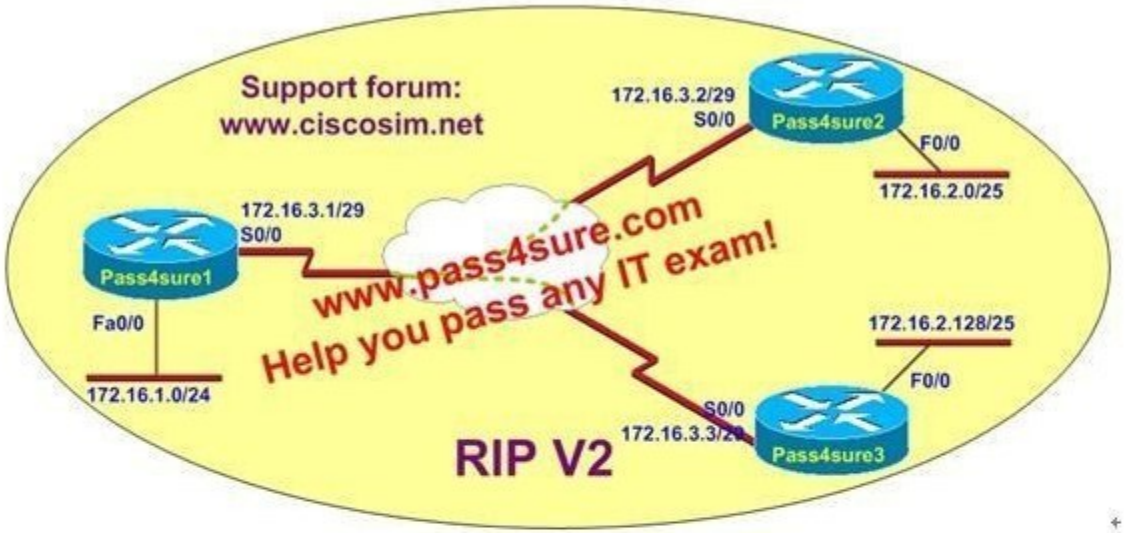
Mark for Review

Three Pass4sure routers are connected as shown below:




Here, serial 0/0 on Pass4sure1 is configured as a multipoint interface to communicate with Pass4sure2 and Pass4sure3 in this hub-and-spoke Frame Relay topology. While testing this configuration, a technician notes that pings are successful from hosts on the 172.16.1.0/24 network to hosts on both the 172.16.2.0/25 and 172.16.2.128/25 networks. However, pings between hosts on the 172.16.2.0/25 and 172.16.2.128/25 networks are not successful. Of the following choices, what could explain this connectivity problem?

A. The ip subnet-zero command has been issued on the Pass4sure1 router.

B. The 172.16.2.0/25 and 172.16.2.128/25 networks are overlapping networks that can be seen by Pass4sure1, but not between Pass4sure2 and Pass4sure3.

C. Split horizon is preventing Pass4sure2 from learning about the Pass4sure3 networks and Pass4sure3 from learning about the Pass4sure2 networks.

D. The RIP v2 dynamic routing protocol cannot be used across a Frame Relay network.

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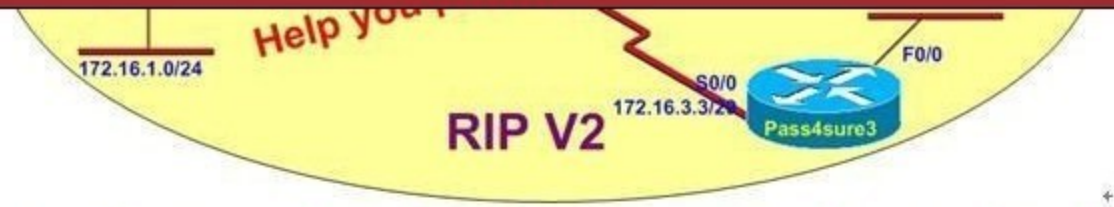


Here, serial 0/0 on Pass4sure1 is configured as a multipoint interface to communicate with Pass4sure2 and Pass4sure3 in this hub-and-spoke Frame Relay topology. While testing this configuration, a technician notes that pings are successful from hosts on the 172.16.1.0/24 network to hosts on both the 172.16.2.0/25 and 172.16.2.128/25 networks. However, pings between hosts on the 172.16.2.0/25 and 172.16.2.128/25 networks are not successful. Of the following choices, what could explain this connectivity problem?

A. The ip subnet-zero command has been issued on the Pass4sure1 router.

B. The 172.16.2.0/25 and 172.16.2.128/25 networks are overlapping networks that can be seen by Pass4sure1, but not between Pass4sure2 and Pass4sure3.

C. Split horizon is preventing Pass4sure2 from learning about the Pass4sure3 networks and Pass4sure3 from learning about the Pass4sure2 networks.

D. The RIP v2 dynamic routing protocol cannot be used across a Frame Relay network.

## Answer & Explanation

### Correct Answer

C

### Explanations

Under normal circumstances, the router that is connected to the broadcast IP network and uses the distance vector routing protocol will use split horizon mechanism to avoid routing loop.
Split horizon is a technology to avoid routing loop and speed up the routing convergence. The router may receive the routing information sent by itself which is useless, split horizon will not advertise the routing update information back received from the terminal , while it will advertise those routes that will not be cleared because of the endless counting .It can be simply interpreted that the route learnt by a router from one interface will not be sent through the same interface .
For the non-broadcast network (such as Frame -Relay and High Speed Switched Data Services), the effect of split horizon is not ideal.
So, we can use the following commands to disable or enable split horizon.
ip split-horizon  to enable split horizon
no ip split-horizon  to disable split horizon

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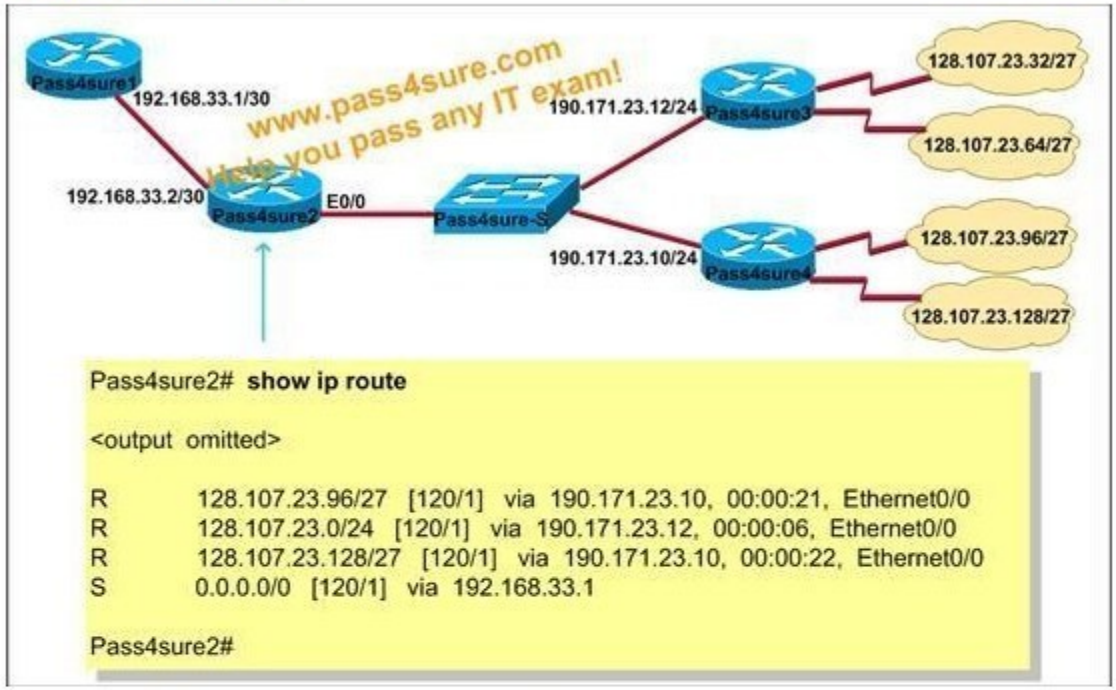
Mark for Review

A Pass4sure network is shown in the exhibit below:




Please study the exhibit shown above carefully, RIPv2 is in use on the network with no standard policy in place for summarization. A packet arrives at Pass4sure2 with a destination IP address of 208.149.23.91. Given the output that is shown, how will Pass4sure2 process that packet?

- A. It will hold the packet for 22 seconds.
- B. It will forward the packet to 190.171.23.10.
- C. It will forward the packet to 192.168.33.1.
- D. It will discard the packet because there is no matching route.

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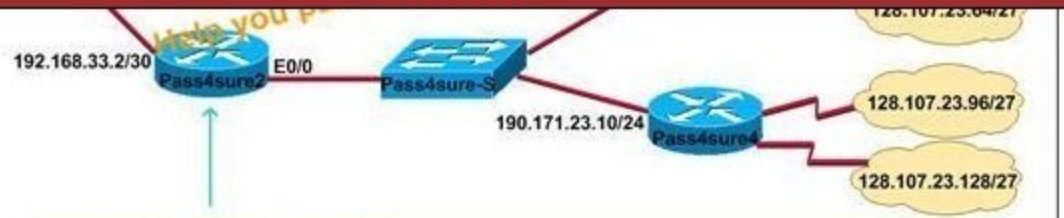


```
Pass4sure2# show ip route

<output omitted>

R        128.107.23.96/27 [120/1] via 190.171.23.10, 00:00:21, Ethernet0/0
R        128.107.23.0/24 [120/1] via 190.171.23.12, 00:00:06, Ethernet0/0
R        128.107.23.128/27 [120/1] via 190.171.23.10, 00:00:22, Ethernet0/0
S        0.0.0.0/0 [120/1] via 192.168.33.1

Pass4sure2#
```

Please study the exhibit shown above carefully, RIPv2 is in use on the network with no standard policy in place for summarization. A packet arrives at Pass4sure2 with a destination IP address of 208.149.23.91. Given the output that is shown, how will Pass4sure2 process that packet?

A. It will hold the packet for 22 seconds.

B. It will forward the packet to 190.171.23.10.

C. It will forward the packet to 192.168.33.1.

D. It will discard the packet because there is no matching route.

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to check the knowledge of routing sequence for the routing table.
When implementing classless routing, the router will not pay attention to the class of the destination address, it will match the destination address to all the known addresses. If there is no matching route, the data packets will be forwarded to the default route provided that the default route exists.

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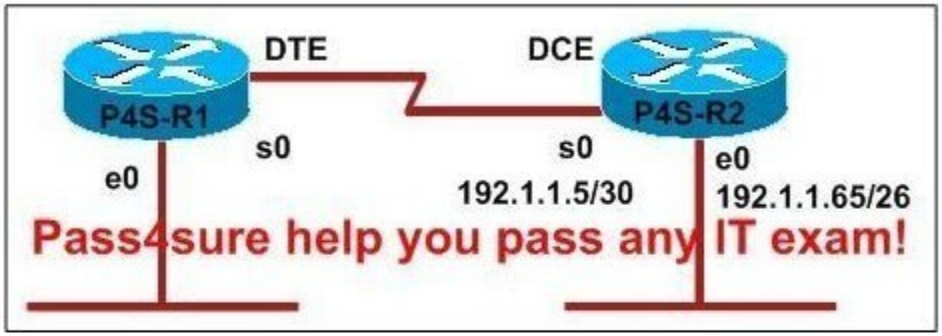
Mark for Review

Refer to the following graphic, the enterprise network address is 192.1.1.0/24 and the routing protocol being used is RIP. Which set of commands can be used on P4S-R1 to build LAN-to-LAN communication between P4S-R1 and P4S-R2? (Choose three.)




A. P4S-R1(config)# interface ethernet 0
P4S-R1(config-if)# ip address 192.1.1.129 255.255.255.192
P4S-R1(config-if)# no shutdown

B. P4S-R1(config)# interface ethernet 0
P4S-R1(config-if)# ip address 192.1.1.97 255.255.255.192
P4S-R1(config-if)# no shutdown

C. P4S-R1(config)# router rip
P4S-R1(config-router)# version 2
P4S-R1(config-router)# network 192.1.1.0

D. P4S-R1(config)# interface serial 0
P4S-R1(config-if)# ip address 192.1.1.6 255.255.255.252
P4S-R1(config-if)# no shutdown

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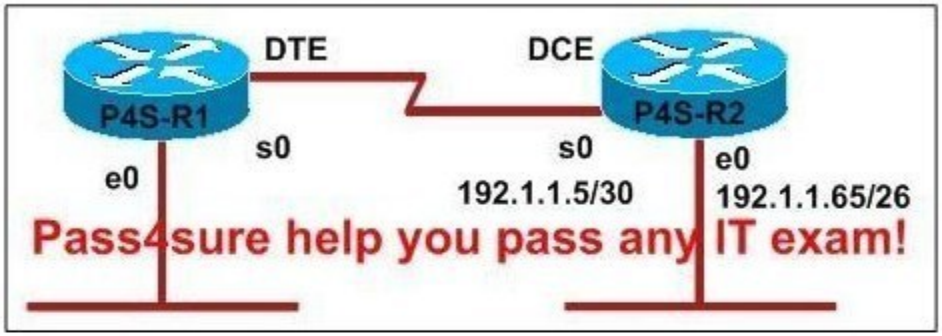
Mark for Review

Refer to the following graphic, the enterprise network address is 192.1.1.0/24 and the routing protocol being used is RIP. Which set of commands can be used on P4S-R1 to build LAN-to-LAN communication between P4S-R1 and P4S-R2? (Choose three.)




- A. P4S-R1(config)# interface ethernet 0
  P4S-R1(config-if)# ip address 192.1.1.129 255.255.255.192
  P4S-R1(config-if)# no shutdown
- B. P4S-R1(config)# interface ethernet 0
  P4S-R1(config-if)# ip address 192.1.1.97 255.255.255.192
  P4S-R1(config-if)# no shutdown
- C. P4S-R1(config)# router rip
  P4S-R1(config-router)# version 2
  P4S-R1(config-router)# network 192.1.1.0
- D. P4S-R1(config)# interface serial 0
  P4S-R1(config-if)# ip address 192.1.1.6 255.255.255.252
  P4S-R1(config-if)# no shutdown

## Answer & Explanation

### Correct Answer

A C D

### Explanations

Because the IP address is classless, RIP v2 should be enabled.

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Lab Simulation

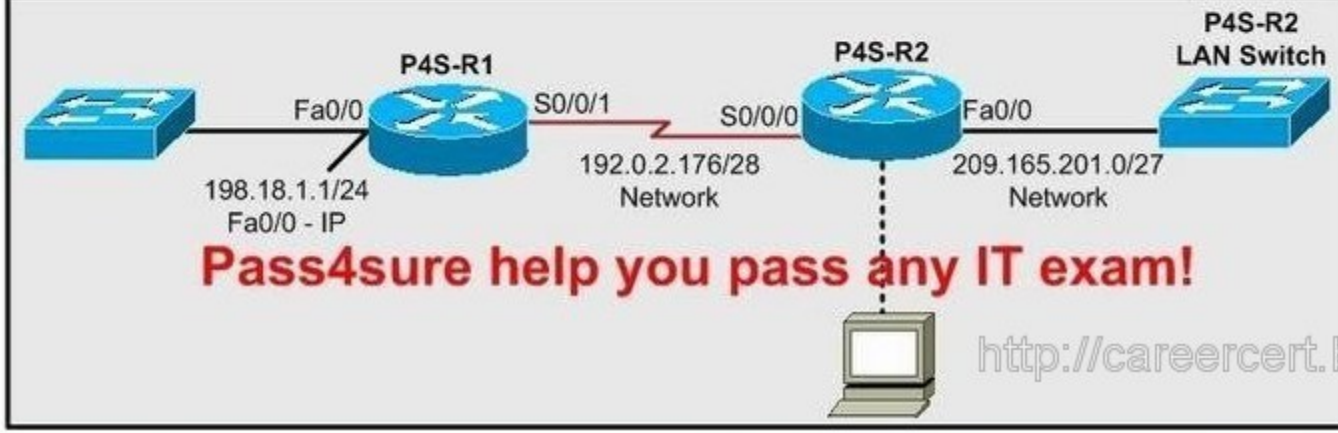
Central Florida Widgets recently installed a new router in their office. Complete the network installation by performing the initial router configurations and configuring RIPV2 routing using the router command line interface (CLI) on the P4S-RC.

Configure the router per the following requirements:

Name of the router is **P4S-R2**
Enable-secret password is **pass4sure1**
The password to access user EXEC mode using the console is **pass4sure2**
The password to allow telnet access to the router is **pass4sure3**
IPV4 addresses must be configured as follows:
Ethernet network **209.165.201.0/27** - router has **fourth** assignable host address in subnet
Serial network is **192.0.2.176/28** - router has **last** assignable host address in the subnet.
Interfaces should be enabled.
Router protocol is **RIPV2**

**Attention:**

**In practical examinations, please note the following, the actual information will prevail.**
**1. Name of the router is xxx**
**2. Enable-secret password is xxx**
**3. Password to access user EXEC mode using the console is xxx**
**4. The password to allow telnet access to the router is xxx**
**5. IP information**



## Answer & Explanation

### Correct Answer

```
Router>enable
Router#config terminal
Router(config)#hostname P4S-R2
P4S-R2(config)#enable secret pass4sure1
P4S-R2(config)#line console 0
P4S-R2(config-line)#password pass4sure2
P4S-R2(config-line)#exit
P4S-R2(config)#line vty 0 4
P4S-R2(config-line)#password pass4sure3
P4S-R2(config-line)#login
P4S-R2(config-line)#exit
P4S-R2(config)#interface fa0/0
P4S-R2(config-if)#ip address 209.165.201.4 255.255.255.224
P4S-R2(config-if)#no shutdown
P4S-R2(config)#interface s0/0/0
P4S-R2(config-if)#ip address 192.0.2.190 255.255.255.240
P4S-R2(config-if)#no shutdown
P4S-R2(config-if)#exit
P4S-R2(config)#router rip
P4S-R2(config-router)#version 2
P4S-R2(config-router)#network 209.165.201.0
P4S-R2(config-router)#network 192.0.2.176
P4S-R2(config-router)#end
P4S-R2#copy run start
```

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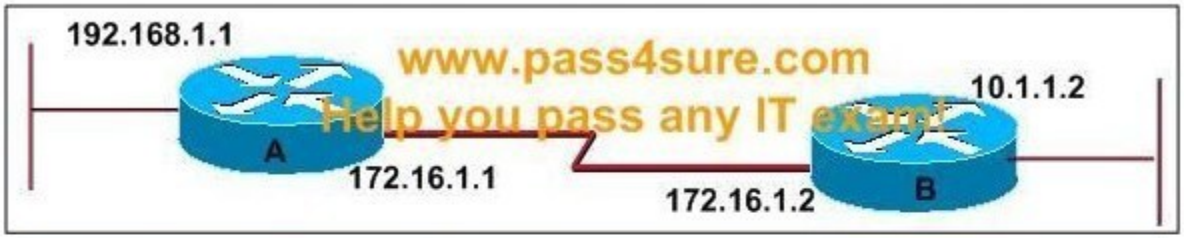
### Explanations

No more information available

Mark for Review

Refer to the exhibit. Router A has interfaces with addresses 192.168.1.1 and 172.16.1.1. Router B, which is connected to router A over a serial link, has interfaces with address 172.16.1.2 and 10.1.1.2.Which sequence of commands will configure RIPv2 on router B?

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A
```
B(config)# router rip
B(config-router)# version 2
B(config-router)# network 172.16.0.0
B(config-router)# network 10.0.0.0
B(config-router)# end
```

B
```
B(config)# router rip 2
B(config-router)# network 172.16.0.0
B(config-router)# network 10.0.0.0
B(config-router)# end
```

C
```
B(config)# router rip
B(config-router)# version 2
B(config-router)# network 172.16.0.0
B(config-router)# network 192.168.1.0
B(config-router)# end
```

D
```
B(config)# router rip version 2
B(config-router)# network 172.16.0.0
B(config-router)# network 10.0.0.0
B(config-router)# end
```

- A. A
- B. B
- C. C
- D. D

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## Answer & Explanation

### Correct Answer

A

### Explanations

The Routing Information Protocol (RIP) is a relatively old, but still commonly used, interior gateway protocol (IGP) created for use in small, homogeneous networks. It is a classical distance-vector routing protocol. RIP is documented in RFC 1058.

RIP uses broadcast User Datagram Protocol (UDP) data packets to exchange routing information. The Cisco IOS software sends routing information updates every 30 seconds; this process is termed advertising. If a router does not receive an update from another router for 180 seconds or more, it marks the routes served by the non-updating router as being unusable. If there is still no update after 240 seconds, the router removes all routing table entries for the non-updating router.

The metric that RIP uses to rate the value of different routes is hop count. The hop count is the number of routers that can be traversed in a route. A directly connected network has a metric of zero; an unreachable network has a metric of 16. This small range of metrics makes RIP an unsuitable routing protocol for large networks.

If the router has a default network path, RIP advertises a route that links the router to the pseudonetwork 0.0.0.0. The network 0.0.0.0 does not exist; RIP treats 0.0.0.0 as a network to implement the default routing feature. The Cisco IOS software will advertise the default network if a default was learned by RIP, or if the router has a gateway of last resort and RIP is configured with a default metric.

RIP sends updates to the interfaces in the specified networks. If an interface's network is not specified, it will not be advertised in any RIP update.

Cisco's implementation of RIP Version 2 supports plain text and MD5 authentication, route summarization, classless interdomain routing (CIDR), and variable-length subnet masks (VLSMs).

Enable RIP
To enable RIP, use the following commands, starting in global configuration mode:

| Step | Command | Purpose |
|---|---|---|
| 1 | router rip | Enable a RIP routing process,which places you in router configuration mode. |
| 2 | network network-number | Associate a network with a RIP routing process. |

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information updates every 30 seconds; this process is termed advertising. If a router does not receive an update from another router for 180 seconds or more, it marks the routes served by the non-updating router as being unusable. If there is still no update after 240 seconds, the router removes all routing table entries for the non-updating router.

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RIP sends updates to the interfaces in the specified networks. If an interface's network is not specified, it will not be advertised in any RIP update.

Cisco's implementation of RIP Version 2 supports plain text and MD5 authentication, route summarization, classless interdomain routing (CIDR), and variable-length subnet masks (VLSMs).

Enable RIP
To enable RIP, use the following commands, starting in global configuration mode:

| Step | Command | Purpose |
|---|---|---|
| 1 | router rip | Enable a RIP routing process,which places you in router configuration mode. |
| 2 | network network-number | Associate a network with a RIP routing process. |

Because RIP is normally a broadcast protocol, in order for RIP routing updates to reach nonbroadcast networks, you must configure the Cisco IOS software to permit this exchange of routing information. To do so, use the following command in router configuration mode:

| Command | Purpose |
|---|---|
| neighbor ip-address | Define a neighboring router with which to exchange routing information. |

By default, the software receives RIP Version 1 and Version 2 packets, but sends only Version 1 packets. You can configure the software to receive and send only Version 1 packets. Alternatively, you can configure the software to receive and send only Version 2 packets. To do so, use the following command in router configuration mode:

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| Command | Purpose |
|---|---|
| Version{1\|2} | Configure the software to receive and send only RIP Version 1 or only RIP Version 2 packets. |

Mark for Review

The Pass4sure network topology and the output of Pass4sure1 are shown below:

```
Pass4sure1#  show ip route

<output  omitted>

R        208.149.23.96/27  [120/1]  via 190.171.23.10,  00:00:21,  Ethernet0/0
R        208.149.23.0/24   [120/1]  via 190.171.23.12,  00:00:06,  Ethernet0/0
R        208.149.23.128/27 [120/1]  via 190.171.23.10,  00:00:22,  Ethernet0/0

Pass4sure1#
```

Please study the exhibit shown above carefully, what is the most likely reason for the disparity between the actual network numbers at the branches and the routes in the routing table on Pass4sure1 router?

- A. Pass4sure1 is configured to only receive RIPv2 updates.
- B. Pass4sure1 is configured to receive only RIPv1 updates.
- C. Pass4sure3 is configured to send both RIPv1 and RIPv2 updates.
- D. Pass4sure2 is configured to only send RIPv1 updates.

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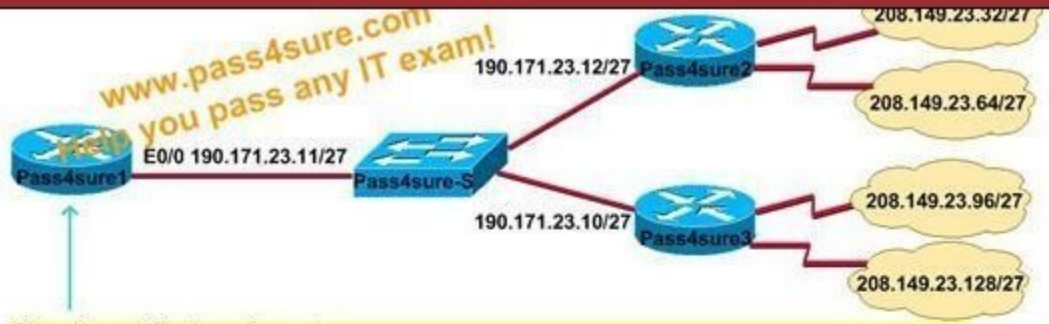
Mark for Review




```
Pass4sure1#  show ip route

<output  omitted>

R        208.149.23.96/27   [120/1]   via  190.171.23.10,  00:00:21,  Ethernet0/0
R        208.149.23.0/24    [120/1]   via  190.171.23.12,  00:00:06,  Ethernet0/0
R        208.149.23.128/27  [120/1]   via  190.171.23.10,  00:00:22,  Ethernet0/0

Pass4sure1#
```

Please study the exhibit shown above carefully, what is the most likely reason for the disparity between the actual network numbers at the branches and the routes in the routing table on Pass4sure1 router?

- A. Pass4sure1 is configured to only receive RIPv2 updates.
- B. Pass4sure1 is configured to receive only RIPv1 updates.
- C. Pass4sure3 is configured to send both RIPv1 and RIPv2 updates.
- D. Pass4sure2 is configured to only send RIPv1 updates.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to check the RIPv1 classful routing knowledge. When enabling RIPv1,route summary will be implemented on the boundary. Because RIPv1 is the main network number based on the classful routing protocol, Pass4sure2 only summarizes 208.149.23.0/24 for Pass4sure1.

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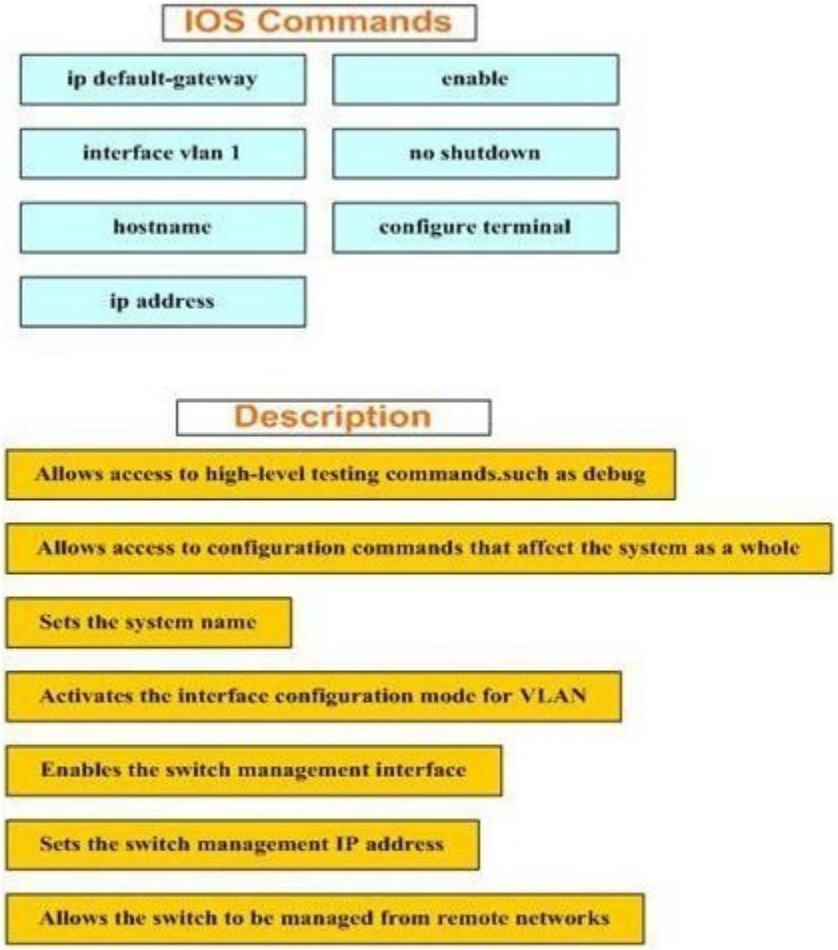
Mark for Review

Drag and drop question. Drag the items to the proper locations.

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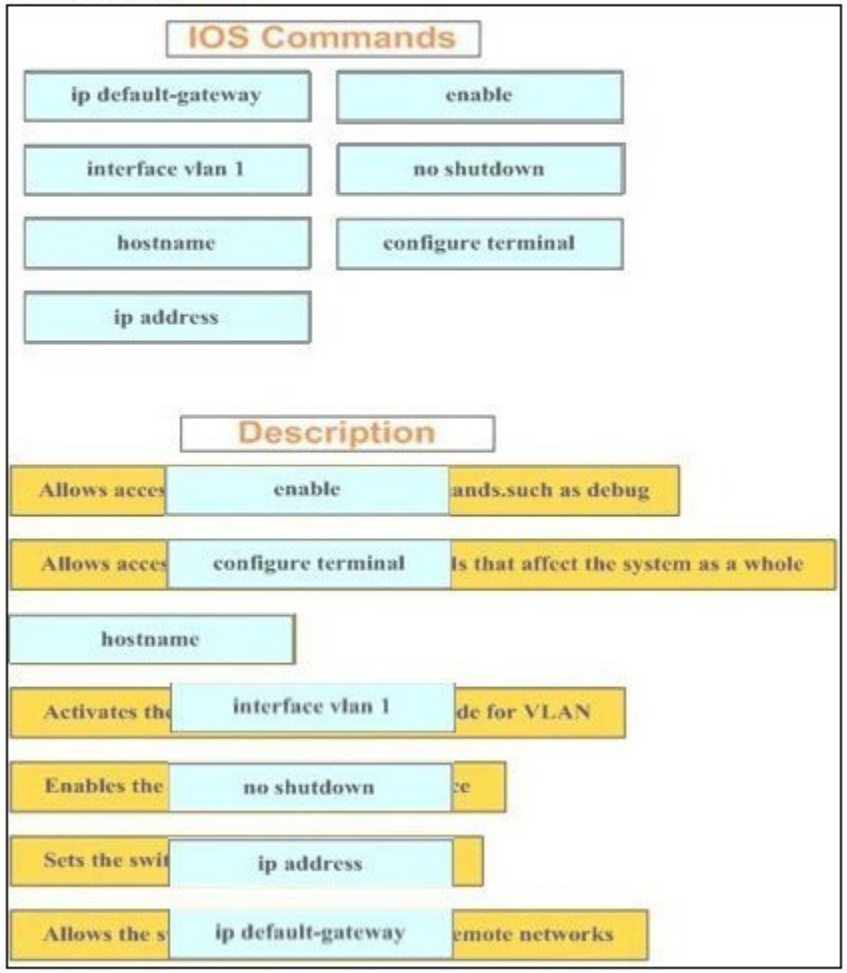
Mark for Review

Sets the switch management IP address

Allows the switch to be managed from remote networks

## Answer & Explanation

### Correct Answer




### Explanations

No more information available

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Mark for Review

The following output was seen on a Pass4sure device:

```
Remote27#
Remote27#telnet access1
Trying ACCESS1 (10.0.0.1)... Open


Password required, but none set

[Connection to access1 closed by foreign host]
Remote27#
```

This graphic shows the result of an attempt to open a Telnet connection to router access1 From Remote27. Which of the following command sequences will correct this problem?

A. ACCESS1(config)# line console 1
ACCESS1(config-line)# password cisco

B. Remote27(config)# line aux 0
Remote27(config-line)# login
Remote27(config-line)# password cisco

C. ACCESS1(config)# line vty 0 4
ACCESS1(config-line)# login
ACCESS1(config-line)# password cisco

D. Remote27(config)# line vty 0 4
Remote27(config-line)# login
Remote27(config-line)# password cisco

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Mark for Review

Password required, but none set

[Connection to access1 closed by foreign host]
Remote27#

This graphic shows the result of an attempt to open a Telnet connection to router access1 From Remote27. Which of the following command sequences will correct this problem?

A. ACCESS1(config)# line console 1
ACCESS1(config-line)# password cisco

B. Remote27(config)# line aux 0
Remote27(config-line)# login
Remote27(config-line)# password cisco

C. ACCESS1(config)# line vty 0 4
ACCESS1(config-line)# login
ACCESS1(config-line)# password cisco

D. Remote27(config)# line vty 0 4
Remote27(config-line)# login
Remote27(config-line)# password cisco

## Answer & Explanation

### Correct Answer

C

### Explanations

The picture shows that it is needed to input password in order to connect Remote27 telnet to access 1 , so it is required to configure password to define the logging password on line cable.
The format of the VTP password configuration is as follows:
Router(config)# line vty 0 4
Router(config-line)# login
Router(config-line)# password cisco

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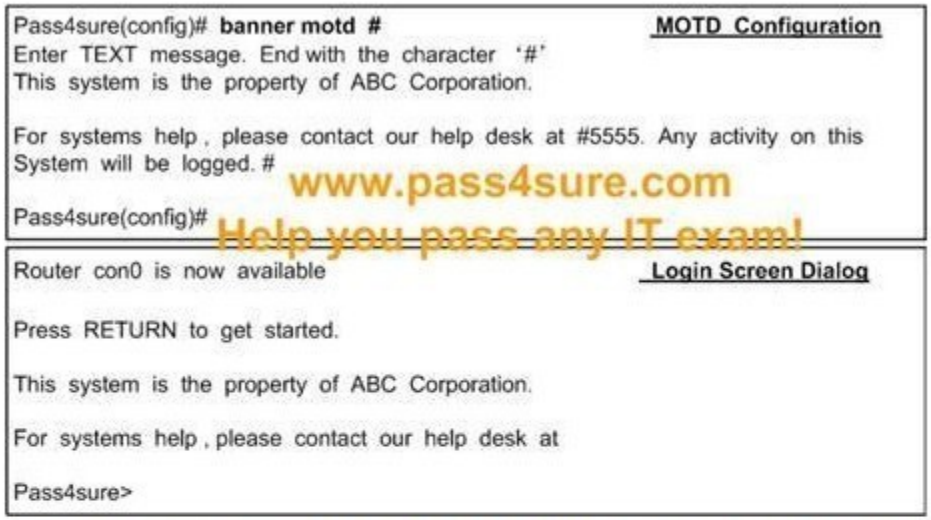
Mark for Review

Exhibit:




On the Pass4sure router, the Pass4sure network administrator enters the MOTD configuration that is shown in the upper box. And then logs into the router and sees the login screen dialog that is shown in the lower box, all are shown above.

Why does the intended message not appear?

- A. The network administrator defined an illegal delimiting character in the MOTD command.
- B. MOTD banner text may contain only letters and numbers.
- C. The IOS image on this router does not support the MOTD configuration shown.
- D. The MOTD delimiting character appeared in the body of the text.
- E. The banner message exceeds the number of characters allowed.

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Mark for Review

```
This system is the property of ABC Corporation.

For systems help , please contact our help desk at #5555. Any activity on this
System will be logged. #

Pass4sure(config)#
```

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```
Router con0 is now available                    Login Screen Dialog

Press RETURN to get started.

This system is the property of ABC Corporation.

For systems help , please contact our help desk at

Pass4sure>
```

On the Pass4sure router, the Pass4sure network administrator enters the MOTD configuration that is shown in the upper box. And then logs into the router and sees the login screen dialog that is shown in the lower box, all are shown above.

Why does the intended message not appear?

- A. The network administrator defined an illegal delimiting character in the MOTD command.
- B. MOTD banner text may contain only letters and numbers.
- C. The IOS image on this router does not support the MOTD configuration shown.
- D. The MOTD delimiting character appeared in the body of the text.
- E. The banner message exceeds the number of characters allowed.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to check the knowledge of mark zone configuration. Using mark zone is to provide the users who dial in your internet with secure Tips. With a mark zone configured on a Cisco router, any user can log into this router or telnet to this router, and the mark zone will display the information you want. Use the banner motd to configure the mark zone.
In the global configuration mode, enter banner motd #, the content followed # will not be displayed.

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Mark for Review

The interface status of a Pass4sure1 router is shown below:

```
Pass4sure1# show interface serial 0/0
Serial0/0 is administratively down , line protocol is down
Hardware is HD64570
Internet address is 192.168.100.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
Reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC , loopback not set
```

The result of the show interfaces serial 0/0 command is displayed in the exhibit.

What command should be executed to make this interface operational?

- A. Pass4sure1(config-if)# enable
- B. Pass4sure1(config-if)# no keepalive
- C. Pass4sure1(config-if)# encapsulation ppp
- D. Pass4sure1(config-if)# no shutdown

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Mark for Review

The interface status of a Pass4sure1 router is shown below:

```
Pass4sure1# show interface serial 0/0
Serial0/0 is administratively down , line protocol is down
Hardware is HD64570
Internet address is 192.168.100.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
Reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC , loopback not set
```

The result of the show interfaces serial 0/0 command is displayed in the exhibit.

What command should be executed to make this interface operational?

- A. Pass4sure1(config-if)# enable
- B. Pass4sure1(config-if)# no keepalive
- C. Pass4sure1(config-if)# encapsulation ppp
- D. Pass4sure1(config-if)# no shutdown

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to check the basic configuration of the router. As we can see from the figure, the interface serial 0/0 is in shutdown status. If you want to activate this interface, only enter no shutdown.

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Mark for Review

The following output was displayed on serial 0/0 a Pass4sure device:

```
Pass4sure2#show interfaces ethernet 0
 Ethernet0 is up, line protocol is up
      Hardware is QUICC Ethernet, address is 00c0.ab73.dead (bia
0010.7bcc.7321)
      MTU 1500 bytes, BW 10000 Kbit , DLY 1000 usec,
          reliablity 255/255 txload 1/255 ,rxload 1/255
      Encapsulation on ARPA,
      Keepalive set (10 sec)
<output omitted>
Pass4sure2#
```

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While troubleshooting the installation of a new Pass4sure LAN device, the command output shown above was issued. What is the meaning of the output "MTU 1500 bytes" shown above?

A. The maximum number of bytes that can traverse this interface per second is 2300.

B. The minimum segment size that can traverse this interface is 4500 bytes.

C. The maximum segment size that can traverse this interface is 5100 bytes.

D. The minimum packet size that can traverse this interface is 1000 bytes.

E. The maximum packet size that can traverse this interface is 1500 bytes.

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Mark for Review

The following output was displayed on serial 0/0 a Pass4sure device:

```
Pass4sure2#show interfaces ethernet 0
 Ethernet0 is up, line protocol is up
      Hardware is QUICC Ethernet, address is 00c0.ab73.dead (bia
0010.7bcc.7321)
      MTU 1500 bytes, BW 10000 Kbit , DLY 1000 usec,
          reliablity 255/255 txload 1/255 ,rxload 1/255
      Encapsulation on ARPA,
      Keepalive set (10 sec)
<output omitted>
Pass4sure2#
```

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While troubleshooting the installation of a new Pass4sure LAN device, the command output shown above was issued. What is the meaning of the output "MTU 1500 bytes" shown above?

A. The maximum number of bytes that can traverse this interface per second is 2300.

B. The minimum segment size that can traverse this interface is 4500 bytes.

C. The maximum segment size that can traverse this interface is 5100 bytes.

D. The minimum packet size that can traverse this interface is 1000 bytes.

E. The maximum packet size that can traverse this interface is 1500 bytes.

## Answer & Explanation

### Correct Answer

E

### Explanations

MTU is short for Maximum Transmission Unit , which refers to the largest data packet transmitted on the network. The unit of MTU is byte. The MTU of most network devices is 1500 byte. If the MTU of the router is larger than that of the gateway, large packets will be split in order to transmit, this causes the production of many data packet fragments, increasing the packet loss rate and lowering the network speed. If the MTU of one device matches that of another, the packet loss rate will be reduced.

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Mark for Review

Refer to the following "show" output:

```
Pass4sure# show interface serial 0/0
 Serial 0/0 is up, line protocol is down
  Hardware is HD64570
  Internet address is 1921.68.100.1/24
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 user,
      reliability 255/255, txload 1/255, rxload 1/255
   Encapsulation HDLC, loopback not set
   Keepalive set (10 sec)
```

What are possible causes for this interface status? (Choose three.)

- A. The interface is shut down.
- B. No keep-alive messages are received.
- C. The clock-rate is not set.
- D. No loopback address is set.
- E. No cable is attached to the interface.
- F. There is a mismatch in the encapsulation type.

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Mark for Review

Refer to the following "show" output:

```
Pass4sure# show interface serial 0/0
 Serial 0/0 is up, line protocol is down
  Hardware is HD64570
  Internet address is 1921.68.100.1/24
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 user,
      reliability 255/255, txload 1/255, rxload 1/255
   Encapsulation HDLC, loopback not set
   Keepalive set (10 sec)
```

What are possible causes for this interface status? (Choose three.)

- A. The interface is shut down.
- B. No keep-alive messages are received.
- C. The clock-rate is not set.
- D. No loopback address is set.
- E. No cable is attached to the interface.
- F. There is a mismatch in the encapsulation type.

## Answer & Explanation

### Correct Answer

B C F

### Explanations

Based on the information provided in the exhibit, we know that Serial0/0 is up, line protocol is down, usually there are three states :
1. serial0/0 up, line protocol is up The interface is up and the link protocol is up.
2. serial0/0 down, line protocol is down The interface is down and there is something wrong with the physical layer .
3. serial0/0 up, line protocol is down The interface is up , but the encapsulation format is not matched correctly.

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Mark for Review

While logged into a router you manually shut down the serial 0 interface using the "shutdown" interface configuration command. You then issue the "show interface serial 0" command in exec mode. What could you expect the status of the serial 0 interface to be?

A. Serial 0 is up, line protocol is up

B. Serial 0 is administratively down, line protocol is down

C. Serial 0 is down, line protocol is down

D. Serial 0 is down, line protocol is up

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Mark for Review

While logged into a router you manually shut down the serial 0 interface using the "shutdown" interface configuration command. You then issue the "show interface serial 0" command in exec mode. What could you expect the status of the serial 0 interface to be?

A. Serial 0 is up, line protocol is up

B. Serial 0 is administratively down, line protocol is down

C. Serial 0 is down, line protocol is down

D. Serial 0 is down, line protocol is up

## Answer & Explanation

### Correct Answer

B

### Explanations

when administrator shut down interface manually, the interface information prompts in show interface status is administratively shut down, i.e. administratively down.

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Mark for Review

You work as a network technician at Pass4sure.com. Please study the exhibit carefully. After configuring two interfaces on the Pass4sure3 router, the network administrator notices an error message. What must be done to fix this error?

```
Pass4sure3# configure terminal
Pass4sure3(config)# interface fastethernet 0/0
Pass4sure3(config-if)# ip address 192.168.1.17 255.255.255.0
Pass4sure3(config-if)# no shutdown
Pass4sure3(config-if)# interface serial 0/0
Pass4sure3(config-if)# ip address 192.168.1.65 255.255.255.240
Pass4sure3(config-if)# no shutdown
                    /  192.168.1.0 overlaps with FastEthernet0/0
```

A. The subnet mask of the serial interface should be changed to 255.255.255.0.

B. The subnet mask of the FastEthernet interface should be changed to 255.255.255.240.

C. The address of the FastEthernet interface should be changed to 192.168.1.66.

D. The serial interface must use the address 192.168.1.2.

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Mark for Review

You work as a network technician at Pass4sure.com. Please study the exhibit carefully. After configuring two interfaces on the Pass4sure3 router, the network administrator notices an error message. What must be done to fix this error?

```
Pass4sure3# configure terminal
Pass4sure3(config)# interface fastethernet 0/0
Pass4sure3(config-if)# ip address 192.168.1.17 255.255.255.0
Pass4sure3(config-if)# no shutdown
Pass4sure3(config-if)# interface serial 0/0
Pass4sure3(config-if)# ip address 192.168.1.65 255.255.255.240
Pass4sure3(config-if)# no shutdown
                    /  192.168.1.0 overlaps with FastEthernet0/0
```

A. The subnet mask of the serial interface should be changed to 255.255.255.0.

B. The subnet mask of the FastEthernet interface should be changed to 255.255.255.240.

C. The address of the FastEthernet interface should be changed to 192.168.1.66.

D. The serial interface must use the address 192.168.1.2.

## Answer & Explanation

### Correct Answer

B

### Explanations

/192.168.1.0 overlaps with FastEthernet0/0 indicates that the IP address repeated, because the 192.168.1.0 mask that Fa0/0 configured is 24 bits, the 28 bit IP of s0/0 192.168.1.0 is unusable.

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Mark for Review

Exhibit.

```
Pass4sure# show interface s0/0/0
Serial 0/0/0 is administatively down, line protocol is down
```

What is the reason that the interface of Pass4sure router status is "administratively down, line protocol down"?

A. The interface needs to be configured as a DTE device.

B. The wrong type of cable is connected to the interface.

C. The interface is not receiving any keepalives.

D. The interface has been configured with the shutdown command.

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Mark for Review

Exhibit.

```
Pass4sure# show interface s0/0/0
Serial 0/0/0 is administatively down, line protocol is down
```

What is the reason that the interface of Pass4sure router status is "administratively down, line protocol down"?

A. The interface needs to be configured as a DTE device.

B. The wrong type of cable is connected to the interface.

C. The interface is not receiving any keepalives.

D. The interface has been configured with the shutdown command.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the knowledge of the serial port status. According to the information provided in the exhibit, the interface of Pass4sure router status is administratively down, so line protocol is down.

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Mark for Review

Refer to the exhibit. What could be possible causes for the "Serial0/0 is down" interface status? (Choose two.)

```
P4S-R# show interface serial 0/0

Serial0/0 is down, line protocol is down
  Hardware is MK5025
  Serial Internet address is 10.1.1.2/24
  MTU 1500 bytes, BW 1544 Kbits, DLY 20000 usec, rely 255/255, load 9/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  <some output omitted>
```

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- A. A Layer 1 problem exists.
- B. The bandwidth is set too low.
- C. A protocol mismatch exists.
- D. An incorrect cable is being used.

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Mark for Review

Refer to the exhibit. What could be possible causes for the "Serial0/0 is down" interface status? (Choose two.)

```
P4S-R# show interface serial 0/0

Serial0/0 is down, line protocol is down
  Hardware is MK5025
  Serial Internet address is 10.1.1.2/24
  MTU 1500 bytes, BW 1544 Kbits, DLY 20000 usec, rely 255/255, load 9/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  <some output omitted>
```

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- A. A Layer 1 problem exists.
- B. The bandwidth is set too low.
- C. A protocol mismatch exists.
- D. An incorrect cable is being used.

## Answer & Explanation

### Correct Answer

A D

### Explanations

Through Serial0 / 0 is down, line protocol is down, we can see the physical interface is not activated. The problem lies in the physical layer. First of all, check whether the interface is connected, and then check cable connectivity, make sure the cable is correctly connected.

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Mark for Review

Part of the configuration of router P4S1 is shown below:

```
Line vty 0 4
 password 7 030752180500
 login
 transport  input  ssh
```

What is the effect of the configuration shown above on router P4S1?

- A. It configures SSH globally for all logins.
- B. It tells the router or switch to try to establish an SSH connection first and if that fails to use Telnet.
- C. It configures the virtual terminal lines with the password 030752180500.
- D. It configures a Cisco network device to use the SSH protocol on incoming communications via the virtual terminal ports.

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Mark for Review

Part of the configuration of router P4S1 is shown below:

```
Line vty 0 4
 password 7 030752180500
 login
 transport  input  ssh
```

What is the effect of the configuration shown above on router P4S1?

- A. It configures SSH globally for all logins.
- B. It tells the router or switch to try to establish an SSH connection first and if that fails to use Telnet.
- C. It configures the virtual terminal lines with the password 030752180500.
- D. It configures a Cisco network device to use the SSH protocol on incoming communications via the virtual terminal ports.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to check the knowledge of Secure Access Router. With restriction, the command transport input ssh only allows SSH to access VTY, while transport output ssh only permits using SSH to telnet to other devices.

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Mark for Review

An administrator issues the command "ping 127.0.0.1" from the command line prompt on a PC host named P4S1. If an ICMP reply is received, what does this confirm?

A. The PC host P4S1 has connectivity with a local host.

B. The PC host P4S1 has connectivity with a Layer 3 device.

C. The PC host P4S1 has a default gateway correctly configured.

D. The PC host P4S1 has connectivity up to Layer 5 of the OSI model.

E. The PC host P4S1 has the TCP/IP protocol stack correctly installed.

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Mark for Review

An administrator issues the command "ping 127.0.0.1" from the command line prompt on a PC host named P4S1. If an ICMP reply is received, what does this confirm?

A. The PC host P4S1 has connectivity with a local host.

B. The PC host P4S1 has connectivity with a Layer 3 device.

C. The PC host P4S1 has a default gateway correctly configured.

D. The PC host P4S1 has connectivity up to Layer 5 of the OSI model.

E. The PC host P4S1 has the TCP/IP protocol stack correctly installed.

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to examine the understanding of the ICMP protocol. ICMP is short for Internet Control Message Protocol. It is one of the core protocols of the Internet Protocol Suite. It is chiefly used by networked computers' operating systems to send error messages-indicating, for instance, that a requested service is not available or that a host or router could not be reached. ICMP is typically not used to send and receive data between end systems, but it plays a very important role in users' data transmission.

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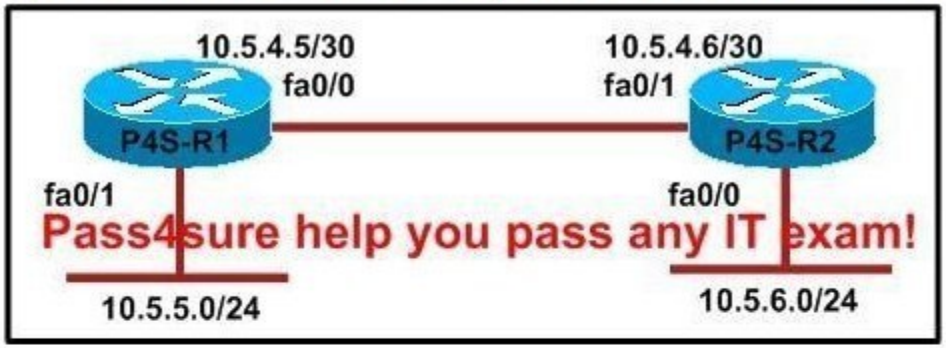
Mark for Review

Which command can be used to configure a static route to the 10.5.6.0/24 network on the P4S-R1 router? (Choose two.)




- A. P4S-R1(config)# ip route 10.5.4.6 0.0.0.255 10.5.6.0
- B. P4S-R1(config)# ip route 10.5.4.6 255.255.255.0 10.5.6.0
- C. P4S-R1(config)# ip route 10.5.6.0 255.255.255.0 fa0/0
- D. P4S-R1(config)# ip route 10.5.6.0 255.255.255.0 10.5.4.6

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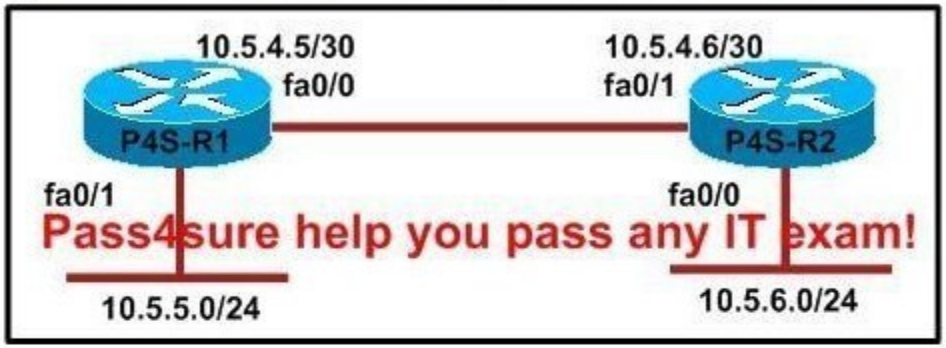
Mark for Review

Which command can be used to configure a static route to the 10.5.6.0/24 network on the P4S-R1 router? (Choose two.)




- A. P4S-R1(config)# ip route 10.5.4.6 0.0.0.255 10.5.6.0
- B. P4S-R1(config)# ip route 10.5.4.6 255.255.255.0 10.5.6.0
- C. P4S-R1(config)# ip route 10.5.6.0 255.255.255.0 fa0/0
- D. P4S-R1(config)# ip route 10.5.6.0 255.255.255.0 10.5.4.6

## Answer & Explanation

### Correct Answer

C D

### Explanations

A static route is a route that is created manually by a network administrator. The opposite of a static route is a dynamic route. Dynamic routes are created by routing protocols. Static routes have advantages and disadvantages as compares to dynamic routes.
To add a static route on a Cisco router, use the `ip route` command.
The syntax to utilize is: ip route <destination> <netmask> <next hop/interface>.

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Mark for Review

You need to configure a default route on a P4S1 router. Which command will configure a default route on a router?

A. P4S1(config)# ip route 0.0.0.0 10.1.1.0 10.1.1.1

B. P4S1(config)# ip default-route 10.1.1.0

C. P4S1(config)# ip default-gateway 10.1.1.0

D. P4S1(config)# ip route 0.0.0.0 0.0.0.0 10.1.1.1

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Mark for Review

You need to configure a default route on a P4S1 router. Which command will configure a default route on a router?

A. P4S1(config)# ip route 0.0.0.0 10.1.1.0 10.1.1.1

B. P4S1(config)# ip default-route 10.1.1.0

C. P4S1(config)# ip default-gateway 10.1.1.0

D. P4S1(config)# ip route 0.0.0.0 0.0.0.0 10.1.1.1

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to check the configuration methods of the default route. The default route is usually used in the stub network. A stub network is a network with a single path.
All the packets for destinations not known by the router's routing table are sent to the default route. A default route can be considered as the static route with wildcard .The command to configure the default route is ip route 0.0.0.0/0 0.0.0.0/0 + next hop.

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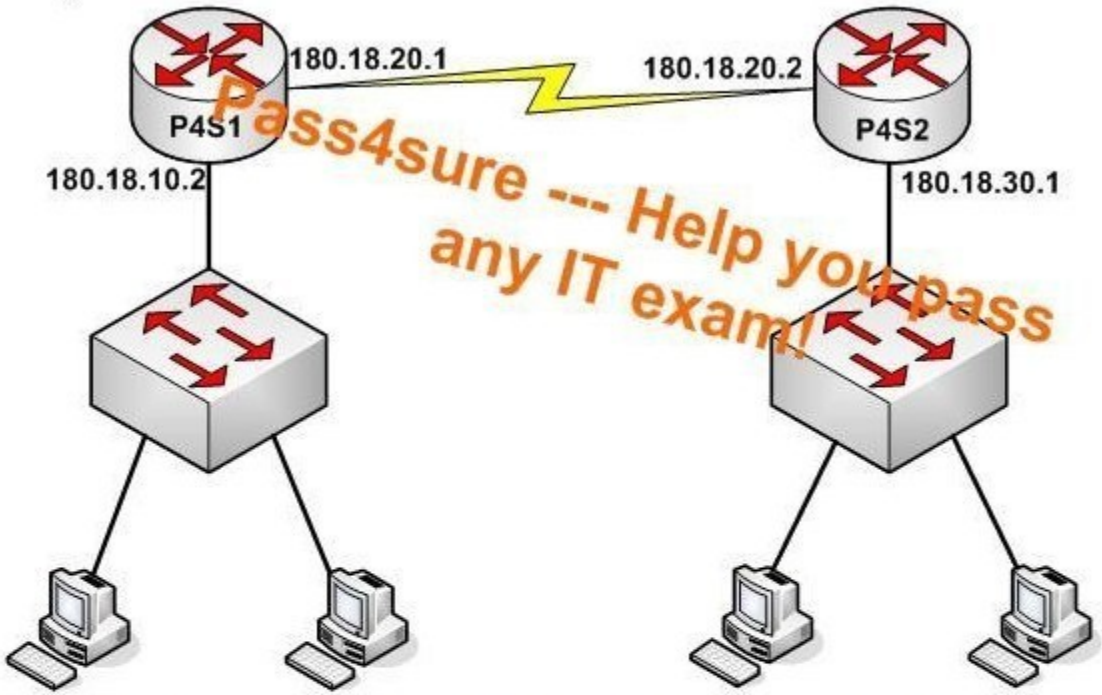
Mark for Review

The pass4sure network is shown below:




Based on this information, which of the following will configure a static route on P4S1 to network 180.18.30.0/24 with an administrative distance of 90?

- A. P4S1 (config)# ip route 90 180.18.20.1 255.255.255.0 182.18.20.2
- B. P4S1 (config)# ip route 180.18.20.1 255.255.255.0 182.18.30.0 90
- C. P4S1 (config)# ip route 180.18.30.1 255.255.255.0 182.18.20.1 90
- D. P4S1(config)# ip route 180.18.30.0 255.255.255.0 182.18.20.2 90

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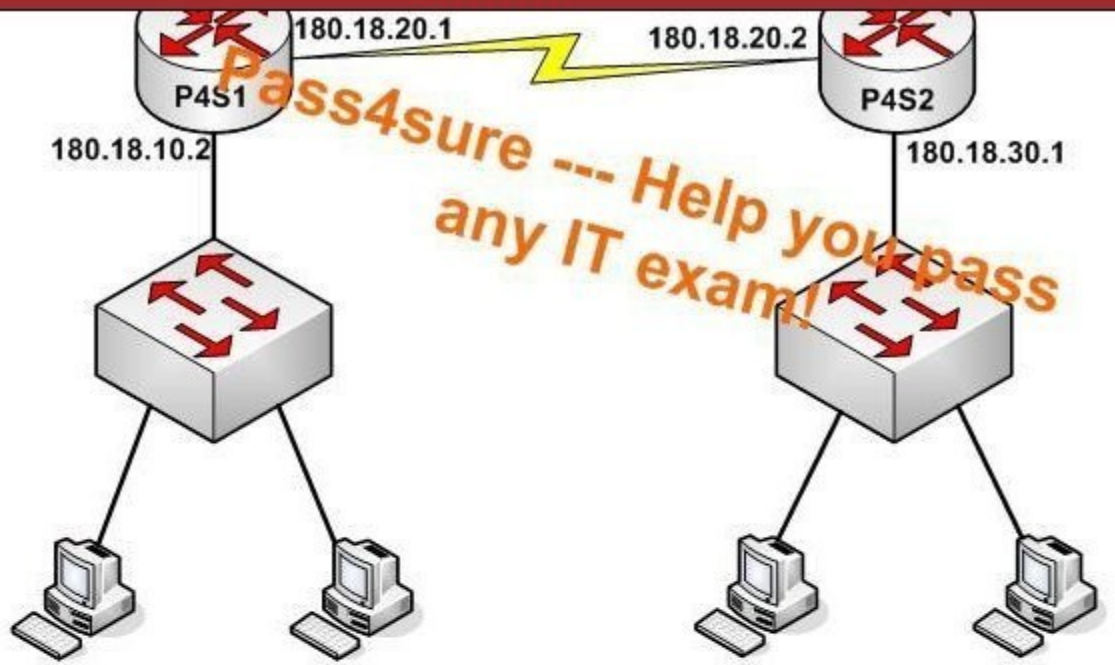
Mark for Review




Based on this information, which of the following will configure a static route on P4S1 to network 180.18.30.0/24 with an administrative distance of 90?

- A. P4S1 (config)# ip route 90 180.18.20.1 255.255.255.0 182.18.20.2
- B. P4S1 (config)# ip route 180.18.20.1 255.255.255.0 182.18.30.0 90
- C. P4S1 (config)# ip route 180.18.30.1 255.255.255.0 182.18.20.1 90
- D. P4S1(config)# ip route 180.18.30.0 255.255.255.0 182.18.20.2 90

## Answer & Explanation

### Correct Answer

D

### Explanations

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This question is to check the methods to configure the static route. That is ip route destination_network_#[subnet_mask] IP_address_of_next_hop_neighbor [administrative_distance] [permanent]

Mark for Review

Which of the commands below can you use to configure a default route on router P4S1?(Choose two)

- A. P4S1(config)# ip route 0.0.0.0 0.0.0.0 E0
- B. P4S1(config)# ip route 0.0.0.0 255.255.255.255 S0
- C. P4S1(config-interface)# ip route 255.255.255.255 0.0.0.0 192.168.1.21
- D. P4S1(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.21

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Mark for Review

Which of the commands below can you use to configure a default route on router P4S1?(Choose two)

- A. P4S1(config)# ip route 0.0.0.0 0.0.0.0 E0
- B. P4S1(config)# ip route 0.0.0.0 255.255.255.255 S0
- C. P4S1(config-interface)# ip route 255.255.255.255 0.0.0.0 192.168.1.21
- D. P4S1(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.21

## Answer & Explanation

### Correct Answer

A D

### Explanations

This question is to check the configuration methods of the default route. The command to configure the default route is ip route 0.0.0.0/0 0.0.0.0/0 + next hop. Next hop can be the outgoing interface address or the specific port address.

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Some of the P4S routers have been configured with default routes. What are some of the advantages of using default routes?(Choose two.)

- A. They establish routes that will never go down.
- B. The keep routing tables small.
- C. They require a great deal of CPU power.
- D. The allow connectivity to remote networks that are not in the routing table.
- E. They direct traffic from the Internet into corporate networks.

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Mark for Review

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- E. They direct traffic from the Internet into corporate networks.

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to check the understanding of the knowledge about the default route. A default route is a special static route, also is the network route used by a router when no other known route exists for a given IP packet's destination address. All the packets for destinations not known by the router's routing table are sent to the default route, if the default route does not exist, all packets will be discarded. A default route works very effectively in some cases. In stub network, the default route will simplify the router's configuration greatly and reduce the burden of the administrator's work to improve the network performance.

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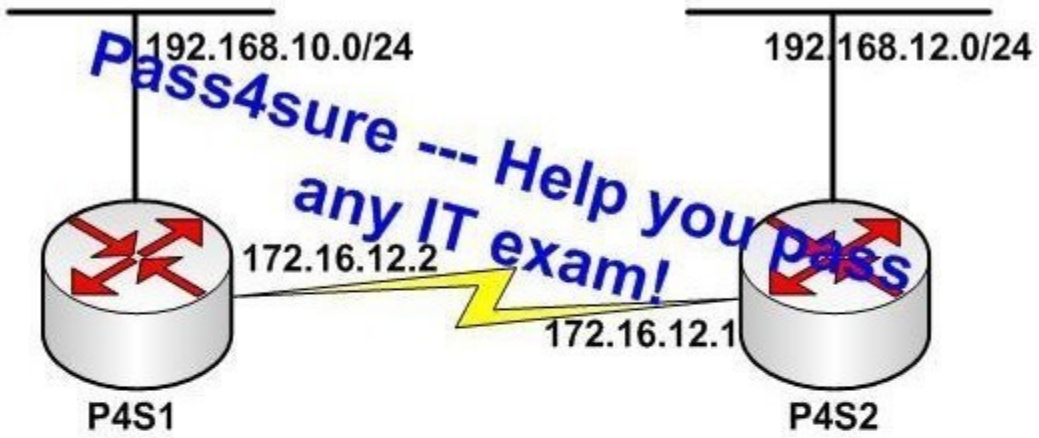
Mark for Review

The network administrator of the P4S1 router adds the following command to the router configuration: ip route 192.168.12.0 255.255.255.0 172.16.12.1. What are the results of adding this command? (Choose two)




- A. Traffic for network 192.168.12.0 is forwarded to 172.16.12.1.
- B. This route is automatically propagated throughout the entire network.
- C. Traffic for all networks is forwarded to 172.16.12.1.
- D. The command establishes a static route.

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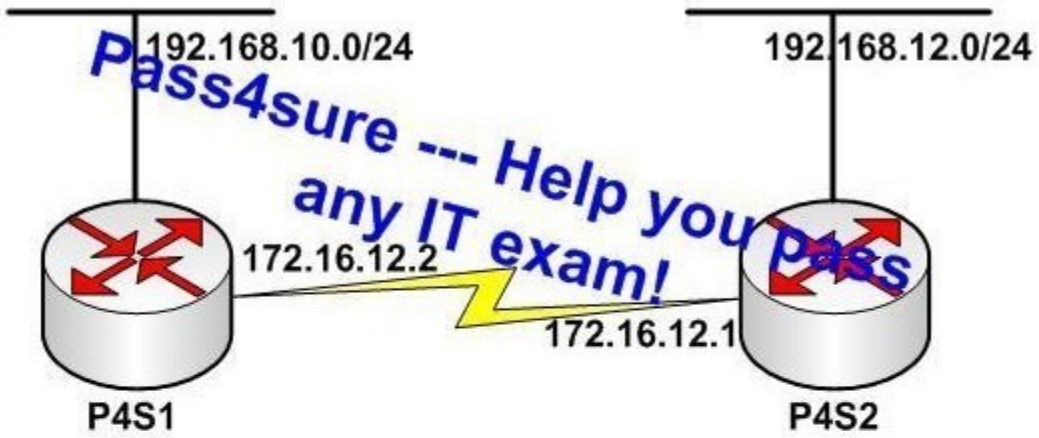


- A. Traffic for network 192.168.12.0 is forwarded to 172.16.12.1.
- B. This route is automatically propagated throughout the entire network.
- C. Traffic for all networks is forwarded to 172.16.12.1.
- D. The command establishes a static route.

## Answer & Explanation

### Correct Answer

A D

### Explanations

This question is about the knowledge of the static route.
A static route refers to setting a typical routing table on the router. The default route will not change without the intervention of the network administrator. Because the static route can't respond to the network changes, it is usually used in the network which is not large and topology is fixed.
Advantages of the static route are simple, effective and reliable. The static route has the highest priority in all routes. When a packet searches for a route on a router, the router will check the static route first, if found, the router will forward this packet according to the static route, if not found, the router will check the dynamic route.

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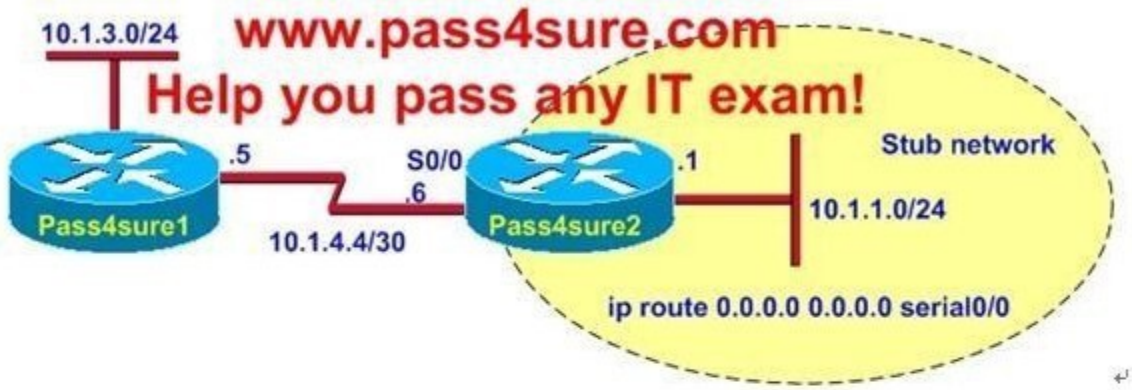
Mark for Review

Part of the Pass4sure WAN is shown below:




In this Pass4sure network segment, subnet 10.1.3.0/24 is unknown to router Pass4sure2. Which router command will prevent router Pass4sure2 from dropping a packet destined for the 10.1.3.0/24 network if a default route is configured?

- A. ip classless
- B. network 10.1.1.0
- C. ip default-network
- D. network 10.10.1.0 0.0.0.255 area 1

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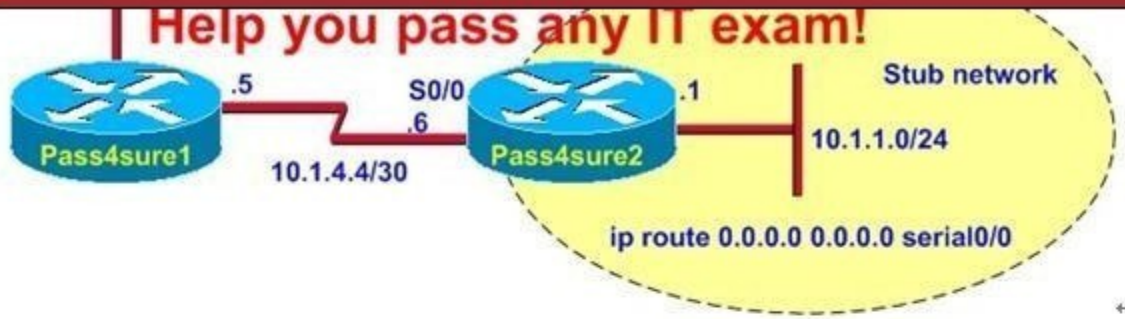


In this Pass4sure network segment, subnet 10.1.3.0/24 is unknown to router Pass4sure2. Which router command will prevent router Pass4sure2 from dropping a packet destined for the 10.1.3.0/24 network if a default route is configured?

A. ip classless

B. network 10.1.1.0

C. ip default-network

D. network 10.10.1.0 0.0.0.255 area 1

## Answer & Explanation

### Correct Answer

A

### Explanations

When data packets are sent to network segment 10.1.3.0/24 through Pass4sure2, because the routing table of Pass4sure2 does not contain the route of 10.1.3.0/24, if configuring the command ip classless, Pass4sure2 will let packets cross the default route and forward packets to Pass4sure1 to reach the destination network segment; if not configuring the command ip classlees, Pass4sure2 will find that the destination address is 10.0.0.0, the address of class A, the network segments directly connected to Pass4sure2 belong to the class A address. So ,it will search for information related to the main class and the subnet in the routing table, if it finds the matching one , it will forward packets,if not ,it will discard packets. It is obvious that there are two subnets in the routing table: 10.1.1.0/24 and 10.1.4.4/30, the network segment 10.1.3.0/24 that the packets want to reach does not exist, so it will discard the packets.

At times the router might receive packets destined for a subnet of a network that has no network default route. To have the Cisco IOS software forward such packets to the best supernet route possible, use the ip classless global configuration command. To disable this feature, use the no form of this command.

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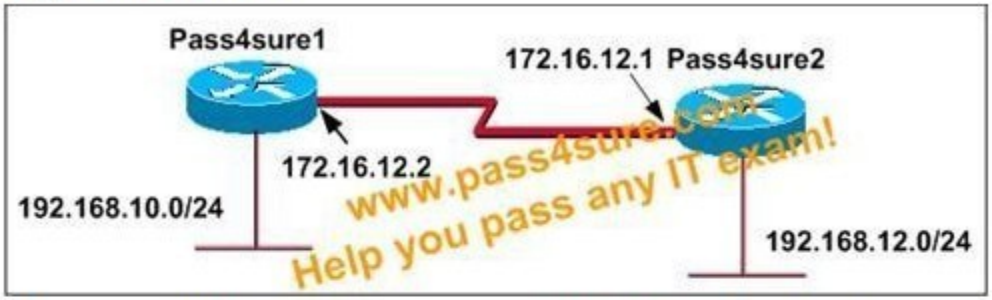
Mark for Review

Part of the Pass4sure network topology is shown below:




As the Pass4sure network administrator, you add the following command to the Pass4sure1 router configuration:

```
ip route 192.168.12.0 255.255.255.0 172.16.12.1
```

What are the results of adding this command? (Choose two.)

- A. The command establishes a static route.
- B. This route is automatically propagated throughout the entire network.
- C. Traffic for network 192.168.12.0 is forwarded to 172.16.12.1.
- D. Traffic for all networks is forwarded to 172.16.12.1.

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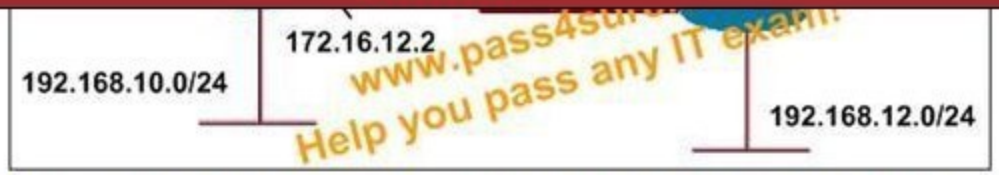
Mark for Review

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As the Pass4sure network administrator, you add the following command to the Pass4sure1 router configuration:

```
ip route 192.168.12.0 255.255.255.0 172.16.12.1
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What are the results of adding this command? (Choose two.)

- A. The command establishes a static route.
- B. This route is automatically propagated throughout the entire network.
- C. Traffic for network 192.168.12.0 is forwarded to 172.16.12.1.
- D. Traffic for all networks is forwarded to 172.16.12.1.

## Answer & Explanation

### Correct Answer

A C

### Explanations

Configure the router Pass4sure1 with ip route 192.168.12.0 255.255.255.0 172.16.12.1 which is a static route, the next hop address is 172.16.12.1, the destination address is 192.168.12.0

A statically defined route is a route is manually entered into the router. The purpose of this is to add routes to a router's routing table. Thus, static routing consists of individual configuration commands that define a route to a router. A router can forward packets only to subnets in its routing table. The router always knows about directly connected routes. By adding static routes, a router can be told how to forward packets to subnets that are not attached to it.
A static route can be entered into the router in global configuration mode with the following command:
ip route destination_ip_address subnet_mask { ip-address | interface } [ distance ]
In the ip route command, the destination_ip_address and subnet_mask is the IP address and subnet mask for the destination host. The ip-address parameter is the IP address of the next hop that can be used to reach the destination and interface is the router interface to use. The optional distance parameter specifies the administrative distance.

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What is the objective of a default route?

- A. Offering routing to override the configured dynamic routing protocol
- B. Offering routing to a local web server
- C. Offering routing from an ISP to a stub network
- D. Offering routing to a destination that is not specified in the routing table and which is outside the local network

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Mark for Review

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## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to check the understanding of the knowledge about the default route. A default route is a special static route, also is the network route used by a router when no other known route exists for a given IP packet's destination address. All the packets for destinations not known by the router's routing table are sent to the default route, if the default route does not exist, all packets will be discarded. A default route works very effectively in some cases. In stub network, the default route will simplify the router's configuration greatly and reduce the burden of the administrator's work to improve the network performance.

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What is the function of the Cisco IOS command ip nat inside source static 10.1.1.5 172.35.16.5?

A. It creates a global address pool for all outside NAT transactions.

B. It establishes a dynamic address pool for an inside static address.

C. It creates dynamic source translations for all inside local PAT transactions.

D. It creates a one-to-one mapping between an inside local address and an inside global address.

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Mark for Review

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A. It creates a global address pool for all outside NAT transactions.

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C. It creates dynamic source translations for all inside local PAT transactions.

D. It creates a one-to-one mapping between an inside local address and an inside global address.

## Answer & Explanation

### Correct Answer

D

### Explanations

The "inside" in "ip nat inside source static 10.1.1.5 172.35.16.5" designate inside local ip address transmitted to inside global ip address.

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Mark for Review

The Pass4sure network administrator has issued the "ip route 172.16.33.0 255.255.255.0 192.168.22.44" command on a pass4sure router. Which two statements are true about this command?(Choose two)

- A. It configures the router to send any traffic for an unknown destination to the 172.16.33.0 network
- B. It establishes a static route to the 172.16.33.0 network
- C. It uses the default administrative distance
- D. It establishes a static route to the 192.168.22.0 network

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Mark for Review

The Pass4sure network administrator has issued the "ip route 172.16.33.0 255.255.255.0 192.168.22.44" command on a pass4sure router. Which two statements are true about this command?(Choose two)

- A. It configures the router to send any traffic for an unknown destination to the 172.16.33.0 network
- B. It establishes a static route to the 172.16.33.0 network
- C. It uses the default administrative distance
- D. It establishes a static route to the 192.168.22.0 network

## Answer & Explanation

### Correct Answer

B C

### Explanations

The user can specify the path for accessing certain network by configuring static route. In a relatively simple network architecture, and the route to a certain network is unique , the static route will be used.

ip route prefix mask {address | interface} [distance] [tag tag] [permanent]

Prefix :the destination network
mask :subnet mask
address :The IP address of the next hop, that is the address of port on the adjacent router
interface :local network interface
distance :administrative distance(optional)
tag tag :tag value(optional)
permanent :The router is designed as follows : would rather to shut down this port than move.

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Mark for Review

Drag and Drop question. Drag the items to the proper locations.

Routing has been configured on the local router with these commands:
Local(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.1
Local(config)# ip route 10.1.0.0 255.255.255.0 192.168.2.2
Local(config)# ip route 10.1.0.0 255.255.0.0 192.168.3.3
Drag each destination IP address on the left to its correct next hop address on the right.

- 10.1.1.10
- 10.1.0.14
- 10.2.1.3
- 10.1.4.6
- 10.1.0.123
- 10.6.8.4

Next hop 192.168.1.1

Next hop 192.168.2.2

Next hop 192.168.3.3

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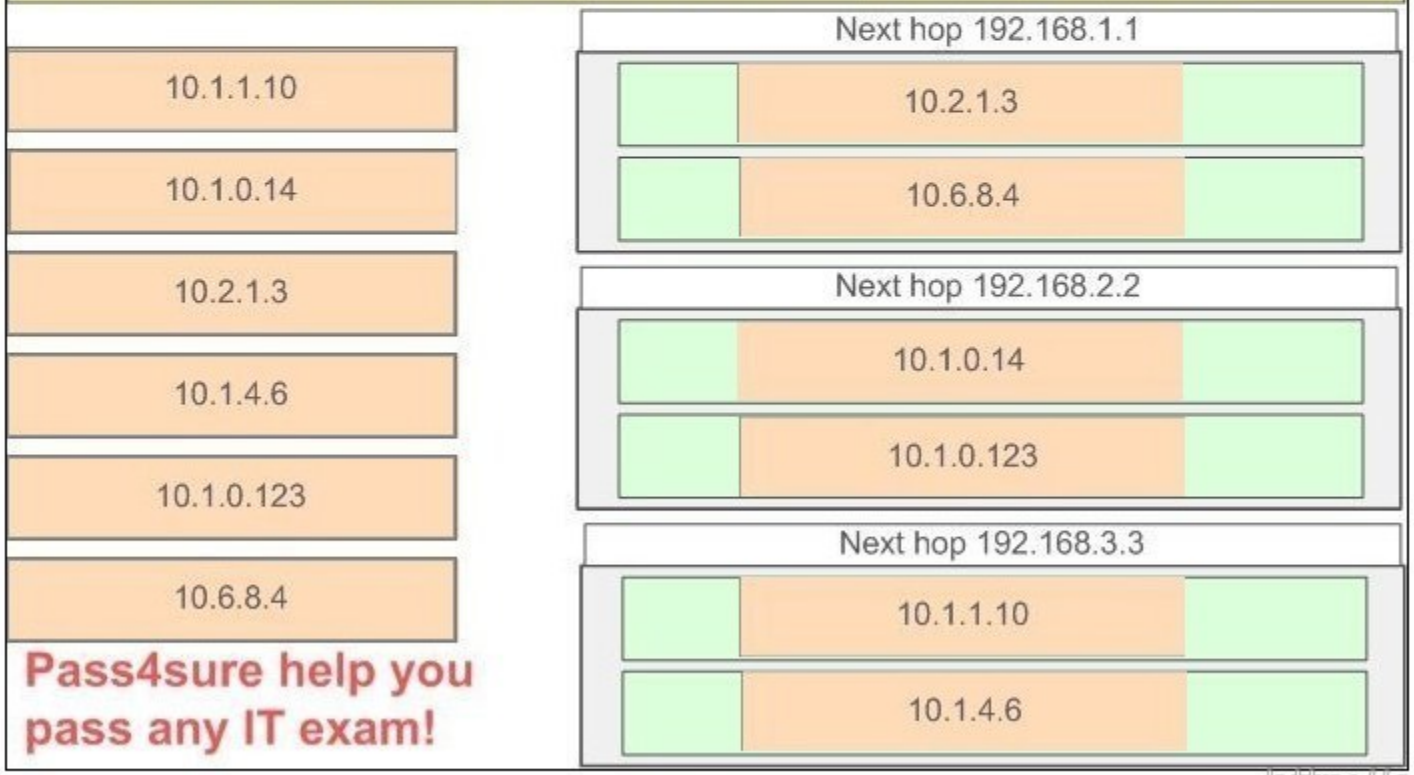
## Answer & Explanation

### Correct Answer

Routing has been configured on the local router with these commands:
Local(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.1
Local(config)# ip route 10.1.0.0 255.255.255.0 192.168.2.2
Local(config)# ip route 10.1.0.0 255.255.0.0 192.168.3.3
Drag each destination IP address on the left to its correct next hop address on the right.

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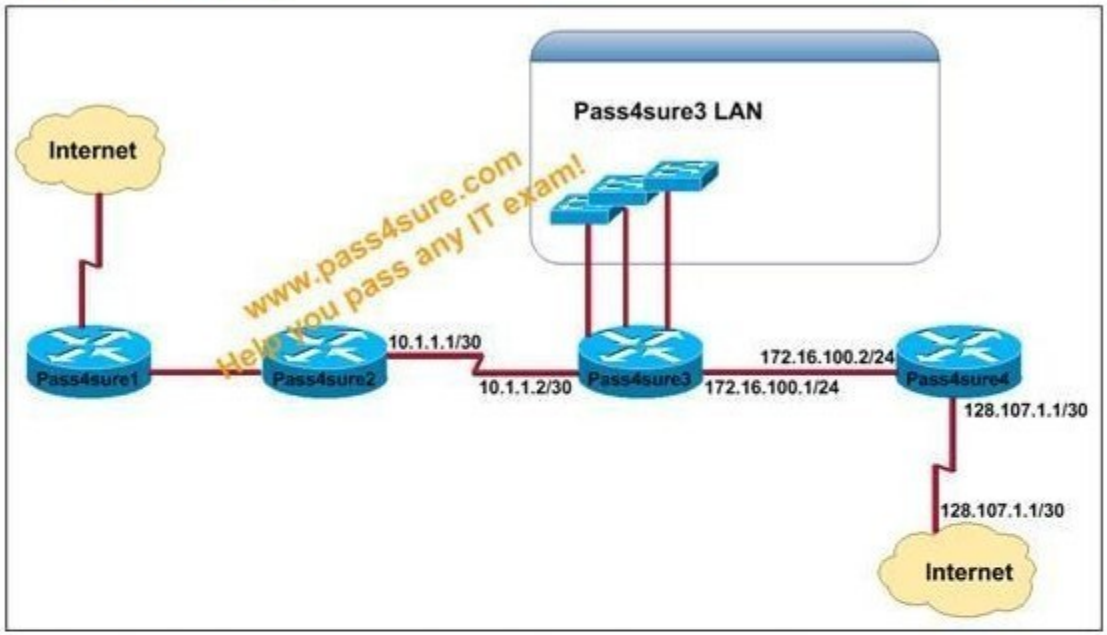
### Explanations

No more information available

Mark for Review

A Pass4sure network is shown in the exhibit below:




The speed of all serial links is E1 and the speed of all Ethernet links is 100 Mb/s. A static route will be established on the Pass4sure3 router to direct traffic toward the Internet over the most direct path available. What configuration on the Pass4sure3 router will establish a route toward the Internet for traffic that originates from workstations on the Pass4sure3 LAN?

- A. ip route 0.0.0.0 255.255.255.255 172.16.100.2
- B. ip route 0.0.0.0 0.0.0.0 128.107.1.1
- C. ip route 0.0.0.0 255.255.255.252 128.107.1.1
- D. ip route 0.0.0.0 0.0.0.0 172.16.100.1
- E. ip route 0.0.0.0 0.0.0.0 172.16.100.2

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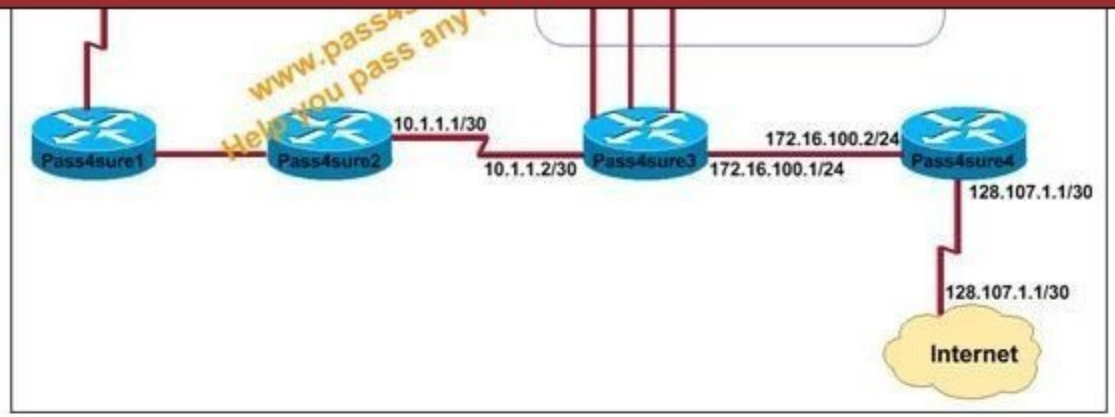


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- A. ip route 0.0.0.0 255.255.255.255 172.16.100.2
- B. ip route 0.0.0.0 0.0.0.0 128.107.1.1
- C. ip route 0.0.0.0 255.255.255.252 128.107.1.1
- D. ip route 0.0.0.0 0.0.0.0 172.16.100.1
- E. ip route 0.0.0.0 0.0.0.0 172.16.100.2

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to check the understanding of the knowledge about the default route. A default route is a special static route, also is the network route used by a router when no other known route exists for a given IP packet's destination address. All the packets for destinations not known by the router's routing table are sent to the default route, if the default route does not exist, all packets will be discarded. A default route works very effectively in some cases. In stub network, the default route will simplify the router's configuration greatly and reduce the burden of the administrator's work to improve the network performance. The command to configure the default route is ip route 0.0.0.0 0.0.0.0 + next hop. The next hop can be the outgoing interface address or the specific port address.

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Mark for Review

You issued the following command on router Pass4sure3:

```
Pass4sure3# copy tftp flash
 Address or name of remote host[]? 192.168.1.5
 Source filename[]? C2600-js-1-121-3.bin
 Destination filename | c2600-js-1-121-3.bin
 Accessing tftp://192.168.1.5/c2600-js-1-121-3.bin
 %Error opening tftp://192.168.1.5/CCC (Timed out)
```

When upgrading the IOS image, you receive the exhibited error message shown above. Based on the information given, what could be the cause of this error?

- A. The TFTP server is unreachable from the router.
- B. The new IOS image is too large for the router flash memory.
- C. The new IOS image is not correct for this router platform.
- D. The IOS image on the TFTP server is corrupt.

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Mark for Review

You issued the following command on router Pass4sure3:

```
Pass4sure3# copy tftp flash
 Address or name of remote host[]? 192.168.1.5
 Source filename[]? C2600-js-1-121-3.bin
 Destination filename | c2600-js-1-121-3.bin
 Accessing tftp://192.168.1.5/c2600-js-1-121-3.bin
 %Error opening tftp://192.168.1.5/CCC (Timed out)
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C. The new IOS image is not correct for this router platform.

D. The IOS image on the TFTP server is corrupt.

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is about the knowledge of IOS upgrade. According to the output information provided in the above figure, timeout indicates that the TFTP server is unreachable from the router.

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Which three actions should be taken before copying an IOS image to a TFTP server? (Choose three.)

- A. Ensure that the server could be reached across the network.
- B. Ensure that the server is able to store binary files.
- C. Ensure that the network server has enough space for the IOS image.
- D. Verify file naming and path requirements.

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Mark for Review

Which three actions should be taken before copying an IOS image to a TFTP server? (Choose three.)

- A. Ensure that the server could be reached across the network.
- B. Ensure that the server is able to store binary files.
- C. Ensure that the network server has enough space for the IOS image.
- D. Verify file naming and path requirements.

## Answer & Explanation

### Correct Answer

A C D

### Explanations

This question is about the knowledge of IOS management. Upgrading or copying an IOS image must ensure that the TFTP server can connect to the network and have enough space for the IOS file, also ensure that the power supply is stable without power-down in the baking up process.

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Mark for Review

You are a trainee technician at Pass4sure, Inc. Your instructor tells you to backup an IOS image of a Cisco device to a Windows 2003 server on the network. What should you do first?(Choose three)

- A. Make sure that the network server can be accessed.
- B. Check that the authentication for access is set.
- C. Assure that the network server has adequate space for the code image.
- D. Verify any file naming and path requirements.

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Mark for Review

You are a trainee technician at Pass4sure, Inc. Your instructor tells you to backup an IOS image of a Cisco device to a Windows 2003 server on the network. What should you do first?(Choose three)

- A. Make sure that the network server can be accessed.
- B. Check that the authentication for access is set.
- C. Assure that the network server has adequate space for the code image.
- D. Verify any file naming and path requirements.

## Answer & Explanation

### Correct Answer

A C D

### Explanations

More often than not, when backing up IOS files, first , using the command PING to test whether the server is reachable or not and whether the server has enough space to store the IOS backup files or not. When the two needs are satisfied, you can use the command "copy flash tftp" to backup on the router.

```
Router>enable
Router#copy flash tftp
ip address of remote host:[255.255.255.255]?129.0.0.3
filename to write on tftp hose?c4500-l
writing c4500-l !!!!!!!!!!!!!!!!!!!!!!!!
successful tftp write
```

After inputting the command "copy flash tftp", the router will require you to input the IP address of the remote TFTP server and IOS mapping name of the server. The router will remind you that backup is successfully completed by a string of exclamation points.

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Mark for Review

Before installing a new, upgraded version of the IOS, what should be checked on the router, and which command should be used to gather this information? (Choose two.)

- A. the amount of available ROM
- B. the amount of available flash and RAM memory
- C. the version of the bootstrap software present on the router
- D. show version

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Mark for Review

Before installing a new, upgraded version of the IOS, what should be checked on the router, and which command should be used to gather this information? (Choose two.)

- A. the amount of available ROM
- B. the amount of available flash and RAM memory
- C. the version of the bootstrap software present on the router
- D. show version

## Answer & Explanation

### Correct Answer

B D

### Explanations

Before the upgrade of IOS, you have to check its current version (you may use show version to check); at the same time you have to ensure that there is sufficient space to store IOS upgrade (you may use the amount of available flash and RAM memory to check).

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Which of the commands below would you enter if you wanted to see the configuration register of your router?

- A. show boot
- B. show flash
- C. show register
- D. show version
- E. show config

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Mark for Review

Which of the commands below would you enter if you wanted to see the configuration register of your router?

- A. show boot
- B. show flash
- C. show register
- D. show version
- E. show config

## Answer & Explanation

**Correct Answer**

D

**Explanations**

No more information available

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Mark for Review

You wish to upgrade the IOS of a router without removing the image currently installed. What command will display the amount of memory that is being used by the current IOS image and whether there is enough room available to hold both the current and new images?

- A. Router# show version
- B. Router# show flash
- C. Router# show memory
- D. Router# show buffers

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Mark for Review

You wish to upgrade the IOS of a router without removing the image currently installed. What command will display the amount of memory that is being used by the current IOS image and whether there is enough room available to hold both the current and new images?

- A. Router# show version
- B. Router# show flash
- C. Router# show memory
- D. Router# show buffers

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is about the knowledge of the IOS management command. The command show version displays the router's information and IOS information. Use the show flash command to list bootflash or Flash PC card information, including file code names, version numbers, volume ID, and sizes. The show memory command is often used to check the information about a router's memory used, including the amount of the router's free memory. The show buffers command displays information (statistics) on buffer pools of a router. It is used to show the information related to flash devices.
The "show flash" command is used to display the layout and contents of the flash memory file system. It will show name of the file system, as well as the number of bytes used and the number available within the flash memory.

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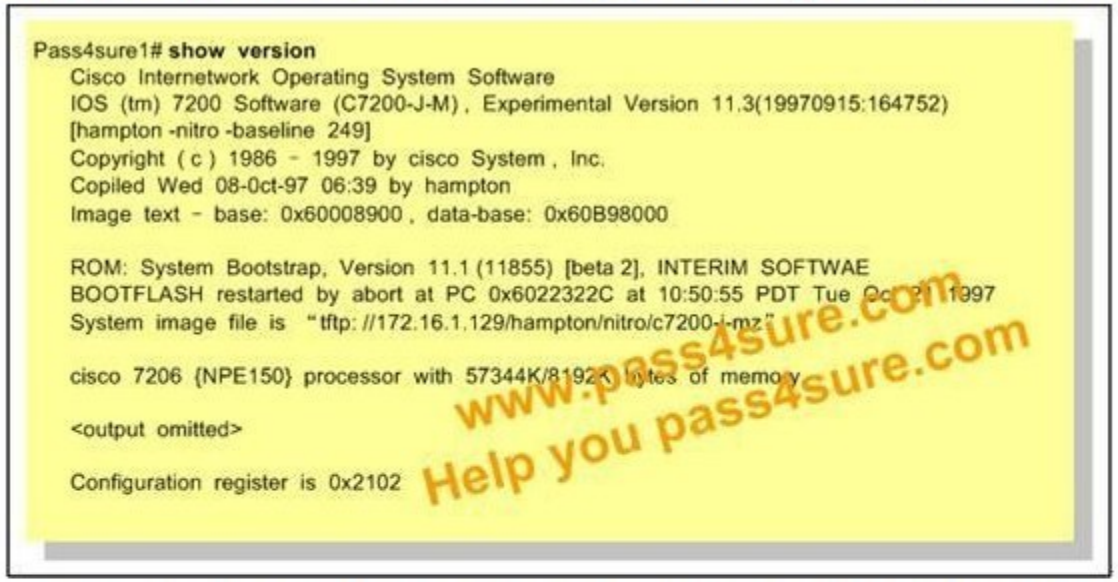
Mark for Review

The network administrator use the command "show version" on the Pass4sure1 router, the diagram is shown below:

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Based on the information shown above, for what two reasons has the router loaded its IOS image from the location that is shown? (Choose two.)

- A. Pass4sure1 has specific boot system commands that instruct it to load IOS from a TFTP server.
- B. Pass4sure1 defaulted to ROMMON mode and loaded the IOS image from a TFTP server.
- C. Pass4sure1 cannot locate a valid IOS image in flash memory.
- D. Cisco routers will first attempt to load an image from TFTP for management purposes.

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Mark for Review

Based on the information shown above, for what two reasons has the router loaded its IOS image from the location that is shown? (Choose two.)

- A. Pass4sure1 has specific boot system commands that instruct it to load IOS from a TFTP server.
- B. Pass4sure1 defaulted to ROMMON mode and loaded the IOS image from a TFTP server.
- C. Pass4sure1 cannot locate a valid IOS image in flash memory.
- D. Cisco routers will first attempt to load an image from TFTP for management purposes.

## Answer & Explanation

### Correct Answer

A C

### Explanations

The loading sequence of CISCO IOS is as follows:
Booting up the router and locating the Cisco IOS
1. POST (power on self test)
2. Bootstrap code executed
3. Check Configuration Register value (NVRAM) which can be modified using the config-register command
0 = ROM Monitor mode
1 = ROM IOS
2 - 15 = startup-config in NVRAM
4. Startup-config file: Check for boot system commands (NVRAM)
If boot system commands in startup-config
a. Run boot system commands in order they appear in startup-config to locate the IOS
b. [If boot system commands fail, use default fallback sequence to locate the IOS (Flash, TFTP, ROM)?]
If no boot system commands in startup-config use the default fallback sequence in locating the IOS:
a. Flash (sequential)
b. TFTP server (netboot)
c. ROM (partial IOS) or keep retrying TFTP depending upon router model
5. If IOS is loaded, but there is no startup-config file, the router will use the default fallback sequence for locating the IOS and then it will enter setup mode or the setup dialogue.
6. If no IOS can be loaded, the router will get the partial IOS version from ROM

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Mark for Review

Refer to the partial command output shown. Which two statements are correct regarding the router hardware? (Choose two.)

```
System image file is "flash:c2600-do3s-mz.120-5.T1"

Cisco 2621 (MPC860) processor (revision 0x600) with 53248k/12288k
bytes of memory

Processor board ID JAD05280307 (3536592999)
M860 processor : part number 0, mask 49
Bridging software.
X.25 software, version 3.0.0.
2 FastEthernet / IEEE 802.3 interface (s)
2 Serial (sync / async) network interface(s)
2 Low-speed serial(sync / async) network interface(s)
16 terninal line (s)

32 bytes of non-volatile configuration memory.
16384 bytes of processor board System flash (Read/write)
```

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- A. Total RAM size is 32 KB.
- B. Total RAM size is 16384 KB (16 MB)
- C. Total RAM size is 65536 KB (64 MB).
- D. Flash size is 16384 KB (16 MB).

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Mark for Review

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- A. Total RAM size is 32 KB.
- B. Total RAM size is 16384 KB (16 MB)
- C. Total RAM size is 65536 KB (64 MB).
- D. Flash size is 16384 KB (16 MB).

## Answer & Explanation

### Correct Answer

C D

### Explanations

From the figure above, we know that total RAM size is the sum of 53248k and 12288k, or 65536k; from 16384 bytes of processor board System flash (Read / write) we know that the flash size is 16384k.

http://ciscocertification.blogspot.com

Cisco IOS (originally Internetwork Operating System) is the software used on the vast majority of Cisco Systems routers and all current Cisco network switches. Which two of the following devices could you configure as a source for the IOS image in the boot system command? (Choose two.)

- A. HTTP server
- B. Telnet server
- C. flash memory
- D. TFTP server

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Mark for Review

Cisco IOS (originally Internetwork Operating System) is the software used on the vast majority of Cisco Systems routers and all current Cisco network switches. Which two of the following devices could you configure as a source for the IOS image in the boot system command? (Choose two.)

- A. HTTP server
- B. Telnet server
- C. flash memory
- D. TFTP server

## Answer & Explanation

### Correct Answer

C D

### Explanations

This question is to examine the conserved locations of IOS. Only IOS configured on flash memory and TFTP server can be loaded when starting the router.

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Mark for Review

Refer to the exhibit. The technician wants to upload a new IOS in the P4S-R router while keeping the existing IOS. What is the maximum size of an IOS file that could be loaded if the original IOS is also kept in flash?

```
P4S-R# show  flash
System flash directory:
File Length Name/status
1  3802992 c827v-y6-mz.121-1.XB
[3803056 bytes used, 4585552 available, 8388608 total]

8192K bytes of processor board System flash (Read/Write)
```

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- A. 3 MB
- B. 4 MB
- C. 5 MB
- D. 7 MB

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Mark for Review

Refer to the exhibit. The technician wants to upload a new IOS in the P4S-R router while keeping the existing IOS. What is the maximum size of an IOS file that could be loaded if the original IOS is also kept in flash?

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```

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- A. 3 MB
- B. 4 MB
- C. 5 MB
- D. 7 MB

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to check the knowledge related to flash in IOS. Because the total memory of the flash is 8388608, and the Total Used Memory is 3803056, so the remained memory is 4585552.

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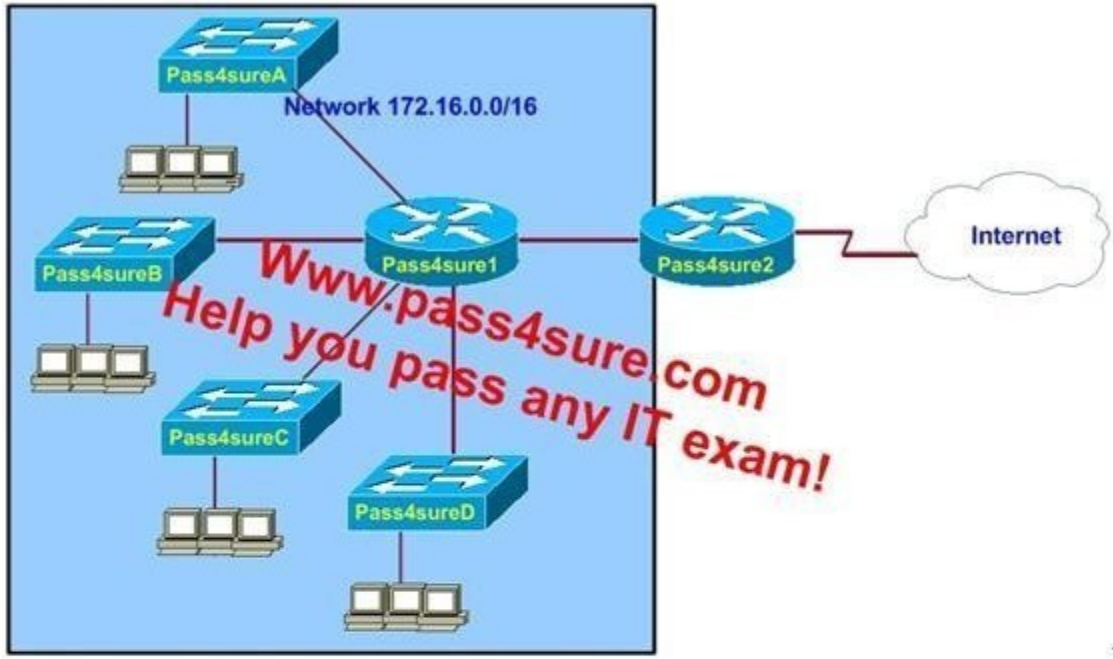
Mark for Review

A portion of the Pass4sure network is shown in the following exhibit:




Refer to the exhibit. The network administrator requires easy configuration options and minimal routing protocol traffic. What two options provide adequate routing table information for traffic that passes between the two routers and satisfy the requests of the network administrator? (Choose two.)

- A. a dynamic routing protocol on Router to advertise all routes to Pass4sure1.
- B. a dynamic routing protocol on Router to advertise summarized routes to Pass4sure1.
- C. a static route on Pass4sure2 to direct traffic that is destined for 172.16.0.0/16 to Pass4sure1.
- D. a dynamic routing protocol on Router to advertise all routes to Pass4sure2.
- E. a dynamic routing protocol on Router to advertise summarized routes to Pass4sure2.
- F. a static, default route on Pass4sure1 that directs traffic to Pass4sure2.

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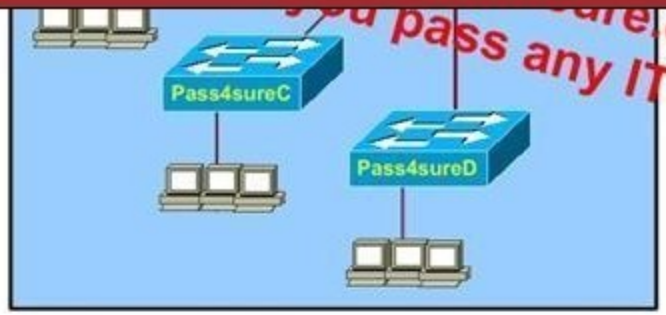


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- B. a dynamic routing protocol on Router to advertise summarized routes to Pass4sure1.
- C. a static route on Pass4sure2 to direct traffic that is destined for 172.16.0.0/16 to Pass4sure1.
- D. a dynamic routing protocol on Router to advertise all routes to Pass4sure2.
- E. a dynamic routing protocol on Router to advertise summarized routes to Pass4sure2.
- F. a static, default route on Pass4sure1 that directs traffic to Pass4sure2.

## Answer & Explanation

### Correct Answer

C F

### Explanations

This question is to check the understanding of routing and static route.
A static route refers to setting a typical routing table on the router. The default route will not change without the intervention of the network administrator. Because the static route can't respond to the network changes, it is usually used in the network which is not large and topology is fixed.
Advantages of the static route are simple, effective and reliable. The static route has the highest priority in all routes. When a packet searches for a route on a router, the router will check the static route first, if found, the router will forward this packet according to the static route, if not found, the router will check the dynamic route.

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Mark for Review

Router Pass4sure1 receives information about network 192.168.10.0/24 from multiple sources. What will Pass4sure1 consider the most reliable information about the path to that network?

A. a directly connected interface with an address of 192.168.10.254/24

B. a RIP update for network 192.168.10.0/24

C. a static route to network 192.168.10.0/24

D. an OSPF update for network 192.168.0.0/16

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Mark for Review

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A. a directly connected interface with an address of 192.168.10.254/24

B. a RIP update for network 192.168.10.0/24

C. a static route to network 192.168.10.0/24

D. an OSPF update for network 192.168.0.0/16

## Answer & Explanation

### Correct Answer

A

### Explanations

Administrative distance refers to the reliability of one routing protocol. Each routing protocol is specified a reliability level from high to low depending on the administrative distance. For the routing information of two different routing protocols to the same destination, the router will make decision on the basis of the administrative distance.

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Mark for Review

A link-state routing protocol is one of the two main classes of routing protocols used in packet-switched networks for computer communications. Which three features are of a link-state routing protocol? (Choose three.)

- A. provides common view of entire topology
- B. utilizes frequent periodic updates
- C. calculates shortest path
- D. utilizes event-triggered updates

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Mark for Review

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- B. utilizes frequent periodic updates
- C. calculates shortest path
- D. utilizes event-triggered updates

## Answer & Explanation

### Correct Answer

A C D

### Explanations

Link State Routing Protocols☐This type of routing protocol requires each router to maintain at least a partial map of the network. When a network link changes state (up to down, or vice versa), a notification, called a link state advertisement (LSA) is flooded throughout the network. All the routers note the change, and recompute their routes accordingly. This method is more reliable, easier to debug and less bandwidth-intensive than Distance-Vector. It is also more complex and more compute and memory-intensive. OSPF and OSI's IS-IS are link state routing protocols.

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Mark for Review

A link-state routing protocol is one of the two main classes of routing protocols used in packet-switched networks for computer communications. Which features are of a link-state routing protocol? (Choose three.)

- A. Offering common view of the whole topology
- B. Using frequent periodic updates
- C. Calculating shortest path
- D. Using event-triggered updates

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- A. Offering common view of the whole topology
- B. Using frequent periodic updates
- C. Calculating shortest path
- D. Using event-triggered updates

## Answer & Explanation

### Correct Answer

A C D

### Explanations

This question is to check the understanding of the link-state routing protocol.
This contrasts with distance-vector routing protocols, which work by having each node share its routing table with its neighbors. In a link-state protocol the only information passed between nodes is connectivity related, because link-state router gets the first-hand information from the peer router. The basic concept of link-state routing is that every node constructs a map of the connectivity of the network, in the form of a graph showing which nodes are connected to which other nodes. Each node then independently calculates the best next hop from it to every possible destination in the network.

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Mark for Review

Refer to the following routing protocols, which three can support the following IP addressing scheme? (Choose three.)

Network 1 - 192.168.10.0 /26
Network 2 - 192.168.10.64 /27
Network 3 - 192.168.10.96 /27
Network 4 - 192.168.10.128 /30
Network 5 - 192.168.10.132 /30

- A. RIP version 1
- B. RIP version 2
- C. OSPF
- D. EIGRP

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Mark for Review

Refer to the following routing protocols, which three can support the following IP addressing scheme? (Choose three.)

Network 1 - 192.168.10.0 /26
Network 2 - 192.168.10.64 /27
Network 3 - 192.168.10.96 /27
Network 4 - 192.168.10.128 /30
Network 5 - 192.168.10.132 /30

- A. RIP version 1
- B. RIP version 2
- C. OSPF
- D. EIGRP

## Answer & Explanation

### Correct Answer

B C D

### Explanations

The given addresses are classless, which require the routing protocols that can support classless addresses. In these options, all protocols support classless routing except RIP version 1.

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Mark for Review

As a CCNA candidate, you need to know all routing protocols very well. When router P4S1 learns about a remote network from EIGRP, OSPF, and a static route. Assuming all routing protocols are using their default administrative distance, which route will P4S1 use to forward data to the remote network?

A. The router will use the static route.

B. The router will use the EIGRP route.

C. The router will use the OSPF route.

D. The router will load balance and use all three routes.

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A. The router will use the static route.

B. The router will use the EIGRP route.

C. The router will use the OSPF route.

D. The router will load balance and use all three routes.

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is about the knowledge of the administrative distance.
A static route refers to setting a typical routing table on the router. The default route will not change without the intervention of the network administrator. Because the static route can't respond to the network changes, it is usually used in the network which is not large and topology is fixed.
Advantages of the static route are simple, effective and reliable. The static route has the highest priority in all routes. When a packet searches for a route on a router, the router will check the static route first, if found, the router will forward this packet according to the static route, if not found, the router will check the dynamic route.

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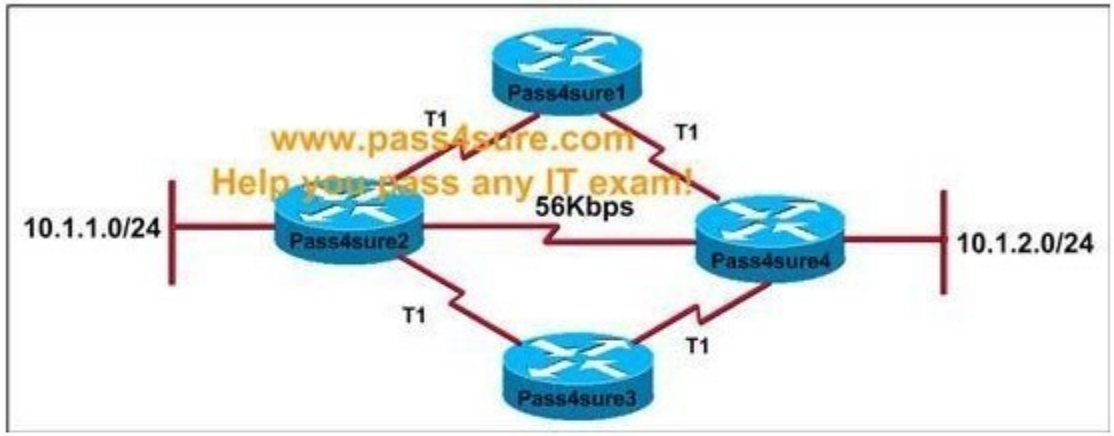
Mark for Review

In a Pass4sure network, four different Pass4sure routers are connected together as shown below:




Based on the information shown above, how will Pass4sure2 choose a path to the 10.1.2.0/24 network when different routing protocols are configured? (Choose three.)

- A. If RIPv2 is the routing protocol, only the path Pass4sure 2-4 will be installed in the routing table by default.
- B. If EIGRP and OSPF are both running on the network, the OSPF paths will be installed in the routing table.
- C. If EIGRP is the routing protocol, only the path Pass4sure 2-4 will be installed in the routing table by default.
- D. If EIGRP is the routing protocol, the equal cost paths Pass4sure 2-1-4 and Pass4sure 2-3-4 will be installed in the routing table by default.
- E. If EIGRP and OSPF are both running on the network, the EIGRP paths will be installed in the routing table.

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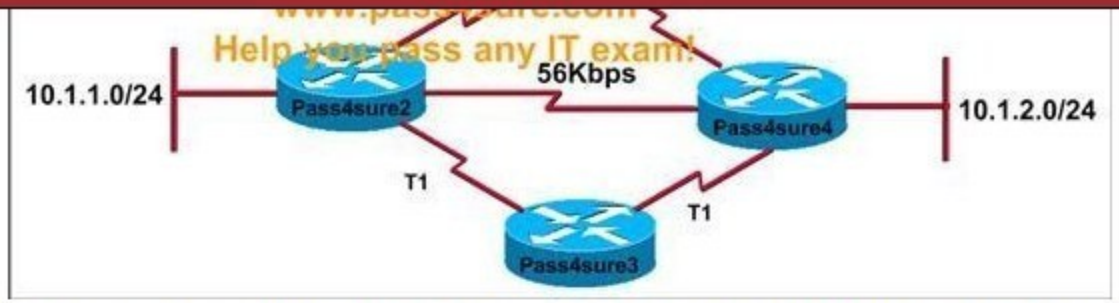
Mark for Review

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- A. If RIPv2 is the routing protocol, only the path Pass4sure 2-4 will be installed in the routing table by default.
- B. If EIGRP and OSPF are both running on the network, the OSPF paths will be installed in the routing table.
- C. If EIGRP is the routing protocol, only the path Pass4sure 2-4 will be installed in the routing table by default.
- D. If EIGRP is the routing protocol, the equal cost paths Pass4sure 2-1-4 and Pass4sure 2-3-4 will be installed in the routing table by default.
- E. If EIGRP and OSPF are both running on the network, the EIGRP paths will be installed in the routing table.

## Answer & Explanation

### Correct Answer

A D E

### Explanations

This question is to check the understanding of the routing protocol. The Routing Information Protocol (RIP) is an old routing protocol using the distance-vector routing algorithm. It employs the hop count as a routing metric to select the best path. Hop count is the number of the routers allowed in a path from the source to a destination. If there are two routers at different speed or with different bandwidth to the same destination, RIP will regard the two routers have the same distance provided that they have the same hop counts. The maximum number of hops allowed for RIP is 15. A hop count of 16 is considered an infinite distance and is inaccessible. EIGRP is based on the Diffusing Update Algorithm (DUAL), which guarantees loop-free operation and provides a mechanism for fast convergence. In the process of the route calculation, EIGRP considers the network bandwidth, network latency, channel Occupancy rate and channel reliability. In this question, the administrative distance of EIGRP is 90, the OSPF administrative distance is 110. The lower value of the administrative distance has the priority.

http://caleeran.blogspot.com

Mark for Review

As the Pass4sure network administrator, you want to choice a routing protocol and use it in the office network, the routing protocol is required that supports:

1) routing update authentication
2) multiple vendors
3) a network with over 50 routers
4) an addressing scheme that conserves IP addresses

Base on the information describe shown above, which routing protocol fulfills these requirements?

- A. EIGRP
- B. RIPv1
- C. RIPv2
- D. OSPF

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1) routing update authentication
2) multiple vendors
3) a network with over 50 routers
4) an addressing scheme that conserves IP addresses

Base on the information describe shown above, which routing protocol fulfills these requirements?

A. EIGRP

B. RIPv1

C. RIPv2

D. OSPF

## Answer & Explanation

### Correct Answer

D

### Explanations

EIGRP is CISCO private agreement, which will not support non-CISCO devices; RIPv1 and RIPv2 are distance vector protocol, supporting up to 15 hop, and 16 hop is inaccessible. RIPv1 does not support routing update verification. Although the convergence rate of OSPF is slower than EIGRP, but OSPF has better expansibility. And OSPF supports multi-vendor devices, and is applicable to large networks.

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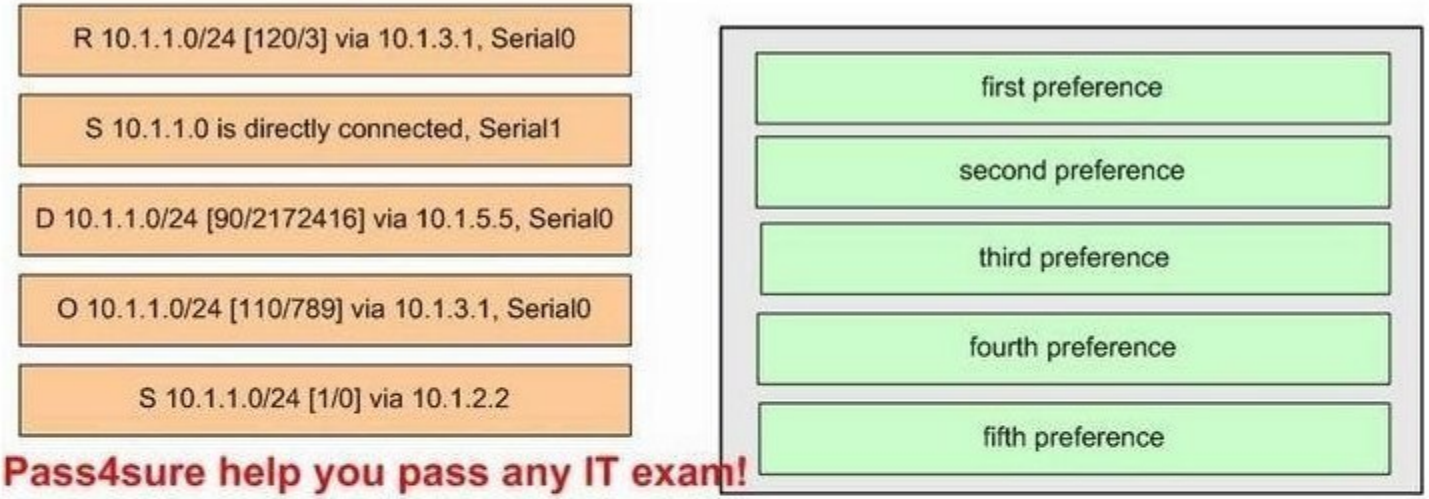
Mark for Review

Assume that a Cisco router has learned about network 10.1.1.0 from multiple sources, the router will choose and install only one entry into the routing table. Look at the following graphic, the left describes the routes, while the right gives the order of preference. Drag the items on the left to the proper locations.

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Mark for Review

R 10.1.1.0/24 [120/3] via 10.1.3.1, Serial0

S 10.1.1.0 is directly connected, Serial1

D 10.1.1.0/24 [90/2172416] via 10.1.5.5, Serial0

O 10.1.1.0/24 [110/789] via 10.1.3.1, Serial0

S 10.1.1.0/24 [1/0] via 10.1.2.2

first preference

second preference

third preference

fourth preference

fifth preference

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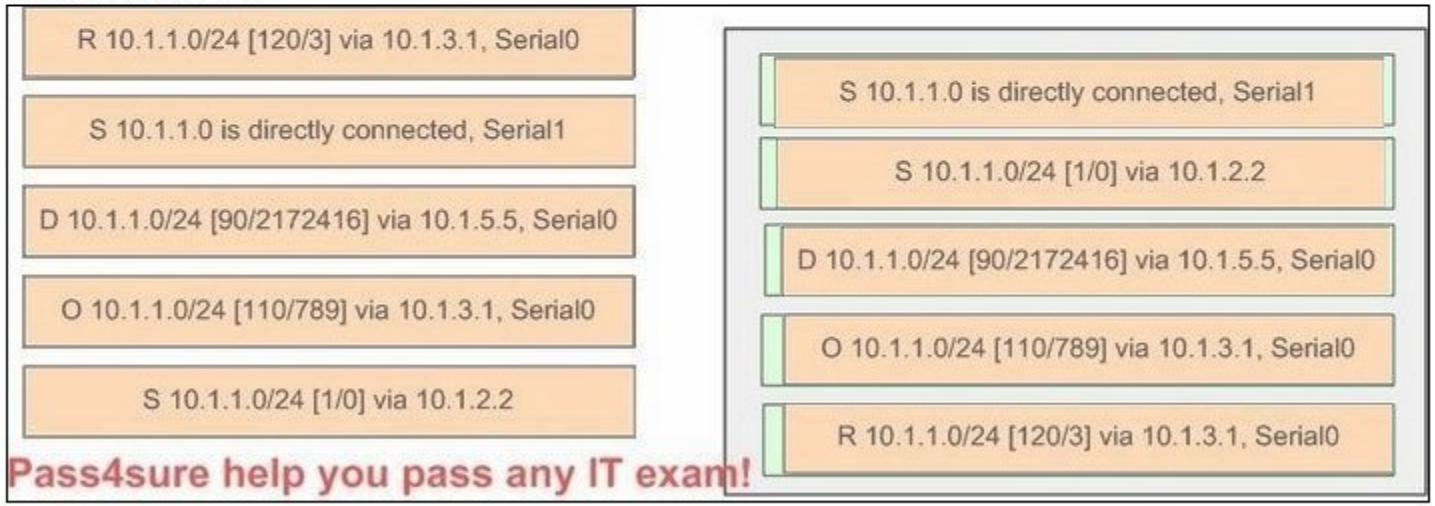
## Answer & Explanation

### Correct Answer




### Explanations

This question is to check the knowledge of routing principles which are based on the administrative distance metric. The lower value of the administrative distance has the priority. The administrative distance of the directly connected network is 0, the static route administrative distance is 1, the RIP administrative distance is 120, the EIGRP administrative distance is 90, the OSPF administrative distance is 110.

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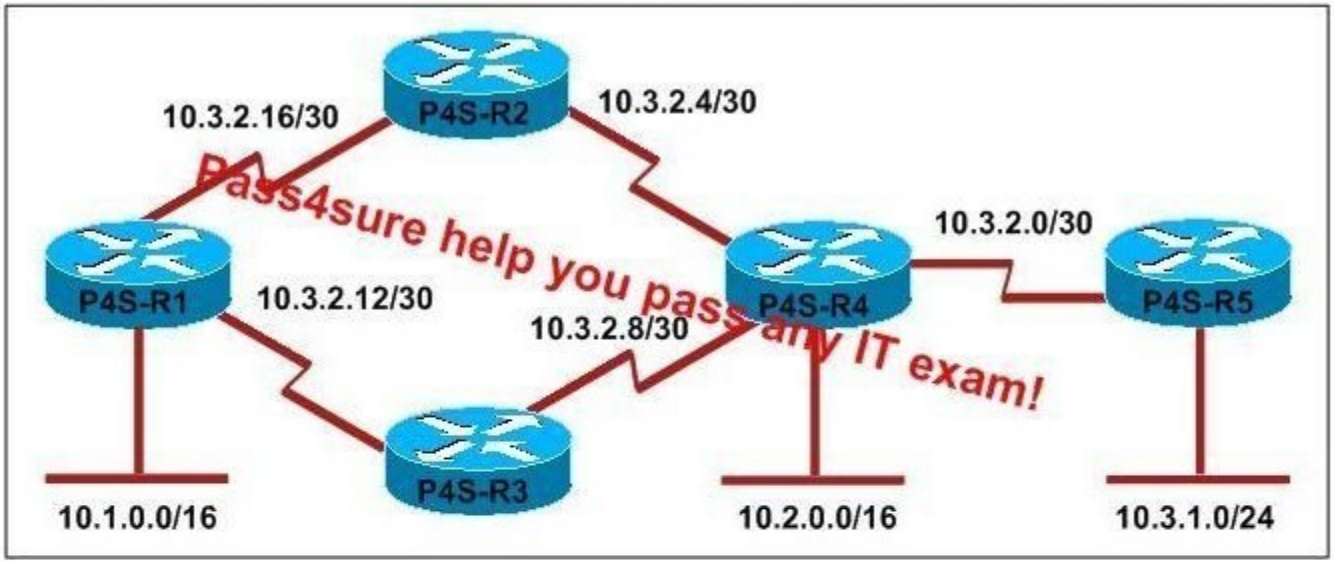
Mark for Review

Refer to the following routing protocols, which three will you use in the following presented enterprise network? (Choose three.)




- A. BGP
- B. RIP v2
- C. EIGRP
- D. OSPF

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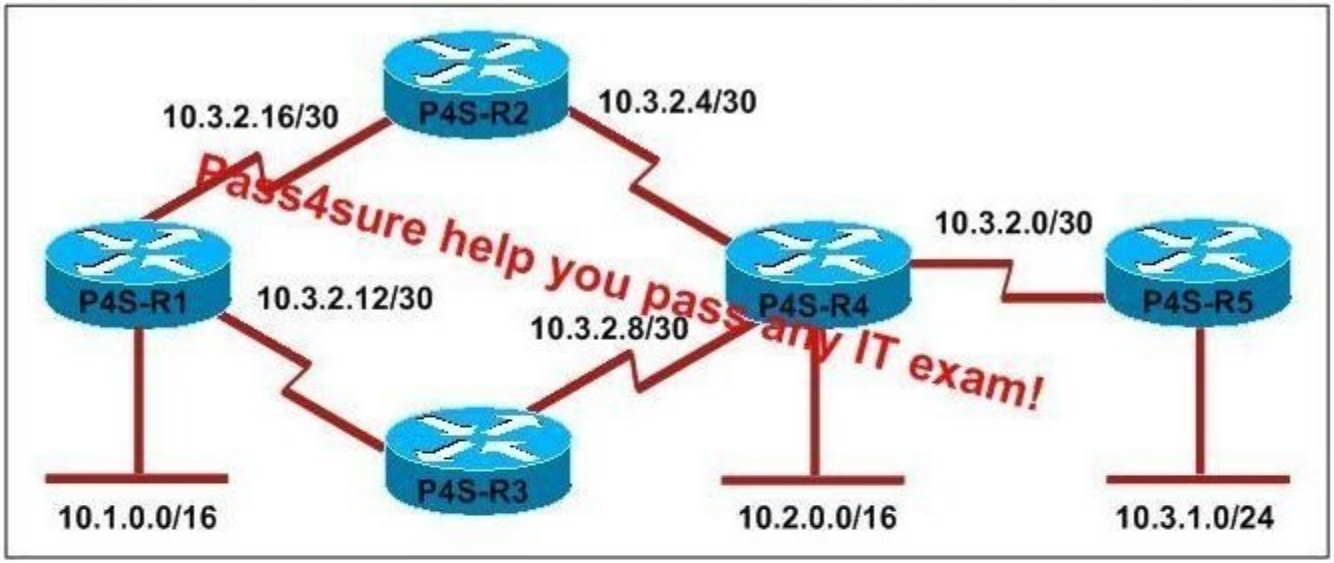
Mark for Review

Refer to the following routing protocols, which three will you use in the following presented enterprise network? (Choose three.)




- A. BGP
- B. RIP v2
- C. EIGRP
- D. OSPF

## Answer & Explanation

### Correct Answer

B C D

### Explanations

This question is to check the understanding of the routing protocol. According to the provided protocols, it is easy to find that RIPv2,EIGRP and OSPF are all IGP protocols, while Border Gateway Protocol is an interautonomous system routing protocol. BGP is used to exchange routing information for the Internet and is the protocol used between Internet service providers (ISP). It is an Exterior Gateway Protocol, which can achieve the loop-free information exchange between autonomous systems.

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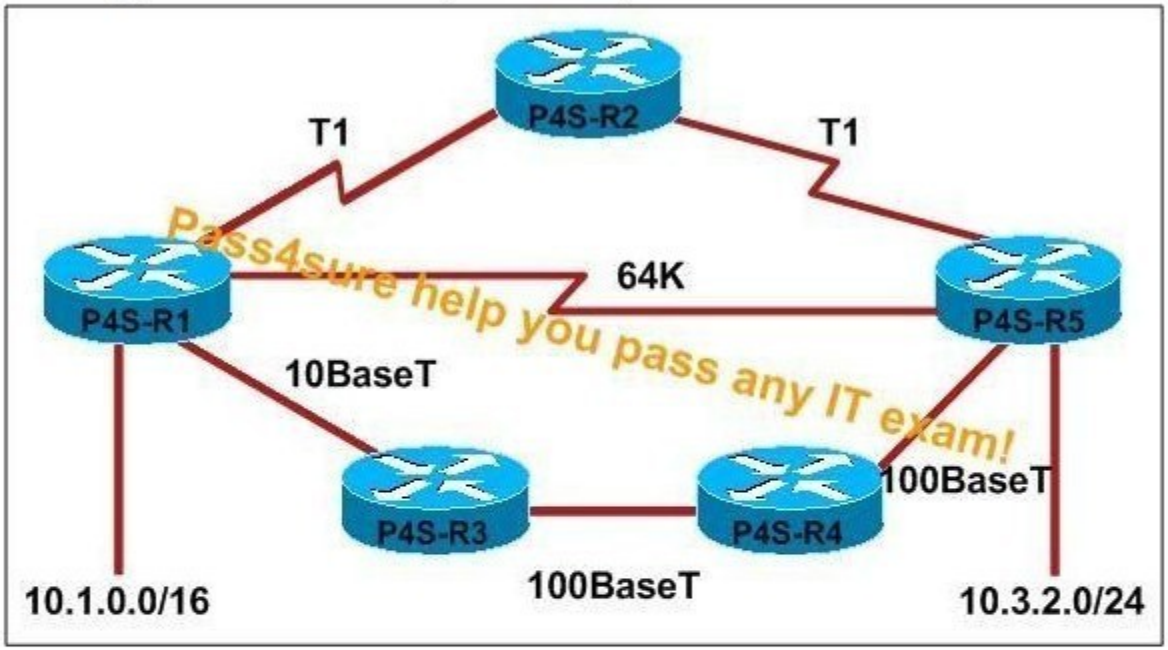
Mark for Review

Study the following exhibit carefully, if the routing protocol provided in each option below is configured with its default settings and the given routing protocol is working on all the routers. Which two descriptions are correct about the path to be selected between networks 10.1.0.0 and 10.3.2.0 for the routing protocol mentioned? (Choose two.)

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- A. The path will be from P4S-R1 to P4S-R3 to P4S-R4 to P4S-R5 when running OSPF protocol.
- B. The path will be from P4S-R1 to P4S-R5 when running OSPF protocol.
- C. The path will be from P4S-R1 to P4S-R3 to P4S-R4 to P4S-R5 when running RIPv2 protocol.
- D. The path will be from P4S-R1 to P4S-R5 when running RIPv2 protocol.

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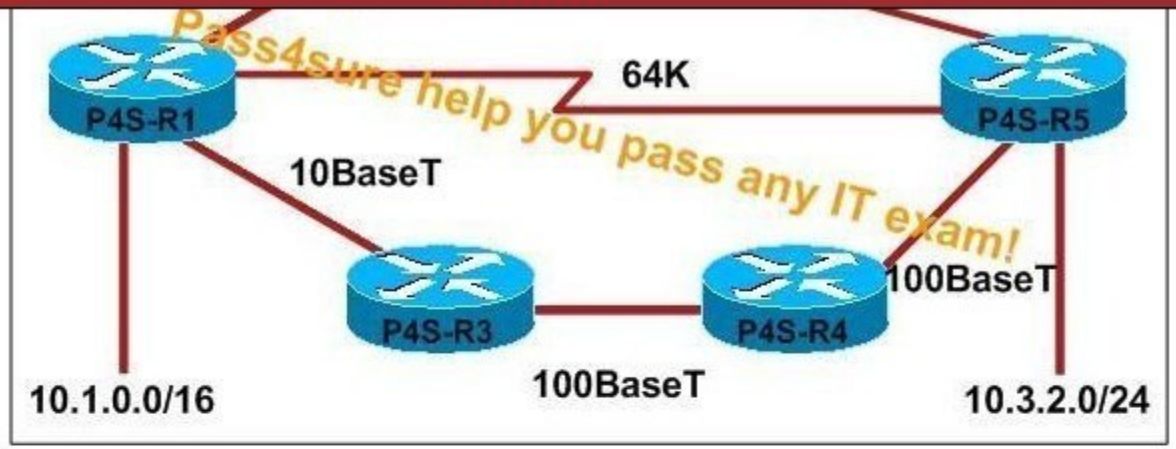

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- A. The path will be from P4S-R1 to P4S-R3 to P4S-R4 to P4S-R5 when running OSPF protocol.
- B. The path will be from P4S-R1 to P4S-R5 when running OSPF protocol.
- C. The path will be from P4S-R1 to P4S-R3 to P4S-R4 to P4S-R5 when running RIPv2 protocol.
- D. The path will be from P4S-R1 to P4S-R5 when running RIPv2 protocol.

## Answer & Explanation

### Correct Answer

A D

### Explanations

This question is to check the understanding of the routing protocol. The Routing Information Protocol (RIP) is an old routing protocol using the distance-vector routing algorithm. It employs the hop count as a routing metric to select the best path. Hop count is the number of the routers allowed in a path from the source to a destination. If there are two routers at different speed or with different bandwidth to the same destination, RIP will regard the two routers have the same distance provided that they have the same hop counts. The maximum number of hops allowed for RIP is 15. A hop count of 16 is considered an infinite distance and is inaccessible. OSPF is short for Open Shortest Path First. It is a link-state routing protocol and falls into the group of interior gateway protocols, operating within a single autonomous system (AS).Each router running OSPF uses LSA to describe the local network status and broadcasts to the entire AS. Thus, each router will receive all LAS generated by all routers in the AS. For each LSA is the description of the around network topologies, the entire LSDB reflects the AS network topology. Each router implements SPF algorithms according to LSDB. The path cost is essential to the OSFP selection.

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Mark for Review

The above provides some descriptions, while the below provides some routing protocols.
Drag the above items to the proper locations.

| | |
|---|---|
| has a default administrative distance of 90 | is vendor-specific |
| uses cost as its metric | elects a DR on each mutiaccess network |

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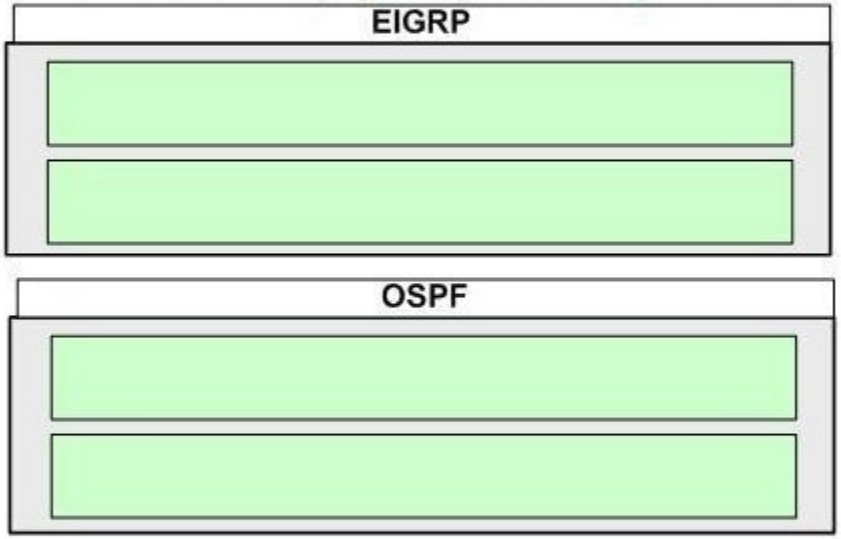


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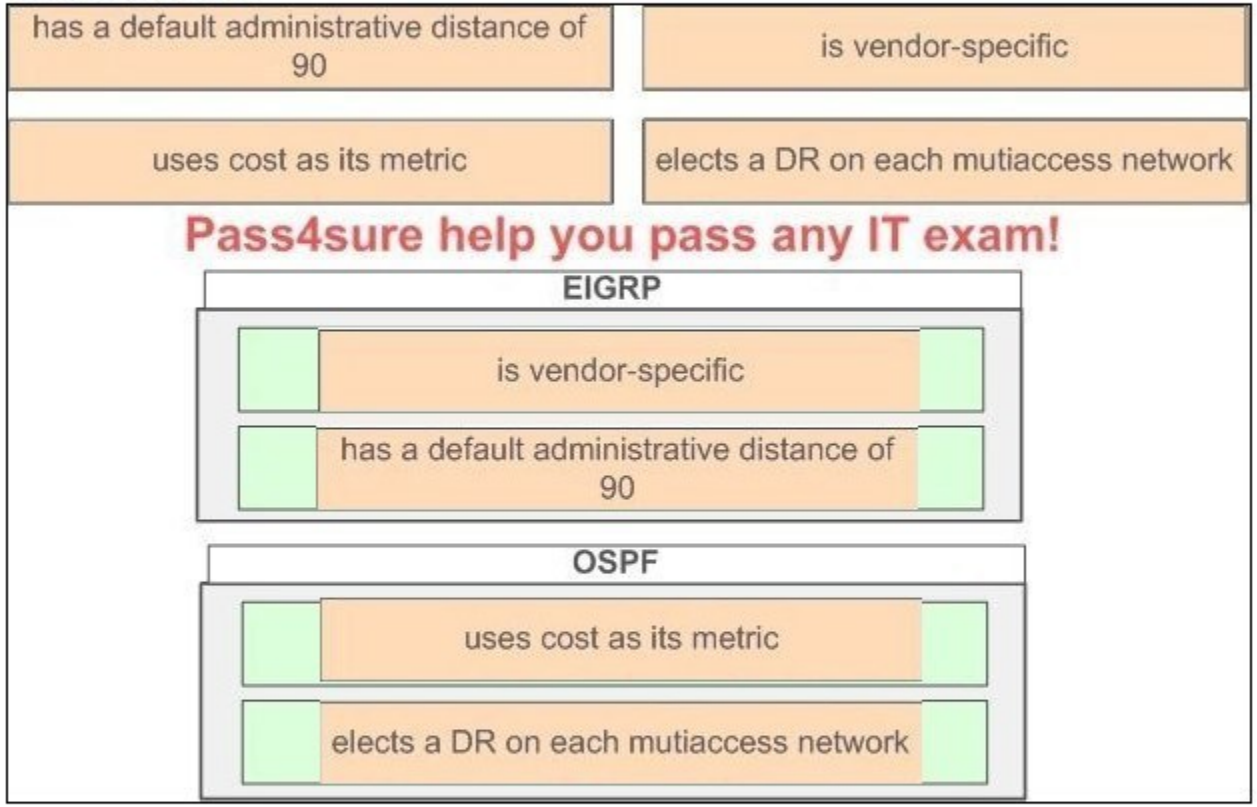
Mark for Review

## Answer & Explanation

### Correct Answer




### Explanations

This question is to check the knowledge about the routing protocols EIGRP and OSPF. EIGRP and earlier IGRP are developed by Cisco, both of which are dynamic routing protocols based on the distance-vector algorithms. EIGRP is the Enhanced Interior Gateway Routing Protocol, which is a dynamic interior gateway routing protocol. In this question, the EIGRP administrative distance is 90. OSPF is short for Open Shortest Path First. It is a link-state routing protocol and falls into the group of interior gateway protocols, operating within a single autonomous system (AS).Each router running OSPF uses LSA to describe the local network status and broadcasts to the entire AS. Thus, each router will receive all LAS generated by all routers in the AS. DR describes a multi-addresses network on which other routers will form a neighbor relationship. OSPF uses the metric to measure the best route.

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Mark for Review

The above describes some features, while the below describes some routing protocols.
Drag the above items to the proper locations.

| | |
|---|---|
| susceptible to routing loops | uses only event-triggered updates |
| requires more memory and processing power | faster convergence |
| Sends frequent updates | exchanges full routing table in updates |
| same topology information held by all routers | less complex configuration |

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| RIP Version 1 | OSPF |
|---|---|
| | |
| | |
| | |
| | |

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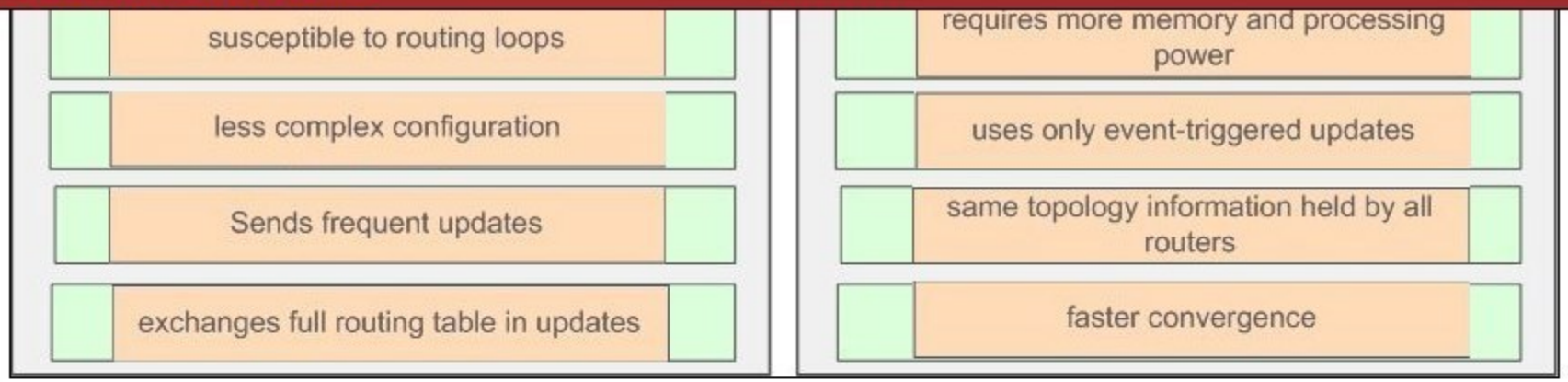


## Explanations

This question is to examine the characteristics of the RIPv1 and OSPF routing protocol.
The advantage of the RIP protocol is of simple configuration, which is very applicable in small- scale network.
The disadvantages of the RIP protocol include:
1. Mass Broadcast: RIP broadcasts a complete routing table every 30 seconds to all neighbors, which take up valuable bandwidth resources and will be a problem in slow WAN link.
2. RIP does not have the concepts of network delay and link costs. When using RIP, the decision of the routing /transmitting is based on the hops, which can easily cause the problem that there is no way to select the best route. 3. The limitation of the supported network scale. As RIP only supports a maximum of 16 step-by-step hops, the network is considered to be inaccessible when the hop number exceeds.
Therefore, RIP is only applicable in small-scale networks.
The main advantages of the OSPF protocols lie in:
1. As it is based on the open standards, it can run on most of the routers.
2. It uses the SPF algorithm developed by the Dijkstra to provide loop-free topology.
3. It provides fast convergence of triggered update and incremental update through link state advertisement.
4. It is a classless protocol, which allows hierarchical design with VLSM and routing aggregation.
The shortcomings of the OSPF protocol:
1. It requests more memory to maintain the adjacency relations (OSPF neighbor list), topology (including all the routers and their link state database) and the routing table.
2. It requests extra CPU handling to perform the SPF algorithm, especially the first time they start up the router when they initially establish the adjacency relationship and the topology list.
3. As to large network, it requires careful design, to separate the network into appropriate hierarchical design through distributing the routers into different areas.
4. Its configuration is complicated and more difficult to troubleshoot.

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Mark for Review

There are three possible routes for a router to reach a destination network. The first is from OSPF with a metric of 782. The second is from RIPv2 with a metric of 4. The third is from EIGRP with a composite metric of 20514560. Which route will be installed by the router in its routing table?

A. the RIPv2 route

B. the EIGRP route

C. all three routes

D. the OSPF route

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

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the understanding of the routing protocol's administrative distance. The principle of selecting routing protocol is measured by administrative distance. The smaller the administrative distance is, the higher the priority. The administrative distance of EIGRP is 90, the OSPF is 110 and the RIP is 120.

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Mark for Review

The left provides the definitions, while the right describes some terms.
Drag the items on the right to the proper locations.

| | |
|---|---|
| A router learns from its neighbor that a route is down, and the router sends an update back to the neighbor with an infinite metric to that route. | split horizon |
| The packets flooded when a topology change occurs, causing network routers to update their topological databases and recalculate routes. | LSA |
| This prevents sending information about a route back out the same interface that originally learned about the route. | holddown timer |
| For a given period, this causes the router to ignore any updates with poorer metrics to a lost network. | poison reverse |

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Mark for Review

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split horizon

LSA

holddown timer

poison reverse

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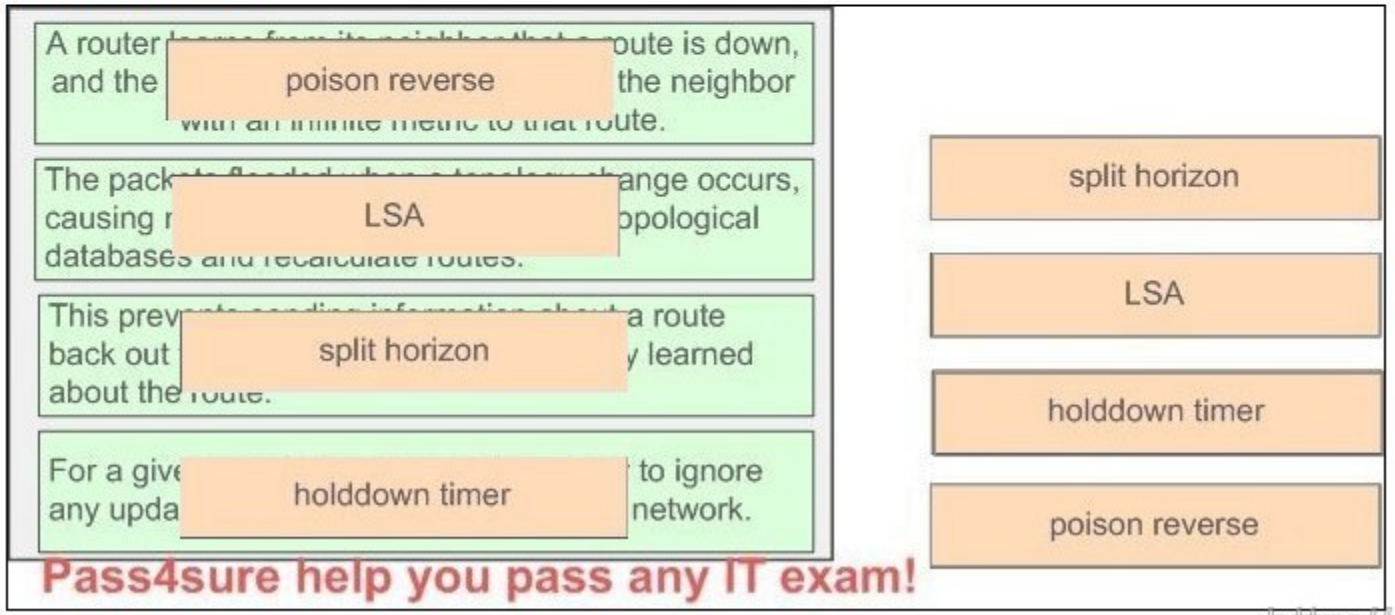
## Answer & Explanation

### Correct Answer

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### Explanations

No more information available

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. beacons received on point-to-point links
- C. LSAs from other routers
- D. routing tables received from other link-state routers

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- B. beacons received on point-to-point links
- C. LSAs from other routers
- D. routing tables received from other link-state routers

## Answer & Explanation

### Correct Answer

A C

### Explanations

Hello protocol - The OSPF Hello protocol provides dynamic neighbor discovery and maintains neighbor relationships. Hello packets and Link State Advertisements (LSAs) build and maintain the topological database.
Link State Advertisement - A Link State Advertisement (LSA) is an link-state protocol data packet containing link-state and routing information that's shared among OSPF routers. There are different types of LSA packets, and I'll go into these shortly. An link-state protocol router will exchange LSA packets only with routers to which it has established adjacencies.

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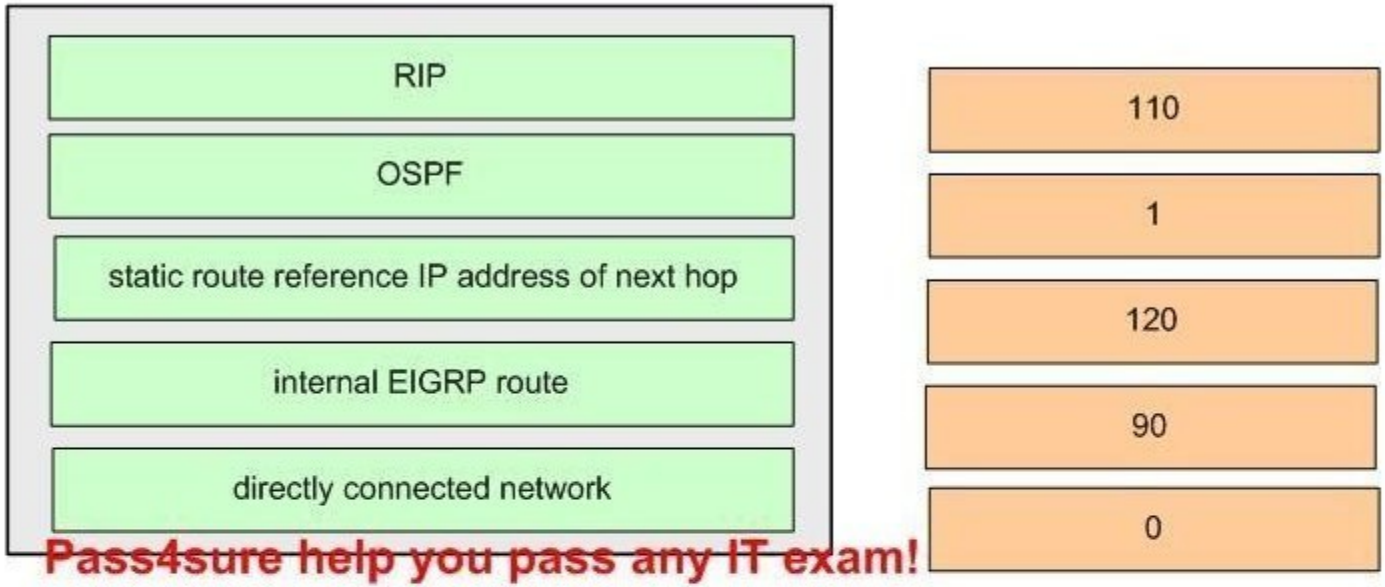
Mark for Review

The left provides some routing protocols, while the right gives several Cisco default administrator distances.
Drag the items on the right to the proper locations.

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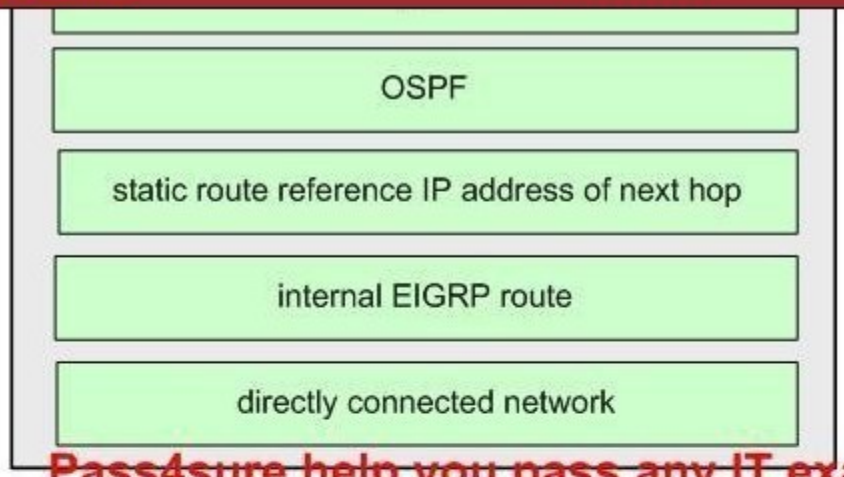
Mark for Review




110
1
120
90
0

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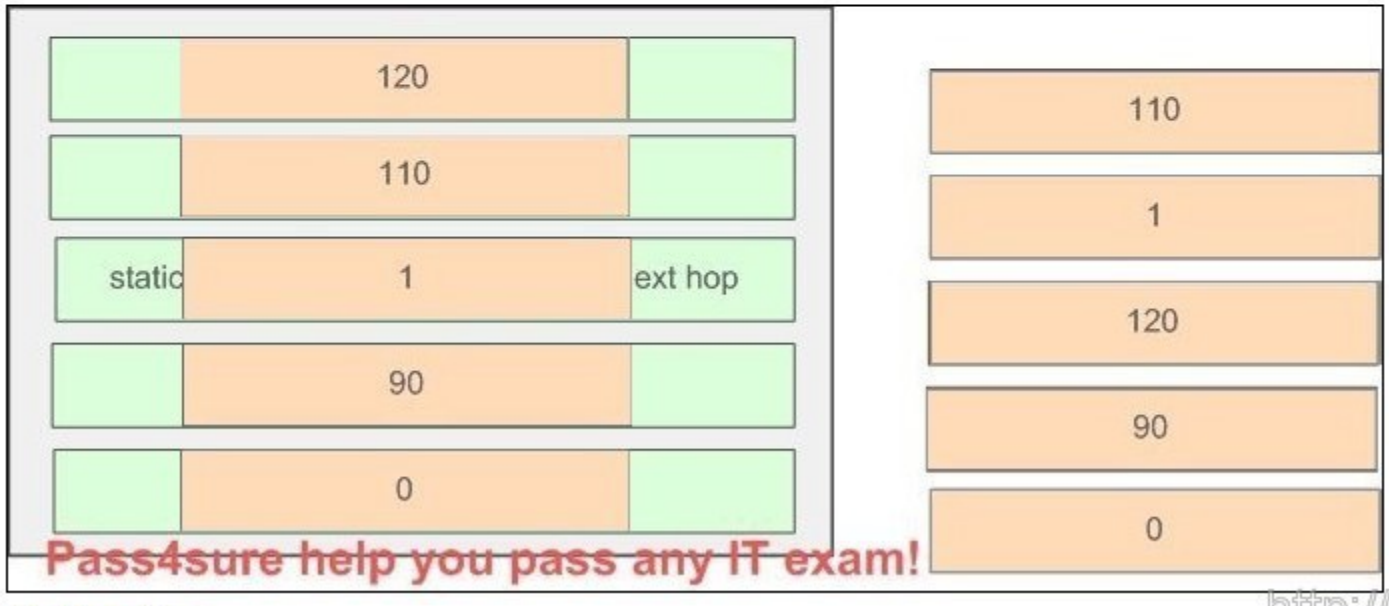
## Answer & Explanation

### Correct Answer

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### Explanations

No more information available

Mark for Review

The Pass4sure Network is shown below:. A network technician has been assigned the task of configuring the internet work that is shown in the exhibit, but has failed to configure routing properly. Which configuration will allow the hosts on the Pass4sure1 LAN to access resources on the Pass4sure2 LAN with the least impact on router processing and WAN bandwidth?

A. Pass4sure1(config)# ip route 172.16.25.0 255.255.255.0 192.168.2.6
Pass4sure2(config)# ip route 192.168.1.0 255.255.255.0 192.168.2.5

B. Pass4sure1(config)# router rip
Pass4sure1(config-router)# network 192.168.2.0
Pass4sure1(config-router)# network 172.16.0.0
Pass4sure2(config)# router rip
Pass4sure2 (config-router)# network 192.168.1.0
Pass4sure2 (config-router)# network 192.168.2.0

C. Pass4sure1(config)# router ospf 1
Pass4sure1(config-router)# network 192.168.2.4 0.0.0.3 area 0
Pass4sure1(config-router)# network 172.16.25.0 0.0.0.255 area 0
Pass4sure2(config)# router ospf 1
Pass4sure2 (config-router)# network 192.168.1.0 0.0.0.255 area 0
Pass4sure2 (config-router)# network 192.168.2.4 0.0.0.3 area 0

D. Pass4sure1(config)# router eigrp 56
Pass4sure1(config-router)# network 192.168.2.4
Pass4sure1(config-router)# network 172.16.25.0
Pass4sure2(config)# router eigrp 56
Pass4sure2 (config-router)# network 192.168.1.0
Pass4sure2 (config-router)# network 192.168.2.4

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Mark for Review

A. Pass4sure1(config)# ip route 172.16.25.0 255.255.255.0 192.168.2.0
Pass4sure2(config)# ip route 192.168.1.0 255.255.255.0 192.168.2.5

B. Pass4sure1(config)# router rip
Pass4sure1(config-router)# network 192.168.2.0
Pass4sure1(config-router)# network 172.16.0.0
Pass4sure2(config)# router rip
Pass4sure2 (config-router)# network 192.168.1.0
Pass4sure2 (config-router)# network 192.168.2.0

C. Pass4sure1(config)# router ospf 1
Pass4sure1(config-router)# network 192.168.2.4 0.0.0.3 area 0
Pass4sure1(config-router)# network 172.16.25.0 0.0.0.255 area 0
Pass4sure2(config)# router ospf 1
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Pass4sure2 (config-router)# network 192.168.2.4 0.0.0.3 area 0

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Pass4sure1(config-router)# network 192.168.2.4
Pass4sure1(config-router)# network 172.16.25.0
Pass4sure2(config)# router eigrp 56
Pass4sure2 (config-router)# network 192.168.1.0
Pass4sure2 (config-router)# network 192.168.2.4

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the understanding of the knowledge points about the routing protocol. As requested by the question, the minimum impact on the router process and the network bandwidth is the static route.
The static route is a method to configure the routing table by manually inputting information, which has the following advantages:
1. being able to reduce the daily expenses of the router;
2. Easily being configured in a small Internet;
3. being able to control the routing updates. However, the static route cannot work properly in a frequently changed network environment. It is not realistic to configure the static route in a large and frequently-changed network.

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Mark for Review

Part of the Pass4sure OSPF network is shown below:

Configuration exhibit:

Pass4sure1 Routing Commands:

```
ip route 0.0.0.0 0.0.0.0 serial0/0
router ospf 1
network 172.16.100.0 0.0.0.3 area 0
network 172.16.100.64 0.0.0.63 area 0
network 172.16.100.128 0.0.0.31 area 0
default-information originate
```

You work as a network technician at Pass4sure.com. Study the exhibits carefully.Assume that all router interfaces are operational and correctly configured. In addition, assume that OSPF has been correctly configured on Router Pass4sure2.

How will the default route configured on Pass4sure1 affect the operation of Pass4sure2?

A. Any packet destined for a network that is not directly connected to router Pass4sure2 will be dropped immediately.

B. Any packet destined for a network that is not directly connected to router Pass4sure1 will be dropped.

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Mark for Review

```
router ospf 1
network 172.16.100.0 0.0.0.3 area 0
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network 172.16.100.128 0.0.0.31 area 0
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How will the default route configured on Pass4sure1 affect the operation of Pass4sure2?

A. Any packet destined for a network that is not directly connected to router Pass4sure2 will be dropped immediately.

B. Any packet destined for a network that is not directly connected to router Pass4sure1 will be dropped.

C. Any packet destined for a network that is not directly connected to router Pass4sure2 will be dropped immediately because of the lack of a gateway on Pass4sure1.

D. The network directly connected to a router Pass4sure2 will not be able to communicate with the 172.16.100.0, 172.16.100.28,and 172.16.100.64 subnetworks.

E. Any packet destined for a network that is not referenced in the routing table of router Pass4sure2 will be directed to Pass4sure1. Pass4sure1 will then send that packet back to Pass4sure2 and a routing loop will occur.

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to examine the understanding of the knowledge points about the default routing and the routing loop.
The default routing is a special static route, which means the selection of the router can make if there is no matching between the packets of destination addresses in the routing table. Otherwise, the packets of the destination address which has no matching in the routing table will be abandoned if there is no default route. When one learns to the default route of Pass4sure2, the router entries which are not matched to the destination addresses in the routing table will be directly handed over to and be transmitted by the default route. If this routing address doesn't even exist, Pass4sure1 will feedback a destination-inaccessible message to Pass4sure2. In this way, Pass4sure2 will transmit the data packet to the default route, and form a loop circuit.

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Open Shortest Path First (OSPF) is a dynamic routing protocol for use in Internet Protocol (IP) networks. Which features are of OSPF areas? (Choose three.)

- A. Hierarchical OSPF networks do not need multiple areas.
- B. Areas can be assigned any number from 0 to 65535.
- C. Area 0 is called the backbone area.
- D. Multiple OSPF areas should connect to area 0.

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Mark for Review

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## Answer & Explanation

### Correct Answer

B C D

### Explanations

Open Shortest Path First (OSPF) is a dynamic routing protocol for use in Internet Protocol (IP) networks. Specifically, it is a link-state routing protocol and falls into the group of interior gateway protocols, operating within an autonomous system (AS). It is defined as OSPF Version 2 in RFC 2328 (1998) for IPv4. The updates for IPv6 are specified as OSPF Version 3 in RFC 5340 (2008)http://en.wikipedia.org/wiki/Open_Shortest_Path_First. OSPF is perhaps the most widely-used interior gateway protocol (IGP) in large enterprise networks; An OSPF network is divided into areas that are labeled with 32-bit area identifiers. The backbone area is responsible for distributing routing information between nonbackbone areas. The backbone must be contiguous.

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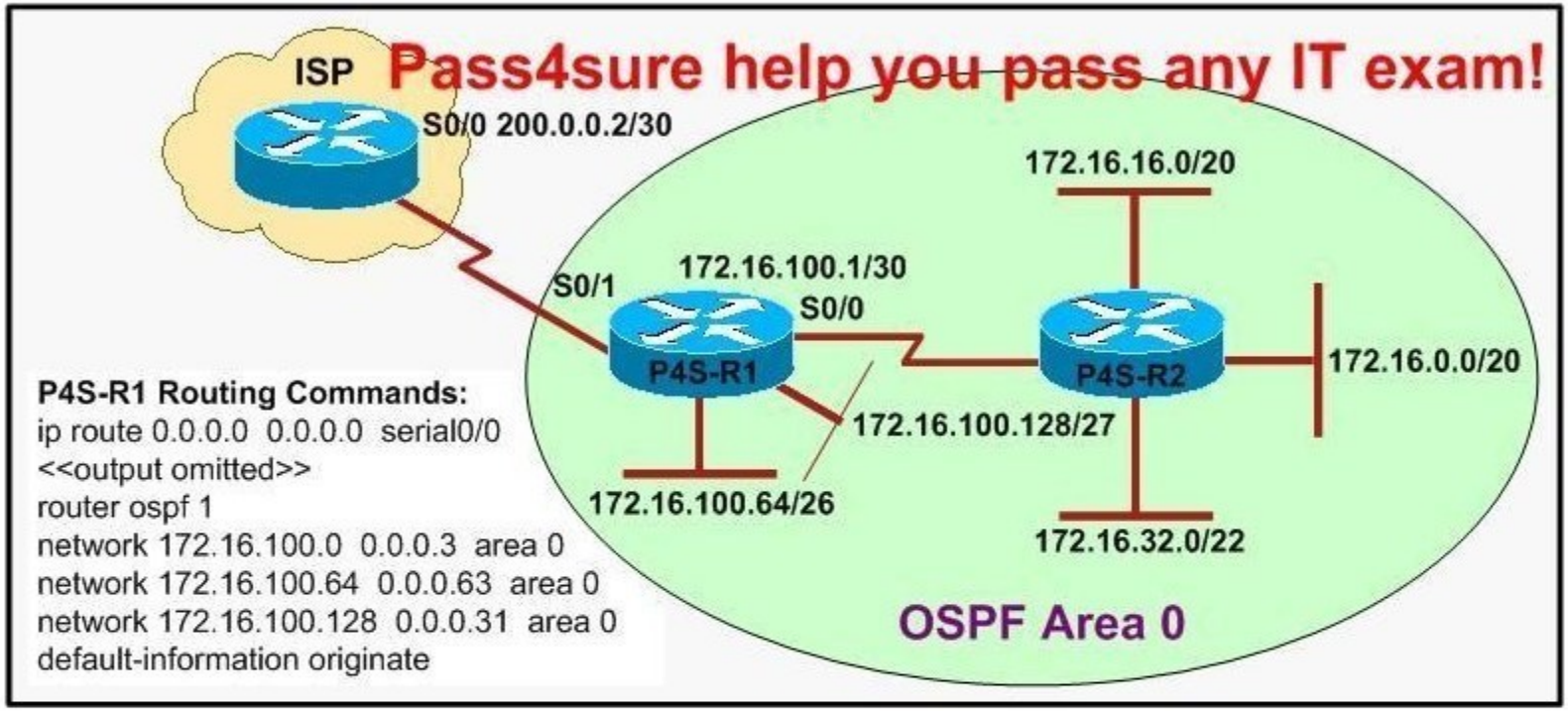
Mark for Review

If all router interfaces are operational and configured correctly. What is the impact of the configuration of P4S-R1 on router P4S-R2 according to the following exhibit?




A. Router P4S-R2 can not establish a neighbor relationship with P4S-R1.

B. P4S-R2 has not a route for the directly connected serial network, but all other directly connected networks will be present, as well as the two Ethernet networks connected to P4S-R1.

C. Router P4S-R2 is to get a complete routing table, including a default route, from P4S-R1.

D. P4S-R2 can get OSPF updates from P4S-R1, but is unable to get a default route from P4S-R1.

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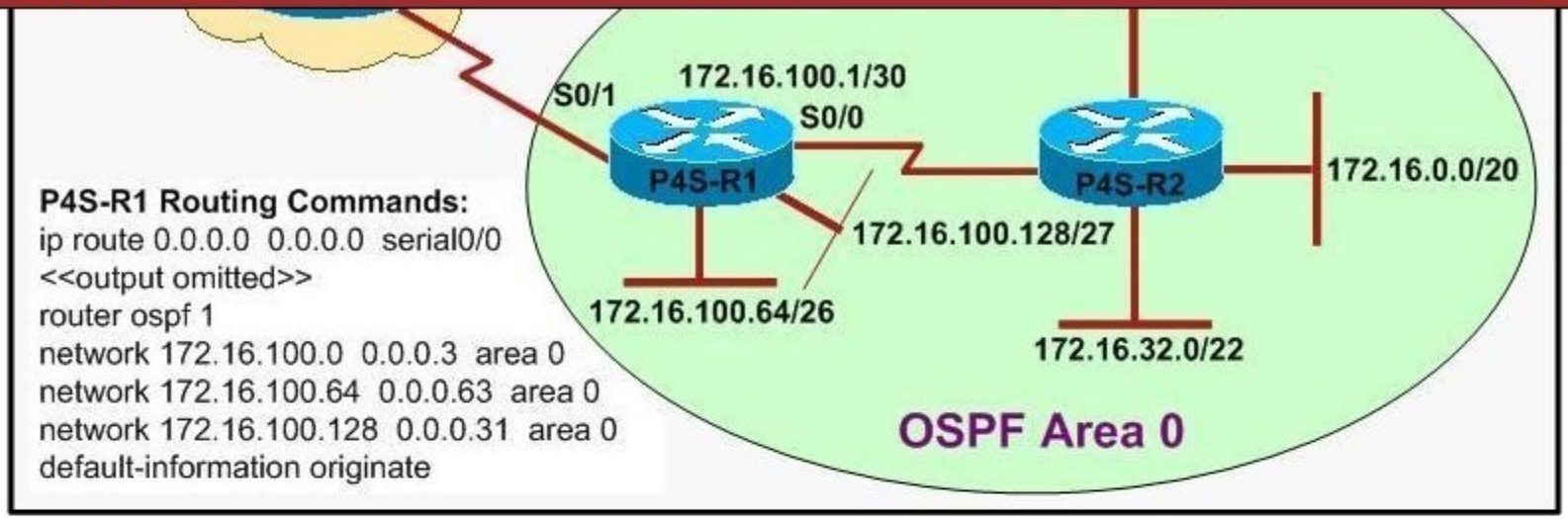
Mark for Review

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D. P4S-R2 can get OSPF updates from P4S-R1, but is unable to get a default route from P4S-R1.

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the conditions for OSPF to create neighborhood.
So as to make the two routers become neighbors, each router must be matched with the following items:
1. The area ID and its types;
2. Hello and failure time interval timer;
3. OSPF Password (Optional);
4. The regional identifier of the end node (which is used to include OSPF and routing information)
5. Distal region marked (for include OSPF routing information and information)

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Open Shortest Path First (OSPF) is a routing protocol developed for Internet Protocol (IP) networks by the Interior Gateway Protocol (IGP) working group of the Internet Engineering Task Force (IETF).Which three features are of OSPF routing protocol? (Choose three.)

- A. It converges quickly.
- B. It uses the DUAL algorithm to determine the best route.
- C. It uses cost to determine the best route.
- D. OSPF routers discover neighbors before exchanging routing information.

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## Answer & Explanation

### Correct Answer

A C D

### Explanations

OSPF builds routing tables based solely on the destination IP address found in IP packets. It was designed to support variable-length subnet masking (VLSM, CIDR). OSPF detects changes in the topology, such as link failures, very quickly and converges on a new loop-free routing structure within seconds. For this, each OSPF router collects link-state information to construct the entire network topology of so-called areas from which it computes the shortest path tree for each route using a method based on Dijkstra's algorithm. The link-state information is maintained on each router as a link-state database (LSDB) which is a tree-image of the network topology. Identical copies of the LSDB are periodically updated through flooding on all routers in each OSPF-aware area (region of the network included in an OSPF area type - see "Area types" below). By convention, area 0 represents the core or "backbone" region of an OSPF-enabled network, and other OSPF area numbers may be designated to serve other regions of an enterprise (large, business) network - however every additional OSPF area must have a direct or virtual connection to the backbone OSPF area. The backbone area has the identifier 0.0.0.0. Inter-area routing goes via the backbone.
Routers in the same broadcast domain or at each end of a point-to-point telecommunications link form adjacencies when they have detected each other. This detection occurs when a router "sees" itself in a hello packet. This is called a two way state and is the most basic relationship. The routers in an Ethernet or frame relay network select a designated router (DR) and a backup designated router (BDR) which act as a hub to reduce traffic between routers. OSPF uses both unicast and multicast to send "hello packets" and link state updates. Multicast addresses 224.0.0.5 (all SPF/link state routers, also known as AllSPFRouters) and 224.0.0.6 (all Designated Routers, AllDRouters) are reserved for OSPF (RFC 2328). In contrast to the Routing Information Protocol (RIP) or the Border Gateway Protocol (BGP), OSPF does not use TCP or UDP but uses IP directly, via IP protocol 89. OSPF handles its own error detection and correction, therefore negating the need for TCP or UDP functions.The OSPF Protocol can operate securely between routers, optionally using a clear-text password or using MD5 to authenticate peers before forming adjacencies and before accepting link-state advertisements (LSA).

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Mark for Review

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B. It uses the DUAL algorithm to determine the best route.

C. It uses cost to determine the best route.

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## Answer & Explanation

### Correct Answer

A C D

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Mark for Review

The interface information for router Pass4sure3 is displayed below:

Pass4sure3# show ip interface brief

www.pass4sure.com

| Interface | IP Address | OK? | Method | Status | Protocol |
|---|---|---|---|---|---|
| Ethernet0 | 190.172.32.10 | YES | NVRAM | up | up |
| Loopback0 | 208.149.23.162 | YES | NVRAM | up | up |
| Loopback1 | 208.149.23.194 | YES | NVRAM | up | up |
| Serial0 | 220.173.149.10 | YES | NVRAM | down | down |
| Serial1 | unassigned | YES | NVRAM | administratively down | down |

Router Pass4sure3 was just successfully rebooted. Based on the information shown above, correctly identify the current OSPF router ID for Router Pass4sure3.

- A. 220.173.149.10
- B. 208.149.23.162
- C. 208.149.23.194
- D. 190.172.32.10

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Mark for Review

| Interface | IP Address | OK? | Method | Status | Protocol |
|---|---|---|---|---|---|
| Ethernet0 | 190.172.32.10 | YES | NVRAM | up | up |
| Loopback0 | 208.149.23.162 | YES | NVRAM | up | up |
| Loopback1 | 208.149.23.194 | YES | NVRAM | up | up |
| Serial0 | 220.173.149.10 | YES | NVRAM | down | down |
| Serial1 | unassigned | YES | NVRAM | administratively down | down |

Router Pass4sure3 was just successfully rebooted. Based on the information shown above, correctly identify the current OSPF router ID for Router Pass4sure3.

A. 220.173.149.10

B. 208.149.23.162

C. 208.149.23.194

D. 190.172.32.10

## Answer & Explanation

### Correct Answer

C

### Explanations

Configures an OSPF router ID.
Description: Router ID is the tie-breaker for OSPF path selection. The path selection process uses a variety of metrics to select a route. If all other metrics (accessibility, administrative weight, local preference, etc.) are equal, OSPF determines the router ID using the following priority:
1.Use the address configured by the ospf router-id command
2.Use the address of the loopback 0 interface
3.Use the highest IP address of any interface
4.If no interface exists, set the router-ID to 0.0.0.0
5.If no OSPF router ID is explicitly configured, OSPF computes the router-ID based on the items 2, 3, and 4 and restarts OSPF (if the process is enabled and router-ID has changed).
WARNING The ospf router-id command causes the OSPF process to restart using the new router-ID (if the processes are enabled and router-ID has changed).
Use ospf router-id ip-address command to set the OSPF router ID for the system.
Use the no ospf router-id to configure the OSPF router ID as the default value (address of the loopback 0 interface).

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Which three features are of OSPF routing protocol? (Choose three.)

- [ ] A. Converge quickly.
- [ ] B. OSPF is a classful routing protocol.
- [ ] C. Identify the best route by use of cost.
- [ ] D. Before exchanging routing information, OSPF routers find out neighbors.

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Mark for Review

Which three features are of OSPF routing protocol? (Choose three.)

- A. Converge quickly.
- B. OSPF is a classful routing protocol.
- C. Identify the best route by use of cost.
- D. Before exchanging routing information, OSPF routers find out neighbors.

## Answer & Explanation

**Correct Answer**

A C D

**Explanations**

No more information available

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Which of the following factors determines the OSPF router ID when configuring a router with both physical and logical interfaces?

- A. The lowest network number of any interface
- B. The highest network number of any interface
- C. The highest IP address of any logical interface
- D. The highest IP address of any physical interface

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Mark for Review

Which of the following factors determines the OSPF router ID when configuring a router with both physical and logical interfaces?

A. The lowest network number of any interface

B. The highest network number of any interface

C. The highest IP address of any logical interface

D. The highest IP address of any physical interface

## Answer & Explanation

### Correct Answer

C

### Explanations

When running OSPF on the network , you must select router ID . Router ID is a 32-bit unsigned integer, it is a unique identifier of a router in the autonomous system.
Router ID can be configured manually, if the ID NO. is not assigned by command, the system will automatically choose one of the current interface IP addresses as the ID NO . The order of choosing is : choose the largest IP address from Loopback addresses as the router ID NO. If not configuring loopback interface, then select the largest IP address from the interface addresses as router ID.

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Mark for Review

The OSPF interface status of two Pass4sure devices is shown below:

```
Pass4sure1:
Ethernet0 is up, line protocol is up
    Internet address 192.168.1.2/24, Area0
    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
    Time intervals configured, Hello 5, Dead 20, Wait 20, Retransmit 5

Pass4sure2:
Ethernet0 is up, line protocol is up
    Internet address 192.168.1.1/24, Area0
    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
    Time intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
```

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You work as a network technician at Pass4sure and are responsible for the OSPF network. You are troubleshooting the OSPF configuration of routers Pass4sure1 and Pass4sure2. The routers can't establish an adjacency relationship on their common Ethernet link. The graphic shows the output of the "show ip ospf interface eth0" command for routers Pass4sure1 and Pass4sure2. Based on the information in the graphic, what is the cause of this problem?

- A. A backup designated router needs to be added to the network
- B. The OSPF process ID numbers must match.
- C. The cost on Pass4sure1 should be set higher.
- D. The hello and dead timers are not configured properly.

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Pass4sure2:
Ethernet0 is up, line protocol is up
Internet address 192.168.1.1/24, Area0
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
Time intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5

You work as a network technician at Pass4sure and are responsible for the OSPF network. You are troubleshooting the OSPF configuration of routers Pass4sure1 and Pass4sure2. The routers can't establish an adjacency relationship on their common Ethernet link. The graphic shows the output of the "show ip ospf interface eth0" command for routers Pass4sure1 and Pass4sure2. Based on the information in the graphic, what is the cause of this problem?

A. A backup designated router needs to be added to the network

B. The OSPF process ID numbers must match.

C. The cost on Pass4sure1 should be set higher.

D. The hello and dead timers are not configured properly.

## Answer & Explanation

### Correct Answer

D

### Explanations

When running OSPF on a network, the router must be configured with the same "hello " timer and "dead" timer to exchange information . In the broadcast environment, the default "hello" timer is 10 seconds and the "dead" timer is 40 seconds, in the non-broadcast network, the default "hello" timer is 30 seconds. In the broadcast environment, the default "hello" timer is 10 seconds and the "dead" timer is 40 seconds, in the non-broadcast network, the default "hello" timer is 30 seconds.
Based on the information provided in the exhibit, we know that the "hello" timer of the Pass4sure1 is 10 seconds, the "dead" timer is 20 seconds , while the "hello" timer of the Pass4sure2 is 10 seconds, the "dead" timer is 40 seconds. The "hello" timer differs from the "dead" timer , so there is no way to build up neighboring relationships.

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Which one of the following OSPF network types needs to select a BDR?

- A. point-to-multipoint and multiaccess
- B. point-to-point and multi-access
- C. nonbroadcast and broadcast multipoint
- D. point-to-point and point-to-multipoint
- E. nonbroadcast and broadcast multiaccess

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Mark for Review

Which one of the following OSPF network types needs to select a BDR?

A. point-to-multipoint and multiaccess

B. point-to-point and multi-access

C. nonbroadcast and broadcast multipoint

D. point-to-point and point-to-multipoint

E. nonbroadcast and broadcast multiaccess

## Answer & Explanation

### Correct Answer

E

### Explanations

When selecting DR and BDR in the NBMA network, OSPF will use the unicast mode.
By adjusting the hello/dead timers you can make non-compatible OSPF network types appear as neighbors via the "show ip ospf neighbor" but they won't become "adjacent" with each other. OSPF network types that use a DR (broadcast and non-broadcast) can neighbor with each other and function properly. Likewise OSPF network types (point-to-point and point-to-multipoint) that do not use a DR can neighbor with each other and function properly. But if you mix DR types with non-DR types they will not function properly (i.e. not fully adjacent). You should see in the OSPF database "Adv Router is not-reachable" messages when you've mixed DR and non-DR types.

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Mark for Review

When designing OSPF networks; what is the purpose of using a hierarchical design?(Choose three)

- A. To reduce the complexity of router configuration
- B. To speed up convergence
- C. To confine network instability to single areas of the network
- D. To reduce routing overhead

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Mark for Review

When designing OSPF networks; what is the purpose of using a hierarchical design?(Choose three)

- A. To reduce the complexity of router configuration
- B. To speed up convergence
- C. To confine network instability to single areas of the network
- D. To reduce routing overhead

## Answer & Explanation

### Correct Answer

B C D

### Explanations

The reason for regional structure division in OSPF network is: In a small network, the structure of router is not complicated, it is easy to identify routes to different destinations. However, in large networks, the link structure is complex, the number of the potential paths for different destinations is large. Therefore, the SPF algorithm which compares all possible routes is very complex and requires a very long time.

Link State Routing Protocol often divides network into area structures to reduce the amount of SPF algorithm. The number of routers within the area and diffusing LSA is less, which means that the link-state database is small. The result is that the amount of SPF algorithm is smaller and the time needed is shorter .

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Mark for Review

You have been assigned the task of designing a new Pass4sure internetwork. And you want to uses OSPF in their WAN. The OSPF Hello protocol performs which of the following tasks? (Choose two.)

- A. It provides dynamic neighbor discovery.
- B. It negotiates correctness parameters between neighboring interfaces.
- C. It maintains neighbor relationships.
- D. It detects unreachable neighbors in 90 second intervals.
- E. It broadcasts hello packets throughout the internetwork to discover all routers that are running OSPF.

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Mark for Review

You have been assigned the task of designing a new Pass4sure internetwork. And you want to uses OSPF in their WAN. The OSPF Hello protocol performs which of the following tasks? (Choose two.)

- A. It provides dynamic neighbor discovery.
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- D. It detects unreachable neighbors in 90 second intervals.
- E. It broadcasts hello packets throughout the internetwork to discover all routers that are running OSPF.

## Answer & Explanation

### Correct Answer

A C

### Explanations

This question is to examine the knowledge point about the Hello protocol in OSPF.
Hello protocol serves for the following purposes:
1. It is a way to find neighbor routers;
2. It is necessary to notice several long parameters that the two routers must have mutually recognition before they become neighbors;
3. The Hello packet plays a role of keepalive between neighboring routers;
4. It ensures the opposing traffic between neighboring routers;
5. It is used to select the designated router and the backup designated routers in a broadcast network or a non-broadcast multi-access (NBMA) network.

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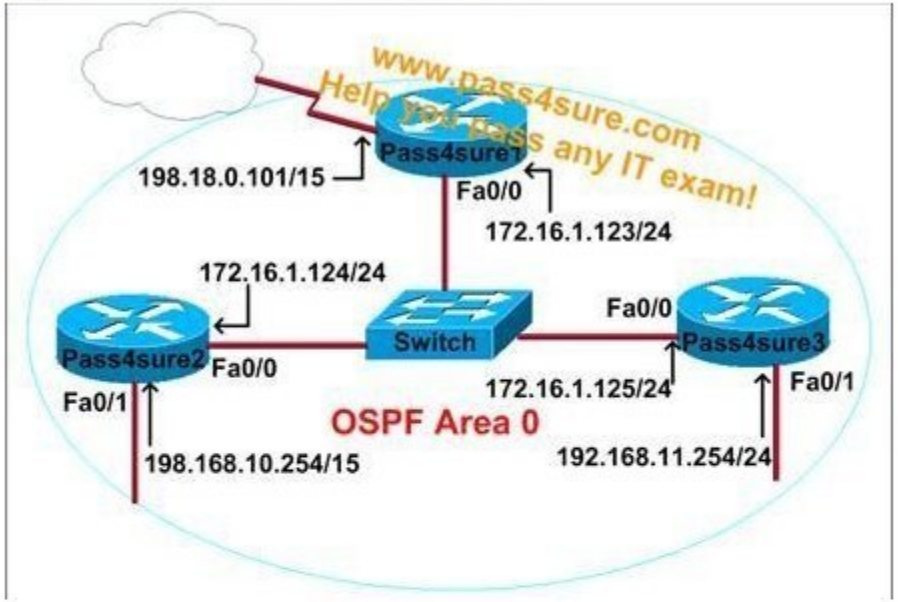
Mark for Review

The Pass4sure network have been configured for OSPF area 0 shown below:




Based on the information shown above, You wish to ensure that Pass4sure1 will be preferred as the designated router (DR) for the 172.16.1.0 /24 LAN segment. What configuration tasks could be used to establish this preference? (Choose three)

- A. Configure the priority value of the Fa0/0 interface of Pass4sure1 to a higher value than any other interface on the Ethernet network.
- B. Change the priority value of the Fa0/0 interface of Pass4sure1 to zero.
- C. Configure a loop back interface on Pass4sure1 with an IP address higher than any IP address on the other routers.
- D. Change the router id of Pass4sure1 by assigning the IP address 172.16.1.130/24 to the Fa0/0 interface of Pass4sure1.
- E. Change the priority values of the Fa0/0 interfaces of Pass4sure2 and Pass4sure3 to zero.

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A. Configure the priority value of the Fa0/0 interface of Pass4sure1 to a higher value than any other interface on the Ethernet network.

B. Change the priority value of the Fa0/0 interface of Pass4sure1 to zero.

C. Configure a loop back interface on Pass4sure1 with an IP address higher than any IP address on the other routers.

D. Change the router id of Pass4sure1 by assigning the IP address 172.16.1.130/24 to the Fa0/0 interface of Pass4sure1.

E. Change the priority values of the Fa0/0 interfaces of Pass4sure2 and Pass4sure3 to zero.

## Answer & Explanation

### Correct Answer

A C E

### Explanations

This question is to examine the DR selecting conditions in OSPF.
There are two DR / BDR electing conditions in OSPF:
1. The priority of each router interface;
2. The RouterID of each router.
Firstly, we'll take a look at the priority. There is a priority attribute on each router interface, which is 1by default and can be modified by ip ospf priority on the interface in broadcast multi-access network. The smaller the priority value (except 0, 0 means no participation in DR / BDR election), the higher the priority. The router whose interface owns the highest priority is selected as the DR, and second-highest as the BDR.
It depends on the Router ID when the priority level is the same. If the Router has not been configured with loopback interface, the highest local active IP address is its OSPF router ID. Otherwise, the loopback IP will be used. Select the highest IP on the loopback interfaces if there is not just one. (Practically, it is generally suggested to configure a loopback interface IP of which the mask is 255.255.255.255, so as to make sure the stability of the system.) The router which has the highest Router ID is selected as the DR, the second-highest as BDR.
Router ID only has something to do with the IP-address of each interface, not with its priority, that is, though certain interface has the lowest priority, if it IP-address is the highest, the router can still use its IP-address as the router ID. However, this router cannot become DR, or BDR.
DR / BDR cannot be changed once you have selected, even though there are new router with higher OSPF priority values in the network.

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HELLO packets can be used to exchange information during OSPF election process.

Mark for Review

The Pass4sure network have been configured OSPF, the output of show ip ospf neighbor is shown below:

```
Pass4sure-R# show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address         Interface
208.149.23.194   1     FULL/DR         00:00:33    192.172.32.10   Ethernet1
208.149.23.66    1     FULL/BDR        00:00:32    192.172.23.13   Ethernet0
208.149.23.130   1     FULL/DR         00:00:39    192.172.23.10   Ethernet0

Pass4sure-R#
```

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As the Pass4sure network administrator, while troubleshooting an issue with the Pass4sure OSPF network, you notice that there are two OSPF designated routers identified on Pass4sure-R. what is the most likely reason?

A. Pass4sure-R is connected to more than one multiaccess network.

B. The DR election is still underway and there are two contenders for the role.

C. Two router IDs have the same OSPF priority and are therefore tied for DR election.

D. The router Pass4sure-R at 208.149.23.130 is a secondary DR in case the primary fails.

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Mark for Review

The Pass4sure network have been configured OSPF, the output of show ip ospf neighbor is shown below:

```
Pass4sure-R# show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
208.149.23.194   1    FULL/DR         00:00:33    192.172.32.10   Ethernet1
208.149.23.66    1    FULL/BDR        00:00:32    192.172.23.13   Ethernet0
208.149.23.130   1    FULL/DR         00:00:39    192.172.23.10   Ethernet0

Pass4sure-R#
```

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As the Pass4sure network administrator, while troubleshooting an issue with the Pass4sure OSPF network, you notice that there are two OSPF designated routers identified on Pass4sure-R. what is the most likely reason?

A. Pass4sure-R is connected to more than one multiaccess network.

B. The DR election is still underway and there are two contenders for the role.

C. Two router IDs have the same OSPF priority and are therefore tied for DR election.

D. The router Pass4sure-R at 208.149.23.130 is a secondary DR in case the primary fails.

## Answer & Explanation

### Correct Answer

A

### Explanations

OSPF neighbors process multicast hello packets upon multicast address 224.0.0.5 to find neighbors dynamically. Default hello packets sending interval is 10 seconds, and dead interval is 40 seconds. In multi-access broadcasting network (such as Ethernet Net and Token Ring), DR/BDR elections are needed. When electing DR/BDR, hello packets priority is considered, the highest priority is DR, then BDR. Default priority is 1. In the circumstances when Priority is the same, RID will be considered, the highest rating RID is DR, and then BDR. When you set the priority 0, OSPF router can not become DR/BDR, it will only turn into DROTHER. From the above OSPF neighbors table, we learn that Ethernet1 and Ethernet0 select DR correspondingly, and Pass4sure-R is connected two multi-access networks.

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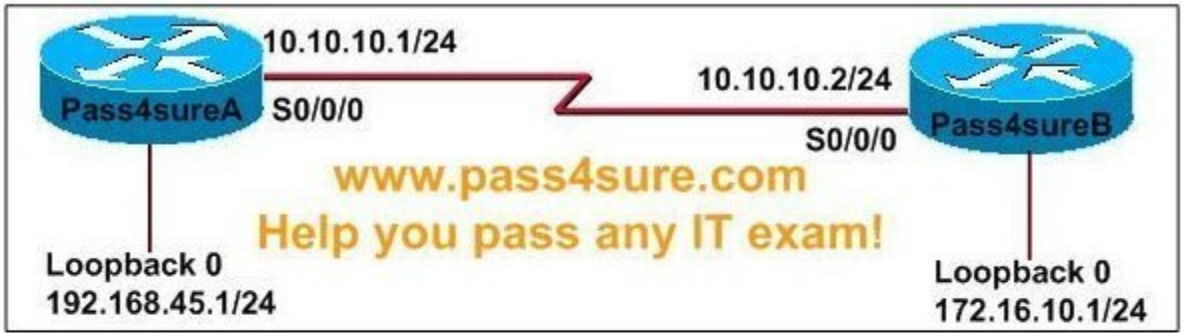
Mark for Review

Based on this information shown below, when running OSPF, what would cause router Pass4sureA not to form an adjacency with router Pass4sureB?




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 Pass4sureA is different than the process identifier on Pass4sureB.

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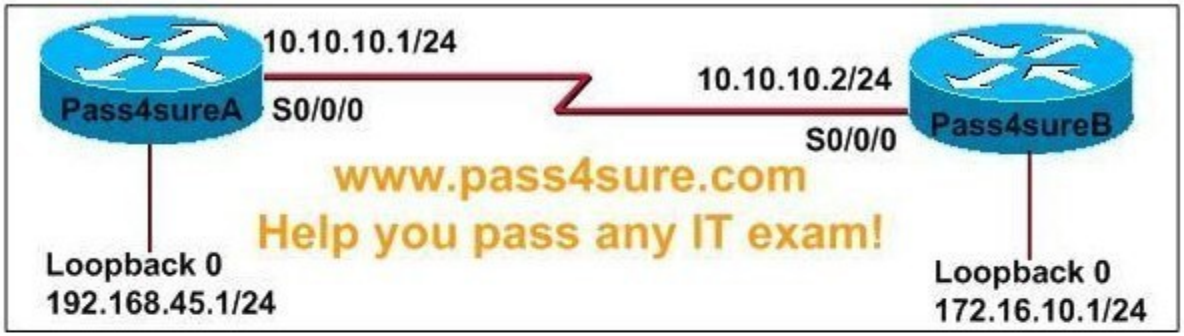
Mark for Review

Based on this information shown below, when running OSPF, what would cause router Pass4sureA not to form an adjacency with router Pass4sureB?




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 Pass4sureA is different than the process identifier on Pass4sureB.

## Answer & Explanation

### Correct Answer

B

### Explanations

OSPF adjacent relations establishment needs consistent parameters such as AreaID, hello timer, dead timer, authentication, compatible network type, and MTU. In addition that the same type of network could form adjacent relations, networks with the same view upon DR/BDR elections are also able be form adjacent relations, such as broad and non-b.

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Mark for Review

The output of Pass4sure router is shown below:

```
Pass4sure#  show ip interface brief

Interface              IP-Address      OK?   Method   Status    Protocol
FastEthernet0/0        192.168.12.48   YES   manual     up        up
FastEthernet0/1        192.168.12.65   YES   manual     up        up
Serial0/0              192.168.12.121  YES   manual     up        up
Serial0/1              unassigned      YES   manual     up        up
Serial0/1.102          192.168.12.125  YES   manual     up        up
Serial0/1.103          192.168.12.129  YES   manual     up        up
Serial0/1.104          192.168.12.133  YES   manual     up        up
Pass4sure#
```

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You work as a network technician for Pass4sure and are responsible for this network. Study the exhibit carefully. A network associate has configured OSPF with the command:

```
Pass4sure(Config-router)#network 192.168.12.64 0.0.0.63 area 0
```

After completing the configuration, the associate discovers that not all interfaces are participating in OSPF. Which three of the interfaces shown in the exhibit will participate in OSPF according to this configuration statement? (Choose three.)

- A. FastEthernet0 /0
- B. FastEthernet0 /1
- C. Serial0/0
- D. Serial0/1.102

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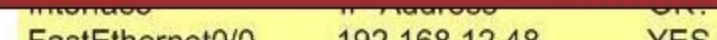



| | | | | | |
|---|---|---|---|---|---|
| FastEthernet0/0 | 192.168.12.48 | YES | manual | up | up |
| FastEthernet0/1 | 192.168.12.65 | YES | manual | up | up |
| Serial0/0 | 192.168.12.121 | YES | manual | up | up |
| Serial0/1 | unassigned | YES | manual | up | up |
| Serial0/1.102 | 192.168.12.125 | YES | manual | up | up |
| Serial0/1.103 | 192.168.12.129 | YES | manual | up | up |
| Serial0/1.104 | 192.168.12.133 | YES | manual | up | up |

Pass4sure#

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```
Pass4sure(Config-router)#network 192.168.12.64 0.0.0.63 area 0
```

After completing the configuration, the associate discovers that not all interfaces are participating in OSPF. Which three of the interfaces shown in the exhibit will participate in OSPF according to this configuration statement? (Choose three.)

- A. FastEthernet0 /0
- B. FastEthernet0 /1
- C. Serial0/0
- D. Serial0/1.102

## Answer & Explanation

### Correct Answer

B C D

### Explanations

This question is to examine the basic knowledge point about the OSPF configuration. The syntax network of the router Pass4sure will match all the interfaces of the router. The address 192.168.12.64 is actually just a placeholder. Here, wildcard-mask 0.0.0.63 is the core of the operation. We can learn from the wildcard-mask that the address range is 192.168.12.64/26, that is, from 192.168.12.64 to 192.168.12.128.

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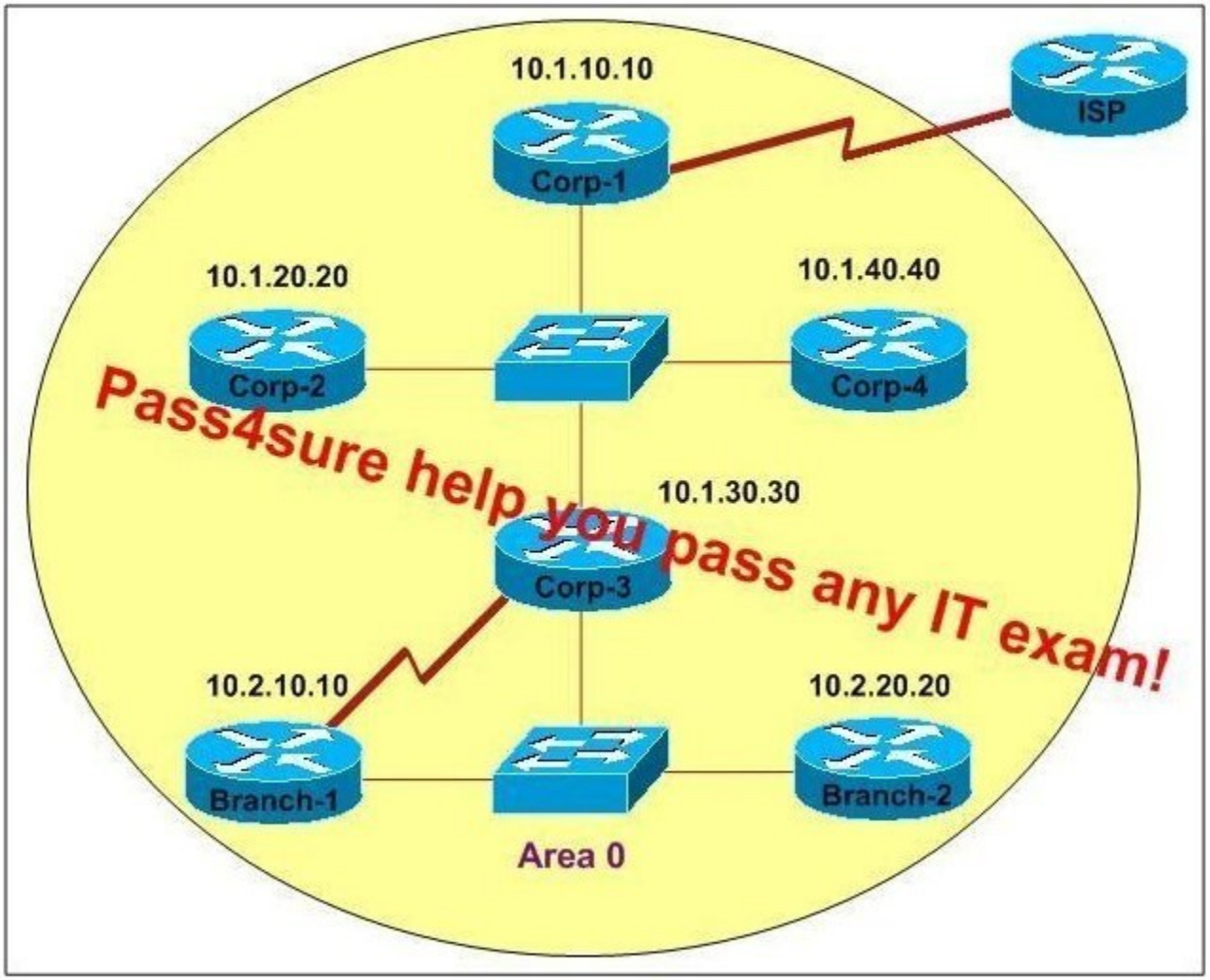
Mark for Review

Refer to the following exhibit, there is a single OSPF area in your company's internetwork infrastructure. The lack of router resources is affecting internetwork performance. The OSPF DRs must be known to examineine the router resources. All the routers are configured with the default OSPF priorities and the router IDs are displayed with each router. Which routers may have been chosen as DR? (Choose two.)

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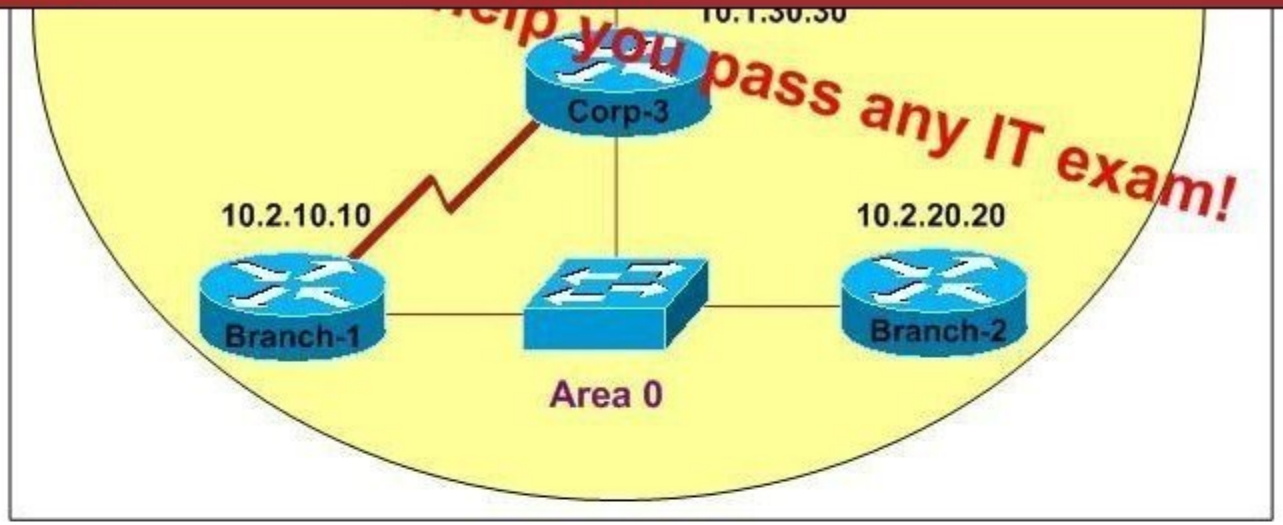
- A. Corp-1
- B. Corp-2

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- A. Corp-1
- B. Corp-2
- C. Branch-2
- D. Corp-4

## Answer & Explanation

### Correct Answer

C D

### Explanations

A router declares its priority value via the "Rtr Pri" field in the OSPF hello packet. This value is configured under the interface via the "ip ospf priority <0-255>" command, with 1 being the default, and 0 meaning that the router is ineligible to become a DR or a BDR, and the higher priority wins. The RID serves as a tie-breaker when the priority values are the same.One important thing to keep in mind, the DR/BDR election is not pre-empitive, thus the first router to come up will be the DR and the second will be the BDR, the rules of election are only effective when one of them fail. If the BDR fails, a new BDR is elected according to the rules of election. on the other hand if the DR fails, the BDR takes the DR role, and a new BDR is elected according to the rules of election.Using "ip ospf priority 0" is the strongest tool with the lowest impact if you wish to have an instantaneous action, it doesn't require resetting the OSPF process. If configured on router that is a DR or a BDR, this router will resign its role immediately.

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Which of the following statements below best describe the process identifier that is used to run OSPF on a Pass4sure router? (Choose two)

- A. It is an optional parameter required only if multiple OSPF processes are running on the router.
- B. It is locally significant.
- C. It is needed to identify a unique instance of an OSPF database.
- D. All routers in the same OSPF area must have the same process ID if they are to exchange routing information.

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## Answer & Explanation

### Correct Answer

B C

### Explanations

OSPF process ID is only locally significant, which is used to distinguish the different OSPF process running on router. With the startup of every OSPF process, corresponding process database will be established in OSPF.

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Which items are correct about the routing protocol OSPF? (Choose three.)

- [ ] A. Support VLSM.
- [ ] B. Increase routing overhead on the network.
- [ ] C. Confine network instability to one area of the network.
- [ ] D. Allow extensive control of routing updates.

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Mark for Review

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- A. Support VLSM.
- B. Increase routing overhead on the network.
- C. Confine network instability to one area of the network.
- D. Allow extensive control of routing updates.

## Answer & Explanation

### Correct Answer

A C D

### Explanations

OSPF builds routing tables based solely on the destination IP address found in IP packets. It was designed to support variable-length subnet masking (VLSM, CIDR). OSPF detects changes in the topology, such as link failures, very quickly and converges on a new loop-free routing structure within seconds. For this, each OSPF router collects link-state information to construct the entire network topology of so-called areas from which it computes the shortest path tree for each route using a method based on Dijkstra's algorithm. The link-state information is maintained on each router as a link-state database (LSDB) which is a tree-image of the network topology. Identical copies of the LSDB are periodically updated through flooding on all routers in each OSPF-aware area (region of the network included in an OSPF area type - see "Area types" below). By convention, area 0 represents the core or "backbone" region of an OSPF-enabled network, and other OSPF area numbers may be designated to serve other regions of an enterprise (large, business) network - however every additional OSPF area must have a direct or virtual connection to the backbone OSPF area. The backbone area has the identifier 0.0.0.0. Inter-area routing goes via the backbone.

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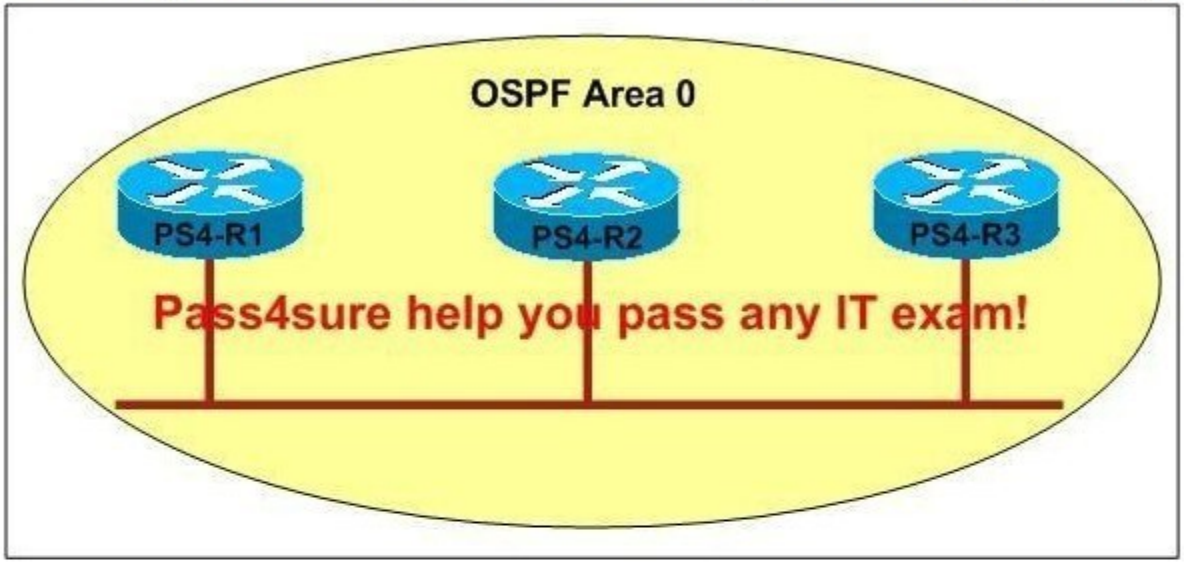
Mark for Review

Why P4S-R1 can't establish an OSPF neighbor relationship with P4S-R3 according to the following graphic? (Choose two.)




- A. Configure EIGRP on these routers with a lower administrative distance.
- B. All routers should be configured for backbone Area 1.
- C. P4S-R1 and P4S-R3 have been configured in different areas.
- D. The hello and dead interval timers are not configured the same values on P4S-R1 and P4S-R3.

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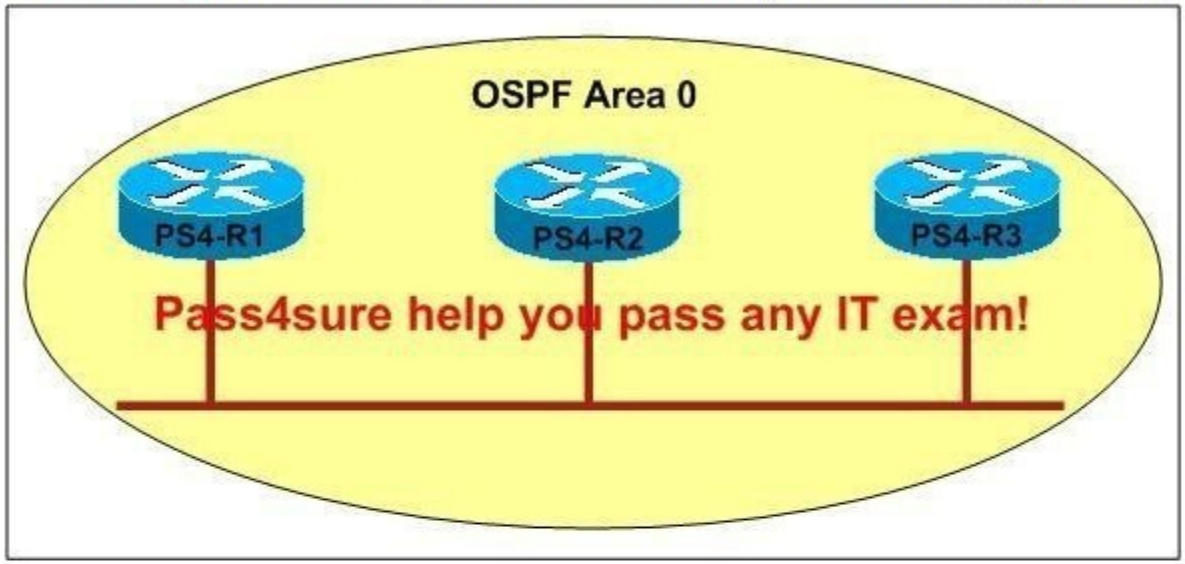
Mark for Review

Why P4S-R1 can't establish an OSPF neighbor relationship with P4S-R3 according to the following graphic? (Choose two.)

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- D. The hello and dead interval timers are not configured the same values on P4S-R1 and P4S-R3.

## Answer & Explanation

### Correct Answer

C D

### Explanations

This question is to examine the conditions for OSPF to create neighborhood.
So as to make the two routers become neighbors, each router must be matched with the following items:
1. The area ID and its types;
2. Hello and failure time interval timer;
3. OSPF Password (Optional);
4. The regional identifier of the end node (which is used to include OSPF and routing information)

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Which two statements best describe EIGRP? (Choose two.)

- [ ] A. EIGRP exchanges full routing table information with neighboring routers with every upda.
- [ ] B. EIGRP supports VLSM, route summarization, and routing update authentication.
- [ ] C. If the feasible successor has a higher advertised distance than the successor route, it will become the primary route.
- [ ] D. Use a query process to discover a replacement for a failed route if a feasible successor is not identified from the current routing information.

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Mark for Review

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- D. Use a query process to discover a replacement for a failed route if a feasible successor is not identified from the current routing information.

## Answer & Explanation

### Correct Answer

B D

### Explanations

Enhanced Interior Gateway Routing Protocol - (EIGRP) is a Cisco proprietary routing protocol loosely based on their original IGRP. EIGRP is an advanced distance-vector routing protocol, with optimizations to minimize both the routing instability incurred after topology changes, as well as the use of bandwidth and processing power in the router. Routers that support EIGRP will automatically redistribute route information to IGRP neighbors by converting the 32 bit EIGRP metric to the 24 bit IGRP metric. Most of the routing optimizations are based on the Diffusing Update Algorithm (DUAL) work from SRI, which guarantees loop-free operation and provides a mechanism for fast convergence.

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As a cisco technician, you need to know EIGRP protocol very well.
Which of the following is true about EIGRP successor routes? (Choose two.)

- A. A successor route is used by EIGRP to forward traffic to a destination.
- B. Successor routes are stored in the neighbor table following the discovery process.
- C. Successor routes are flagged as "active" in the routing table.
- D. A successor route may be backed up by a feasible successor route.

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Mark for Review

B. Successor routes are stored in the neighbor table following the discovery process.

C. Successor routes are flagged as "active" in the routing table.

D. A successor route may be backed up by a feasible successor route.

## Answer & Explanation

### Correct Answer

A D

### Explanations

The DUAL finite state machine embodies the decision process for all route computations.

It tracks all routes advertised by all neighbors. The distance information, known as a metric, is used by DUAL to select efficient loop free paths.

DUAL selects routes to be inserted into a routing table based on feasible successors. A successor is a neighboring router used for packet forwarding that has a least cost path to a destination that is guaranteed not to be part of a routing loop. When there are no feasible successors but there are neighbors advertising the destination, a recomputation must occur. This is the process where a new successor is determined. The amount of time it takes to recompute the route affects the convergence time.

Even though the recomputation is not processor-intensive, it is advantageous to avoid recomputation if it is not necessary. When a topology change occurs, DUAL will test for feasible successors. If there are feasible successors, it will use any it finds in order to avoid any unnecessary recomputation. Feasible successors are defined in more detail later in this document.

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

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

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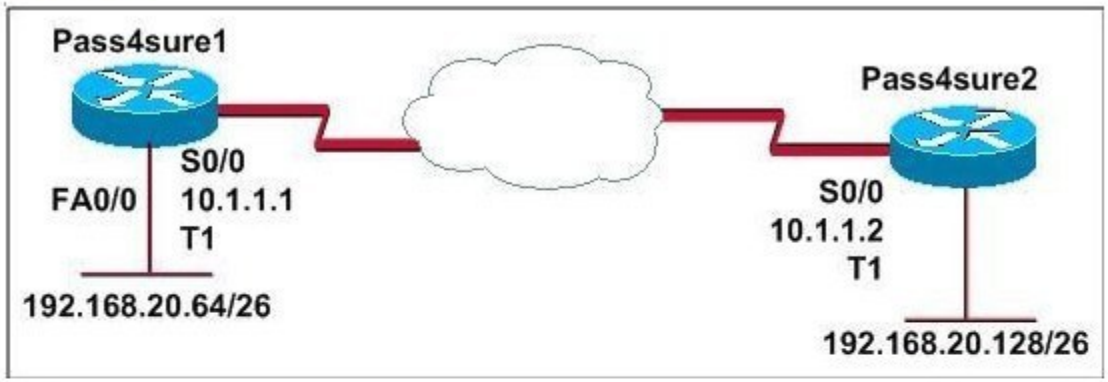
When a neighbor changes the metric it has been advertising or a topology change occurs in the network, the set of feasible successors may have to be re-evaluated. However, this is not categorized as a route recomputation.

Mark for Review

The Pass4sure network is shown below:




The output of Pass4sure1 exhibit:

```
Pass4sure1(config)# router eigrp 20
Pass4sure1(config-router)# network 192.168.20.0
Pass4sure1(config-router)# network 10.0.0.0
Pass4sure1(config)# interface fastethernet 0/0
Pass4sure1(config-if)# ip address 192.168.20.65 255.255.255.192
Pass4sure1(config)# interface serial 0/0
Pass4sure1(config-if)# ip address 10.1.1.1 255.255.255.252
```

The output of Pass4sure2 exhibit:

```
Pass4sure2(config)# router eigrp 20
Pass4sure2(config-router)# network 192.168.20.0
Pass4sure2(config-router)# network 10.0.0.0
Pass4sure2(config)# interface fastethernet 0/0
Pass4sure2(config-if)# ip address 192.168.20.129 255.255.255.192
Pass4sure2(config)# interface serial 0/0
Pass4sure2(config-if)# ip address 10.1.1.2 255.255.255.252
```

As the Pass4sure network administrator, you found that the network has failed to converge. What is the likely cause of the failure?

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A. The no auto-summary command needs to be applied to the routers.

B. The bandwidth values have not been properly configured on the serial interfaces

```
Pass4sure1(config-router)# network 192.168.20.0
Pass4sure1(config-router)# network 10.0.0.0
Pass4sure1(config)# interface fastethernet 0/0
Pass4sure1(config-if)# ip address 192.168.20.65 255.255.255.192
Pass4sure1(config)# interface serial 0/0
Pass4sure1(config-if)# ip address 10.1.1.1 255.255.255.252
```

The output of Pass4sure2 exhibit:

```
Pass4sure2(config)# router eigrp 20
Pass4sure2(config-router)# network 192.168.20.0
Pass4sure2(config-router)# network 10.0.0.0
Pass4sure2(config)# interface fastethernet 0/0
Pass4sure2(config-if)# ip address 192.168.20.129 255.255.255.192
Pass4sure2(config)# interface serial 0/0
Pass4sure2(config-if)# ip address 10.1.1.2 255.255.255.252
```

As the Pass4sure network administrator, you found that the network has failed to converge. What is the likely cause of the failure?

A. The no auto-summary command needs to be applied to the routers.

B. The bandwidth values have not been properly configured on the serial interfaces.

C. The autonomous system number has not been properly configured.

D. The subnet masks for the network numbers have not been properly configured.

## Answer & Explanation

### Correct Answer

A

### Explanations

More often than not, in order to solve the problem that Discontinuous subnets communicate with each other, it is needed to disable the auto-summary of route and use the manual summary to advertise routes. In the network structure shown above, assuming that auto-summary is not shut down, when the router advertises the route of 192.168.20.0/24, the route of /26 subnet will not be advertised , the result is that the network is unreachable.

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Mark for Review

In Pass4sure Network, you use the command "show ip route", the routing table of router PASS4SUREA is shown below:

```
Gateway of last resort is not set

     192.168.25.0/30 is subnetted, 4 subnets
D       192.168.25.20 [90/2681856] via 192.168.15.5, 00:00:10, Serial0/1
D       192.168.25.16 [90/1823638] via 192.168.15.5, 00:00:50, Serial0/1
D       192.168.25.24 [90/3837233] via 192.168.15.5, 00:05:23, Serial0/1
D       192.168.25.28 [90/8127323] via 192.168.15.5, 00:06:45, Serial0/1
C    192.168.15.4/30 is directly connected, Serial0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

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According to the information shown above, Which address and mask combination represents a summary of the routes learned by EIGRP?

- A. 192.168.25.16 255.255.255.252
- B. 192.168.25.28 255.255.255.240
- C. 192.168.25.16 255.255.255.240
- D. 192.168.25.0 255.255.255.240

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```
D    192.168.25.16 [90/1823638] via 192.168.15.5, 00:00:50, Serial0/1
D    192.168.25.24 [90/3837233] via 192.168.15.5, 00:05:23, Serial0/1
D    192.168.25.28 [90/8127323] via 192.168.15.5, 00:06:45, Serial0/1
C    192.168.15.4/30 is directly connected, Serial0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

According to the information shown above, Which address and mask combination represents a summary of the routes learned by EIGRP?

A. 192.168.25.16 255.255.255.252

B. 192.168.25.28 255.255.255.240

C. 192.168.25.16 255.255.255.240

D. 192.168.25.0 255.255.255.240

## Answer & Explanation

### Correct Answer

C

### Explanations

This is a problem of route Summarization. There are altogether four addresses in the chart.
192.168.25.20
192.168.25.16
192.168.25.24
192.168.25.28
We mainly focus on the fourth octet.
128 64 32 16 8 4 2 1
0 0 0 1 0 1 0 0 = 20
0 0 0 1 0 0 0 0 = 16
0 0 0 1 1 0 0 0 = 24
0 0 0 1 1 1 0 0 = 28
The former four bits are the same. There are altogether 24 bits for the former three octets. 4+24=28, that is 240 by decimalism algorithm. Therefore, it is 192.168.25.16 255.255.255.240.

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Mark for Review

The topology table for the Pass4sure EIGRP network is shown below from router Pass4sure3:

```
Pass4sure3# show ip eigrp topology
IP-EIGRP Topology Table for AS(109)/ID(192.168.80.28)

Codes: P - Passsive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 192.168.90.0 255.255.255.0, 2 successors, FD is 0
         via 192.168.80.28 (46251776/46226176), Ethernet0
         via 192.168.81.28 (46251776/46226176), Ethernet1
         via 192.168.80.31 (46277376/46251776), Serial 0
P 192.168.81.0 255.255.255.0, 1 successors, FD is 307200
         via Connected, Ethernet1
         via 192.168.81.28 (307200/281600), Ethernet0
         via 192.168.81.28 (307200/281600), Ethernet1
         via 192.168.80.31 (332800/307200), Serial 0
```

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You are troubleshooting a routing issue with the Pass4sure network. Based on the information shown above, why does router Pass4sure3 show multiple unequal cost paths to network 192.168.81.0/24?

- A. Multiple floating static routes were configured to network 192.168.81.0 via interface Serial0.
- B. The EIGRP topology table displays all routes to a destination.
- C. A variance was configured for EIGRP autonomous system 109.
- D. The EIGRP topology table shows only backup routes to a destination.

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Mark for Review

```
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         via 192.168.80.28 (46251776/46226176), Ethernet0
         via 192.168.81.28 (46251776/46226176), Ethernet1
         via 192.168.80.31 (46277376/46251776), Serial 0
P 192.168.81.0 255.255.255.0, 1 successors, FD is 307200
         via Connected, Ethernet1
         via 192.168.81.28 (307200/281600), Ethernet0
         via 192.168.81.28 (307200/281600), Ethernet1
         via 192.168.80.31 (332800/307200), Serial 0
```

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- C. A variance was configured for EIGRP autonomous system 109.
- D. The EIGRP topology table shows only backup routes to a destination.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point related to the EIGRP topology list. Similar to the OSPF database, the EIGRP topology list contains all the lists of the receiving stations and paths of the EIGRP router. It is basically the editor of the routing table of the neighbor routers. Each routed protocol has a separate topology table.

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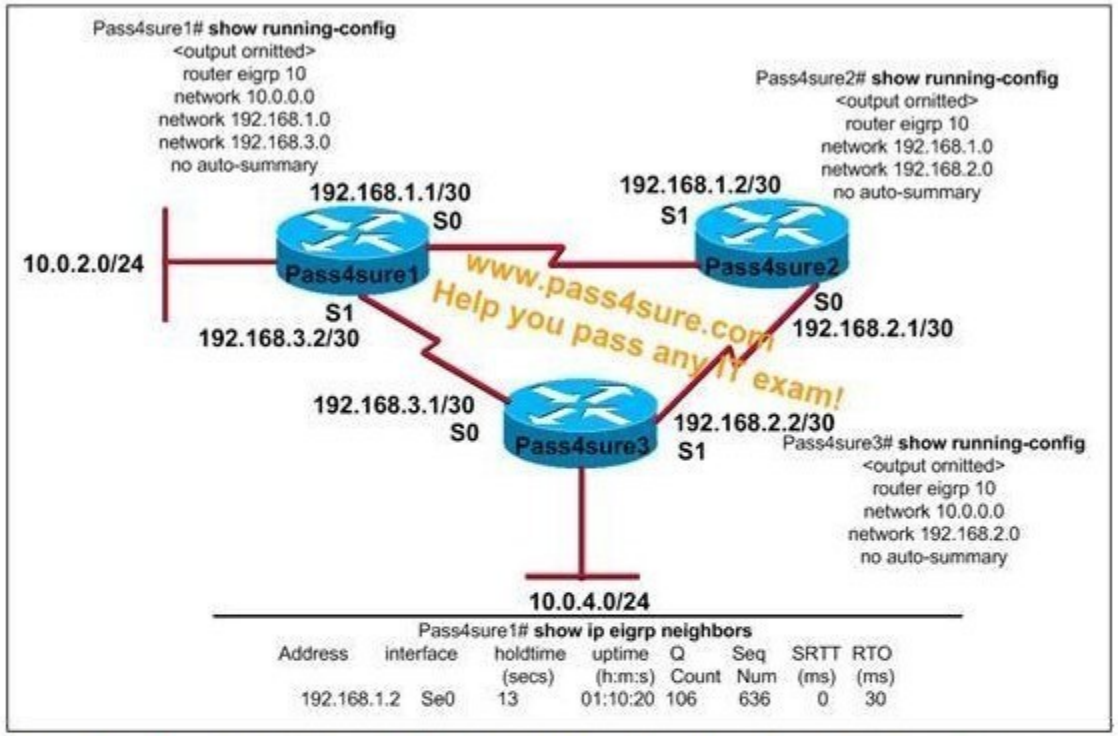
Mark for Review

In the Pass4sure network, three routers are connected together as shown below:




IP Addresses and routing for the network are configured as shown above. The Pass4sure network administrator issued the "show ip eigrp neighbors" command from router Pass4sure1 and receives the output shown. Based on all the information shown above, which following statement is true?

- A. The no auto-summary command configured on the routers prevents Pass4sure1 and Pass4sure2 from forming a neighbor relationship.
- B. Routing is not completely configured on Pass4sure3.
- C. The IP addresses are not configured properly on the Pass4sure1 and Pass4sure3 interfaces
- D. It is normal for router Pass4sure1 to show one active neighbor at a time to prevent routing loops.

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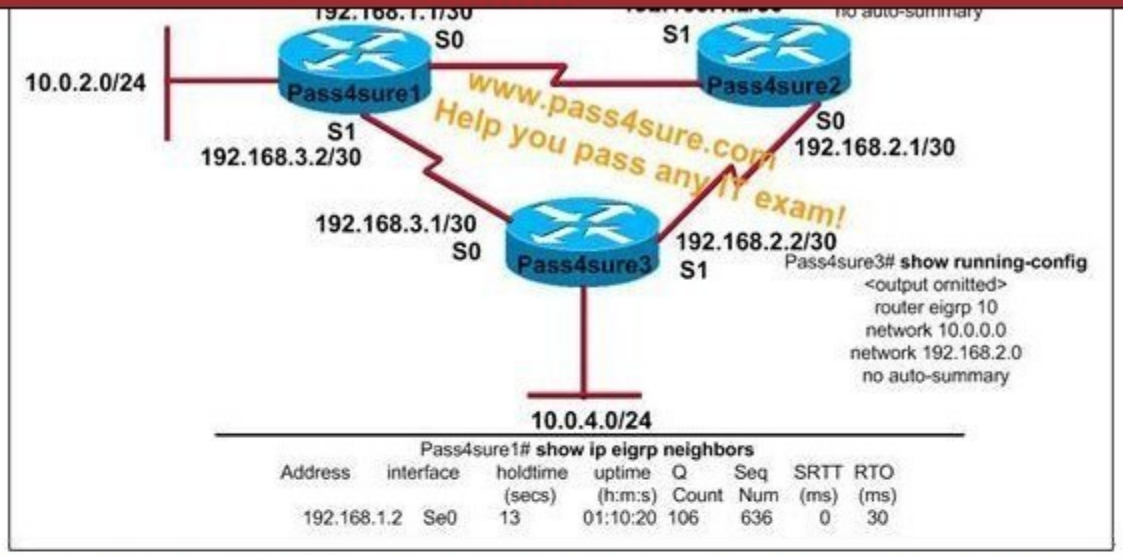
Mark for Review

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- C. The IP addresses are not configured properly on the Pass4sure1 and Pass4sure3 interfaces
- D. It is normal for router Pass4sure1 to show one active neighbor at a time to prevent routing loops.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the EIGRP failure troubleshooting. We can learn from the output information of the command show ip eigrp neighbors of Pass4sure1 that Pass4sure1 only formed the neighborhood with Pass4sure2. It is impossible to form neighborhood for the reason that Pass4sure3 has not announced the network segment between it and Pass4sure1.

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Mark for Review

Lab Simulation
After adding P4S2 router, no routing updates are being exchanged between P4S1 and the new location. All other inter connectivity and Internet access for the existing locations of the company are working properly.

The task is to identify the fault(s) and correct the router configuration to provide full connectivity between the routers.

Access to the router CLI can be gained by clicking on the appropriate host.
All passwords on all routers are cisco.
IP addresses are listed in the chart below.

| | |
|---|---|
| **P4S1**<br>Fa0/0 - 192.168.77.33<br>S1/0 - 198.0.18.6<br>S0/1 - 192.168.60.25 | **P4S2**<br>Fa0/0 - 192.168.77.34<br>Fa1/0 - 192.168.60.81<br>Fa0/1 - 192.168.60.65 |
| **P4SA**<br>Fa0/0 - 192.168.60.97<br>Fa0/1 - 192.168.60.113<br>S0/0 - 192.168.36.14 | **P4SB**<br>Fa0/0 - 192.168.60.129<br>Fa0/1 - 192.168.60.145<br>S0/1 - 192.168.60.26 |

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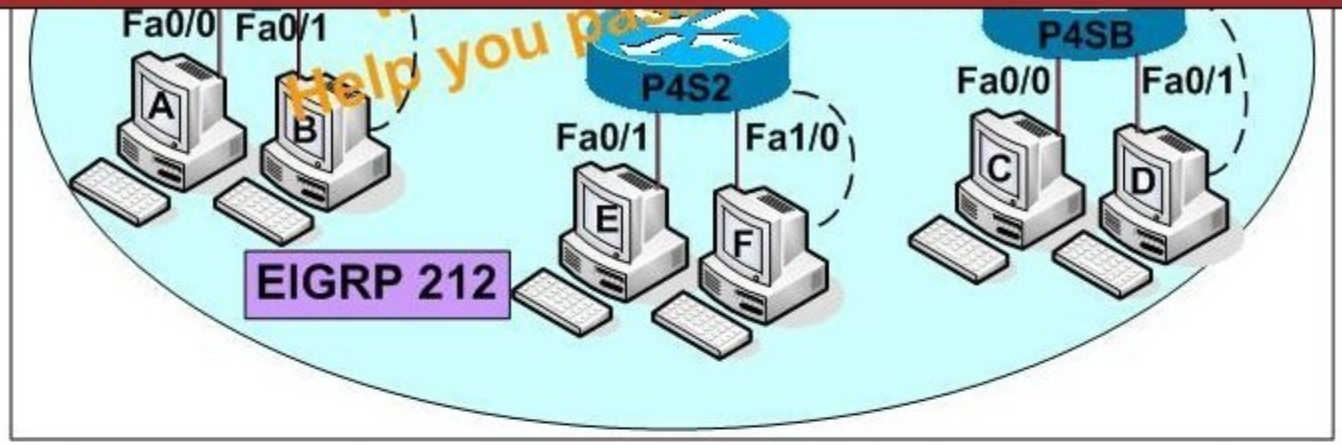


**********

```
P4SA# show run
interface FastEthernet0/0
  ip address 192.168.60.97 255.255.255.240
!
interface FastEthernet0/1
  ip address 192.168.60.113 255.255.255.240
!
interface Serial0/0
  Ip address 192.168.36.14 255.255.255.252
  Clockrate 64000

!
router eigrp 212
  Network 192.168.36.0
  Network 192.168.60.0
  No auto-summary
!

P4SA# show ip route
      192.168.36.0/30 is subnetted, 1 subnets
C      192.168.36.12 is directly connected, Serial0/0
      192.168.60.0/24 is variably subnetted, 5 subnets, 2 masks
C      192.168.60.96/28 is directly connected, FastEthernet0/0
```

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```
      192.168.60.0/24 is variably subnetted, 5 subnets, 2 masks
C     192.168.60.96/28 is directly connected, FastEthernet0/0
C     192.168.60.112/28 is directly connected, FastEthernet0/1
D     192.168.60.128/28 [ 90/21026560 ] via 192.168.36.13, 00:00:57, Serial0/0
D     192.168.60.144/28 [ 90/21026560 ] via 192.168.36.13, 00:00:57, Serial0/0
D     192.168.60.24/30 [ 90/21026560 ] via 192.168.36.13, 00:00:57, Serial0/0
D*    198.0.18.0 [ 90/21024000 ] via 192.168.36.13, 00:00:57, Serial0/0

**********************************************************************************************************

P4S2# show run
!
!
interface FastEthernet0/0
 ip address 192.168.77.34 255.255.255.252
!
interface FastEtherner0/1
 ip address 192.168.60.65 255.255.255.240
!
interface FastEthernet1/0
 ip address 192.168.60.81 255.255.255.240
!
!
router eigrp 22
 network 192.168.60.0
 network 192.168.77.0
 no auto-summary

P4S2# show ip route
      192.168.60.0/28 is subnetted, 2 subnets
C     192.168.60.80 is directly connected, FastEthernet1/0
C     192.168.60.64 is directly connected, FastEthernet0/1
      192.168.77.0/30 is subnetted, 1 subnets
C     192.168.77.32 is directly connected, FastEthernet0/0
**********************************************************************************************************
P4SB# show run
```

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```
P4SB# show run

interface FastEthernet0/0
 ip address 192.168.60.129 255.255.255.240
!
interface FastEthernet0/1
 ip address 192.168.60.145 255.255.255.240
!
interface Serial0/1
 ip address 192.168.60.26 255.255.255.252

router eigrp 212
 network 192.168.60.0
 network 192.168.60.0


P4SB# show ip route
     192.168.60.0/24 is variably subnetted, 5 subnets, 2 masks
C       192.168.60.24/30 is directly connected, Serial0/1
C       192.168.60.128/28 is directly connected, FastEthernet0/0
C       192.168.60.144/28 is directly connected, FastEthernet0/1
D       192.168.60.96/28 [ 90/21026560 ] via 192.168.60.25, 00:00:57, Serial0/1
D       192.168.60.112/28 [ 90/21026560 ] via 192.168.60.25, 00:00:57, Serial0/1
     192.168.36.0/30 is subnetted, 1 subnets
D       192.168.36.12 [ 90/21026560 ] via 192.168.60.25, 00:00:57, Serial0/1
D*     198.0.18.0 [ 90/21024000 ] via 192.168.60.25, 00:00:57, Serial0/1


**********************************************************************************************************

P4S1# show run
!
interface FastEthernet0/0
 ip address 192.168.77.33 255.255.255.252
!
```

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```
interface Serial0/0
 ip address 192.168.36.13 255.255.255.252
 clockrate 64000
!
interface Serial0/1
 ip address 192.168.60.25 255.255.255.252
 clockrate 64000
!
!
router eigrp 212
 network 192.168.36.0
 network 192.168.60.0
 network 192.168.85.0
 network 198.0.18.0
 no auto-summary
!
ip classless
ip default-network 198.0.18.0
ip route 0.0.0.0 0.0.0.0 198.0.18.5
ip http server

P4S1# sh ip route
      192.168.36.0/30 is subnetted, 1 subnets
C      192.168.36.12 is directly connected, Serial0/0
      192.168.60.0/24 is variably subnetted, 5 subnets, 2 masks
C      192.168.60.24/30 is directly connected, Serial0/1
D      192.168.60.128/28 [ 90/21026560 ] via 192.168.60.26, 00:00:57, Serial0/1
D      192.168.60.144/28 [ 90/21026560 ] via 192.168.60.26, 00:00:57, Serial0/1
D      192.168.60.96/28 [ 90/21026560 ] via 192.168.36.14, 00:00:57, Serial0/0
      192.168.77.0/30 is subnetted, 1 subnets
C      192.168.77.32 is directly connected, FastEthernet0/0
C      198.0.18.0/24 is directly connected, Serial1/0
*S     0.0.0.0 via 198.0.18.5
```

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Click here to input the answer.

## Answer & Explanation

### Correct Answer

```
P4S2>enable
P4S2#config t
P4S2(config)#no router eigrp 22
P4S2(config)#router eigrp 212
P4S2(config-router)#network 192.168.60.0
P4S2(config-router)#network 192.168.77.0
P4S2(config-router)#end
P4S2#copy run start


P4S1>enable
P4S1#config t
P4S1(config)#router eigrp 212
P4S1(config-router)#network 192.168.77.0
P4S1(config-router)#end
P4S1#copy run start
```

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### Explanations

No more information available

Mark for Review

As a CCNA candidate, you need to know EIGRP very well. Which tables of EIGRP route information are held in RAM and maintained through the use of hello and update packets? Please choose two appropriate tables and drag the items to the proper locations.

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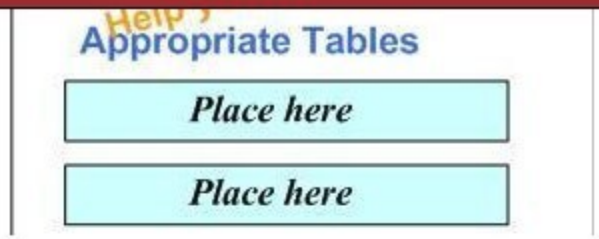
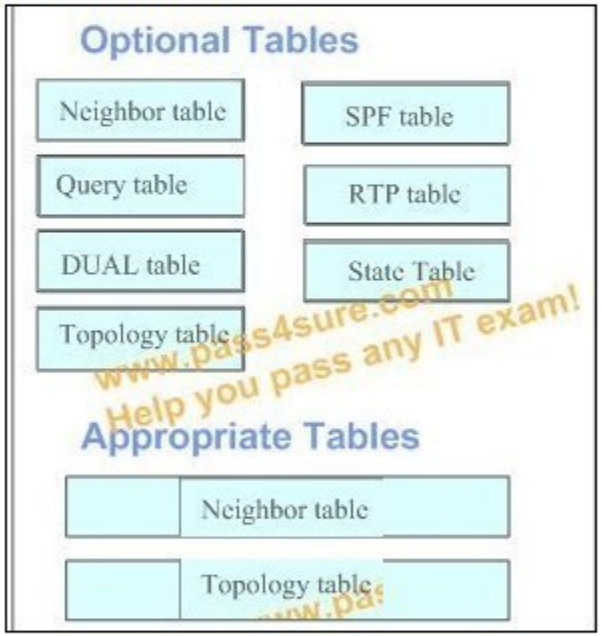



## Answer & Explanation

### Correct Answer




### Explanations

This question is to examine the knowledge point about the EIGRP Databases.
EIGRP Databases (EIGRP database):
1. Neighbor table: After starting up, the EIGRP router will send a HELLO packet to find and maintain the neighborhood;
2. Topology table: The EIGRP router will load the received routing path information from the neighbors to its own topology list, to form the whole network topology awareness.
3. Routing table: The router relies on it to forward the data switching. The contents of the routing table are one or many successors calculated by the topology table through algorithm.

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Mark for Review

Refer to the exhibit. Given the output from the show ip eigrp topology command, which router is the feasible successor?

```
P4S-R# show ip eigrp topology 10.0.0.5 255.255.255.255
IP-EIGRP topology entry for 10.0.0.5/32 State is Passive, Query
Origin flag is 1, 1 Successor(s), FD is 41152000
```

A

```
10.1.0.1 (Serial0), from 10.1.0.1, Send flag is 0x0
      Composite metric is (46152000/41640000), Route is Internal
      Vector metric:
        Minimum bandwidth is 64 Kbit
        Total delay is 45000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 2
```

B

```
10.0.0.2 (Serial0.1), from 10.0.0.2, Send flag is 0x0
      Composite metric is (53973248/128256), Route is Internal
      Vector metric:
        Minimum bandwidth is 48 Kbit
        Total delay is 25000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 1
```

C

```
10.1.0.3 (Serial0), from 10.1.0.3, Send flag is 0x0
      Composite metric is (46866176/46354176), Route is Internal
      Vector metric:
        Minimum bandwidth is 56 Kbit
        Total delay is 45000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 2
```

D

```
10.1.1.1 (Serial0.1), from 10.1.1.1, Send flag is 0x0
      Composite metric is (46763776/46251776), Route is External
      Vector metric:
        Minimum bandwidth is 56 Kbit
        Total delay is 41000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 2
```

- A. A
- B. B
- C. C
- D. D

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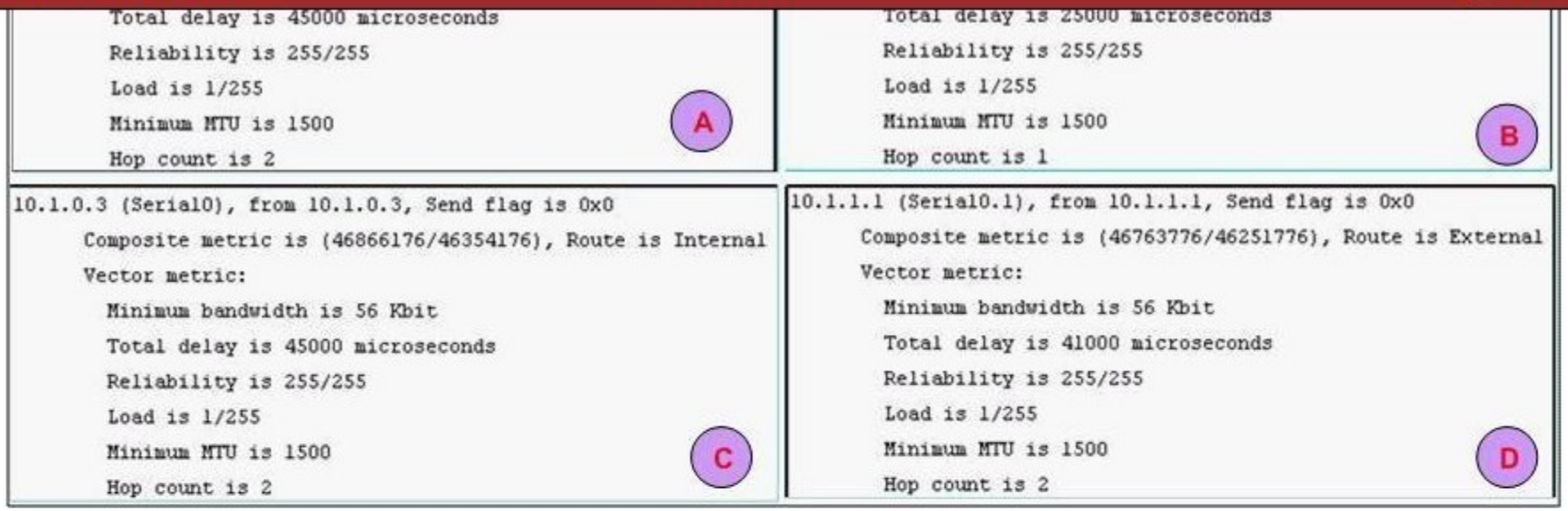
Mark for Review




- A. A
- B. B
- C. C
- D. D

## Answer & Explanation

### Correct Answer

B

### Explanations

The AD of the feasible successor must be smaller than the FD of successor. From the output provided in the exhibit, we know that the FD of successor is 41152000.
In the option A, the AD is 41640000☐
In the option B , the AD is 128256☐
In the option C, the AD is 46354176☐
In the option D, the AD is 46251776.
Through comparison, we know that only the AD in option B is smaller than FD, so B can be used as feasible successor.

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Mark for Review

How many paths can be used by the EIGRP routing process to forward packets from P4S_Router to a neighbor router?

```
P4S_Router# show ip protocols
Routing Protocol is "eigrp 109"
   Outgoing update filter list for all interfaces is not set
   Incoming update filter list for all interfaces is not set
   Default networks flagged in outgoing updates
   Default networks accepted from incoming updates
   EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0
   EIGRP maximum hopcount 100
   EIGRP maximum metric variance 3
   Redistributing: eigrp 109
   EIGRP NSF-aware route hold timer is 240s
   Automatic network summarization is not in effect
   Maximum path: 4
   Routing for Networks:
      20.10.10.0/24
      172.30.10.0/24
      192.168.1.0
   Routing Information Sources:
      Gateway         Distance              Last Update
      192.168.1.1           90              00:13:12
      172.16.10.2           90              01:13:06
   Distance: internal 90 external 170

P4S_Router#
```

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- A. two equal-cost paths
- B. three unequal-cost paths
- C. four equal-cost paths
- D. four unequal-cost paths

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Mark for Review

```
Redistributing: eigrp 100
  EIGRP NSF-aware route hold timer is 240s
  Automatic network summarization is not in effect
  Maximum path: 4
  Routing for Networks:
    20.10.10.0/24
    172.30.10.0/24
    192.168.1.0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.1.1          90       00:13:12
    172.16.10.2          90       01:13:06
  Distance: internal 90 external 170

P4S_Router#
```

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- A. two equal-cost paths
- B. three unequal-cost paths
- C. four equal-cost paths
- D. four unequal-cost paths

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the understanding of the knowledge point about the non-equivalent Load Balance. The command show ip protocols displays the parameters and statistics information handled by IP routing protocol. The command variance is used to determine which routing is applicable in the non-equivalent Load Balance. Variance defines a multiplying factor to show the degree of divergence between a router's metric value and minimum cost routing's. this routing is not allowed to be used if any router's metric value exceeds the metric value of the minimum cost routing multiply the Variance value. The command maximum-paths can be used to configure the maximum routing paths of the non-equivalent Load Balance by the EIGRP protocol.

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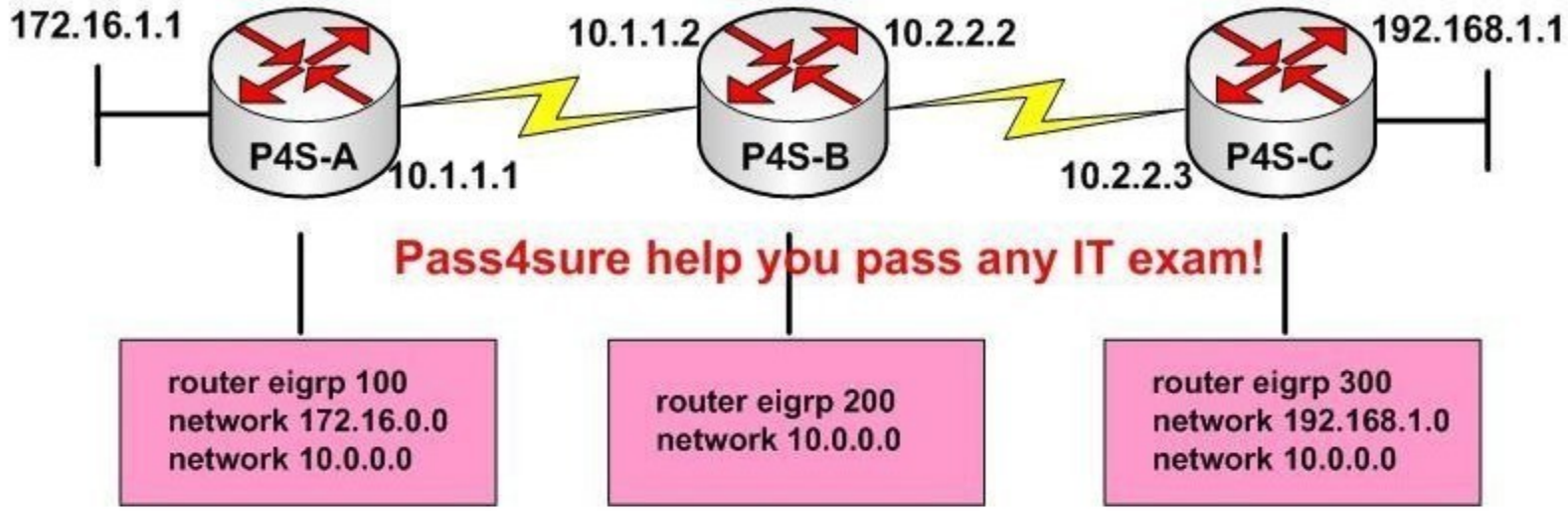
Mark for Review

Refer to the exhibit. When running EIGRP, what is required for P4S-A to exchange routing updates with P4S-C?




A. AS numbers must be changed to match on all the routers

B. Loopback interfaces must be configured so a DR is elected

C. The no auto-summary command is needed on P4S-A and P4S-C

D. P4S-B needs to have two network statements, one for each connected network

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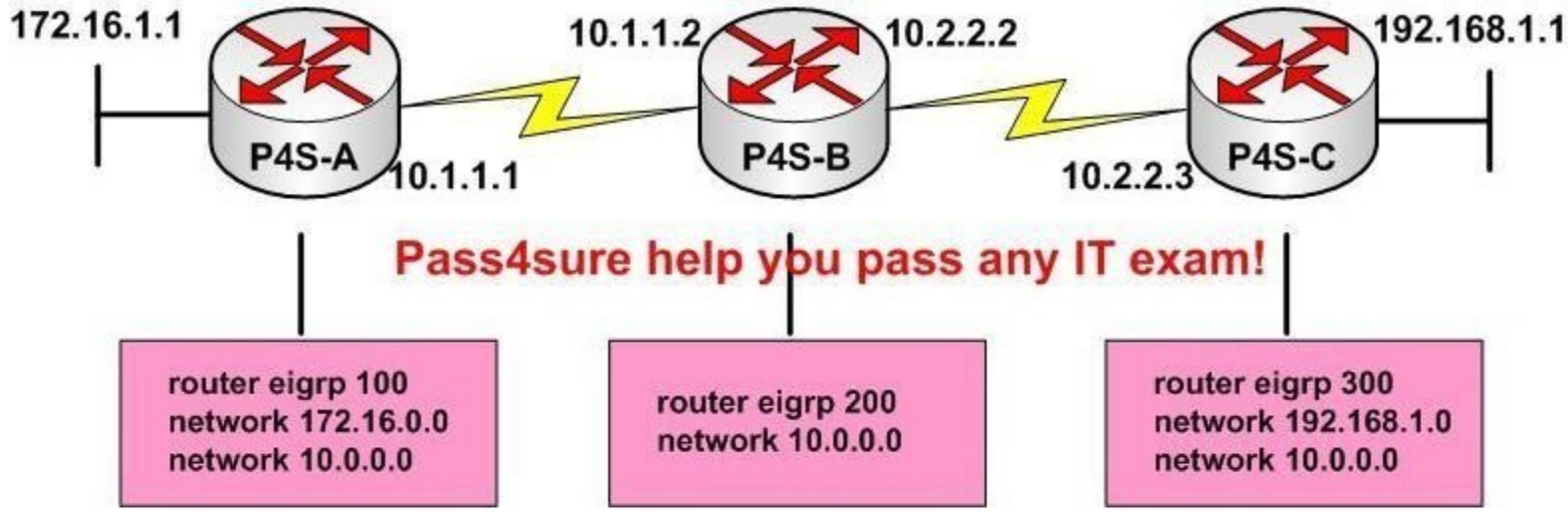
Mark for Review

Refer to the exhibit. When running EIGRP, what is required for P4S-A to exchange routing updates with P4S-C?




A. AS numbers must be changed to match on all the routers

B. Loopback interfaces must be configured so a DR is elected

C. The no auto-summary command is needed on P4S-A and P4S-C

D. P4S-B needs to have two network statements, one for each connected network

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the understanding of the interaction between EIGRP routers.
The following information must be matched so as to create neighborhood:
EIGRP routers to establish, must match the following information:
1. AS Number;
2. K value.
Different from the OSPF, there is no need to match the hello and Holddown Timer on the two routers to create neighborhood.

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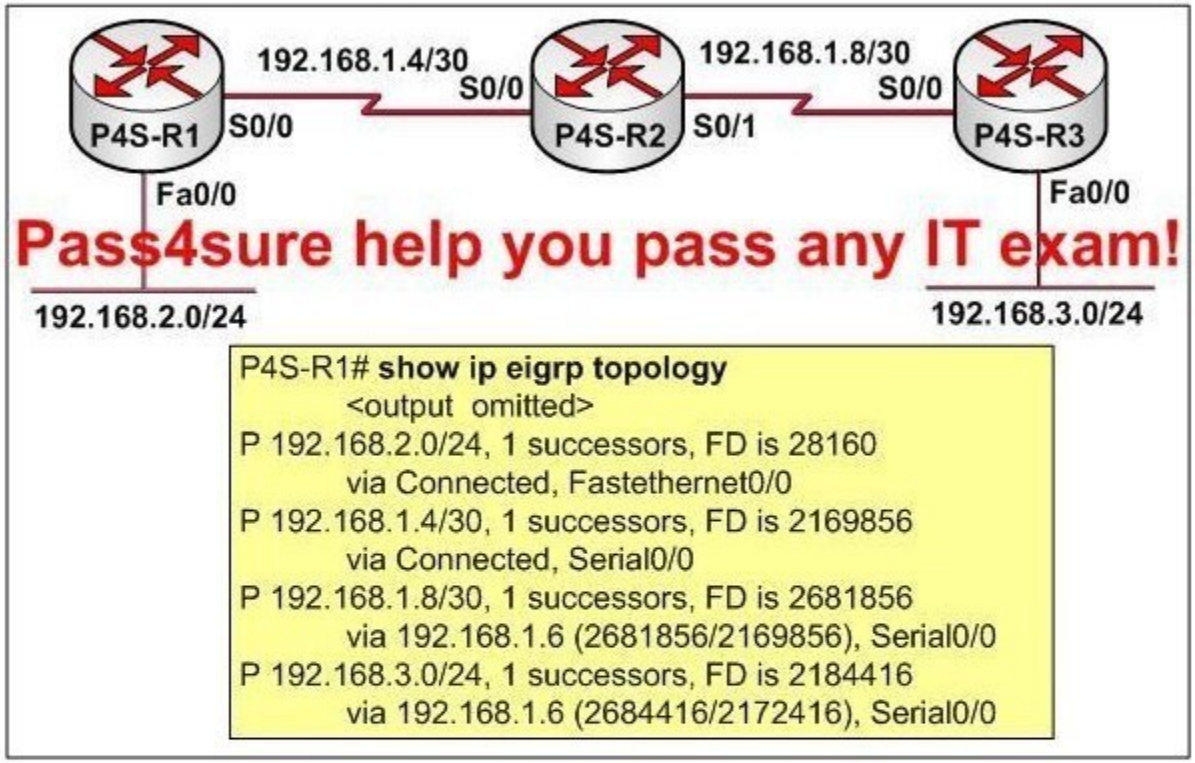
Mark for Review

Refer to the exhibit. Based on the output from P4S-R1, what metric will P4S-R2 install in its routing table to reach network 192.168.3.0 if EIGRP is the only routing process in use in the network?




- A. 28160
- B. 2169856
- C. 2172416
- D. 2681856

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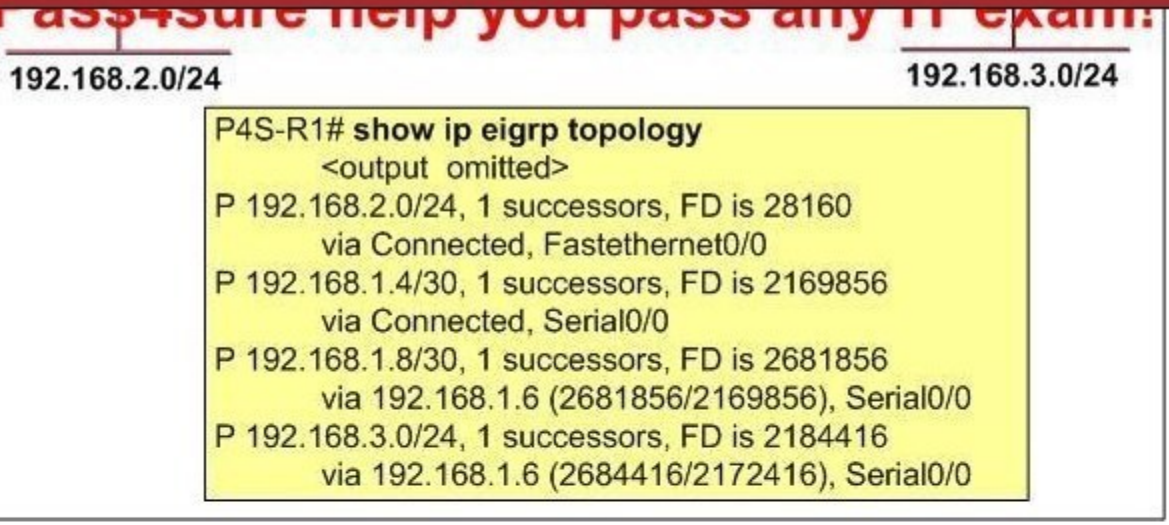


- A. 28160
- B. 2169856
- C. 2172416
- D. 2681856

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the understanding of the eigrp topology list. The topology list is to preserve all the routing information of the router. The command show ip eigrp topology is useful to view the eigrp topology list, which displays the information such as FD□AD□FS,Successor. Advertise Distance (AD) - the metric values of the (next hop) neighboring router to the destination Network. FD (Feasible Distance) - the metric values of the local router to the neighboring router. Successor- FD's smallest neighboring router (as the best router in the routing table) the lowest cost, and no loop circuit will occur. Feasible Successor (FS) - the local router in the topology list; AD, the neighboring router of the FD of the Feasible Successor, will not occur loop circuit and as a alternate routing. EIGRP will only put the main route (Successor) and the alternate routing (Feasible Successor) in the topology list, and then put the Successor in the routing table. EIGRP uses the DUAL to calculate the current destination network. Enable alternate routing if there is no routing.

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Regarding the extended ping command; which of the statements below are true? (Choose two)

- [ ] A. The extended ping command is supported from user EXEC mode.
- [ ] B. The extended ping command is available from privileged EXEC mode.
- [ ] C. With the extended ping command you can specify the TCP and UDP port to be pinged.
- [ ] D. With the extended ping command you can specify the timeout value.

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Mark for Review

Regarding the extended ping command; which of the statements below are true? (Choose two)

- A. The extended ping command is supported from user EXEC mode.
- B. The extended ping command is available from privileged EXEC mode.
- C. With the extended ping command you can specify the TCP and UDP port to be pinged.
- D. With the extended ping command you can specify the timeout value.

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to examine the understanding of the widening command Ping. Extended version of the ping command can be used to configure each option of the ping command. For example, the following options can be configured in the widening command Ping:

Protocol: Under almost 99% cases, you are using IP. But most administrators have no idea that it is possible to conduct AppleTalk□CLNS□Novell and other Ping testing types in the widening command Ping.

Repeat frequency: How many ping tests are you going to process? By default, the standard version of the ping command will carry out five tests, but in the widening command Ping, it will be extended to 999 tests. The widening command Ping will be convenient to test if and when there is variable interval problem in the network.

Data packet size: The standard ping command will send a 100 byte testing data packet; but the widening command Ping will send a very large one, which is helpful to test whether the network is possible to transfer mass data or not.

Timeout: The timeout time of the standard ping command is 2 seconds; but the widening command Ping supports time-out settings to select the time you want.

Source interface: I think this feature is very important. You are able to configure the source of the test. But in standard ping command, the test might fail to work because you cannot see all the interfaces of the router.

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Mark for Review

When you use the ping command to send ICMP messages across a network, what's the most common request/reply pair you'll see?

- A. Echo request and Echo reply
- B. ICMP hold and ICMP send
- C. ICMP request and ICMP reply
- D. Echo off and Echo on

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Mark for Review

When you use the ping command to send ICMP messages across a network, what's the most common request/reply pair you'll see?

- A. Echo request and Echo reply
- B. ICMP hold and ICMP send
- C. ICMP request and ICMP reply
- D. Echo off and Echo on

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the understanding of the command Ping. When using the PING command, such as ping www.pass4sure.com, your computer will send an ECHO data packet to determine network connectivity. By default, your computer will generally send four data packets. Through this command, you can define the sending number, which will be helpful to measure the speed of the network.

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Mark for Review

Two Pass4sure hosts are connected as shown below:

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Ping Exhibit:

```
C:\>ping 10.1.2.9
Pinging 10.1.2.9 with 32 bytes of data:

Reply from 10.1.1.1: Destination host unreachable.
Reply from 10.1.1.1: Destination host unreachable.
Reply from 10.1.1.1: Destination host unreachable.
Reply from 10.1.1.1: Destination host unreachable.

Ping statistics for 10.1.2.9
    Packets: Sent = 4 , Received = 4, Lost = 0 (0% loss).
```

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In the network shown above, a network administrator attempts to ping Host P4SII from Host P4SI and receives the results that are shown. What is a possible problem?

- A. The link between Host P4SI and Pass4sureA is down.
- B. TCP/IP is not functioning on Host P4SI
- C. The link between Pass4sure1 and Pass4sure2 is down.
- D. The default gateway on P4SI is incorrect.
- E. Interface Fa0/0 on Pass4sure1 is shutdown.
- F. The link between Pass4sureA and Pass4sure1 is down.

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Mark for Review

Ping Exhibit:

```
C:\>ping 10.1.2.9
Pinging 10.1.2.9 with 32 bytes of data:

Reply from 10.1.1.1: Destination host unreachable.
Reply from 10.1.1.1: Destination host unreachable.
Reply from 10.1.1.1: Destination host unreachable.
Reply from 10.1.1.1: Destination host unreachable.

Ping statistics for 10.1.2.9
    Packets: Sent = 4 , Received = 4, Lost = 0 (0% loss).
```

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In the network shown above, a network administrator attempts to ping Host P4SII from Host P4SI and receives the results that are shown. What is a possible problem?

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- C. The link between Pass4sure1 and Pass4sure2 is down.
- D. The default gateway on P4SI is incorrect.
- E. Interface Fa0/0 on Pass4sure1 is shutdown.
- F. The link between Pass4sureA and Pass4sure1 is down.

## Answer & Explanation

### Correct Answer

C

### Explanations

When Host P4SI attempts to ping Host P4SII, it will first send ARP request to Host P4SII. The router Pass4sure1 will receive this ARP request and find the reachable route of the destination host by IP addressing.

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On the basis of the exhibit provided, when the router Pass4sure1 performs addressing, the interface Fa0/0 gives back the information that the destination host is unreachable, which indicates that the link between the router Pass4sure1 and Pass4sure2 is down.

Mark for Review

In order to resolve the LAN connectivity problems, which router IOS commands will you use? (Choose three.)

- [ ] A. ping
- [ ] B. tracert
- [ ] C. show interfaces
- [ ] D. show ip route

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Mark for Review

In order to resolve the LAN connectivity problems, which router IOS commands will you use? (Choose three.)

- A. ping
- B. tracert
- C. show interfaces
- D. show ip route

## Answer & Explanation

### Correct Answer

A C D

### Explanations

This question is to examine the failure troubleshooting methods of the LAN network connectivity. The command Ping is a very useful tool to test network connectivity as well as the sending and receiving situation of the data packets, and also a most-commonly used network testing command. Ping sends an echo request data packet to the target host computer (address) to ask it to respond after the receipt of the request, so as to determine the responding time of the network and whether the computer connects to the target host computer (address). The command Tracert shows the path of the data packets reaching to the target host computer, and the time reaching to each node. The function of the command Tracert is similar to Ping, but the information it obtains is in much greater detail than the Ping command. It displays all the information such as all the paths of the data packets, the IP of the nodes and the spending time, which is comparatively applicable in large networks. The command show interfaces is used to view the detailed port information, so as to determine the port activity status in order to troubleshoot. The command show ip route is to view the information related to the routing table, which describes all the routing information in the network environment. Therefore, it is possible to troubleshoot router by viewing the routing table.

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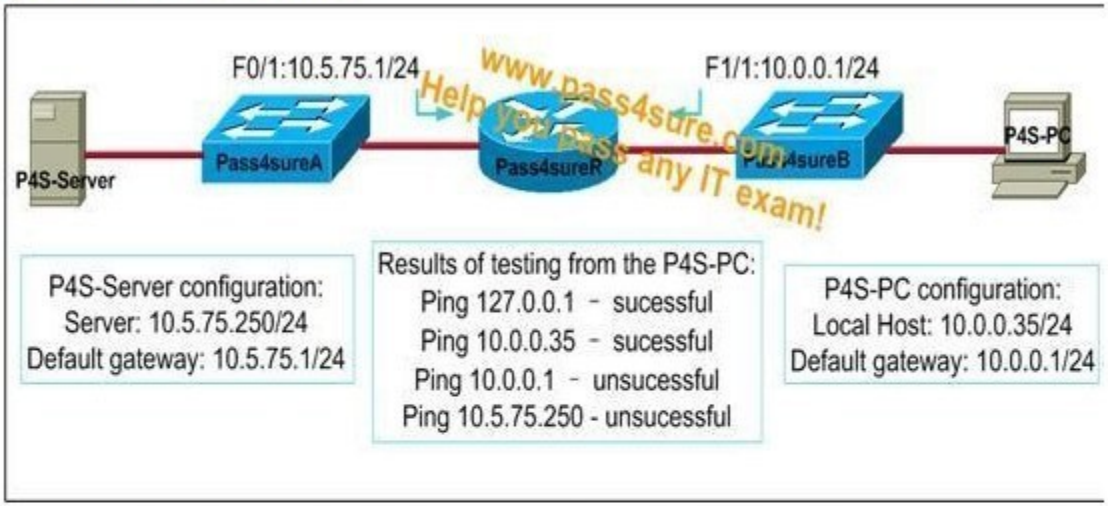
Mark for Review

The Pass4sure network topology exhibit is shown below:




Please study the exhibit carefully. A technician is troubleshooting a host connectivity problem. The host is unable to ping a server connected to Switch Pass4sureA. Based on the result 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.

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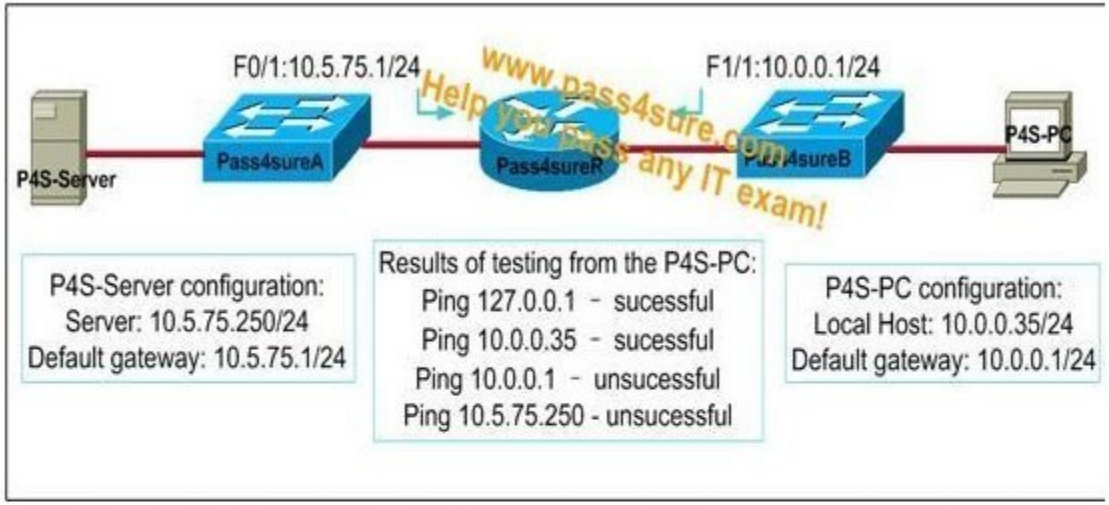
Mark for Review

The Pass4sure network topology exhibit is shown below:




Please study the exhibit carefully. A technician is troubleshooting a host connectivity problem. The host is unable to ping a server connected to Switch Pass4sureA. Based on the result 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 & Explanation

### Correct Answer

D

### Explanations

This question is to examine the LAN failure troubleshooting. We can conclude from the above-mentioned output information that the success of the test ping 127.0.0.1 shows that there is no problem about TCP / IP stack. And the success of the test ping 10.0.0.35 shows that the NIC is in a normal working condition. The ping gateway 10.0.0.1 fails to work means there is something wrong with the configured default gateway and the default gateway itself, which causes the failure of the ping server 10.5.75.250. We can conclude that the problem is the local physical layer.

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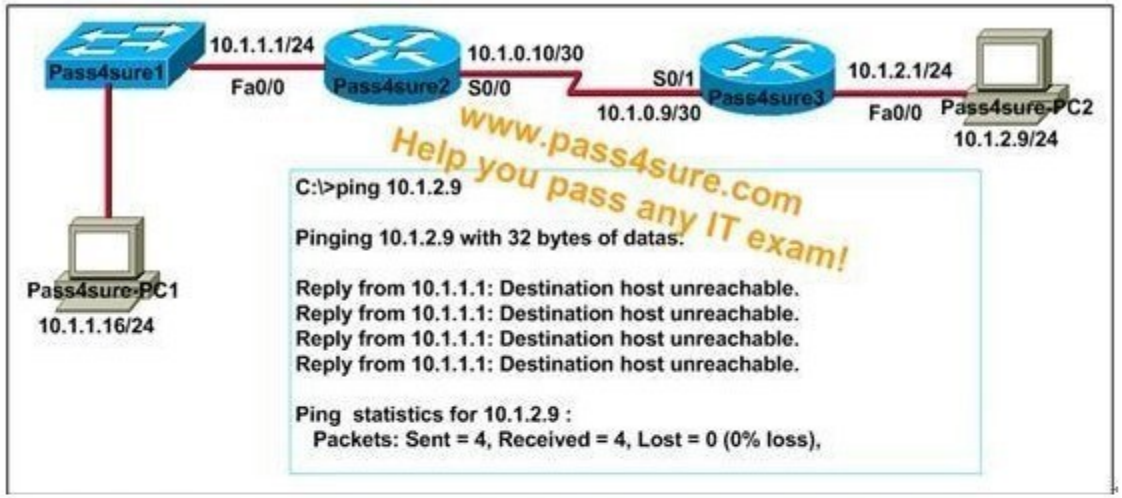
Mark for Review

The Pass4sure network is shown below:




Based on the information shown above, when the Pass4sure network administrator attempts to ping Host Pass4sure-PC2 from Host Pass4sure-PC1 and receives the results that are shown. What is a possible problem?

- A. The link between Pass4sure1 and Pass4sure2 is down.
- B. Interface Fa0/0 on Pass4sure2 is shutdown.
- C. The link between Pass4sure2 and Pass4sure3 is down.
- D. The default gateway on Pass4sure-PC1 is incorrect.

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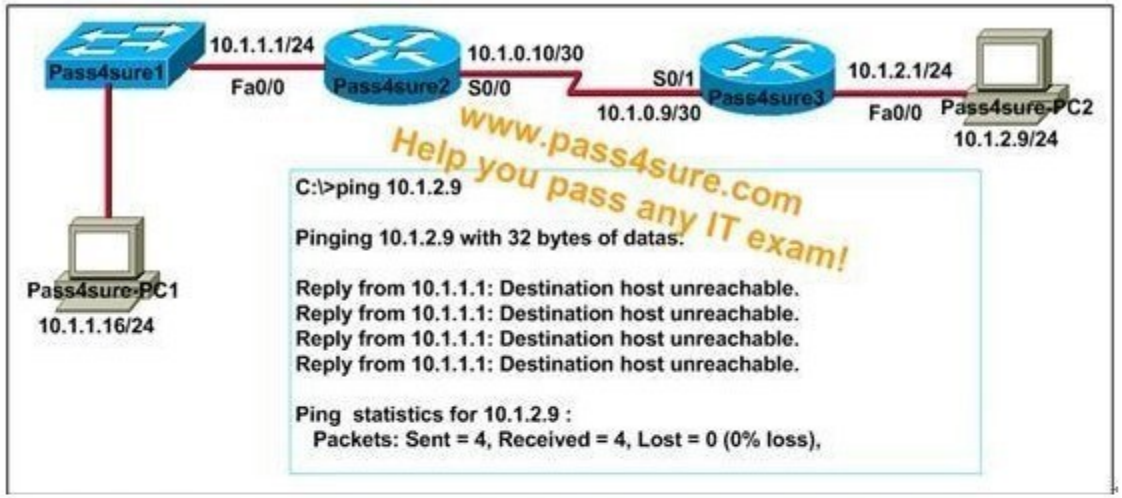
Mark for Review

The Pass4sure network is shown below:




Based on the information shown above, when the Pass4sure network administrator attempts to ping Host Pass4sure-PC2 from Host Pass4sure-PC1 and receives the results that are shown. What is a possible problem?

- A. The link between Pass4sure1 and Pass4sure2 is down.
- B. Interface Fa0/0 on Pass4sure2 is shutdown.
- C. The link between Pass4sure2 and Pass4sure3 is down.
- D. The default gateway on Pass4sure-PC1 is incorrect.

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about network failure troubleshooting. The prompt message Destination host Unreachable means there is something wrong with the net twine. Here is to illustrate the difference between "destination host unreachable" and "time out". If there is goal-reaching router in the routing table of the came by router, and the target is inaccessible for some reasons, "time out" will display. While displays "destination host unreachable", it means there is no goal reaching router in the routing table.

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A network administrator issues the ping 192.168.2.5 command and successfully tests connectivity to a host that has been newly connected to the network. Which protocols were used during the test? (Choose two.)

- A. ARP
- B. DHCP
- C. DNS
- D. ICMP

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Mark for Review

A network administrator issues the ping 192.168.2.5 command and successfully tests connectivity to a host that has been newly connected to the network. Which protocols were used during the test? (Choose two.)

- A. ARP
- B. DHCP
- C. DNS
- D. ICMP

## Answer & Explanation

### Correct Answer

A D

### Explanations

PING (Packet Internet Grope) is program to test network connection amount. Ping sends an ICMP echo request message to the destination and reports whether an expected ICMP echo response is received or not. It is a command used to check whether the network is connected or network connection speed. As a network administrator or a hacker, ping is the first DOS command that one should master. Its operation principle is: the machines on the network are identified by unique IP addresses; when we send a data packet to our destination IP address, it will return a same-sized data packet. With this packet, we can determine the existence of the target host, and the operating system of the host.

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Mark for Review

What are two characteristics of Telnet? (Choose two.)

- A. It sends data in clear text format.
- B. It is no longer supported on Cisco network devices.
- C. It is more secure than SSH.
- D. It requires that the destination device be configured to support Telnet connections.

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Mark for Review

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- C. It is more secure than SSH.
- D. It requires that the destination device be configured to support Telnet connections.

## Answer & Explanation

### Correct Answer

A D

### Explanations

Telnet protocol is a membership of TCP/IP protocol. It is the standard protocol of Internet remote login service. With Telnet, computers of local users are able to become terminals of remote host system. To use Telnet protocol for remote login, the following conditions are required: the local computer must be equipped with client programs including Telnet; IP address or domain name of the remote host; login ID and password. Remote login is: users use Telnet command to make the computer become a terminal emulation of remote hosts. Terminal emulation is equivalent to a non-intelligent machine, it is only used to send each character (that users input) to host, and display the information (that host output) on the screen.

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Mark for Review

Two pass4sure routers are connected as shown below:

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Pass4sure1 configuration exhibit:

```
pass4sure1# show interfaces s0
    Serial0 is up ,line protocol is up
        Hadrware is HD04370
        Internet address is 192.168.10.1/24
        MTU 1500 bytes,BW 1544 kbit,
            reliability 255/255
        Encapsulation HDLC loopback not set
        Keepalive ser(10 sec)
```

Pass4sure2 configuration exhibit:

```
Pass4sure2# show interfaces s1
    Serial0 is up , line protocol is up
        Hardware is HD64570
        Internet address is 192.168.11.2/24
        MTU 1500 bytes, BW 56000 kbit,
            Reliability 255/255
        Encapsulation HDLC loopback not set
        Keepalive set(10 sec)
```

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Mark for Review

```
Hadrware is HD04370
Internet address is 192.168.10.1/24
MTU 1500 bytes,BW 1544 kbit,
   reliability 255/255
Encapsulation HDLC loopback not set
Keepalive ser(10 sec)
```

Pass4sure2 configuration exhibit:

```
Pass4sure2# show interfaces s1
    Serial0 is up , line protocol is up
      Hardware is HD64570
      Internet address is 192.168.11.2/24
      MTU 1500 bytes, BW 56000 kbit,
         Reliability 255/255
      Encapsulation HDLC loopback not set
      Keepalive set(10 sec)
```

Two routers named Pass4sure1 and Pass4sure2 are connected by their serial interfaces as shown in the exhibit, but there is no data connectivity between them. The Pass4sure1 router is known to have a correct configuration. Given the partial configurations shown in the exhibit, what is the problem on the Pass4sure2 router that is causing the lack of connectivity?

- A. A loopback is not set.
- B. The IP address is incorrect.
- C. The subnet mask is incorrect.
- D. The serial line encapsulations are incompatible.
- E. The maximum transmission unit (MTU) size is too large.
- F. The bandwidth setting is incompatible with the connected interface.

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Mark for Review

```
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- E. The maximum transmission unit (MTU) size is too large.
- F. The bandwidth setting is incompatible with the connected interface.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the router failure troubleshooting. We have to firstly make sure the connected interfaces are in the same network segment so as to achieve network connectivity between two routers. We can learn from the above-mentioned output information that the network fails to connect because the IP addresses of the two interfaces are in different segments.

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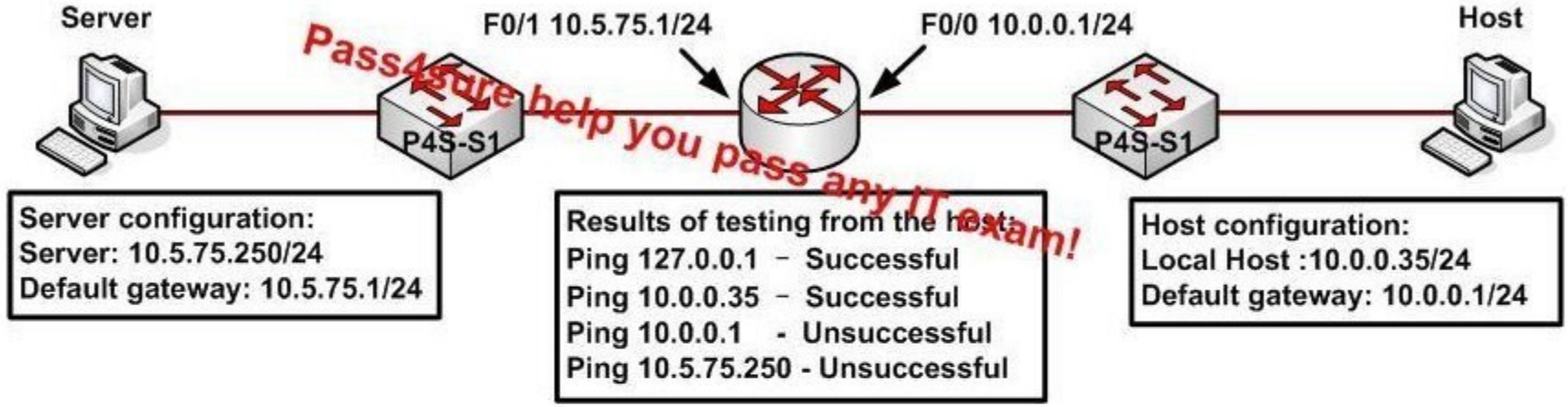
Mark for Review

Refer to the exhibit. A technician is troubleshooting a host connectivity problem. The host is unable to ping a server connected to Switch P4S-S1. Based on the results of the testing, What is the underlying cause of this problem?

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- 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.

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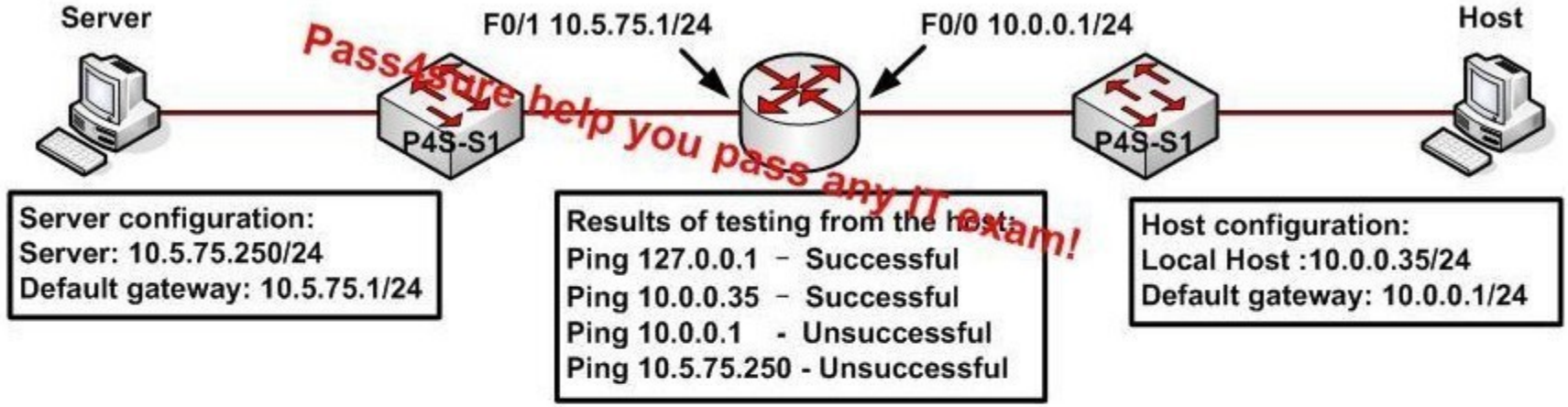


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- A. A remote physical layer problem exists.
- B. The host NIC is not functioning.
- C. TCP/IP has not been correctly installed on the host.
- D. A local physical layer problem exists.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the LAN failure troubleshooting. We can conclude from the above-mentioned output information that the success of the test ping 127.0.0.1 shows that there is no problem about TCP / IP stack. And the success of the test ping 10.0.0.35 shows that the NIC is in a normal working condition. The ping gateway 10.0.0.1 fails to work means there is something wrong with the configured default gateway and the default gateway itself, which causes the failure of the ping server 10.5.75.250. We can conclude that the problem is the local physical layer.

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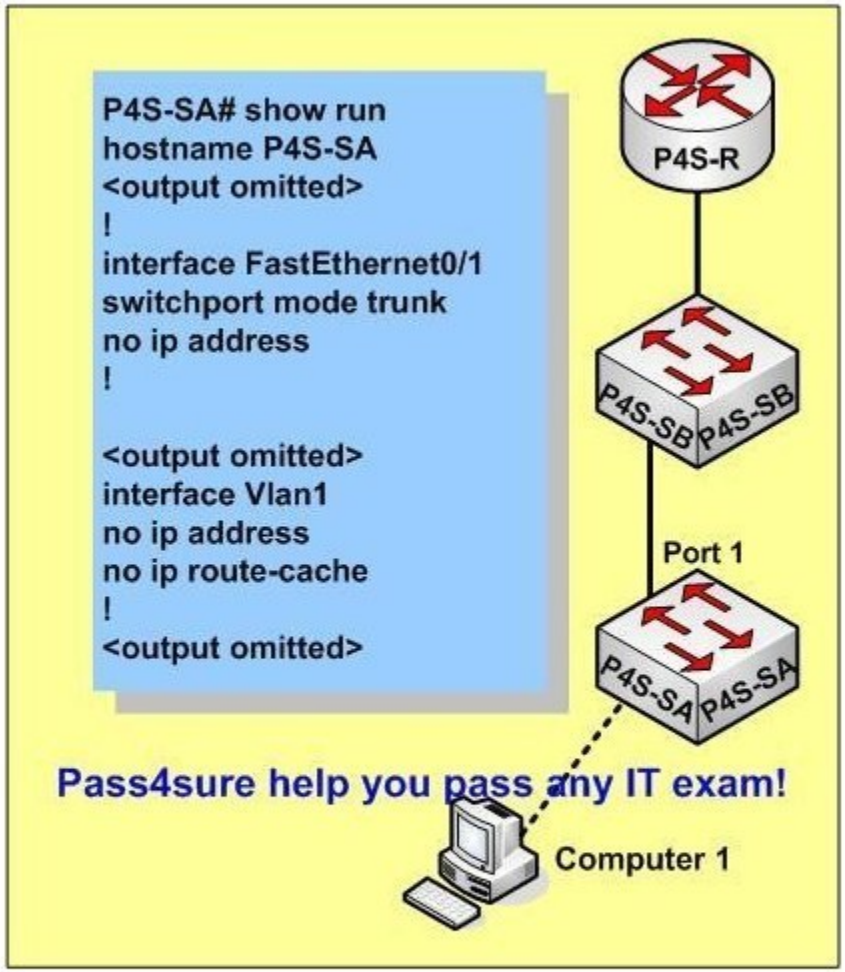
Mark for Review

Refer to the graphic. Computer 1 is consoled into P4S-SA. Telnet connections and pings run from the command prompt on P4S-SA fail. Which of the following could cause this problem?




A. P4S-SA is not directly connected to P4S-R.

B. P4S-SA does not have a default gateway assigned.

C. Port 1 on P4S-SA should be an access port rather than a trunk port.

D. P4S-SA does not have an IP address.

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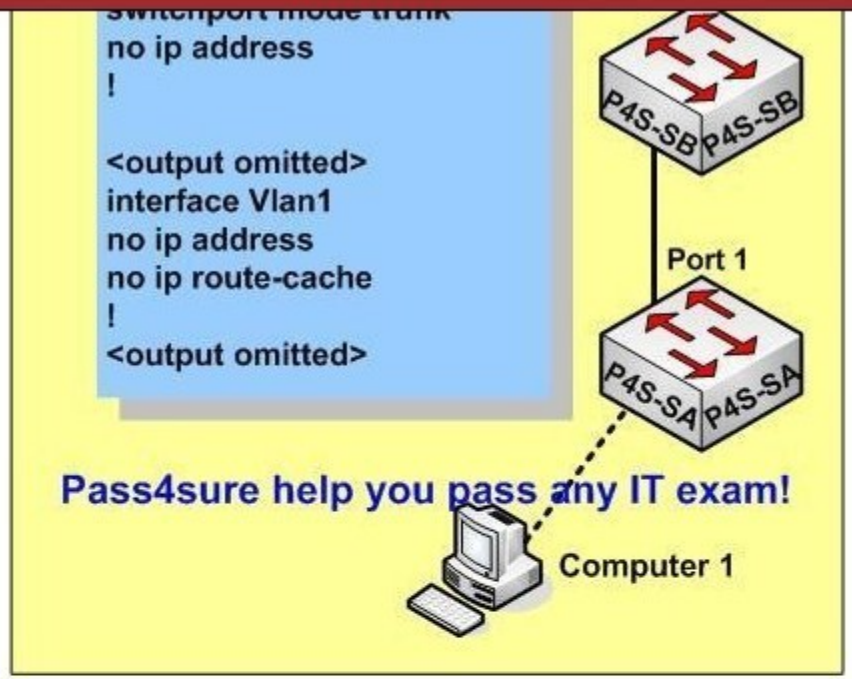
Mark for Review

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B. P4S-SA does not have a default gateway assigned.

C. Port 1 on P4S-SA should be an access port rather than a trunk port.

D. P4S-SA does not have an IP address.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the network failure troubleshooting. The command Ping is used to test network connectivity. However, the premise of using the ping command is to test the IP address configuration at both ends. Otherwise, it is impossible to test by the command Ping. We can learn from the above-mentioned output information that fa0 / 1 has not been configured with IP address, so the command ping failed to work.

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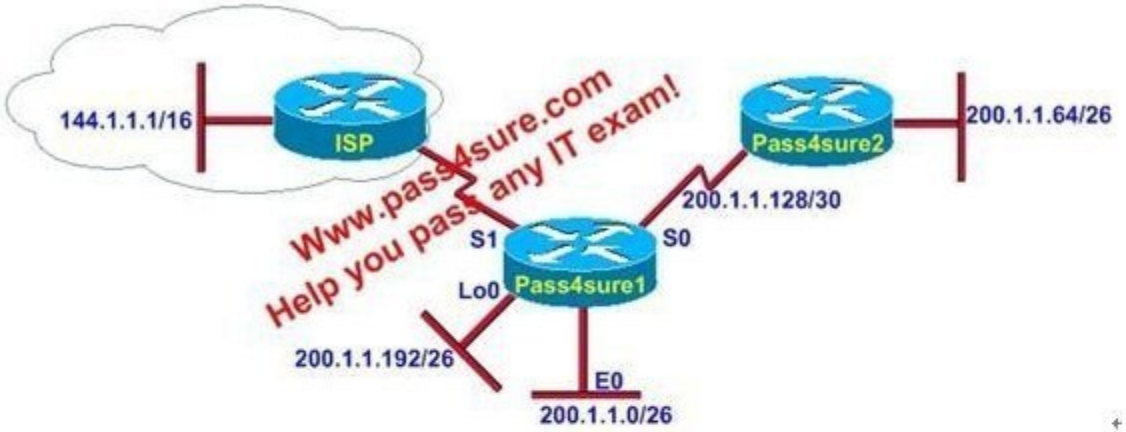
Mark for Review

Network topology exhibit:




Configuration exhibit (Routing Table):

```
        200.1.1.0/24 is var subneted, 5 subnets, 5 masks
C               200.1.1.192/26 is directly connected, Looback0
C               200.1.1.128/30 is directly connected, Serial0
D               200.1.1.64/26 [90/2195456] via 2001.1.130 , 00:02:15, Serial0
D               200.1.1.0/24 is a summary , 00:00:41, Null0
C               200.1.1.0/26 is directly connected, Ethernet0
        200.1.2.0/40 is subnetted, 1 subnets
C               200.1.2.4 is directly connected, Serial1
S*      0.0.0.0/0
```

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Based on the information provided above, what can be determined from the router output shown in the graphic?

- A. 200.1.2.0 is a default route.
- B. The input shows that there are two default routes.
- C. The input came from router R1.
- D. The intput came from a router that has four physical interfaces.
- E. EIGRP is in use in this network.

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C               200.1.2.4 is directly connected, Serial1
S*      0.0.0.0/0
```

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- C. The input came from router R1.
- D. The intput came from a router that has four physical interfaces.
- E. EIGRP is in use in this network.

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to examine the understanding of the routing table information, among which, C stands for directly-connected network, D for EIGRP and S * for default routing. The Loopback interface does not belong to the physical interface. Pass4sure1 has no directly-connected subnet 200.1.2.0/40 of.

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Mark for Review

As the Pass4sure network administrator, you are troubleshooting network issues, which following commands will allow you to find the ip address associated with each MAC address? (Choose two)

- A. show arp
- B. show interface
- C. show address
- D. show hosts

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- A. show arp
- B. show interface
- C. show address
- D. show hosts

## Answer & Explanation

### Correct Answer

A B

### Explanations

Use the command "show arp" to display the MAC addresses of Layer2 and the IP addresses of Layer3 contained in the ARP table:
Router # show arp
Protocol Address Age (min) Hardware Addr Type Interface
Internet 10.0.0.2 0 0005.dc0c.ffab ARPA Ethernet01
Internet 10.0.0.4 - 0005.dc0c.ff76 ARPA Ethernet0
In the same way, use the command "show interface" on router to display the related information of the MAC addresses of Layer2 and the IP addresses of Layer3
Router# show interfaces
Ethernet 0 is up, line protocol is up
Hardware is MCI Ethernet, address is 0000.0d00.640c (bia 0000.0d00.640c)
Internet address is 10.112.12.85, subnet mask is 255.255.255.0
MTU 1500 bytes, BW 10000 Kbit, DLY 100000 usec, rely 255/255, load 1/255
----more----

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Mark for Review

Recently, associates have noticed extremely slow network performance, intermittent connectivity, and connection losses. After entering the "show interfaces" command, you notice that the Ethernet interface is configured as 100 Mbps full-duplex and that there is evidence of late collisions. What could be the cause of this problem?

A. Duplex mismatch

B. A routing loop

C. Trunking mode mismatch

D. Improperly configured root bridge

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- A. Duplex mismatch
- B. A routing loop
- C. Trunking mode mismatch
- D. Improperly configured root bridge

## Answer & Explanation

### Correct Answer

A

### Explanations

A duplex mismatch may result in performance issues, intermittent connectivity, and loss of communication. When troubleshooting NIC issues, verify that the NIC and switch are using a valid configuration. Some third-party NIC cards may fall back to half-duplex operation mode, even though both the switchport and NIC configuration have been manually configured for 100 Mbps, full-duplex. This behavior is due to the fact that NIC autonegotiation link detection is still operating when the NIC has been manually configured. This causes duplex inconsistency between the switchport and the NIC. Symptoms include poor port performance and frame check sequence (FCS) errors that increment on the switchport. To troubleshoot this issue, try manually configuring the switchport to 100 Mbps, half-duplex. If this action resolves the connectivity problems,you may be running into this NIC issue. Try to update to the latest drivers for your NIC, or contact your NIC card vendor for additional support.

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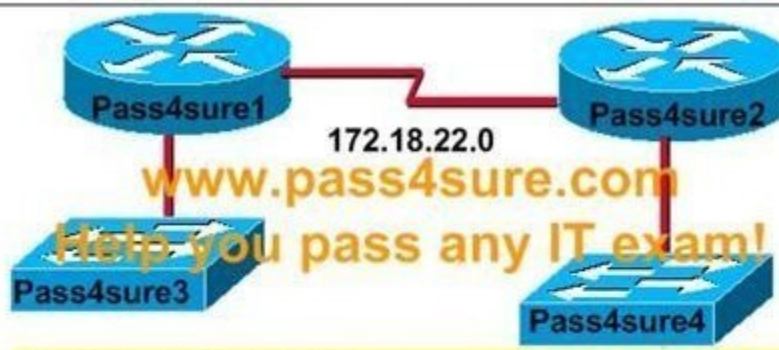
Mark for Review

The topology of the Pass4sure network is displayed below, along with the routing table of the router:




```
Pass4sure1# show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i- IS-IS, L1 - IS-IS level-1, L2 - IS-IS level 1-2, * - candidate default
       U - per-user static route, o - ODR
Gateway of last resort is 172.19.22.2 to network 0.0.0.0

C    172.17.22.0 is directly connected, FastEthernet0/0
C    172.18.22.0 is directli  connected, Serial0/0
S*   0.0.0.0/0 [1/0] via 172.19.22.2
```

Users on the 172.17.22.0 network cannot reach the server located on the 172.31.5.0 network. As the Pass4sure network administrator, you connected to router Pass4sure1 via the console port, issued the show ip route command, and was able to ping the server. Based on the information above, what is the cause of the failure?

- A. The network has not fully converged.
- B. The neighbor relationship table is not correctly updated.
- C. A static route is configured incorrectly.
- D. The FastEthernet interface on Pass4sure1 is disabled.

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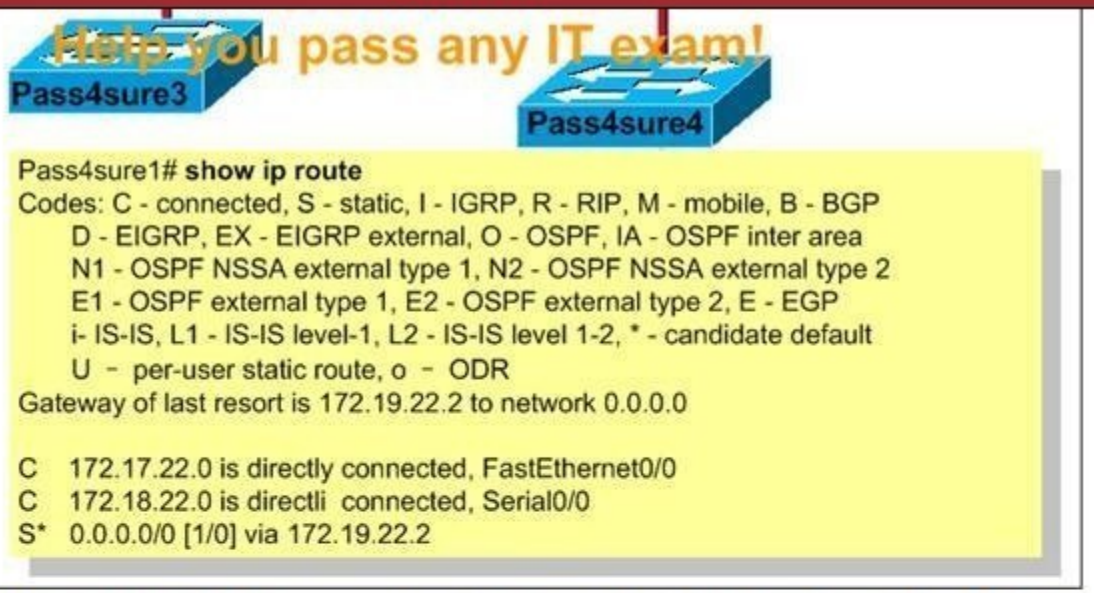


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- C. A static route is configured incorrectly.
- D. The FastEthernet interface on Pass4sure1 is disabled.

## Answer & Explanation

### Correct Answer

C

### Explanations

On the basis of the output from the command "show ip route", we know that the static route of Pass4sure1 is:
S* 0.0.0.0/0 [1/0] via 172.19.22.2
Configuration is in error.

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Mark for Review

You work as a network technician at Pass4sure.com. Please study the exhibit carefully.

```
00:34:43:  RIP:  recevied v1 update from 192.168.11.2 on Serial0/0
00:34:43:          192.168.12.0  in  1 hops
00:34:43:  RIP:  update contains 1 routers
00:34:50:  Serial0/0: HDLC myseq 179, mineseen 179*, yourseen 180, line up
00:35:00:  Serial0/0: HDLC myseq 180, mineseen 180*, yourseen 181, line up
00:35:00:  IP: s= 192.168.11.1 (local), d= 192.168.11.2 (Serial0/0), len 40, rcvd 3
00:35:00:  IP: s= 192.168.11.2 (Serial0/0), d= 192.168.11.1 (Serial0/0), len 40, rcvd 3
00:35:00:  tcp2: I ESTAB 192.168.11.2: 11] 03 192.168.11.1: 23 seq 4063973782
          ACK  4061200175  WIN  4049
```

The router console screen is rapidly displaying line after line of output similar to what is shown in the exhibit. The help desk has called to say that users are reporting a slowdown in the network. What will solve this problem while not interrupting network operation?

A. Enter the no debug all command.

B. Use the show processes command.

C. Save the configuration and reboot the router.

D. Press the CTRL+C keys.

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00:34:43:  RIP:  update contains 1 routers
00:34:50:  Serial0/0: HDLC myseq 179, mineseen 179*, yourseen 180, line up
00:35:00:  Serial0/0: HDLC myseq 180, mineseen 180*, yourseen 181, line up
00:35:00:  IP: s= 192.168.11.1 (local), d= 192.168.11.2 (Serial0/0), len 40, rcvd 3
00:35:00:  IP: s= 192.168.11.2 (Serial0/0), d= 192.168.11.1 (Serial0/0), len 40, rcvd 3
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A. Enter the no debug all command.

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C. Save the configuration and reboot the router.

D. Press the CTRL+C keys.

## Answer & Explanation

### Correct Answer

A

### Explanations

Debug is used to obtain exchanged message in the router and frame details, and for debugging information. As debug will occupy huge CPU resources and thus affecting network usage, so normally we would avoid the use of debug. When using debug, no debug all command may be used to shut down.

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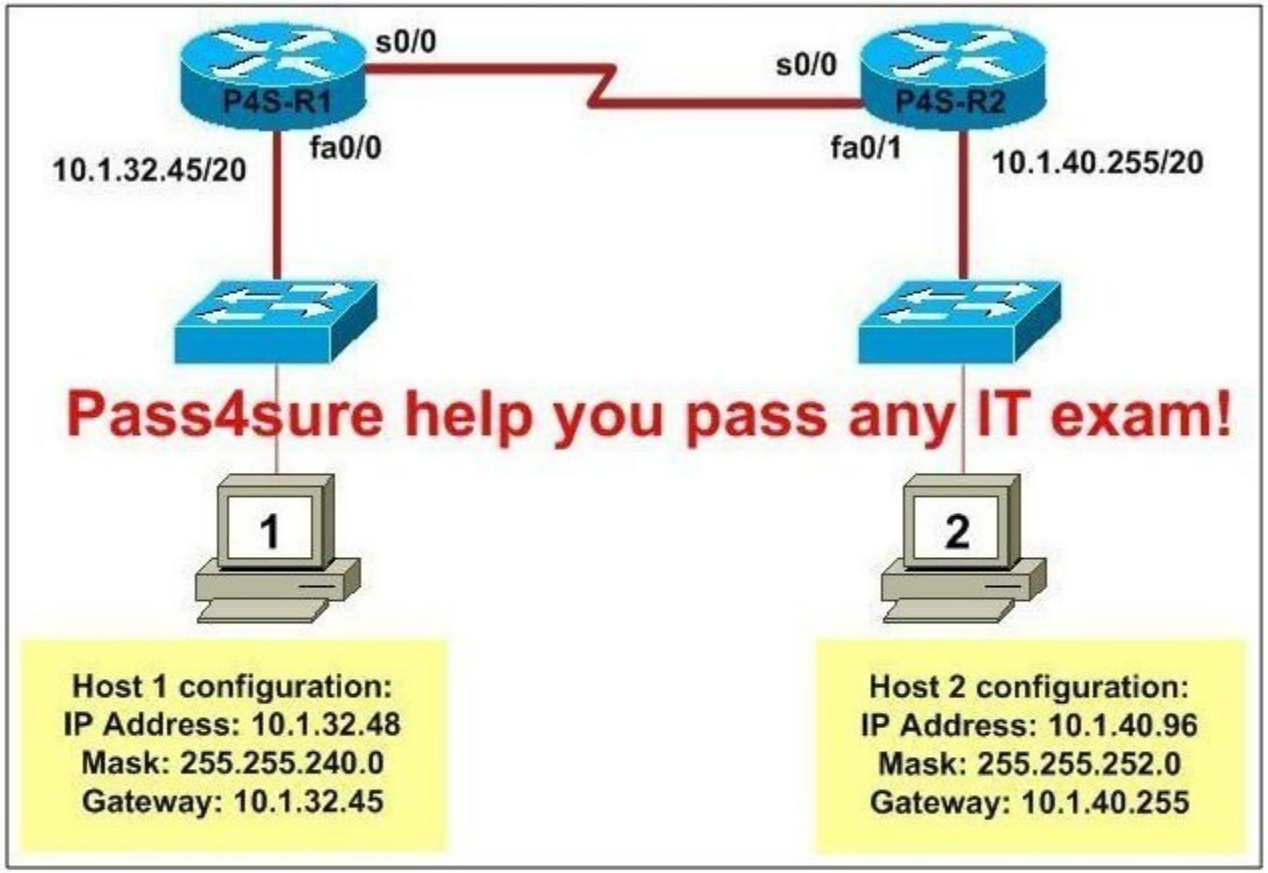
Mark for Review

Observe the graphic below carefully, Host 1 is unable to receive packets from Host 2. If the routing protocol being used is RIP v1, what is the problem with the IP configuration information displayed? (Choose two.)




- A. The subnet mask 255.255.248.0 is configured on Host 1.
- B. The fa0/1 network on router P4S-R2 overlaps with the LAN attached to P4S-R1.
- C. Having assigned the incorrect subnet mask to Host 2.
- D. Host 2 on router P4S-R2 is on a different subnet than its gateway.

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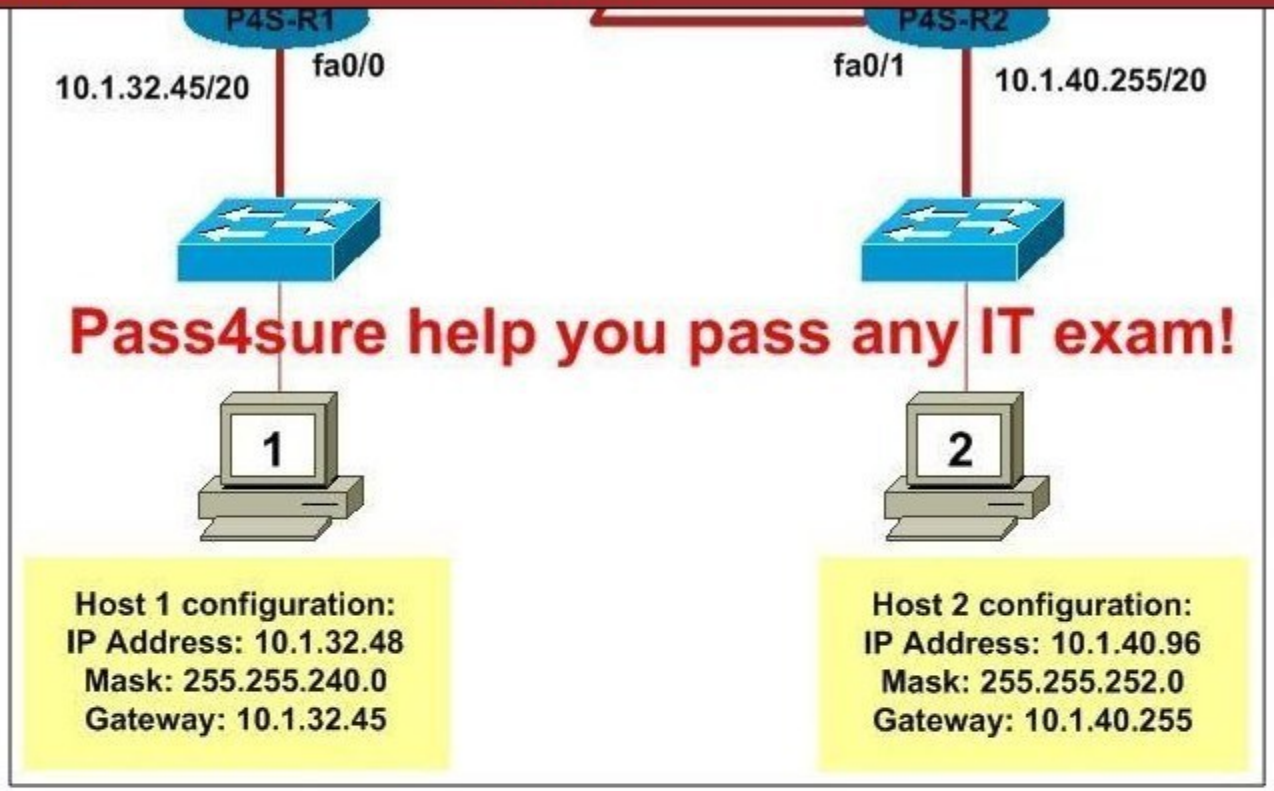


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## Answer & Explanation

**Correct Answer**

B C

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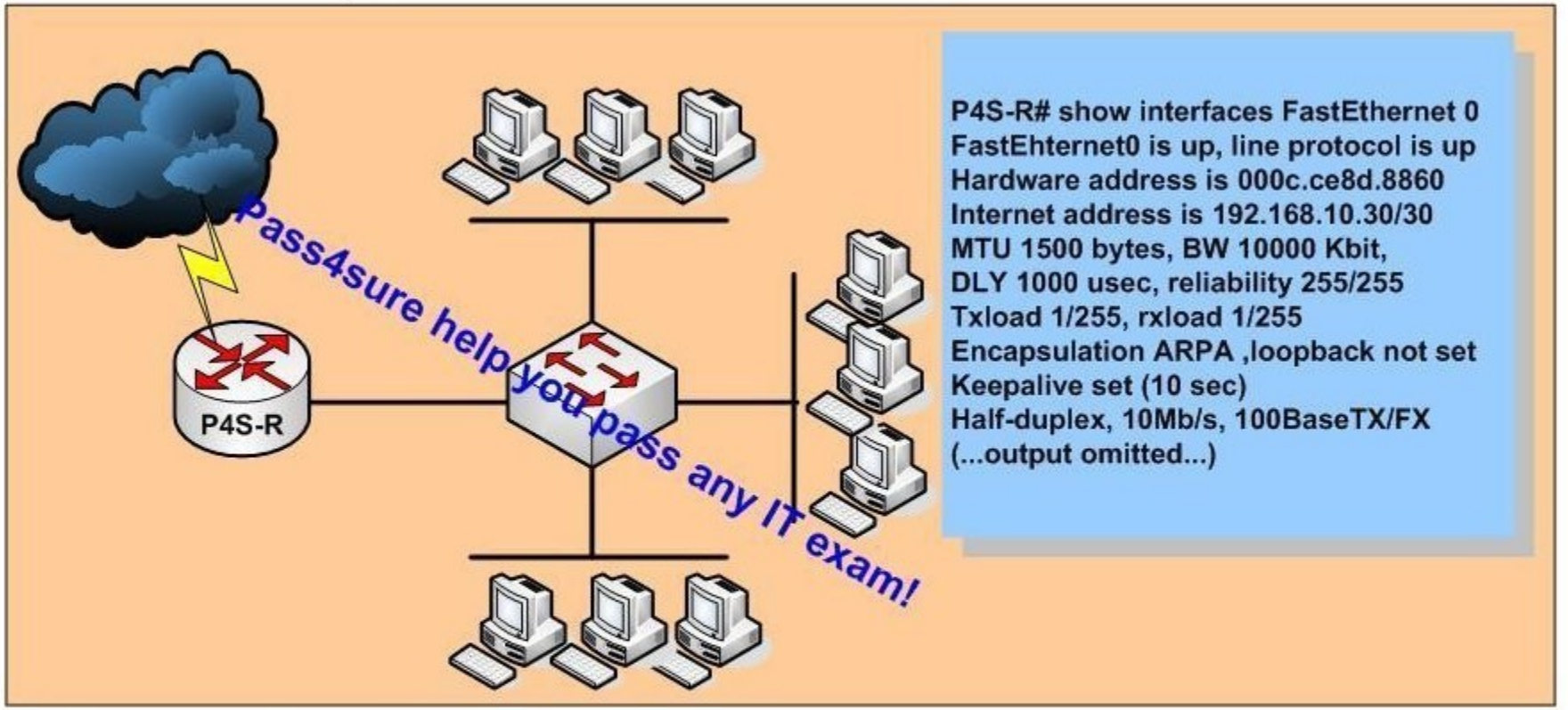
**Explanations**

Different subnets should not have the same address filed, refer to the same subnet, the subnet masks should be the same.

Mark for Review

A router has been configured to provide the nine users on the branch office LAN with Internet access, as shown in the diagram. It is found that some of the users on the LAN cannot reach the Internet. Based on the topology and router output shown, which command should be issued on the router to correct the problem?




A. P4S-R(config-if)# no shutdown

B. P4S-R(config-if)# duplex full

C. P4S-R(config-if)# no keepalive

D. P4S-R(config-if)# ip address 192.168.10.30 255.255.255.240

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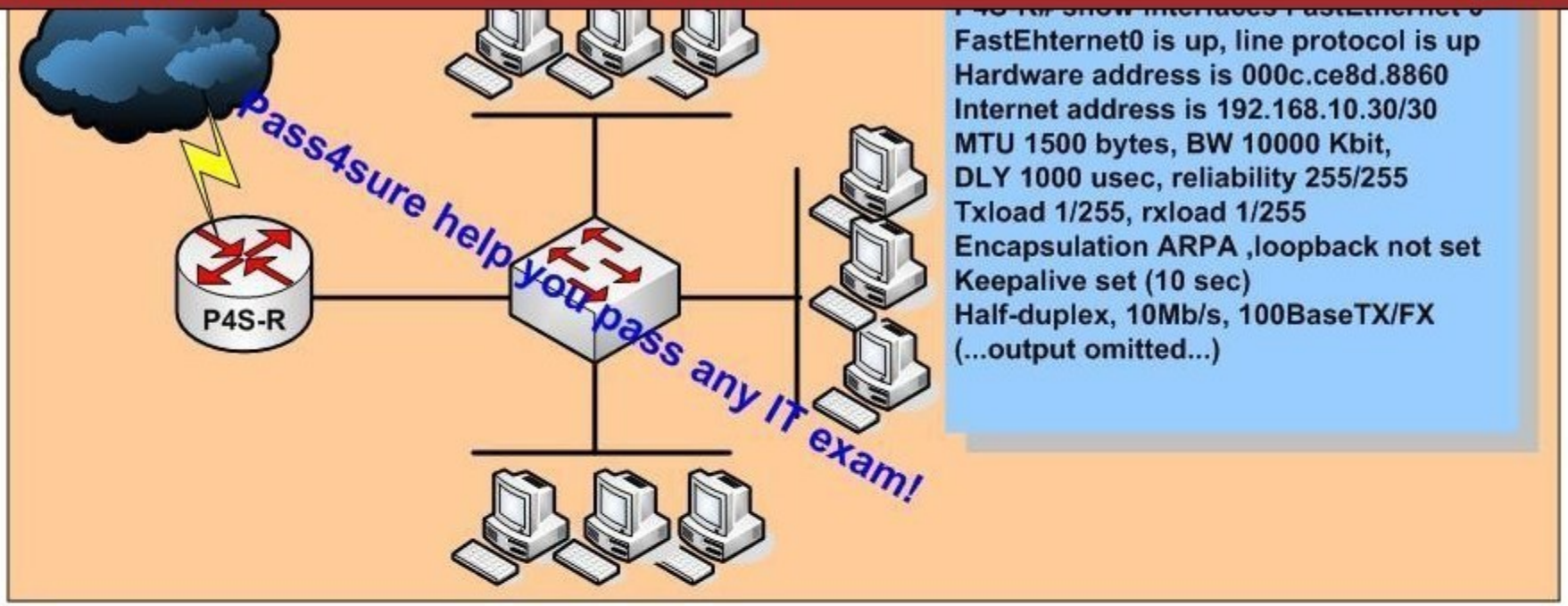
Mark for Review




A. P4S-R(config-if)# no shutdown

B. P4S-R(config-if)# duplex full

C. P4S-R(config-if)# no keepalive

D. P4S-R(config-if)# ip address 192.168.10.30 255.255.255.240

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine how to troubleshooting network. We can learn from the question that it is necessary to connect nine users to the public Internet at one time. But the configuration shows that it is impossible to make that happen according to the interface information 192.168.10.30/30. Therefore, it is necessary to modify the mask off code to meet the requirement. 2*4 is more than 9. So the mask bit is 32-4 = 28.

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Mark for Review

Refer to the Pass4sure network shown below. A ping from 192.168.4.1 to 192.168.4.2 was unsuccessful. Which three commands will provide the most useful troubleshooting information?(Choose three)

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- A. show interfaces
- B. show protocols
- C. show frame-relay pvc
- D. show frame-relay map

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Mark for Review

Refer to the Pass4sure network shown below. A ping from 192.168.4.1 to 192.168.4.2 was unsuccessful. Which three commands will provide the most useful troubleshooting information?(Choose three)

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- A. show interfaces
- B. show protocols
- C. show frame-relay pvc
- D. show frame-relay map

## Answer & Explanation

### Correct Answer

A C D

### Explanations

This question is to examine how to troubleshooting network. The command show interface will display the configuration statistic status of all interfaces. Furthermore, this command can be added with other parameters to show the configuration statistic status of some specific interface. The command show interface [type] [module / port] is helpful to solve network problems. The command show protocol displays the specific conditions of the overall situation and interface's layer-3 protocol. The command show frame-relay pvc is used to view all the statistic information, as well as the distributed DLCI to make sure it connects to the corresponding sub-interface. Use the command shutdown to disable interface if the DLCI configuration is correct. And then use the command no shutdown to reactivate the interface. Use the command show frame-relay map to check if there is address mapping with DLCI. Use the command show running-config to view the configuration and use the command frame-relay map to configure the static mapping if there is no address mapping. Check to see if the DLCI and the next hop address are correct. Make sure the next hop address and the protocol address of the local frame relay interface are in the same network.

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Mark for Review

The output of Pass4sure-R is shown below:

```
Pass4sure-R# debug ip rip
RIP protocol debugging is on

<output omitted>

*Mar   1 00:19:36 . 804:   %LINK-5-CHANGED: Interface Ethernet0, changed state to down
*Mar   1 00:19:36 . 805:   RIP: sending v2 flash update to 224.0.0.9 via Ethernet1
(190.172.32.11)
*Mar   1 00:19:36 . 805:   RIP: build flash update entries
*Mar   1 00:19:36 . 809:          190.171.23.0/24 via 0.0.0.0, metric 16, tag 0
*Mar   1 00:19:36 . 813:          190.149.23.32/27 via 0.0.0.0, metric 16, tag 0
*Mar   1 00:19:36 . 813:          190.149.23.64/27 via 0.0.0.0, metric 16, tag 0
*Mar   1 00:19:36 . 817:          190.149.23.96/27 via 0.0.0.0, metric 16, tag 0
*Mar   1 00:19:36 . 821:          190.149.23.128/27 via 0.0.0.0, metric 16, tag 0
*Mar   1 00:19:37 . 789:   %LINEPROT0-5-IPDOWN: Line protocol on Interface Ethernet0,
changed state to down
*Mar   1 00:19:30 . 131:   RIP: sending request  on Ethernet0 to 224.0.0.9
<output omitted>

Pass4sure-R#
```

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Based on the information shown above. Explain how the routes in the table are being affected by the status change on interface Ethernet0.

- A. The Pass4sure-R router is receiving updates about unreachable networks from routers that are connected to interface Ethernet1.
- B. The Pass4sure-R router is poisoning the routes and broadcasting the new path costs via interface Ethernet1.
- C. The Pass4sure-R router is requesting updates for these networks from routers that are connected to interface Ethernet1.
- D. The Pass4sure-R router is poisoning the routes and multicasting the new path costs via interface Ethernet1.

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Mark for Review

```
RIP protocol debugging is on

<output omitted>

*Mar    1 00:19:36 . 804:  %LINK-5-CHANGED: Interface Ethernet0, changed state to down
*Mar    1 00:19:36 . 805:  RIP: sending v2 flash update to 224.0.0.9 via Ethernet1
(190.172.32.11)
*Mar    1 00:19:36 . 805:  RIP: build flash update entries
*Mar    1 00:19:36 . 809:          190.171.23.0/24 via 0.0.0.0, metric 16, tag 0
*Mar    1 00:19:36 . 813:          190.149.23.32/27 via 0.0.0.0, metric 16, tag 0
*Mar    1 00:19:36 . 813:          190.149.23.64/27 via 0.0.0.0, metric 16, tag 0
*Mar    1 00:19:36 . 817:          190.149.23.96/27 via 0.0.0.0, metric 16, tag 0
*Mar    1 00:19:36 . 821:          190.149.23.128/27 via 0.0.0.0, metric 16, tag 0
*Mar    1 00:19:37 . 789:  %LINEPROT0-5-IPDOWN: Line protocol on Interface Ethernet0,
changed state to down
*Mar    1 00:19:30 . 131:  RIP: sending request  on Ethernet0 to 224.0.0.9
<output omitted>

Pass4sure-R#
```

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Based on the information shown above. Explain how the routes in the table are being affected by the status change on interface Ethernet0.

- A. The Pass4sure-R router is receiving updates about unreachable networks from routers that are connected to interface Ethernet1.
- B. The Pass4sure-R router is poisoning the routes and broadcasting the new path costs via interface Ethernet1.
- C. The Pass4sure-R router is requesting updates for these networks from routers that are connected to interface Ethernet1.
- D. The Pass4sure-R router is poisoning the routes and multicasting the new path costs via interface Ethernet1.

## Answer & Explanation

### Correct Answer

D

### Explanations

As you can see from the figure, RIPv2 is operating. When the router finds an interface down, RIPv2 will poisoned this router(metric equals 16 hops) and advertises other interfaces this router through multicast address 224.0.0.9. Actually, RIPv2 is to tell others that this router does not exist.

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Mark for Review

Two Pass4sure routers are connected as shown below:

```
Pass4sure1# sh cdp entry *
-------------------------------------------
Device ID: Pass4sure2
Entry address (es):
   IP address : 10.1.1.2
Platform: cisco 2610 , capabilities: router
Interface : Seriall0/0 ,port ID (outging port): serial0/1
Holdtime :125 sec

<output omitted>
```

The two Pass4sure routers shown above are the only Cisco devices on the network. The serial network between the two devices has a mask of 255.255.255.252 (/30). Given the output that is shown, what three statements are true of these devices? (Choose three)

- A. The Pass4sure1 serial address is 10.1.1.1.
- B. The CDP information was sent by port Serial0/0 of the Pass4sure2 router.
- C. The Pass4sure2 router is a Cisco 2610.
- D. The Pass4sure1 serial address is 10.1.1.2.
- E. The CDP information was received on port Serial0/0 of the Pass4sure1 router.

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```
Pass4sure1# sh cdp entry *
-------------------------------------------
Device ID: Pass4sure2
Entry address (es):
   IP address : 10.1.1.2
Platform: cisco 2610 , capabilities: router
Interface : Serial0/0 ,port ID (outging port): serial0/1
Holdtime :125 sec

<output omitted>
```

The two Pass4sure routers shown above are the only Cisco devices on the network. The serial network between the two devices has a mask of 255.255.255.252 (/30). Given the output that is shown, what three statements are true of these devices? (Choose three)

- A. The Pass4sure1 serial address is 10.1.1.1.
- B. The CDP information was sent by port Serial0/0 of the Pass4sure2 router.
- C. The Pass4sure2 router is a Cisco 2610.
- D. The Pass4sure1 serial address is 10.1.1.2.
- E. The CDP information was received on port Serial0/0 of the Pass4sure1 router.

## Answer & Explanation

### Correct Answer

A C E

### Explanations

This question is to examine the understanding of CDP information. The command show cdp entry can view specific neighboring device information. Through this command, we can view the IP address, hardware platform, and connected ports and IOS version information of specific neighbor.

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Mark for Review

Study the following exhibit carefully, when a packet with a source IP address of 192.168.2.4 and a destination IP address of 10.1.1.4 arrives at the P4S-R router, what will the router do?

```
P4S-R# show ip route
  <output omitted>
Gateway of last resort is not set
    192.168.2.0/28 is subnetted, 6 subnets
D   192.168.2.64 [90/20514560] via 192.168.0.6, 01.22.10, Serial0/1
D   192.168.2.80 [90/20514560] via 192.168.0.6, 01.22.10, Serial0/1
D   192.168.2.32 [90/20514560] via 192.168.9.2, 01.22.10, Serial0/0
D   192.168.2.48 [90/20514560] via 192.168.9.2, 01.22.10, Serial0/0
D   192.168.2.0 [90/30720] via 192.168.1.10, 01:22:10, FastEthernet0/0
D   192.168.2.6 [90/156160] via 192.168.1.10, 01:22:11, FastEthernet0/0
    192.168.9.0/30 is subnetted, 1 subnets
C   192.168.9.0 is directly connected, Serial0/0
    192.168.0.0/30 is subnetted, 1 subnets
C   192.168.0.4 is directly connected, Serial0/1
    192.168.1.0/30 is subnetted, 1 subnets
C   192.168.1.8 is directly connected, FastEthernet0/0
P4S-R#
```

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- A. It will send a packet containing an ARP request out the FastEthernet0/1 interface
- B. It will send the received packet out the Serial0/0 interface
- C. It will send a packet containing an ICMP message out the FastEthernet0/0 interface
- D. It will send a packet containing an EIGRP advertisement out the Serial0/1 interface

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Mark for Review

arrives at the P4S-R router, what will the router do?

```
P4S-R# show ip route
  <output omitted>
Gateway of last resort is not set
   192.168.2.0/28 is subnetted, 6 subnets
D   192.168.2.64 [90/20514560] via 192.168.0.6, 01.22.10, Serial0/1
D   192.168.2.80 [90/20514560] via 192.168.0.6, 01.22.10, Serial0/1
D   192.168.2.32 [90/20514560] via 192.168.9.2, 01.22.10, Serial0/0
D   192.168.2.48 [90/20514560] via 192.168.9.2, 01.22.10, Serial0/0
D   192.168.2.0 [90/30720] via 192.168.1.10, 01:22:10, FastEthernet0/0
D   192.168.2.6 [90/156160] via 192.168.1.10, 01:22:11, FastEthernet0/0
   192.168.9.0/30 is subnetted, 1 subnets
C   192.168.9.0 is directly connected, Serial0/0
   192.168.0.0/30 is subnetted, 1 subnets
C   192.168.0.4 is directly connected, Serial0/1
   192.168.1.0/30 is subnetted, 1 subnets
C   192.168.1.8 is directly connected, FastEthernet0/0
P4S-R#
```

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- A. It will send a packet containing an ARP request out the FastEthernet0/1 interface
- B. It will send the received packet out the Serial0/0 interface
- C. It will send a packet containing an ICMP message out the FastEthernet0/0 interface
- D. It will send a packet containing an EIGRP advertisement out the Serial0/1 interface

## Answer & Explanation

### Correct Answer

C

### Explanations

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Observe this line "D 192.168.2.0[90/30720] via 192.168.1.10,01:22:10 FastEthernet0/0" carefully, we know that 192.168.2.4 are communicating with P4S-R via fa0/0, and the router will send an ICMP message after receiving the packets.

Mark for Review

According to the output from the router provided in the following graphic, which statements are true? (Choose two.)

```
P4S-R# show ip protocol
Routing Protocol is "rip"
    Sending updates every 30 seconds, next due in 4 seconds
    Invalid after 180 seconds, hold down 180, flushed after 240
    Outgoing update filter list for all interfaces is not set
    Incoming update filter list for all interfaces is not set
    Redistributing: rip
    Default version control: send version 1, receive any version
      Interface          Send  Recv  Triggered RIP  Key-chain
      Serial0/0          1     1 2
      Serial0/1          1     1 2
    Automatic network summarization is in effect
    Maximum path: 4
    Routing Information Sources:
      Gateway         Distance      Last Update
      10.168.11.14         120      00:00:22
    Distance: (default is 120)
```

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```
P4S-R# show ip interface brief
Interface              IP-Address      OK? Method Stauts
FastEthernet0/0        192.168.18.1    YES manual  up
Serial0/0              10.168.11.17    YES manual  up
FastEthernet0/1        unassigned      YES NVRAM   administrative down
Serial0/1              192.168.11.21   YES manual  up
```

- A. Router P4S-R is to forward routing updates out the Serial0/1 interface.
- B. Router P4S-R is to receive routing updates on the Serial0/0 interface.
- C. Router P4S-R is to forward routing updates out the FastEthernet0/0 interface.
- D. Router P4S-R is to forward routing updates out the Serial0/0 interface.

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Mark for Review

```
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface         Send  Recv  Triggered RIP  Key-chain
  Serial0/0         1     1 2
  Serial0/1         1     1 2
Automatic network summarization is in effect
Maximum path: 4
Routing Information Sources:
  Gateway         Distance      Last Update
  10.168.11.14         120      00:00:22
Distance: (default is 120)
```

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**P4S-R# show ip interface brief**

| Interface | IP-Address | OK? | Method | Stauts |
|---|---|---|---|---|
| FastEthernet0/0 | 192.168.18.1 | YES | manual | up |
| Serial0/0 | 10.168.11.17 | YES | manual | up |
| FastEthernet0/1 | unassigned | YES | NVRAM | administrative down |
| Serial0/1 | 192.168.11.21 | YES | manual | up |

- A. Router P4S-R is to forward routing updates out the Serial0/1 interface.
- B. Router P4S-R is to receive routing updates on the Serial0/0 interface.
- C. Router P4S-R is to forward routing updates out the FastEthernet0/0 interface.
- D. Router P4S-R is to forward routing updates out the Serial0/0 interface.

## Answer & Explanation

### Correct Answer

B D

### Explanations

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Routing information sources only has 10.168.11.14 which is in the same subnet together with s0/0. This indicates that only s0/0 enables RIP protocol, so only s0/0 will send and receive RIP routing information.

Mark for Review

The following debug was used on a Pass4sure3 router:
Which of the following are true regarding the command output shown in the display? (Choose two.)

```
Pass4sure3# debug ip rip
        RIP protocol debugging is on
        Pass4sure3#
        1d05h: RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.16.1.1)
        1d05h: RIP: build update entries
        1d05h: network 10.0.0.0 metric 1
        1d05h: network 192.168.1.0 metric 2
        1d05h: RIP: sending v1 update to 255.255.255.255 via Serial0/0 (10.0.8.1)
        1d05h: RIP: build update entries
        1d05h: network 172.16.0.0 metric 1
        Pass4sure3#
        1d05h: RIP: received v1 update from 10.0.15.2  on Serial0/0
        1d05h:     192.168.1.0 in 1 hops
        1d05h:     192.168.168.0 in 16 hops (ina ccessible)
```

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- A. There are at least two routers participating in the RIP process.
- B. Pass4sure3 has three interfaces participating in the RIP process
- C. Pass4sure3 ping to 10.0.15.2 will be successful.
- D. Pass4sure3 ping to 192.168.18.2 will be successful

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Mark for Review

The following debug was used on a Pass4sure3 router:
Which of the following are true regarding the command output shown in the display? (Choose two.)

```
Pass4sure3# debug ip rip
        RIP protocol debugging is on
        Pass4sure3#
        1d05h: RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.16.1.1)
        1d05h: RIP: build update entries
        1d05h: network 10.0.0.0 metric 1
        1d05h: network 192.168.1.0 metric 2
        1d05h: RIP: sending v1 update to 255.255.255.255 via Serial0/0 (10.0.8.1)
        1d05h: RIP: build update entries
        1d05h: network 172.16.0.0 metric 1
        Pass4sure3#
        1d05h: RIP: received v1 update from 10.0.15.2  on Serial0/0
        1d05h:     192.168.1.0 in 1 hops
        1d05h:     192.168.168.0 in 16 hops (ina ccessible)
```

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- A. There are at least two routers participating in the RIP process.
- B. Pass4sure3 has three interfaces participating in the RIP process
- C. Pass4sure3 ping to 10.0.15.2 will be successful.
- D. Pass4sure3 ping to 192.168.18.2 will be successful

## Answer & Explanation

### Correct Answer

A C

### Explanations

The Serial0 / 0 interface of the router Pass4sure3 receives RIP update from the address of 10.0.15.2, it is obvious that the destination network of 10.0.15.2 is reachable. At the same time Pass4sure3 will send RIP update from the interface Fa0 / 0 and the interface S0 / 0 of its own, it is known that there are two routers at least running RIP process in the network.

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Mark for Review

The Pass4sure network administrator use the command " show ip protocols", and the exhibit is shown below:

```
Pass4sure# show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 18 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 2, receive version 2
    Interface         Send  Recv  Triggered RIP  Key-chain
    Ethernet0         2     2
    Ethernet1         2     2
  Automatic network summarization is not in effect
  Maximum path: 4
  Routing for Networks:
    190.171.0.0
    190.172.0.0
  Routing Information Sources:
    Gateway         Distance      Last Update
    190.171.23.10        120      00:00:22
    190.171.23.12        120      00:03:30
    190.172.32.10        120      00:00:16
  Distance: (default is 120)

Pass4sure#
```

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Based on the information shown above, what can be determined about routes that are learned from the router at IP address 190.171.23.12?

A. 190.171.23.12 is expected to send an update to Pass4sure router for network 190.172.0.0 in 3 minutes and 30 seconds.

B. If Pass4sure router does not receive an update from 190.171.23.12 in 30 seconds, all routes from that source will be removed from the routing table.

C. If Pass4sure router does not receive an update from 190.171.23.12 in 30 seconds, all routes from that source will be flagged with a hold-down timer.

D. Pass4sure router last received an update from 190.171.23.12 at 3:30 am.

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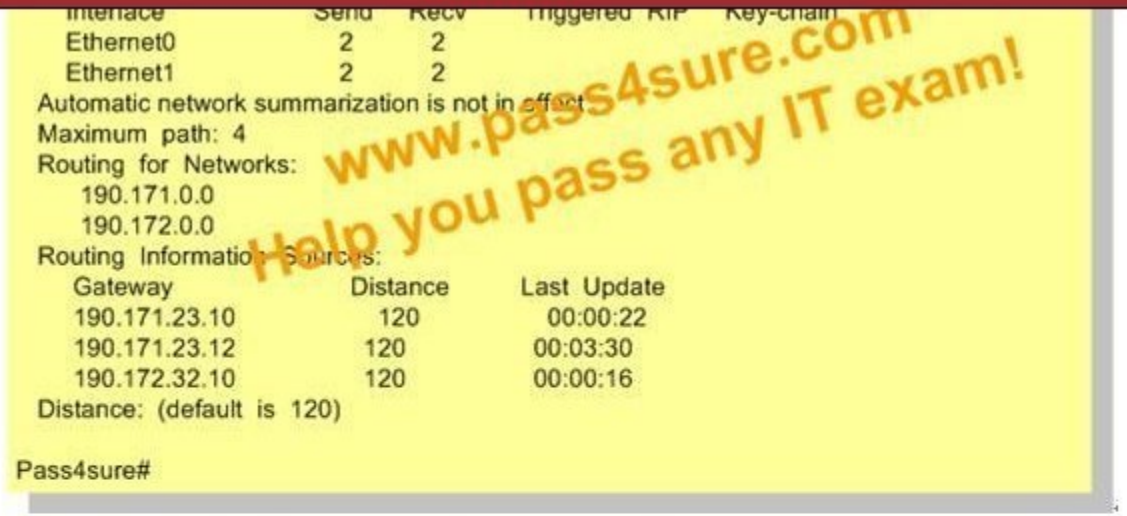


Based on the information shown above, what can be determined about routes that are learned from the router at IP address 190.171.23.12?

A. 190.171.23.12 is expected to send an update to Pass4sure router for network 190.172.0.0 in 3 minutes and 30 seconds.

B. If Pass4sure router does not receive an update from 190.171.23.12 in 30 seconds, all routes from that source will be removed from the routing table.

C. If Pass4sure router does not receive an update from 190.171.23.12 in 30 seconds, all routes from that source will be flagged with a hold-down timer.

D. Pass4sure router last received an update from 190.171.23.12 at 3:30 am.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point related to RIP update timer. RIP notifies the route every 30 seconds; its inhibition cycle is 180 seconds, and its refresh cycle is 240 seconds. As the last update time of 190.171.23.12 is three minutes and 30 seconds ago, there is still no update after 30 seconds and the update timer will time-out. This router will be notified by a measure-unreachable router and it will be deleted from the routing table.

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Mark for Review

The following output was shown on router Pass4sure3:

```
Pass4sure3#show running-config
    <some output text omitted>
  router rip
   network 10.0.0.0
  !
  ip classless
Pass4sure3#show ip route
    <some output text omitted>
  Gateway of last resort is 10.1.5.5 to network 0.0.0.0

      10.0.0.0/24 is subnetted, 2 subnets
  R      10.1.3.0 [120/1] via 10.1.2.2, 00:00:00, Serial0/0
  C      10.1.2.0 is directly connected, Serial0/0
  C      10.1.5.0 is directly connected, Serial0/1
  C      10.1.6.0 is directly connected, FastEthernet0/0
  R*     0.0.0.0/0 [120/1] via 10.1.5.5, 00:00:00, Serial0/1
```

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Refer to the output of the two show commands in the exhibit above. If the Pass4sure network administrator tries to ping host 10.1.8.55 from host 10.1.6.100, how will these ICMP packets be processed by Router Pass4sure3?

- A. The packets will be discarded.
- B. The packets will be routed out the S0/0 interface.
- C. The packets will be routed out the S0/1 interface.
- D. The packets will be routed out the Fa0/0 interface.

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Mark for Review

```
router rip
 network 10.0.0.0
!
ip classless
Pass4sure3#show ip route
  <some output text omitted>
Gateway of last resort is 10.1.5.5 to network 0.0.0.0

    10.0.0.0/24 is subnetted, 2 subnets
R      10.1.3.0 [120/1] via 10.1.2.2, 00:00:00, Serial0/0
C      10.1.2.0 is directly connected, Serial0/0
C      10.1.5.0 is directly connected, Serial0/1
C      10.1.6.0 is directly connected, FastEthernet0/0
R*     0.0.0.0/0 [120/1] via 10.1.5.5, 00:00:00, Serial0/1
```

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Refer to the output of the two show commands in the exhibit above. If the Pass4sure network administrator tries to ping host 10.1.8.55 from host 10.1.6.100, how will these ICMP packets be processed by Router Pass4sure3?

- A. The packets will be discarded.
- B. The packets will be routed out the S0/0 interface.
- C. The packets will be routed out the S0/1 interface.
- D. The packets will be routed out the Fa0/0 interface.

## Answer & Explanation

### Correct Answer

C

### Explanations

Since network 10.1.8.0 does not exist in the routing table, ICMP packet is then sent to default route port S0/1. Default route is a special static route, which will be used when no matching option can be found between the routing tables and package destination address. If there is no default route, the packet whose destination address finds no matching option in the routing table will be discarded. Default route is very effective at certain circumstances, when there is stub network, the default route will greatly simplify router configuration, reducing the workload of administrators and improving network performance. Only one single default route can be configured on Routers.

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Mark for Review

The output of Pass4sure router is shown below:

```
Pass4sure# show ip protocols
Routing protocol is "rip"
    Sending updates every 30 seconds, next due in 8 seconds
    Invaild after 180 seconds, hold down 180, flushed after 240
    Outgoing update filter list for all interfaces is not set
    Incoming update filter list for all interfaces is not set
    <output omitted>

Pass4sure#
```

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After a RIP route is marked invalid on Router Pass4sure, how much time will elapse before that route is removed from the routing table?

- A. 240 seconds
- B. 60 seconds
- C. 90 seconds
- D. 180 seconds

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Mark for Review

The output of Pass4sure router is shown below:

```
Pass4sure# show ip protocols
Routing protocol is "rip"
    Sending updates every 30 seconds, next due in 8 seconds
    Invaild after 180 seconds, hold down 180, flushed after 240
    Outgoing update filter list for all interfaces is not set
    Incoming update filter list for all interfaces is not set
    <output omitted>

Pass4sure#
```

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After a RIP route is marked invalid on Router Pass4sure, how much time will elapse before that route is removed from the routing table?

- A. 240 seconds
- B. 60 seconds
- C. 90 seconds
- D. 180 seconds

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point related to RIP update timer. RIP notifies the route every 30 seconds; its inhibition cycle is 180 seconds, and its refresh cycle is 240 seconds. We can learn from the output information hold down 180 that the refresh timer will time-out after 60 seconds. This router will be notified by a measure-unreachable router and it will be deleted from the routing table.

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Mark for Review

Study the following exhibit carefully, the network technician of your company has just configured two routers. All interfaces are up. But the routers are not sharing their routing tables. Why?

```
P4S-R2# debug ip rip
RIP protocol debugging is on
P4S-R2#RIP: sending v1 update to 255.255.255.255 via Serial0/0
(192.168.2.2)
RIP: build update entries
  network 192.168.3.0 metric 1
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0
(192.168.3.1)
RIP: build update entries
  network 192.168.2.0 metric 1
RIP: ignored v2 packet from 192.168.2.1 (illegal version)
```

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```
P4S-R2#
```

- A. P4S-R1 has an ACL which is blocking RIP version 2.
- B. P4S-R1 has been configured with RIP version 2, and P4S-R2 has been configured with RIP version 1.
- C. P4S-R1 and P4S-R2 are not connected successfully.
- D. P4S-R1 is implementing authentication and P4S-R2 is not.

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```
P4S-R2# debug ip rip
RIP protocol debugging is on
P4S-R2#RIP: sending v1 update to 255.255.255.255 via Serial0/0
(192.168.2.2)
RIP: build update entries
  network 192.168.3.0 metric 1
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0
(192.168.3.1)
RIP: build update entries
  network 192.168.2.0 metric 1
RIP: ignored v2 packet from 192.168.2.1 (illegal version)
```

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```
P4S-R2#
```

A. P4S-R1 has an ACL which is blocking RIP version 2.

B. P4S-R1 has been configured with RIP version 2, and P4S-R2 has been configured with RIP version 1.

C. P4S-R1 and P4S-R2 are not connected successfully.

D. P4S-R1 is implementing authentication and P4S-R2 is not.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point about the renewal of RIPv1 and RIPv2. We can learn from the above-mentioned debug information that P4S-R2 enables the RIPv1 so its interface sends the renewal of Version 1 to P4S-R1. However, the P4S-R1 enables the RIPv2, as P4S-R1 does not add the function of sending and receiving the renewal of Version 1 on the interface, the P4S-R2 is unable to receive the renewed Version 2 of P4S-R1. Therefore, the two cannot share the routing information between them.

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Mark for Review

Which of the following are true regarding the debug output shown in the graphic? (Choose two.)

```
RIP protocol debugging is on
P4S-R#
1d05h: RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.16.1.1)
1d05h: RIP: building update entries
1d05h: network 10.0.0.0 metric 1
1d05h: network 192.168.1.0 metric 2
1d05h: RIP: sending v1 update to 255.255.255.255 via Serial0/0 (10.0.8.1)
1d05h: RIP: building update entries
1d05h: network 172.16.0.0 metric 1
P4S-R#
1d05h: RIP: received v1 update from 10.0.15.2 on Serial0/0
1d05h:    192.168.1.0  in  1  hops
1d05h:    192.168.168.0  in  16  hops (inaccessible)
```

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A. This router was configured with the commands:
P4S-R(config)# router rip
P4S-R(config-router)# network 172.16.0.0
P4S-R(config-router)# network 10.0.0.0

B. This router was configured with the commands:
P4S-R(config)# router rip
P4S-R(config-router)# network 192.168.1.0
P4S-R(config-router)# network 10.0.0.0
P4S-R(config-router)# network 192.168.168.0

C. This router was configured with the commands:
P4S-R(config)# router rip
P4S-R(config-router)# version 2
P4S-R(config-router)# network 172.16.0.0
P4S-R(config-router)# network 10.0.0.0

D. Network 10.0.0.0 will be displayed in the routing table.

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```
1d05h: RIP: building update entries
1d05h: network 172.16.0.0 metric 1
P4S-R#
1d05h: RIP: received v1 update from 10.0.15.2 on Serial0/0
1d05h:    192.168.1.0  in  1  hops
1d05h:    192.168.168.0  in  16  hops (inaccessible)
```

- A. This router was configured with the commands:
  P4S-R(config)# router rip
  P4S-R(config-router)# network 172.16.0.0
  P4S-R(config-router)# network 10.0.0.0
- B. This router was configured with the commands:
  P4S-R(config)# router rip
  P4S-R(config-router)# network 192.168.1.0
  P4S-R(config-router)# network 10.0.0.0
  P4S-R(config-router)# network 192.168.168.0
- C. This router was configured with the commands:
  P4S-R(config)# router rip
  P4S-R(config-router)# version 2
  P4S-R(config-router)# network 172.16.0.0
  P4S-R(config-router)# network 10.0.0.0
- D. Network 10.0.0.0 will be displayed in the routing table.

## Answer & Explanation

### Correct Answer

A D

### Explanations

Routing Information Protocol (rip) is a distance vector protocol that uses hop as a metric. Rip routing metric: rip uses single routing metric (hops) to measure the distance from source network to destination network. From source to destination, every hop is given a value, which is usually 1. When routers receive route update information of new or changed destination network, the metric value will be added 1 and then stored into a routing table, the ip address of the sender will be used as the next hop address.

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Mark for Review

What causes this interface status according to the output of the show interfaces serial 0/0 command? (Choose three.)

```
P4S-R# show interfaces serial 0/0
Serial0/0 is up, line protocol is down
  Hardware is HD64570
  Internet address is 192.168.100.1/24
  MTU 1500 bytes, BW 1544 Kbit, DLY20000 usec,
   reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive set (10 sec)
```

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- A. Attaching no cable to the interface.
- B. Not receiving keepalive messages.
- C. Not setting the clockrate.
- D. The encapsulation type is mismatched.

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Mark for Review

What causes this interface status according to the output of the show interfaces serial 0/0 command? (Choose three.)

```
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Serial0/0 is up, line protocol is down
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  MTU 1500 bytes, BW 1544 Kbit, DLY20000 usec,
   reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive set (10 sec)
```

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- A. Attaching no cable to the interface.
- B. Not receiving keepalive messages.
- C. Not setting the clockrate.
- D. The encapsulation type is mismatched.

## Answer & Explanation

### Correct Answer

B C D

### Explanations

This question is to examine the understanding of the interface.
We can learn from the output information of the chart that:
1. The encapsulation protocol mismatches because the interface is up while the protocol is down;
2. There is no clock frequency configuration to the serial;
3. It is impossible to receive keepalive information because the interface protocol is in the down state.

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Mark for Review

The output of Pass4sure router is shown below:

```
Pass4sure# show ip protocols
Routing Protocol is "ospf 109"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 221.130.149.10
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
     190.171.23.0 0.0.0.255 area 0
     190.171.32.0 0.0.0.255 area 0
  Routing Information Sources:
     Gateway          Distance      Last Update
     208.149.23.66         110      00:20:09
     208.149.23.194        110      00:20:09
     208.149.23.130        110      00:20:09
  Distance: (default is 110)

Pass4sure#  show ip ospf interface
Ethernet1 is up, line protocol is up
   Internet Address 190.172.32.11/24, Area 0
   Process ID 109, Router ID 221.130.149.10, Network Type  BROADCAST, Cost: 10
   Tracsmit Delay is 1 sec, State BDR, Priority 1
   Desingnated Router (ID) 208.149.23.194, Interface address 190.172.32.10
   Backup Designated router (ID) 221.130.149.10, Interface address 190.172.32.11
<output omittede>
```

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Please study the exhibit shown above carefully, Why was Pass4sure router not elected as the designated router?

- A. Pass4sure router has a lower OSPF priority value than the router elected as DR.
- B. The OSPF process ID of Pass4sure router is lower than the process ID of the elected DR.
- C. The interface address of Pass4sure router is a higher value than the interface address of the DR.
- D. Pass4sure router is not advertising the interface with address 221.130.149.10.

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Mark for Review

```
Gateway          Distance      Last Update
208.149.23.66        110         00:20:09
208.149.23.194       110         00:20:09
208.149.23.130       110         00:20:09
Distance: (default is 110)

Pass4sure#  show ip ospf interface
Ethernet1 is up, line protocol is up
   Internet Address 190.172.32.11/24, Area 0
   Process ID 109, Router ID 221.130.149.10, Network Type  BROADCAST, Cost: 10
   Tracsmit Delay is 1 sec, State BDR, Priority 1
   Desingnated Router (ID) 208.149.23.194, Interface address 190.172.32.10
   Backup Designated router (ID) 221.130.149.10, Interface address 190.172.32.11
<output omittede>
```

www.Pass4sure.com Help you!

Please study the exhibit shown above carefully, Why was Pass4sure router not elected as the designated router?

- A. Pass4sure router has a lower OSPF priority value than the router elected as DR.
- B. The OSPF process ID of Pass4sure router is lower than the process ID of the elected DR.
- C. The interface address of Pass4sure router is a higher value than the interface address of the DR.
- D. Pass4sure router is not advertising the interface with address 221.130.149.10.

## Answer & Explanation

### Correct Answer

D

### Explanations

The route advertised by Pass4sure can be known from the output of "show ip protocols" provided in the exhibit
190.171.23.0 0.0.0.255 area 0
190.171.32.0 0.0.0.255 area 0
Not advertising the interface of 221.130.149.10.
In broadcast multi-access networks, the routers perform DR and BDR election, more often than not, after being enabled, the routers on the Ethernet will use Hello protocol to select DR and BDR, and the rest routers will attempt to establish neighbor relationships with DR and BDR. If an interface is not advertised, it will not participate in the election.

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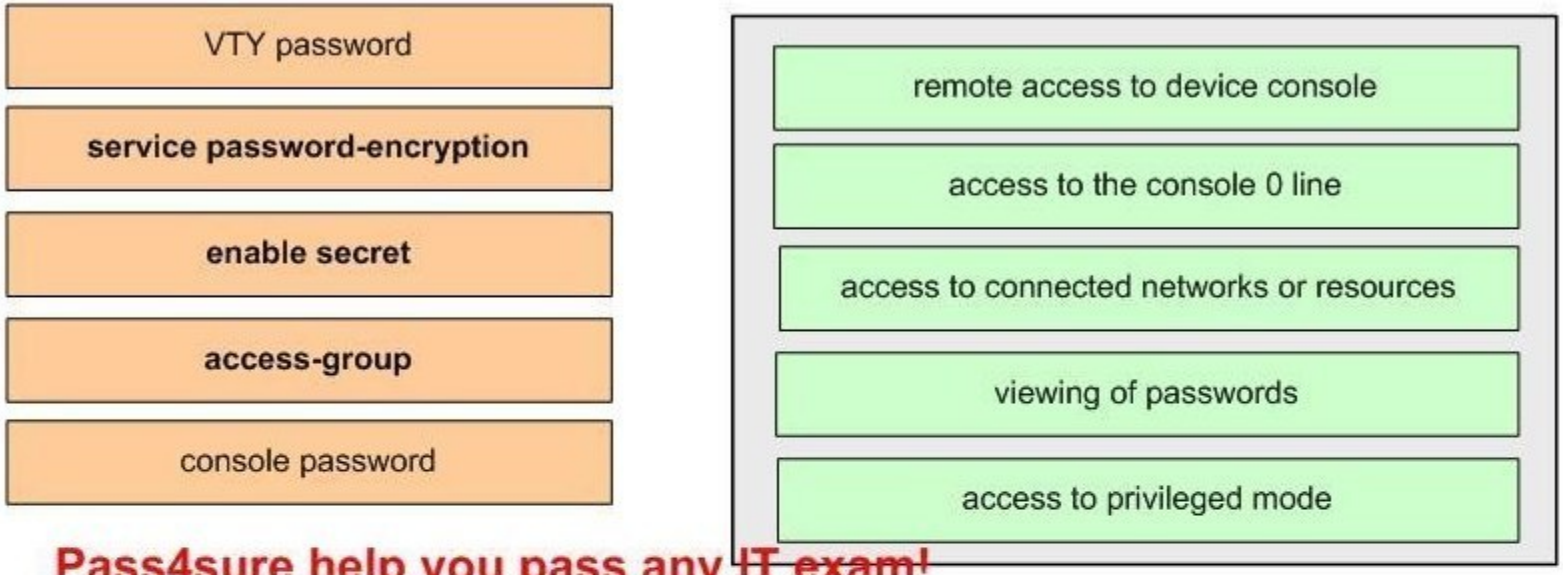
Mark for Review

The left describes the security features, while the right describes the specific security risks.
Drag the items on the left to the proper locations. (Not all items can be used.)

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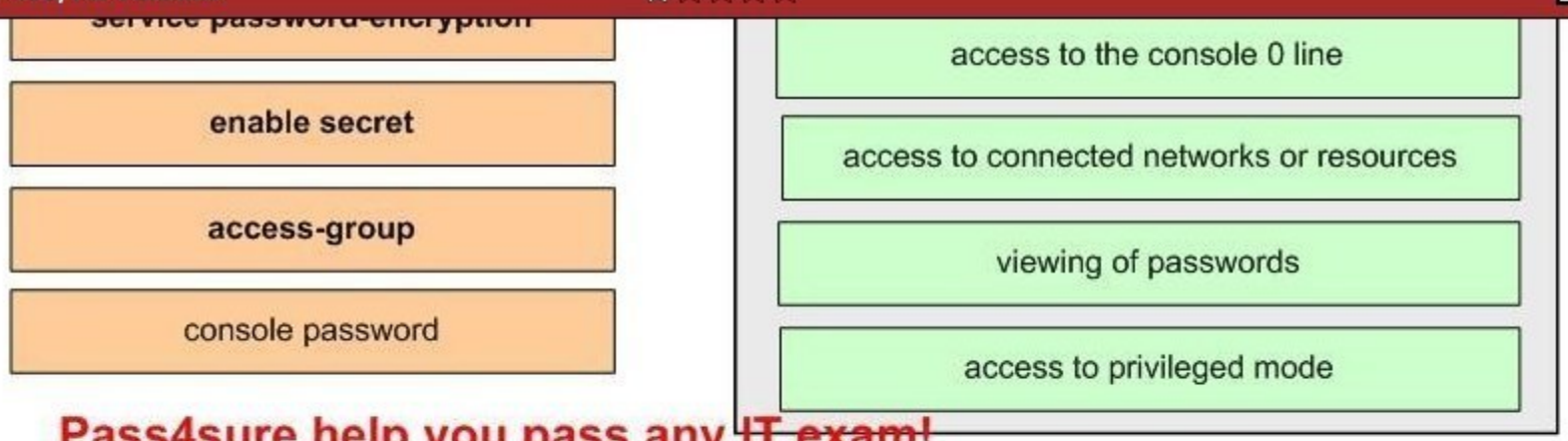
Mark for Review

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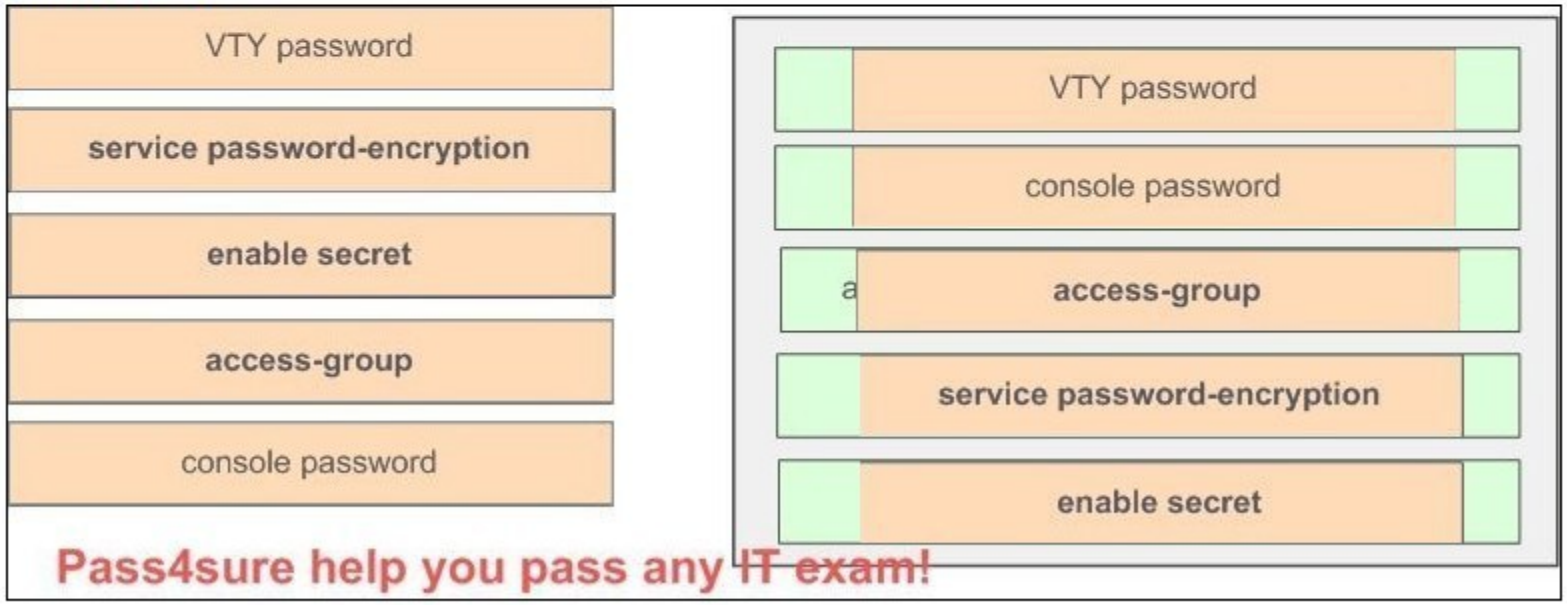
## Answer & Explanation

### Correct Answer

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### Explanations

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This question is to check the applications of encryption on devices in different modes and in different lines. It is easy if you know the concepts of different modes and lines.

Mark for Review

On router Pass4sure1, the Pass4sure network administrator issued the "service password-encryption" command. What is the effect of this configuration command?

A. The enable password will be encrypted.

B. Only passwords configured after the command has been entered will be encrypted.

C. Only the enable secret password will be encrypted.

D. It will encrypt the secret password and remove the enable secret password from the configuration.

E. It will encrypt all current and future passwords.

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Mark for Review

On router Pass4sure1, the Pass4sure network administrator issued the "service password-encryption" command. What is the effect of this configuration command?

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B. Only passwords configured after the command has been entered will be encrypted.

C. Only the enable secret password will be encrypted.

D. It will encrypt the secret password and remove the enable secret password from the configuration.

E. It will encrypt all current and future passwords.

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to examine the understanding of the command service password-encryption. This command is used to encrypt all the passwords stored in the configuration files and the similar data (such as CHAP) so as to avoid the configuration file being seen by ill-intentioned persons and to obtain the plain text of the data. However, the encryption algorithm of the service password-encrypation is a simple Virginia encryption, which is easy to decipher. This mainly aims at the password configuration of the enable password command. The command enable secret uses MD5 algorithm, which is difficult to decipher. But this MD5 algorithm still fails to deal with the dictionary attack. Therefore, do not think the encryption is enough. The best method is to select a long password to avoid the configuration files from obtaining by the outside, with the setting of enable secret and service password-encryption.

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You just entered the following command:

Pass4sure (config)# line console 0

- A. Configure the terminal type.
- B. Enter protocol parameters for a serial line.
- C. Create a password on the console terminal line.
- D. Establish a terminal type 4 connection to a remote host.

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Mark for Review

You just entered the following command:

Pass4sure (config)# line console 0

A. Configure the terminal type.

B. Enter protocol parameters for a serial line.

C. Create a password on the console terminal line.

D. Establish a terminal type 4 connection to a remote host.

## Answer & Explanation

**Correct Answer**

C

**Explanations**

No more information available

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Topic 5 - Explain and select the appropriate administrative tasks required for a WLAN (11 Questions)

Describe standards associated with wireless media (including: IEEE WI-FI Alliance, ITU/FCC)
Identify and describe the purpose of the components in a small wireless network. (Including: SSID, BSS, ESS)
Identify the basic parameters to configure on a wireless network to ensure that devices connect to the correct access point
Compare and contrast wireless security features and capabilities of WPA security (including: open, WEP, WPA-1/2)
Identify common issues with implementing wireless networks. (Including: Interface, missconfiguration)

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Mark for Review

A new Pass4sure is using an IEEE 802.11b a wireless LAN. What is the maximum data rate specified for this WLAN?

- A. 1000 Mbps
- B. 11 Mbps
- C. 16 Mbps
- D. 100 Mbps
- E. 10 mbps

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Mark for Review

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- A. 1000 Mbps
- B. 11 Mbps
- C. 16 Mbps
- D. 100 Mbps
- E. 10 mbps

## Answer & Explanation

### Correct Answer

B

### Explanations

Based on the successful IEEE 802.11b standard, the maximum data rate of Wi-Fi technology has reached 11 Mbps. When it was adopted in 1999, FCC prohibits the use of OFDM in the 2.4 GHz frequency band.

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Mark for Review

802.1b is being utilized in the Pass4sure wireless network. Which spread spectrum technology does the 802.1b standard define for operation in this network?

- A. IR
- B. DSSS
- C. FHSS
- D. DSSS and FHSS
- E. IR, FHSS, and DSSS

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Mark for Review

802.1b is being utilized in the Pass4sure wireless network. Which spread spectrum technology does the 802.1b standard define for operation in this network?

A. IR

B. DSSS

C. FHSS

D. DSSS and FHSS

E. IR, FHSS, and DSSS

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point about the wireless.
The differences of performance and capacity of the Wireless local area network mainly depends on the applied FHSS or DSSS, as well as the applied modulation type, to achieve. Up to now, if we compare the parameters of existing products in detail, we can see that the DSSS technology shows relative advantage in the applications which require optimum reliability, while FHSS technology plays relative advantage in the applications which require low cost. In the selection of wireless products, we have to pay attention which spread-spectrum technology, DSSS or FHSS, is chosen by manufacturers. We must prudence the market positioning of end view products because they can solve the transmission capability and characteristic of the wireless LAN, including anti-interference ability, usable distance range, bandwidth size, and the data transfer size.
Generally, DSSS uses the full bandwidth to transmit data to quicken its transmission speed, which means a greater potential to higher transmission frequency in the future. DSSS technology is applicable to a fixed environment, or to applications which have higher quality requirement, therefore, mostly applications, such as wireless plant, wireless hospital, network community, branch school networking, are applied to DSSS wireless technology products.FHSS is mostly used in fast-moving endpoint, for example, mobile phone applies FHSS technology in wireless transmission technology part. Due to the small FHSS transmission range, though under the same transmission environment, the required technology devices of FHSS is more than those of DSSS and the price of FHSS will probably be higher as a whole. As to the current business requirement, high-speed mobile endpoint applications are relatively less, while mostly pay attention to the transmission rate, as well as the stability of transmission. Therefore, the DSSS technology will be the mainstream of the future development of wireless networking products.
Current needs, the less, and are more focused on, and the, so technology in DSSS.

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You need to add a wireless access point to a new Pass4sure office. Which additional configuration step is necessary in order to connect to an access point that has SSID broadcasting disabled?

A. Set the SSID in the client software to public.

B. Set the SSID in the client software to public.

C. Set the SSID value on the client to the SSID configured on the AP.

D. Configure open authentication on the AP and the client.

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D. Configure open authentication on the AP and the client.

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about the wireless. While implementing SSID, AP and client must use the same SSID value to authenticate. By default, access point will broadcast the SSID value to announce its existence. Basically, everyone is allowed to access this AP. Initially, so as to prevent malicious access to AP, the administrator will shut the SSID broadcast function, which is generally called SSID cloaking. If the beaconing broadcast on the AP is prohibited, the client has to be configured with SSID corresponding with AP.

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Mark for Review

Two Pass4sure workers have established wireless communication directly between their wireless laptops. What type of wireless topology has been created by these Pass4sure employees?

- A. BSS
- B. SSID
- C. IBSS
- D. ESS

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Mark for Review

Two Pass4sure workers have established wireless communication directly between their wireless laptops. What type of wireless topology has been created by these Pass4sure employees?

A. BSS

B. SSID

C. IBSS

D. ESS

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about the understanding of wireless. BSS is the abbreviation of Base Station Subsystem, which is the Base Station Subsystem network module in GSM network. The BSS in WLAN is a special Ad-hoc LAN application called Basic Service Set (BSS). A series of computers set the same BSS name to be a group, and this BSS is the so-called BSSID. SSID (Service Set IDentifier) technology can divide the wireless local area network into several sub-networks which need different identities to authenticate and each sub-network requires separate ID authentication. Only the authenticated users can access the corresponding sub-networks to prevent unauthorized user from accessing to the network. SSID, which is generally advertised by AP, can have up to 32 characters. NIC has been configured with different SSIDs to access different networks and the SSID of the current region can be checked by the XP built-in scanning feature. For security reasons, there is no need to broadcast SSID. But the user has to manually set the SSID to access the corresponding network. Independent Basic Service Set is a wireless topology, which is an IEEE802.11 standard model. IBSS mode, also known as the Independent Broadcasting satellite service or ad hoc mode, is designed for point-to-point connection. IBSS mode does not have wireless infrastructure backbone, but requires at least 2 sets wireless stations in ad hoc mode, allowing users to spontaneously form a wireless local area network. In order to share documents, such as presentation charts and spreadsheets, we can easily and quickly build a small wireless local area network in the conference room with handy NIC in ad hoc way. ESS (Extended Service Set) DS and a number of BSSs allow IEEE802.11 to constitute a wireless network regardless of its size and complexity, the network of which is called Extended Service Set network by IEEE802.11b. Similarly, ESS also has an identifier name that is, ESSID.

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Mark for Review

As the Pass4sure network administrator, you need to add a wireless access point to a new Pass4sure office, which additional configuration step is necessary in order to connect to an access point that has SSID broadcasting disabled?

A. Set the SSID value in the client software to public.

B. Configure open authentication on the AP and the client.

C. Set the SSID value on the client to the SSID configured on the AP.

D. Configure MAC address filtering to permit the client to connect to the AP.

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C. Set the SSID value on the client to the SSID configured on the AP.

D. Configure MAC address filtering to permit the client to connect to the AP.

## Answer & Explanation

### Correct Answer

C

### Explanations

SSID□Service Set Identifier□can also be written as ESSID, which is used to distinguish different networks and has 32 characters at most , WLAN cards set up different SSID to enter different networks. SSID is usually broadcast by AP, you can view SSID of the present area through XP built-in scanning feature .Taking security into consideration, SSID can be not broadcast, meanwhile users need to set up SSID manually to enter the appropriate network. In simple terms, SSID is the name of a local area network, only those computers that set up the same SSID values can communicate with each other.

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Mark for Review

A single 802.11g access point has been configured and installed in the center of a square shaped Pass4sure office. A few wireless Pass4sure users are experiencing slow performance and drops while most users are operating at peak efficiency. From the list below, what are three likely causes of this problem? (Choose three)

- A. mismatched TKIP encryption
- B. null SSID
- C. cordless phones
- D. mismatched SSID
- E. metal file cabinets
- F. antenna type or direction

## Answer & Explanation

### Correct Answer

C E F

### Explanations

A. Cordless phones may interfere in wireless NIC.
B. mismatched SSID
SSID□Service Set Identifier□can also be written as ESSID, which is used to distinguish different networks and has 32 characters at most , WLAN cards set up different SSID to enter different networks. SSID is usually broadcast by AP, you can view SSID of the present area through XP built-in scanning feature .Taking security into consideration, SSID can be not broadcast, meanwhile users need to set up SSID manually to enter the appropriate network. In simple terms, SSID is the name of a local area network; only those computers that set up the same SSID values can communicate with each other. If SSID fails to match, wireless will fail in connection, and no wireless network inefficiency will appear.
C. metal file cabinets may have a certain amount of shielding
D. antenna type or direction
Antenna type and direction may affect wireless network.

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Mark for Review

What are three basic parameters to configure on a wireless access point? (Choose three.)

- A. SSID
- B. RTS/CTS
- C. RF channel
- D. authentication method

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Mark for Review

What are three basic parameters to configure on a wireless access point? (Choose three.)

- A. SSID
- B. RTS/CTS
- C. RF channel
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## Answer & Explanation

### Correct Answer

A C D

### Explanations

SSID□Service Set Identifier□can also be written as ESSID, which is used to distinguish different networks. It has 32 characters at most, WLAN cards set up different SSID to enter different networks. SSID is usually broadcast by AP or wireless routers , you can view SSID of the present area through XP built-in scanning feature .Taking security into consideration, SSID can be not broadcast, meanwhile users need to set up SSID manually to enter the appropriate network. Simply speaking, SSID is the name of a local area network, only those computers that set up the same SSID value can communicate with each other.

RF is an acronym for Radio Frequency. It is the electromagnetic frequency that can be radiated to space, frequency range from 300 KHz to 30GHz.

RTS/CTS protocol (Request To Send /Clear To Send) is protocol that requests to send / allows to send, which is equivalent to a handshake protocol, mainly used to deal with "hidden terminal" problems. " Hidden Stations ": base station A sends a message to base station B, base C sends message to B too because it fails to detect the station A. so both A and C send signals to B at the same time, conflict occurs, and the result is both messages are lost.

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Mark for Review

In an effort to increase security within the Pass4sure wireless network, WPA is being utilized. Which two statements shown below best describe the wireless security standard that is defined by WPA? (Choose two)

- A. It requires use of an open authentication method.
- B. It specifies use of a static encryption key that must be changed frequently to enhance security.
- C. It specifies the use of dynamic encryption keys that change each time a client establishes a connection.
- D. It requires that all access points and wireless devices use the same encryption key.
- E. It includes authentication by PSK.

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- D. It requires that all access points and wireless devices use the same encryption key.
- E. It includes authentication by PSK.

## Answer & Explanation

### Correct Answer

C E

### Explanations

This question is to examine the knowledge point about WPA of the Wireless. WPA is a standard-based interoperable WLAN security-enhanced solution, which greatly enhances the data protection and access control level of the existing and future wireless LAN systems.

WPA originates from IEEE802.11i standard which is under development and will maintain the forward compatibility with it. If the WPA is deployed appropriately, it will guarantee the data of WLAN users are protected and only authorized users can access the WLAN network. As WEP has been proved to be insecure, WPA will provide users with a temporary solution before the perfection of 802.11i protocol. The data encryption of the standard uses Temporary Key Integrity Protocol. There are two models of authentication, one is to authenticate with the usage of 802.1x protocol, and the other is called Pre-Shared Key mode.

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Mark for Review

You work as a network technician for Pass4sure and are responsible for this network. And you have chosen WPA over WEP in their wireless network. What is one reason why WPA encryption is preferred over WEP in this network?

A. WPA key values remain the same until the client configuration is changed.

B. A WPA key is longer and requires more special characters than the WEP key.

C. The access point and the client are manually configured with different WPA key values.

D. The values of WPA keys can change dynamically while the system is used.

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D. The values of WPA keys can change dynamically while the system is used.

## Answer & Explanation

### Correct Answer

D

### Explanations

WEP is security mechanism that encrypts grouping information between Access Point and Client in "RC4" mode. Password is easily cracked. The encryption key that WEP uses includes the 40 bits (104 bits) general key that both receiver and sender predefined, and the 24 bits encryption key (IV key) that sender defined for each group. However, in order to tell communication object the IV key, IV key is embedded in the grouping information directly and sent out without encryption. If wiretapping, collecting some certain IV key grouping information and then analyze, even secret general key will be worked out.
WPA is a new mechanism that takes up basic WEP principle while solves its shortcomings. With WPA, even if you collect grouping information and analyze it, you will never work out its general key.

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Mark for Review

You need to add a wireless access point to a new Pass4sure office. Which additional configuration step is necessary in order to connect to an access point that has SSID broadcasting disabled?

A. Configure open authentication on the AP and the client

B. Set the SSID value in the client software to public

C. Set the SSID value on the client to the SSID configured on the AP

D. Configure MAC address filtering to permit the client to connect to the AP

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D. Configure MAC address filtering to permit the client to connect to the AP

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about the Wireless. While implementing SSID, the AP and the client must use the same SSID value to authenticate. By default, the access point advertises the SSID value to announce its existence, which basically allows everyone to access this IP. At first, so as to prevent malicious devices from accessing AP, the administrator will shut the SSID advertisement function on AP, which is generally called SSID cloaking. If the advertisement of beaconing on AP is prohibited, one has to manually configure the SSID of the client to accord with the AP.

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Mark for Review

Which of the following data network would you implement if you wanted a wireless network that had a relatively high data rate, but was limited to very short distances?

- A. Broadband personal comm. Service (PCS)
- B. Broadband circuit
- C. Infrared
- D. Spread spectrum

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Mark for Review

Which of the following data network would you implement if you wanted a wireless network that had a relatively high data rate, but was limited to very short distances?

A. Broadband personal comm. Service (PCS)

B. Broadband circuit

C. Infrared

D. Spread spectrum

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point related to the Wireless. Infrared wireless communication has the advantages of low power consumption, low price, low electromagnetic interference and high confidentiality, etc, which is widely used in wireless communication.

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Topic 6 - Identify security threats to a network and describe general methods to mitigate those threats (5 Questions)

Describe today's increasing network security threats and explain the need to implement a comprehensive security policy to mitigate the threats
Explain general methods to mitigate common security threats to network devices, hosts, and applications
Describe the functions of common security appliances and applications
Describe security recommended practices including initial steps to secure network devices

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Mark for Review

If you are a security administrator of the enterprise network ,you will see many different types of attacks that threaten the security of network. Which type of attack is characterized by a flood of packets that are requesting a TCP connection to a server?

- A. denial of service
- B. Computer Virus
- C. reconnaissance
- D. Trojan horse

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Mark for Review

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- A. denial of service
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- D. Trojan horse

## Answer & Explanation

### Correct Answer

A

### Explanations

DOS is short for Denial of Service, the activity to attack DoS is called DoS attack , its purpose is to make computers or networks be not able to provide normal services. The most common DoS attacks are computer network bandwidth attack and connectivity attack. Bandwidth attack refers to attacking network by using excessive traffic to exhaust all the available network resources , the result is that the legitimate user requests can not cross; while connectivity attack refers to attacking computers by use of a large number of connection requests to exhaust all the available operational system resources ,resulting in computers being unable to deal with the legitimate user requests.

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Mark for Review

You need to create a security plan for the Pass4sure network. What should be part of a comprehensive network security plan?

A. Allow users to deployment their own approach to network access.

B. Physically secure network equipment from potential access by unauthorized individuals.

C. Allow users to develop their own approach to network security.

D. Delay deployment of software patches and updates until their effect on end-user equipment is well known and widely reported.

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B. Physically secure network equipment from potential access by unauthorized individuals.

C. Allow users to develop their own approach to network security.

D. Delay deployment of software patches and updates until their effect on end-user equipment is well known and widely reported.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point related to network security. Aiming at the disadvantage of traditional network access control technology, the present late-model network access control technology turns its control objective into computer terminal. Proceeding from computer terminal, perform safety inspection to the host computer which accesses to the in-house network through the safety measures appointed by administrator, and automatically denies insecure computers to access the in-house network till they accord with the in-house network safety measures. At present, the relatively better secure network access control technologies include NAC of Cisco, NAP of Microsoft, UAC of Juniper, and TNC of TCG, etc.

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The Pass4sure administrator is concerned with enhancing network security. To do this, what are two recommended ways of protecting network device configuration files from outside security threats on the network?(Choose two.)

- A. Allow unrestricted access to the console or VTY ports.
- B. Use a firewall to restrict access from the outside to the network devices.
- C. Always use Telnet to access the device command line because its data is automatically encrypted.
- D. Use SSH or another encrypted and authenticated transport to access device configurations.

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Mark for Review

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- C. Always use Telnet to access the device command line because its data is automatically encrypted.
- D. Use SSH or another encrypted and authenticated transport to access device configurations.

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to examine the knowledge point related to network security. Internet firewall is a or a group of systems, which will enhance the in-house network security of a mechanism. It decides which in-house services can be accessed by the outside, which people from the outside can access what in-house services and which outside services can be accessed by in-house personnel. Firewall is an Internet customs inspection post. So as to keep the effectiveness of the firewall, all the information in or out of the Internet must flow through the firewall and being checked by it. Only the authorized data is allowed to pass through the firewall and the firewall itself must be free of infiltration. Unfortunately, once the firewall system has been break through or roundabout, it is incapable of providing any protection.

SSH is the abbreviation of Secure Shell, which is established by the Network Working Group of IETF. SSH is a secure protocol which is based on application layer and transport layer.

The traditional web server applications, such as FTP,POP and Telnet, are insecure in nature because they transmit data, user account and user password on Internet by plain text, which is easily attacked by the man-in-the-middle. That is a person or a computer imitated to be a real server to receive the data that a user transmitted to the server, then, by imitating a user, transmitted the data to the real server. So far, SSH is a reliable protocol, which is specially designed to provide security for the telnet session and other network services. The usage of SSH protocol can effectively prevent information leakage during tele-management. SSH is helpful to encrypt all the transmitting data, as well as to prevent DNS and IP spoofing. Another advantage of SSH is that its transmitted data are under compression, which is helpful to quicken the transmit speed. SSH has many functions, which can not only replace Telnet but also provides a secure channel for FTP,POP and even PPP.

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Which two security appliances will you use in a network? (Choose two.)

- [ ] A. IOS
- [ ] B. IDS
- [ ] C. IOX
- [ ] D. IPS

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Mark for Review

Which two security appliances will you use in a network? (Choose two.)

- A. IOS
- B. IDS
- C. IOX
- D. IPS

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to examine the knowledge point related to network security. IDS is the abbreviation of Intrusion Detection Systems. Technically, it means the detection of the network and system's operational state according to some security policy to find all kinds of attempted attacks, aggressive behaviors or aggressive results as possible, so as to protect the confidentiality, integrality and usability of the network system resources. Unlike firewall, Intrusion Detection Systems is a snoop device, which is not cross connected to any link circuit and it works with or without the network flow. Therefore, the only requirement of the IDS deployment is that the IDS should be connected to the link circuit where all the concerned flows are passing through. The concerned flow here means the access flow from the high risk network area and the network message which needs to be counted and watched. As to the beginners, IPS (Intrusion Prevention System) locates between firewall and network devices. Therefore, as long as the attack has been detected, ISP will stop the malicious communication from spreading before it reaches to other places of the Internet. IDS only perform the function as an alarm outside the network, but not as a defense before it. The way that ISP detects attack is also different from IDS. At present, there are many kinds of IPS systems, and their applied-technology is different. However, IPS systems generally rely on the detection of data packet. IPS will check the network accessed data packets to make sure their real intention, and then decides whether allows them to access your network or not.

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Refer to the following protocols, which one can create a secure terminal connection to a remote network device?

- A. Telnet
- B. SSH
- C. WEP
- D. SNMPv1

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Mark for Review

Refer to the following protocols, which one can create a secure terminal connection to a remote network device?

- A. Telnet
- B. SSH
- C. WEP
- D. SNMPv1

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point about the secure remote access protocol. SSH is the abbreviation of Secure Shell, which is established by the Network Working Group of IETF. SSH is a secure protocol which is based on application layer and transport layer. The traditional web server applications, such as FTP□POP and Telnet, are insecure in nature because they transmit data, user account and user password on Internet by plain text, which is easily attacked by the man-in-the-middle. That is a person or a computer imitated to be a real server to receive the data that a user transmitted to the server, then, by imitating a user, transmitted the data to the real server. So far, SSH is a reliable protocol, which is specially designed to provide security for the telnet session and other network services. The usage of SSH protocol can effectively prevent information leakage during tele-management. SSH is helpful to encrypt all the transmitting data, as well as to prevent DNS and IP spoofing. Another advantage of SSH is that its transmitted data are under compression, which is helpful to quicken the transmit speed. SSH has many functions, which can not only replace Telnet but also provides a secure channel for FTP□POP and even PPP.

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Topic 7 - Implement, verify, and troubleshoot NAT and ACLs in a medium-size Enterprise branch office network. (36 Questions)

Describe the purpose and types of ACLs
Configure and apply ACLs based on network filtering requirements.(including: CLI/SDM)
Configure and apply an ACLs to limit telnet and SSH access to the router using (including: SDM/CLI)
Verify and monitor ACLs in a network environment
Troubleshoot ACL issues
Explain the basic operation of NAT
Configure NAT for given network requirements using (including: CLI/SDM)
Troubleshoot NAT issues

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Mark for Review

An extended access list needs to be applied to a Pass4sure router. What three pieces of information can be used in an extended access list to filter traffic? (Choose three)

- A. protocol
- B. source switch port number
- C. TCP or UDP port numbers
- D. VLAN number
- E. source IP address and destination IP address

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Mark for Review

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- A. protocol
- B. source switch port number
- C. TCP or UDP port numbers
- D. VLAN number
- E. source IP address and destination IP address

## Answer & Explanation

### Correct Answer

A C E

### Explanations

This question is to examine the knowledge point about the widening access list. The widening access control list is applicable to filter traffic based on protocols as well as source and destination IP addresses. Protocol is a variable quantity, which can search for matching in protocol field of IP header. The optional keywords are eigrp, gre, icmp, igrp, ip, ipinip, nos, ospf, tcp and udp. One can still use an integer from 0 to 255 to represent the IP protocol. IP is a general keyword, which can match any and all IP protocols.

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When are packets processed by an inbound access list?

- A. before they are routed to an outbound interface
- B. after they are routed to an outbound interface
- C. before and after they are routed to an outbound interface
- D. after they are routed to an outbound interface but before being placed in the outbound queue

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Mark for Review

When are packets processed by an inbound access list?

A. before they are routed to an outbound interface

B. after they are routed to an outbound interface

C. before and after they are routed to an outbound interface

D. after they are routed to an outbound interface but before being placed in the outbound queue

## Answer & Explanation

### Correct Answer

A

### Explanations

For inbound ACL, before the router forwards groups to other interface, the router will compare group and interface ACL. ACL statement will process in top-down order, until a match item is found; the follow-up statement will no longer be handled. If no matching item is found in ACL, groups will be discarded (implicit refusal).

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Mark for Review

In order to enhance the security of pass4sure enterprise network, Pass4sure network administrators use ACL(Access Control lists). What are two reasons that the Pass4sure network administrator would use access lists?

- To control vty access into a router
- To filter traffic that originates from the router
- To filter traffic as it passes through a router
- To prevent the virus from entering network

1

2

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Mark for Review

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- To control vty access into a router
- To filter traffic that originates from the router
- To filter traffic as it passes through a router
- To prevent the virus from entering network

1

2

## Answer & Explanation

### Correct Answer

- To control vty access into a router
- To filter traffic that originates from the router
- To filter traffic as it passes through a router
- To prevent the virus from entering network

- To control vty access into a router
- To filter traffic as it passes through a router

### Explanations

This question is to examine the knowledge point about the function of ACL.
The functions of the ACL are mainly the following points:
1. To limit network traffic and improve network performance;
2. To supply the control methods towards communication flows;
3. The basic method to supply secure network access;
4. To decide which communication flow types to be transmitted or to be blocked on router ports.

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Mark for Review

An access list was written with the four statements shown in the graphic. Which single access list statement will combine all four of these statements into a single statement that will have exactly the same effect?

```
access-list 10 permit 172.29.16.0 0.0.0.255
access-list 10 permit 172.29.17.0 0.0.0.255
access-list 10 permit 172.29.18.0 0.0.0.255
access-list 10 permit 172.29.19.0 0.0.0.255
```

A. access-list 11 permit 172.29.161.0 0.0.0.255

B. access-list 11 permit 172.29.161.0 0.0.1.255

C. access-list 10 permit 172.29.16.0 0.0.3.255

D. access-list 11 permit 172.29.161.0 0.0.15.255

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access-list 10 permit 172.29.16.0 0.0.0.255
access-list 10 permit 172.29.17.0 0.0.0.255
access-list 10 permit 172.29.18.0 0.0.0.255
access-list 10 permit 172.29.19.0 0.0.0.255
```

A. access-list 11 permit 172.29.161.0 0.0.0.255

B. access-list 11 permit 172.29.161.0 0.0.1.255

C. access-list 10 permit 172.29.16.0 0.0.3.255

D. access-list 11 permit 172.29.161.0 0.0.15.255

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about ACL. We can learn from the above-mentioned list information that ACL allows the traffic of the 172.29.16.0-172.29.19.0 segment. This question can be regarded as a super net problem. As the mask bits of the four segments are the same, they are collected to 172.29.16.0/22. Therefore, the usage of access-list 10 permit 172.29.16.0 0.0.3.255 can also achieve the function of those four ACLs.

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Mark for Review

You are securing a network for Pass4sure and want to apply an ACL (access control list) to an interface of a router. Which one of the following commands would you use?

- A. permit access-list 101 out
- B. ip access-group 101 out
- C. apply access-list 101 out
- D. access-class 101 out

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Mark for Review

You are securing a network for Pass4sure and want to apply an ACL (access control list) to an interface of a router. Which one of the following commands would you use?

- A. permit access-list 101 out
- B. ip access-group 101 out
- C. apply access-list 101 out
- D. access-class 101 out

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge point of how to transfer ACL. The access list will not be processed if the data packet has not been sent to it through transferring command. This transferring command ip access-group access-list-number {in|out} defines how to use access list. Configure this command on the interface can create safety filter or traffic filter, as well as apply to through flow and outflow. The default value is outbound if the keywords in or out is not designated.

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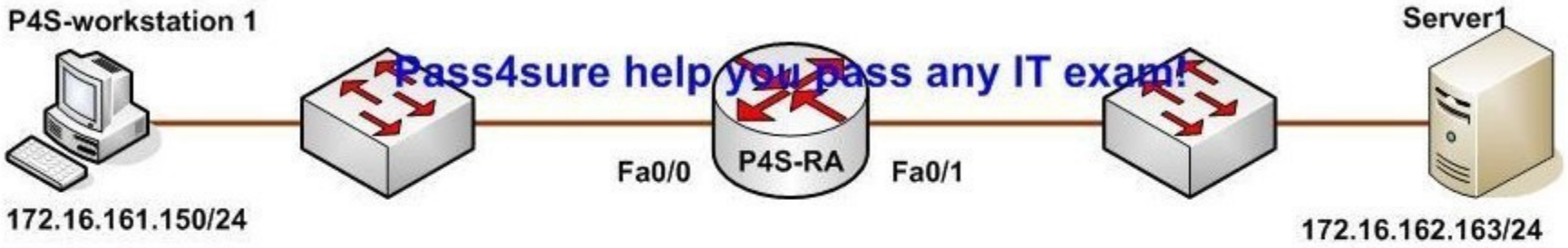
Mark for Review

Refer to the graphic. It has been decided that P4S-workstation1 should be denied access to Server1. Which of the following commands are required to prevent only P4S-workstation1 from accessing Server1 while allowing all other traffic to flow normally? (Choose two.)




- A. P4S-RA(config)# interface fa0/0
  P4S-RA(config-if)# ip access-group 101 out
- B. P4S-RA(config)# interface fa0/0
  P4S-RA(config-if)# ip access-group 101 in
- C. P4S-RAconfig)# access-list 101 deny ip host 172.16.161.150 host 172.16.162.163
  P4S-RA(config)# access-list 101 permit ip any any
- D. P4S-RA(config)# access-list 101 deny ip 172.16.161.150 0.0.0.255 172.16.162.163 0.0.0.0
  P4S-RA(config)# access-list 101 permit ip any any

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Mark for Review

C. P4S-RAconfig)# access-list 101 deny ip host 172.16.161.150 host 172.16.162.163
P4S-RA(config)# access-list 101 permit ip any any

D. P4S-RA(config)# access-list 101 deny ip 172.16.161.150 0.0.0.255 172.16.162.163 0.0.0.0
P4S-RA(config)# access-list 101 permit ip any any

## Answer & Explanation

### Correct Answer

B C

### Explanations

Taking security into consideration, Pass4sure will implement access control on router P4S-RA. When the traffic coming from P4S-workstation1 to Server1 crosses the router P4S-RA, it will be refused, but all other traffic than this can cross P4S-RA normally. Therefore, in the configuration of access list, it is needed to deny datagrams from the specified source to the specified destination and allow all other datagrams to cross.

Specifications to configure access control list(ACL).
The standard Access Control List should be placed near to the source.
Extended Access Control List should be placed near to the destination.
There are two solutions to issue this problem:
Apply access list to interface fa0/0 in the inbound direction.
P4S-RA(config)# access-list 101 deny ip host 172.16.161.150 host 172.16.162.163
P4S-RA(config)# access-list 101 permit ip any any
P4S-RA(config)# interface fa0/0
P4S-RA(config-if)# ip access-group 101 in
P4S-RA(config-if)# exit
Apply access list to interface fa0/1 in the outbound direction.
P4S-RA(config)# access-list 101 deny ip host 172.16.161.150 host 172.16.162.163
P4S-RA(config)# access-list 101 permit ip any any
P4S-RA(config)# interface fa0/1
P4S-RA(config-if)# ip access-group 101 out
P4S-RA(config-if)# exit
Both methods will be used in the actual work. But P4S will advise you to use the first method on the basis of savings routing resources. However, in the examineination environment, please complete the steps of answering questions according to options provided. We remind you that the examineination environment and the actual environment are not exactly the same

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Mark for Review

As the Pass4sure network administrator, you have been instructed to prevent all traffic originating on the Pass4sureA LAN from entering the Pass4sureB router. Which the following command would implement the access list on the interface of the Pass4sureB router?

- A. access-list 101 in
- B. access-list 101 out
- C. ip access-group 101 in
- D. ip access-group 101 out

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Mark for Review

As the Pass4sure network administrator, you have been instructed to prevent all traffic originating on the Pass4sureA LAN from entering the Pass4sureB router. Which the following command would implement the access list on the interface of the Pass4sureB router?

- A. access-list 101 in
- B. access-list 101 out
- C. ip access-group 101 in
- D. ip access-group 101 out

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine how to use transferring access list. Use the command ip access-group access-list-number {in|out} to apply the regulations to the interface. Use the keyword in to filter the message received on interface, and use the keyword out to filter the message transmitted on interface. According to the traffic regulation of reducing unnecessary communication flows, the network administrator should try hard to configure the ACL as close as the denied communication flows's source place.

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Mark for Review

Drag Drop

A host with the address of 192.168.125.34/27 needs to be denied access to all hosts outside its own subnet.To accomplish this, complete the command in brackets,[access-list 100 deny *protocol address mask* any]. According to the guides drag the contents to relevant modules. **Pass4sure help you pass any IT exam!**

- 0.0.0.0
- 192.168.125.0
- 192.168.125.32
- 192.168.125.34
- 255.255.255.255
- ip
- tcp
- udp

Protocol [ ]

address [ ]

mask [ ]

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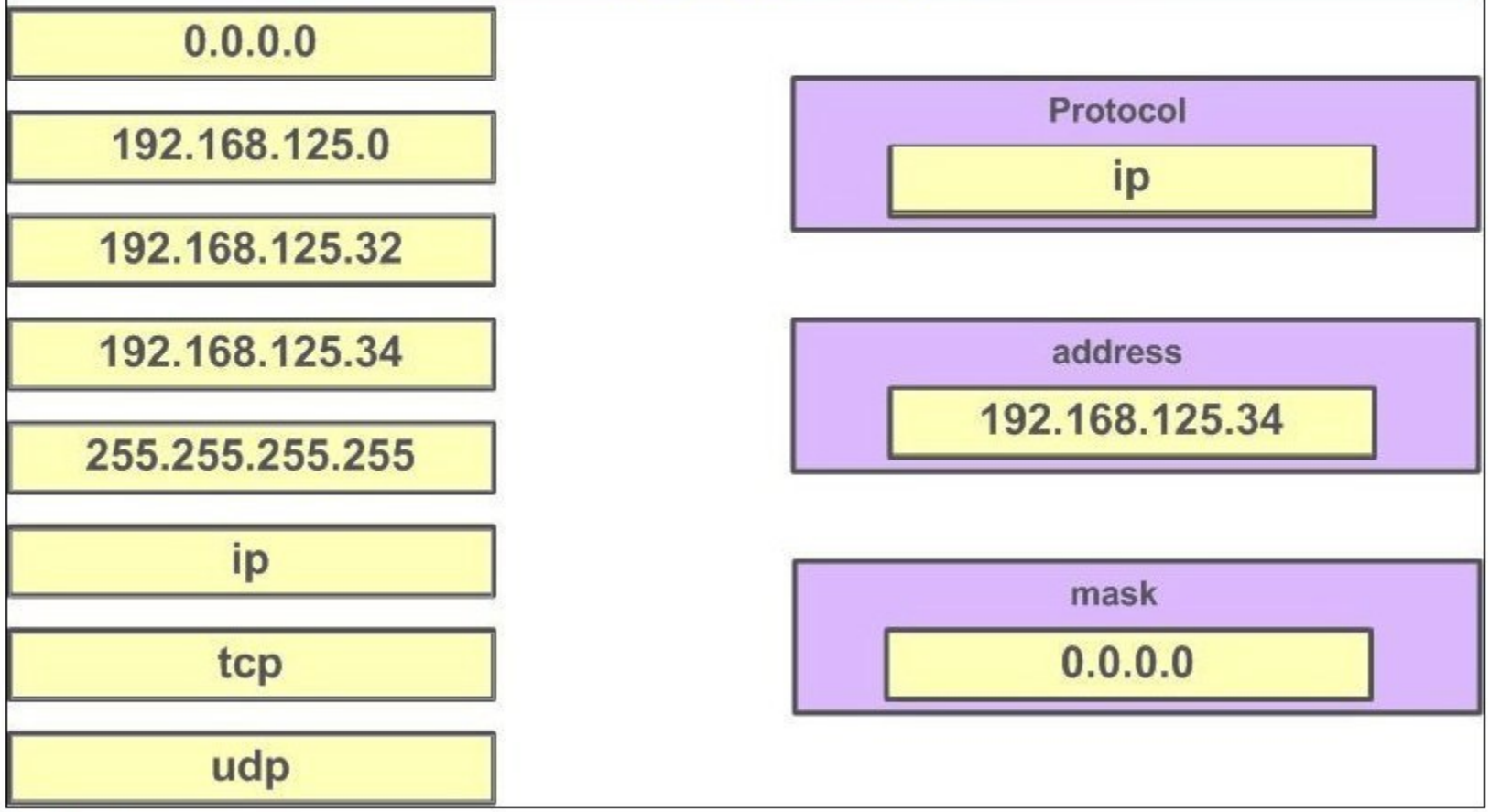
Mark for Review

**Correct Answer**

A host with the address of 192.168.125.34/27 needs to be denied access to all hosts outside its own subnet.To accomplish this, complete the command in brackets,[access-list 100 deny *protocol address mask* any]. According to the guides drag the contents to relevant modules. Pass4sure help you pass any IT exam!




**Explanations**

This question is to examine the ACL configuration. IP is a general keyword, which can match any and all IP protocols. So as to filter the traffic of this host computer 192.168.125.34, the mask off code uses 0.0.0.0 to represent absolute match, that is, only this host computer is applicable.

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Mark for Review

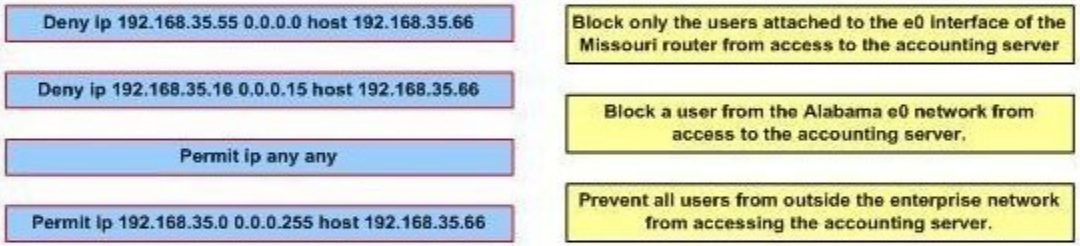
Drop

The Missouri branch office router is connected through its s0 interface to the Alabama Headquarters router s1 interface.The Alabama router has two LANs. Missouri user obtain internet access through the Headquarters router. The network interfaces in the topology are addressed as follows:

Missouri: e0-192.168.35.17/28
s0-192.168.35.33/28

Alabama: e0-192.168.35.49/28
e1-192.168.35.65/28
s1-192.168.35.34/28

The accounting server has the address of 192.168.35.66/28.Match the access list conditions on the left with the goals on the right.(Not all options on the left are used.)

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Mark for Review

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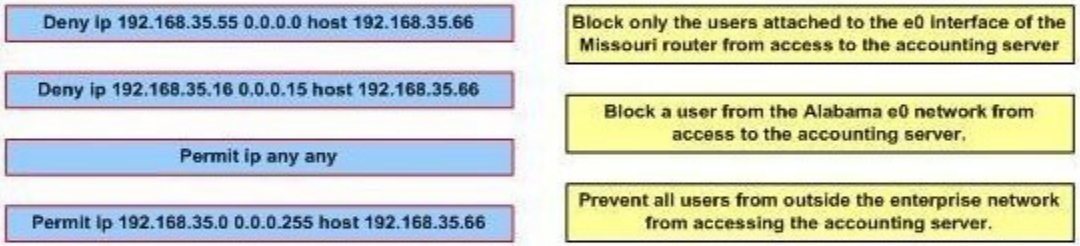
Missouri: e0-192.168.35.17/28
s0-192.168.35.33/28

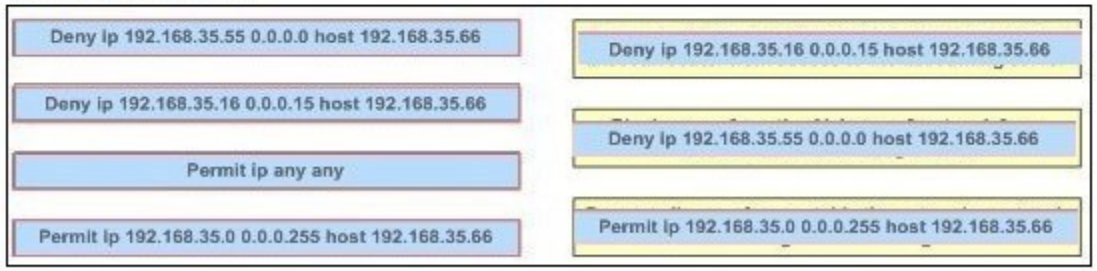
Alabama: e0-192.168.35.49/28
e1-192.168.35.65/28
s1-192.168.35.34/28

The accounting server has the address of 192.168.35.66/28.Match the access list conditions on the left with the goals on the right.(Not all options on the left are used.)




## Answer & Explanation

### Correct Answer




### Explanations

No more information available

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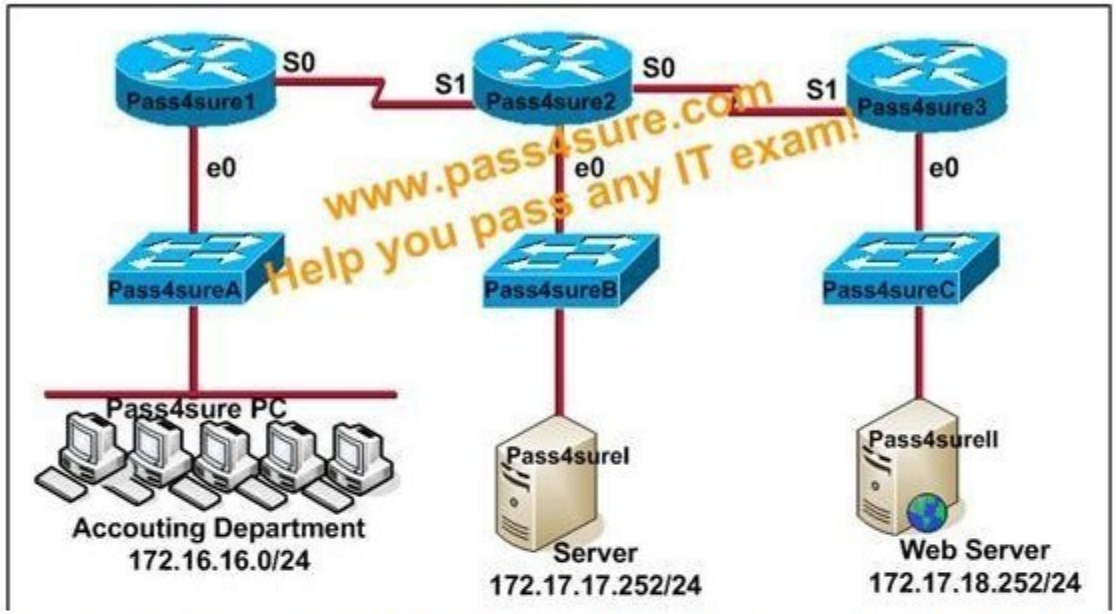
Mark for Review

A Pass4sure office's network topology is shown in the diagram below:




Please study the exhibit shown above carefully, an access list has been designed to prevent HTTP traffic from the accounting department from reaching the Pass4surel server attached to the Pass4sure2 router. Which of the following access lists will accomplish this task when grouped with the e0 interface on the Pass4sure1 router?

A. deny tcp 172.17.17.252 0.0.0.0 172.16.16.0 0.0.0.255 eq 80
permit ip any any

B. permit ip any any
deny tcp 172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 80

C. permit ip any any
deny tcp 172.17.17.252 0.0.0.0 172.16.16.0 0.0.0.255 eq 80

D. deny tcp 172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 80
permit ip any any

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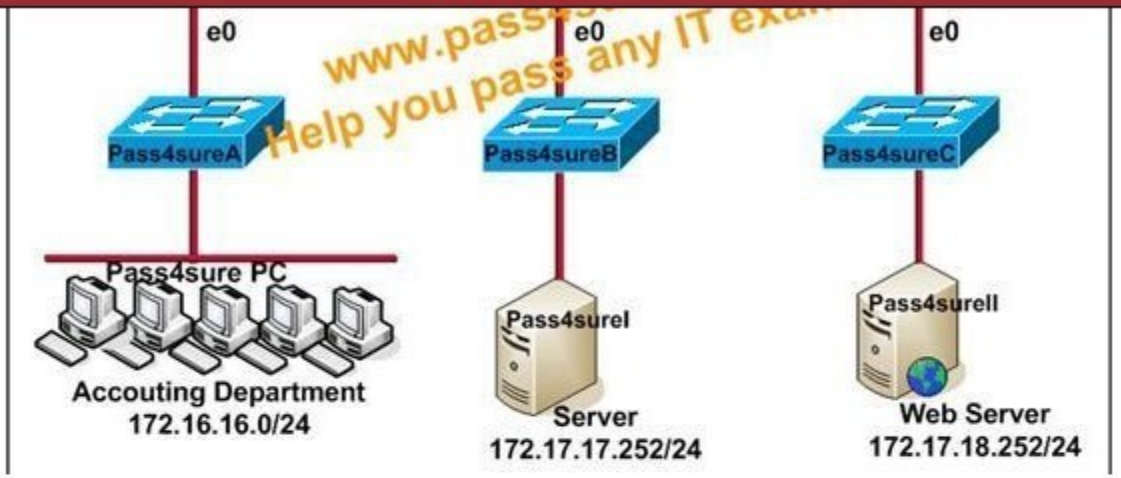


Please study the exhibit shown above carefully, an access list has been designed to prevent HTTP traffic from the accounting department from reaching the Pass4sureI server attached to the Pass4sure2 router. Which of the following access lists will accomplish this task when grouped with the e0 interface on the Pass4sure1 router?

A. deny tcp 172.17.17.252 0.0.0.0 172.16.16.0 0.0.0.255 eq 80
permit ip any any

B. permit ip any any
deny tcp 172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 80

C. permit ip any any
deny tcp 172.17.17.252 0.0.0.0 172.16.16.0 0.0.0.255 eq 80

D. deny tcp 172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 80
permit ip any any

## Answer & Explanation

### Correct Answer

D

### Explanations

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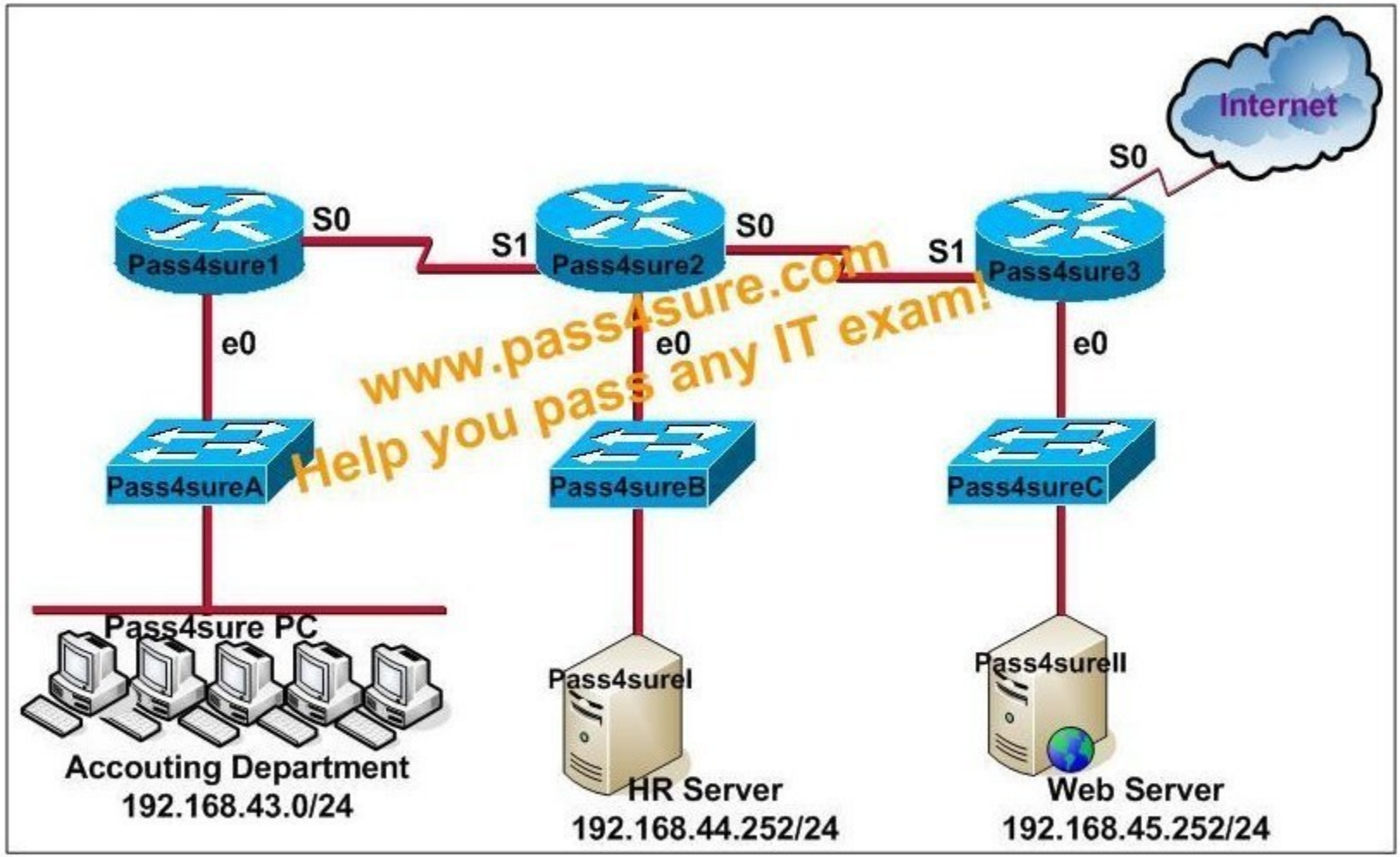
This question is to examine the configuration methods of widening access control list. So as to filter the HTTP traffic of the accounting department, the source address should be in the 172.16.16.0/24 segment, and the destination address is the 172.17.17.252 server.

Mark for Review

Based on this information, which of the following access list statements are necessary to allow FTP access to the HR server from the Internet while blocking all other traffic? (Select two.)

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- A. access-list 101 permit tcp any 192.168.44.252 0.0.0.0 eq 21
- B. access-list 101 permit tcp any 192.168.44.252 0.0.0.0 eq 20
- C. access-list 101 permit tcp 192.168.44.252 0.0.0.0 any eq 20
- D. access-list 101 permit tcp 192.168.44.252 0.0.0.0 any eq 21

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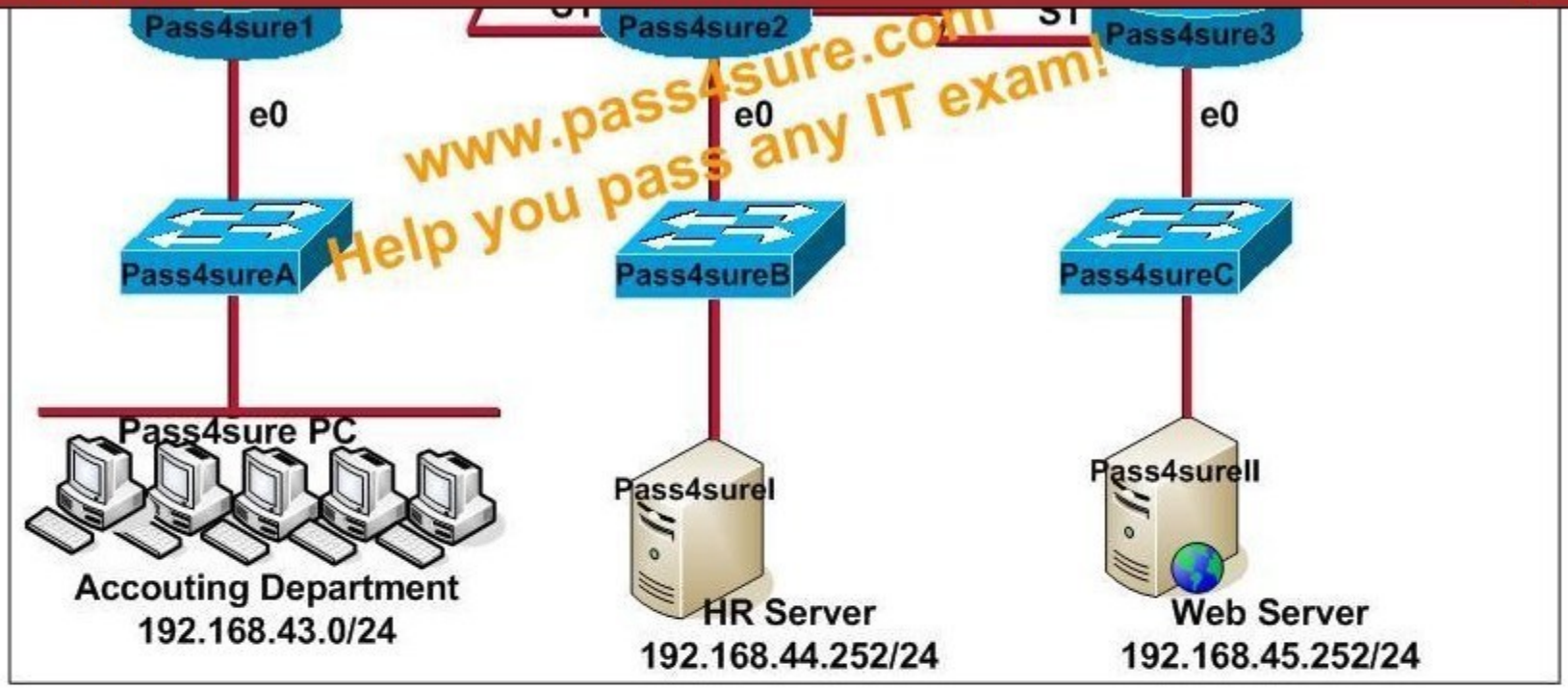


- [ ] A. access-list 101 permit tcp any 192.168.44.252 0.0.0.0 eq 21
- [ ] B. access-list 101 permit tcp any 192.168.44.252 0.0.0.0 eq 20
- [ ] C. access-list 101 permit tcp 192.168.44.252 0.0.0.0 any eq 20
- [ ] D. access-list 101 permit tcp 192.168.44.252 0.0.0.0 any eq 21

## Answer & Explanation

### Correct Answer

A B

### Explanations

Access Control List (ACL) is the directive list used in router interface. These lists of instructions are to tell the router which data packets can be received, and which should be rejected. As for whether the packet will be received or rejected, it is determined by particular instructive conditions such as source address, destination address, port number, and so on.

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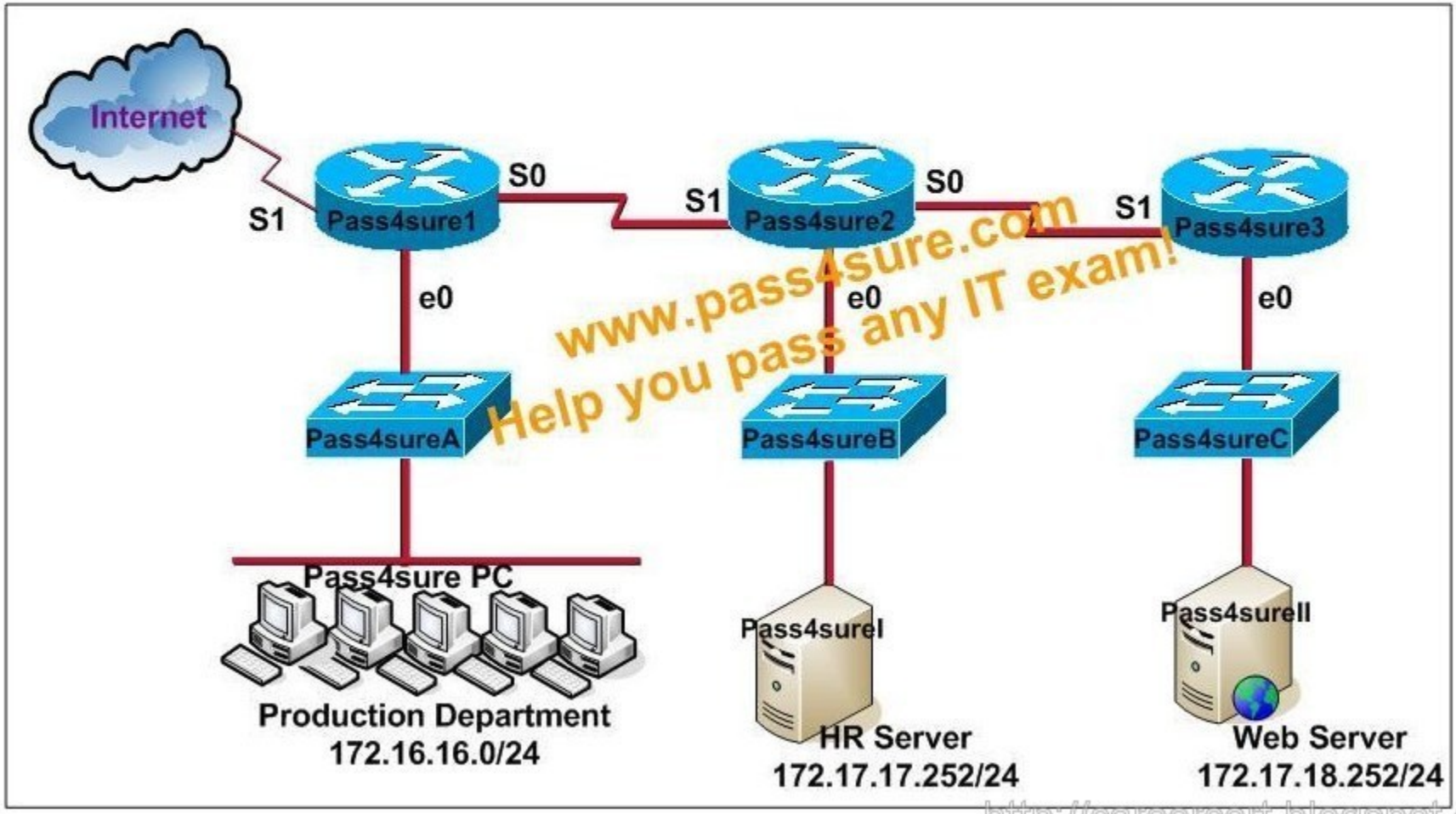
Mark for Review

Refer to the graphic. Assuming the following goals:

1) allow Telnet from the Internet to the HR server
2) allow HTTP access from the Internet to the web server
3) all other traffic from the Internet should be blocked

Which of the following access list statements are necessary to accomplish these goals? (Select two.)

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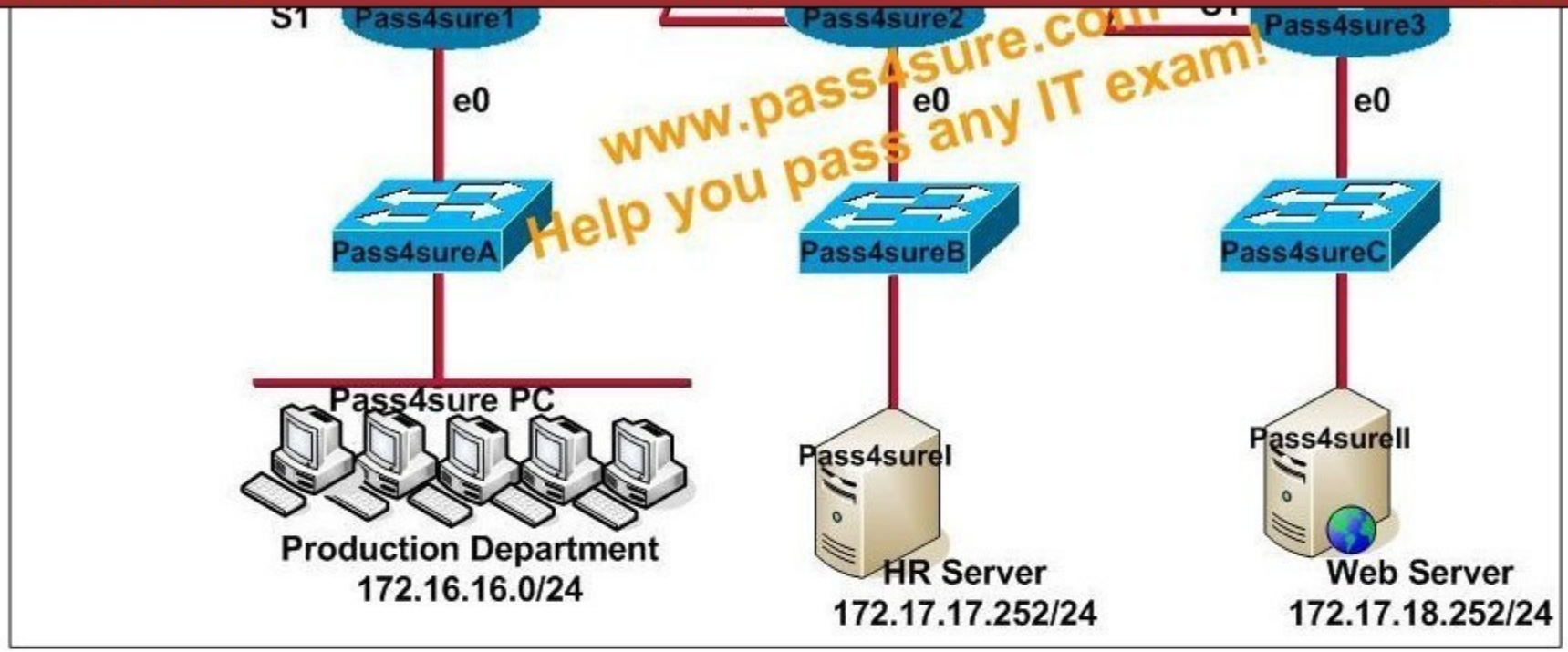
A. access-list 101 permit tcp any 172.17.18.252 0.0.0.0 eq 80

Mark for Review

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- A. access-list 101 permit tcp any 172.17.18.252 0.0.0.0 eq 80
- B. access-list 1 permit tcp any 172.17.17.252 0.0.0.0 eq 23
- C. access-list 101 deny tcp any 172.17.18.252 0.0.0.0 eq 80
- D. access-list 101 permit tcp any 172.17.17.252 0.0.0.0 eq 23

## Answer & Explanation

### Correct Answer

A D

### Explanations

Access Control List (ACL) is the directive list used in router interface. These lists of instructions are to tell the router which data packets can be received, and which should be rejected. As for whether the packet will be received or rejected, it is determined by particular instructive conditions such as source address, destination address, port number, and so on.

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Mark for Review

A Pass4sure network administrator wants to add a line to an access list that will block only Telnet access by the hosts on subnet 192.168.1.128/28 to the server at 192.168.1.5. What command should be issued to accomplish this task?

A. access-list 101 deny tcp 192.168.1.128 0.0.0.15 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any

B. access-list 101 deny tcp 192.168.1.128 0.0.0.240 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any

C. access-list 1 deny tcp 192.168.1.128 0.0.0.255 192.168.1.5 0.0.0.0 eq 21
access-list 1 permit ip any any

D. access-list 1 deny tcp 192.168.1.128 0.0.0.15 host 192.168.1.5 eq 23
access-list 1 permit ip any any

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Mark for Review

A Pass4sure network administrator wants to add a line to an access list that will block only Telnet access by the hosts on subnet 192.168.1.128/28 to the server at 192.168.1.5. What command should be issued to accomplish this task?

A. access-list 101 deny tcp 192.168.1.128 0.0.0.15 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any

B. access-list 101 deny tcp 192.168.1.128 0.0.0.240 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any

C. access-list 1 deny tcp 192.168.1.128 0.0.0.255 192.168.1.5 0.0.0.0 eq 21
access-list 1 permit ip any any

D. access-list 1 deny tcp 192.168.1.128 0.0.0.15 host 192.168.1.5 eq 23
access-list 1 permit ip any any

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the configuration methods of widening access control list. What needs to know first is that only widening access list supports the filter of source and destination IP address as well as protocols. As the mask off code of 192.168.1.128 segment is 28 characters, if the ACL is under absolute match, the wildcard-mask address should be 0.0.0.15, that is, 32-28=4, 2*4-1=15.

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Mark for Review

Recently, unauthorized users have used Telnet to gain access to the Pass4sure company router. As the Pass4sure network administrator, you want to configure and apply an access list to allow Telnet access to the router, but only from your computer. Please consider the problem carefully, which group of commands would be the best choice to allow only the IP address 172.16.3.3 to have Telnet access to the router?

A. access-list 3 permit host 172.16.3.3
line vty 0 4
ip access-group 3 in

B. access-list 3 permit host 172.16.3.3
line vty 0 4
access-class 3 in

C. access-list 101 permit tcp any host 172.16.3.3 eq telnet
interface s0/0
ip access-group 101 in

D. access-list 101 permit tcp any host 172.16.3.3 eq telnet
access-list 101 permit ip any any
interface s0/0
ip access-group 101 in

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Mark for Review

Recently, unauthorized users have used Telnet to gain access to the Pass4sure company router. As the Pass4sure network administrator, you want to configure and apply an access list to allow Telnet access to the router, but only from your computer. Please consider the problem carefully, which group of commands would be the best choice to allow only the IP address 172.16.3.3 to have Telnet access to the router?

A. access-list 3 permit host 172.16.3.3
line vty 0 4
ip access-group 3 in

B. access-list 3 permit host 172.16.3.3
line vty 0 4
access-class 3 in

C. access-list 101 permit tcp any host 172.16.3.3 eq telnet
interface s0/0
ip access-group 101 in

D. access-list 101 permit tcp any host 172.16.3.3 eq telnet
access-list 101 permit ip any any
interface s0/0
ip access-group 101 in

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine how to configure telnet by ACL. Firstly, make sure the host computer address which allows launching telnet. Secondly, telnet should be configured with the accessible virtual terminal port. Finally, transferring access list is necessary to apply the configured ACL to the terminal port.

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Which of the following statements regarding the use of multiple access lists are valid when configuring a single interface on a Cisco router?

A. Application of up to three access lists per protocol to a single interface.

B. No more than two access lists per interface.

C. One access list may be configured per direction for each Layer 3 protocol configured on an interface.

D. The maximum number allowed varies due to RAM availability in the router.

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Mark for Review

Which of the following statements regarding the use of multiple access lists are valid when configuring a single interface on a Cisco router?

A. Application of up to three access lists per protocol to a single interface.

B. No more than two access lists per interface.

C. One access list may be configured per direction for each Layer 3 protocol configured on an interface.

D. The maximum number allowed varies due to RAM availability in the router.

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the understanding of knowledge point related to the ACL. The ACL technology can effectively control the access of the network user to network materials on three layers, which can be specifically applied in the network application between two network devices, as well as conduct large-scaled list-control management according to segments, to provide an effective safety measure for network application.

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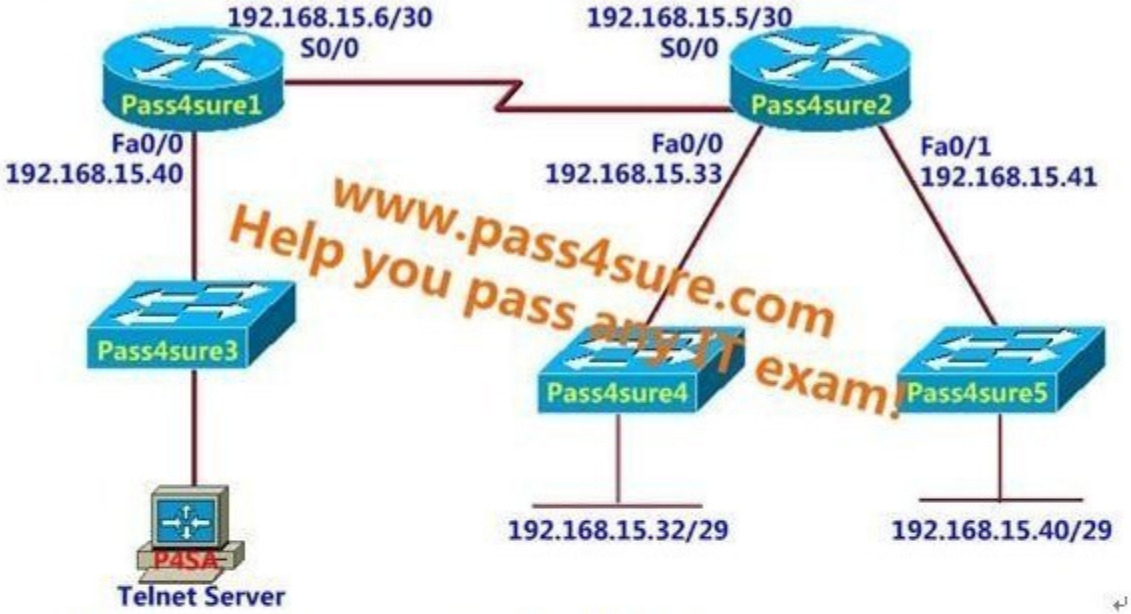
Mark for Review

Part of the pass4sure network is shown below:




In this pass4sure network segment,the following ACL was configured on the S0/0 interface of router Pass4sure2 in the outbound direction:

access-list 101 deny tcp 192.168.15.32 0.0.0.15 any eq telnet
access-list 101 permit ip any any

Which two packets, if routed to the interface, will be denied?(Choose two)

- A. source ip address: 192.168.15.49 destination port: 23
- B. source ip address: 192.168.15.41 destination port: 21
- C. source ip address: 192.168.15.37 destination port: 21
- D. source ip address: 192.168.15.36 destination port: 23
- E. source ip address: 192.168.15.46 destination port: 23

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Mark for Review

In this pass4sure network segment,the following ACL was configured on the S0/0 interface of router Pass4sure2 in the outbound direction:

access-list 101 deny tcp 192.168.15.32 0.0.0.15 any eq telnet
access-list 101 permit ip any any

Which two packets, if routed to the interface, will be denied?(Choose two)

- A. source ip address: 192.168.15.49 destination port: 23
- B. source ip address: 192.168.15.41 destination port: 21
- C. source ip address: 192.168.15.37 destination port: 21
- D. source ip address: 192.168.15.36 destination port: 23
- E. source ip address: 192.168.15.46 destination port: 23

## Answer & Explanation

### Correct Answer

D E

### Explanations

This question is to examine the understanding of the ACL. We can learn from the above-mentioned ACL configuration information that access-list 101 denies the telnet session from the IP address of 192.168.15.32/28 segment, and the telnet port number is 23. Therefore, according to the above-mentioned conditions, the data packet will be discarded if the IP address of 192.168.15.32-192.168.15.47 segment launch telnet request.

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Mark for Review

You work as a network technician at Pass4sure.com. Study the exhibit carefully

Based on the output shown below, what should you do to allow the Pass4sure workstations connected to the fastethernet0/0 interface to obtain an IP Address?

```
!
Ip subnet-zero
Ip name-server 192,16.1,1
Ip dhcp excluded-address 10.90.201.1
!
Ip dhcp pool ABC_DHCP
    network 10.90.201.0 255.255.255.0
    default-router 10.90.201.1
    dns-server 192.31.7.152
!
Interface FastEthernet 0/0
    no ip directef-broadcast
    ip nat inside
!
Interface Serial 0/0
    destcription to ISP circuit ID ALDS1-3456AX4743-00
    ip address 192.31.7.38 255.255.255.252
    ip nat outside
!
Ip nat inside source list 14 interface serial 0/0 overload
Ip classless
Ip route 0.0.0.0 0.0.0.0 192.31.7.37
!
access-list 14 permit 10.90.201.0 0.0.0.255
<output omitted>
```

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A. Add an interface description to the FastEthernet 0/0 interface configuration

B. Add access-list 14 permit any any to the access list configuration.

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```
    dns-server 192.31.7.152
!
Interface FastEthernet 0/0
    no ip directef-broadcast
    ip nat inside
!
Interface Serial 0/0
    destcription to ISP circuit ID ALDS1-3456AX4743-00
    ip address 192.31.7.38 255.255.255.252
    ip nat outside
!
Ip nat inside source list 14 interface serial 0/0 overload
Ip classless
Ip route 0.0.0.0 0.0.0.0 192.31.7.37
!
access-list 14 permit 10.90.201.0 0.0.0.255
<output omitted>
```

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A. Add an interface description to the FastEthernet 0/0 interface configuration

B. Add access-list 14 permit any any to the access list configuration.

C. Configure the IP address of the FastEtherent 0/0 interface to 10.90.201.1.

D. None of the above.

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about the DHCP. The fa0/0 port has not been configured with IP address; therefore, the workstation cannot obtain the address distributed from the DHCP server through this port. As long as IP address has not been obtained, the workstation can only obtain it through the default gateway of DHCP. Therefore, the only way to obtain IP address through DHCP is to configure this port as the default gateway.

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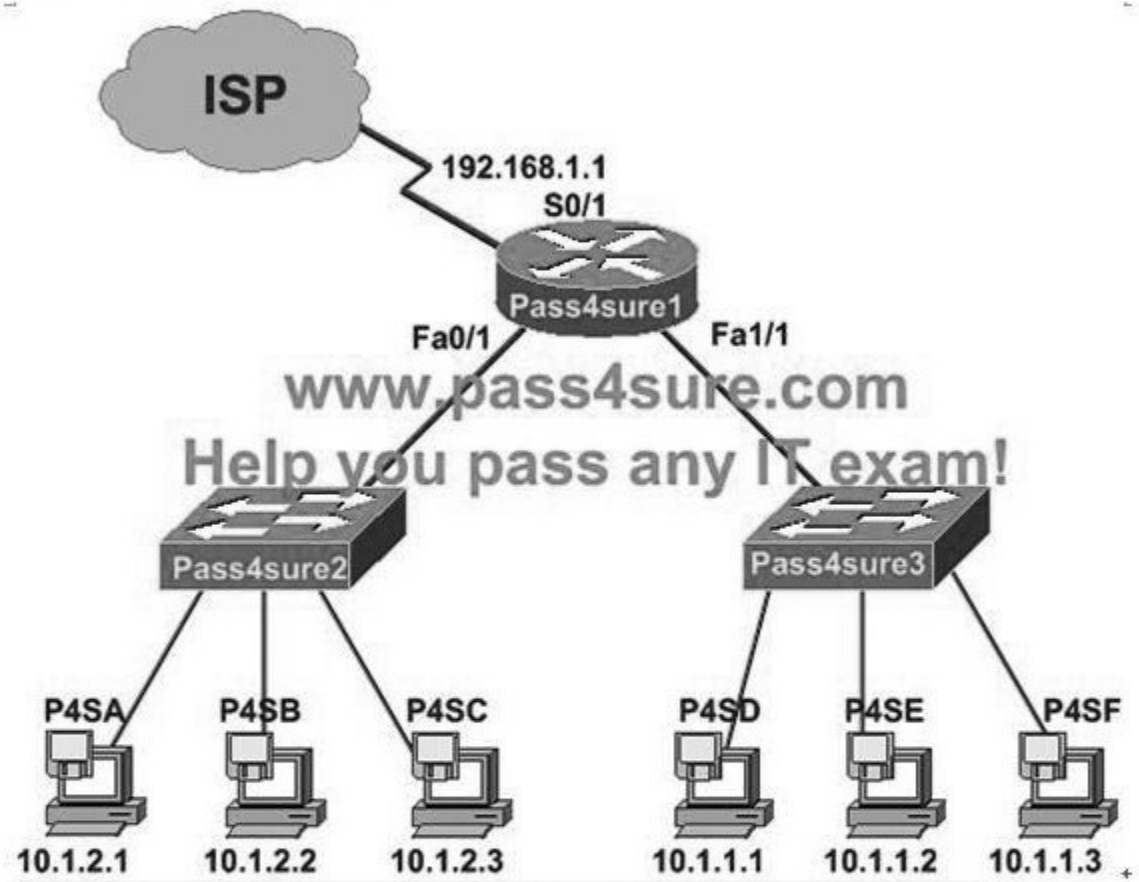
Mark for Review

The Pass4sure network topology exhibit is shown below:

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```
Pass4sure1(config)#access-list 2 permit 10.1.1.0 0.0.0.255
Pass4sure1(config)#line vty 0 4
Pass4sure1(config-line)#access-class 2 in
```

Based on the information shown above, why would the Pass4sure network administrator configure Router Pass4sure1 as shown above?

- A. to give Pass4sure2 from accessing the Pass4sure3 network
- B. to prevent Pass4sure2 from accessing the command prompt of Pass4sure1
- C. to prevent Pass4sure3 from accessing the console of Pass4sure1

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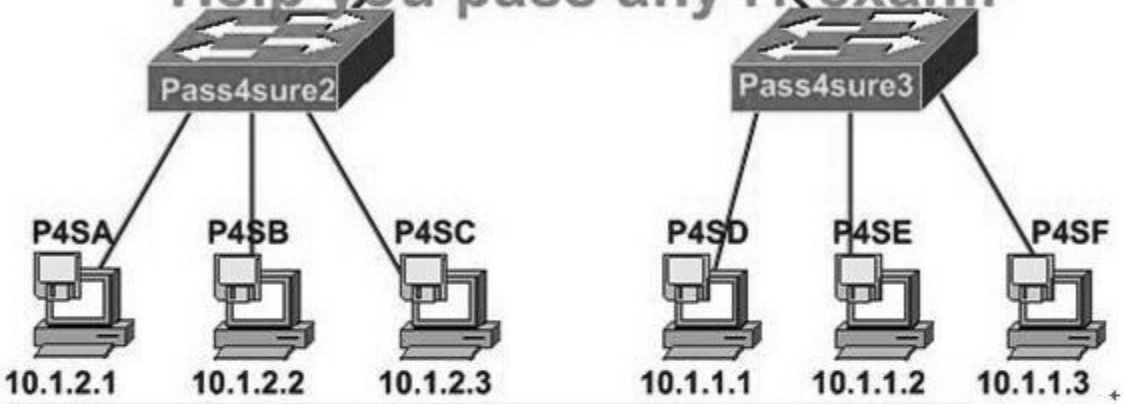


```
Pass4sure1(config)#access-list 2 permit 10.1.1.0 0.0.0.255
Pass4sure1(config)#line vty 0 4
Pass4sure1(config-line)#access-class 2 in
```

Based on the information shown above, why would the Pass4sure network administrator configure Router Pass4sure1 as shown above?

- A. to give Pass4sure2 from accessing the Pass4sure3 network
- B. to prevent Pass4sure2 from accessing the command prompt of Pass4sure1
- C. to prevent Pass4sure3 from accessing the console of Pass4sure1
- D. to give Pass4sure3 access to the Internet

## Answer & Explanation

### Correct Answer

B

### Explanations

An ACL is configured on Pass4sure1 to allow users on the 10.1.1.0/24 network to access VTY line of Pass4sure1 and to prevent the access of other users.

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Mark for Review

The following configuration line was added to router Pass4sure1:

Access-list 101 permit ip 10.25.30.0 0.0.0.255 any

What is the effect of this access list configuration?

- A. permit all packets matching the first three octets of the source address to all destinations
- B. permit all packet matching the last octet of the destination address and accept all source addresses
- C. permit all packet matching the host bits in the source address to all destinations
- D. permit all packet from the third subnet of the network address to all destinations

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Mark for Review

The following configuration line was added to router Pass4sure1:

Access-list 101 permit ip 10.25.30.0 0.0.0.255 any

What is the effect of this access list configuration?

- A. permit all packets matching the first three octets of the source address to all destinations
- B. permit all packet matching the last octet of the destination address and accept all source addresses
- C. permit all packet matching the host bits in the source address to all destinations
- D. permit all packet from the third subnet of the network address to all destinations

## Answer & Explanation

### Correct Answer

A

### Explanations

This is an extended access list, which completes matching based on the source address and the destination address, the source address 10.25.30.0 0.0.0.255 indicates that all IP addresses within this scope can be matched, the destination address can be any one. This access list allows IP addresses within the network segment of 10.25.30.0/24 to access any network segment.
Extended IP access lists are similar to standard IP ACLs in that you enable extended access lists on interfaces for packets either entering or exiting the interface. IOS then searches the list sequentially. The first statement matched stops the search through the list and defines the action to be taken. The key difference between the extended ACLs and standard ACLs is the variety of fields in the packet that can be compared for matching by extended access lists. A single extended ACL statement can examineine multiple parts of the packet headers, requiring that all the parameters be matched correctly in order to match that one ACL statement. That matching logic is what makes extended access lists both much more useful and much more complex than standard IP ACLs. You can configure extended ACL to match the IP protocol type, which identifies what header follows the IP header. You can specify all IP packets, or those with TCP headers, UDP headers, ICMP, etc, by checking the Protocol field. You can also check the source and destination IP addresses, as well as the TCP source and destination port numbers.
The format of extended access list: access-list ACL No., [permit | deny] [protocol] [define the scope of filtering source host] [define the filtering source port] [define filtering definition host's access] [define the filtering definition port]

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Mark for Review

The following access list below was applied outbound on the E0 interface connected to the 192.169.1.8/29 LAN:

access-list 135 deny tcp 192.169.1.8 0.0.0.7 eq 20 any
access-list 135 deny tcp 192.169.1.8 0.0.0.7 eq 21 any

How will the above access lists affect traffic?

A. FTP traffic from 192.169.1.22 will be denied.

B. No traffic, except for FTP traffic will be allowed to exit E0.

C. FTP traffic from 192.169.1.9 to any host will be denied.

D. All traffic exiting E0 will be denied.

E. All FTP traffic to network 192.169.1.9/29 will be denied.

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Mark for Review

The following access list below was applied outbound on the E0 interface connected to the 192.169.1.8/29 LAN:

access-list 135 deny tcp 192.169.1.8 0.0.0.7 eq 20 any
access-list 135 deny tcp 192.169.1.8 0.0.0.7 eq 21 any

How will the above access lists affect traffic?

- A. FTP traffic from 192.169.1.22 will be denied.
- B. No traffic, except for FTP traffic will be allowed to exit E0.
- C. FTP traffic from 192.169.1.9 to any host will be denied.
- D. All traffic exiting E0 will be denied.
- E. All FTP traffic to network 192.169.1.9/29 will be denied.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the understanding of widening access list. We can learn from the above-mentioned access list syntax that all the traffic from EO outbound is denied because of the keyword any after access list.

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Mark for Review

Which IP address and wildcard mask would you use in your ACL to block all the hosts in the subnet 192.168.16.43/28?

- A. 192.168.16.32 0.0.0.16
- B. 192.168.16.43 0.0.0.212
- C. 192.168.16.0 0.0.0.31
- D. 192.168.16.32 0.0.0.15

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Mark for Review

Which IP address and wildcard mask would you use in your ACL to block all the hosts in the subnet 192.168.16.43/28?

A. 192.168.16.32 0.0.0.16

B. 192.168.16.43 0.0.0.212

C. 192.168.16.0 0.0.0.31

D. 192.168.16.32 0.0.0.15

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the configuration methods of access control list. According to the requirement of the question, all the traffic of the network segment 192.168.16.43/28 of the host computer must be stopped. The IP address of the ACL should be matched as 192.168.16.32 and the wildcard-mask is 0.0.0.15. The mask off code of 192.168.16.43 is 28. Therefore, the end of the wildcard-mask is 32-28=4, 2*4-1=15.

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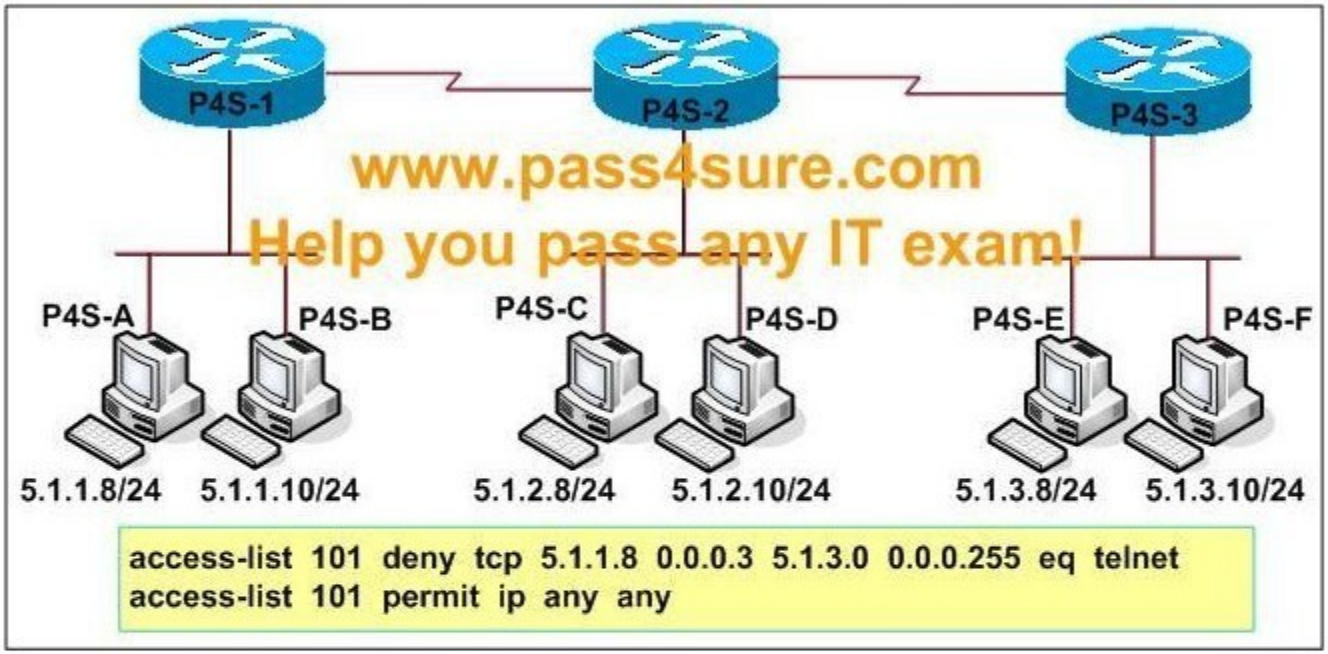
Mark for Review

The access control list shown in the graphic has been applied to the Ethernet interface of router P4S1 using the ip access-group 101 in command. Which of the following Telnet sessions will be blocked by this ACL? (Choose two.)




- A. from host P4SA to host 5.1.1.10
- B. from host P4SA to host 5.1.3.10
- C. from host P4SB to host 5.1.2.10
- D. from host P4SB to host 5.1.3.8

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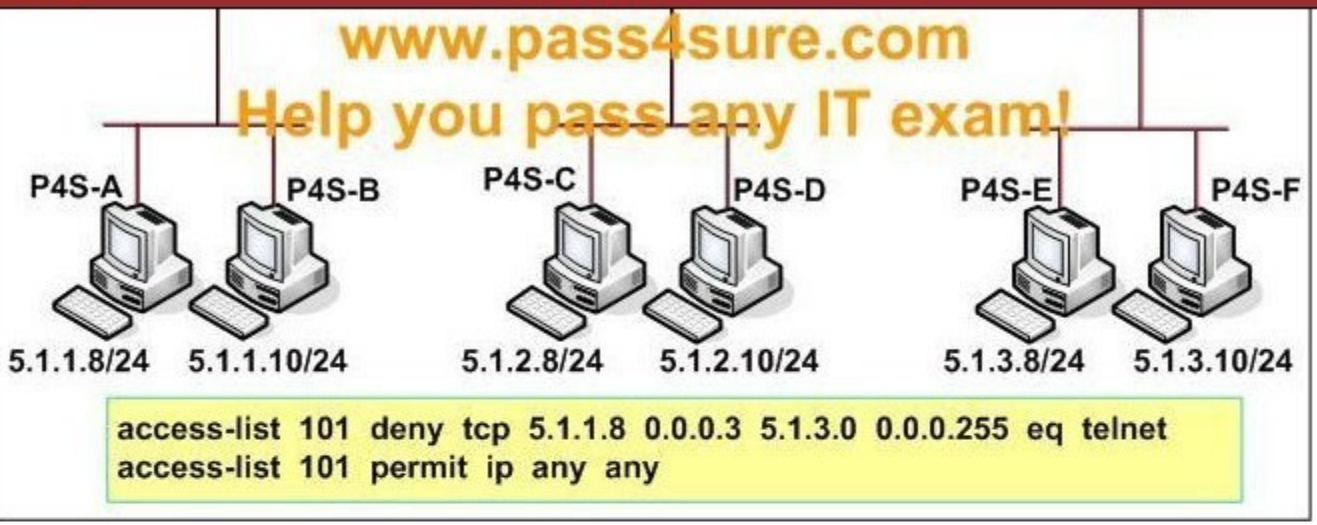


- A. from host P4SA to host 5.1.1.10
- B. from host P4SA to host 5.1.3.10
- C. from host P4SB to host 5.1.2.10
- D. from host P4SB to host 5.1.3.8

## Answer & Explanation

### Correct Answer

B D

### Explanations

"Access-list 101 deny tcp 5.1.1.8 0.0.0.3 5.1.3.0 0.0.0.255 eq telnet" means: deny all telnet dialog from the network segment 5.1.1.8 - 5.1.1.10/24 to network segment 5.1.3.0/24
From the chart above, the refused dialogs are:

from host 5.1.1.8/24 to host 5.1.3.8☐
from host 5.1.1.8/24 to host 5.1.3.10☐
from host 5.1.1.10/24 to host 5.1.3.8☐
from host 5.1.1.10/24 to host 5.1.3.10.

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Mark for Review

The Pass4sure network is shown below:

The Pass4sure network administrator would like to implement NAT in the Pass4sure network segment shown in the graphic to allow inside hosts to use a private addressing scheme. In this network segment, where should NAT be configured?

A. Pass4sure1 router

B. all routers

C. Pass4sure3 router

D. Pass4sure2 router

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Mark for Review

The Pass4sure network is shown below:

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The Pass4sure network administrator would like to implement NAT in the Pass4sure network segment shown in the graphic to allow inside hosts to use a private addressing scheme. In this network segment, where should NAT be configured?

- A. Pass4sure1 router
- B. all routers
- C. Pass4sure3 router
- D. Pass4sure2 router

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the knowledge points about NAT. The basic NAT is a technology that means the mapping from one group of IP addresses to another, which is transparent to the end-user. Generally, NAT is configured on the router which connects ISP.

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In any NAT (network address translation) configuration, what is the Inside Global IP address?

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

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Mark for Review

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- C. the summarized address for all of the internal subnetted addresses
- D. a registered address that represents an inside host to an outside network

## Answer & Explanation

### Correct Answer

D

### Explanations

In NAT, CISCO defines four types of addresses:
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's 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's owner. The address is allocated from a globally routable address or network space.

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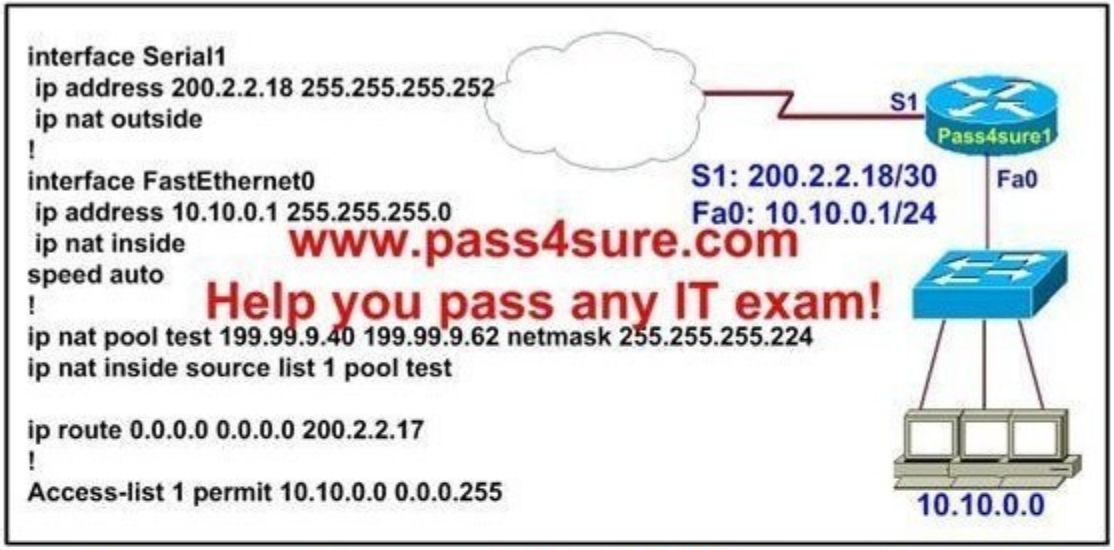
Mark for Review

Part of the Pass4sure network is shown below:




A host on the LAN is accessing an FTP server across the Internet. Which of the following addresses could appear as a source address for the packets forwarded by the router to the destination server?

- A. 10.10.0.1
- B. 199.99.9.33
- C. 199.99.9.57
- D. 200.2.2.17

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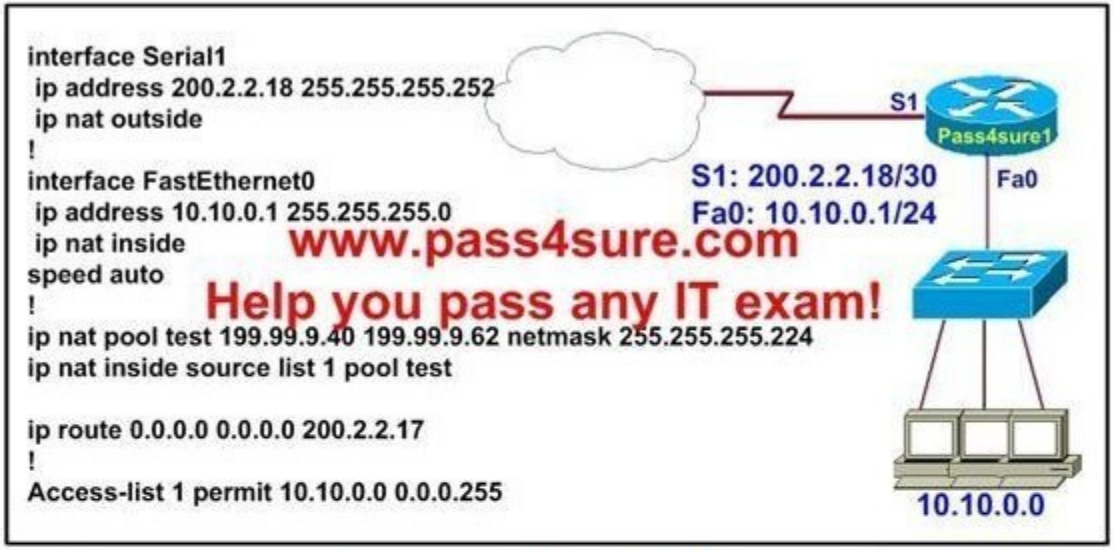
Mark for Review

Part of the Pass4sure network is shown below:

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- A. 10.10.0.1
- B. 199.99.9.33
- C. 199.99.9.57
- D. 200.2.2.17

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the knowledge point about the address translation of dynamic NAT. We can learn from the above-mentioned configuration information that the range of interior IP address pool is from 199.99.9.40 to 199.99.9.62. Therefore, through NAT address translation, the connected public network address of LAN interior host computer must within the IP address pool range.

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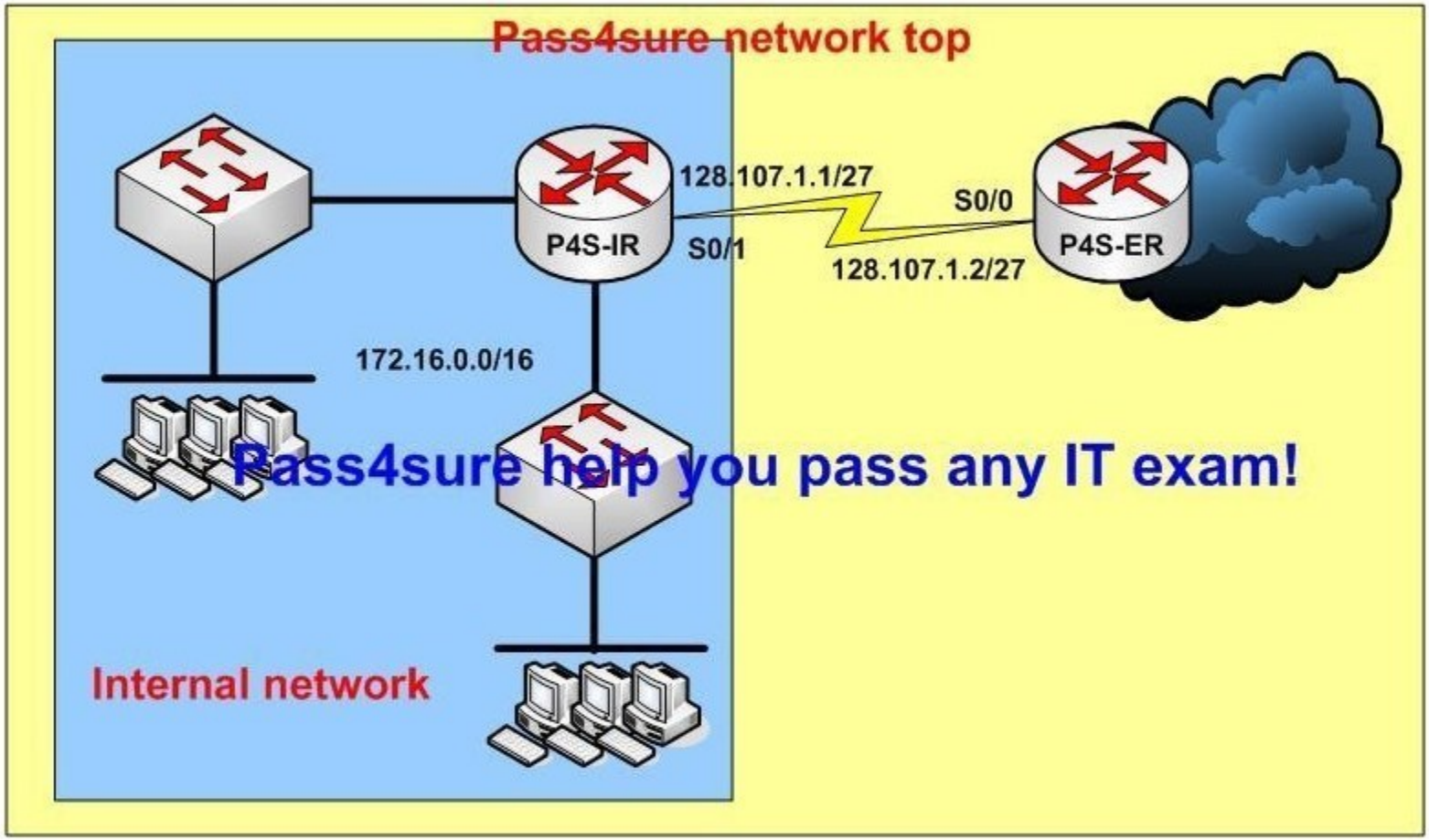
Mark for Review

Study the exhibit carefully. NAT has been used for converting all the IP addresses on the internal network to the single address 128.107.1.1 as traffic is routed forward the Internet. Which of these statements accurately describes what will happen when the IP traffic returns from the Internet destined for hosts on the internal network?




A. P4S-ER will require a route to 172.16.0.0/16 in its routing table to properly direct the traffic.

B. P4S-IR will convert the source IP addresses of all packets before forwarding them onto the internal network.

C. P4S-ER will translate the destination IP addresses of all packets before forwarding them to P4S-IR.

D. P4S-ER can use the directly connected interface on the 128.107.1.0/27 network to route return traffic to its originators.

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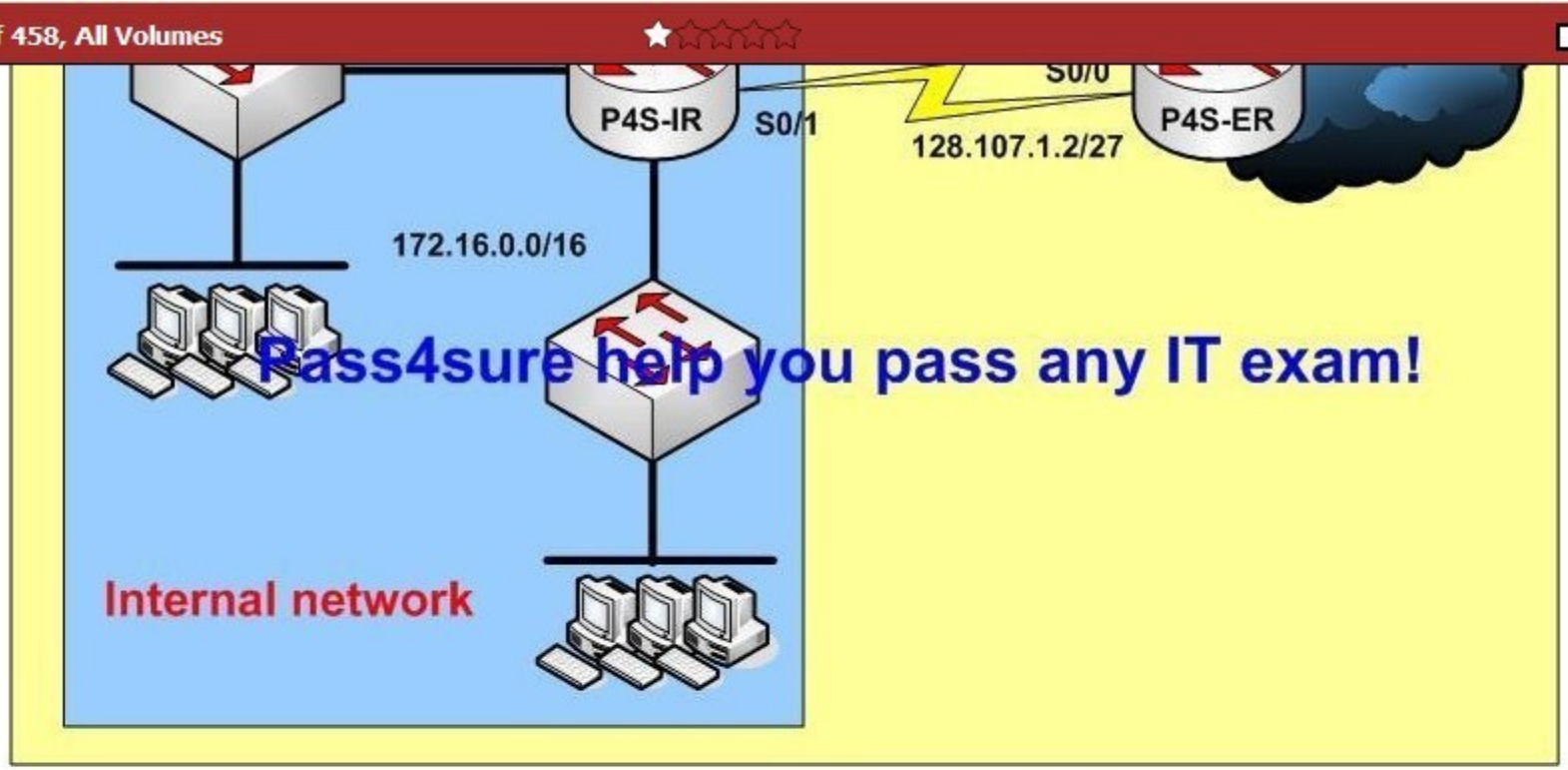


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C. P4S-ER will translate the destination IP addresses of all packets before forwarding them to P4S-IR.

D. P4S-ER can use the directly connected interface on the 128.107.1.0/27 network to route return traffic to its originators.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the knowledge point of NAT. According to the above picture, P4S-ER plays an ISP role. NAT can make the inferior private address access public network through address translation. However, public network cannot access interior host computer from exterior. Therefore, the backtracked traffic of public network will stay with ISP itself.

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Mark for Review

You need to review the NAT configuration of a Pass4sure router. What is the function of the Cisco IOS command "ip nat inside source static 10.99.199.9 172.137.16.9" that us being used in this router?

A. It establishes a dynamic address pool for an inside static address.

B. It creates a global address pool for all outside NAT transactions.

C. It creates dynamic source translations for all inside local PAT transactions.

D. It creates a one-to-one mapping between an inside local address and an inside global address.

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D. It creates a one-to-one mapping between an inside local address and an inside global address.

## Answer & Explanation

### Correct Answer

D

### Explanations

It creates a one-to-one static IP mapping between an inside local address and an inside global address.

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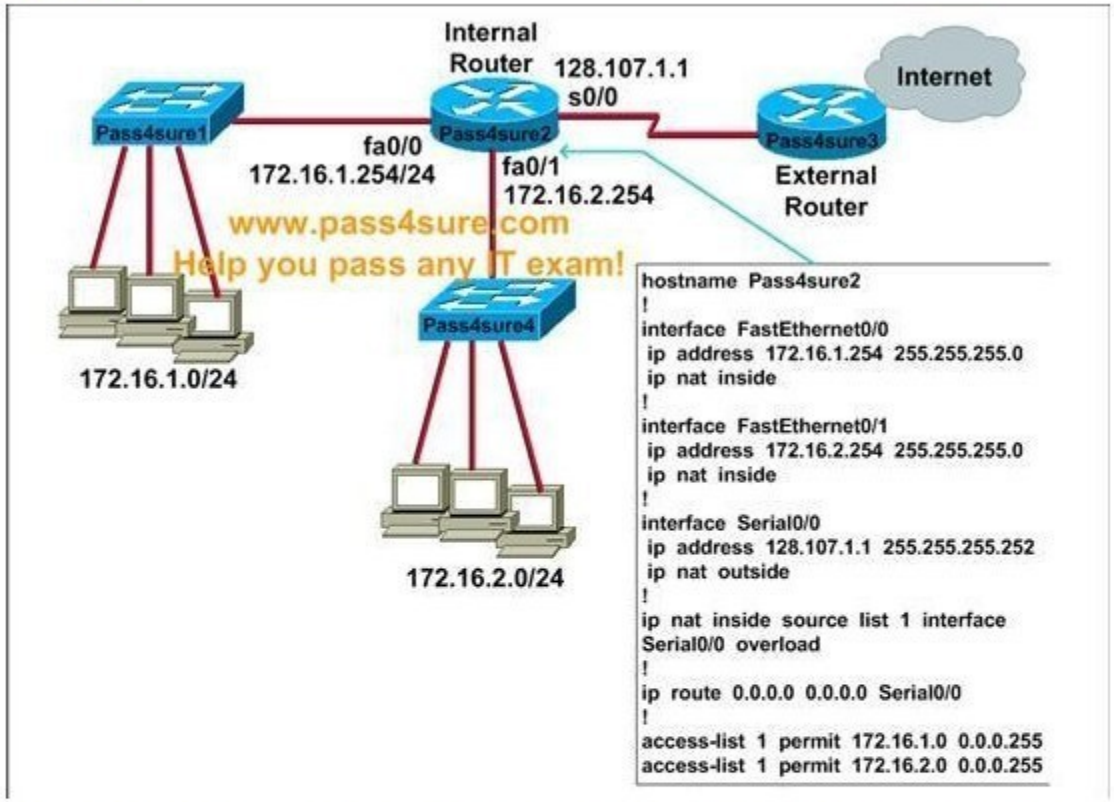
Mark for Review

The Pass4sure network is shown below:




The Pass4sure network administrator has configured the routers correctly, based on the information shown above. What is the purpose of the configuration that is shown?

- A. to translate addresses of hosts on the fa0/0 and fa0/1 networks to a single public IP address for Internet access
- B. to provide security on fa0/0 and fa0/1 through the application of an access list
- C. to allow IP hosts on the Internet to initiate TCP/IP connections to hosts on fa0/0 and fa0/1
- D. to translate the internal address of each host on fa0/0 and fa0/1 to a unique external IP address for Internet access

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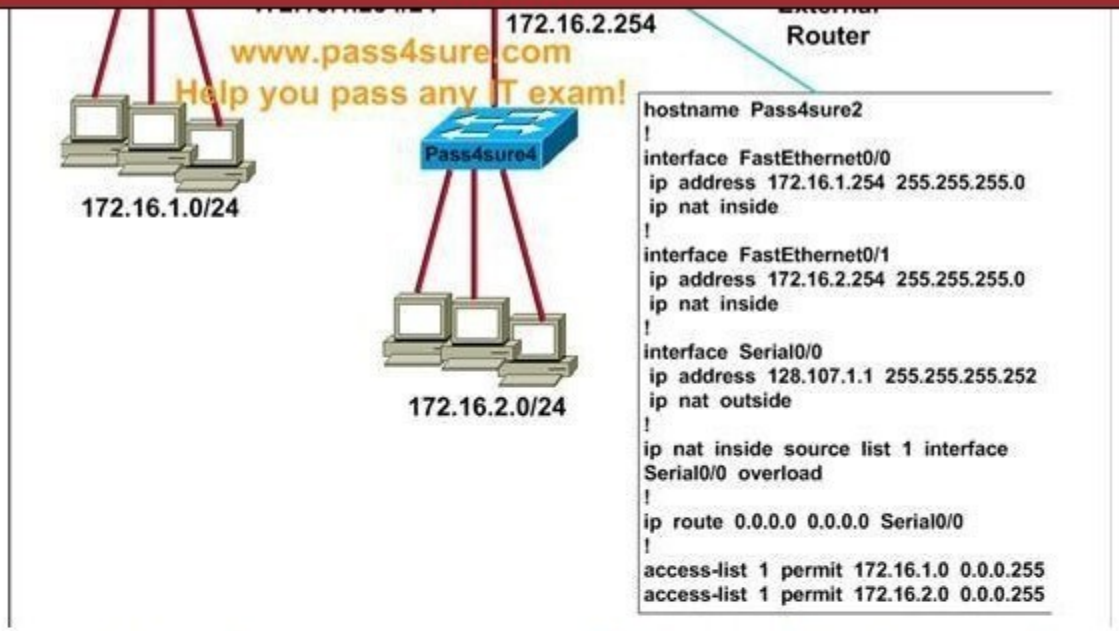


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- B. to provide security on fa0/0 and fa0/1 through the application of an access list
- C. to allow IP hosts on the Internet to initiate TCP/IP connections to hosts on fa0/0 and fa0/1
- D. to translate the internal address of each host on fa0/0 and fa0/1 to a unique external IP address for Internet access

## Answer & Explanation

### Correct Answer

A

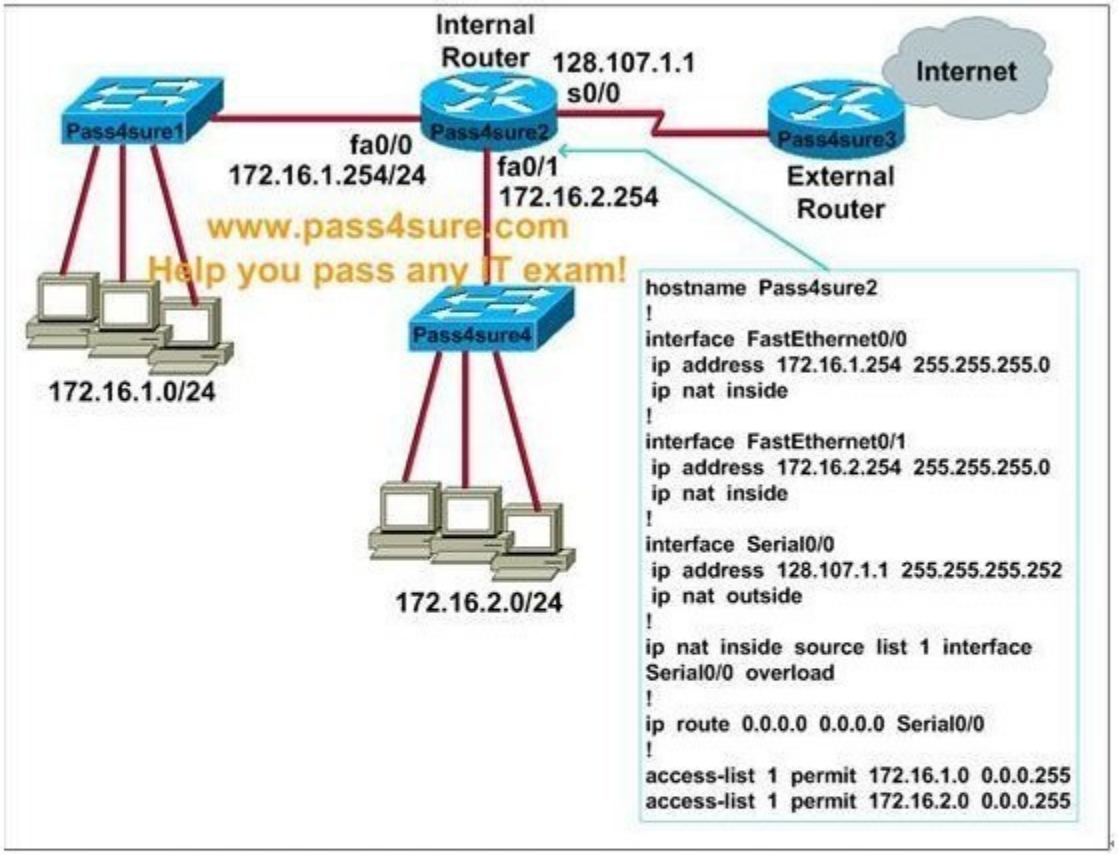
### Explanations

This question is to examine the understanding of the knowledge points about NAT. The essence of NAT is to translate private address into public address, so as to achieve the purpose of communication with public network. We can get the information from the picture show run that NAT inbound interface has been defined on fa0/0 and fa0/1 interfaces of Pass4sure2 to translate inferior private address.

http://caneetcert.blogspot.com

Mark for Review

The Pass4sure network topology and the output of Pass4sure2 router are shown below:




Based on the information shown above, Which of the following correctly describe the configuration for this network?

A. Pass4sure3 must be configured with static routes to networks 172.16.1.0/24 and 172.16.2.0/24.

B. Because of the addressing on interface FastEthernet0/1, the Serial0/0 interface address will not support the NAT configuration as shown.

C. The number 1 referred to in the ip nat inside source command references access-list number 1.

D. The configuration that is shown provides inadequate outside address space for translation of the number of inside addresses that are supported.

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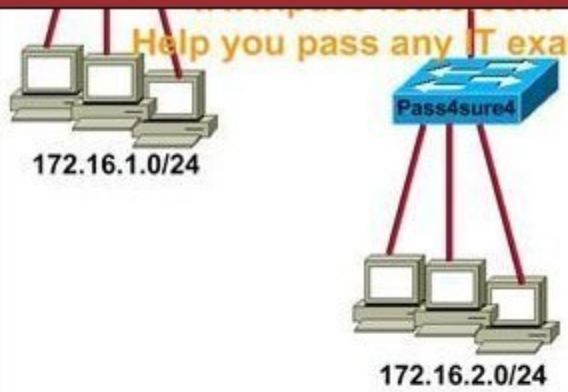


```
hostname Pass4sure2
!
interface FastEthernet0/0
 ip address 172.16.1.254 255.255.255.0
 ip nat inside
!
interface FastEthernet0/1
 ip address 172.16.2.254 255.255.255.0
 ip nat inside
!
interface Serial0/0
 ip address 128.107.1.1 255.255.255.252
 ip nat outside
!
ip nat inside source list 1 interface
Serial0/0 overload
!
ip route 0.0.0.0 0.0.0.0 Serial0/0
!
access-list 1 permit 172.16.1.0 0.0.0.255
access-list 1 permit 172.16.2.0 0.0.0.255
```

Based on the information shown above, Which of the following correctly describe the configuration for this network?

A. Pass4sure3 must be configured with static routes to networks 172.16.1.0/24 and 172.16.2.0/24.

B. Because of the addressing on interface FastEthernet0/1, the Serial0/0 interface address will not support the NAT configuration as shown.

C. The number 1 referred to in the ip nat inside source command references access-list number 1.

D. The configuration that is shown provides inadequate outside address space for translation of the number of inside addresses that are supported.

## Answer & Explanation

### Correct Answer

C

### Explanations

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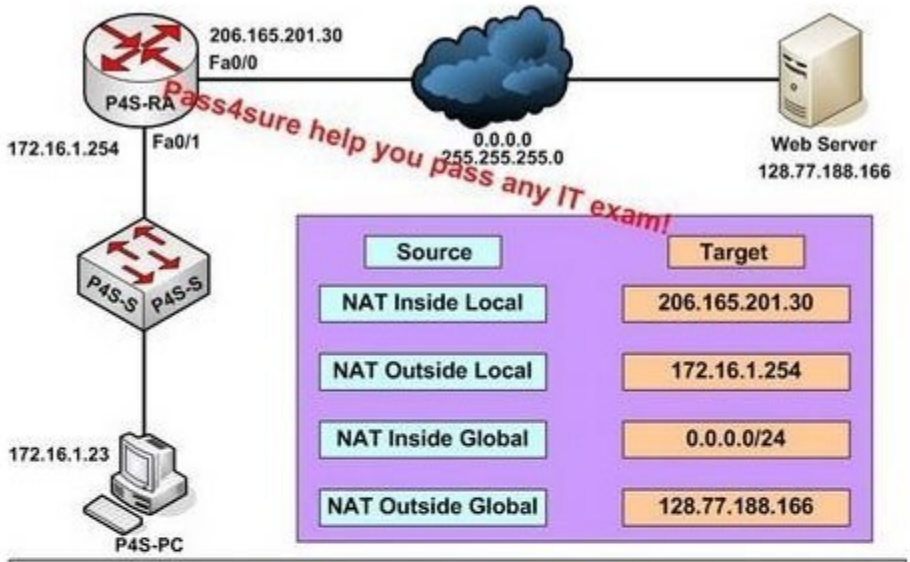
Command ip nat inside source list needs to configure a standard IP access control list to designate internal source address used for transmission --- transmit any address listed by permit, not transmit any address listed by deny or implicitly denied address.

Mark for Review

Drag Drop




Refer to the exhibit.P4S-RA is configured to use NAT in overload mode.Host P4S-PC is sending packets to Web Server.Drag the addresses to fill in the NAT terminology table with their associated IP address values.
NOTE: Addresses may be used,none,once or more.

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Mark for Review

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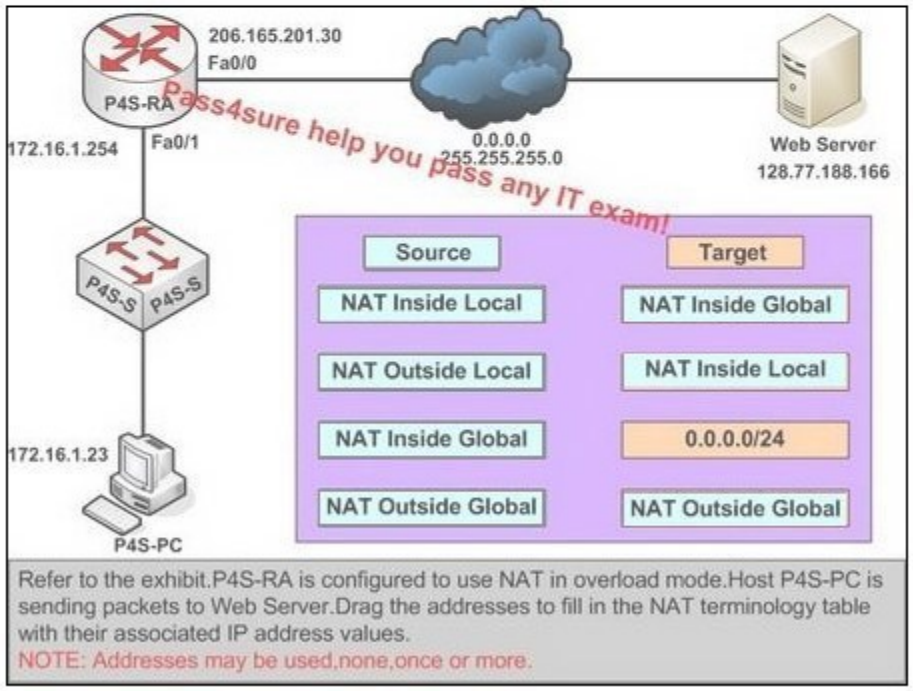
## Answer & Explanation

### Correct Answer

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NOTE: Addresses may be used,none,once or more.

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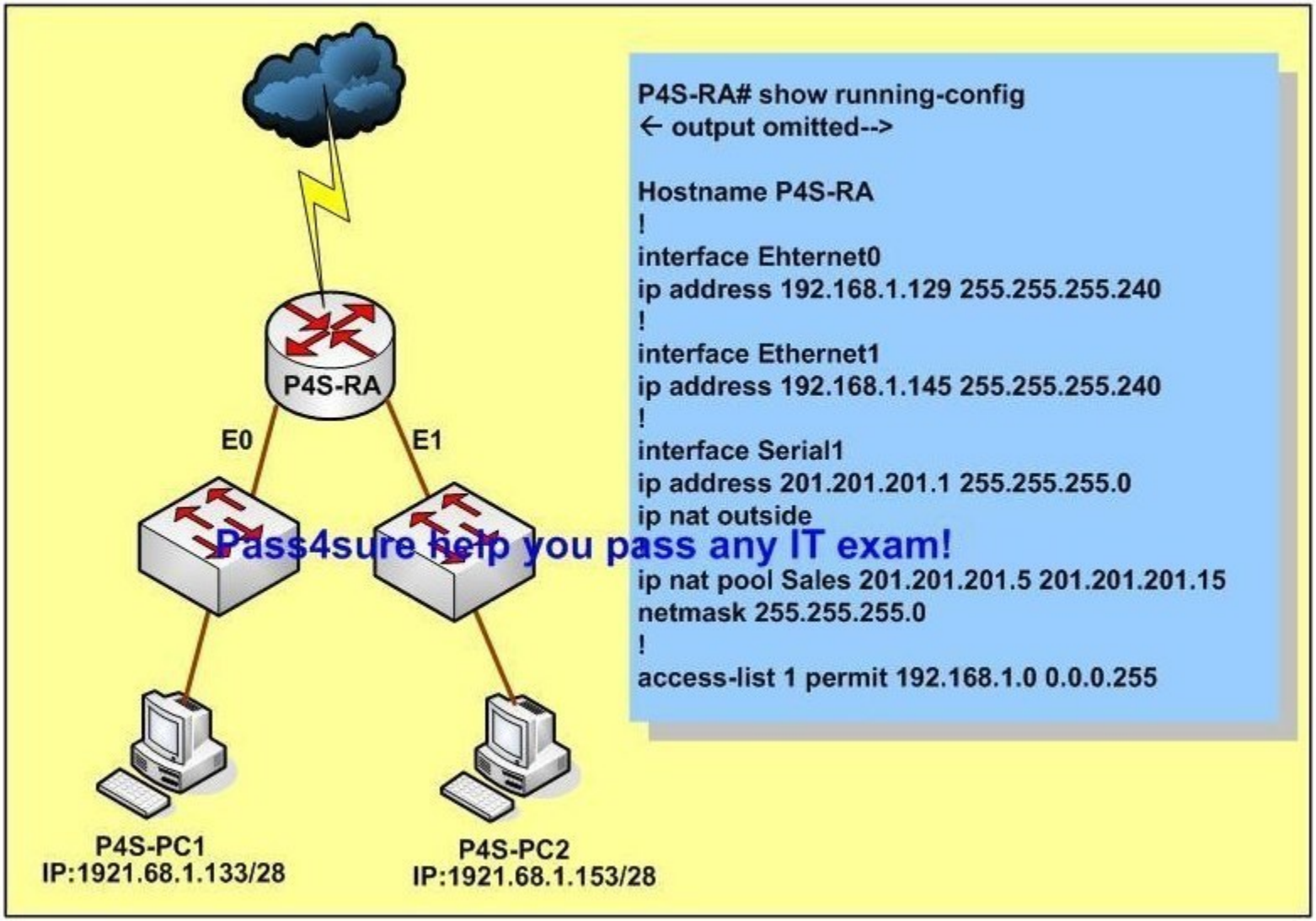
### Explanations

No more information available

Mark for Review

Given the partial router configuration in the graphic, why does the P4S-PC1 and P4S-PC2 with the IP address 192.168.1.153/28 fail to access the Internet? (Choose two.)

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- A. The NAT inside interfaces are not configured properly.
- B. The NAT outside interface is not configured properly.

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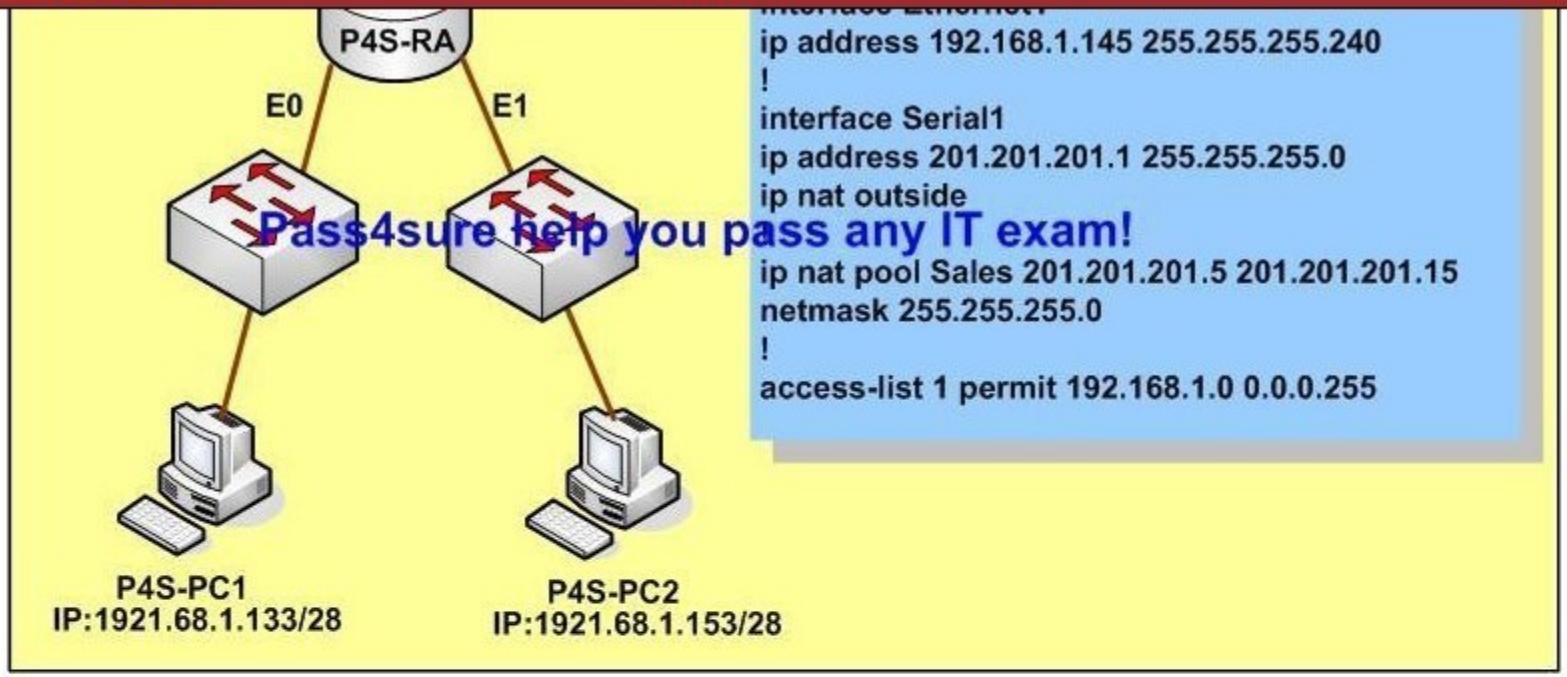


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- A. The NAT inside interfaces are not configured properly.
- B. The NAT outside interface is not configured properly.
- C. The router is not properly configured to use the access control list for NAT.
- D. The NAT pool is not properly configured to use routable outside addresses.

## Answer & Explanation

### Correct Answer

A C

### Explanations

On the basis of the output from the partial configuration on border router, NAT technology is applied to this network. When P4S-PC1 and P4S-PC2 access external network, datagram will be translated by NAT on P4S-RA before crossing the router, which then will be routed to Internet. But P4S-PC1and P4S-PC2 can't access Internet. After checking NAT configuration on P4S-RA, we discover that inside interface and outside interface are not applied to proper interfaces and there is no matching Access Control List when call address pool.

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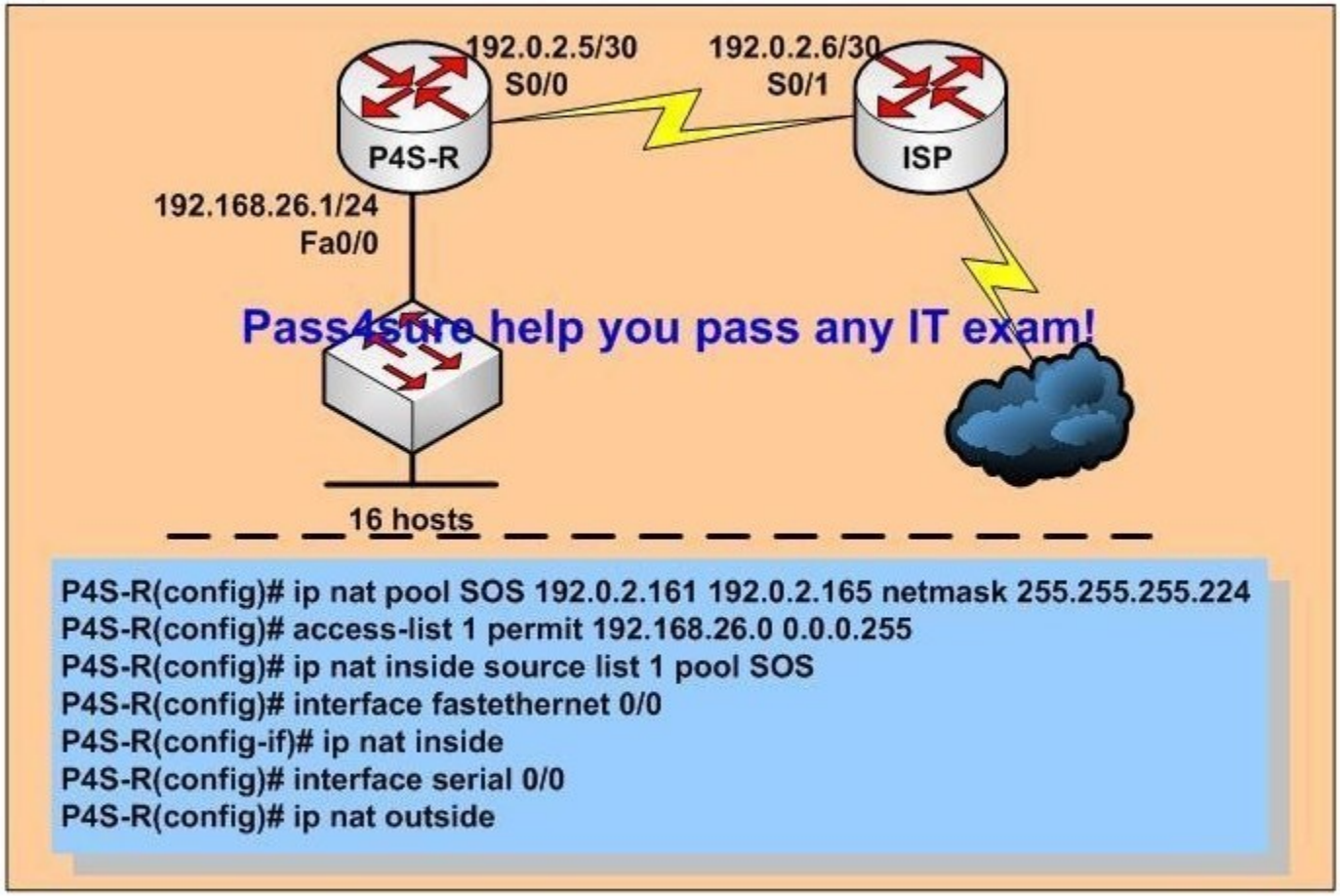
Mark for Review

Based on the network diagram and configuration shown in the exhibit. The network at the Pass4sure Company has just been configured for NAT as shown. Initial tests indicate that everything is functioning as intended. However, it is found that a number of hosts cannot access the Internet. Why?




A. The access list is not correct.

B. There are not enough IP addresses available in the NAT address pool.

C. The wrong interface has been configured with the ip nat inside command.

D. The S0/1 interface of the ISP router is in the wrong subnet.

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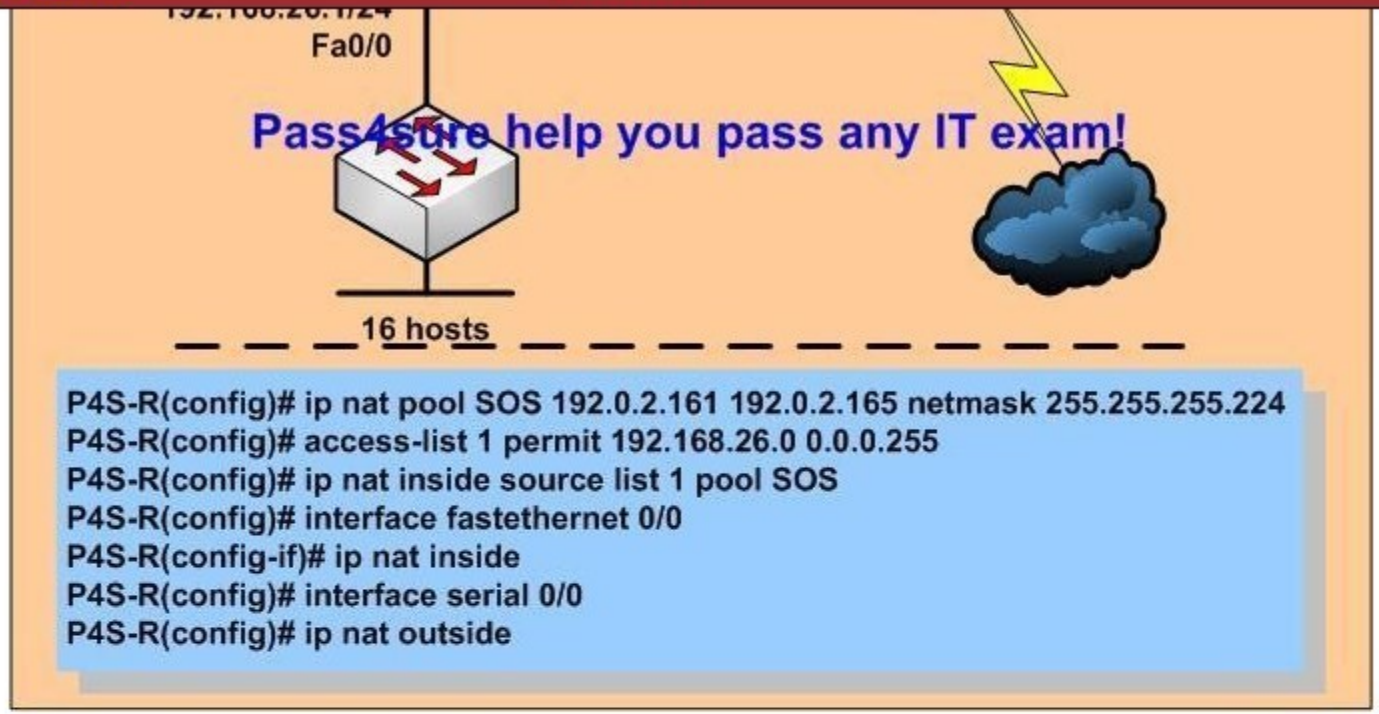


A. The access list is not correct.

B. There are not enough IP addresses available in the NAT address pool.

C. The wrong interface has been configured with the ip nat inside command.

D. The S0/1 interface of the ISP router is in the wrong subnet.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge points of NAT. We can learn from the above-mentioned configuration that a static NAT is used in this case because there are only five transferable addresses in the interior global IP address pool. Therefore, when more than five users are applying address translation, certain users may fail to do that and connect to the Public LAN.

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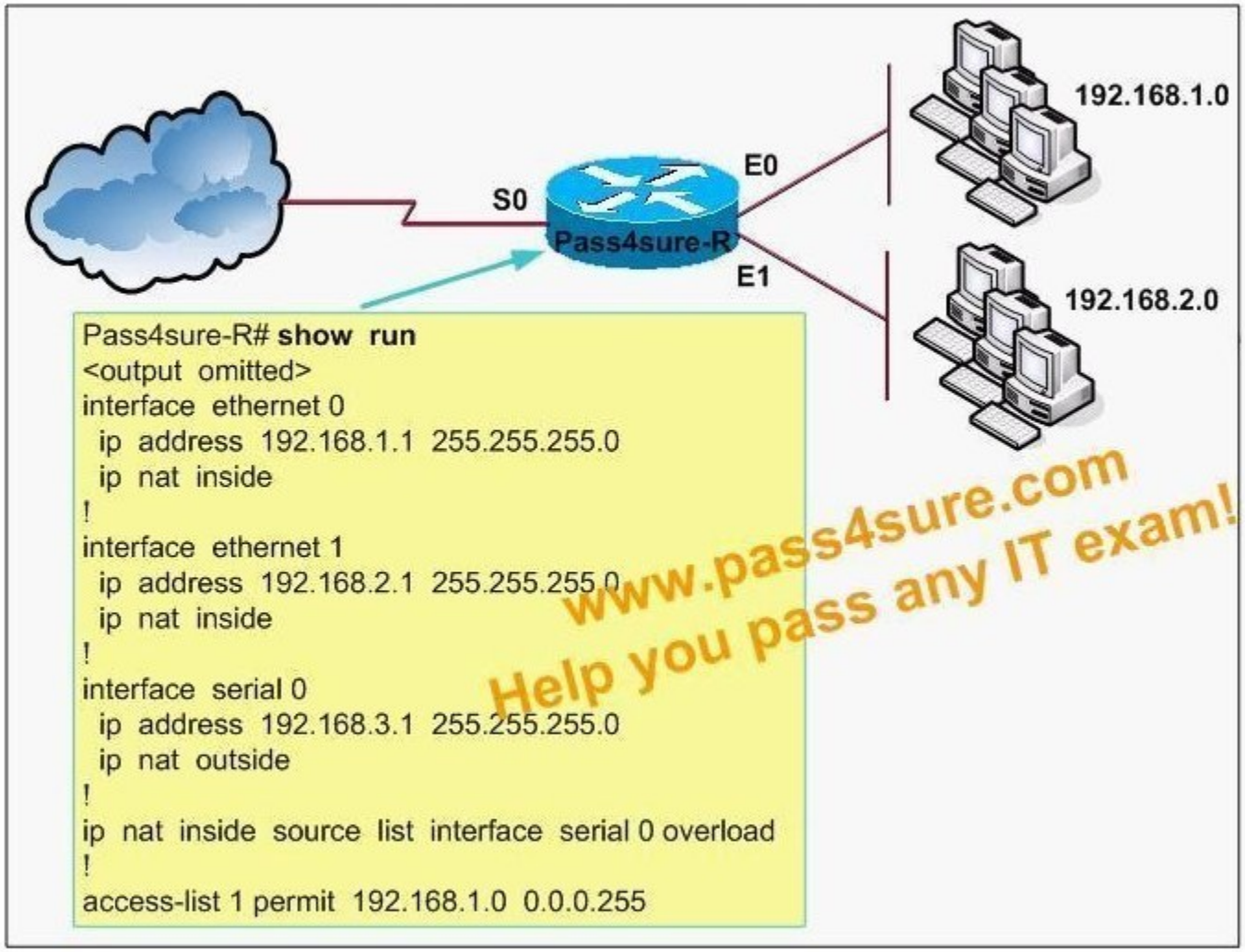
Mark for Review

You work as a network technician for Pass4sure Company and are responsible for this network. You have configured NAT as shown in the graphic. Some clients can access the Internet while others cannot. What should you do to resolve the problem?

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A. Configure an IP NAT pool.

B. Properly configure the ACL.

C. Apply the ACL to the S0 interface.

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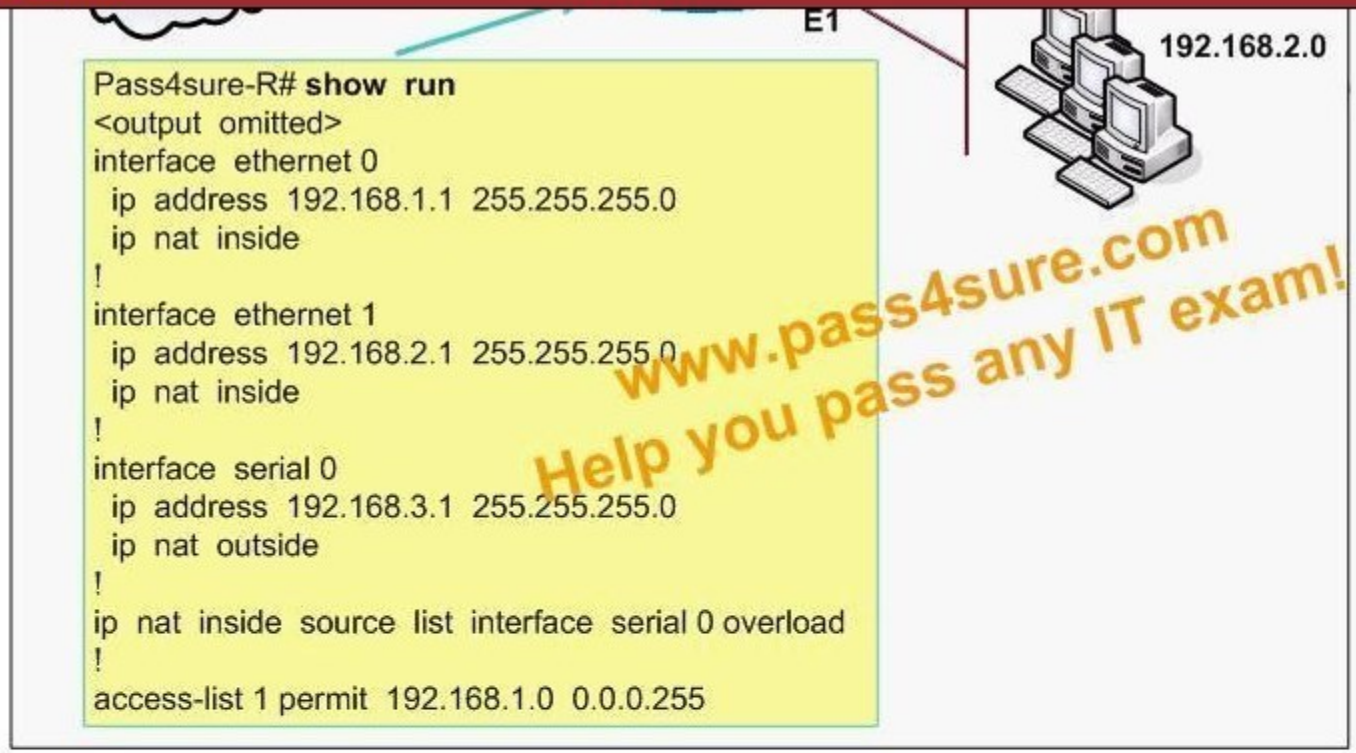


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A. Configure an IP NAT pool.

B. Properly configure the ACL.

C. Apply the ACL to the S0 interface.

D. Configure another interface with the ip nat outside command.

## Answer & Explanation

### Correct Answer

B

### Explanations

Because of the improper configuration of access control lists, some users can not access Internet, here you have to add commands access-list 1 permit 192.168.2.0 0.0.0.255 in the control list.

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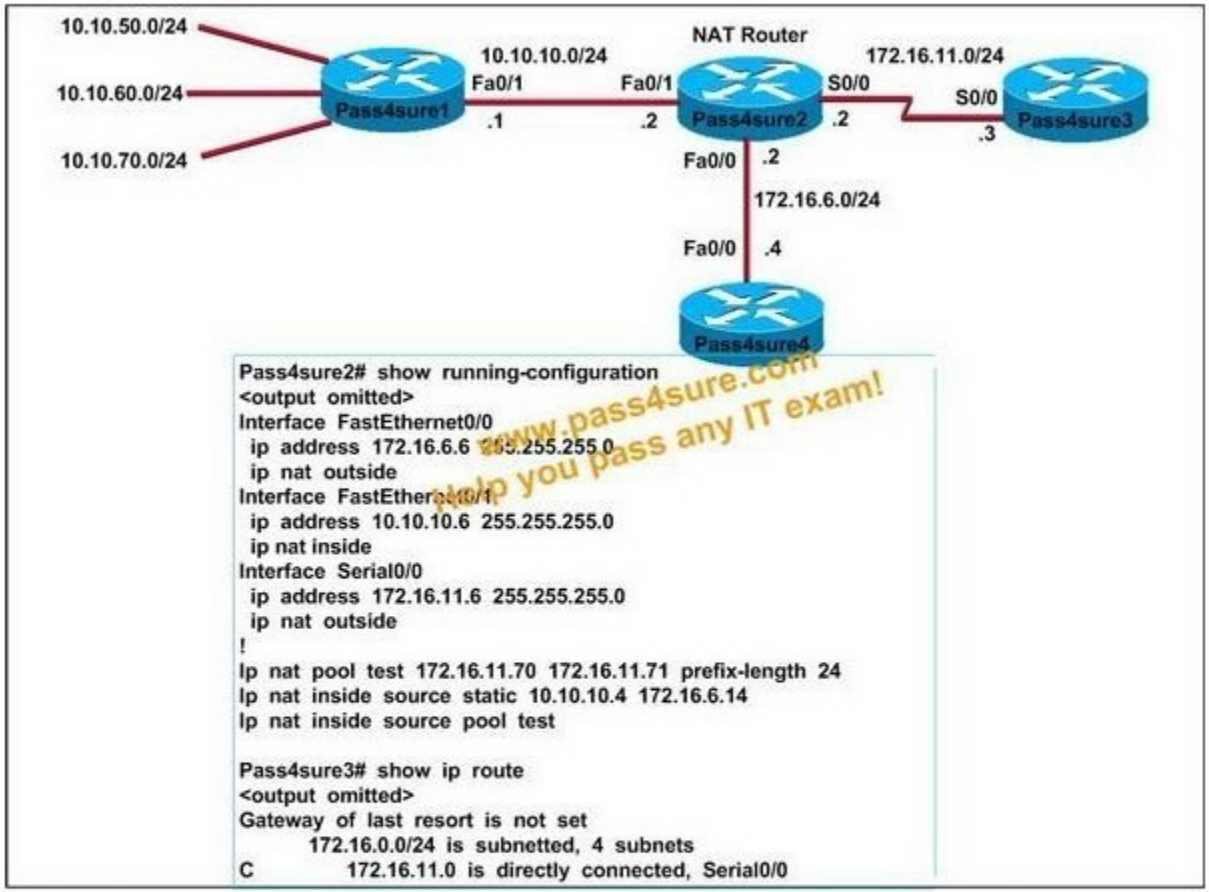
Mark for Review

Part of the Pass4sure network and the output of Pass4sure2 are shown below:

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Please study the exhibit shown above carefully, Pass4sure1 can ping Pass4sure4 (172.16.6.4), but not Pass4sure3 (172.16.11.3). There are no routing protocols running in any of the routers, and Pass4sure1 has Pass4sure2 as its default gateway. What can be done to address this problem?

- A. Convert to static NAT.
- B. Convert to dynamic NAT.
- C. Add a static route in Pass4sure3 back to Pass4sure1.
- D. Change the inside and outside NAT commands.

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Mark for Review

```
<output omitted>
Interface FastEthernet0/0
 ip address 172.16.6.6 255.255.255.0
 ip nat outside
Interface FastEthernet0/1
 ip address 10.10.10.6 255.255.255.0
 ip nat inside
Interface Serial0/0
 ip address 172.16.11.6 255.255.255.0
 ip nat outside
!
Ip nat pool test 172.16.11.70 172.16.11.71 prefix-length 24
Ip nat inside source static 10.10.10.4 172.16.6.14
Ip nat inside source pool test

Pass4sure3# show ip route
<output omitted>
Gateway of last resort is not set
        172.16.0.0/24 is subnetted, 4 subnets
C           172.16.11.0 is directly connected, Serial0/0
```

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- A. Convert to static NAT.
- B. Convert to dynamic NAT.
- C. Add a static route in Pass4sure3 back to Pass4sure1.
- D. Change the inside and outside NAT commands.

## Answer & Explanation

### Correct Answer

C

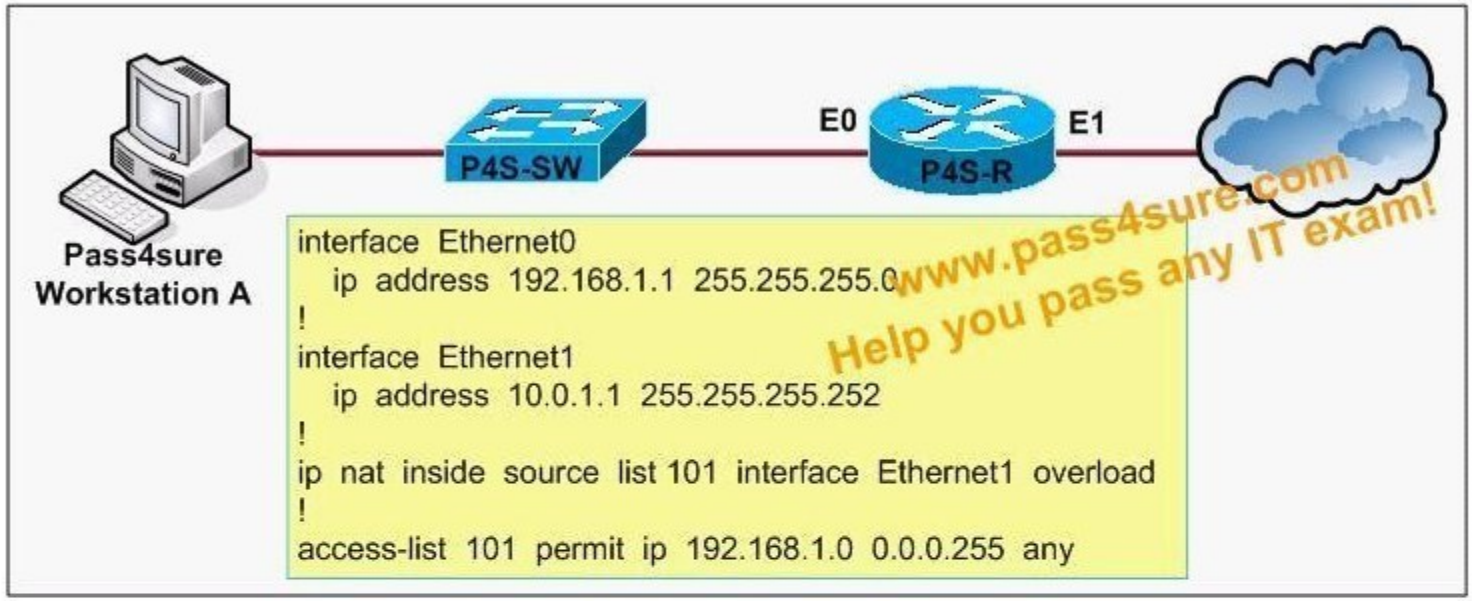
### Explanations

This question is to examine the knowledge point about NAT, as well as static router. According to the above-mentioned information, all the routers are not running router protocol. Under that circumstance, Inter-IP-segment communication is not available. We can learn from the configuration information of the picture that the Pass4sure1 can successfully ping Pass4sure4 owing to the enabling of NAT on Pass4sure2. However, Pass4sure2 has not been configured with NAT reaching to Pass4sure3. Therefore, so as to make Pass4sure1 successfully ping Pass4sure3, the configuration of static router is necessary.

http://careerset.blogspot.com

Mark for Review

Refer to the exhibit. Given the partial configuration shown in the exhibit, why do internal workstations on the 192.168.1.0 network fail to access the Internet?




A. A NAT pool has not been defined.

B. The wrong interface is overloaded.

C. NAT has not been applied to the inside and outside interfaces.

D. The access list has not been applied to the proper interface to allow traffic out of the internal network.

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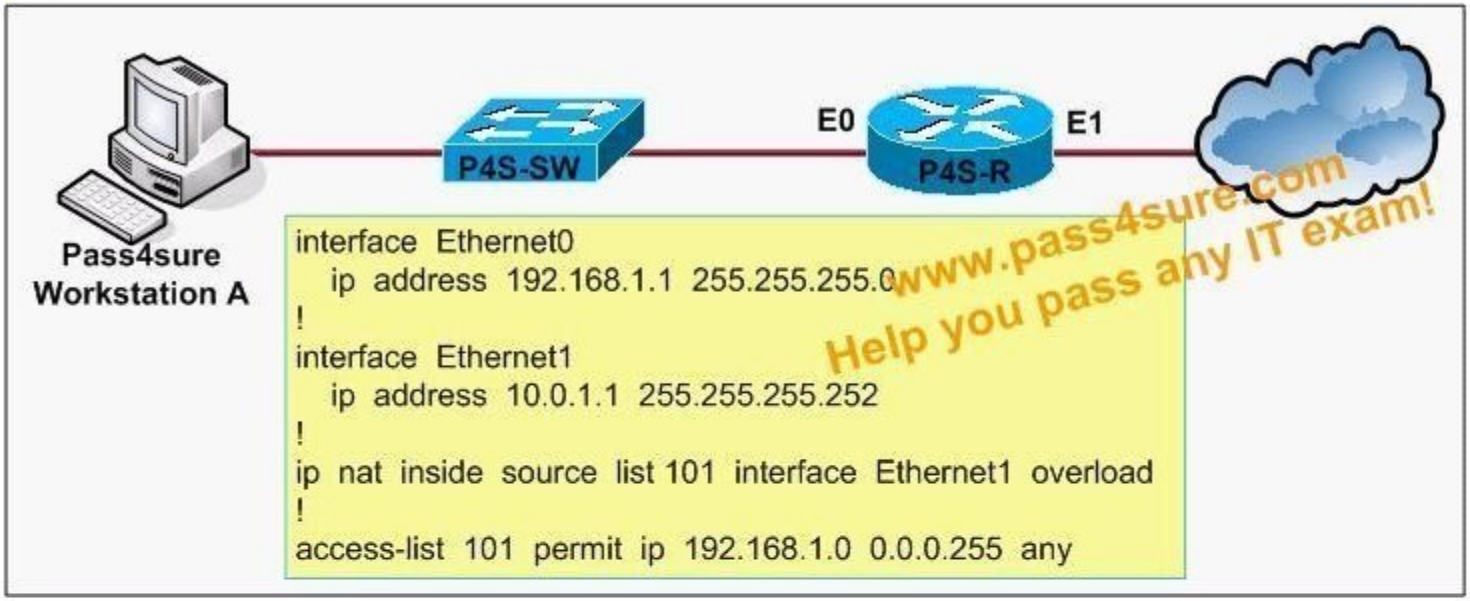
Mark for Review

to access the Internet?

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C. NAT has not been applied to the inside and outside interfaces.

D. The access list has not been applied to the proper interface to allow traffic out of the internal network.

## Answer & Explanation

### Correct Answer

C

### Explanations

Two basic configurations are needed when configuring NAT in CISCO IOS: 1, the definition of address translation types (global configuration mode command); 2, the definition of devices location (interface sub-configuration mode command). Inside and outside parameters designate the transmission direction. Designate inside on interface that is connected to internal network, and designate outside on interface that is connected to external network. The configuration in the figure above does not apply NAT to interface, so address can not be translated.

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Mark for Review

Lab Simulation

A network associate is configuring a router for the P4S company to provide Internet access. The ISP has provided the company with six public IP addresses of 198.18.237.225 198.18.237.230. The company has 14 hosts that need to access the Internet simultaneously. The hosts in the company LAN have been assigned private space addresses in the range of 192.168.16.33 - 192.168.16.46.

The following have already been configured on the router:

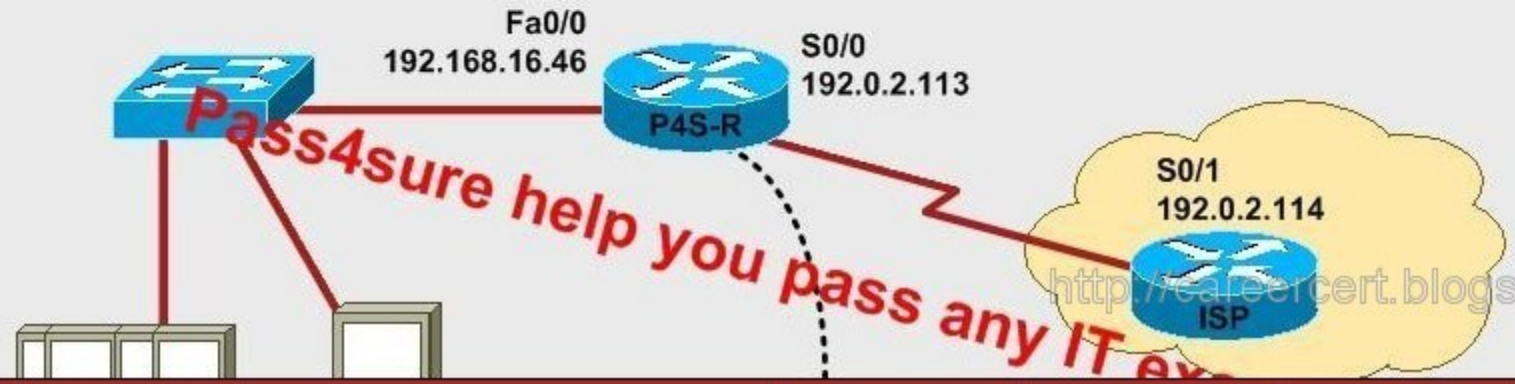
- The basic router configuration
- The appropriate interfaces have been configured for NAT inside and NAT outside.
- The appropriate static routes have also been configured (since the company will be a stub network, no routing protocol will be required)
- All passwords have been temporarily set to "cisco".

The task is to complete the NAT configuration using all IP addresses assigned by the ISP to provide Internet access for the hosts in the Bomar LAN. You have successfully completed this exercise when the host PC can ping the ISP.

Configuration information

router name - P4S-R
inside global addresses- 198.18.237.225 198.18.237.230/29
inside local addresses - 198.168.16.33 192.168.16.46/28
number of inside hosts - 14

**The Topology**



Mark for Review

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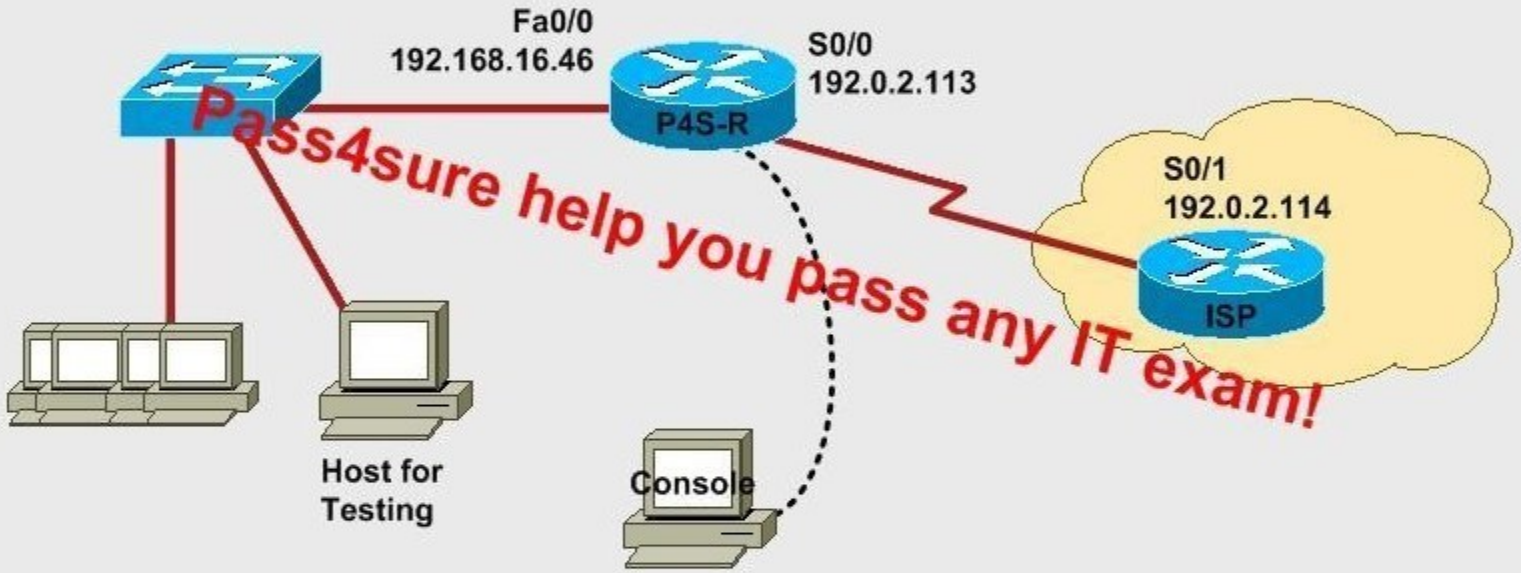
inside local addresses - 198.168.16.33 192.168.16.46/28
number of inside hosts - 14

**The Topology**




Click here to input the answer.

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Mark for Review

Click here to input the answer.

## Answer & Explanation

### Correct Answer

```
Router>enable
Router#config terminal
Router(config)#hostname P4S-R
P4S-R(config)#interface fa0/0
P4S-R(config-if)#ip nat inside
P4S-R(config-if)#no shutdown
P4S-R(config)#interface S0/0
P4S-R(config-if)#ip nat outside
P4S-R(config-if)#no shutdown
P4S-R(config-if)#exit
P4S-R(config)#access-list 1 permit 192.168.16.32 0.0.0.15
P4S-R(config)#access-list 1 deny any
P4S-R(config)#ip nat pool nat_test 198.18.237.225 198.18.237.230 prefix-length 29
P4S-R(config)#ip nat inside source list 1 pool nat_test overload
P4S-R(config)#end
P4S-R#copy run start
```

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### Explanations

No more information available

Topic 8 - Implement and verify WAN links (26 Questions)

Describe different methods for connecting to a WAN
Configure and verify a basic WAN serial connection
Configure and verify Frame Relay on Cisco routers
Troubleshoot WAN implementation issues
Describe VPN technology (including: importance, benefits, role, impact, components)
Configure and verify a PPP connection between Cisco routers

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Mark for Review

Which three types of layer 2 encapsulation are used by the WAN and differ from the LAN?(Choose three)

- A. HDLC
- B. Ethernet
- C. Token bus
- D. PPP
- E. CSMA/CD
- F. Frame Relay

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Mark for Review

Which three types of layer 2 encapsulation are used by the WAN and differ from the LAN?(Choose three)

- A. HDLC
- B. Ethernet
- C. Token bus
- D. PPP
- E. CSMA/CD
- F. Frame Relay

## Answer & Explanation

### Correct Answer

A D F

### Explanations

This question is to examine the encapsulation types of WAN layer-2. The most commonly used methods are HDLC (High-Level Data Link Control), SDLC (Synchronous Data Line Control), LAPB (Link Access Procedure, Balanced), LAPF (Link Access Procedure for Frame Relay), PPP (point-t-point protocol) and Frame Relay.

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Mark for Review

What can the Pass4sure network administrator utilize by using PPP (Point to Point Protocol) as the Layer 2 encapsulation? (Choose three)

- A. quality of service
- B. compression
- C. authentication
- D. VLAN support
- E. multilink support

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Mark for Review

What can the Pass4sure network administrator utilize by using PPP (Point to Point Protocol) as the Layer 2 encapsulation? (Choose three)

- A. quality of service
- B. compression
- C. authentication
- D. VLAN support
- E. multilink support

## Answer & Explanation

### Correct Answer

B C E

### Explanations

Compared to HDLC ,PPP has more features. Similar to HDLC, PPP defines a type of frame and how to communicate between PPP devices including the multiplexed networks and the data link layer protocols cross the same link. However, PPP has more characteristics as follows:
Perform the dynamic configuration of the link.
Allow for authentication.
Compress packet header.
Test the quality of the link.
Complete detecting and troubleshooting.
Allow for combining many PPP physical links into a single logical link.
PPP has 3 main components.
1.frame format
2.LCP(Link Control Protocol)
3.NCP(Network Control Protocol)

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Mark for Review

You are about to configure PPP on the interface of a Cisco router. Which authentication methods could you use? (Choose two)

- A. VNP
- B. CHAP
- C. PAP
- D. LAPB

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Mark for Review

You are about to configure PPP on the interface of a Cisco router. Which authentication methods could you use? (Choose two)

- A. VNP
- B. CHAP
- C. PAP
- D. LAPB

## Answer & Explanation

### Correct Answer

B C

### Explanations

This question is to examine the knowledge points about WAN network types. There are two ways to accomplish PPP authentication, including most commonly used PAP (Password Authentication Protocol) and CHAP (Challenge-Handshake Authentication Protocol).

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Mark for Review

When a frame departs from a Layer 3 device, the Layer 2 encapsulation information will be modified while entering the device. Why? (Choose two.)

- A. The data format is changed from analog to digital.
- B. The type of WAN encapsulation is changed.
- C. The source and destination hosts are in the same subnet.
- D. The source and destination MAC addresses are changed.

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Mark for Review

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- C. The source and destination hosts are in the same subnet.
- D. The source and destination MAC addresses are changed.

## Answer & Explanation

### Correct Answer

B D

### Explanations

This question is to examine the knowledge points of the WAN data packet encapsulation. The data packet names are not the same on different protocol layers, which is called segment on transport layer, datagram on network layer, and frame on link layer. Sending the framed packet encapsulation to transmission medium, the protocol of each layer arrived at the destination host will decapsulate its corresponding herder, and finally, transferring the data on application layer to be processed by applications.

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Which PPP authentication methods will you use when configuring PPP on an interface of a Cisco router?(Choose two)

- A. SSL
- B. SLIP
- C. PAP
- D. CHAP

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Mark for Review

Which PPP authentication methods will you use when configuring PPP on an interface of a Cisco router?(Choose two)

- A. SSL
- B. SLIP
- C. PAP
- D. CHAP

## Answer & Explanation

### Correct Answer

C D

### Explanations

PPP has two ways to authenticate : one is PAP, the other is CHAP. PAP is less secure than CHAP. PAP transmits the password in the form of plaintext, while the transmission process of CHAP does not contain password, using hash to replace password. The PAP authentication can be achieved by two-way handshake ,while the CHAP authentication can be achieved by three-way handshake. The PAP authentication is that the dialed sends the request and the dial reply, while the CHAP authentication is that the dial send request and the dialed sends back a data packet which contains the random hash value sent by the dial, after confirming the database has no error, the dial will send a successfully connected packet to connect.

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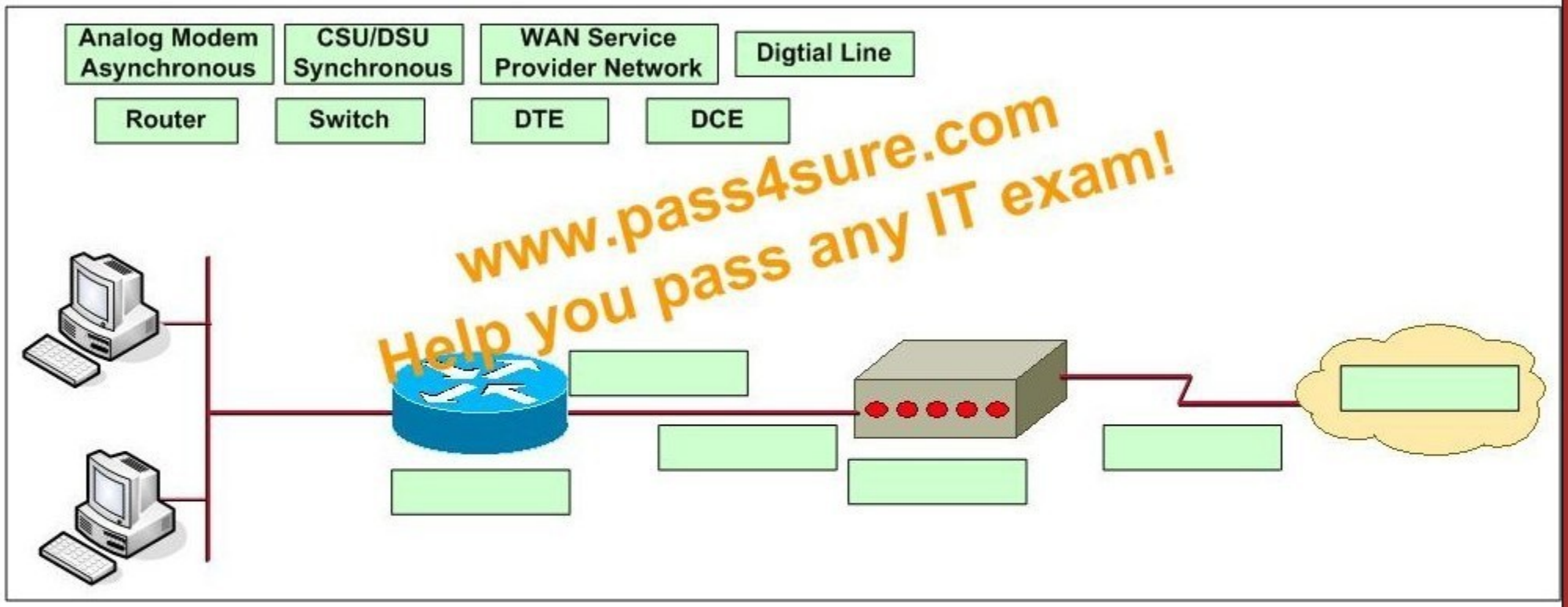
Mark for Review

Refer to the exhibit. Complete this network diagram by dragging the correct device name of description name or description to the correct location. Not all the names or descriptions will be used.

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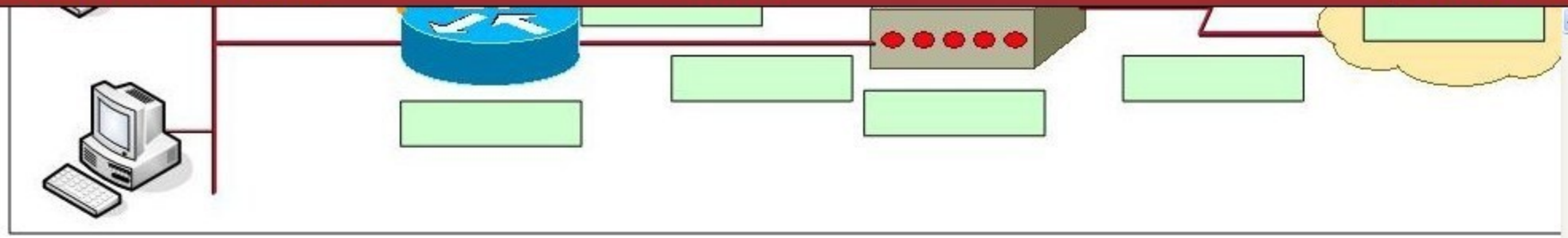
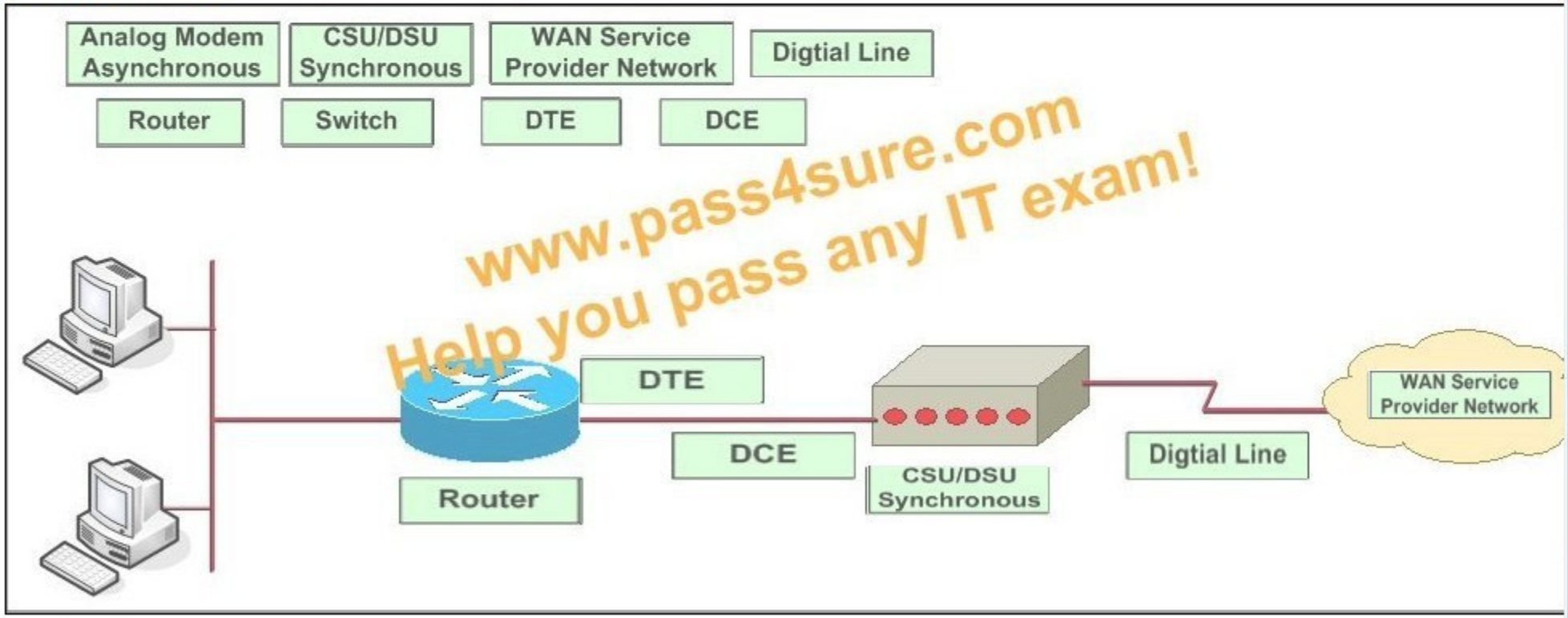


## Answer & Explanation

### Correct Answer

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### Explanations

No more information available

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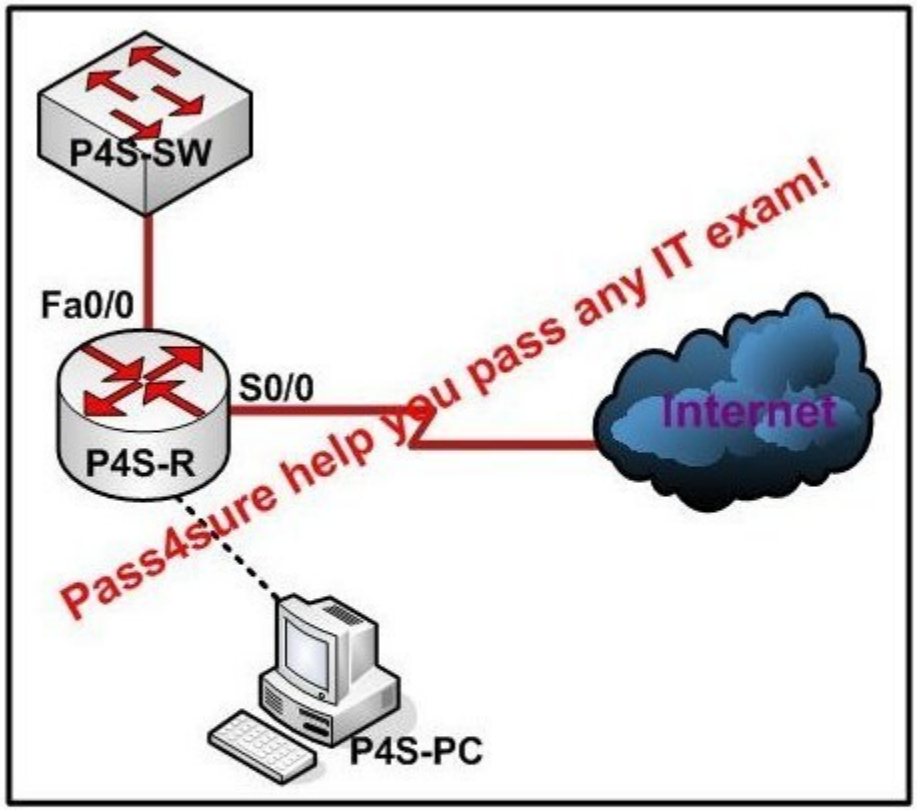
Mark for Review

As the Pass4sure network administrator, you are configuring P4S-R to connect to a non-Cisco network. Which two commands would be applied to the S0/0 WAN interface, but not to the Fa0/0 LAN interface? (Choose two.)




- A. no shutdown
- B. ip address
- C. authentication pap
- D. encapsulation ppp

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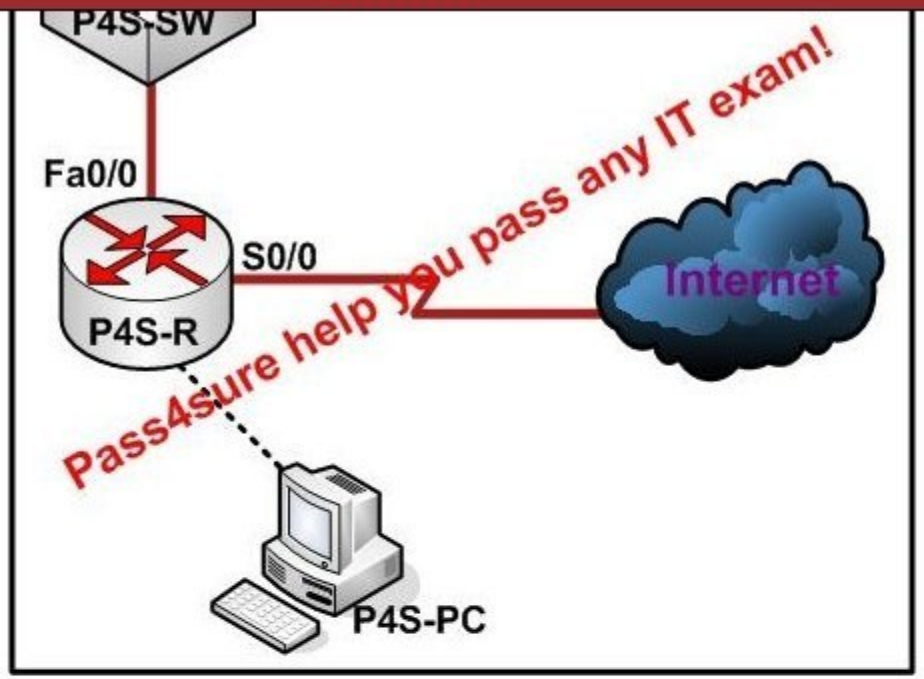


- A. no shutdown
- B. ip address
- C. authentication pap
- D. encapsulation ppp

## Answer & Explanation

### Correct Answer

C D

### Explanations

Because of the open standards of PPP, it is often used for serial WAN connection. It can work asynchronously and synchronously. Because pap is the most unsafe one in PPP certification protocol, PAP will experience shook hands processes twice during certification stage. At that stage, sending station will send in plain text the user name (the host name) and password to the receiving station. It is not suitable for LAN between Fa0/0.

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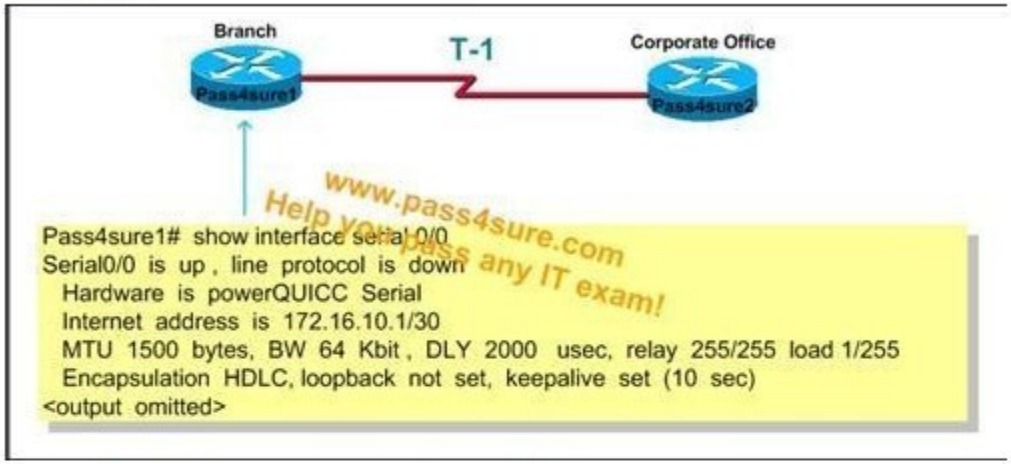
Mark for Review

Part of the Pass4sure WAN is shown below:




Please study the exhibit shown above carefully, the corporate office and branch location have been attached through two non-Cisco routers over a highly reliable WAN connection for over two year. Recently, the network administrator has installed a new Cisco router to replace the hardware at the branch location. Since the installation, IP communication cannot be verified across the link. what would be a logical first step to take to resolve this problem?

A. Change the bandwidth setting on Pass4sure1 router to match the actual line speed.

B. Verify Layer 1 communication on the Pass4sure1 router Serial 0/0 interface.

C. Change the encapsulation on Pass4sure1 router to match Pass4sure2 router.

D. Ensure an exact match between the bandwidth setting on Pass4sure2 router and Pass4sure1 router.

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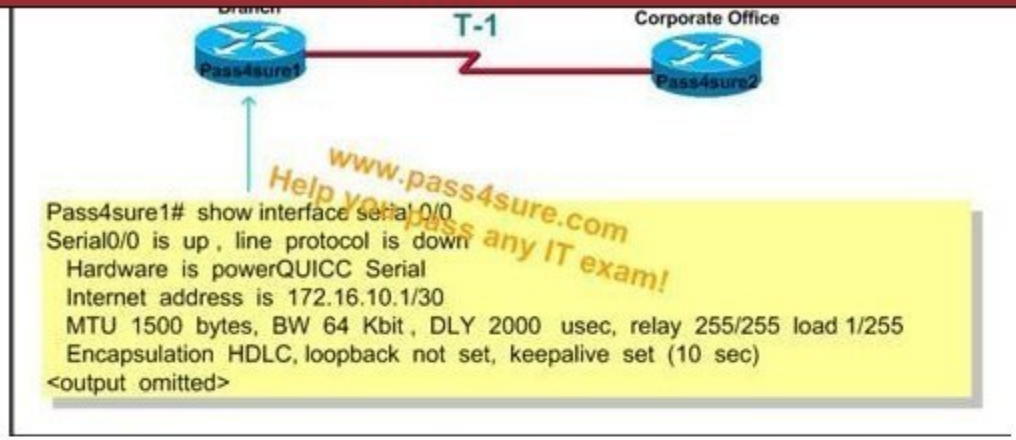


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B. Verify Layer 1 communication on the Pass4sure1 router Serial 0/0 interface.

C. Change the encapsulation on Pass4sure1 router to match Pass4sure2 router.

D. Ensure an exact match between the bandwidth setting on Pass4sure2 router and Pass4sure1 router.

## Answer & Explanation

### Correct Answer

C

### Explanations

Based on the information provided in the exhibit, we know that Serial0/0 is up, line protocol is down. There are three common states:
1. serial0/0 up, line protocol is up The interface is up and the line protocol is up.

2. serial0/0 down, line protocol is down The interface is down , there is something wrong with the physical layer.

3. serial0/0 up, line protocol is down The interface is up, the encapsulation format is not matched.

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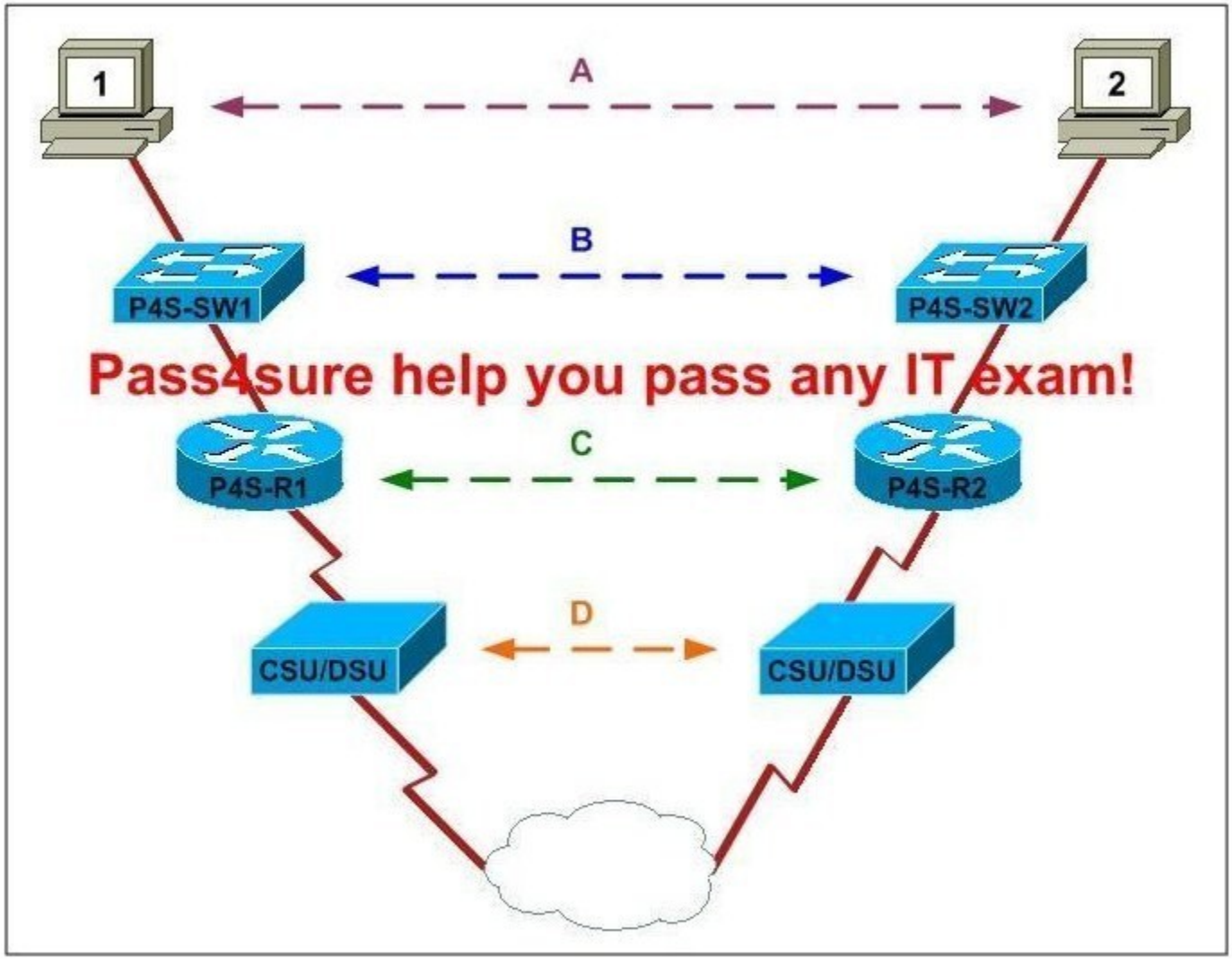
Mark for Review

According to the following graphic, when host 1 communicates with host 2 through the point-to-point WAN, what does the dashed line A stand for?




- A. IP
- B. IEEE 802.3

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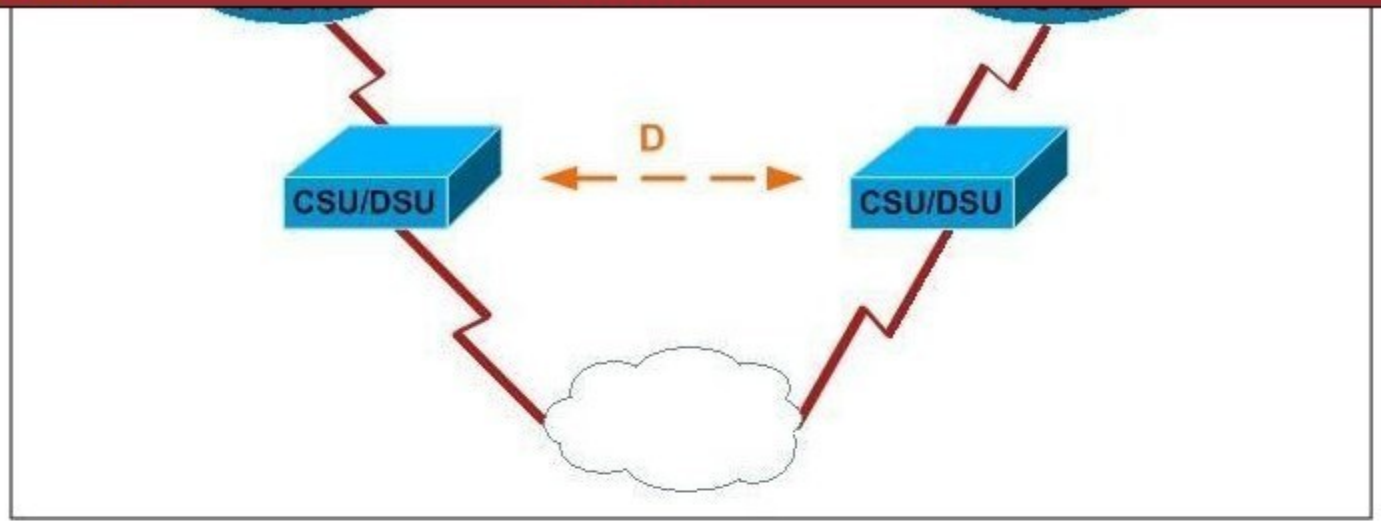
Mark for Review




A. IP

B. IEEE 802.3

C. T1

D. PPP

## Answer & Explanation

### Correct Answer

A

### Explanations

The question is to examine the knowledge point about the WAN connectivity. The communication between two host computers is based on network layer; therefore their communication is actually IP communication. Generally, IEEE 802.3 refers to Ethernet. T1/E1 represents two data transmission speed standards. T1 is a North America standard, which supports 1.544Mbps dedicated circuit telephone data transmission. It is made of 24 autonomous channels and the transmission speed of each one is 64kbps, which can be used simultaneously to transmit voice and data. PPP (Point-to-Point Protocol) is a link layer protocol which is designed for simple link circuit such as transmit data packet between coequal cells. This link circuit supplies duplex operation and transmit data packet in order. The purpose of the design is mainly about creating point-to-point connection through dial-up or autonomous channels to transmit data, making it the common solution of the connection between different host computers, network bridges and routers.

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In a Frame Relay environment, what is the function of the DE bit?

- A. the activation of the LMI protocol
- B. the identification of the virtual circuit
- C. the identification of what routing updates to block
- D. the identification of frames that are transmitted above the CIR

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Mark for Review

In a Frame Relay environment, what is the function of the DE bit?

A. the activation of the LMI protocol

B. the identification of the virtual circuit

C. the identification of what routing updates to block

D. the identification of frames that are transmitted above the CIR

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the knowledge points related to Frame Relay. DE (discard eligibility) indicates that a frame may be discarded in preference to other frames, which can be configured manually or be configured on the frame which is different from your traffic contract by the operator.

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Mark for Review

You work as a network technician for Pass4sure and are responsible for this network. P4S1 is a Cisco router was providing Frame Relay connectivity at a remote Pass4sure branch site. This router was replaced with a different vendor's frame relay router. Connectivity is now down between the central and remote site. What is the most likely cause of the problem?

A. mismatched LMI types

B. incorrect DLCI

C. mismatched encapsulation types

D. incorrect IP address mapping

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B. incorrect DLCI

C. mismatched encapsulation types

D. incorrect IP address mapping

## Answer & Explanation

### Correct Answer

C

### Explanations

The question is to examine the troubleshooting of Frame Relay. The device encapsulation types of different manufactures are different so that mismatched encapsulations problems will occur once connect them together. Therefore, if the link circuit cannot get connected, one should first check if the mismatched encapsulation problems are caused by different manufacture types.

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Mark for Review

Router Pass4sure-R is being used in the Pass4sure frame relay network. When this frame relay router is connected to a WAN link using a serial DTE interface, how is the interface clock rate determined?

A. It is supplied by the far end router.

B. It is supplied by the Layer 1 bit stream timing.

C. It is supplied by the CSU/DSU.

D. It is determined by the clock rate command.

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Mark for Review

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C. It is supplied by the CSU/DSU.

D. It is determined by the clock rate command.

## Answer & Explanation

### Correct Answer

C

### Explanations

CSU/DSU (Channel Service Unit/Data Service Unit) are used for format conversion, to convert data from DTE users to a kind of format that WAN service providers may accept. This belongs to Data Communication Equipment (DCE).

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Mark for Review

The Pass4sure network administrator use command "show frame-relay lmi" on Pass4sure router, and the output is shown below:

```
Pass4sure# show frame-relay lmi

LMI Statistics for interface Serial 0/0 (Frame-Relay DTE) LMI TYPE = ANSI
  Invalid Unnumbered info 0          Invalid Prot Disc 0
  Invalid dummy Call Ref 0           Invalid Msg Type 0
  Invalid Status Message 0           Invalid Lock Shift 0
  Invalid Information ID 0           Invalid Report IE Len 0
  Invalid Report Request 0           Invalid Keep IE Len 0
  Invalid Status Enq. Sent 61        Num Status msgs Rcvd 0
  Invalid Update Status Rcvd 0       Num Status Timeouts 60
```

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Based on the information shown above, which two following statements are true regarding the output of the show frame-relay lmi command issued on the Pass4sure router? (Choose two.)

- A. LMI messages are being sent on DLCI 0.
- B. LMI messages are being sent on DLCI 1023.
- C. The LMI exchange between the router and Frame Relay switch is functioning properly.
- D. The Frame Relay switch is not responding to LMI requests from the Pass4sure router.

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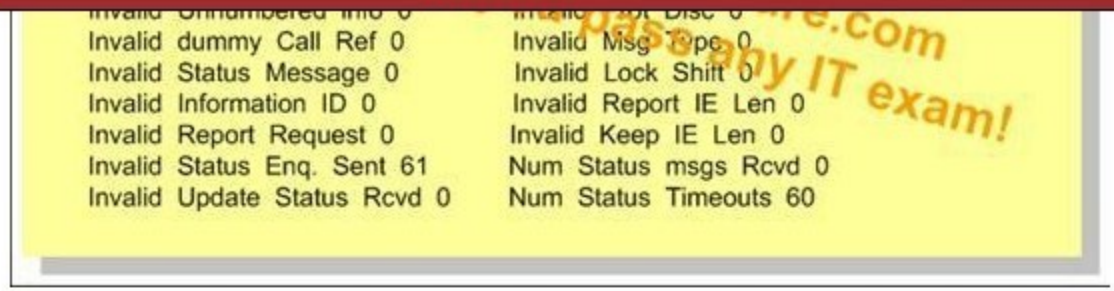


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- B. LMI messages are being sent on DLCI 1023.
- C. The LMI exchange between the router and Frame Relay switch is functioning properly.
- D. The Frame Relay switch is not responding to LMI requests from the Pass4sure router.

## Answer & Explanation

### Correct Answer

A D

### Explanations

Alongside a very active community of implementors, several standards bodies have defined specifications for aspects of Frame Relay communications.
In North America, Committee T1S1 of the Exchange Carrier Standards Association has been assigned to draft Frame Relay standard for the American National Standards Institute (ANSI):

The current ANSI standards, T1.606- 1990, T1.617-1991, and T1.618-1991 respectively define Frame Relay service, access signaling for Frame Relay, and the core aspects of the Frame Relay protocol.

The LMI specification, which originated in the "private sector" appears as Annex D of T1.617-1991, which defines a status signaling process that's essentially the same as LMI without the optional extensions. ANSI's LMI-like protocol operates on DLCI 0.

The specification for CLLM appears in the main body of T1.618-1991.

Mark for Review

Drag the Frame Relay acronym on the left to match its definition on the right. (Not all acronyms are used.)

- SVC
- DLCI
- CIR
- DCE
- DTE
- LMI
- PVC

- a router is this type of device
- the most common type of virtual circuit
- provides status messages between DTE and DCE device
- identifies the virtual connection between the DTE and the switch

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Mark for Review

DCE

DTE

LMI

PVC

device

identifies the virtual connection between the DTE and the switch

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## Answer & Explanation

### Correct Answer

SVC

DLCI

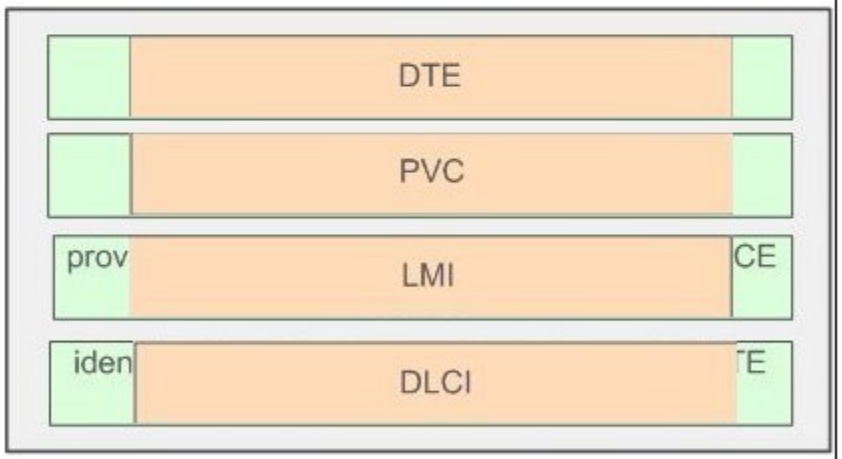
CIR

DCE

DTE

LMI

PVC

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### Explanations

No more information available

Mark for Review

Which function does the Frame Relay DLCI provide with respect to router Pass4sureA?

A. defines the signaling standard between router Pass4sureA and the frame switch

B. identifies the circuit between router Pass4sureA and the frame switch

C. identifies the circuit between router Pass4sureB and the frame switch

D. identifies the encapsulation used between router Pass4sureA and router Pass4sureB

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Mark for Review

Which function does the Frame Relay DLCI provide with respect to router Pass4sureA?

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- A. defines the signaling standard between router Pass4sureA and the frame switch
- B. identifies the circuit between router Pass4sureA and the frame switch
- C. identifies the circuit between router Pass4sureB and the frame switch
- D. identifies the encapsulation used between router Pass4sureA and router Pass4sureB

## Answer & Explanation

### Correct Answer

B

### Explanations

Each virtual circuit has a unique local address, called DLCI. This means that when using virtual circuit in different WAN segments, each segment may have a different DLCI. Operator switch will transmit a segment DLCI into another segment DLCI. Note that DLCI has only local significance: they are unique only in each network segment, but not unique in the entire frame relay network.

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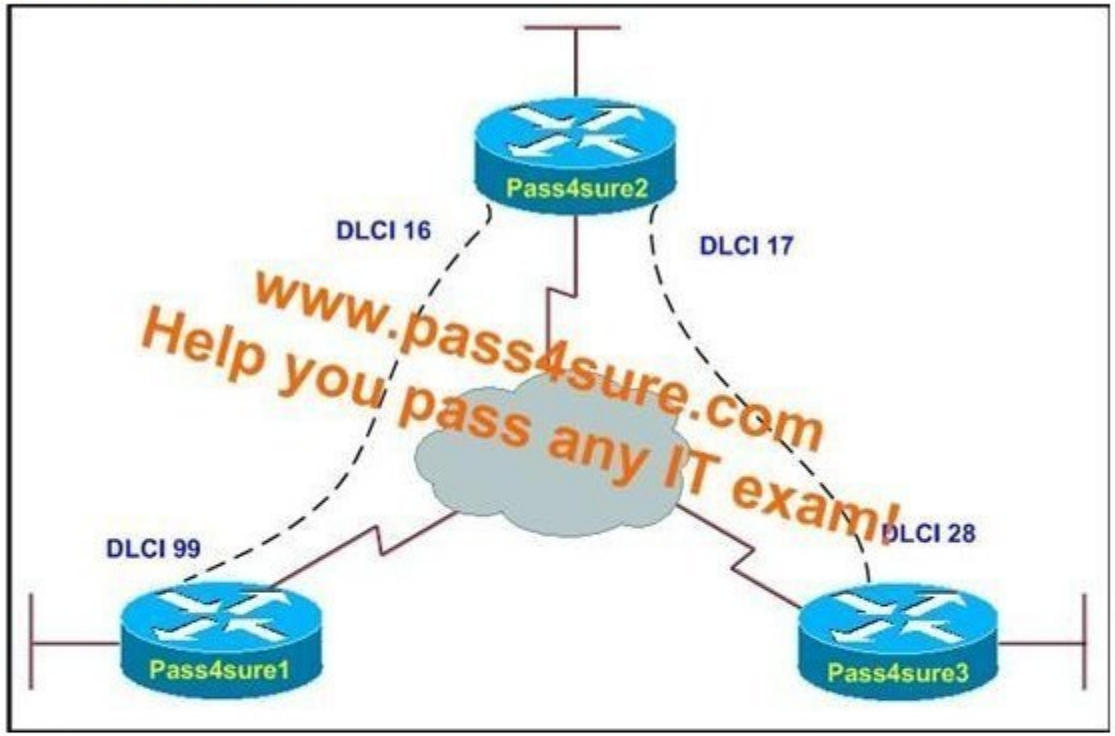
Mark for Review

The Pass4sure frame relay network is shown below:




which statement describes DLCI 17?

A. DLCI 17 describes the ISDN circuit between Pass4sure2 and Pass4sure3.

B. DLCI 17 describes a PVC on Pass4sure2. It cannot be used on Pass4sure3 or Pass4sure1.

C. DLCI 17 is the Layer 2 address used by Pass4sure2 to describe a PVC to Pass4sure3.

D. DLCI 17 describes the dial-up circuit from Pass4sure2 and Pass4sure3 to the service provider.

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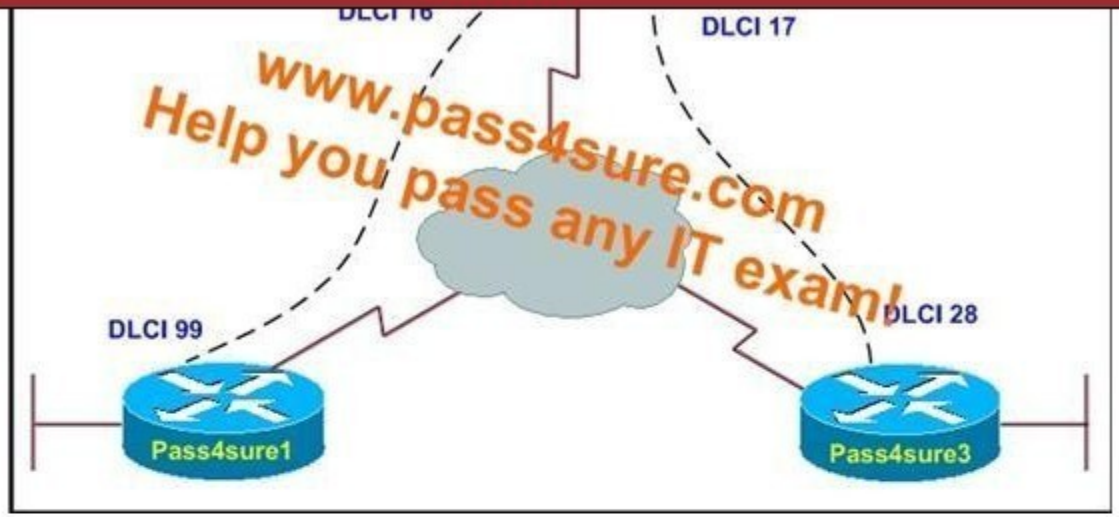

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D. DLCI 17 describes the dial-up circuit from Pass4sure2 and Pass4sure3 to the service provider.

## Answer & Explanation

### Correct Answer

C

### Explanations

This question is to examine the DLCI knowledge points of the Frame Relay. The Data Link Connection Identifier Frame Relay exchanger connects the DLCI of the two ends, which is an important part of the frame format address field of the Frame Relay. It is a six-character identifier used in FCOMM layer which represents the connectivity between client and server in process. The Frame Relay uses the DLCI to identify virtual circuit between DTE and facilitator exchanger. DLCI is a two layers address, which is used to distinguish different virtual circuits in the Internet. Generally, the length of the field is 10 bit, but it can be extended to 16 bit, the former uses the two byte address field, three byte address field for the latter and 23bit uses four byte address field. DLCI value is used to identify PVC, call control and management information. It only has local significance.

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Mark for Review

The following output was displayed on a Pass4sure router:

Based on the information shown below, what is the meaning of the term "dynamic" as displayed in the output of the show frame-relay map command shown?

**Pass4sure1 # show frame-relay map**
Serial0/0 (up) ip 172.16.3.1 dlci 100 (0x64,0x1840),dynamic broadcast,status defined ,active

- A. The DLCI 100 will be dynamically changed as required to adapt to changes in the Frame Relay cloud.
- B. The DLCI 100 was dynamically allocated by the router.
- C. The Serial0/0 interface acquired the IP address of 172.16.3.1 from a DHCP server.
- D. The Serial0/1 interface is passing traffic.
- E. The mapping between DLCI 100 and the end station IP address 172.16.3.1 was learned through Inverse ARP.

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Mark for Review

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Serial0/0 (up) ip 172.16.3.1 dlci 100 (0x64,0x1840),dynamic
broadcast,status defined ,active

A. The DLCI 100 will be dynamically changed as required to adapt to changes in the Frame Relay cloud.

B. The DLCI 100 was dynamically allocated by the router.

C. The Serial0/0 interface acquired the IP address of 172.16.3.1 from a DHCP server.

D. The Serial0/1 interface is passing traffic.

E. The mapping between DLCI 100 and the end station IP address 172.16.3.1 was learned through Inverse ARP.

## Answer & Explanation

### Correct Answer

E

### Explanations

This question is to examine the Inverse ARP knowledge point of the Frame Relay. Inverse ARP is used to dynamically maintenance the mapping between IP address and virtual circuit number in Frame Relay Internet, where the configuration and maintenance of the one-to-one mapping between IP address and virtual circuit number DLCI is necessary. So as to mitigate the workload of the network administrator, the operational principle recurring to RARP appears a special Address Resolution Protocol(ARP), which is used to solve the IP address of the opposite end while the home terminal IP address, the hardware address and the opposite end hardware address are known.

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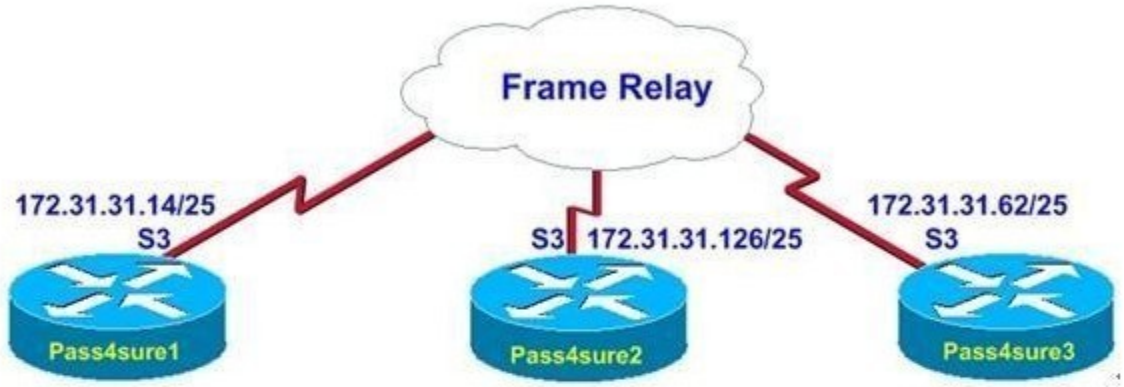
Mark for Review

The Frame Relay network in the diagram is not functioning properly. What is the cause of the problem?




Configuration exhibit:

```
Pass4sure1# show frame-relay map
        Serial3  (up) : ip 172.31.31.126 dlci 205 (0xCD, 0x30D0), static, broadcast,
                       CISCO, status defined, active

Pass4sure2# show frame-relay map
        Serial3  (up) : ip 172.31.31.126 dlci 605 (0x25D, 0x94D0), static, broadcast,
                       CISCO, status defined, active

Pass4sure3# show frame-relay map
        Serial3  (up) : ip 172.31.31.62 dlci 509 (0x1FD, 0x7CD0), static, broadcast,
                       CISCO, status deleted
        Serial3  (up) : ip 172.31.31.14 dlci 502 (0x1F6, 0x7C60), static, broadcast,
                       CISCO, status defined, active
```

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- A. The Pass4sure1 router has the wrong LMI type configured.
- B. The S3 interface of the Pass4sure2 router has been configured with the frame-relay encapsulation ietf command
- C. Inverse ARP is providing the wrong PVC information to the Pass4sure1 router.
- D. The frame-relay map statement in the Pass4sure3 router for the PVC to Pass4sure2 is not correct.

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Mark for Review

Configuration exhibit:

```
Pass4sure1# show frame-relay map
        Serial3  (up) : ip 172.31.31.126 dlci 205 (0xCD, 0x30D0), static, broadcast,
                        CISCO, status defined, active

Pass4sure2# show frame-relay map
        Serial3  (up) : ip 172.31.31.126 dlci 605 (0x25D, 0x94D0), static, broadcast,
                        CISCO, status defined, active
```

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```
Pass4sure3# show frame-relay map
        Serial3  (up) : ip 172.31.31.62 dlci 509 (0x1FD, 0x7CD0), static, broadcast,
                        CISCO, status deleted
        Serial3  (up) : ip 172.31.31.14 dlci 502 (0x1F6, 0x7C60), static, broadcast,
                        CISCO, status defined, active
```

A. The Pass4sure1 router has the wrong LMI type configured.

B. The S3 interface of the Pass4sure2 router has been configured with the frame-relay encapsulation ietf command

C. Inverse ARP is providing the wrong PVC information to the Pass4sure1 router.

D. The frame-relay map statement in the Pass4sure3 router for the PVC to Pass4sure2 is not correct.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the Frame Relay troubleshooting, which requires a certain understanding of the function of DLCI. The Frame Relay relates the DLCI of the two ends, which is an important part of the frame format address field of the Frame Relay. It is a six-character identifier used in FCOMM layer which represents the connectivity between client and server in process. The Frame Relay uses the DLCI to identify virtual circuit between DTE and facilitator exchanger. As the DLCI number of the Pass4sure3 configuration is not corresponding that of the Pass4sure2, the Frame Relay cannot function properly.

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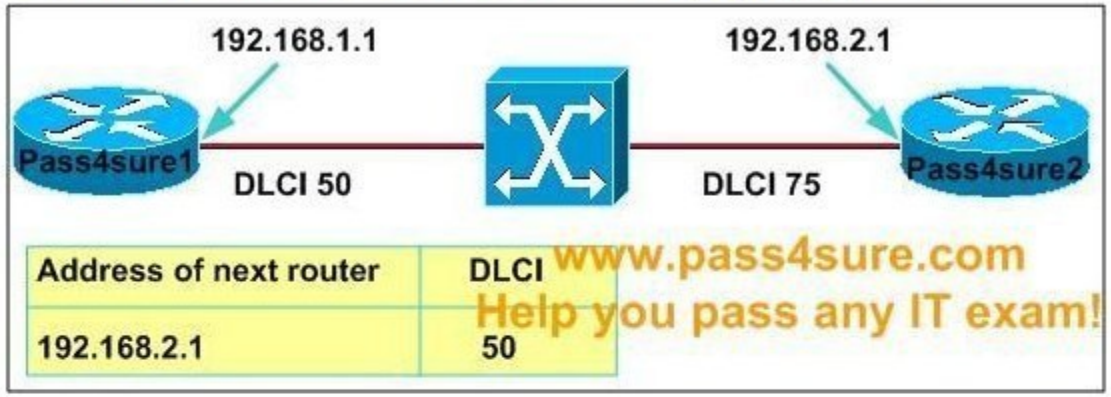
Mark for Review

What Frame Relay mechanism is used to build the map illustrated in the accompanying graphic?




- A. ARP
- B. Inverse ARP
- C. inverse multiplexing
- D. LMI mapping

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| | |
|---|---|
| 192.168.2.1 | 50 |

A. ARP

B. Inverse ARP

C. inverse multiplexing

D. LMI mapping

## Answer & Explanation

### Correct Answer

B

### Explanations

The locally significant DLCI must be mapped to the destination router's IP address. There are two options for this, Inverse ARP and static mapping.
In both of the following examineples, the single physical Serial interface on Router 1 is configured with two logical connections through the frame relay cloud, one to Router 2 and one to Router 3.
Inverse ARP runs by default once Frame Relay is enabled, and starts working as soon as you open the interface. By running show frame-relay map after enabling Frame Relay, two dynamic mappings are shown on this router. If a dynamic mapping is shown, Inverse ARP performed it.

```
R1#show frame map
Serial0 (up): ip 200.1.1.2 dlci 122(0x7A,0x1CA0), dynamic,
broadcast,, status defined, active
Serial0 (up): ip 200.1.1.3 dlci 123(0x7B,0x1CB0), dynamic,
broadcast,, status defined, active
```

Static mappings require the use of a frame map statement. To use static mappings, turn Inverse ARP off with the no frame-relay inverse-arp statement, and configure a frame map statement for each remote destination that maps the local DLCI to the remote IP address. Frame Relay requires the broadcast keyword to send broadcasts to the remote device.

```
R1#conf t
R1(config)#interface serial0
R1(config-if)#no frame-relay inverse-arp
R1(config-if)#frame map ip 200.1.1.2 122 broadcast
R1(config-if)#frame map ip 200.1.1.3 123 broadcast
```

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Mark for Review

A network administrator at pass4sure.com is configuring a router that will act as the hub in a Frame Relay hub-and-spoke topology. What is the advantage of using point-to-point subinterfaces instead of a multipoint interface on this router?

A. It avoids split-horizon issues with distance vector routing protocols.

B. Only one IP network address needs to be used to communicate with all the spoke devices.

C. Only a single physical interface is needed with point-to-point subinterfaces, whereas a multipoint interface logically combines multiple physical interfaces.

D. Point-to-point subinterfaces offer greater security compared to a multipoint interface configuration.

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D. Point-to-point subinterfaces offer greater security compared to a multipoint interface configuration.

## Answer & Explanation

### Correct Answer

A

### Explanations

Using split horizon in frame relay network will result in the situation that route fails to reach the destination router. There are usually two ways to solve split horizon of frame relay networks:

1. Close split horizon manually on "Hub" router; the premise to use this method is that the network will not cause loop;

2. Divide some sub-division in the logic interface on "Hub" router, so that each interface belongs to different network.

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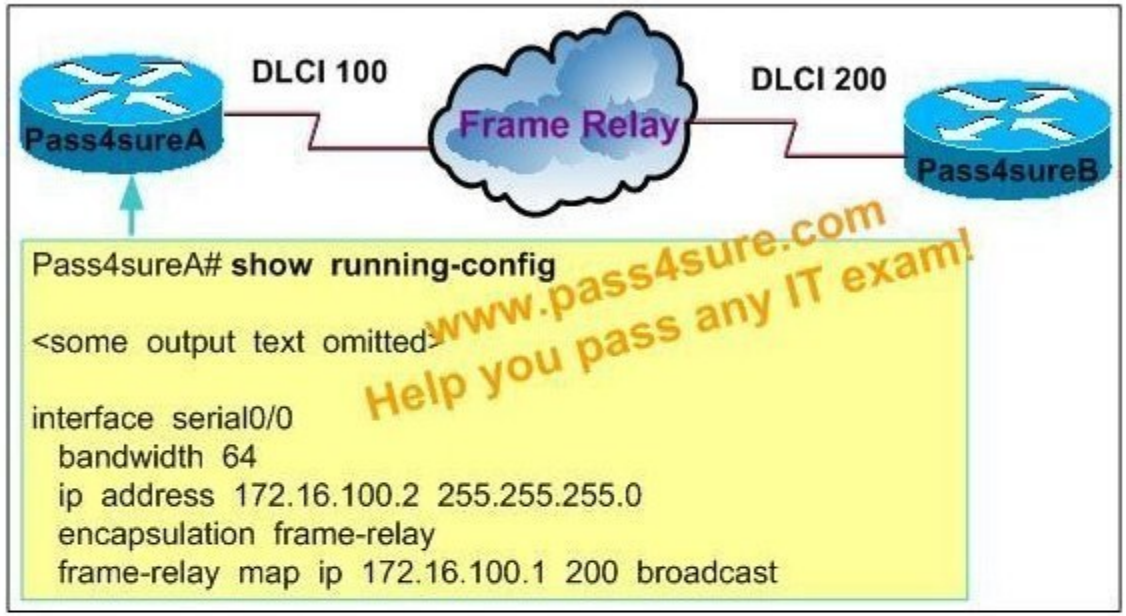
Mark for Review

As the Pass4sure.com technician, you found the router Pass4sureA is unable to reach Pass4sureB. Both Pass4sure routers are running IOS version 12.0. Based on this information, what is the most likely cause of the problem?

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- A. incorrect bandwidth configuration
- B. incorrect LMI configuration
- C. incorrect map statement
- D. incorrect IP address

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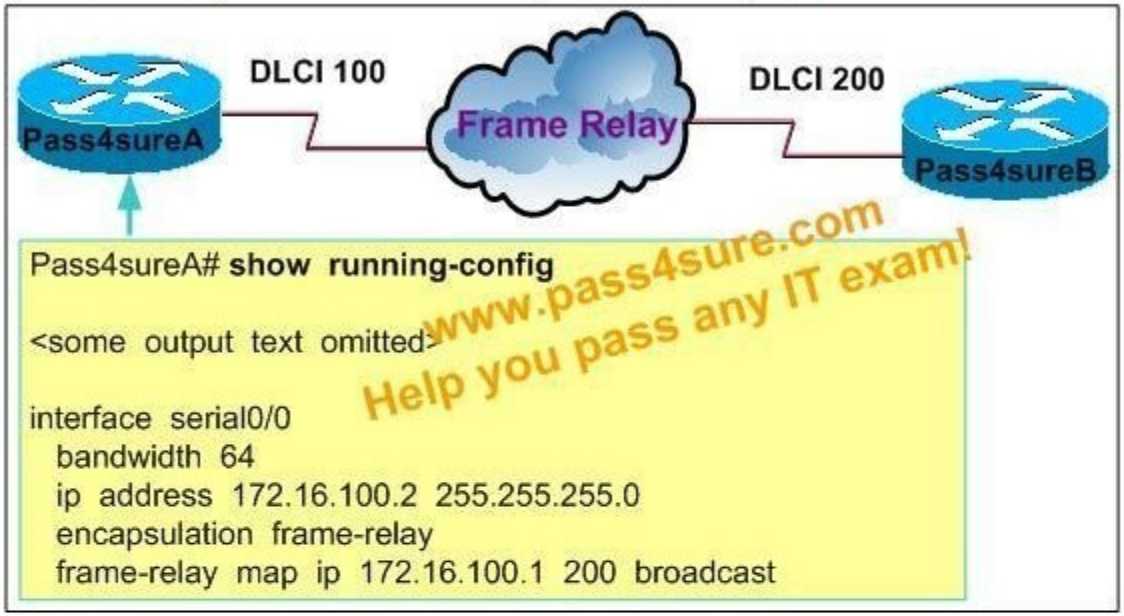


- A. incorrect bandwidth configuration
- B. incorrect LMI configuration
- C. incorrect map statement
- D. incorrect IP address

## Answer & Explanation

### Correct Answer

C

### Explanations

The local DLCI from Pass4sureA to Frame-relay cloud is 100, the local DLCI from Pass4sureB to FR cloud is 200. FR mapping from Pass4sureA to Pass4sureB is as follows:
frame-relay map ip 172.16.100.1 100 broadcast

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Mark for Review

How should router Pass4sure1, which will be used in the Pass4sure Frame Relay network, be configured to avoid split horizon issues from preventing routing updates?

A. Configure a separate sub-interface for each PVC with a unique DLCI and subnet assigned to the sub-interface.

B. None of the bove

C. Configure many sub-interfaces on the same subnet.

D. Configure a single sub-interface to establish multiple PVC connections to multiple remote router interfaces.

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Mark for Review

How should router Pass4sure1, which will be used in the Pass4sure Frame Relay network, be configured to avoid split horizon issues from preventing routing updates?

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B. None of the bove

C. Configure many sub-interfaces on the same subnet.

D. Configure a single sub-interface to establish multiple PVC connections to multiple remote router interfaces.

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the knowledge point about horizontal split, as well as the Frame Relay knowledge point. Under Frame Relay circumstance, using sub-interface to create PVC can be used to avoid horizontal split. Meanwhile, every PVC has one and only local address (DLCI).

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Mark for Review

As a CCNA candidate, you need to know PPP very well. Which of the statements are true regarding key characteristics of PPP? (Choose three.)

- A. can be used over analog circuits
- B. supports IP only
- C. encapsulates several routed protocols
- D. maps Layer 2 to Layer 3 address
- E. provides error correction

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- A. can be used over analog circuits
- B. supports IP only
- C. encapsulates several routed protocols
- D. maps Layer 2 to Layer 3 address
- E. provides error correction

## Answer & Explanation

### Correct Answer

A C E

### Explanations

The Point-to-Point Protocol (PPP) originally emerged as an encapsulation protocol for transporting IP traffic over point-to-point links. PPP also established a standard for the assignment and management of IP addresses, asynchronous (start/stop) and bit-oriented synchronous encapsulation, network protocol multiplexing, link configuration, link quality testing, error detection, and option negotiation for such capabilities as network layer address negotiation and data-compression negotiation. PPP supports these functions by providing an extensible Link Control Protocol (LCP) and a family of Network Control Protocols (NCPs) to negotiate optional configuration parameters and facilities. In addition to IP, PPP supports other protocols, including Novell's Internetwork Packet Exchange (IPX) and DECnet.
http://www.cisco.com/en/US/docs/internetworking/technology/handbook/PPP.html

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Mark for Review

An ISDN link can be encapsulated using either PPP or HDLC. What are the advantages of using PPP? (choose two)

- A. PPP can be routed across public facilities, while HDLC is not routable in circuit-switched networks.
- B. PPP is consistently implemented among different equipment vendors.
- C. PPP will run faster and more efficiently than HDLC on circuit-switched ISDN links.
- D. PPP authentication will prevent unauthorized callers from establishing an ISDN circuit.

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- D. PPP authentication will prevent unauthorized callers from establishing an ISDN circuit.

## Answer & Explanation

### Correct Answer

B D

### Explanations

PPP is now the most popular data link encapsulation protocol. It provides improved compatibility, network providers are enabled to cooperate together; while HDLC is Cisco private, which has limitations. Meanwhile, PPP supports also Password Authentication Protocol (PAP) and Challenge-Handshake Authentication Protocol (CHAP). It bears better security.

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Mark for Review

Which of the following Frame-Relay encapsulation commands would you use, if you had to connect your Cisco router to a non-Cisco router?

A. P4SRouter(config-if)# Encapsulation frame-relay dot1q

B. P4SRouter(config-if)# Encapsulation frame-relay aal5snap

C. P4SRouter(config-if)# Encapsulation frame-relay ietf

D. P4SRouter(config-if)# Encapsulation frame-relay isl

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Mark for Review

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B. P4SRouter(config-if)# Encapsulation frame-relay aal5snap

C. P4SRouter(config-if)# Encapsulation frame-relay ietf

D. P4SRouter(config-if)# Encapsulation frame-relay isl

## Answer & Explanation

### Correct Answer

C

### Explanations

IETF encapsulation mode is used for cisco and non-cisco devices connection under Frame-Relay environment.

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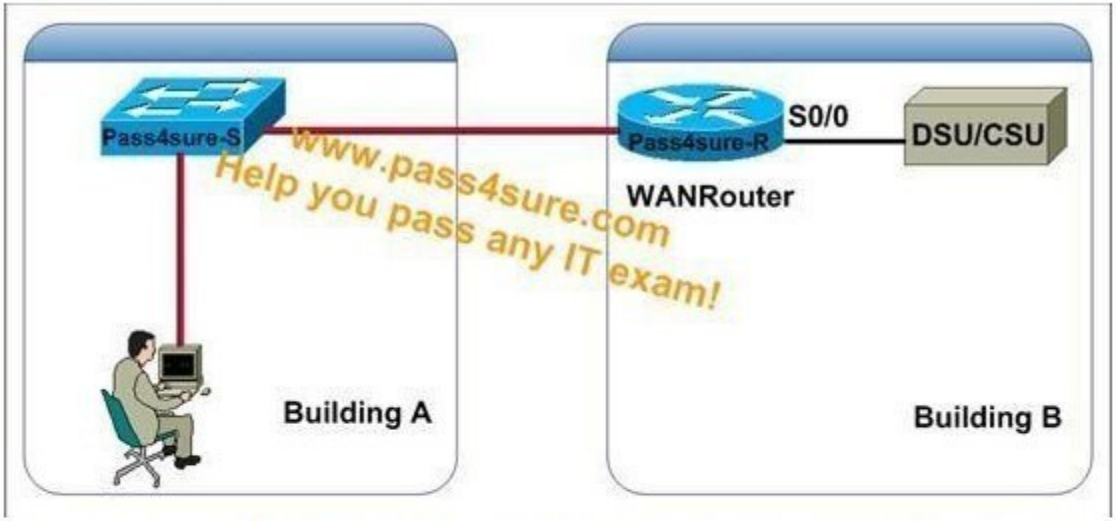
Mark for Review

Part of the Pass4sure network is shown below:




Based on information the exhibit shown above, the network administrator is in a campus building distant from Building B. Pass4sure-R is hosting a newly installed WAN link on interface S0/0. The new link is not functioning and the administrator needs to determine if the correct cable has been attached to the S0/0 interface. How can the administrator accurately verify the correct cable type on S0/0 in the most efficient manner?

A. Telnet to Pass4sure-R and execute the command show interfaces S0/0

B. Physically examineine the cable between Pass4sure-R S0/0 and the DCE.

C. Establish a console session on Pass4sure-R and execute the command show interfaces S0/0

D. Telnet to Pass4sure-R and execute the command show controller S0/0

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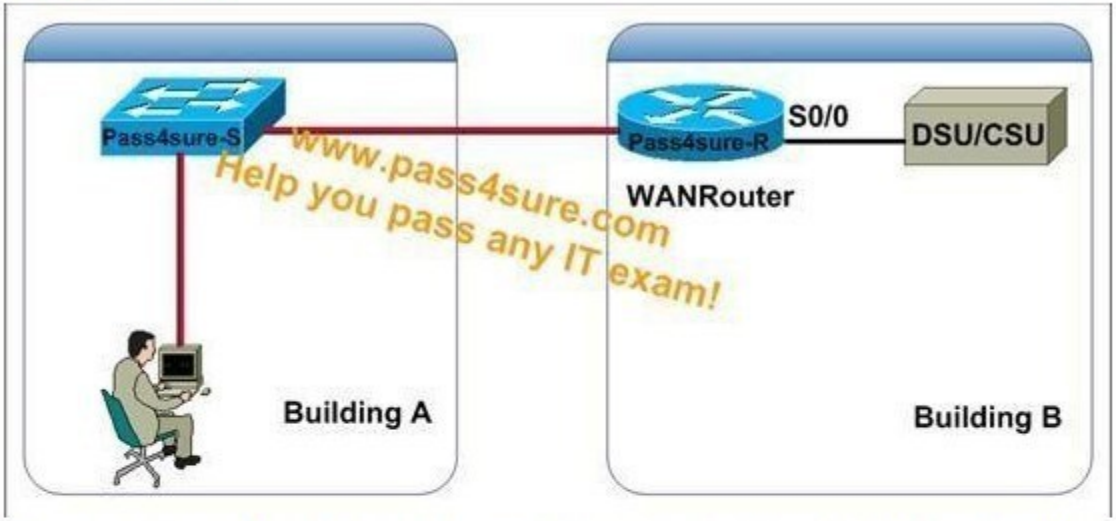
Mark for Review

Part of the Pass4sure network is shown below:

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- A. Telnet to Pass4sure-R and execute the command show interfaces S0/0
- B. Physically examineine the cable between Pass4sure-R S0/0 and the DCE.
- C. Establish a console session on Pass4sure-R and execute the command show interfaces S0/0
- D. Telnet to Pass4sure-R and execute the command show controller S0/0

## Answer & Explanation

### Correct Answer

D

### Explanations

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When checking the cable type of the port s0 / 0, you should first log on to the router, which can be achieved using telnet technology. And use the command show controller s0/0 to check the type of cable connected to the port, the port status is DTE OR DCE.

Topic 9 - Pass4sure Network Case (18 Questions)

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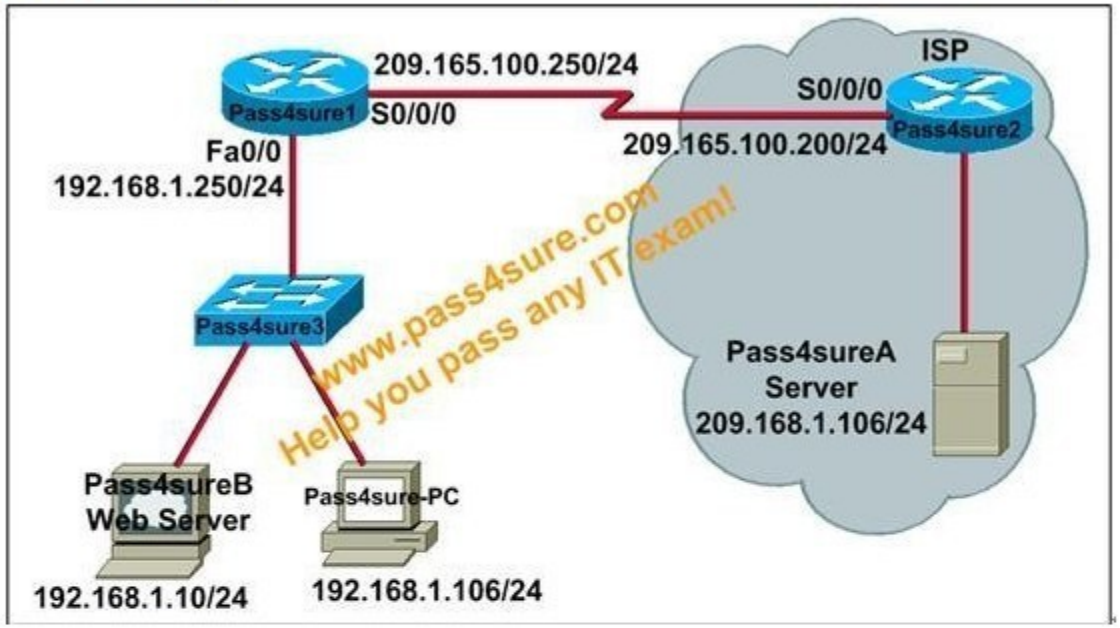
Mark for Review

Please study the exhibit shown above carefully:




Host Pass4sure-PC sends a request for a file to remote server Pass4sureA. Which destination address does host Pass4sure-PC place in the layer 3 header of the packet containing the request?

- A. The Mac address of the NIC in Sever Pass4sureA
- B. The IP address of Server Pass4sureA
- C. The MAC address of the s0/0/0 interface of router Pass4sure2
- D. The IP address of the Fa0/0 interface of router Pass4sure1

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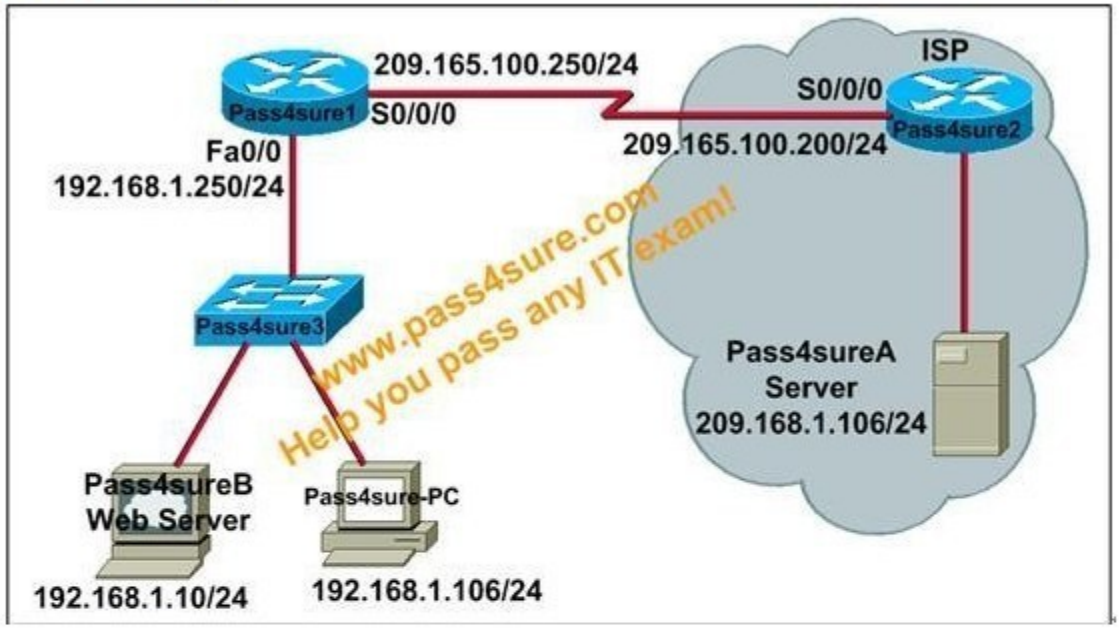
Mark for Review

Please study the exhibit shown above carefully:




Host Pass4sure-PC sends a request for a file to remote server Pass4sureA. Which destination address does host Pass4sure-PC place in the layer 3 header of the packet containing the request?

- A. The Mac address of the NIC in Sever Pass4sureA
- B. The IP address of Server Pass4sureA
- C. The MAC address of the s0/0/0 interface of router Pass4sure2
- D. The IP address of the Fa0/0 interface of router Pass4sure1

## Answer & Explanation

**Correct Answer**

B

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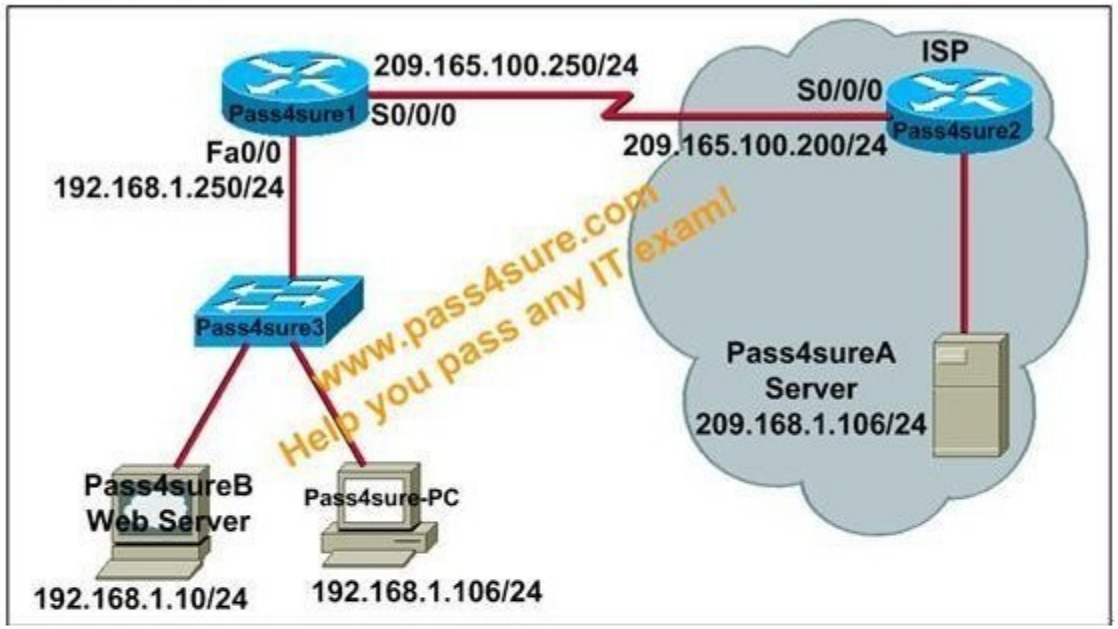
**Explanations**

In the packet that HOST Pass4sure-PC sent and request response, layer 3 destination address is Server Pass4sureA.

Mark for Review

Please study the exhibit shown above carefully:




Host Pass4sure-PC sends an ICMP echo requests to remote server Pass4sureA. Which destination address does host Pass4sure-PC place in the Layer 2 header of the frame containing the ping packet?

- A. The IP address of the s0/0/0 interface of router Pass4sure2
- B. The MAC address of the s0/0/0 interface of router Pass4sure2
- C. The IP address of F0/0 interface of router Pass4sure1.
- D. The MAC address of the Fa0/0 interface of router Pass4sure1.

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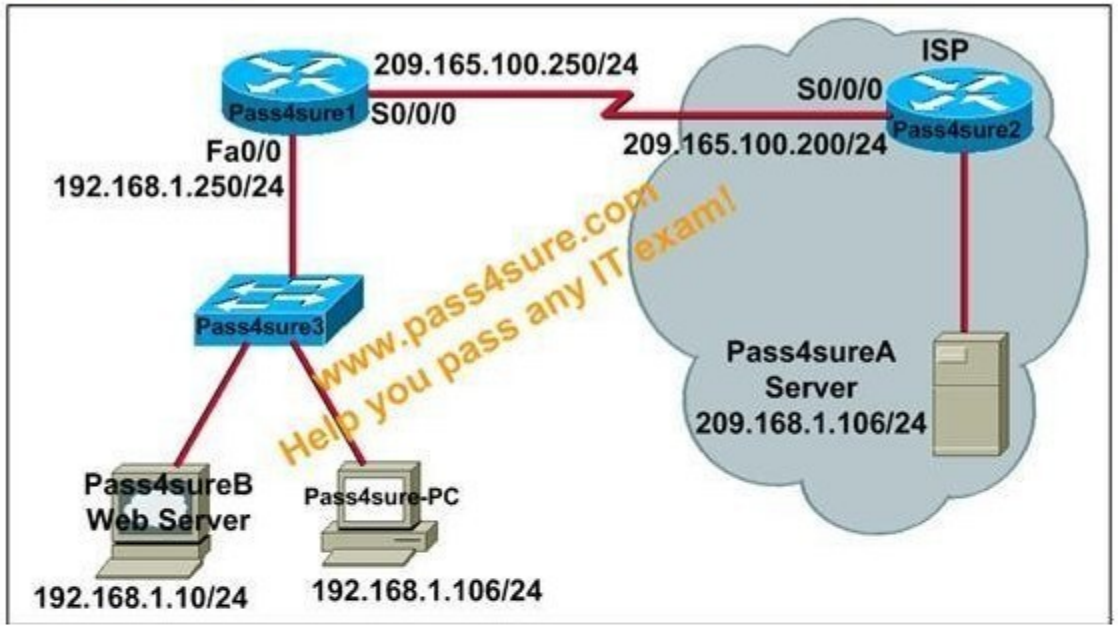
Mark for Review

Please study the exhibit shown above carefully:




Host Pass4sure-PC sends an ICMP echo requests to remote server Pass4sureA. Which destination address does host Pass4sure-PC place in the Layer 2 header of the frame containing the ping packet?

- A. The IP address of the s0/0/0 interface of router Pass4sure2
- B. The MAC address of the s0/0/0 interface of router Pass4sure2
- C. The IP address of F0/0 interface of router Pass4sure1.
- D. The MAC address of the Fa0/0 interface of router Pass4sure1.

## Answer & Explanation

### Correct Answer

D

### Explanations

Host Pass4sure-PC belongs to Fa0/0 interface network of Router Pass4sure1, so when Host Pass4sure-PC sends a ping packet to Pass4sureA, the 2 layer MAC address inside is Fa0/0 interface of Router Pass4sure1.

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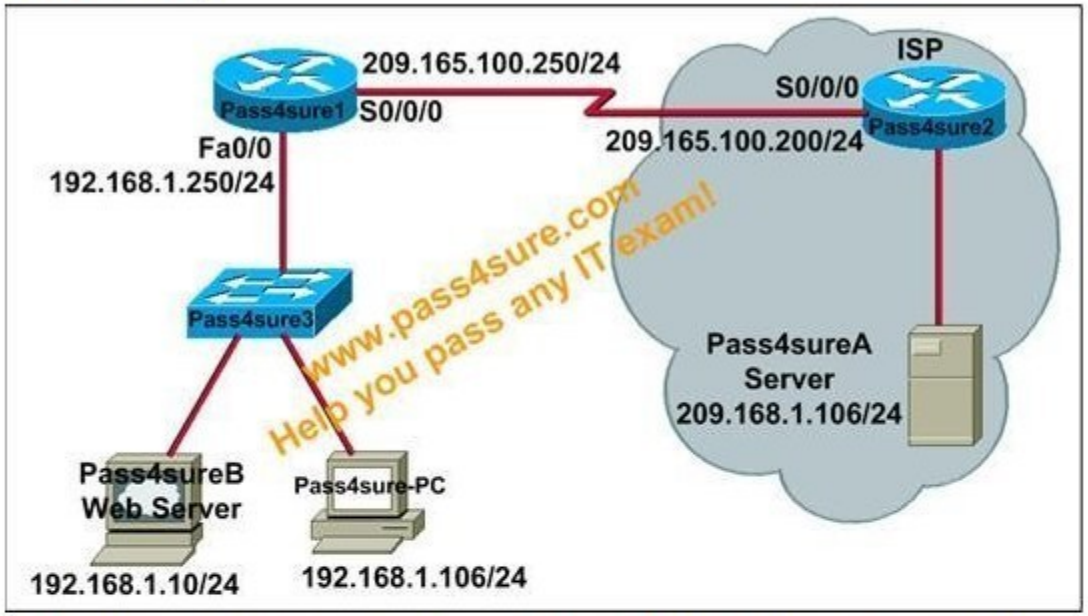
Mark for Review

Please study the exhibit shown above carefully:

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Host Pass4sure-PC receives a file from the remote server Pass4sureA. Which MAC address appears as the source address in the header of the frames received by Pass4sure-PC.

- A. The MAC address of the NIC in Pass4sure-PC .
- B. The MAC address of the NIC in Pass4sureA.
- C. The MAC address of the Fa0/0 interface of router Pass4sure1
- D. The MAC address of the s0/0/0 interface of the router Pass4sure2

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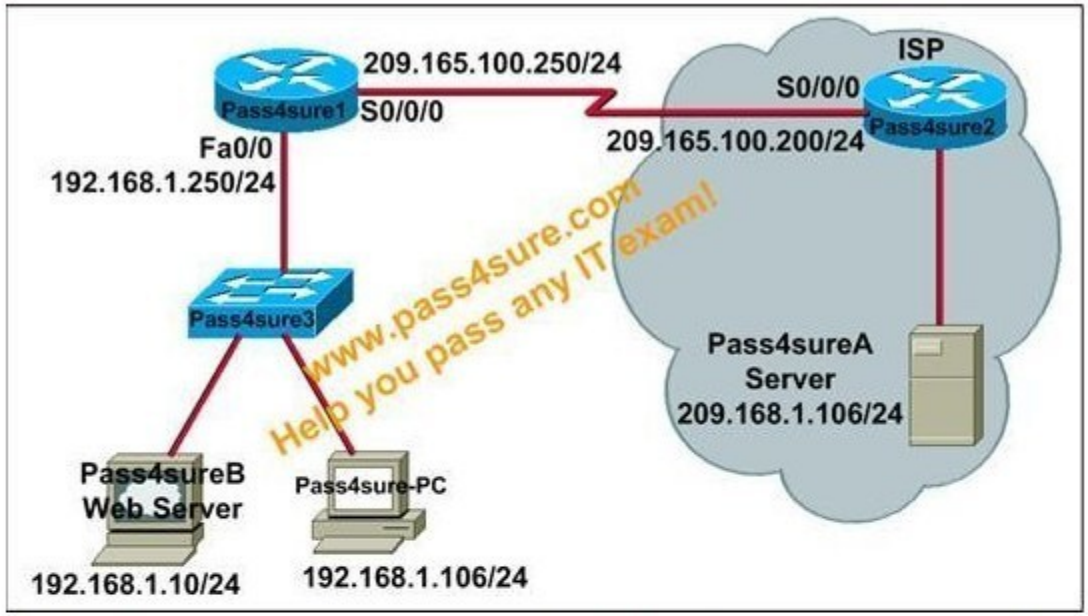
Mark for Review




Host Pass4sure-PC receives a file from the remote server Pass4sureA. Which MAC address appears as the source address in the header of the frames received by Pass4sure-PC.

A. The MAC address of the NIC in Pass4sure-PC .

B. The MAC address of the NIC in Pass4sureA.

C. The MAC address of the Fa0/0 interface of router Pass4sure1

D. The MAC address of the s0/0/0 interface of the router Pass4sure2

## Answer & Explanation

### Correct Answer

C

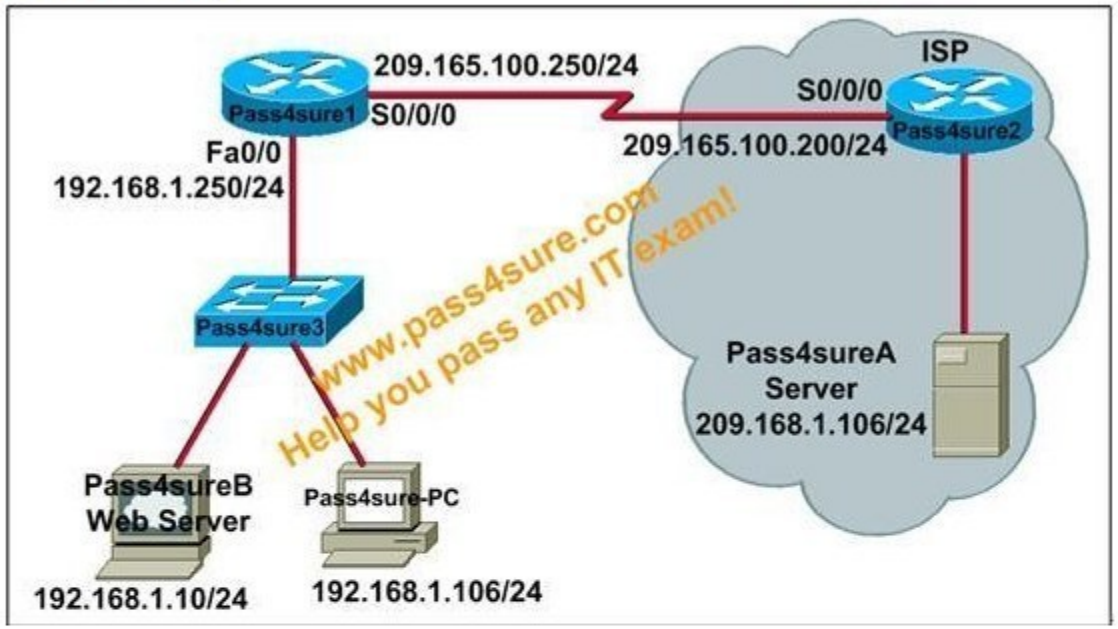
### Explanations

The source MAC address in the data packets that Host Pass4sure-PC receives from Pass4sureA before in should be Fa0/0 interface that connects Router Pass4sure1 of Host Pass4sure-PC. Host and Fa0/0 are in the same network segment, thus the data packets MAC sent to host is replaced by router Fa0/0.

http://caleeicent.blogspot.com

Mark for Review

Please study the exhibit shown above carefully:




Host Pass4sure-PC has just started up and requests a web page from the web server Pass4sureB.Which two statements describe steps in the process host Pass4sure-PC uses to send the requests Pass4sureB. Select two.

- A. Pass4sure-PC addresses the frames to the MAC address of router Pass4sure1
- B. Pass4sure-PC looks in its ARP cache for the MAC address of router Pass4sure1
- C. Pass4sure-PC addresses the frames to the MAC address of web server Pass4sureB
- D. Pass4sure-PC sends the packets to router Pass4sure1 to be forwarded to web server Pass4sureB
- E. Pass4sure-PC sends a broadcast ARP request to obtain the MAC address of web server Pass4sureB.

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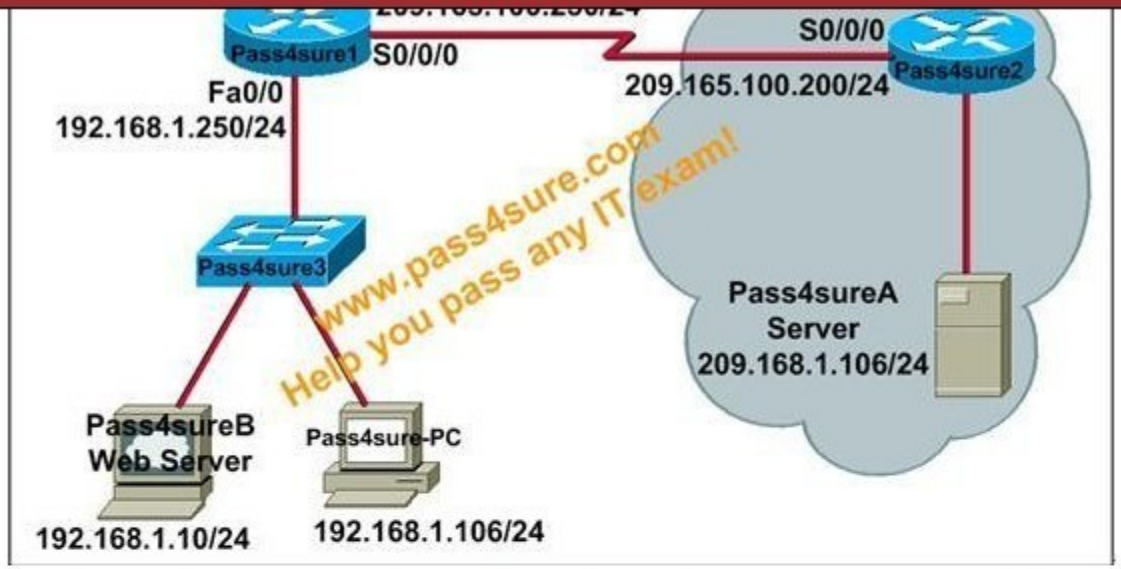
Mark for Review




Host Pass4sure-PC has just started up and requests a web page from the web server Pass4sureB.Which two statements describe steps in the process host Pass4sure-PC uses to send the requests Pass4sureB. Select two.

- A. Pass4sure-PC addresses the frames to the MAC address of router Pass4sure1
- B. Pass4sure-PC looks in its ARP cache for the MAC address of router Pass4sure1
- C. Pass4sure-PC addresses the frames to the MAC address of web server Pass4sureB
- D. Pass4sure-PC sends the packets to router Pass4sure1 to be forwarded to web server Pass4sureB
- E. Pass4sure-PC sends a broadcast ARP request to obtain the MAC address of web server Pass4sureB.

## Answer & Explanation

### Correct Answer

C E

### Explanations

When Host Pass4sure-PC is started and at the same time send response request to Pass4sureB Web Server, it will first check their MAC address table. If no Pass4sureB Web Server MAC address is found in the address table, an ARP request to the network will be sent to obtain Pass4sureB Web Server MAC address, data will not be sent until a response is received.

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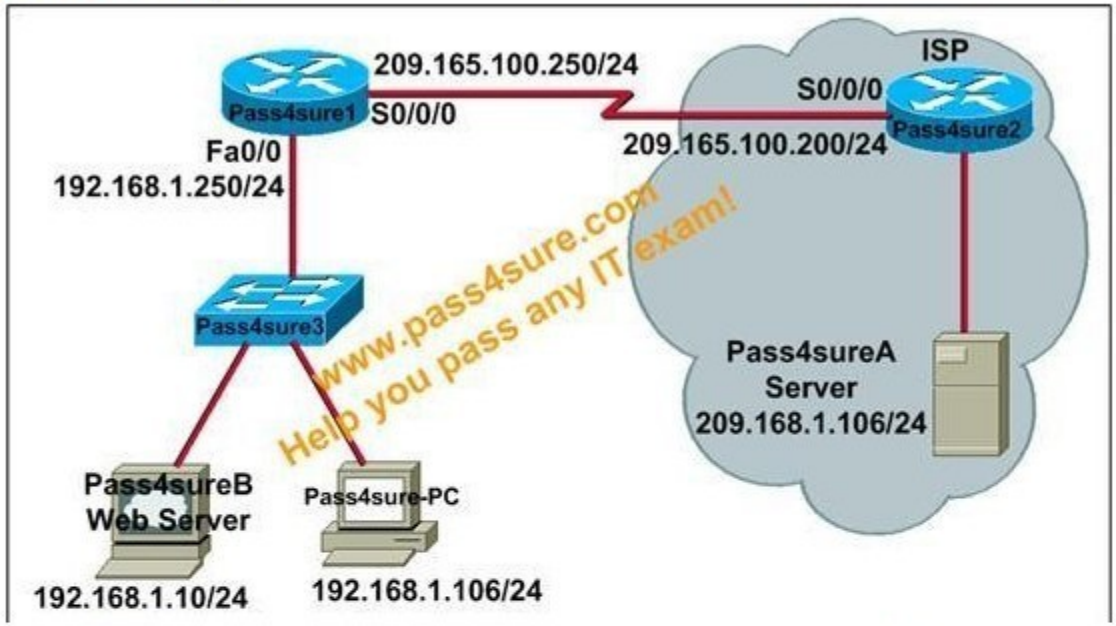
Mark for Review

Please study the exhibit shown above carefully:




Router Pass4sure1 forwards a packet from host Pass4sure-PC to remote server Pass4sureA. Which statement describes the use of a MAC as the frame carrying this packet leaves the S0/0/0 interface of router Pass4sure1?

- A. The frame does not have MAC addresses.
- B. The source MAC address in the frame is the MAC address of the NIC of Pass4sure-PC.
- C. The source MAC address in the frame is the MAC address of the s0/0/0 interface of Pass4sure1.
- D. The destination MAC address in the frame is the MAC address of the s0/0/0 interface of Pass4sure2

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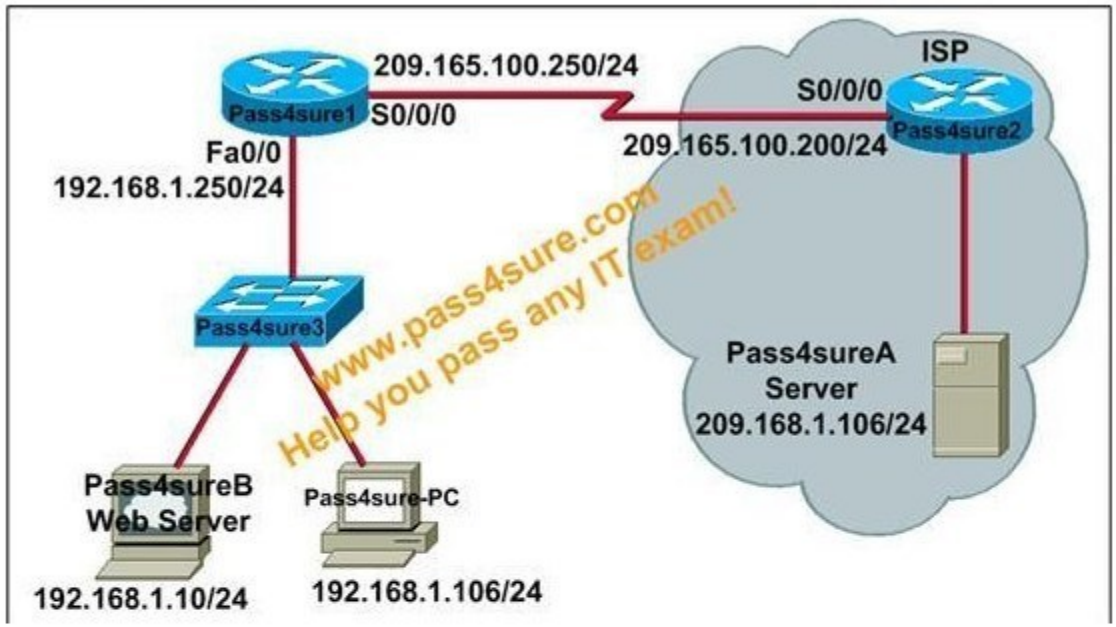
Mark for Review

Please study the exhibit shown above carefully:




Router Pass4sure1 forwards a packet from host Pass4sure-PC to remote server Pass4sureA. Which statement describes the use of a MAC as the frame carrying this packet leaves the S0/0/0 interface of router Pass4sure1?

- A. The frame does not have MAC addresses.
- B. The source MAC address in the frame is the MAC address of the NIC of Pass4sure-PC.
- C. The source MAC address in the frame is the MAC address of the s0/0/0 interface of Pass4sure1.
- D. The destination MAC address in the frame is the MAC address of the s0/0/0 interface of Pass4sure2

## Answer & Explanation

### Correct Answer

A

### Explanations

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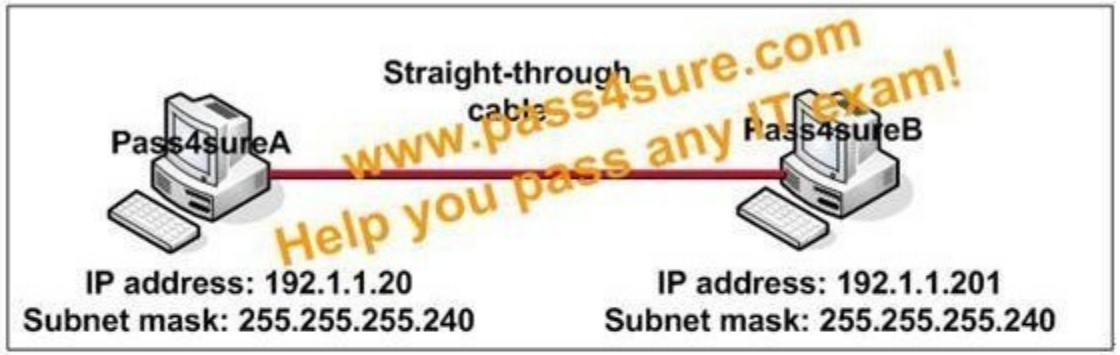
Since router is a 3 layer device, the data packets sent will include only IP addresses, but no MAC. So the data packets that Router Pass4sure1 forwards to Pass4sure-PC will not include MAC address.

Mark for Review

The Pass4sure network administrator is connecting PC hosts Pass4sureA and Pass4sureB 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.)

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

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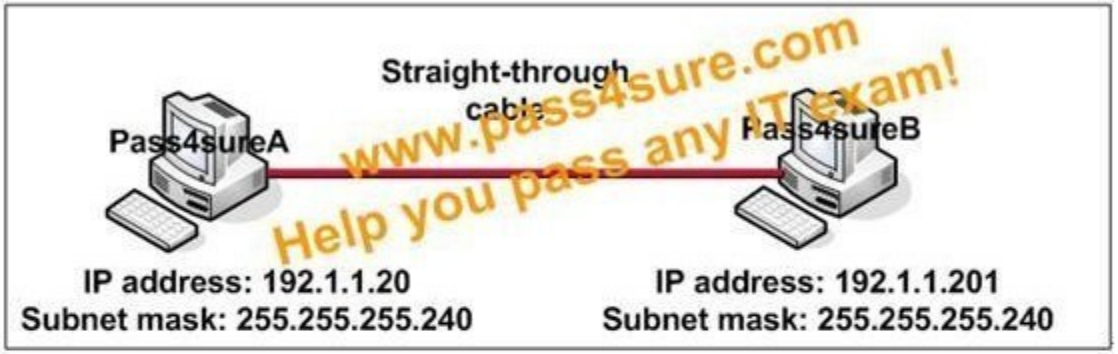
Mark for Review

The Pass4sure network administrator is connecting PC hosts Pass4sureA and Pass4sureB 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.)

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

## Answer & Explanation

### Correct Answer

A D

### Explanations

First, from the IP address mask we can see that although both the two hosts are in 28 bit network, this subnet 192.1.1.0 can only include 15 hosts, because the two hosts do not belong to the same subnet. You may change the mask to make the two hosts belong to the same network segment. Second, the connection between hosts and hosts should use cross-line rather than straight line. Straight line is used to connect network devices.

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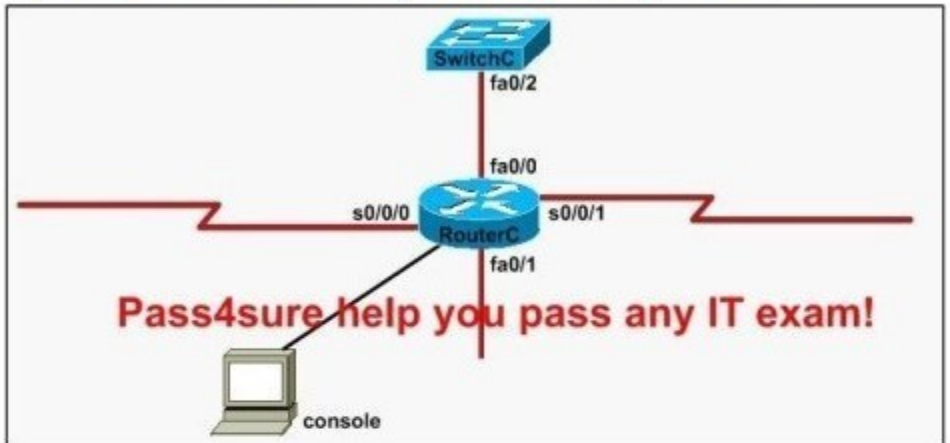
Mark for Review

In the case of keeping telnet disabled, how to fix the issue and permit ONLY ping to work?




An administrator is trying to ping and telnet from SwitchC to RouterC with the results shown below:

```
SwitchC>
SwitchC> ping 10.4.4.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.4.4.3, timeout is 2 seconds:
U.U.U
Success rate is 0 percent (0/5)
SwitchC>
SwitchC> telnet 10.4.4.3
Trying 10.4.4.3 ···
% Destination unreachable; gateway or host down
SwitchC>
```

The "show run" command exhibit is shown below, according the exhibit to answer the questions.

```
Press RETURN to get started!
RouterC>en
RouterC#
RouterC#show run
Building configuration...

Current configuration : 3120 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname RouterC
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$sC1P$Umfi4mWeVeLrqKFNJzHas0
!
```

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```
resource policy
!
!
!
ip cef
!
!
no ip domain lookup
ipv6 unicast-routing
!
!
!
voice-card 0
 no dspfarm
!
!
key chain icndchain
 key 1
  key-string san-fran
!
!
!
interface Loopback1
 ip address 172.16.4.1 255.255.255.0
!
interface Loopback2
 ip address 10.145.145.1 255.255.255.0
 ipv6 address 2001:410:2:3::/64 eui-64
!
interface FastEthernet0/0
 ip address 10.4.4.3 255.255.255.0
 ip access-group 106 in
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 bandwidth 64
 no ip address
 ip access-group 102 out
 encapsulation frame-relay
 ip ospf authentication
 ip ospf authentication-key san-fran
!
interface Serial0/0/0.1 point-to-point
 ip address 10.140.3.2 255.255.255.0
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 frame-relay interface-dlci 120
!
interface Serial0/0/1
 bandwidth 64
 ip address 10.45.45.1 255.255.255.0
 ip access-group 102 in
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 ip ospf authentication
 ip ospf authentication-key san-fran
 ipv6 address 2001:410:2:10::/64 eui-64
!
router eigrp 100
 network 10.0.0.0
 network 172.16.0.0
 network 192.168.2.0
```

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```
 log-adjacency-changes
 network 10.4.4.3 0.0.0.0 area 0
 network 10.45.45.1 0.0.0.0 area 0
 network 10.140.3.2 0.0.0.0 area 0
 network 192.168.2.62 0.0.0.0 area 0
!
router rip
 version 2
 network 10.0.0.0
 network 172.16.0.0
!
ip default-gateway 10.1.1.2
!
!
ip http server
no ip http secure-server
!
access-list 102 permit tcp any any eq ftp
access-list 102 permit tcp any any eq ftp-data
access-list 102 deny   tcp any any eq telnet
access-list 102 deny   icmp any any echo-reply
access-list 102 permit ip any any
access-list 104 permit tcp any any eq ftp
access-list 104 permit tcp any any eq ftp-data
access-list 104 deny   tcp any any eq telnet
access-list 104 permit icmp any any echo
access-list 104 deny   icmp any any echo-reply
access-list 104 permit ip any any
access-list 106 permit tcp any any eq ftp
access-list 106 permit tcp any any eq ftp-data
access-list 106 deny   tcp any any eq telnet
access-list 106 permit icmp any any echo-reply
access-list 110 permit udp any any eq domain
access-list 110 permit udp any eq domain any
access-list 110 permit tcp any any eq domain
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
```

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Mark for Review

```
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
 login
!
scheduler allocate 20000 1000
!
end
RouterC#
```

A. Alter the ip access-group command from "in" to "out" on fa0/0.

B. Remote access-group 106 in from interface fa0/0 and add access-group 115 in.

C. Remote access-group 102 out from interface s0/0/0 and add access-group 114 in.

D. Remote access-group 106 in from interface fa0/0 and add access-group 104 in.

## Answer & Explanation

### Correct Answer

D

### Explanations

This question is to examine the transferring access list. It is necessary to transfer access control list No.106 on the inbound interface fa0/0 so as to ping successfully, among which the Echo-Relay is a response answer made by inquiry-received computer through ICMP to maintain the Internet connectivity. Therefore, it is necessary to add access control list No.104 on the inbound interface so as to carry out the ping function.

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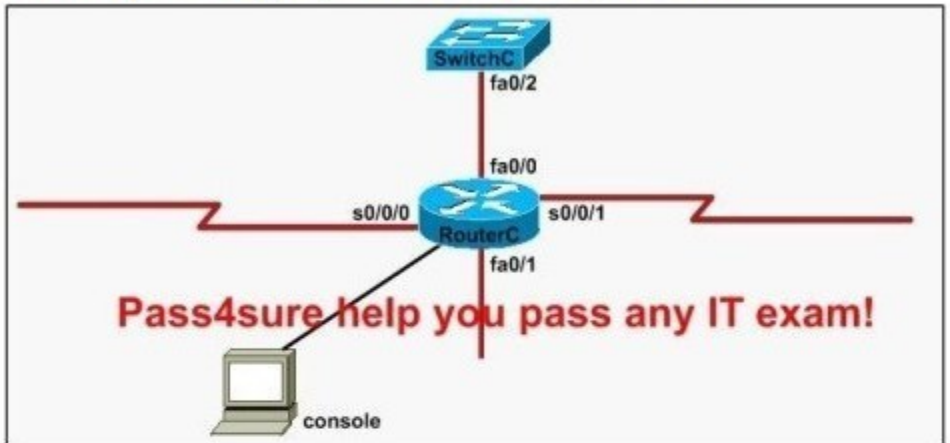
Mark for Review

What will happen after using the command ip access-group 114 in on the fa0/0 interface?




An administrator is trying to ping and telnet from SwitchC to RouterC with the results shown below:

```
SwitchC>
SwitchC> ping 10.4.4.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.4.4.3, timeout is 2 seconds:
U.U.U
Success rate is 0 percent (0/5)
SwitchC>
SwitchC> telnet 10.4.4.3
Trying 10.4.4.3 ···
% Destination unreachable; gateway or host down
SwitchC>
```

The "show run" command exhibit is shown below, according the exhibit to answer the questions.

```
Press RETURN to get started!
RouterC>en
RouterC#
RouterC#show run
Building configuration...

Current configuration : 3120 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname RouterC
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$sC1P$Umfi4mWeVeLrqKFNJzHas0
!
```

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```
!
voice-card 0
 no dspfarm
!
!
key chain icndchain
 key 1
  key-string san-fran
!
!
!
interface Loopback1
 ip address 172.16.4.1 255.255.255.0
!
interface Loopback2
 ip address 10.145.145.1 255.255.255.0
 ipv6 address 2001:410:2:3::/64 eui-64
!
interface FastEthernet0/0
 ip address 10.4.4.3 255.255.255.0
 ip access-group 106 in
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 bandwidth 64
 no ip address
 ip access-group 102 out
 encapsulation frame-relay
 ip ospf authentication
 ip ospf authentication-key san-fran
!
interface Serial0/0/0.1 point-to-point
 ip address 10.140.3.2 255.255.255.0
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 frame-relay interface-dlci 120
!
interface Serial0/0/1
 bandwidth 64
 ip address 10.45.45.1 255.255.255.0
 ip access-group 102 in
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 ip ospf authentication
 ip ospf authentication-key san-fran
 ipv6 address 2001:410:2:10::/64 eui-64
!
router eigrp 100
 network 10.0.0.0
 network 172.16.0.0
 network 192.168.2.0
 no auto-summary
!
router ospf 100
 log-adjacency-changes
 network 10.4.4.3 0.0.0.0 area 0
 network 10.45.45.1 0.0.0.0 area 0
 network 10.140.3.2 0.0.0.0 area 0
 network 192.168.2.62 0.0.0.0 area 0
!
router rip
```

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Mark for Review

```
 network 10.45.45.1 0.0.0.0 area 0
 network 10.140.3.2 0.0.0.0 area 0
 network 192.168.2.62 0.0.0.0 area 0
!
router rip
 version 2
 network 10.0.0.0
 network 172.16.0.0
!
ip default-gateway 10.1.1.2
!
!
ip http server
no ip http secure-server
!
access-list 102 permit tcp any any eq ftp
access-list 102 permit tcp any any eq ftp-data
access-list 102 deny   tcp any any eq telnet
access-list 102 deny   icmp any any echo-reply
access-list 102 permit ip any any
access-list 104 permit tcp any any eq ftp
access-list 104 permit tcp any any eq ftp-data
access-list 104 deny   tcp any any eq telnet
access-list 104 permit icmp any any echo
access-list 104 deny   icmp any any echo-reply
access-list 104 permit ip any any
access-list 106 permit tcp any any eq ftp
access-list 106 permit tcp any any eq ftp-data
access-list 106 deny   tcp any any eq telnet
access-list 106 permit icmp any any echo-reply
access-list 110 permit udp any any eq domain
access-list 110 permit udp any eq domain any
access-list 110 permit tcp any any eq domain
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
```

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Mark for Review

```
!
!
line con 0
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access-list 110 permit tcp any eq domain any
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access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
 login
!
scheduler allocate 20000 1000
!
end
RouterC#
```

A. IP traffic will be passed through the interface but TCP and UDP traffic will not.

B. It will allow all traffic from the 10.4.4.0 network.

C. Routing protocol updates for the 10.4.4.0 network will not be accepted from the fa0/0 interface.

D. Fail to telnet to the router.

## Answer & Explanation

### Correct Answer

B

### Explanations

This question is to examine the knowledge points about transferring access list. The configuration of this command on interface can create security filter or traffic filter, which can also be applied in inflow and outflow. The default value is outbound if the keyword in or out is not designated. Of course, the access list number designates the access list which receives data packet transmitted by the command. It is unnecessary to handle the access list if not using the transfer command to transmit the data packet to access list. The command ip access-group 114 in will transfer access list 114 on the fa0/0 interface.

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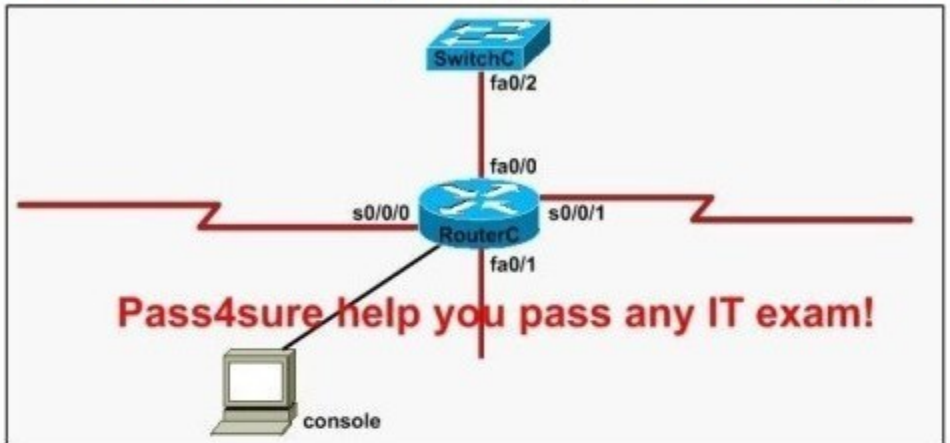
Mark for Review

Which of the following is the result after using the command ip access-group 115 in on the s0/0/1 interface?




An administrator is trying to ping and telnet from SwitchC to RouterC with the results shown below:

```
SwitchC>
SwitchC> ping 10.4.4.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.4.4.3, timeout is 2 seconds:
U.U.U
Success rate is 0 percent (0/5)
SwitchC>
SwitchC> telnet 10.4.4.3
Trying 10.4.4.3 ···
% Destination unreachable; gateway or host down
SwitchC>
```

The "show run" command exhibit is shown below, according the exhibit to answer the questions.

```
Press RETURN to get started!
RouterC>en
RouterC#
RouterC#show run
Building configuration...

Current configuration : 3120 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname RouterC
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$sC1P$Umfi4mWeVeLrqKFNJzHas0
!
```

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Mark for Review

```
!
!
ip cef
!
!
no ip domain lookup
ipv6 unicast-routing
!
!
!
voice-card 0
 no dspfarm
!
!
key chain icndchain
 key 1
  key-string san-fran
!
!
!
interface Loopback1
 ip address 172.16.4.1 255.255.255.0
!
interface Loopback2
 ip address 10.145.145.1 255.255.255.0
 ipv6 address 2001:410:2:3::/64 eui-64
!
interface FastEthernet0/0
 ip address 10.4.4.3 255.255.255.0
 ip access-group 106 in
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 bandwidth 64
 no ip address
 ip access-group 102 out
 encapsulation frame-relay
 ip ospf authentication
 ip ospf authentication-key san-fran
!
interface Serial0/0/0.1 point-to-point
 ip address 10.140.3.2 255.255.255.0
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 frame-relay interface-dlci 120
!
interface Serial0/0/1
 bandwidth 64
 ip address 10.45.45.1 255.255.255.0
 ip access-group 102 in
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 ip ospf authentication
 ip ospf authentication-key san-fran
 ipv6 address 2001:410:2:10::/64 eui-64
!
router eigrp 100
 network 10.0.0.0
 network 172.16.0.0
 network 192.168.2.0
 no auto-summary
```

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```
 network 10.4.4.3 0.0.0.0 area 0
 network 10.45.45.1 0.0.0.0 area 0
 network 10.140.3.2 0.0.0.0 area 0
 network 192.168.2.62 0.0.0.0 area 0
!
router rip
 version 2
 network 10.0.0.0
 network 172.16.0.0
!
ip default-gateway 10.1.1.2
!
!
ip http server
no ip http secure-server
!
access-list 102 permit tcp any any eq ftp
access-list 102 permit tcp any any eq ftp-data
access-list 102 deny   tcp any any eq telnet
access-list 102 deny   icmp any any echo-reply
access-list 102 permit ip any any
access-list 104 permit tcp any any eq ftp
access-list 104 permit tcp any any eq ftp-data
access-list 104 deny   tcp any any eq telnet
access-list 104 permit icmp any any echo
access-list 104 deny   icmp any any echo-reply
access-list 104 permit ip any any
access-list 106 permit tcp any any eq ftp
access-list 106 permit tcp any any eq ftp-data
access-list 106 deny   tcp any any eq telnet
access-list 106 permit icmp any any echo-reply
access-list 110 permit udp any any eq domain
access-list 110 permit udp any eq domain any
access-list 110 permit tcp any any eq domain
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
```

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Mark for Review

```
!
!
control-plane
!
!
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line con 0
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access-list 115 permit ip 0.0.0.0 255.255.255.0 any
access-list 122 deny   tcp any any
access-list 122 deny   icmp any any echo-reply
access-list 122 permit ip any any
!
!
!
control-plane
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 password sanjose
 login
!
scheduler allocate 20000 1000
!
end
RouterC#
```

A. No host can connect to RouterC through s0/0/1.

B. Only traffic from the 10.4.4.0 network could pass through the interface.

C. Telnet and ping will be operational but routing updates will fail.

D. FTP,FTP-DATA,ech0,and www will be operational but telnet will fail.

## Answer & Explanation

### Correct Answer

A

### Explanations

Refer to ACL, you should pay attention to the followings: the first is the ACL direction and traffic direction, ACL should be put in the inbound direction to control the inbound traffic and be put in the outbound direction to control the outbound traffic; the second is the deny any hidden behind ACL; the third is the use of wildcard, matching the correct address filed.

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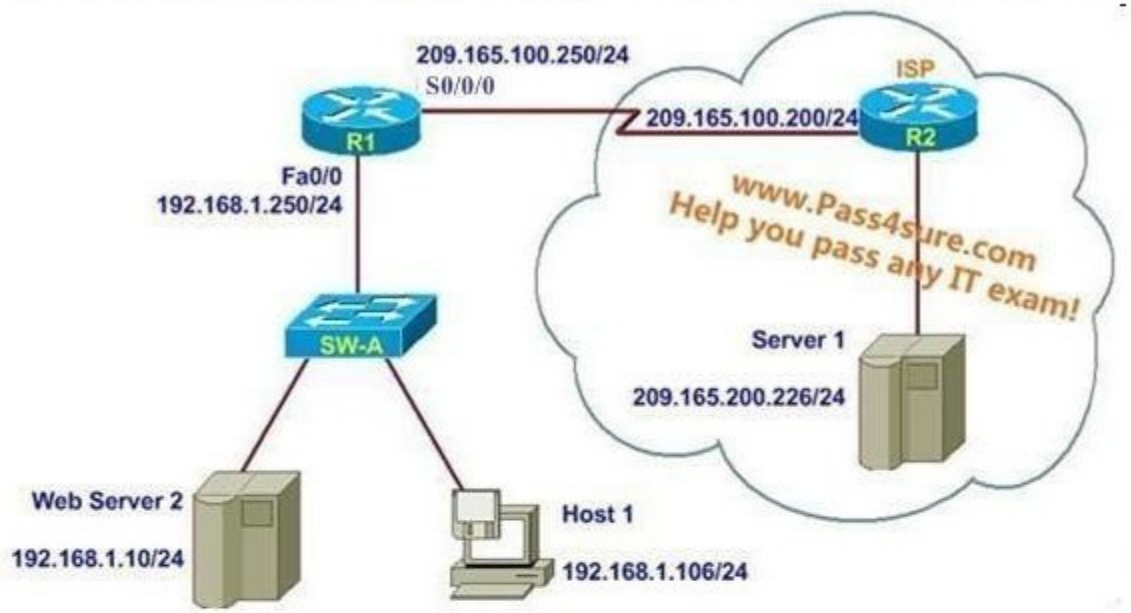
Mark for Review

If the router R1 has a packet with a destination address 192.168.1.255, what describes the operation of the network?




A. R1 will forward the packet out all interface.

B. R1 will drop this packet because this it is not a valid IP address.

C. As R1 forwards the frame containing this packet, SW-A will add 192.168.1.255 to its MAC table.

D. R1 will encapsulate the packet in a frame with a destination MAC address of FF-FF-FF-FF-FF-FF

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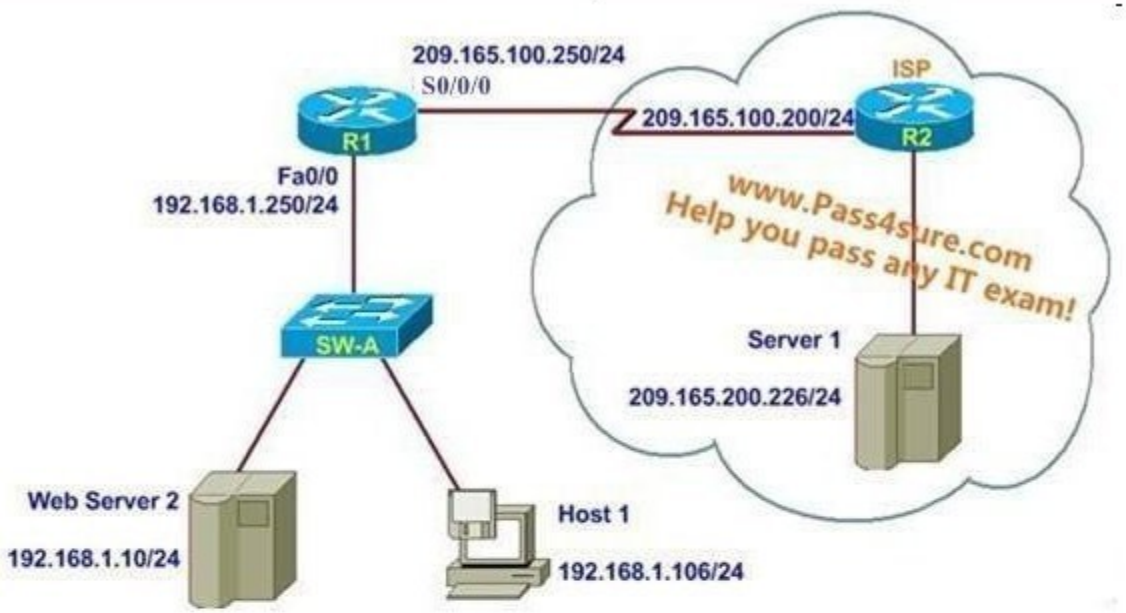
Mark for Review




A. R1 will forward the packet out all interface.

B. R1 will drop this packet because this it is not a valid IP address.

C. As R1 forwards the frame containing this packet, SW-A will add 192.168.1.255 to its MAC table.

D. R1 will encapsulate the packet in a frame with a destination MAC address of FF-FF-FF-FF-FF-FF

## Answer & Explanation

### Correct Answer

B

### Explanations

The IP address 192.168.1.255 of data packet is a broadcast address, the router will not forward broadcast address, instead it will drop this packet.
Network address: 192.168.1.0 subnet mask: 255.255.255.0
Valid address scope of hosts: 192.168.1.1 - 192.168.1.254
Broadcast address: 192.168.1.255

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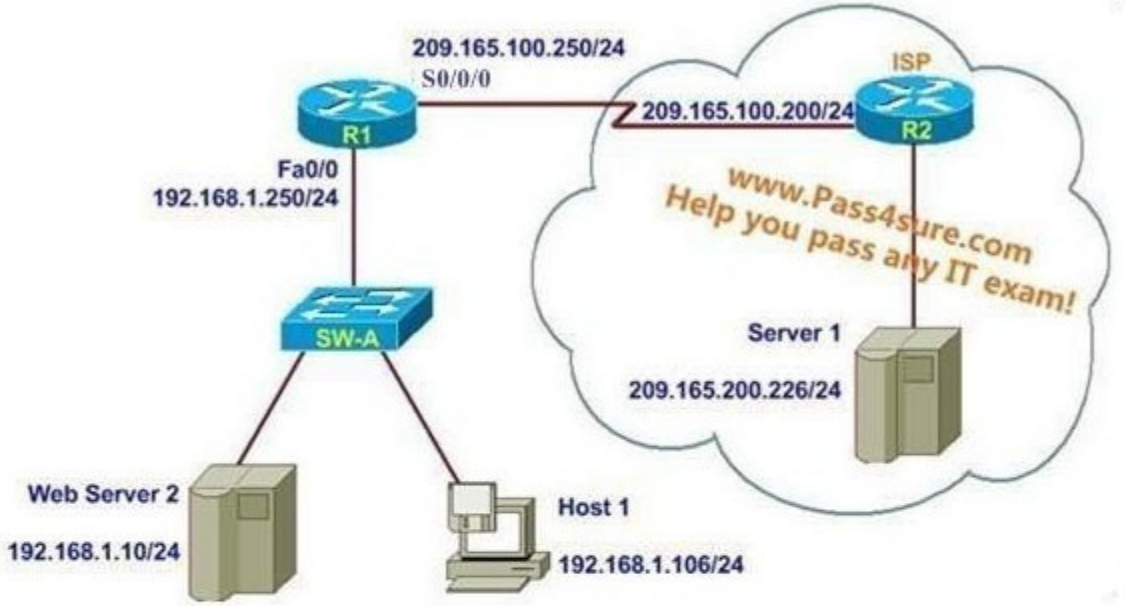
Mark for Review

Users on the 192.168.1.0/24 network must access files located on the Server1.What route could be configured on router R1 for file requests to reach the server?




- A. ip route 0.0.0.0 0.0.0.0 s0/0/0
- B. ip route 0.0.0.0 0.0.0.0 209.165.200.226
- C. ip route 209.165.200.0 255.255.255.0 192.168.1.250
- D. ip route 192.168.1.0 255.255.255.0 209.165.100.250

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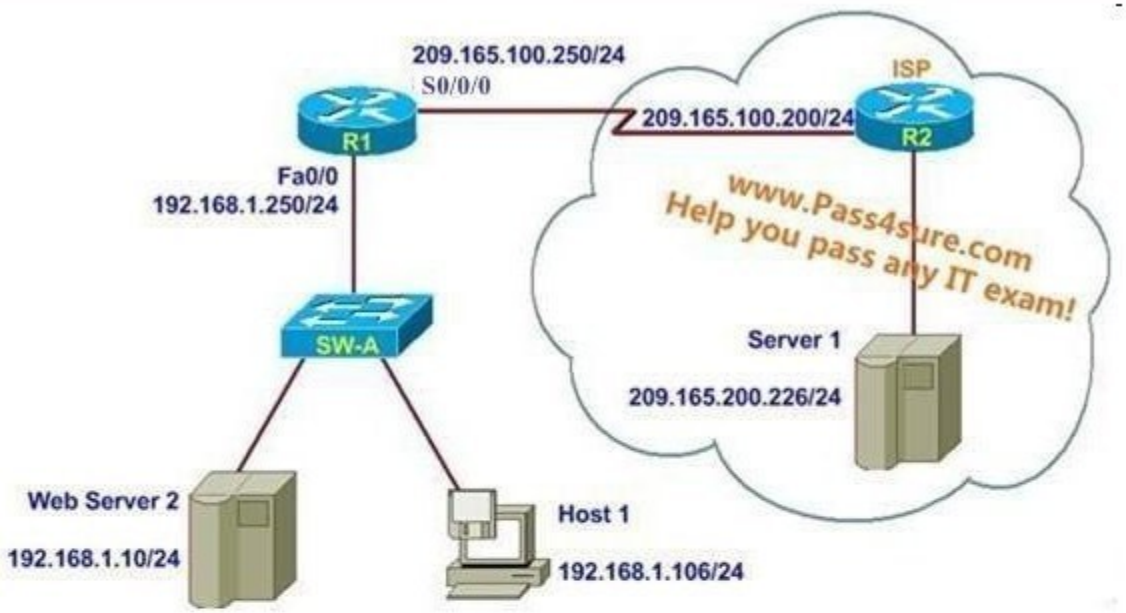


A. ip route 0.0.0.0 0.0.0.0 s0/0/0

B. ip route 0.0.0.0 0.0.0.0 209.165.200.226

C. ip route 209.165.200.0 255.255.255.0 192.168.1.250

D. ip route 192.168.1.0 255.255.255.0 209.165.100.250

## Answer & Explanation

### Correct Answer

A

### Explanations

In order to allow the network of 192.168.1.0/24 to access Serverl1, we need to establish a default route. The format of this default route is as follows:
ip route prefix mask {ip-address interface-type interface-number [ip-address]} [distance] [name] [permanent track number] [tag tag]
Based on the request of this subject, we need to configure the correct route as follows:
ip route 0.0.0.0 0.0.0.0 s0/0/0

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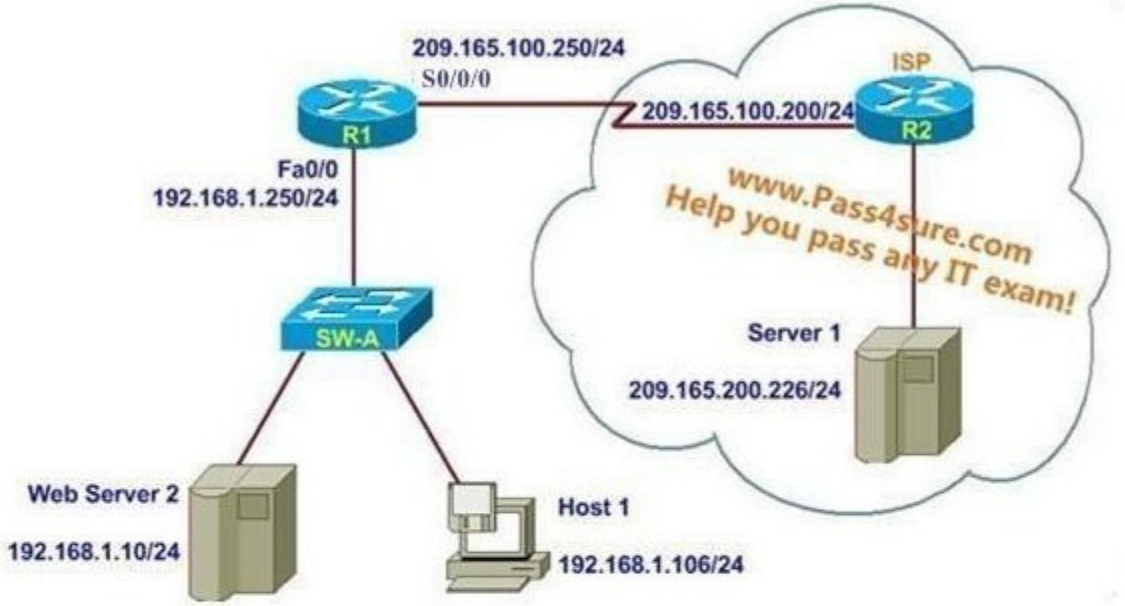
Mark for Review

When a packet is sent from Host 1 to Server1, in how many different frames will the packet be encapsulated as it is sent across the internetwork?




- A. 1
- B. 3
- C. 2
- D. 7

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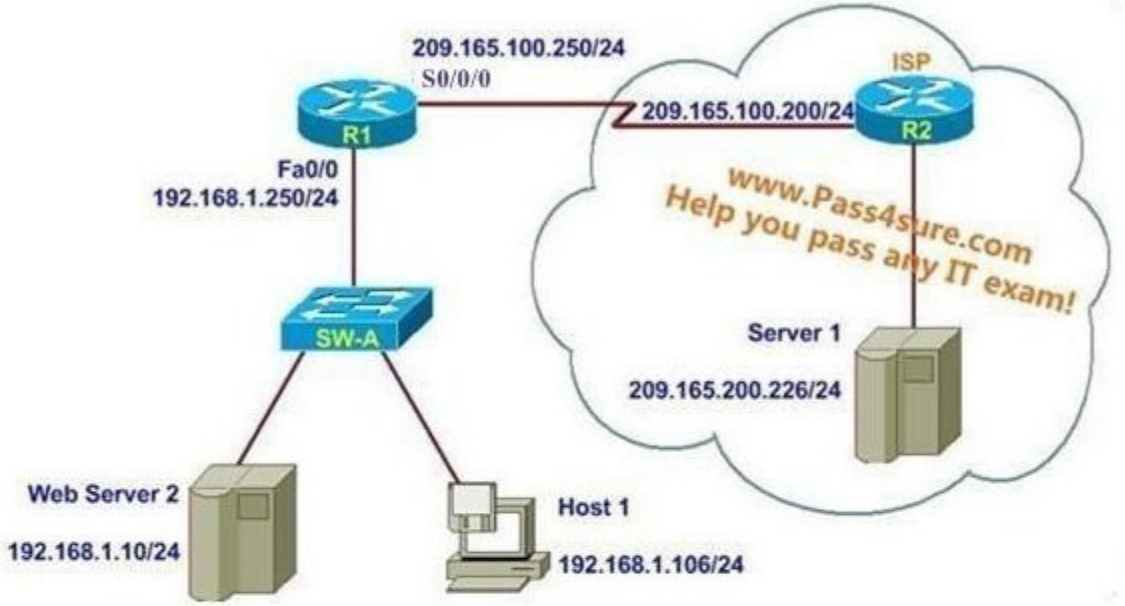
Mark for Review

When a packet is sent from Host 1 to Server1, in how many different frames will the packet be encapsulated as it is sent across the internetwork?




- A. 1
- B. 3
- C. 2
- D. 7

## Answer & Explanation

### Correct Answer

C

### Explanations

No more information available

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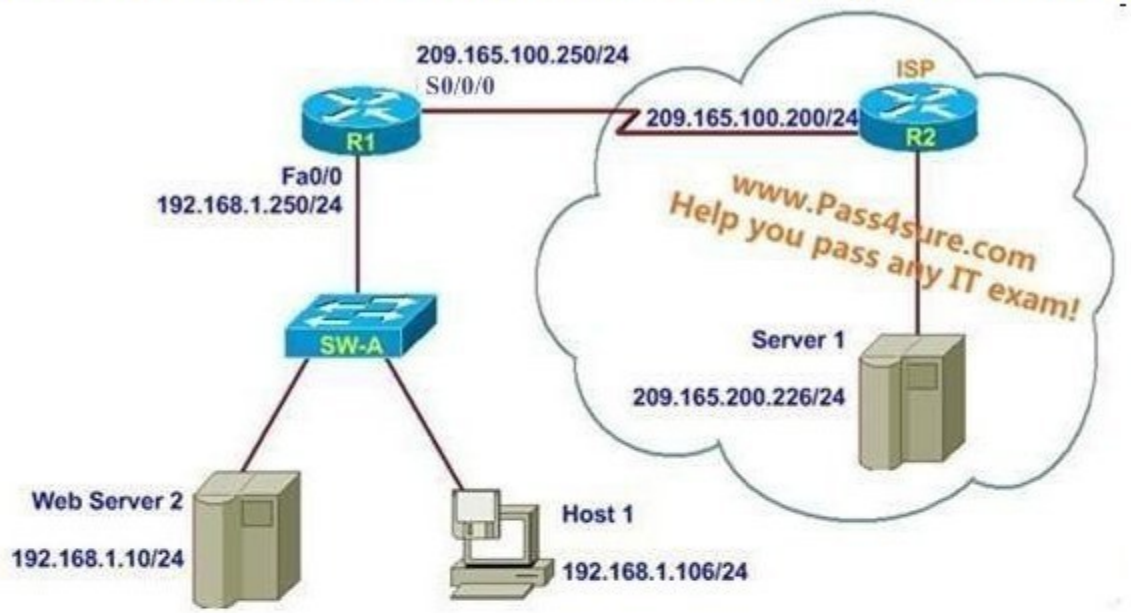
Mark for Review

What must be configured on the network in order for users on the Internet to view web pages located on Web Server 2?




A. On router R1, configure a default static route to the 192.168.1.0 network.

B. On router R1 ,configure DNS to resolve the URL assigned to Web Server 2 to the 192.168.1.10 address

C. On router R1, configure NAT to translate an address on the 209.165.100.0/24 network to 192.168.1.10

D. On router R2, configure DHCP to assign a registered IP address on the 209.165.100.0/24 network to Web Server 2.

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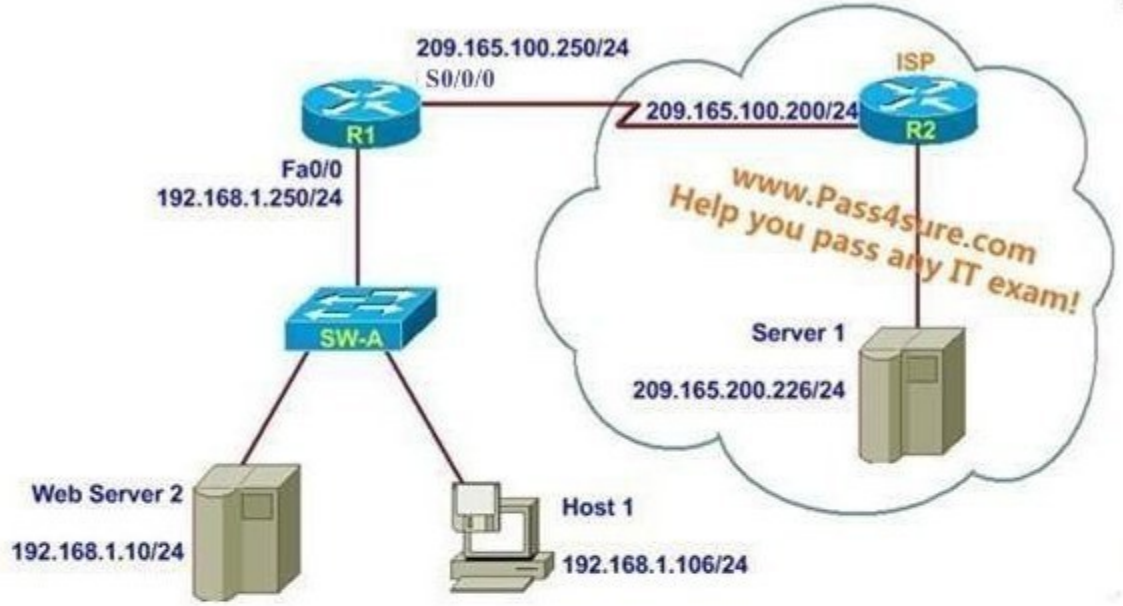
Mark for Review

What must be configured on the network in order for users on the Internet to view web pages located on Web Server 2?




A. On router R1, configure a default static route to the 192.168.1.0 network.

B. On router R1 ,configure DNS to resolve the URL assigned to Web Server 2 to the 192.168.1.10 address

C. On router R1, configure NAT to translate an address on the 209.165.100.0/24 network to 192.168.1.10

D. On router R2, configure DHCP to assign a registered IP address on the 209.165.100.0/24 network to Web Server 2.

## Answer & Explanation

**Correct Answer**

C

**Explanations**

In order to allow internet users to access Web Server 2, we need to configure NAT address translation on router R1.

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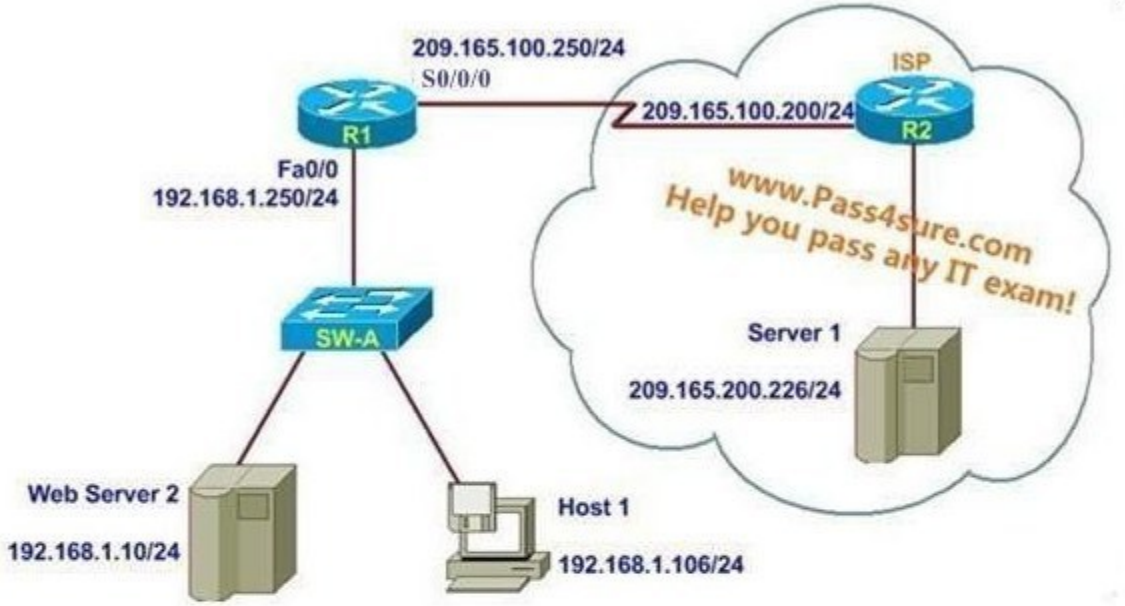
Mark for Review

The router address 192.168.1.250 is the default gateway for both the Web Server 2 and Host 1. What is the correct subnet mask for this network?




- A. 255.255.255.0
- B. 255.255.255.128
- C. 255.255.255.252
- D. 255.255.255.250

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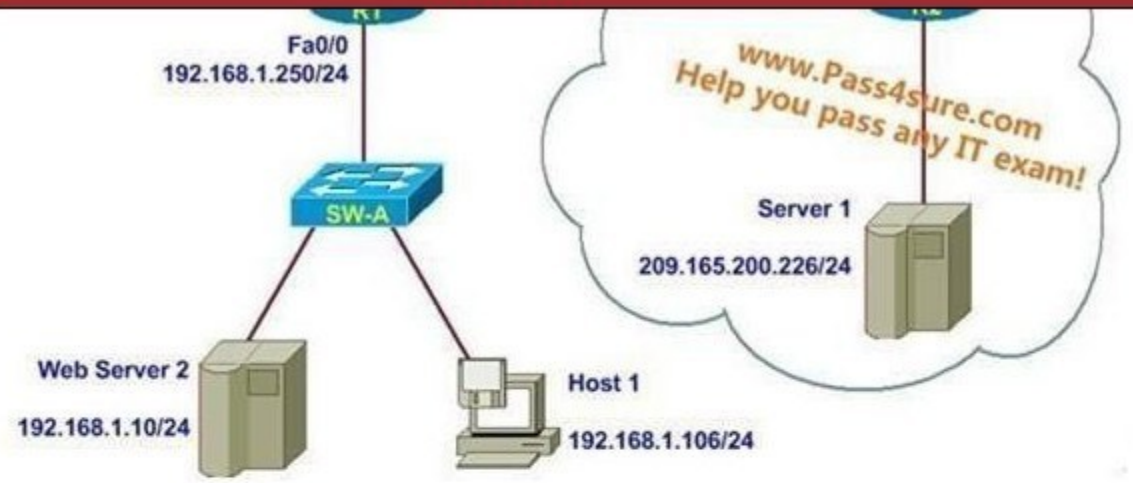
Mark for Review




A. 255.255.255.0

B. 255.255.255.128

C. 255.255.255.252

D. 255.255.255.250

## Answer & Explanation

### Correct Answer

A

### Explanations

1☐Based on the information provided in the exhibit, we know that the IP address of the interface Fa0/0 is 192.168.1.250/24, that is to say the subnet mask is 255.255.255.0☐

When configuring the correct IP address and not wasting IP address, the network of 192.168.1.0 needs to contain the following three IP addresses of interfaces:
R1(fa 0/0) : 192.168.1.250
Host1: 192.168.1.106/24
Web server 2: 192.168.1.10/24
The correct mask is 255.255.255.0.

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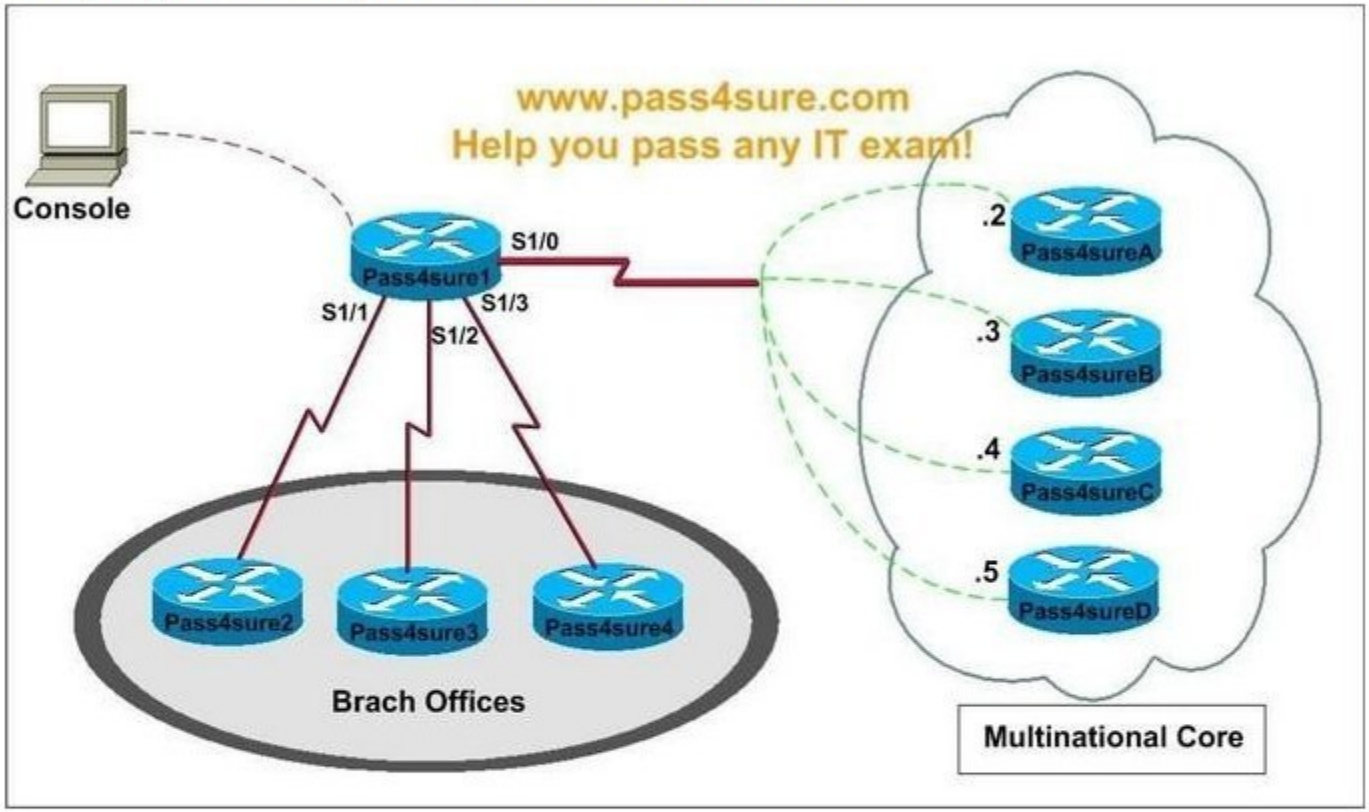
Mark for Review

The Pass4sure network topology and the output of Pass4sure1 are shown below:




```
Pass4sure1# show frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B , 0x1CB0) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA , 0x38A0) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159 , 0x5490) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8 , 0x7080) , dynamic ,
                broadcast , , status defined , active
Pass4sure1#
interface FastEthernet0/0
 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
```

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```
Pass4sure1#
interface FastEthernet0/0
 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulatiom ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Telnet
 login
!
end
```

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Please study the exhibit shown above carefully, and answer the following questions.

What destination Layer2 address will be used in the frame header containing a packet for host 172.30.0.4?

- A. 704
- B. 196
- C. 702
- D. 344

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```
line vty 0 4
 password Telnet
 login
!
end
```

Please study the exhibit shown above carefully, and answer the following questions.

What destination Layer2 address will be used in the frame header containing a packet for host 172.30.0.4?

- A. 704
- B. 196
- C. 702
- D. 344

## Answer & Explanation

### Correct Answer

C

### Explanations

In the Frame Relay network, the devices are connected with each other through DLCI. The address of the destination host presented in the subject is 172.30.0.4, on the basis of the output of the command "show frame-relay map " displayed in the exhibit , we know that the Layer3 IP address 172.30.0.4 corresponding DLCI is 702.

DLCI Addressing□The DLCI is an addressing mechanism used to identify a VC so that when multiple VCs use the same access link the Frame Relay switches know how to forward the frames to the correct remote sites.
Two important features of the DLCI are:

The Frame Relay headers, which have a single DLCI field, not both Source and Destination DLCI fields.

The local significance of the DLCI, which means that the addresses need to be unique only on the local access link. This is called local addressing.
Because there is only a single DLCI field in the Frame Relay header, Global addressing can be used, making DLCI addressing look like LAN addressing in concept. Global addressing is a way of choosing DLCI numbers when planning a Frame Relay network so that working with DLCIs is much easier.

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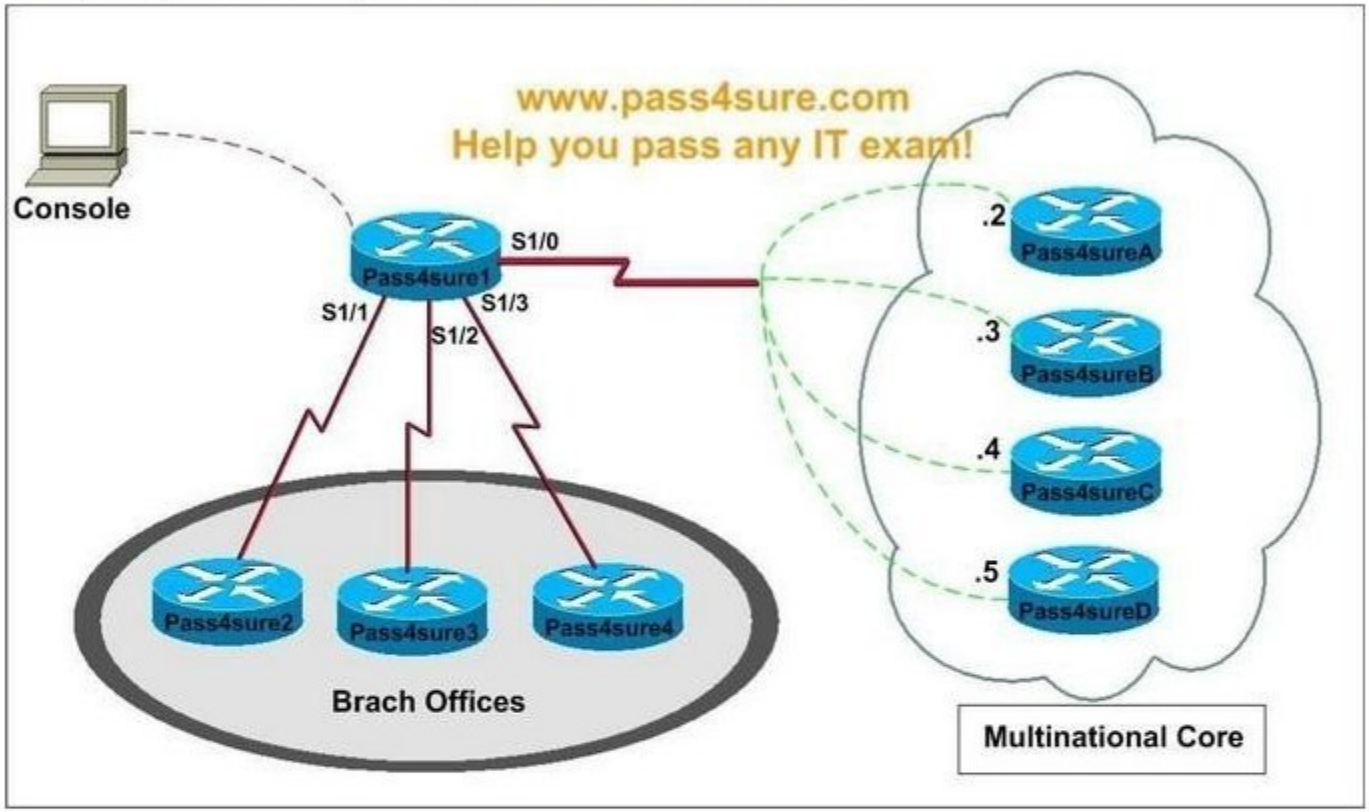
Mark for Review

The Pass4sure network topology and the output of Pass4sure1 are shown below:




```
Pass4sure1# show frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B , 0x1CB0) , dynamic ,
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                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159 , 0x5490) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8 , 0x7080) , dynamic ,
                broadcast , , status defined , active
Pass4sure1#
interface FastEthernet0/0
 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
```

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```
Pass4sure1#
interface FastEthernet0/0
 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulatiom ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Telnet
 login
!
end
```

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Please study the exhibit shown above carefully, and answer the following questions.

A static map to the Pass4sureB location is required. Which command should be used to create this map?

- A. frame-relay map ip 172.30.0.3 704 broadcast
- B. frame-relay map ip 172.30.0.3 196 broadcast
- C. frame-relay map ip 172.30.0.3 702 broadcast
- D. frame-relay map ip 172.30.0.3 344 broadcast

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```
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Telnet
 login
!
end
```

Please study the exhibit shown above carefully, and answer the following questions.

A static map to the Pass4sureB location is required. Which command should be used to create this map?

- A. frame-relay map ip 172.30.0.3 704 broadcast
- B. frame-relay map ip 172.30.0.3 196 broadcast
- C. frame-relay map ip 172.30.0.3 702 broadcast
- D. frame-relay map ip 172.30.0.3 344 broadcast

## Answer & Explanation

### Correct Answer

B

### Explanations

Based on the output of the command "show frame-relay map", we know that DLCI mapped to the router Pass4sureB is 196. (.3 In the above network topology, the complete layer3 IP address is172.30.0.3)
Frame-relay map☐ The mapping command "Frame-relay map" can statically create a mapping reaching the remote protocol address.
The format is :
frame-relay map protocol protocol-address dlci [ broadcast ][ ietf | cisco ]

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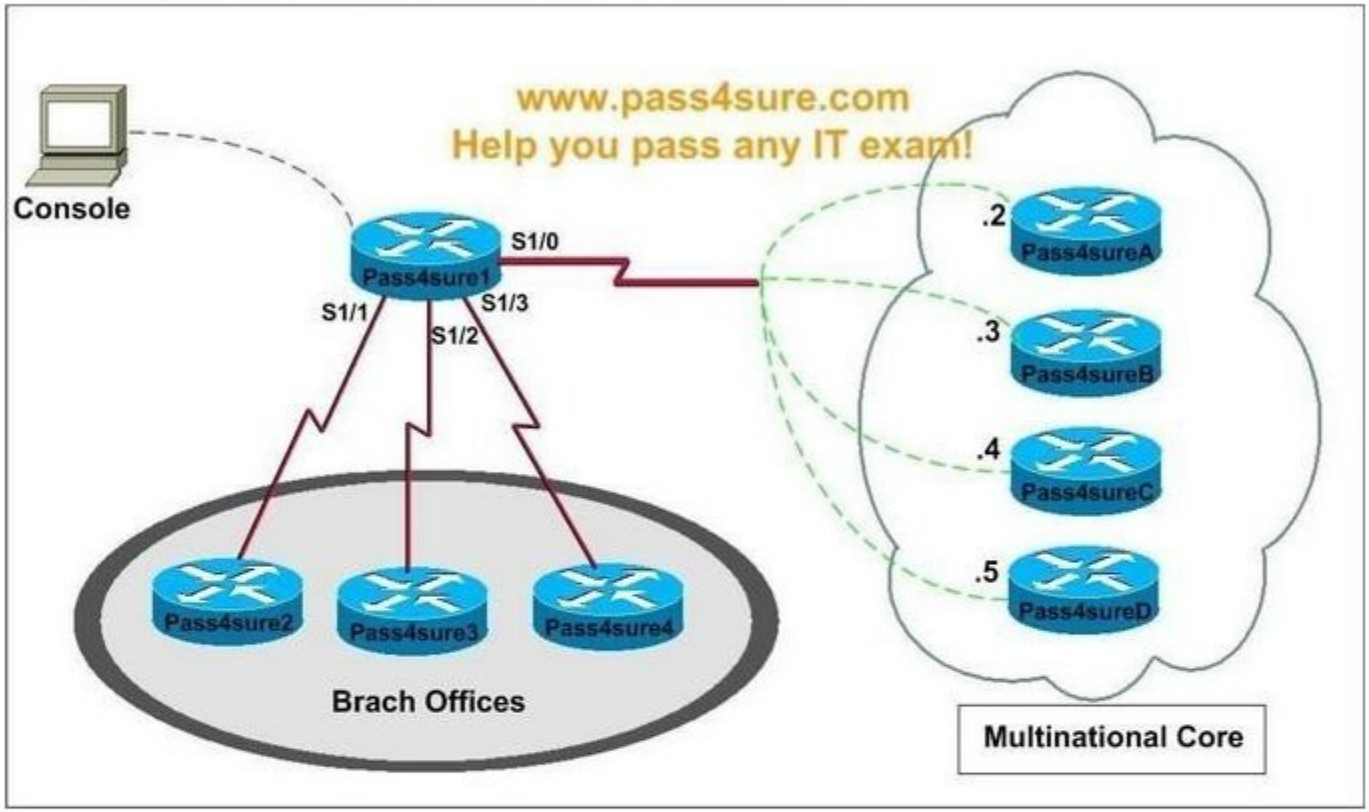
Mark for Review

The Pass4sure network topology and the output of Pass4sure1 are shown below:

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                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159 , 0x5490) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8 , 0x7080) , dynamic ,
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Pass4sure1#
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 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
```

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```
Pass4sure1#
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 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulatiom ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Telnet
 login
!
end
```

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Please study the exhibit shown above carefully, and answer the following question.

Which connection user the default encapsulation for serial interfaces on Cisco routers?

- A. The serial connection to the Pass4sure2 branch office.
- B. The serial connection to the Pass4sure3 branch office.
- C. The serial connection to the Pass4sure4 branch office.
- D. The serial connection to the Multination Core.

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```
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
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 login
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- B. The serial connection to the Pass4sure3 branch office.
- C. The serial connection to the Pass4sure4 branch office.
- D. The serial connection to the Multination Core.

## Answer & Explanation

### Correct Answer

A

### Explanations

On the basis of the configuration on Pass4sure1 provided in the exhibit, we know that the encapsulation types of different interfaces are as follows:
Serial 1/0 : encapsulation frame-relay
Serial 1/2 and Serial 1/3 : both interfaces are encapsulated PPP
Serial 1/1: There is no related encapsulation information displayed, so its default encapsulation type is HDLC.
Based on the network topology provided in the exhibit, the interface Serial 1/1 is connected to the router Pass4sure2 of the branch office, so the encapsulation type of the router pass4sure2 is by default.

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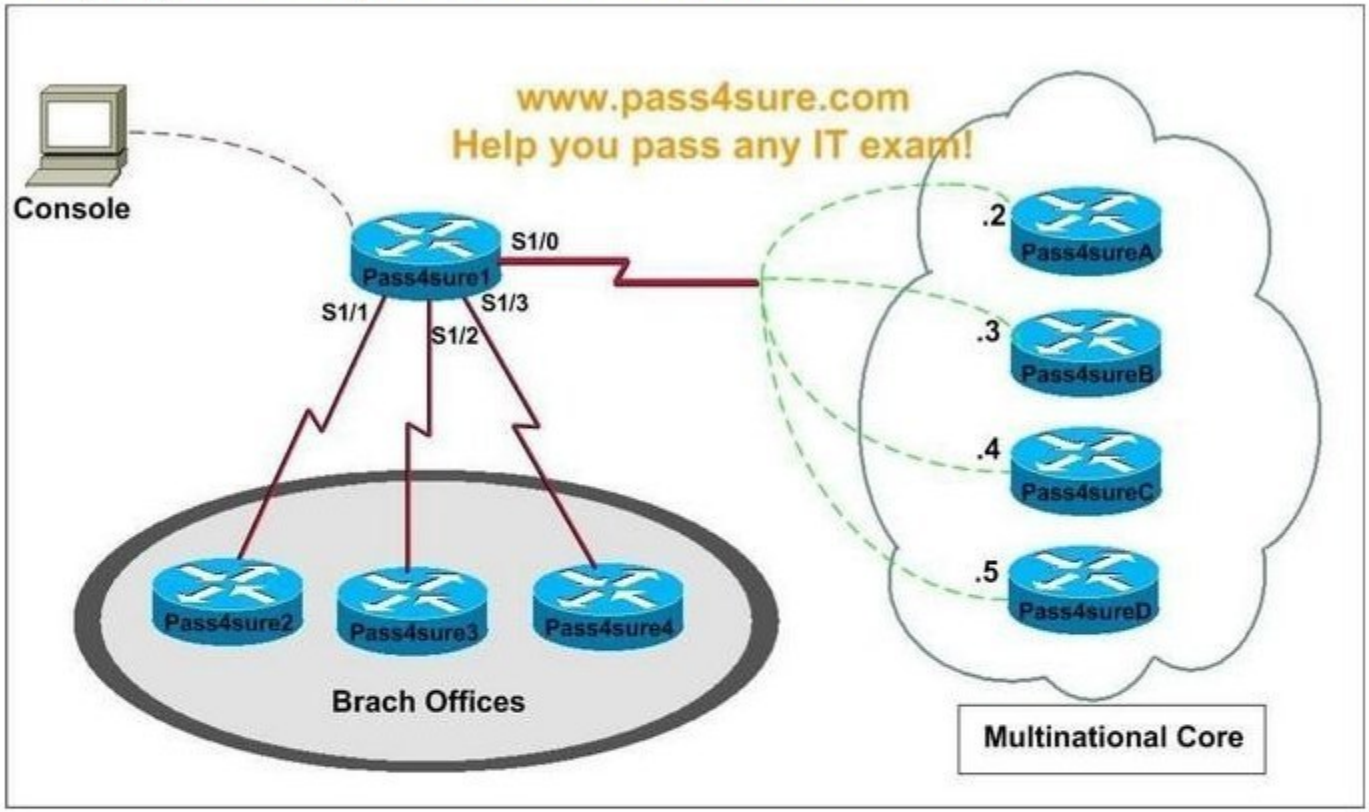
Mark for Review

The Pass4sure network topology and the output of Pass4sure1 are shown below:

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Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA , 0x38A0) , dynamic ,
                broadcast , , status defined , active
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                broadcast , , status defined , active
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Pass4sure1#
interface FastEthernet0/0
 no ip address
  shutdown
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
```

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```
!
interface Serial1/0
 ip address 172.130.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
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!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
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!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Telnet
 login
!
end
```

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Please study the exhibit shown above carefully, and answer the following question.

If required, what password should be configured on the router in the Pass4sure2 branch office to allow a connection to be established with the Pass4sure1 router?

- A. No password is required.
- B. Enable
- C. Secret
- D. Telnet
- E. Console

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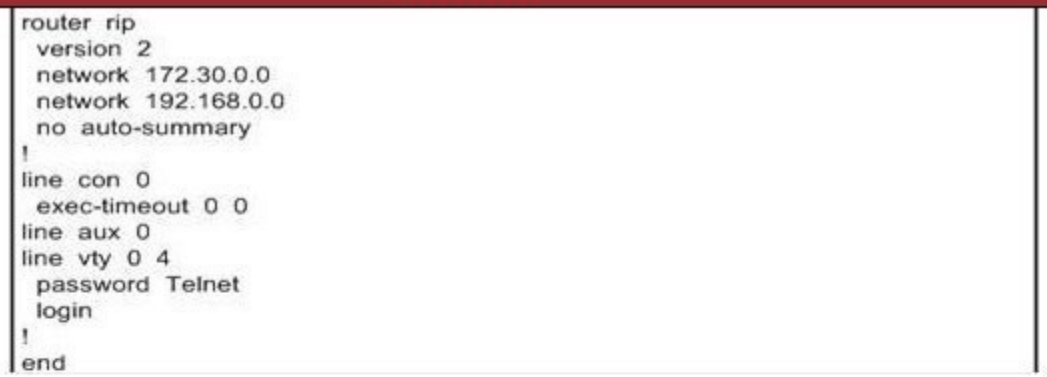

```
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Telnet
 login
!
end
```

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If required, what password should be configured on the router in the Pass4sure2 branch office to allow a connection to be established with the Pass4sure1 router?

- A. No password is required.
- B. Enable
- C. Secret
- D. Telnet
- E. Console

## Answer & Explanation

### Correct Answer

A

### Explanations

This question is to examine the function of the router password configuration. Firstly, when creating access between two routers, there is no need to configure password. The password to enter the privileged mode is Enable password, which displays by plain text (which can be viewed by sh run). Enable Secret is also the password to enter the privileged mode, which does not display by plain text (which cannot be viewed by sh run). The command Telnet is used to tele-manage router. The only chance to telnet router is when configuring telnet password. Console is an important interface to configure router. It is necessary to accomplish password recovery through console interface. The Console password configuration can make sure the security of router management.

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