



Exam : 640-822

**Title : Interconnecting Cisco Networking
Devices Part 1**

Ver : 03.03.09

QUESTION 1:

Which one of the following characteristics is true regarding the use of hubs and switches?

- A. Hubs can have their ports be configured with VLANs
- B. Using hubs is costly with regard to bandwidth availability.
- C. Switches can not forward broadcasts.
- D. Switches are more efficient than hubs in processing frames.
- E. Switches increase the number of collision domains in the network.

Answer: E

Explanation: Switches increases the number of collisions domains in the network. Switches that are configured with VLANs will reduce the size of the collision domains by increasing the number of collision domains in a network, but making them smaller than that of one big, flat network.

Incorrect Answers:

- A. Switches are capable of VLAN configurations, but hubs are not.
- B. Hubs are generally the least costly method possible to connect multiple devices together in a network.
- C. Switches forward broadcasts and multicasts, by default, to all ports within the same VLAN. Only routers block all broadcast traffic by default.
- D. Switches and hubs can be equally efficient in processing frames, in theory. In practice, switches are generally more efficient as they usually have more CPU and memory allocated to them, and are generally much more expensive than a simple hub.

QUESTION 2:

When comparing and contrasting the similarities and differences between bridges and switches, which of the following are valid statements? Choose all the valid answer choices)

- 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.
- E. Bridges and switches increase the size of a collision domain.
- F. None of the above statements are true.

Answer: B, C

Explanation:

Both bridges and switches build the bridge table by listening to incoming frames and

examining the source MAC address in the frame.

Switches are multiport bridges that allow you to create multiple broadcast domains. Each broadcast domain is like a distinct virtual bridge within a switch.

Incorrect Answers:

A. Switches are generally faster than bridges. Bridges also do not necessarily have fewer ports than switches.

D. Both bridges and switches will forward broadcast and multicast traffic, assuming that the traffic remains in the same VLAN.

E. The use of VLANs in a switch can decrease the size of the collision domain, by creating additional, smaller collision domains.

QUESTION 3:

Which of the following correctly describe the various functions and virtues of a router? (Select all valid answer choices)

- A. Packet switching
- B. Collision prevention on a LAN segment.
- C. Packet filtering
- D. Broadcast domain enlargement
- E. Broadcast forwarding
- F. Internetwork communication
- G. None of the above

Answer: A, C, F

Explanation:

The main function of a router is to connect different, separated networks together. In doing so, switching packets from one network to another is a primary function, along with providing for communication between networks. As an additional feature, routers are capable of providing filtering on a network address and application port level, so choice C is also correct.

Incorrect Answers:

B. Routers can indeed be used to segment a network separate a collision domain, since routers do not forward LAN broadcasts and multicasts to other interfaces. However, routers alone can not prevent all collisions from occurring on any given LAN segment.

D. Routers actually segment LANs into smaller broadcast domains.

E. Routers do not forward broadcast and multicast traffic out the additional interfaces by default. Unless bridging or IP helpers are configured on the router, LAN broadcasts are blocked at the router level.

QUESTION 4:

The LAN needs are expanding at the Certkiller corporate office, which is quickly growing. You are instructed to enlarge the area covered by a single LAN segment on the Certkiller network.

Which of the following are layer 1 devices that you can use? (Choose all that apply.)

- A. A switch
- B. A router
- C. A network adapter card
- D. A hub
- E. A repeater

Answer: D, E

Explanation:

A hub simply repeats the electrical signal and makes no attempt to interpret the electrical signal (layer 1) as a LAN frame (Layer 2). So, a hub actually performs OSI layer 1 functions, repeating an electrical signal, whereas a switch performs OSI layer 2 functions, actually interpreting Ethernet header information, particularly addresses, to make forwarding decisions. Hubs can be used to increase the number of stations that can be supported on a LAN.

Because the repeater does not interpret what the bits mean, but does examine and generate electrical signals, a repeater is considered to operate at Layer 1. Repeaters can be used to physically extend the LAN to greater distances.

QUESTION 5:

Cisco is the leader in the router market space. What basic functions do their routers perform in a network? (Choose two)

- A. The microsegmentation of broadcast domains
- B. Path selection
- C. Packet switching
- D. Bridging between LAN segments
- E. Access layer security
- F. VLAN membership assignment
- G. Application optimization

Answer: B, C

Explanation:

The primary functions of a router are: Packet Switching and Path Selection. It is the routers job to determine the best method for delivering the data, and switching that data as quickly as possible.

QUESTION 6:

The Certkiller network administrator needs to determine what LAN devices to install on the Certkiller network. What are two advantages of using Layer 2 Ethernet switches over hubs? (Choose two)

- A. Allowing simultaneous frame transmissions
- B. Increasing the size of broadcast domains
- C. Increasing the maximum length of UTP cabling between devices
- D. Filtering frames based on MAC addresses
- E. Decreasing the number of collision domains

Answer: A, D

Explanation:

A: 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.

D: Switches are capable of filtering frames based on any Layer 2 fields. For example, a switch can be programmed to reject (not forward) all frames sourced from a particular network. Because link layer information often includes a reference to an upper-layer protocol, switches usually can filter on this parameter. Furthermore, filters can be helpful in dealing with unnecessary broadcast and multicast packets.

QUESTION 7:

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

- A. To determine the status of network services on a remote device
- B. To obtain the IP Address of a connected device in order to telnet to the device
- C. To verify the type of cable interconnecting two devices
- D. To verify Layer 2 connectivity between two devices when Layer 3 fails
- E. To obtain VLAN information from directly connected switches
- F. To determine the status of the routing protocols between directly connected routers
- G. To support automatic network failover during outages

Answer: B, D

Explanation:

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

You can use:

Show cdp neighbor

Show cdp neighbor details

Commands to gather the information of connected neighbors.

QUESTION 8:

CDP is running between two Certkiller devices. What information is supplied by CDP? (Select three)

- A. Device Identifiers
- B. Capabilities list
- C. Platform
- D. Route identifier
- E. Neighbor traffic data

Answer: A, B, C

Explanation:

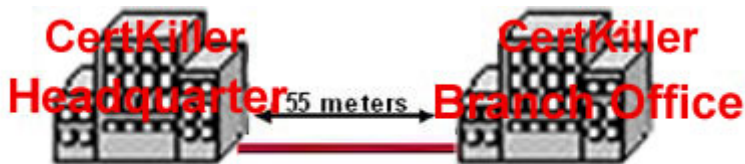
CDP is a Cisco proprietary protocol; to support forwarding CDP messages over an interface, that interface must support SNAP headers. Any LAN interface, HDLC, Frame Relay, and ATM all support CDP. The router or switch can discover Layer 3 addressing details of neighboring routers—without even configuring that Layer 3 protocol—because CDP is not dependent on any particular Layer 3 protocol.

CDP discovers several useful details from the neighboring device:

- **Device Identifier**—Typically the host name.
- **Address list**—Network and data link addresses.
- **Port Identifier**—Text that identifies the port, which is another name for an interface.
- **Capabilities list**—Information on what the device does—for instance, a router or switch.
- **Platform**—The model and OS level running in the device.

QUESTION 9:

Two Certkiller offices are connected as shown below:



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

- A. Coaxial cable
- B. Fiber optic cable
- C. UTP cable
- D. STP cable

E. None of the above

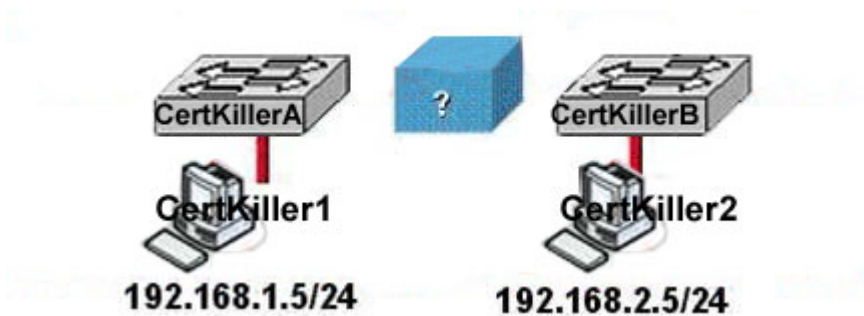
Answer: B

Explanation:

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 given in FO systems and in the fiber medium itself.

QUESTION 10:

Refer to the Certkiller network shown below:



You work as a network technician at Certkiller .com. Please study the exhibit carefully. Based on the information shown above, what is needed to allow host Certkiller 1 to ping host Certkiller 2?

- A. A crossover cable connecting the switches
- B. A backbone switch connecting the switches with either fiber optic or straight-through cables
- C. A straight-through cable connecting the switches
- D. A CSU/DSU connected to the switches with straight-through cables
- E. A router connected to the switches with straight-through cables

Answer: E

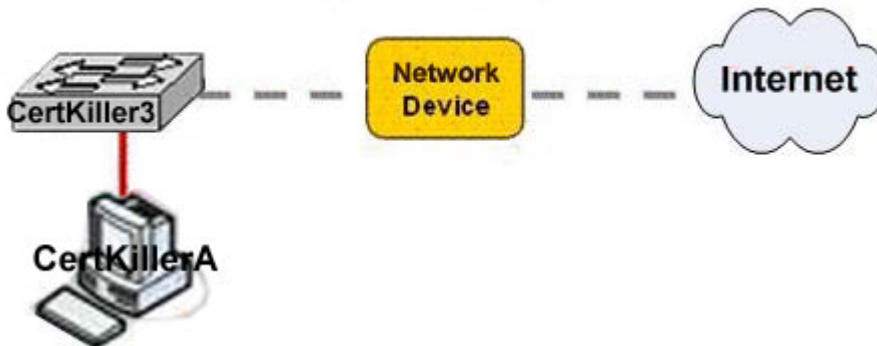
Explanation:

Routers are Layers 3 devices used for inter-network communication. In this scenario there are two different networks, so both switches need to connect to a router using straight-through cables.

A straight-through cable is used to connect two different devices like, switch to router, host to switch. Since we need to insert a router for communication between the two switches, straight through cables will be used between the switches and the router.

QUESTION 11:

Exhibit:



A new Certkiller office is opening, and a network device needs to be installed in the place of the icon labeled Network Device to accommodate a leased line T1 to the Internet. Which network device and interface configuration meets the minimum requirements for this installation?

- A. A switch with two Ethernet interfaces
- B. A router with two Ethernet interfaces
- C. A switch with one Ethernet and one serial interface
- D. A router with one Ethernet and one serial interface
- E. A router with one Ethernet and one modem interface
- F. None of the above

Answer: D

Explanation:

Only a router can terminate a leased line T1 access circuit, and only a router can connect two different IP networks. Here, we will need a router with two interfaces, one serial connection for the T1 and one Ethernet interface to connect to the switch on the LAN.

QUESTION 12:

As a CCNA candidate, you must know the various layers of the OSI model. At which layers of the OSI Model do Wide Area Networks operate in? (Choose two)

- A. Physical Layer
- B. Datalink Layer
- C. Network Layer
- D. Session Layer
- E. Transport Layer
- F. Presentation Layer
- G. Application Layer

Answer: A, B

Explanation:

A WAN is a data communications network that covers a relatively broad geographic area and that often uses transmission facilities provided by common carriers, such as telephone companies. WAN technologies generally function at the lower two layers of the OSI reference model: the physical layer and the data link layer as shown below.



Note:

Occasionally WAN's would also be considered to operate at layer 3, but since this question asked for only 2 choices layers 1 and 2 are better choices.

QUESTION 13:

While troubleshooting a connectivity problem on the network, you issue the ping command from your PC command prompt, but the output shows "request times out."

At which OSI layer is this problem associated with?

- A. The data link layer
- B. The application layer
- C. The access layer
- D. The session layer
- E. The network layer

Answer: E

Explanation:

TCP/IP includes ICMP, a protocol designed to help manage and control the operation of a TCP/IP network. The ICMP protocol provides a wide variety of information about a

network's health and operational status. Control message is the most descriptive part of a name. ICMP helps control and manage IP's work and therefore is considered part of TCP/IP's network layer.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) page 277.

QUESTION 14:

You download a file from an FTP site on the Internet. What is the highest layer in the OSI model used in this FTP operation?

- A. Application
- B. Presentation
- C. Session
- D. Transport
- E. Internet
- F. Data Link
- G. Physical

Answer: A

Explanation:

Layer 7 is the application layer, which is the highest layer in the OSI model. This layer describes the use of end user applications, such as opening movie files (avi, mpeg, etc) used Microsoft Office applications, using WWW browsers, using Telnet, and using FTP.

QUESTION 15:

A host computer has been correctly configured with a static IP address, but the default gateway is incorrectly set. Which layer of the OSI model will be first affected by this configuration error?

- A. Layer 1
- B. Layer 2
- C. Layer 3
- D. Layer 4
- E. Layer 5
- F. Layer 6
- E. Layer 7

Answer: C

Explanation:

IP Addressing and IP routing resides on the OSI Network layer, which is layer 3.

QUESTION 16:

Which layer of the OSI reference model is responsible for ensuring reliable end-to-end delivery of data?

- A. Application
- B. Presentation
- C. Session
- D. Transport
- E. Network
- F. Data-Link

Answer: D

Explanation:

A key function of the transport layer is to provide connection services for the protocols and applications that run at the levels above it. These can be categorized as either connection-oriented services or connectionless services. Some protocol suites, such as TCP/IP, provide both a connection-oriented and a connectionless transport layer protocol, to suit the needs of different applications.

The transport layer is also the place in the layer stack where functions are normally included to add features to end-to-end data transport. Where network layer protocols are normally concerned with just "best effort" communications, where delivery is not guaranteed. Transport layer protocols are given intelligence in the form of algorithms that ensure that reliable and efficient communication between devices takes place. This encompasses several related jobs, including lost transmission detection and handling, and managing the rate at which data is sent to ensure that the receiving device is not overwhelmed.

Transmission quality, meaning ensuring that transmissions are received as sent, is so important that some networking references define the transport layer on the basis of reliability and flow-control functions. However, not all transport layer protocols provide these services. Just as a protocol suite may have a connection-oriented and a connectionless transport layer protocol, it may also have one that provides reliability and data management services, and one that does not. Again, this is the case with TCP/IP: there is one main transport layer protocol; TCP, that includes reliability and flow control features, and a second, UDP, that doesn't.

QUESTION 17:

At which OSI layer is a logical path created between two host systems named CK1 and CK2 on the Certkiller LAN?

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

- E. Network
- F. Application
- G. Presentation

Answer: E

Explanation:

The Network layer (also called layer 3) manages device addressing, tracks the location of devices on the network, and determines the best way to move data, which means that the Network layer must transport traffic between devices that aren't locally attached. Routers (layer 3 devices) are specified at the Network layer and provide the routing services within an internetwork.

QUESTION 18:

Which OSI layer is associated with the following: The acknowledgement of transmissions, sequencing, and flow control across a network?

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

Answer: C

Explanation:

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.

QUESTION 19:

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

- A. Application
- B. Presentation
- C. Session
- D. Transport

- E. Network
- F. Data link
- G. Physical

Answer: E

Explanation:

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

QUESTION 20:

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.
- E. Packets are created when the network layer encapsulates a frame with source and destination host addresses and protocol-related control information.

Answer: B, C

Explanation:

The Transport Layer:

You can think of the transport layer of the OSI model as a boundary between the upper and lower protocols. The transport layer provides a data transport service that shields the upper layers from transport implementation issues such as the reliability of a connection. The transport layer provides mechanisms for:

Segmenting upper layer application

The establishment, maintenance, and orderly termination of virtual circuits
information flow control and reliability via TCP

Transport fault detection and recovery

The Network Layer:

Layer three of the OSI model is the network layer.

The network layer creates and sends packets from source network to destination network.

it provides consistent end-to-end packet delivery service and control information
it creates and uses layer3 addresses for use in path determination and to forward

packets.

Incorrect Answers:

A: This correctly describes the physical layer, not the presentation layer.

D: Although the data link layer adds physical (MAC) source and destination addresses, it adds it to a frame, not a segment.

E: Packets are encapsulated, not frames.

QUESTION 21:

When files are transferred between a host and an FTP server, the data is divided into smaller pieces for transmission. As these pieces arrive at the destination host, they must be reassembled to reconstruct the original file. What provides for the reassembly of these pieces into the correct order?

- A. The sequence number in the TCP header
- B. The Start Frame Delimiter in the 802.3 Preamble
- C. The TTL in the IP header
- D. The acknowledgement number in the segment header
- E. The frame check sequence in the Ethernet frame trailer

Answer: A

Explanation:

The Transport layer can provide reliable networking via acknowledgments, sequencing, and flow control.

Acknowledgments Delivered segments are acknowledged to the sender. If they are not acknowledged, the sender will retransmit.

* Sequencing Data segments are sequenced into their original order when they arrive at the destination.

* Flow Control Provides buffer controls that prevent packet flooding to the destination host. Buffers store bursts of data for processing when the transmission is complete.

Layer 4 protocols include the following:

* Transmission Control Protocol (TCP)

* User Datagram Protocol (UDP)

Sequenced Packet Exchange (SPX) A reliable communications protocol created by Novell NetWare

QUESTION 22:

Network equipment supporting the use of flow control mechanisms has been recently installed in the Certkiller network. What is the purpose of flow control in a data network?

- A. It ensures that data is retransmitted if an acknowledgment is not received.
- B. It reassembles segments in the correct order on the destination device.
- C. It provides a mechanism for the receiver to control the transmission speed.

- D. It regulates the size of each datagram segment.
- E. All of the above are functions of flow control

Answer: C

Explanation:

Flow control paces the transmission of data between a sending device and a receiving device. Flow control ensures that the receiving device can absorb the data sent to it before the sending device sends more. When the buffers on the receiving device are full, a message is sent to the sending device to suspend transmission until the data in the buffers has been processed.

Incorrect Answers:

- A. Data retransmission mechanisms are not handled by control. They are most often handled by transport layer protocols such as TCP.
- B. This describes the reassembly portion of the segmentation and reassembly (SAR) function of network equipment.
- D. The maximum transmission unit (MTU) handles the regulation of maximum frame sizes.

QUESTION 23:

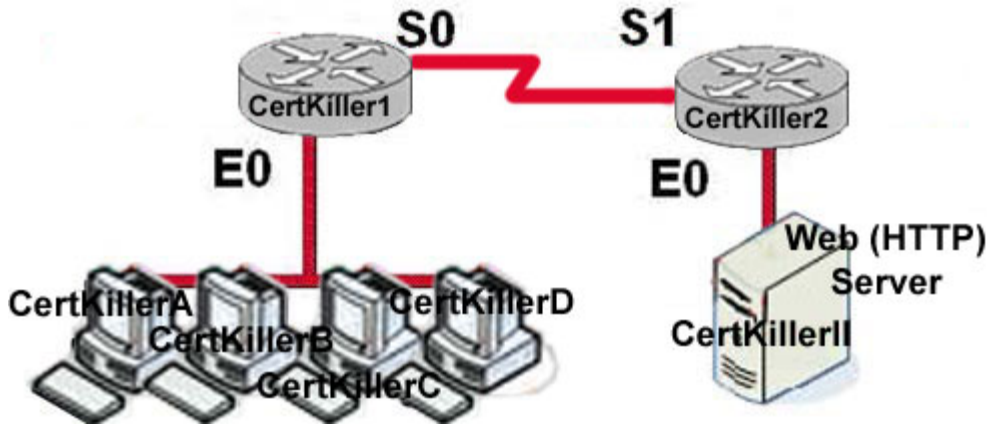
You need to describe the various types of flow control to your co-workers. Which of the following are types of flow control that can be used in a network? (Choose three)

- A. Congestion avoidance
- B. Windowing
- C. Cut-through
- D. Buffering
- E. Load Balancing
- F. Fast Forward

Answer: A, B, D

QUESTION 24:

Part of the Certkiller network is displayed below:



Study the exhibit shown above. Host Certkiller A has established a connection with the Certkiller II server attached to interface E0 of the Certkiller 2 router. Which of the following statements describe the information contained in protocol data units sent from Host Certkiller to Certkiller II? (Choose three)

- A. The destination port number in a segment header will have a value of 80
- B. The destination IP address of a packet will be the IP address of the E0 interface of the Certkiller 1 router
- C. The destination IP address of a packet will be the IP address of the network interface of the Certkiller II server
- D. The destination address of a frame will be the MAC address of the E0 interface of Certkiller 1 router

Answer: A, C, D

QUESTION 25:

Which protocol below uses TCP port 443 at layer 4?

- A. HTML
- B. HTTPS
- C. TFTP
- D. Telnet
- E. SMTP
- F. None of the above

Answer: B

Explanation:

HTTPS is the secured version of the HTTP application, which normally uses 128 bit SSL encryption to secure the information sent and received on a web page. An example is a banking web site, or a trustworthy shopping web site that takes credit card information. It is an application layer protocol which uses TCP port 443.

Incorrect Answers:

A. HTML is not a protocol.

- C. TFTP uses UDP port 69.
- D. Telnet uses TCP port 23.
- E. SMTP uses TCP port 25.

QUESTION 26:

As a CCNA candidate, you will be expected to know the OSI model very well. Which of the following are associated with the application layer (layer 7) of the OSI model? (Choose two)

- A. TCP
- B. Telnet
- C. FTP
- D. Ping
- E. IP
- F. UDP

Answer: B, C

Explanation:

The application layer is the top layer of the OSI model and is used to describe the end user applications that can be used over a network.

Layer Name Examples

Application (layer 7) Telnet, HTTP, FTP, WWW browsers, NFS, SMTP gateways, SNMP

Incorrect Answers:

- A. TCP resides at layer 4.
- D. ARP is a function of the data link layer, which is layer 2.
- E. IP is used at layer 3 (network layer).

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 34.

QUESTION 27:

As the Certkiller network administrator, you are required to have a firm understanding of the OSI model. Why does the data communication industry use the layered OSI reference model? (Choose two)

- A. It enables equipment from different vendors to use the same electronic components, thus saving research and development funds
- B. It encourages industry standardization by defining what functions occur at each layer of the model
- C. It divides the network communication process into smaller and simpler components; thus aiding component development, design and troubleshooting
- D. It provides a means by which changes in functionality in one layer require changes in other layers

E. It supports the evolution of multiple competing standards and thus provides business opportunities for equipment manufacturers

Answer: B, C

Explanation:

The OSI (Open System Interconnection) reference model was created as a reference point for communications devices. A layered approach is used to segment the entire telecommunications process into a series of smaller steps.

A is correct because it encourages a level of standardization by encouraging that functions be compared to known layers. D is also correct because it allows engineers to focus on the development, refining, and perfection of simpler components.

QUESTION 28:

Which of the protocols below use TCP at the transport layer? (Select four)

- A. TFTP
- B. SMTP
- C. SNMP
- D. FTP
- E. HTTP
- F. HTTPS

Answer: B, D, E, F

Explanation:

SMTP (Simple Mail Transfer Profile for email), FTP (File Transfer Protocol), and HTTP/HTTPS (Hyper Text Transfer Protocol for internet) all use TCP because of the reliable delivery mechanism. SMTP uses TCP port 25, FTP uses TCP ports 20 and 21, HTTP uses TCP port 80, and HTTPS uses TCP port 443.

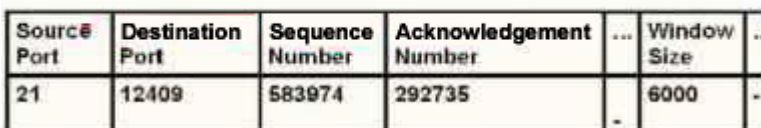
Incorrect Answers:

A, C: SNMP and TFTP use UDP as the transport mechanism. Generally speaking, protocols that use the keywords "trivial" or "simple" uses UDP, since connectionless, best effort delivery mechanism usually suffice.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 163.

QUESTION 29:

Exhibit:



Source Port	Destination Port	Sequence Number	Acknowledgement Number	...	Window Size	..
21	12409	583974	292735	-	6000	-

The exhibit above displays the partial contents of an encapsulation header.

Which of the following are true of the network traffic represented in this diagram?
(Select three)

- A. This is a UDP header
- B. This is an OSI layer 4 header.
- C. This is traffic from an FTP server.
- D. This is traffic from an Telnet client.
- E. The last PDU received in this session had a sequence number of 292735.

Answer: B, C, E

Explanation:

As the header contains the sequence number and ACK number fields, it represents a TCP header. Choice B is correct as TCP works on Layer 4 i.e. Transport Layer.

Source Port mentioned in the header is 21 which indicate it is FTP Traffic because FTP uses port 20 and 21 for data and control. So choice C is correct.

The acknowledgment number refers to the sequence number of the last PDU received, which is 292735, making choice E also correct.

QUESTION 30:

Acknowledgements, sequencing, and flow control are functions that are handled by which layer of the OSI model?

- A. Layer 5
- B. Layer 4
- C. Layer 7
- D. Layer 6
- E. Layer 3
- F. Layer 2
- G. Layer 1

Answer: B

QUESTION 31:

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

- A. Start a new session using UDP
- B. Obtain a new IP address from the DHCP server
- C. Use a different source port for the session
- D. Decrease the sequence number
- E. Decrease the window size

Answer: E

Explanation:

A TCP window the amount of outstanding (unacknowledged by the recipient) data a sender can send on a particular connection before it gets an acknowledgment back from the receiver that it has gotten some of it.

For example if a pair of hosts are talking over a TCP connection that has a TCP window size of 64 KB (kilobytes), the sender can only send 64 KB of data and then it must stop and wait for an acknowledgment from the receiver that some or all of the data has been received. If the receiver acknowledges that all the data has been received then the sender is free to send another 64 KB.

One way to improve the reliability of the TCP connection is to reduce the window size that the receiver needs to receive before sending an acknowledgement. However, this will reduce throughput as more segments and acknowledgements will need to be sent in order to transfer the same amount of data.

QUESTION 32:

You have set up an Internet based FTP server, where people can upload and download files. In terms of the OSI model, what is the highest layer used during the FTP sessions.

- A. Application
- B. Presentation
- C. Session
- D. Transport
- E. Internet
- F. Data Link
- G. Physical

Answer: A

Explanation:

The application layer is the highest layer (layer 7) of the OSI model, and is reserved for end user applications. Since FTP is itself an application, layer 7 is the highest layer used.

Incorrect Answers:

B, C, D, E, F, G. In any given FTP session, all of these layers will be used at some point but they are incorrect because the question asked for the highest layer used by FTP.

QUESTION 33:

Which Layer 4 protocol is used for a Telnet connection between two Certkiller routers?

- A. IP
- B. ICMP
- C. DNS

- D. TCP
- E. UDP
- F. RTP

Answer: D

Explanation:

TCP is a reliable connection-oriented protocol. TCP uses acknowledgments, sequencing, and flow control to ensure reliability. Telnet uses TCP port 23.

QUESTION 34:

DRAG DROP

You work as a network administrator at Certkiller .com.

Your boss, Mrs. Certkiller, is interested in the OSI layers. Match the terms with the appropriate layer. Some options are not used.

Options, select from these

routing	packets	IP addresses
switching	segments	windowing
UDP	bits	Mac addresses

Transport layer

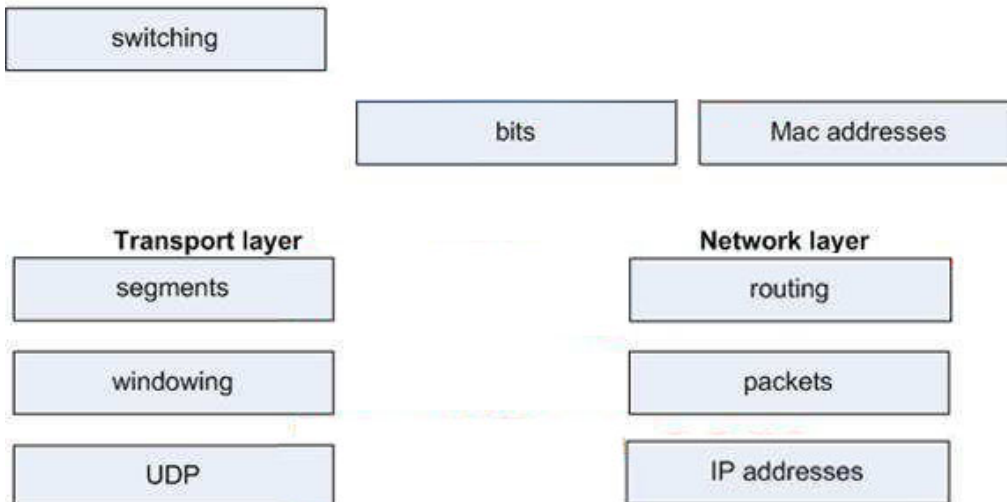
Place here
Place here
Place here

Network layer

Place here
Place here
Place here

Answer:

Options, select from these



Explanation:

The Transport layer segments and reassembles data into a data stream. Services located in the Transport layer segment and reassemble data from upper-layer applications and unite it into the same data stream. They provide end-to-end data transport services and can establish a logical connection between the sending host and destination host on an internetwork.

TCP and UDP transport protocol lies on Transport Layer, which break down the data coming from upper layer into segment.

Windows are used to control the amount of outstanding, unacknowledged data segments that is also on Transport Layer.

Network Layer:

The Network layer (also called layer 3) manages device addressing, tracks the location of devices on the network, and determines the best way to move data, which means that the Network layer must transport traffic between devices that aren't locally attached. Routers (layer 3 devices) are specified at the Network layer and provide the routing services within an internetwork.

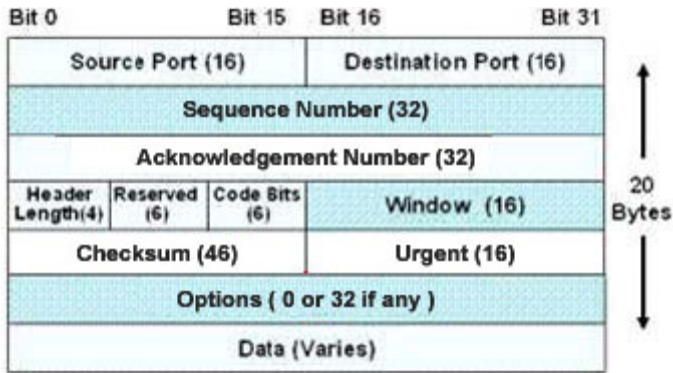
Protocol Data Packets (PDU) on Network Layer is known as Packets. Routing and Routed protocols are lies on Network Layer.

Routing Protocol: RIP, IGRP, EIGRP, OSPF, BGP

Routed Protocol: IP, IPX

QUESTION 35:

Refer to the following exhibit:



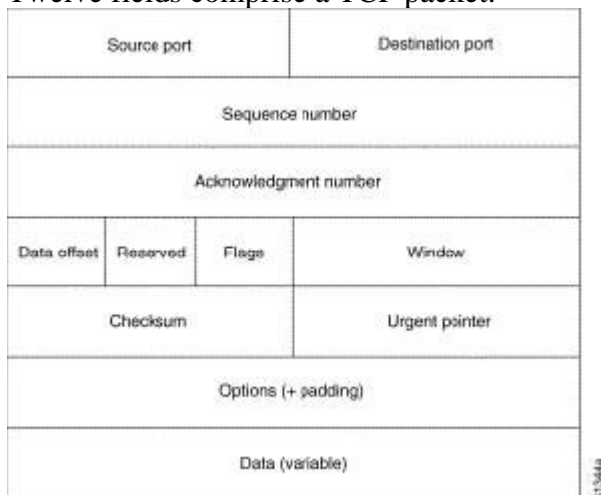
What data structure is described in the exhibit shown above?

- A. IP datagram
- B. TCP segment
- C. Ethernet frame
- D. UDP datagram
- E. FDDI frame
- F. Token Ring frame
- G. None of the above

Answer: B

Explanation:

The Figure below illustrates the fields and overall format of a TCP packet. Twelve fields comprise a TCP packet.



The following descriptions summarize the TCP packet fields illustrated above.

1. SourcePort and DestinationPort-Identifies points at which upper-layer source and destination processes receive TCP services.
- 2.
3. Sequence Number-Usually specifies the number assigned to the first byte of data in the current message. In the connection-establishment phase, this field also can be used to identify an initial sequence number to be used in an upcoming transmission.
- 4.

- 5. Acknowledgment Number-Contains the sequence number of the next byte of data the sender of the packet expects to receive.
 - 6.
 - 7. Data Offset-Indicates the number of 32-bit words in the TCP header.
 - 8.
 - 9. Reserved-Remains reserved for future use.
 - 10.
 - 11. Flags-Carries a variety of control information, including the SYN and ACK bits used for connection establishment, and the FIN bit used for connection termination.
 - 12.
 - 13. Window-Specifies the size of the sender's receive window (that is, the buffer space available for incoming data).
 - 14.
 - 15. Checksum-Indicates whether the header was damaged in transit.
 - 16.
 - 17. Urgent Pointer-Points to the first urgent data byte in the packet.
 - 18.
 - 19. Options-Specifies various TCP options.
- Data-Contains upper-layer information.
-

QUESTION 36:

FTP, Telnet, DNS, and SMTP are all protocols being used in the Certkiller network. Of these, which uses both TCP and UDP ports?

- A. Telnet
- B. FTP
- C. DNS
- D. SMTP
- E. None of the above

Answer: C

Explanation:

The following port numbers for the protocols listed above are as follows:

FTP: TCP Port 20 and 21

SMTP: TCP Port 25

Telnet: TCP Port 23

DNS: both TCP and UDP Port 53

QUESTION 37:

ICMP is often used in troubleshooting and verifying network. What statements are true regarding ICMP packets? (Choose two)

- A. They acknowledge receipt of TCP segments.
- B. They guarantee datagram delivery.
- C. They can provide hosts with information about network problems.
- D. They are encapsulated within IP datagrams.
- E. They are encapsulated within UDP datagrams.
- F. They are encapsulated within TCP datagrams.

Answer: C, D

Explanation:

ping may be used to find out whether the local machines are connected to the network or whether a remote site is reachable. This tool is a common network tool for determining the network connectivity which uses ICMP protocol instead of TCP/IP and UDP/IP. This protocol is usually associated with the network management tools which provide network information to network administrators, such as ping and traceroute (the later also uses the UDP/IP protocol).

ICMP is quite different from the TCP/IP and UDP/IP protocols. No source and destination ports are included in its packets. Therefore, usual packet-filtering rules for TCP/IP and UDP/IP are not applicable. Fortunately, a special "signature" known as the packet's Message type is included for denoting the purposes of the ICMP packet. Most commonly used message types are namely, 0, 3, 4, 5, 8, 11, and 12 which represent echo reply, destination unreachable, source quench, redirect, echo request, time exceeded, and parameter problem respectively.

In the ping service, after receiving the ICMP "echo request" packet from the source location, the destination

Incorrect Answers

ICMP is an IP protocol so A and E are incorrect.

ICMP doesn't guarantee datagram delivery so B is wrong as well.

QUESTION 38:

Although TCP segments are similar to UDP segments, TCP packets contains some additional fields. Which of the following are found in a TCP header, but not in a UDP header? (Choose three)

- A. Checksum
- B. Sequence number
- C. Destination port
- D. Window size
- E. Acknowledgment number
- F. Source port

Answer: B, D, E

Explanation:

The Figure below illustrates the fields and overall format of a TCP packet.

Twelve fields comprise a TCP packet.

Source port		Destination port	
Sequence number			
Acknowledgment number			
Data offset	Reserved	Flags	Window
Checksum		Urgent pointer	
Options (+ padding)			
Data (variable)			

TCP Packet Field Descriptions

The following descriptions summarize the TCP packet fields illustrated in Figure 30-10:

1. Source Port and Destination Port-Identifies points at which upper-layer source and destination processes receive TCP services.
2. Sequence Number-Usually specifies the number assigned to the first byte of data in the current message. In the connection-establishment phase, this field also can be used to identify an initial sequence number to be used in an upcoming transmission.
3. Acknowledgment Number-Contains the sequence number of the next byte of data the sender of the packet expects to receive.
4. Data Offset-Indicates the number of 32-bit words in the TCP header.
5. Reserved-Remains reserved for future use.
6. Flags-Carries a variety of control information, including the SYN and ACK bits used for connection establishment, and the FIN bit used for connection termination.
7. Window-Specifies the size of the sender's receive window (that is, the buffer space available for incoming data).
8. Checksum-Indicates whether the header was damaged in transit.
9. Urgent Pointer-Points to the first urgent data byte in the packet.
10. Options-Specifies various TCP options.
11. Data-Contains upper-layer information.

User Datagram Protocol (UDP)

The User Datagram Protocol (UDP) is a connectionless transport-layer protocol (Layer 4) that belongs to the Internet protocol family. UDP is basically an interface between IP and upper-layer processes. UDP protocol ports distinguish multiple applications running on a single device from one another.

Unlike the TCP, UDP adds no reliability, flow-control, or error-recovery functions to IP. Because of UDP's simplicity, UDP headers contain fewer bytes and consume less network overhead than TCP.

UDP is useful in situations where the reliability mechanisms of TCP are not necessary, such as in cases where a higher-layer protocol might provide error and flow control.

UDP is the transport protocol for several well-known application-layer protocols, including Network File System (NFS), Simple Network Management Protocol (SNMP), Domain Name System (DNS), and Trivial File Transfer Protocol (TFTP).

The UDP packet format contains four fields, as shown in the figure below. These include source and destination ports, length, and checksum fields.

A UDP packet consists of four fields.



Source and destination ports contain the 16-bit UDP protocol port numbers used to demultiplex datagrams for receiving application-layer processes. A length field specifies the length of the UDP header and data. Checksum provides an (optional) integrity check on the UDP header and data.

Reference: http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/ip.htm#xtocid21

QUESTION 39:

DRAG DROP

You work as a network administrator at Certkiller .com.

Your boss, Mrs. Certkiller, is interested in the OSI layers. Match the items with the appropriate layers. Note that not all options are used.

Options, select from these

Mac addresses	bits	switching
packets	IP addresses	routing
segments	udp	windowing

Transport Layer

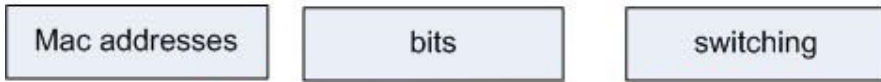
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Place here

Network Layer

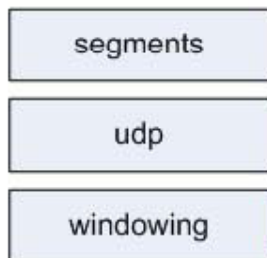
Place here
Place here
Place here

Answer:

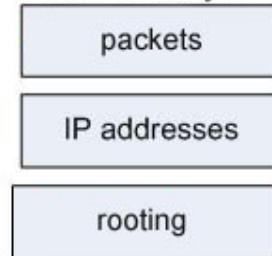
Options, select from these



Transport Layer



Network Layer



QUESTION 40:

Certkiller is installing IP phones in a new office. The phones and office computers connect to the same device. To ensure maximum throughput for the phone data sessions, the company needs to make sure that the phone traffic is on a different network from that of the office computer data traffic. What is the best network device to which to directly connect the phones and computers and what technology should be implemented on this device? (Choose two)

- A. VLAN
- B. Subinterface
- C. STP
- D. Hub
- E. Switch
- F. Router
- G. Wireless Access Point
- H. VTP

Answer: A, E

QUESTION 41:

The corporate head office of Certkiller 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.
- E. UDP will not acknowledge the datagrams and wait for a retransmission of the datagrams.

Answer: B

Explanation:

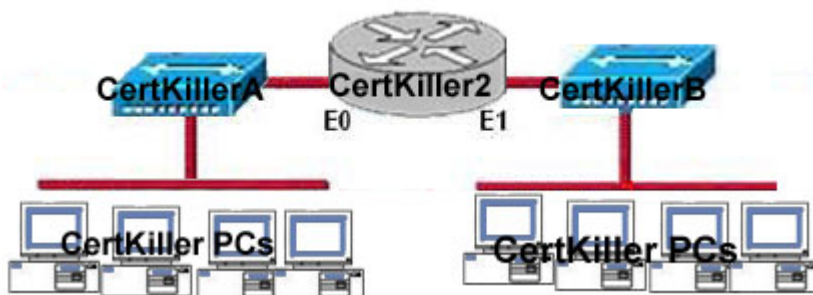
VOIP systems utilize UDP because it is faster and uses less overhead. In addition, the reliable transport mechanism used in TCP is useless to VOIP because if a packet gets dropped and needs to be resent, it will be already too late.

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.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 161.

QUESTION 42:

Part of the Certkiller network is shown below:



You work as a network technician for Certkiller and are responsible for this network. Based on the diagram shown above, how many collision domains are there?

- A. Six

- B. Fourteen
- C. Four
- D. Two
- E. Three
- F. One
- G. Eight

Answer: D

Explanation:

The multi-segment configuration guidelines apply only to a single Ethernet "collision domain." A collision domain is formally defined as a single CSMA/CD network in which there will be a collision if two computers attached to the system transmit at the same time. An Ethernet system composed of a single segment or multiple segments linked with repeaters is a network that functions as a single collision domain.

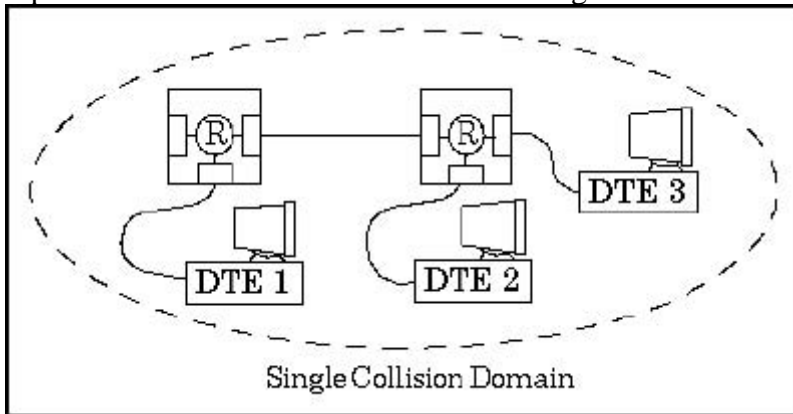


FIGURE 1 Repeater hubs create a single collision domain

The figure shows two repeater hubs connecting three computers. Since only repeater connections are used between segments in this network, all of the segments and computers are in the same collision domain.

In the next figure, the repeaters and DTEs are instead separated by a router (packet switch) and are therefore in separate collision domains, since routers do not forward collision signals from one segment to another. Routers contain multiple Ethernet interfaces and are designed to receive a packet on one Ethernet port and transmit the data onto another Ethernet port in a new packet.

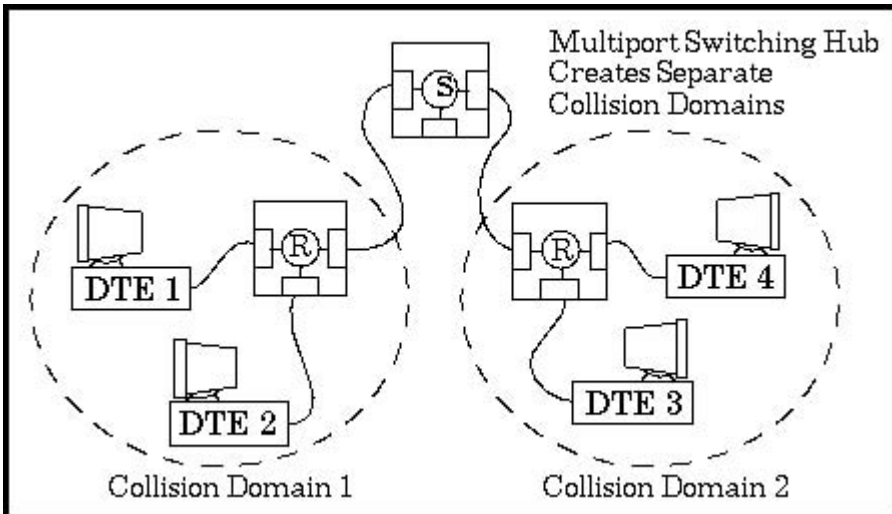


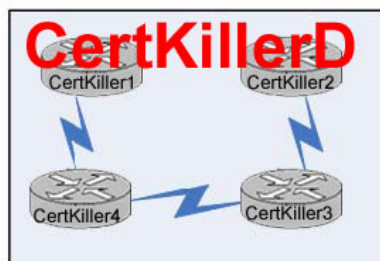
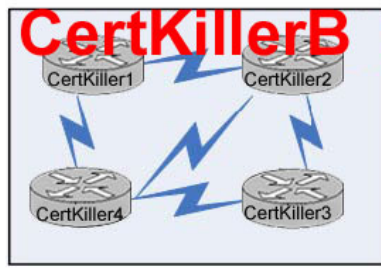
FIGURE 2 Routers creates separate collision domains

Instead of propagating collision signals between Ethernet segments, routers interrupt the collision domain and allow the Ethernets they link to operate independently. Therefore, you can use packet switching hubs to build larger network systems by interconnecting individual Ethernet systems.

QUESTION 43:

You work as a network technician at Certkiller .com. You have been assigned the task of designing a new Certkiller internetwork. The main priority is to achieve the highest reliability available. Certkiller .com is willing to spend more dollars to avoid downtime caused by link failure.

Which of the following four designs is to be preferred?



A. Design Certkiller A

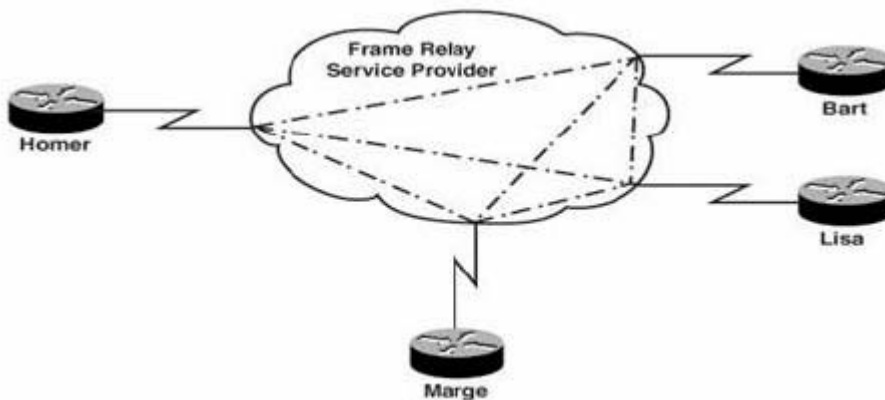
- B. Design Certkiller B
- C. Design Certkiller C
- D. Design Certkiller D

Answer: A

Explanation:

A network topology that is set up so that each device is directly connected to every other device on the network. This connection method has built-in redundancy. If one link goes down, the device will transmit via another link.

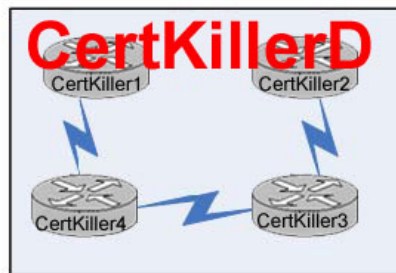
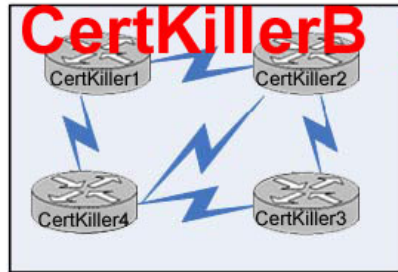
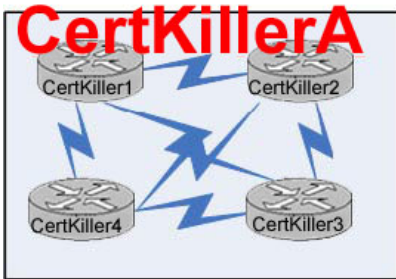
Example: If the partial mesh design is a compromise between the network administrators and managers, then the full mesh design implies that the network administrators won. This design is every Cisco network administrator's picture of perfection over a Frame Relay cloud. It gives every site a direct virtual circuit to every other site, as shown in Figure This design gives maximum redundancy and minimum packet latency (latency describes how long it takes a packet to reach each location).



QUESTION 44:

You work as a network technician at Certkiller .com. You have been assigned the task of designing a new Certkiller internetwork. The main priority is to achieve the highest reliability available, however not at all costs. Certkiller .com is willing to spend more dollars to avoid downtime caused by link failure.

Which of the following four designs would provide some redundancy and increase reliability for all four sites, but would cost less than a fully redundant topology?



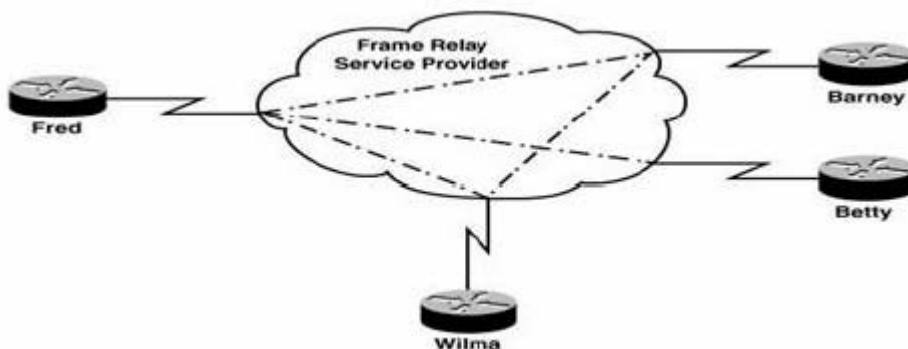
- A. Design Certkiller A
- B. Design Certkiller B
- C. Design Certkiller C
- D. Design Certkiller D

Answer: B

Explanation:

You can think of the partial mesh Frame Relay design as the compromise between network administrators and cost-saving managers.

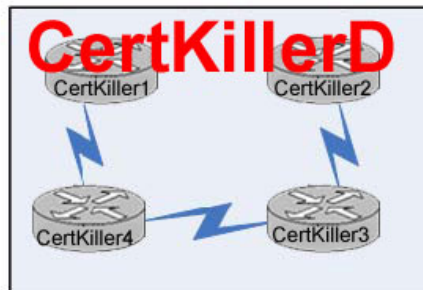
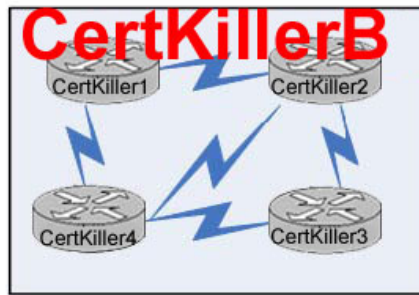
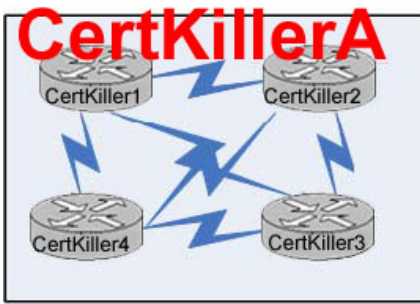
Example:



QUESTION 45:

You work as a network technician at Certkiller .com. You have been assigned the task of designing a new Certkiller internetwork. The main priority is to minimize the link costs and at the same time wants to ensure the branch offices have direct connectivity to the main site.

Which of the following four designs is to be preferred?



- A. Design Certkiller A
- B. Design Certkiller B
- C. Design Certkiller C
- D. Design Certkiller D

Answer: C

Explanation:

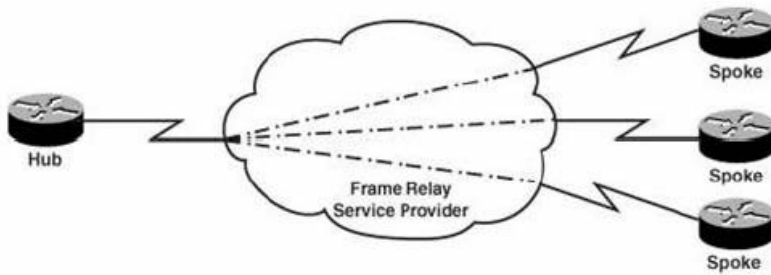
Every

network looks for cost efficiency. Redundancy is often sacrificed on the altar of monthly cost. Thus, the hub and spoke Frame Relay network design is one of the more common.

In this configuration, you pick a centralized location (most likely, your largest, most connected office) as the "hub" of the network. All other locations are considered "spokes" and have a single virtual circuit connection back to the hub.

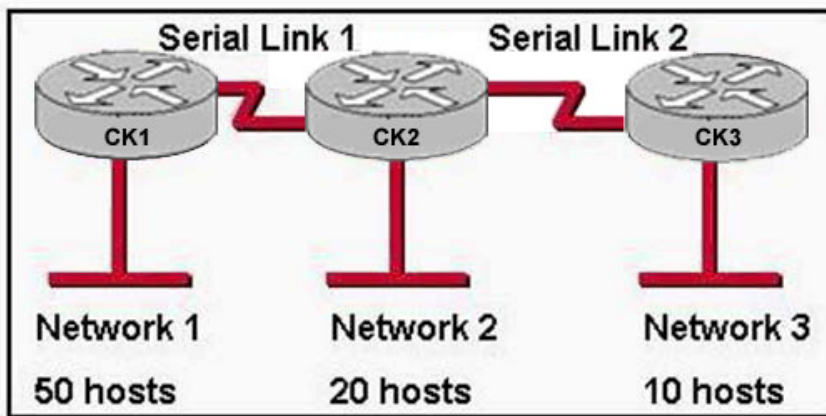
The major advantage of this configuration is the cost. It offers the cheapest monthly price tag, which cost-cutting corporations enjoy. The disadvantages are beginning to mount against this design, however. The redundancy is sorely lacking. If a single router (the central router) loses connectivity for any reason (if the router crashes, if a trenching company cuts through the line), your entire WAN goes down. The other disadvantage of this design is beginning to eclipse even redundancy. It is the disadvantage of tandem switching. Any time the spoke offices need to reach each other, they must go through the hub office.

Example:



QUESTION 46:

A Certkiller network is shown in the exhibit below:



The routers in this network are running RIPv2. Which addressing scheme would satisfy the needs of this network yet waste the fewest addresses?

- A. Network 1: 192.168.10.0/26 Network 2: 192.168.10.64/26 Network 3: 192.168.10.128/26 Serial link 1: 192.168.20.0/24 Serial link 2: 192.168.30.0/24
- B. Network 1: 192.168.10.0/26 Network 2: 192.168.10.64/28 Network 3: 192.168.10.80/29 Serial link 1: 192.168.10.88/30 Serial link 2: 192.168.10.96/30
- C. Network 1: 192.168.10.0/26 Network 2: 192.168.10.64/27 Network 3: 192.168.10.96/28 Serial link 1: 192.168.10.112/30 Serial link 2: 192.168.10.116/30
- D. Network 1: 192.168.10.0/27 Network 2: 192.168.10.64/28 Network 3: 192.168.10.96/29 Serial link 1: 192.168.10.112/30 Serial link 2: 192.168.10.116/30

Answer: C

Explanation:

Network 1

Required Number of hosts :50

When We use the 26 bits for Network : 11111111.11111111.11111111.11000000 so 62 usable host can be in one network. 50 host for now and remaining hosts address for further growth.

Network 2

Required Number of Hosts: 20

When we use the 27 bits for Network: 11111111.11111111.11111111.11100000 so 30 usable hosts can be in one network.

Network 3

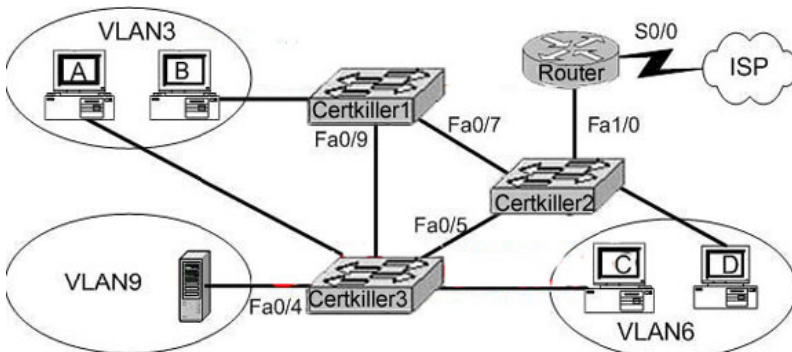
Required Number of Hosts: 10

When we use the 28 bits for Network: 11111111.11111111.11111111.11110000 so 14 usable hosts can be in one network.

Connection between CK1, CK2 and CK3 is WAN so when you use 30 bits network IP, you will not lose any IP addresses from network since this subnet allows for only 2 host addresses.

QUESTION 47:

The Certkiller network is shown below:



A technician is investigating a problem with the network shown above. These symptoms have been observed:

1. All of the user hosts can access the Internet.
2. None of the user hosts can access the server in VLAN9
3. All of the hosts can ping each other.

What could cause the symptoms?

- A. Interface S0/0 on the router is down.
- B. Interface Fa0/1 on the router is down.
- C. Interface Fa0/5 on Certkiller 3 is down.
- D. Interface Fa0/4 on Certkiller 3 is down.
- E. Certkiller 2 is turned off.
- F. Trunking is not enabled on the link between Certkiller 1 and Certkiller 3.

Answer: D

Explanation:

Since all user hosts have access to internet, link to router has to be up. Therefore, router interface (Fa0/1 - believe it is labeled incorrectly on diagram as Fa1/0) must be up. Since all hosts can ping each other, but none can get to VLAN 9 which is through single interface Fa0/4, this interface must be down.

Choice A: incorrect, S0/0 must be up if internet access available.

Choice B: incorrect, Fa0/1 must be up if internet access (through router) available.

Choice C: incorrect, would not prevent access to VLAN9 via other routes (i.e. Fa0/7,

Fa0/9, Fa0/4)

Choice D: correct

Choice E: incorrect: Certkiller 2 must be up if internet access (through switch and then router) available

Choice F: incorrect: Disabled trunking on link between Certkiller 1 and Certkiller 3 would not prevent access to VLAN9 via other routes

QUESTION 48:

Refer to the graphic shown below:

Sw1-2960#show mac-address-table			
Mac Address Table			
Vlan	Mac Address	Type	Ports
All	0014.a8a8.8780	STATIC	CPU
All	0100.0ccc.cccc	STATIC	CPU
All	0100.0ccc.cccd	STATIC	CPU
All	0100.0cdd.dddd	STATIC	CPU
1	0001.af07.ad76	DYNAMIC	Fa0/7
1	0001.e640.3b4b	DYNAMIC	Fa0/23
1	0001.e640.4b2b	DYNAMIC	Fa0/23
1	0001.e658.63ea	DYNAMIC	Fa0/23
1	0002.fde1.6acb	DYNAMIC	Fa0/14
1	0004.0077.7179	DYNAMIC	Fa0/23
1	0005.32a9.9d97	DYNAMIC	Fa0/23
1	0006.5b88.dff4	DYNAMIC	Gi0/2
1	0006.5bdd.736d	STATIC	Fa0/9
1	0006.5bdd.6eb5	DYNAMIC	Fa0/5
1	0006.5bdd.6fee	DYNAMIC	Fa0/23
1	0006.5bdd.7027	DYNAMIC	Fa0/23
1	0006.5bdd.72fd	DYNAMIC	Fa0/23
1	0006.5bdd.7425	DYNAMIC	Fa0/23
1	0006.5bdd.74b5	DYNAMIC	Fa0/23
1	0006.5bdd.7027	DYNAMIC	Fa0/23
1	0006.5bdd.7027	DYNAMIC	Fa0/23
1	0006.5bdd.72fd	DYNAMIC	Fa0/23
1	0006.5bdd.7425	DYNAMIC	Fa0/23
1	000f.1f16.be89	DYNAMIC	Fa0/23
<output continued>			
1	000f.1f16.bea2	DYNAMIC	Fa0/23
1	000f.1f16.bfe6	DYNAMIC	Fa0/23
1	000f.8f28.b7b5	DYNAMIC	Fa0/18
1	0010.22fe.466b	DYNAMIC	Fa0/6
1	0010.22fe.4ad8	DYNAMIC	Fa0/23
1	0010.4b08.194b	DYNAMIC	Fa0/23
1	0010.4bca.7ee4	DYNAMIC	Fa0/23
1	0010.5a04.3faa	DYNAMIC	Fa0/3
1	0010.5a0a.8567	DYNAMIC	Fa0/14
1	0010.7be7.fae7	DYNAMIC	Fa0/14
1	0011.1165.8acf	DYNAMIC	Fa0/23
1	0013.720b.40c3	DYNAMIC	Fa0/19
1	0014.f26e.ed8e	DYNAMIC	Fa0/23
1	0014.f26e.edb5	DYNAMIC	Fa0/23
1	0020.afe8.b95c	DYNAMIC	Fa0/23
1	0040.9654.49bb	DYNAMIC	Fa0/2
1	0050.049b.371b	DYNAMIC	Fa0/23
1	0060.088d.5551	DYNAMIC	Fa0/2
1	0080.9120.1766	DYNAMIC	Fa0/8
1	0090.96ae.4f94	DYNAMIC	Fa0/18
1	0090.96ae.6151	DYNAMIC	Fa0/18
1	00a0.c949.702a	DYNAMIC	Fa0/15
1	00b0.d020.d4fb	DYNAMIC	Fa0/23
1	00c0.4f79.72b8	DYNAMIC	Fa0/23
1	0050.049b.371b	DYNAMIC	Fa0/22
1	0060.088d.5551	DYNAMIC	Fa0/21
1	0080.9120.1766	DYNAMIC	Fa0/20
1	0090.96ae.4f94	DYNAMIC	Fa0/17
Total: 55 Addresses for this criterion: 55			
Sw1-2960#			

A.



B.



C.



D.



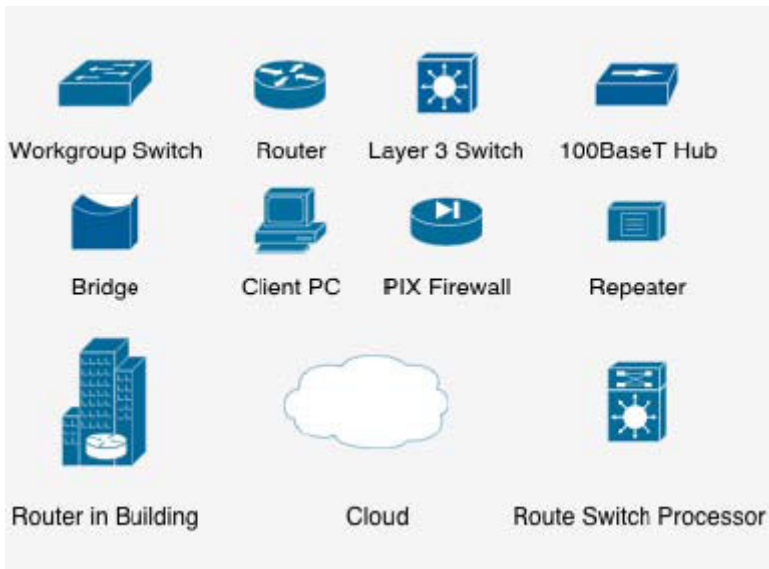
What symbol represents a type of device that is connected to interface FastEthernet 0/23 of the 2960 switch Sw1-2960?

- A. Picture A
- B. Picture B
- C. Picture C
- D. Picture D

Answer: D

Explanation:

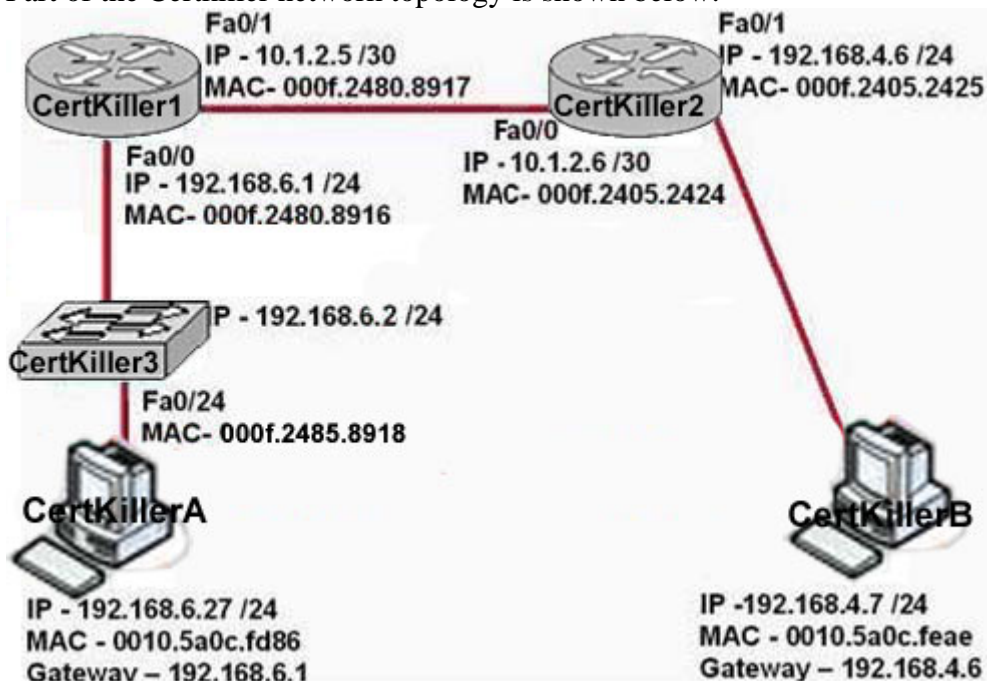
Some of the common Cisco symbols are shown below:



Note: Choice B in this question represents an ATM switch, which is not pictured above. From the output shown in this question, we can see that there are numerous different MAC addresses associated with port Fa 0/23. This can only mean that a device with multiple hosts attached to it is plugged into this port, such as a hub or another switch.

QUESTION 49:

Part of the Certkiller network topology is shown below:



Entry exhibit:

A.

Interface Address	Physical Address	Type
192.168.6.2	0010.5a0c.feae	dynamic

B.

Interface Address	Physical Address	Type
192.168.4.7	000f.2480.8916	dynamic

C.

Interface Address	Physical Address	Type
192.168.6.1	000f.2485.8916	dynamic

D.

Interface Address	Physical Address	Type
192.168.4.7	0010.5a0c.feae	dynamic

E.

Interface Address	Physical Address	Type
192.168.6.1	0010.5a0c.feae	dynamic

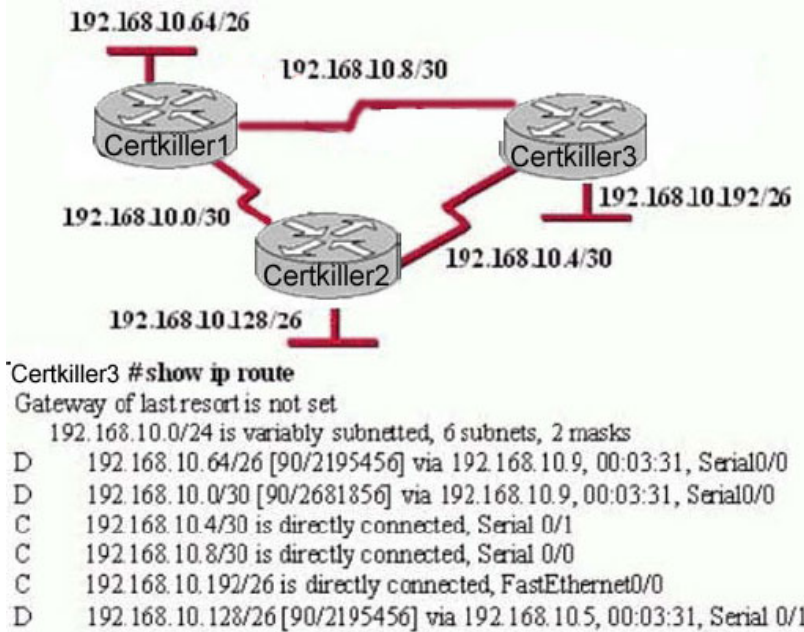
Host Certkiller A pings Host Certkiller B, which entry will be in the ARP cache of Host Certkiller A to support this transmission?

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

Answer: C

QUESTION 50:

The Certkiller network is shown in the following exhibit:



Certkiller uses EIGRP as the routing protocol. Based on the info shown above, what path will packets take from a host on the 192.168.10.192/26 network to a host on the LAN attached to router Certkiller 1?

- A. The path of the packets will be Certkiller 3 to Certkiller 2 to Certkiller 1
- B. The path of the packets will be Certkiller 3 to Certkiller 1 to Certkiller 2
- C. The path of the packets will be both Certkiller 3 to Certkiller 2 to Certkiller 1 AND Certkiller 3 to Certkiller 1
- D. The path of the packets will be Certkiller 3 to Certkiller 1
- E. None of the above

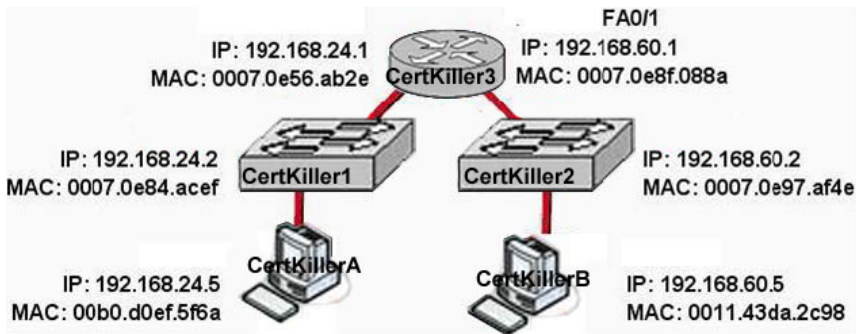
Answer: D

Explanation:

Based on the routing table of Certkiller 3, the best path to the Certkiller 1 LAN is shown on the first routing entry (192.168.10.64). Certkiller 3 will use the Serial 0/0 interface to route traffic to this destination, with the next hop IP address of 192.168.10.9, which is the network used between Certkiller 3 and Certkiller 1, making choice D correct. Note that there is only one routing entry for this destination. If traffic were load balancing over both paths, then both would be displayed in the routing table.

QUESTION 51:

Refer to the following exhibit:



Based on the diagram shown above, what is the correct addressing for a frame and packet received by Host Certkiller B from Host Certkiller A?

- A. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e8f.088a
Destination IP: 192.168.60.5
Source IP: 192.168.60.1
- B. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e8f.088a
Destination IP: 192.168.60.5
Source IP: 192.168.24.5
- C. Destination MAC: 0011.43da.2c98
Source MAC: 00b0.d0ef.5f6a
Destination IP: 192.168.60.5
Source IP: 192.168.24.5
- D. Destination MAC: 0011.43da.2c98
Source MAC: 0070.0e97.af4e
Destination IP: 192.168.60.5
Source IP: 192.168.60.2
- E. None of the above

Answer: B

Explanation:

When packets leave from the host, the packets contains the source MAC and IP of the host address. The source and destination IP address will not change. Because the host knows that the destination is on another subnet, it will forward the packet to the default gateway device, so the destination MAC address will be of the default gateway, which is the FA0/0 interface of router Certkiller 3.

QUESTION 52:

Exhibit #1:

Destination	Source	Destination	Source	Destination	Source	S	A
000d.56ad.a313	000a.8a47.e612	192.168.14.1	192.168.14.2	23	42335	1	0

Exhibit #2:

A.

Destination	Source	Destination	Source	Destination	Source	S	A
000a.8a47.e612	000d.56ad.a313	192.168.14.2	192.168.14.1	42335	23	Y	N
						K	
						1	1

B.

Destination	Source	Destination	Source	Destination	Source	S	A
000d.56ad.a313	000a.8a47.e612	192.168.14.1	192.168.14.2	42335	23	Y	N
						K	
						0	1

C.

Destination	Source	Destination	Source	Destination	Source	S	A
000a.8a47.e612	000d.56ad.a313	192.168.14.2	192.168.14.1	23	42335	Y	N
						K	
						0	1

D.

Destination	Source	Destination	Source	Destination	Source	S	A
000d.56ad.a313	000a.8a47.e612	192.168.14.2	192.168.14.1	42336	23	Y	N
						K	
						0	0

E.

Destination	Source	Destination	Source	Destination	Source	S	A
000a.8a47.e612	000d.56ad.a313	192.168.14.2	192.168.14.1	23	42336	Y	N
						K	
						1	1

Please study the two exhibits carefully.

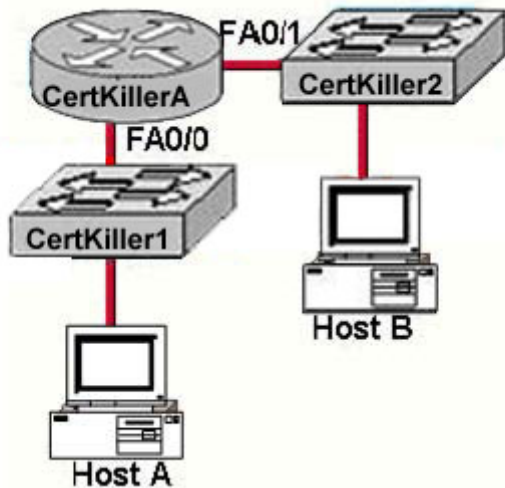
The partial frame shown above displays select header information as it arrives at the destination host. Of the following choices shown below, which one represents the correct header information in the responding frame returned to the remote host?

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

Answer: A

QUESTION 53:

The Certkiller network is shown below:



Based on the diagram above, which destination addresses will Host A use to send data to Host B? (Choose two.)

- A. The IP address of Certkiller 1
- B. The IP address of Certkiller A Fa0/0
- C. The IP address of Host B
- D. The MAC address of Certkiller 1
- E. The MAC address of Certkiller A Fa0/0
- F. The MAC address of Host B

Answer: C, E

Explanation:

When sending data from one host to another, destination information will be added to every packet's header. The destination information will be the IP and MAC Address of destination host. If the destination is found outside the subnet the MAC address of the router is used. Note: The destination IP address will never change, unless NAT is involved.

QUESTION 54:

Which IOS user EXEC command will allow a network technician to determine which router in the path to an unreachable network host should be examined more closely for the cause of the network failure?

- A. Certkiller B> telnet
- B. Certkiller B > ping
- C. Certkiller B > trace
- D. Certkiller B > show ip route
- E. Certkiller B > show interface
- F. Certkiller B > show cdp neighbors

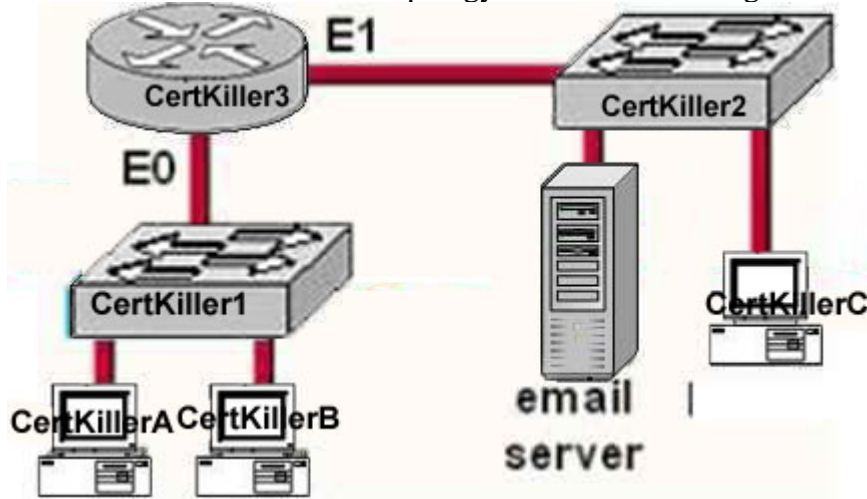
Answer: C

Explanation:

This can perform the trace command. It sends the ping packets to each of the routers on the way to the receiver. The router which doesn't respond will be a potential failure place in this network.

QUESTION 55:

A Certkiller office's network topology is shown in the diagram below:



Host Certkiller A needs to communications with the e-mail server shown above. What address will be placed on the destination address field of the frame when it leaves host Certkiller A?

- A. The MAC address of Certkiller A
- B. The MAC address of switch Certkiller 1
- C. The MAC address of the E0 interface of the Certkiller 3 router.
- D. The MAC address of the E1 interface of the Certkiller 3 router.
- E. The MAC address of switch Certkiller 2
- F. The MAC address of the email server

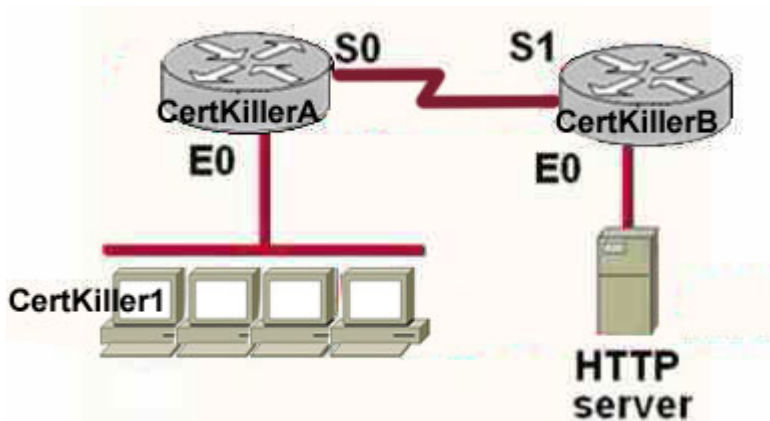
Answer: C

Explanation:

If the destination host is in the remote segment than the router will change the MAC address of the source to its own. The inverse ARP protocol is by default on. Remember that IP address is not changed after forwarding. The MAC address is changed after crossing each broadcast domain.

QUESTION 56:

The Certkiller network topology is shown below:



You work as a network engineer at Certkiller .com. The topology of the Certkiller .com network is displayed in the exhibit. Host Certkiller 1 has established a connection with the HTTP server attached to interface E0 of the Certkiller B router. Which of the following statements describe the information contained in protocol data units sent from host Certkiller 1 to this server? (Select three)

- A. The destination port number in a segment header will have a value of 80.
- B. The destination port number in a segment header will have a unique value greater than or equal to 1023.
- 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 Certkiller A router.
- E. The destination IP address of a packet will be the IP address of the E0 interface of the Certkiller A router.
- F. The destination address of a packet will be the IP address of the HTTP-Server

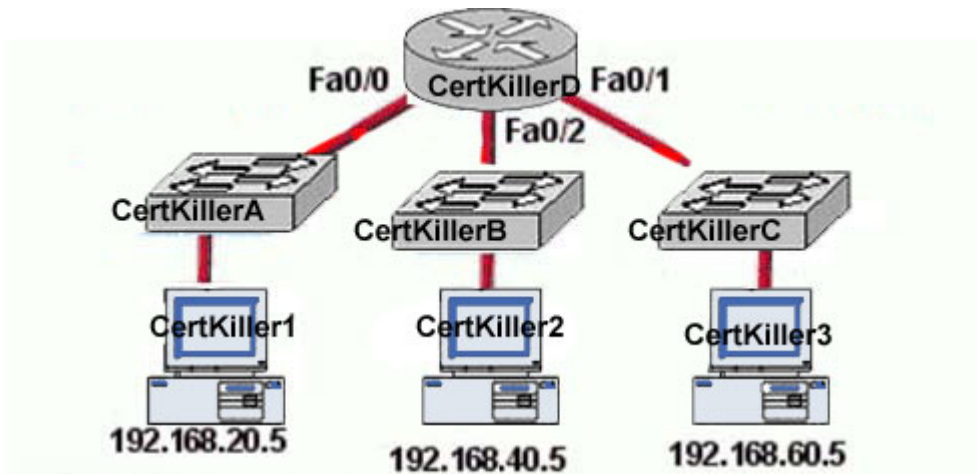
Answer: A, D, F

Explanation:

HTTP uses TCP port 80, making choice A correct. The source port will be chosen randomly, but not the destination TCP port. The destination IP address will be left unchanged, and since HTTP server is on a remote network, the destination MAC address will be the MAC address of the default gateway (E0 on Certkiller A).

QUESTION 57:

The Certkiller network is shown below:



CertKillerD# 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

In this network, host Certkiller 1 is able to send data to Host Certkiller 2. How will Router Certkiller D handle the data frame received from Host Certkiller 1? (Choose three)

- A. Router Certkiller D will strip off the source MAC address and replace it with the MAC address on the forwarding Fast Ethernet interface
- B. Router Certkiller D will strip off the source IP address and replace it with the IP address on the forwarding Fast Ethernet interface
- C. Router Certkiller D will strip off the destination MAC address and replace it with the MAC address of Host Certkiller 2
- D. Router Certkiller D will strip off the destination IP address and replace it with the IP address of Host B
- E. Router Certkiller D will forward the data frame out interface Fast Ethernet0/1
- F. Router Certkiller D will forward the data frame out interface FastEthernet0/2

Answer: A, C, F

Explanation:

Whereas switches can only examine and forward packets based on the contents of the MAC header, routers can look further into the packet to discover the network for which a packet is destined. Routers make forwarding decisions based on the packet's network-layer header (such as an IPX header or IP header). These network-layer headers contain source and destination network addresses.

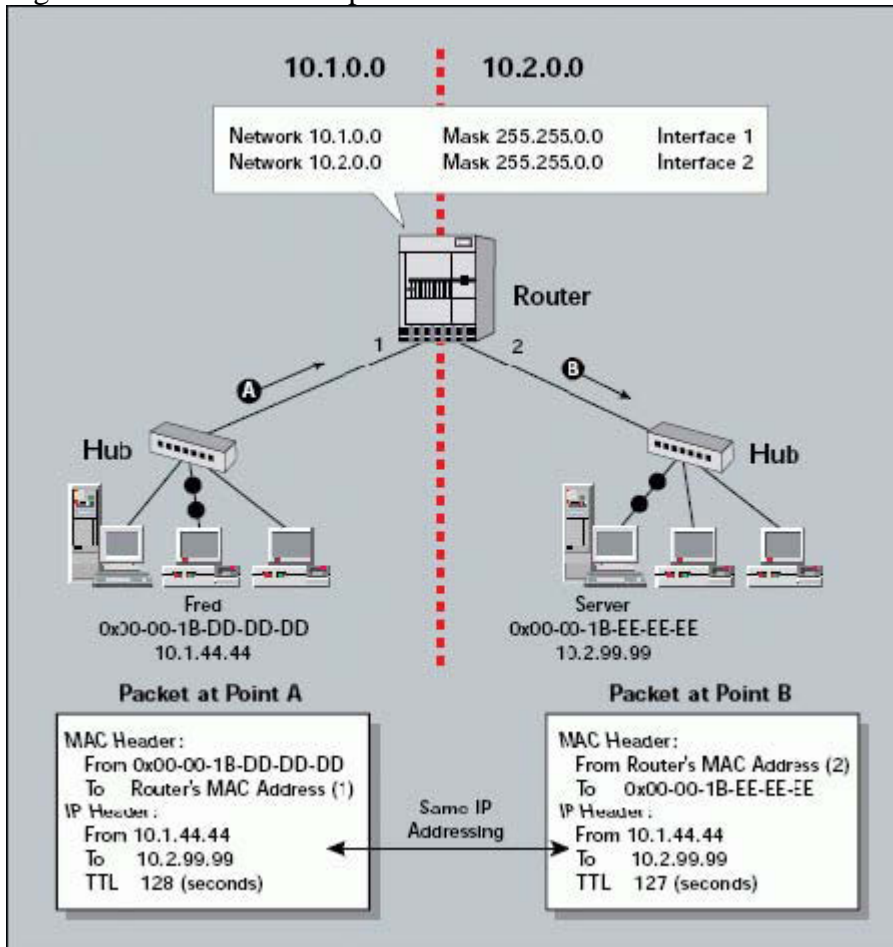
Local devices address packets to the router's MAC address in the MAC header. After receiving the packets, the router must perform the following steps:

1. Check the incoming packet for corruption, and remove the MAC header . The router checks the packet for MAC-layer errors. The router then strips off the MAC header and examines the network-layer header to determine what to do with the packet.
2. Examine the age of the packet. The router must ensure that the packet has not come too far to be forwarded. For example, IPX headers contain a hop count. By default, 15 hops is the maximum number of hops (or routers) that a packet can cross. If a packet has a hop count of 15, the router discards the packet.
IP headers contain a Time to Live (TTL) value. Unlike the IPX hop count, which increments as the packet is forwarded through each router, the IP TTL value decrements as the IP packet is forwarded through each router. If an IP packet has a TTL value of 1, the router discards the packet. A router cannot decrement the TTL value to 1 and then forward the packet.
3. Determine the route to the destination. Routers maintain a routing table that lists available networks, the direction to the desired network (the outgoing interface number), and the distance to those networks. After determining which direction to forward the packet, the router must build a new header. (If you want to read the IP routing tables on a Windows 95/98 workstation, type ROUTE PRINT in the DOS box.)
4. Build the new MAC header and forward the packet.

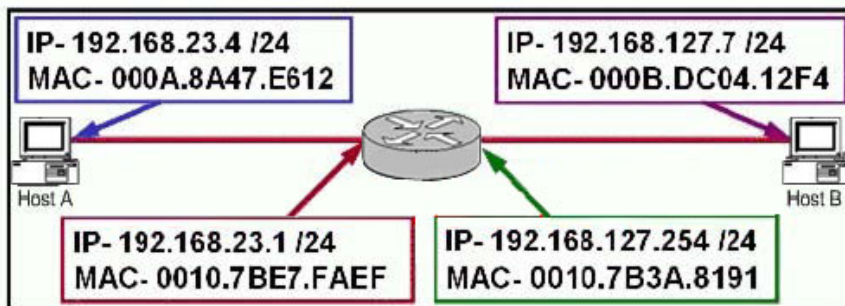
Finally, the router builds a new MAC header for the packet. The MAC header includes the router's MAC address and the final destination's MAC address or the MAC address of the next router in the path.

Figure 5 shows the contents of a packet before and after it has been forwarded by a router. Figure 5 also shows the contents of the router's routing tables.

Figure 5: Routers forward packets based on the network address.

**QUESTION 58:**

Two Certkiller hosts are shown below:



Refer to the exhibit above. Host A is communicating with host B. How will the data be addressed when it leaves host A?

- A. Source MAC=000A.8A47.E612
Destination MAC=000B.DC04.12F4
Source IP=192.168.23.4
Destination IP=192.168.23.1

- B. Source MAC=000A.8A47.E612
Destination MAC=0010.7BE7.FAEF
Source IP=192.168.23.4
Destination IP=192.168.127.7
- C. Source MAC=000A.8A47.E612
Destination MAC=000B.DC04.12F4
Source IP=192.168.23.4
Destination IP=192.168.127.7
- D. Source MAC=000A.8A47.E612
Destination MAC=0010.7BE7.FAEF
Source IP=192.168.23.4
Destination IP=192.168.23.1
- E. None of the above

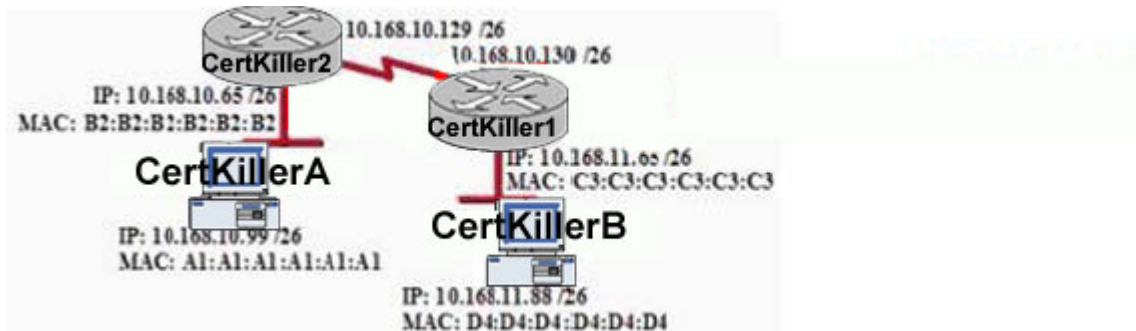
Answer: B

Explanation:

When packets leave from the host, the packets contains the source MAC and IP of the host address. The source and destination IP address will not change (if it did, the router devices would not know where to send the data). Because the host knows that the destination is on another subnet, it will forward the packet to the default gateway device, so the destination MAC address will be of the default gateway, which is the LAN interface of router Certkiller 1.

QUESTION 59:

Exhibit:



Please study the exhibit above carefully. If host Certkiller A sends an IP packet to host Certkiller B, what will the OSI Layer 3 source address be in the packet when it reaches host B?

- A. B2:B2:B2:B2:B2:B2
- B. A1:A1:A1:A1:A1:A1
- C. 10.168.10.99
- D. 10.168.11.65
- E. C3:C3:C3:C3:C3:C3
- F. 10.168.11.88

G. None of the above

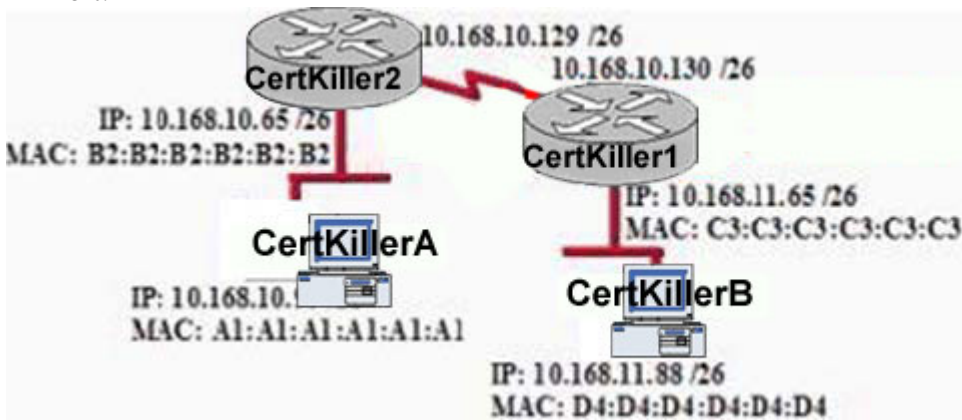
Answer: C

Explanation:

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

QUESTION 60:

Exhibit:



Please study the exhibit carefully. If host Certkiller A sends an IP packet to host Certkiller B, what will the source physical (MAC) address be in the frame when it reaches host Certkiller B?

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

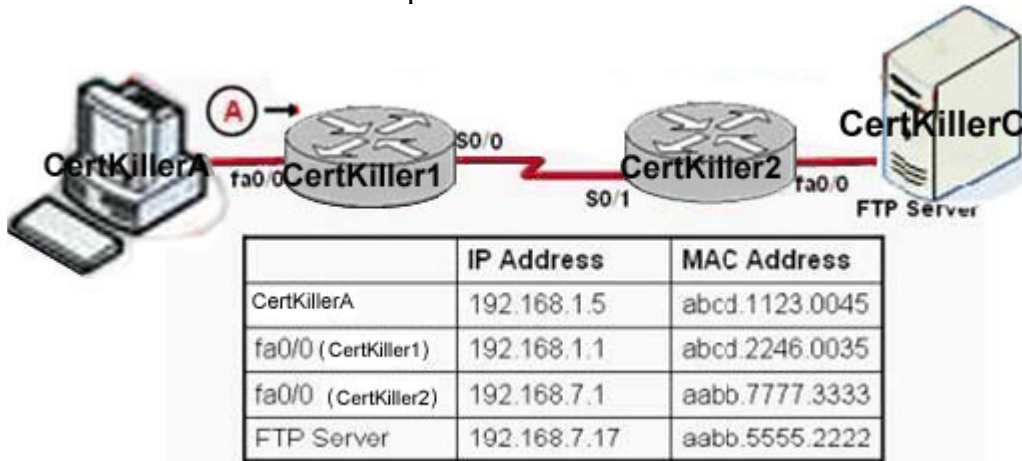
Answer: F

Explanation:

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

QUESTION 61:

In the network below, host Certkiller A is transferring a file to the FTP server. Point A represents the frame as it goes toward the Certkiller 1 router. What will the Layer 2 destination address be at this point?



- A. 192.168.7.17
- B. abcd.1123.0045
- C. aabb.555.2222
- D. 192.168.1.1
- E. abcd.2246.0035

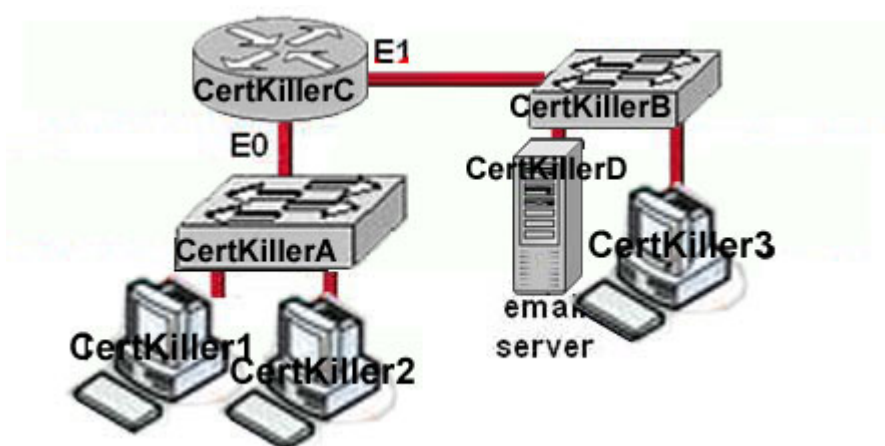
Answer: E

Explanation:

For packets destined to a host on another IP network, the destination MAC address will be the LAN interface of the router. Since the FTP server lies on a different network, the host will know to send the frame to its default gateway, which is Certkiller 1.

QUESTION 62:

Part of the Certkiller network is shown below:



Host Certkiller 1 needs to communicate with the email server shown above. What

address will be placed in the destination address field of the frame when it leaves Host Certkiller 1?

- A. The MAC address of Host Certkiller 1
- B. The MAC address of E0 of the router Certkiller C
- C. The MAC address of Switch Certkiller B
- D. The MAC address of E1 of the router Certkiller C
- E. The MAC address of Switch Certkiller A
- F. The MAC address of the email server Certkiller D
- G. None of the above

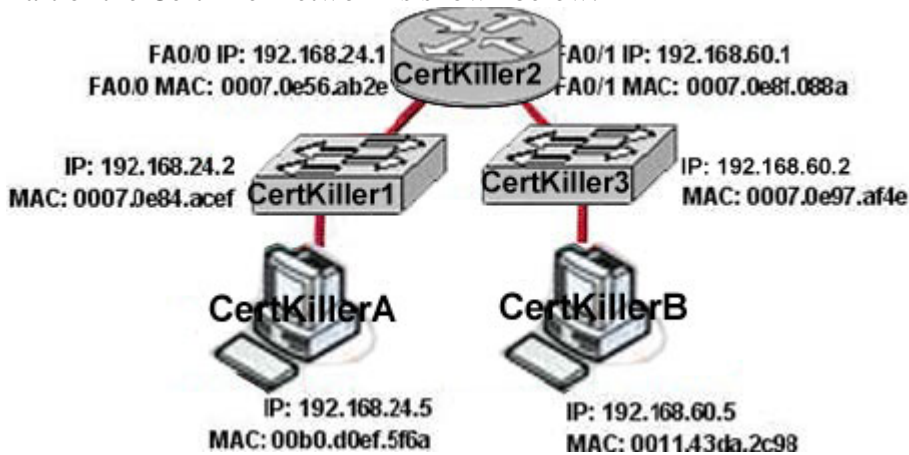
Answer: B

Explanation:

Since the email server resides on a different IP subnet than the host Certkiller 1, the host will send the frame to its default gateway. In this case, the router Certkiller C is acting as the default gateway for all hosts on the LAN, so the frame will be sent to its Ethernet interface so that it can be routed to the email server.

QUESTION 63:

Part of the Certkiller network is shown below:



In this Certkiller network segment, host Certkiller A needs to send data to Host Certkiller B. Which Layer 2 and Layer 3 destination addresses will be used in this session to send the data from Host Certkiller A to Host Certkiller B?

- A. 192.168.60.5 and 0007.0e56.ab2e
- B. 192.168.24.2 and 0007.0e84.acef
- C. 192.168.24.1 and 0007.0e56.ab2e
- D. 192.168.60.5 and 0011.43da.2c98
- E. None of the above

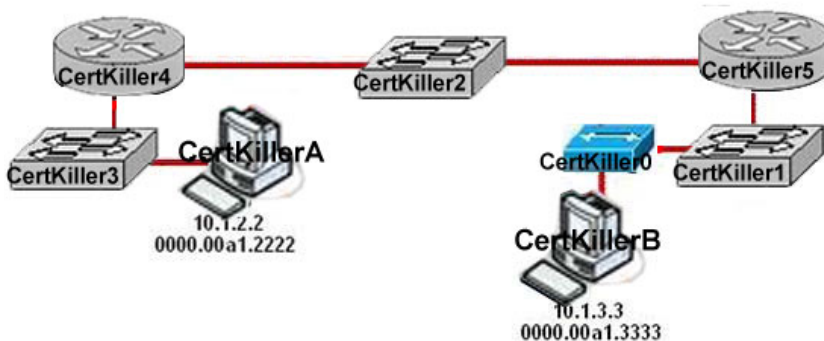
Answer: A

Explanation:

When packets leave from the host, the packets contains the source MAC and IP of the host address. The source and destination IP address will not change. Because the host knows that the destination is on another subnet, it will forward the packet to the default gateway device, so the destination MAC address will be of the default gateway, which is the FA0/0 interface of router Certkiller 2.

QUESTION 64:

Part of the Certkiller network is shown below:



In this network segment, host Certkiller A sends data to Host Certkiller B. As packets travel from host Certkiller A to host Certkiller B, which three devices will use the destination MAC address of the packet to determine a forwarding path? (Choose three)

- A. Hub Certkiller 0
- B. Switch Certkiller 1
- C. Router Certkiller 5
- D. Router Certkiller 4
- E. Switch Certkiller 2
- F. Switch Certkiller 3

Answer: B, E, F

Explanation:

Switches use the destination MAC address information for forwarding traffic, while routers use the destination IP address information.

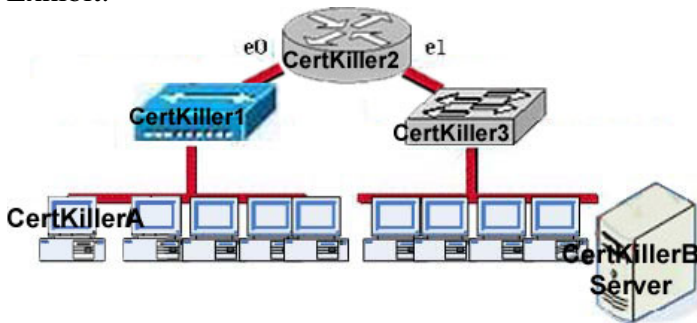
Local Area Networks employ Layer 2 Switches and Bridges to forward and filter network traffic. Switches and Bridges operate at the Data Link Layer of the Open System Interconnect Model (OSI). Since Switches and Bridges operate at the Layer 2 they operate more intelligently than hubs, which work at Layer 1 (Physical Layer) of the OSI. Because the switches and bridges are able to listen to the traffic on the wire to examine the source and destination MAC address. Being able to listen to the traffic also allows the switches and bridges to compile a MAC address table to better filter and forward network traffic.

To accomplish the above functions switches and bridges carry out the following tasks:

1. MAC address learning by a switch or a bridge is accomplished by the same method. The switch or bridge listens to each device connected to each of its ports and scan the incoming frame for the source MAC address. This creates a MAC address to port map that is cataloged in the switches/bridge MAC database. Another name for the MAC address table is content addressable memory or CAM table.
2. When a switch or bridge is listening o the network traffic, it receives each frame and compares it to the MAC address table. By checking the MAC table the switch/ bridge are able o determine which port the frame came in on. If the frame is on the MAC table the frame is filtered or transmitted on only that port. If the switch determines that the frame is not on the MAC table, the frame is forwarded out to all ports except the incoming port.

QUESTION 65:

Exhibit:



You work as a network technician at Certkiller .com. Please study the exhibit carefully. Host Certkiller A is communicating with the server. What will be the source MAC address of the frames received by Host Certkiller A from the Certkiller B server?

- A. The MAC address of Certkiller 2 router interface e1
- B. The MAC address of Certkiller 2 router interface e0
- C. The MAC address of the Certkiller B server network interface
- D. The MAC address of host Certkiller A
- E. None of the above

Answer: B

Explanation:

Whereas switches can only examine and forward packets based on the contents of the MAC header, routers can look further into the packet to discover the network for which a packet is destined. Routers make forwarding decisions based on the packet's network-layer header (such as an IPX header or IP header). These network-layer headers contain source and destination network addresses.

Local devices address packets to the router's MAC address in the MAC header. After receiving the packets, the router must perform the following steps:

1. Check the incoming packet for corruption, and remove the MAC header . The router checks the packet for MAC-layer errors. The router then strips off the MAC

header and examines the network-layer header to determine what to do with the packet.

2. Examine the age of the packet.

The router must ensure that the packet has not come too far to be forwarded. For example, IPX headers contain a hop count. By default, 15 hops is the maximum number of hops (or routers) that a packet can cross. If a packet has a hop count of 15, the router discards the packet.

IP headers contain a Time to Live (TTL) value. Unlike the IPX hop count, which increments as the packet is forwarded through each router, the IP TTL value decrements as the IP packet is forwarded through each router. If an IP packet has a TTL value of 1, the router discards the packet. A router cannot decrement the TTL value to 1 and then forward the packet.

3. Determine the route to the destination. Routers maintain a routing table that lists available networks, the direction to the desired network (the outgoing interface number), and the distance to those networks. After determining which direction to forward the packet, the router must build a new header. (If you want to read the IP routing tables on a Windows 95/98 workstation, type ROUTE PRINT in the DOS box.)

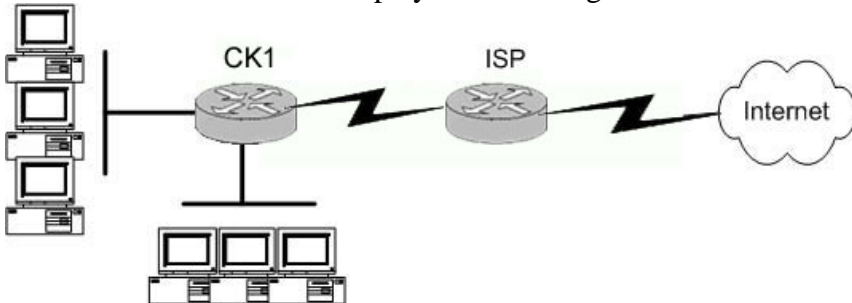
4. Build the new MAC header and forward the packet. Finally, the router builds a new MAC header for the packet. The MAC header includes the router's MAC address and the final destination's MAC address or the MAC address of the next router in the path.

Figure 5 shows the contents of a packet before and after it has been forwarded by a router. Figure 5 also shows the contents of the router's routing tables.

Figure 5: Routers forward packets based on the network address.

QUESTION 66:

The Certkiller network is displayed in the diagram shown below:



The Certkiller network consists of a small office with twenty-five employees that has one connection to the Internet through the CK1 router. What routing configurations are recommended on the CK1 and ISP routers?

- A. BGP on both the routers.
- B. RIP on both the routers.
- C. Default routes on both routers.
- D. BGP on the ISP router and a static route on CK1 .
- E. A default route on CK1 and a static route on the ISP router.
- F. None of the above

Answer: E

Explanation:

Since private network use RFC 1918 IP address ranges internally, and because of security reasons, it is generally not possible to use an interior routing protocol with the ISP. This eliminates choice B. When connecting to an ISP, usually only BGP or static routes are supported. In this case, since there is only one connection to the Internet, BGP is not needed so choices A and D can be eliminated. A static default route would be needed on router CK1 to route to the Internet. In turn, the ISP only needs a specific static route to reach the LAN of the Certkiller network.

Incorrect Answers:

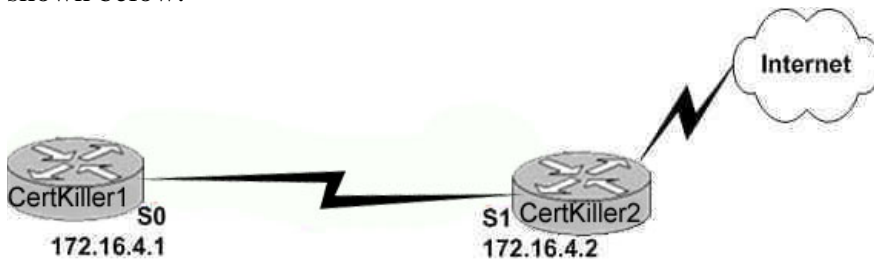
A, D: BGP is not needed on networks that contain only a single link to the Internet.

B. Interior routing protocols are generally not supported with an ISP.

C. A default route on the ISP router would send all of their customers Internet traffic to the Certkiller network, and not the Internet.

QUESTION 67:

A new point to point circuit is installed, connecting Certkiller 1 to Certkiller 2 as shown below:



Users at Certkiller 1 wish to utilize the existing Internet connection at Certkiller 2. To do this, a gateway of last resort needs to be set. What is the command to do this?

- A. Certkiller 1(config)# ip route 172.16.4.2 0.0.0.0 0.0.0.0
- B. Certkiller 1(config)# ip route 0.0.0.0 0.0.0.0 S1
- C. Certkiller 1(config)# ip route 172.16.4.1 0.0.0.0 0.0.0.0
- D. Certkiller 1(config)# ip route S0 0.0.0.0 0.0.0.0
- E. Certkiller 1(config)# ip route 0.0.0.0 0.0.0.0 172.16.4.2
- F. None of the above

Answer: E

Explanation:

Setting the default gateway is done by issuing either the "ip route 0.0.0.0 0.0.0.0 serial 0" or the "ip route 0.0.0.0 0.0.0.0 172.16.4.2" command. The following excerpt provides some additional information:

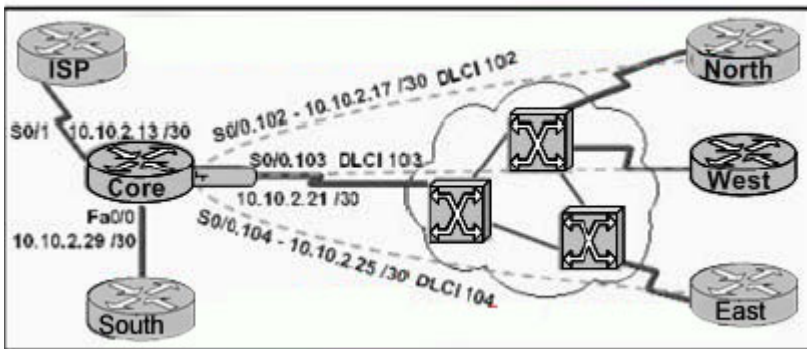
The `ip default-network` command and the `ip route 0.0.0.0 0.0.0.0` commands accomplish the goal of having the router use a known route as the default for packets that are not matched in the routing table. The `ip route 0.0.0.0 0.0.0.0` command uses the fact that network 0.0.0.0 is used by Cisco IOS software to represent the default network.

Incorrect Answers:

- A, C. The IP address of the next hop needs to go after the route, not before.
- B. This would have been acceptable if the interface specified was S0, not S1.
- C. The interface used to forward packets for the route should be placed after the route, not before.

QUESTION 68:

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



- A. Core(config-router)# default-information originate
Core(config-router)# network 10.0.0.0 0.255.255.255 area 0
Core(config-router)# exit
Core(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14
- B. Core(config-router)# default-information originate
Core(config-router)# network 10.10.2.32 0.0.0.31 area 0
Core(config-router)# exit
Core(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14
- C. Core(config-router)# default-information originate
Core(config-router)# network 10.10.2.13 0.0.0.242 area 0
Core(config-router)# exit
Core(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14
- D. Core(config-router)# default-information originate
Core(config-router)# network 10.10.2.16 0.0.0.15 area 0
Core(config-router)# exit
Core(config)# ip route 0.0.0.0 0.0.0.0 10.10.2.14

Answer: D

Explanation:

There are two ways to inject a default route into a normal area.

1. If the ASBR already has the default route in its routing table, you can advertise the existing 0.0.0.0/0 into the OSPF domain with the default-information originate router configuration command.

2. If the ASBR doesn't have a default route, you can add the keyword always to the default-information originate command (default-information originate always).

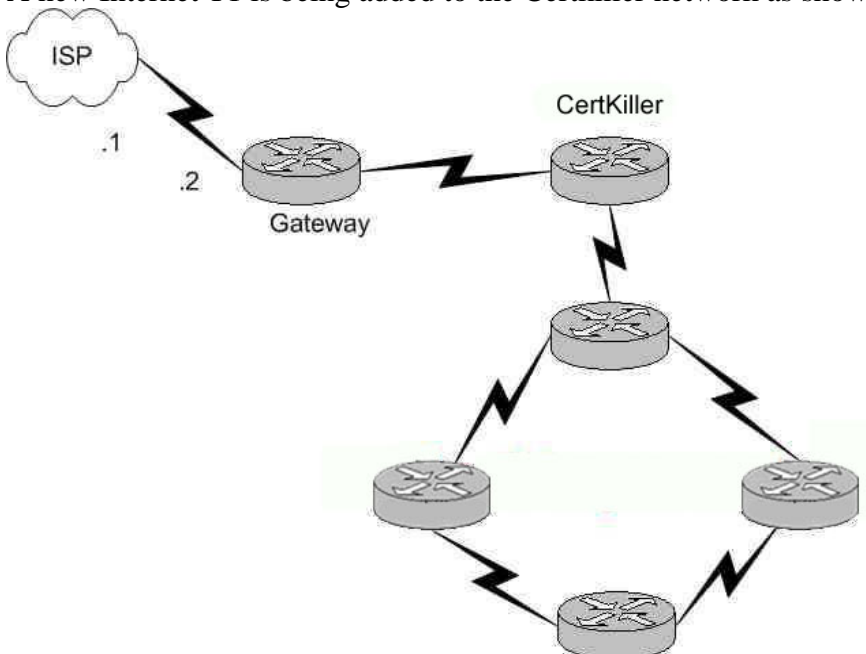
This command will advertise a default route into the OSPF domain, regardless of whether it has a route to 0.0.0.0. Another benefit of adding always keyword is that it can add stability to the internetwork. For example, if the ASBR is learning a default route from another routing domain such as RIP and this route is flapping, then without the always keyword, each time the route flaps, the ASBR will send a new Type 5 LSA into the OSPF domain causing some instability inside the OSPF domain. With the always keyword, the ASBR will advertise the default inside the OSPF domain always, and thus the flapping of the default route from the RIP domain will not cause any instability inside the OSPF domain.

In the example shown here, only choice D is correct as the wildcard mask correctly specifies the 10.10.2.16 0.0.0.15 networks, which include all IP addresses in the 10.10.2.16-10.10.2.31 range. In this question we were told that the ISP link should NOT be configured for OSPF, making choice A incorrect.

Reference: <http://www.cisco.com/warp/public/104/21.html>

QUESTION 69:

A new Internet T1 is being added to the Certkiller network as shown:



The ISP assigned you the class CIP address 207.134.6.0/30 for this Internet connection. A default route to the Internet should be set up. Which of the following

are acceptable ways to configure this on the Gateway router? (Select all that apply)

- A. Gateway(config)# ip route 0.0.0.0 0.0.0.0 207.134.6.1.
- B. Gateway(config)# router rip
Gateway(config-router)# network 207.134.6.0 default
- C. Gateway(config)# ip route 207.134.6.0 255.255.255.0 Serial0/0
- D. Gateway(config)# router OSPF
Gateway(config-router)# network 207.134.6.0
- E. Gateway(config)# ip default-network 207.134.6.0

Answer: A, E

Explanation:

This question only involves the configuration of the gateway router to the ISP, nothing else. You have two choices to accomplish this: the command "ip route" or the command "ip default-network". Both of these methods will configure a default route to the ISP as desired.

Incorrect Answers:

B, D: RIP and OSPF are interior routing protocols. The T1 Internet connection that is being set up here is between two different Autonomous Systems. The only routing protocol that could be potentially used is BGP, but that is not an option.

C: This command will only set up a static route to the 207.134.6.0/24 network. We wish to set up a static default route.

QUESTION 70:

Router Certkiller 2 is connected to an ISP as shown below:



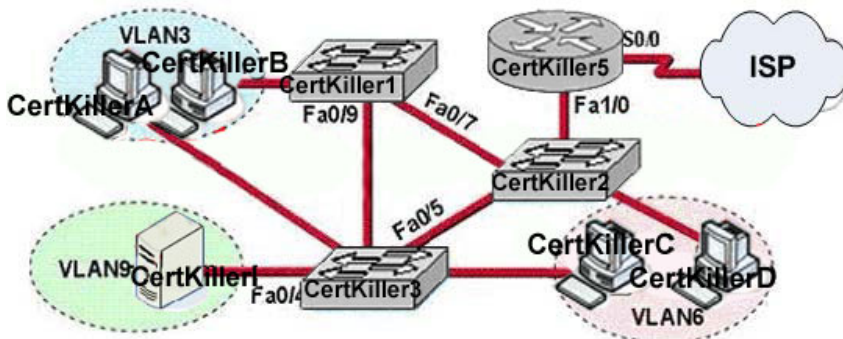
In the ISP link to the WAN shown above, you must complete the connection between the Certkiller 2 router to the service provider. To accomplish this task, which two devices could be installed at the Certkiller site to provide a connection through the local loop to the CO of the provider? (Choose two)

- A. Multiplexer
- B. WAN switch
- C. ATM switch
- D. CSU/DSU
- E. PVC
- F. Modem
- G. LMI

Answer: D, F

QUESTION 71:

Part of the Certkiller network is shown below:



Study the exhibit shown above. A problem with network connectivity has been observed. It is suspected that the cable connected to switch port Fa0/9 on Switch Certkiller 1 is disconnected. What would be an effect of this cable being disconnected?

- A. Communication between VLAN3 and the other VLANs would be disabled
- B. Host Certkiller B would not be able to access the server in VLAN9 until the cable is reconnected
- C. For less than a minute, Host Certkiller B would not be able to access the server in VLAN9. Then normal network function would resume
- D. The transfer of files from Host Certkiller B to the server in VLAN9 would be significantly slower
- E. None of the above

Answer: C

Explanation:

Spanning-Tree Protocol (STP) is a Layer 2 protocol that utilizes a special-purpose algorithm to discover physical loops in a network and effect a logical loop-free topology. STP creates a loop-free tree structure consisting of leaves and branches that span the entire Layer 2 network. The actual mechanics of how bridges communicate and how the STP algorithm works will be discussed at length in the following topics. Note that the terms bridge and switch are used interchangeably when discussing STP. In addition, unless otherwise indicated, connections between switches are assumed to be trunks. STP keeps the port either in block or in forward states, when forward port disconnect then within the less than a minute blocked port comes into forward state so packets starts to go through new forward port.

The Spanning Tree Protocol (STP) would identify the best path as well as alternate path to reach in proper destination. In a redundant link, if the primary link fails then the secondary links will automatically start after few minutes. If port Fa0/9 became disconnected, then the packets would be re-routed automatically using the Certkiller A- Certkiller 2- Certkiller 3 path.

QUESTION 72:

You are logged into a router and wish to view the layer 3 information about your neighboring Cisco routers. What IOS command gives layer 3 information for of the directly connected router interfaces?

- A. show ip links
- B. show cdp neighbor
- C. show cdp neighbor detail
- D. show ip clients
- E. show ip route
- F. None of the above

Answer: C

Explanation:

To display detailed information about neighboring devices discovered using Cisco Discovery Protocol (CDP), use the show cdp neighbors privileged EXEC command. Detail - (Optional) Displays detailed information about a neighbor (or neighbors) including network address, enabled protocols, hold time, and software version.

Incorrect Answers:

- A, D. These are invalid commands.
- B. The "show cdp neighbor" command, without the "detail" keyword will not display the additional layer 3 protocol information.
- E. This will show all routes from all other routers within the domain. We wish to see information from just the direct interface neighbors.

QUESTION 73:

A Certkiller technician is troubleshooting connectivity problems between two routers that are directly connected through the serial line. The technician notices that the serial line is up but cannot see any neighbors displayed in the output of the show cdp neighbors command.

In which OSI layer is the problem most likely occurring?

- A. Physical
- B. Data link
- C. Network layer
- D. Transport layer
- E. Application layer

Answer: B

Explanation:

As the question states that serial line is up, it means the problem is not on the Network layer. The administrator cannot see any output by issuing the show cdp neighbors

command. It means that CDP is disabled and CDP is a protocol that runs over Layer2 (the data link layer) on all Cisco routers, bridges, access servers, and switches.

QUESTION 74:

While troubleshooting a network connectivity problem, a Certkiller technician observes steady link lights on both the workstation NIC and the switch port to which the workstation is connected. However, when the ping command is issued from the workstation, the output message "Request timed out." is displayed. At which layer of the 7-layer OSI model does the problem most likely exist?

- A. The data link layer
- B. The application layer
- C. The protocol layer
- D. The access layer
- E. The session layer
- F. The network layer
- G. None of the above

Answer: F

Explanation:

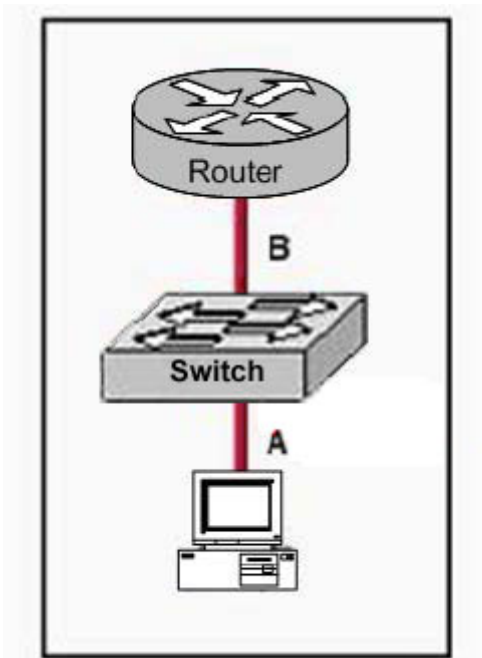
Network Layer:

The Network layer (also called layer 3) manages device addressing, tracks the location of devices on the network, and determines the best way to move data, which means that the Network layer must transport traffic between devices that aren't locally attached. Routers (layer 3 devices) are specified at the Network layer and provide the routing services within an internetwork.

Request Time out, Destination Unreachable etc error comes from Network Layer problem.

QUESTION 75:

A host is connected to the Certkiller network as displayed below:



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

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

Answer: B, D, F

Explanation:

Straight-through cables are used to connect hosts to a switch (or hub) and routers to a switch (or hub). See the table below:

	Hub	Switch	Router	Workstation
Hub	Crossover	Crossover	Straight	Straight
Switch	Crossover	Crossover	Straight	Straight
Router	Straight	Straight	Crossover	Crossover
Workstation	Straight	Straight	Crossover	Crossover

Incorrect Answers:

- A: This would mean that there was a layer 2 issue, not layer 1. If the problem was related to the encapsulation, the lights on the switch would indicate layer 1 activity.
- C: A trunk port is not required, and again if this was the problem the link lights on the

switch would be on.

E: This should only be used as a last resort, as this will affect all users on the switch.

QUESTION 76:

Which line from the output of the show ip interface command indicates that there is a Layer 1 problem?

- A. Serial0/1 is up, line protocol is down
- B. Serial0/1 is down, line protocol is down
- C. Serial0/1 is up, line protocol is up
- D. Serial0/1 is administratively down, line protocol is down
- E. None of the above

Answer: B

Explanation:

When the physical interface itself is down, then the problem is related to layer 1. When it is up, but the line protocol is down, then the problem is related to layer 2.

Status Line Condition	Possible Problem	Solution
Serial x is down, line protocol is down (DTE mode)	<p>The router is not sensing a CD signal (that is, the CD is not active).</p> <p>A telephone company problem has occurred—line is down or is not connected to CSU/DSU.</p> <p>Cabling is faulty or incorrect.</p> <p>Hardware failure has occurred (CSU/DSU).</p>	<ol style="list-style-type: none"> 1. Check the LEDs on the CSU/DSU to see whether the CD is active, or insert a breakout box on the line to check for the CD signal. 2. Verify that you are using the proper cable and interface (see your hardware installation documentation). 3. Insert a breakout box and check all control leads. 4. Contact your leased-line or other carrier service to see whether there is a problem. 5. Swap faulty parts. <hr/> <ol style="list-style-type: none"> 6. If you suspect faulty router hardware, change the serial line to another port. If the connection comes up, the previously connected interface has a problem.

Reference: http://www.cisco.com/univercd/cc/td/doc/cisintwk/itg_v1/tr1915.htm

QUESTION 77:

At which layer of the OSI model does the protocol that provides the information displayed by the "show cdp neighbors" command operate?

- A. Transport

- B. Physical
- C. Application
- D. Data link
- E. Network

Answer: D

Explanation:

CDP is a device discovery protocol that runs over Layer 2 (the data link layer) on all Cisco-manufactured devices (routers, bridges, access servers, and switches) and allows network management applications to discover Cisco devices that are neighbors of already known devices. With CDP, network management applications can learn the device type and the Simple Network Management Protocol (SNMP) agent address of neighboring devices running lower-layer, transparent protocols.

QUESTION 78:

Which three of the protocols below belong to the application layer? (Select three answer choices)

- A. ARP
- B. HTTPS
- C. SMTP
- D. CDP
- E. TFTP
- F. ICMP

Answer: B, C, E

Explanation:

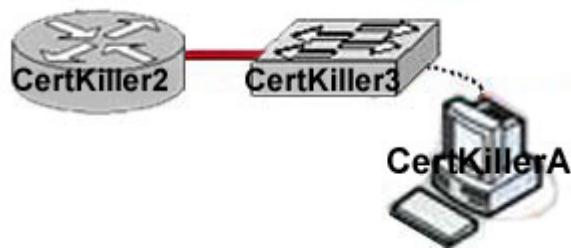
The application layer is the highest OSI layer, and protocols at this layer are end-user oriented. HTTPS so people can get information on the internet, SMTP so people can manage networks, and TFTP so people can download files.

Incorrect Answers:

A, D, F. ARP, CDP, ICMP are protocols that equipment like routers and switches use to communicate with themselves, and belong to lower levels on the model.

QUESTION 79:

Exhibit:



A Cisco router and a Catalyst switch are connected as shown. The Certkiller network administrator is working on a computer that is connected to the management console of the switch. In order to configure the default gateway for the switch, the administrator needs to learn the IP address of the attached router interface. Which IOS command will provide this information in the absence of Layer 3 connectivity?

- A. ping router_ip_address
- B. show ip rarp
- C. ping switch_ip_address
- D. show cdp neighbors detail
- E. show dhcp-config
- F. show ip neighbors
- G. None of the above

Answer: D

Explanation:

To display detailed information about neighboring devices discovered using Cisco Discovery Protocol (CDP), use the `show cdp neighbors` privileged EXEC command. Detail - (Optional) Displays detailed information about a neighbor (or neighbors) including network address, enabled protocols, hold time, and software version.

The following is sample output for the `show cdp neighbors detail` command.

```
router#show cdp neighbors detail
```

```
-----  
Device ID: lab-7206  
Entry address(es):  
IP address: 172.19.169.83  
Platform: cisco 7206VXR, Capabilities: Router  
Interface: Ethernet0, Port ID (outgoing port): FastEthernet0/0/0  
Holdtime : 123 sec  
Version :  
Cisco Internetwork Operating System Software  
IOS (tm) 5800 Software (C5800-P4-M), Version 12.1(2)  
Copyright (c) 1986-2002 by Cisco Systems, Inc.  
advertisement version: 2  
Duplex: half
```

QUESTION 80:

You want to upgrade the Certkiller LAN so that all ports operate in full duplex mode. Which statement is true about full-duplex Ethernet when comparing to half-duplex Ethernet?

- A. Full-duplex Ethernet consists of a shared cable segment. Half-duplex provides a point-to-point link
- B. Full-duplex Ethernet uses two wires to send and receive. Half-duplex Ethernet uses one wire to send and receive
- 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
- E. None of the above

Answer: C

Explanation:

Full-duplex Ethernet uses two pairs of wires instead of one wire pair like half duplex. And full duplex uses a point-to-point connection between the transmitter of the transmitting device and the receiver of the receiving device. This means that with full-duplex data transfer, you get a faster data transfer compared to half duplex.

QUESTION 81:

What are two characteristics of "store and forward" switching? (Select two answer choices)

- A. Latency fluctuates regardless of frame size.
- B. The switch receives the complete frame before beginning to forward it.
- C. Latency through the switch varies with frame length.
- D. The switch checks the destination address upon receipt of headers.

Answer: B, C

Explanation:

With store-and-forward, the entire frame is received by the switch before the first bit of the frame is forwarded.

As soon as the incoming switch port receives enough of the frame to see the destination MAC address, the forwarding decision is made and the frame is transmitted out the appropriate outgoing port to the destination device. So, each frame might experience slightly less latency. Store and forward switching may add latency when compared to other switching methods such as cut through, but it can reduce the amount of errors that become forwarded through a network.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 243

Incorrect Answers:

- A. The amount of latency that is introduced with this method of switching is dependent on the size of the frame, as the switch must wait to receive the entire frame before sending it.
- D. The switch must wait for the entire frame before forwarding it on, and not just the headers.

QUESTION 82:

Split horizon has been enabled within the Certkiller routed network. Which one of the following statements best explains the split horizon rule?

- A. Only routers can split boundaries (horizons) between networks in separate AS numbers.
- B. Each AS must keep routing tables converged to prevent dead routes from being advertised across boundaries.
- C. Once a route is received on an interface, advertise that route as unreachable back out the same interface.
- D. Information about a route should never be sent back in the direction from which the original update came.
- E. None of the above

Answer: D

Explanation:

The split horizon rule states:

* Never advertise a route out of the interface through which you learned it.

For instance, in Figure 4a below, if Router One is connected to Routers Two and Three through a single multipoint interface (such as Frame Relay), and Router One learned about Network A from Router Two, it will not advertise the route to Network A back out the same interface to Router Three. Router one assumes that Router Three would learn about Network A directly from Router Two.

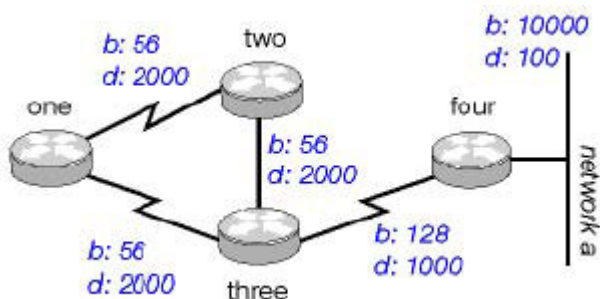


Figure 4a

Incorrect Answers:

- A: There is no such requirement
- B: Distance vector protocols updates routing table at regular intervals instead of

Topology changes

C: This is the definition of the poison reverse rule, not the split horizon rule.

Reference: Wendell Odom. CISCO CCNA Certification Guide (2000 Press) Page 369.

QUESTION 83:

Which of the following commands would be applied to a WAN interface, but not on LAN Interface? (Choose all that apply)

- A. IP address
- B. encapsulation PPP
- C. no shutdown
- D. authentication CHAP
- E. Speed
- F. None of the above

Answer: B, D

Explanation:

PPP encapsulation can be used in ISDN interfaces, Asynchronous serial interfaces, and point to point serial WAN connections. PPP is not an option for LAN interfaces. CHAP authentication is a PPP 3 way authentication method. CHAP authentication can only be used on PPP encapsulated interfaces and is not a LAN interface configuration option.

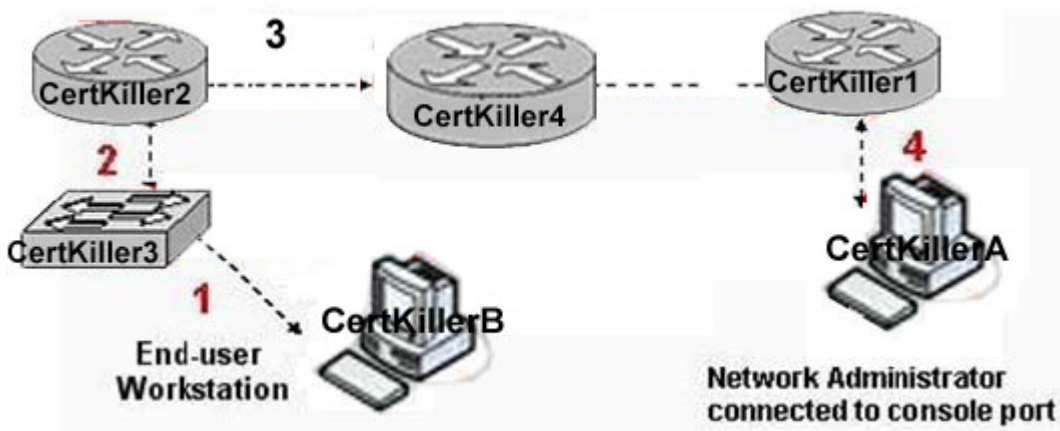
Incorrect Answers:

A, C. This command can be applied to both LAN and WAN interface types.

E. The speed command is used on LAN interfaces, and is not used on WAN interface types.

QUESTION 84:

Exhibit:



You work as a network technician at Certkiller and you need to connect your workstation to the network as shown above. Based on the diagram shown, what kind of cable should be used to make each connection that is identified by the

numbers shown?

- A. 1. Ethernet rollover cable
2. Ethernet crossover cable
3. Serial Cable
4. Null Modem Cable
- B. 1. Ethernet crossover cable
2. Ethernet Straight-through cable
3. Fiber Optic Cable
4. Rollover Cable
- C. 1. Ethernet Straight-through cable
2. Ethernet Straight-through cable
3. Serial Cable
4. Rollover Cable
- D. 1. Ethernet Straight-through cable
2. Ethernet Crossover Cable
3. Serial Cable
4. Rollover cable
- E. None of the above

Answer: C

QUESTION 85:

What kind of cable should be used to establish a trunked line between two Catalyst switches?

- A. A straight-through cable
- B. An EIA/TIA-232 serial cable
- C. An auxiliary cable
- D. A modem cable
- E. A cross-over cable

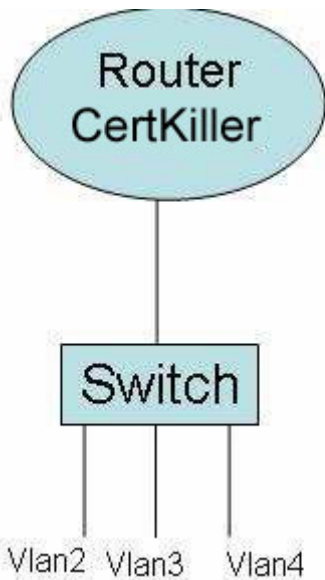
Answer: E

Explanation:

A crossover cable is used to connect two of the same device types, or devices from the same OSI layer.

QUESTION 86:

The Certkiller network Topology is displayed in the exhibit below:



A switch has been configured for three different VLANs: VLAN 2, VLAN 3, and VLAN 4. For the purposes of communication between VLANs a router is to be added. Host from one VLAN should be able to reach the hosts in the other VLANs. Based on this requirement, what type of connection is acceptable between the router and switch?

- A. 10 Mbps Ethernet
- B. 56 kbps serial
- C. 100 Mbps Ethernet
- D. 1,544 Mbps serial
- E. 1000 Mbps Ethernet

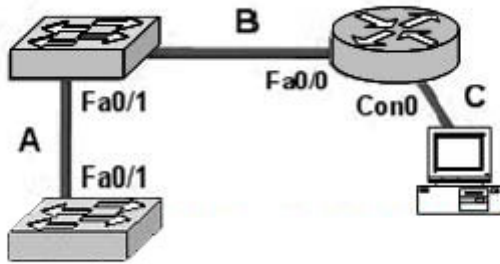
Answer: C, E

Explanation:

For all hosts to be able to reach each other, inter-VLAN routing will need to be configured. In order to provide Inter-VLAN routing between the router and the switch, a trunk will need to be set up. This trunk can be either ISL or 802.1Q. On a router, the interface that is to be used as the trunk can be 100 Mbps Ethernet, Gigabit Ethernet, or 10 Gigabit Ethernet. Therefore, only choices C or E are correct.

QUESTION 87:

Part of the Certkiller LAN is shown below:



Based on the diagram shown above, which set of terms correctly identifies the cable types shown in the exhibit? (Assume that none of the switches are set to 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
- E. A: straight-through
- B: crossover
- C: rollover

Answer: D

Explanation:

Crossover Cables are Used to Connect:

Host to Host (Peer to Peer) Networking

Switch to Switch

Hub to Hub

Computer to Router's Ethernet Port

Straight through Cable:

Host to Switch

Host to Hub

Switch to Router

Serial Cable:

Router's Serial Port to Serial Port

Rollover Cable:

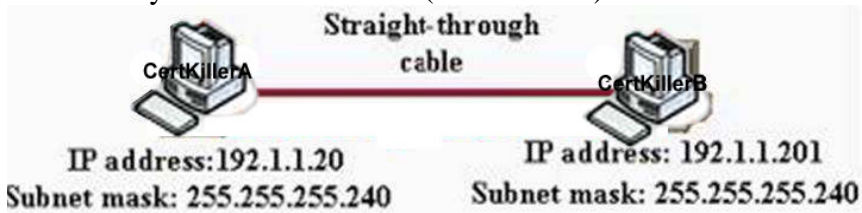
To connect Router/Switch Console port.

Here one switch is connected with another switch using a crossover cable. The switch

connected with the router uses a straight through cable and the PC Connects to the router's console port using the console rollover cable.

QUESTION 88:

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



- A. 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 rollover cable should be used in place of the straight-through cable
- E. A crossover cable should be used in place of the straight-through cable.
- F. The subnet masks should be set to 255.255.255.192.

Answer: A, E

Explanation:

This problem is due to the misconfiguration of subnet mask as well as the fact that a straight-through cable is used to connect the two devices. To ensure connectivity, the correct subnet mask needs to be used so that the two devices are in the same subnet and when connecting two PC's back to back a crossover cable should be used.

QUESTION 89:

Assuming you build networks to exact specifications, what is the recommended maximum length a 10BaseT cable can be before it has to be segmented or repeated?

- A. 100 meters
- B. 100 feet
- C. 100 yards
- D. 200 meters
- E. None of the above

Answer: A

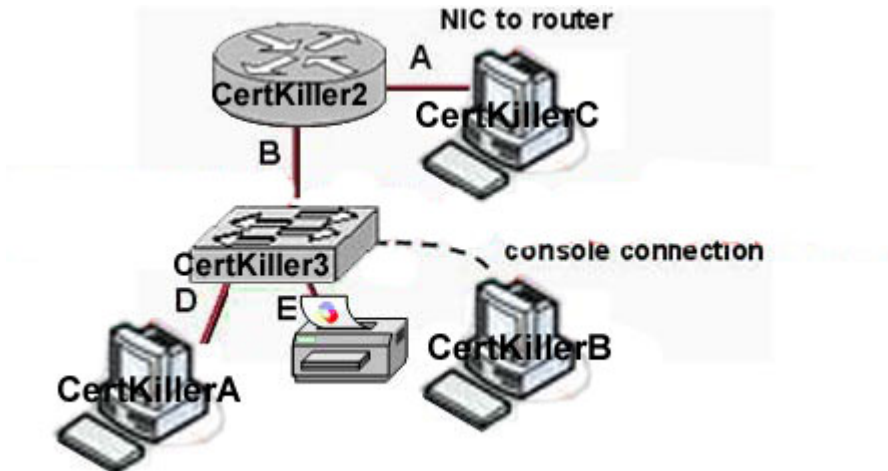
Explanation:

The distance standards are in meters and 10BaseT has a distance restriction of 100

meters. If you go further then that, you compromise data integrity. 10BastT is the predominant cable type used in Ethernet networks.

QUESTION 90:

Exhibit:



You need to connect the network devices in a new Certkiller office. What types of cables should you use 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
- D. A-crossover
- B-straight-through
- C-crossover
- D-straight-through
- E-crossover
- E. A-crossover
- B-straight-through
- C-rollover
- D-straight-through
- E-straight-through

Answer: E

Explanation:

Crossover Cables are Used to Connect :

Host to Host (Peer to Peer) Networking

Switch to Switch

Hub to Hub

Computer to Router's Ethernet Port

Straight through Cable:

Host to Switch

Host to Hub

Switch to Router

Serial Cable:

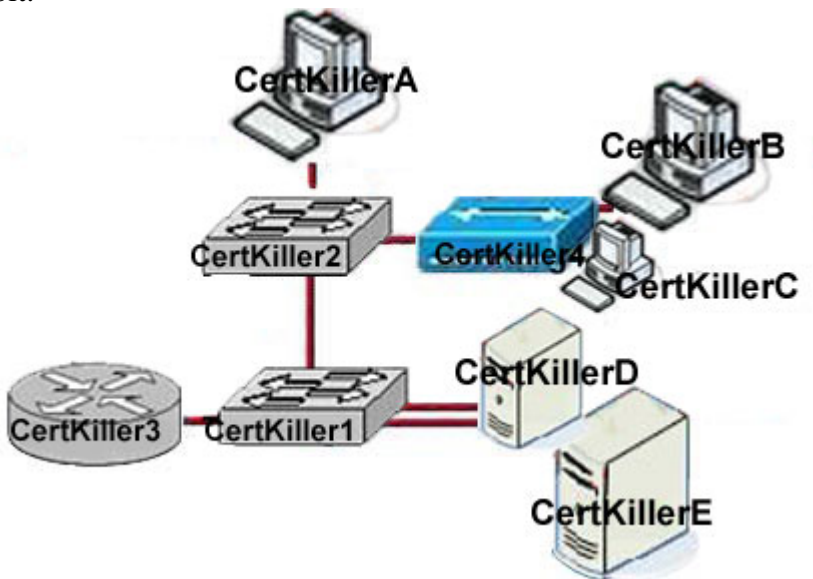
Router's Serial Port to Serial Port

Rollover Cable :

To connect Router/Switch Console port.

QUESTION 91:

Exhibit:



Host Certkiller A has just been added to the network. Which type of cable should be used between Switch Certkiller 2 and host Certkiller A?

- A. Crossover cable
- B. Rollover cable
- C. Straight-through cable
- D. Console cable
- E. Fiber optic cable
- F. None of the above

Answer: C

Explanation:

Straight-through cables are used to connect hosts to a switch (or hub) and routers to a switch (or hub). See the table below:

	Hub	Switch	Router	Workstation
Hub	Crossover	Crossover	Straight	Straight
Switch	Crossover	Crossover	Straight	Straight
Router	Straight	Straight	Crossover	Crossover
Workstation	Straight	Straight	Crossover	Crossover

QUESTION 92:

The Certkiller LAN is upgrading all devices to operate in full duplex. Which statement is true about full-duplex Ethernet in comparison 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
- E. None of the above

Answer: C

QUESTION 93:

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
- E. VTP
- F. Blocking mode

Answer: B

Explanation:

UnderstandingHow PortSecurity Works:

You can use port security to block input to an Ethernet, Fast Ethernet, or Gigabit Ethernet port when the MAC address of the station attempting to access the port is different from any of the MAC addresses specified for that port. Alternatively, you can use port security to filter traffic destined to or received from a specific host based on the host MAC address.

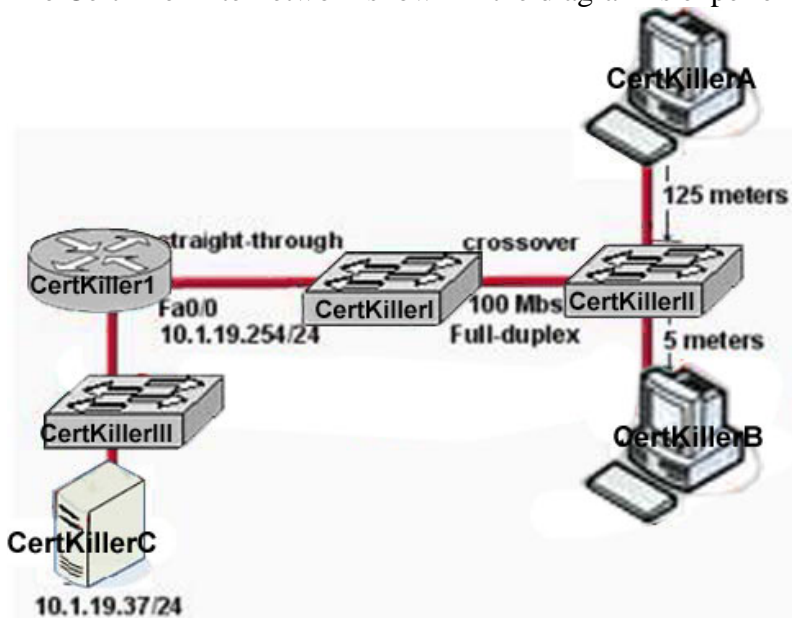
When a secure port receives a packet, the source MAC address of the packet is compared to the list of secure source addresses that were manually configured or autoconfigured (learned) on the port. If a MAC address of a device attached to the port differs from the list of secure addresses, the port either shuts down permanently (default mode), shuts down for the time you have specified, or drops incoming packets from the insecure host. The port's behavior depends on how you configure it to respond to a security violation. If a security violation occurs, the Link LED for that port turns orange, and a link-down trap is sent to the Simple Network Management Protocol (SNMP) manager. An SNMP trap is not sent if you configure the port for restrictive violation mode. A trap is sent only if you configure the port to shut down during a security violation.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps700/products_configuration_guide_chapter09186a008007f

QUESTION 94:

The Certkiller internetwork shown in the diagram is experiencing network delays.



On the basis of the information provided in the exhibit above, what is the problem?

- A. The connection between Switch1 and Switch2 should be half-duplex.
- B. The cable between Router1 and Switch1 should be a crossover.
- C. The cable connecting Host A to Switch2 is too long.
- D. The server is on a different subnet than router interface Fa0/0.
- E. The cable between Switch1 and Switch2 should be straight-through.
- F. None of the above

Answer: C

Explanation:

According to IEEE specifications, the maximum segment length of an Ethernet cable should not exceed 100 meters. The total distance between an Ethernet Transmitter and Receiver at the absolute end points of the network (maximum diameter from origin to final destination, if the wires were stretched out to form a straight line) should be no more than 100 Meters (328 ft., 109 yards, or about the length of a football field). This limitation results from the timing of the Ethernet signals on the cable and not necessarily the cable characteristics, and is, therefore, a "hard" number.

QUESTION 95:

What is the IEEE standard associated with Gigabit Ethernet? (Select two answer choices)

- A. 802.11
- B. 802.5
- C. 802.3ab
- D. 802.3ae
- E. 802.3z
- F. 802.3u

Answer: C, E

Explanation:

The IEEE 802.3z standard describes 1000BASE-SX.

The 1000BaseT standard was released in June 1999, defined by IEEE 802.3ab.

Incorrect Answers:

- A. This describes the standard used for wireless networks.
 - B. This is the standard for token ring networks.
 - D. On June 17, 2002 the IEEE 802.3ae specification for 10 Gigabit Ethernet was approved as an IEEE standard by the IEEE Standards Association (IEEE-SA) Standards Board.
 - F. IEEE 802.3u describes the standard for 100BASE-TX.
-

QUESTION 96:

Which of the following can lead to the contribution of LAN traffic congestion? (Select all that apply)

- A. Too many hosts in a broadcast domain
- B. Full duplex operation
- C. Broadcast storms
- D. Multicasting

- E. Segmentation
- F. Low bandwidth

Answer: A, C, F

Explanation:

Choice A is correct because the more hosts on a broadcast domain, the more traffic that is created. Choice C contributes to congestion because broadcast storms can become very problematic, and lead to complete network saturation. Multicasts are similar to broadcasts in their use on a LAN. Finally, if there is not enough bandwidth, traffic sessions can time out. This leads to new transmissions and the re-sending of data, which can lead to more congestion.

Incorrect Answers:

B, E. These are incorrect because full duplex operation and segmented networks actually result in less congestion.

D. Multicasting can actually alleviate congestion issues, as single streams of information can reach multiple hosts at the same time, instead of using a series of point to point connections.

QUESTION 97:

On a half-duplex Ethernet LAN, two hosts attempt to send data simultaneously, resulting in a collision. Following this collision, what will the hosts do? (Select all valid answers)

- A. The destination host sends a request to the source for retransmission.
- B. The jam signal indicates that the collision has been cleared.
- C. The hosts will attempt to resume transmission after a time delay has expired.
- D. An electrical pulse indicates that the collision has cleared.
- E. The router on the segment will signal that the collision has cleared.
- F. The hosts will do nothing, as the higher layers are responsible for data error correction and re-transmission.

Answer: C

Explanation:

When a host on an Ethernet LAN has information to send, the following steps are taken:

1. A device with a frame to send listens until Ethernet is not busy.
 2. When the Ethernet is not busy, the sender begins sending the frame.
 3. The sender listens to make sure that no collision occurred.
 4. Once the senders hear the collision, they each send a jamming signal, to ensure that all stations recognize the collision.
 5. After the jamming is complete, each sender randomizes a timer and waits that long.
 6. When each timer expires, the process starts over with step 1.
-

QUESTION 98:

Which of the following statements correctly describe the differences between half-duplex and full-duplex Ethernet? (Select two answer choices.)

- A. Full-duplex Ethernet uses CSMA/CD to prevent collisions.
- B. Half-duplex Ethernet uses a loopback circuit to detect collisions.
- C. A full-duplex Ethernet card allows 20Mbps for data transmission.
- D. Full-duplex Ethernet makes use of two pairs of wires for data.
- E. An Ethernet hub can operate both half and full duplex simultaneously.

Answer: B, D

Explanation:

Half-duplex Ethernet send and receives on the same line, so a loopback needs to be set to detect collisions. Alternatively, full-duplex Ethernet doesn't have to because it uses two pairs of wire, one to send and the other to receive. Collisions are not possible on full duplex Ethernet networks.

Incorrect Answers:

- A. Full duplex uses both pairs of wires, so transmissions are sent on the first pair, and data that is received come in on the other pair. This prevents collisions.
- C. Full duplex allows for data to be sent and received at the same time. It will not double the amount of bandwidth at any given time. The speed of the Ethernet link will remain at 10/100.
- E. Hubs are shared devices and can only support one mode, unlike switches.

QUESTION 99:

Why is full-duplex Ethernet superior to its single-duplex counterpart? (Select two answer choices.)

- A. It uses inexpensive hubs
- B. It operates without collisions
- C. It operates on switches
- D. It provides faster data transfer
- E. It utilizes fewer wiring pairs

Answer: B, D

Explanation:

Full duplex Ethernet allows concurrent sending and receiving, which allows the full bandwidth to be used for both sending and receiving. The result is a collision free network with increased throughput.

Incorrect Answers:

- A, C. These are incorrect because full duplex doesn't require hubs or switches. Full duplex operation can be used on switch and router ports, as well as PC hosts.

E. This is incorrect because full duplex actually uses more wiring pairs. In full duplex, both wire pairs are used. Half duplex uses only a single pair.

QUESTION 100:

When you compare the differences between half-duplex and full-duplex Ethernet, which of the following characteristics are exclusive to half-duplex? (Select two answer choices)

- 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.
- E. Half-duplex Ethernet operates in an exclusive collision domain.

Answer: A, D

Explanation:

A single device could not be sending a frame and receiving a frame at the same time because it would mean that a collision was occurring. So, devices simply chose not to send a frame while receiving a frame. That logic is called half-duplex logic.

Ethernet switches allow multiple frames to be sent over different ports at the same time. Additionally, if only one device is connected to a switch port, there is never a possibility that a collision could occur. So, LAN switches with only one device cabled to each port of the switch allow the use of full-duplex operation. Full duplex means that an Ethernet card can send and receive concurrently.

Incorrect Answers:

- B. Full duplex effectively doubles the throughput of half-duplex operation, because data can be both sent and received at the full 10/100 speed.
- C, E. In half duplex operation, the network is shared between all devices in the collision domain.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 62-63.

QUESTION 101:

Two stations on the Certkiller LAN transmit at the same time, resulting in a collision. What happens when a collision occurs on the network? (Choose all that apply)

- A. Each device on the Ethernet segment stops transmitting for a short time.
- B. A jam signal informs all devices that a collision occurred.
- C. When data transmission resumes, the devices that were involved in the collision have priority to transmit.
- D. The devices that are involved in the collision stops transmitting for a short time.
- E. The collision invokes a random back-off algorithm.

Answer: B, D, E

Explanation:

When a host on an Ethernet LAN has information to send, the following steps are taken:

1. A device with a frame to send listens until Ethernet is not busy.
2. When the Ethernet is not busy, the sender begins sending the frame.
3. The sender listens to make sure that no collision occurred.
4. Once the senders hear the collision, they each send a jamming signal, to ensure that all stations recognize the collision.
5. After the jamming is complete, each sender randomizes a timer and waits that long.
6. When each timer expires, the process starts over with step 1.

Incorrect Answers:

- A. Only the stations involved in the collision stop transmitting for a short time, not all stations on the LAN.
- C. No priority is given to any stations once a collision has occurred.

QUESTION 102:

Which of the following are true of Ethernet technology?

- A. Hosts use a logical ring topology.
- B. Hosts use a logical bus topology
- C. Hosts must wait for an electronic signal to transfer data.
- D. Hosts are directly connected to a wiring concentrator called a MSAU.
- E. None of the above

Answer: B

Explanation:

LAN topologies define the manner in which network devices are organized. Four common LAN topologies exist: bus, ring, star, and tree. These topologies are logical architectures, but the actual devices need not be physically organized in these configurations. Logical bus and ring topologies, for example, are commonly organized physically as a star. A bus topology is a linear LAN architecture in which transmissions from network stations propagate the length of the medium and are received by all other stations. Of the three most widely used LAN implementations, Ethernet/IEEE 802.3 networks, including 100BaseT, implement a bus topology, which is illustrated in Figure 2-3.

Figure2-3: Some networks implement a local bus topology.



Reference: <http://www.pulsewan.com/lanintro.htm>

QUESTION 103:

With regard to Ethernet media access methods, which of the following are true?
(Choose all that apply.)

- A. A device waits for an electronic signal before transmitting.
- B. A device listens and waits until the media is not busy before transmitting.
- C. All devices on an Ethernet segment see data that passes on the network medium.
- D. Only the sender and the receiver devices see data that passes on the network medium.
- E. Ethernet networks allow you to configured devices with higher transmission priority.

Answer: B, C

Explanation:

Ethernet uses the CSMA/CD access method.

CSMA/CD logic helps prevent collisions and also defines how to act when a collision does occur. The CSMA/CD algorithm works like this:

1. A device with a frame to send listens until the Ethernet is not busy.
2. When the Ethernet is not busy, the sender begins sending the frame.
3. The sender listens to make sure that no collision occurred.
4. Once the senders hear the collision, they each send a jamming signal, to ensure that all stations recognize the collision.
5. After the jamming is complete, each sender randomizes a timer and waits that long.
6. When each timer expires, the process starts over with Step 1.

So, all devices on the Ethernet need to use CSMA/CD to avoid collisions and to recover when inadvertent collisions occur.

Reference: Cisco CCNA intro 640-821 p.55

QUESTION 104:

Which two statements describe the operation of the CSMA/CD access method, which is in use on the Certkiller network? (Choose two)

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

Answer: B, E

Explanation:

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

QUESTION 105:

Which three statements are true about the operation of a full-duplex Ethernet network, which is being used in the Certkiller LAN? (Choose three)

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

Answer: B, C, E

Explanation:

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

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

QUESTION 106:

Exhibit:

```
CertKiller2# show Interfaces FastEthernet 0/0
FastEthernet0/0 is up, line protocol is up
Hardware is PQ1000_FEC, address is 000d.bd64.98f1 (bia 000d.bd64.98f1)
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, reliability 253/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set, Keepalive set (10 sec)
Half-duplex, 100Mb/s, 100BaseTX/FX, Internet address is 192.168.88.254/25
ARP type: ARPA, ARP Timeout 04:00:00
Last input: 00:00:00, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 1105 drops; input queue 27/75, 10274 drops
5 minute input rate 1530000 bits/sec, 201 packets/sec
5 minute output rate 673000 bits/sec, 173 packets/sec
 404737363 packets input, 2387517953 bytes, 11 no buffer
Received 12083011 broadcasts, 0 runts, 0 giants
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
 0 input packets with dubble condition detected
401877661 packets output, 2769220540 bytes, 0 underruns
 0 output errors, 5768297 collisions, 0 interface resets
 0 babbles, 0 late collision, 2174742 deferred
 0 lost carrier, 0 no carrier
 0 output buffer failures, 0 output buffers swapped out
```

You work as a network technician at Certkiller . Please study the exhibit carefully. Which statement describes the operational state of the Certkiller 2 FastEthernet 0/0 interface?

- A. The interface is operational and currently handling traffic.
- B. The interface has failed because of a media error.
- C. The interface requires a no shutdown command to be issued.
- D. The interface is generating protocol errors.

E. None of the above.

Answer: A

Explanation:

The interface is up indicates whether the interface hardware is currently active and whether it has been taken down by an administrator. "Disabled" indicates that the router has received more than 5,000 errors in a keepalive interval, which is 10 seconds, by default.

The line protocol indicates whether the software processes that handle the line protocol believe that the interface is usable (that is, whether keepalives are successful) or if it has been taken down by an administrator.

For a complete list of the field descriptions of this command as well as troubleshooting information for Ethernet interfaces refer to the reference link listed below.

Reference: "Troubleshooting Ethernet"

<http://www.cisco.com/en/US/docs/internetworking/troubleshooting/guide/tr1904.html>

QUESTION 107:

The Certkiller network administrator wants to use a router named CK1 to segment the local network. What are some of the advantages of using CK1 to segment the network? (Choose two)

- A. Routers generally cost less than switches
- B. Filtering can occur based on Layer 3 information
- C. Broadcasts are not forwarded across the router
- D. Broadcasts are eliminated
- E. Adding a router to the network decreases latency
- F. Routers can generally support more LAN ports than switches

Answer: B, C

QUESTION 108:

Which of the following devices can the Certkiller network administrator use to segment the LAN? (Choose all that apply)

- A. Hubs
- B. Repeaters
- C. Switches
- D. Bridges
- E. Routers
- F. Media Converters
- G. All of the above

Answer: C, D, E

Explanation:

Switches and bridges forward broadcast but routers do not forward broadcasts by default (they can via the "ip helper-address" command).

Switches, bridges and routers can segment an Ethernet collision domain via the use of VLAN's

Incorrect Answers:

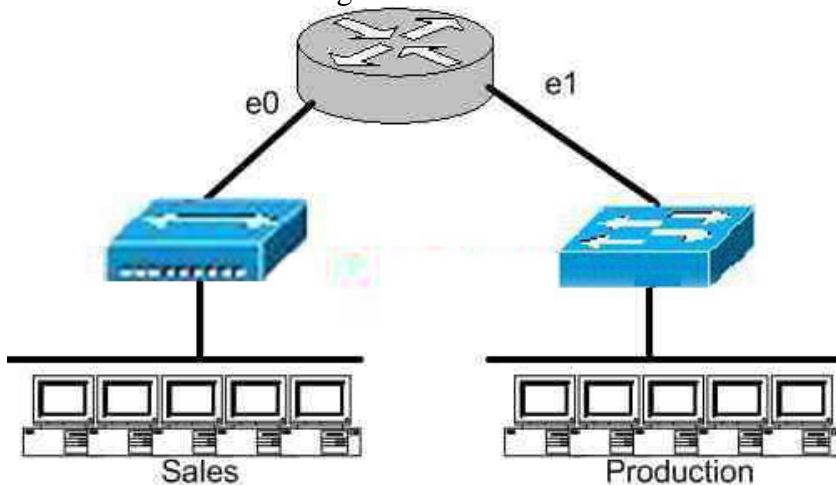
A. Hubs is incorrect because a hub doesn't segment a network, it only allows more hosts on one. Hubs operate at layer one, and is used primarily to physically add more stations to the LAN.

B. This also incorrect because the job of a repeater is to repeat a signal so it can exceed distance limitations. It also operates at layer one and provides no means for logical LAN segmentation.

F. This is incorrect because media converters work by converting data from a different media type to work with the media of a LAN. It also operates at layer one and provides no means for logical LAN segmentation.

QUESTION 109:

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



Which of the following statements most accurately describes the characteristics of the above networks broadcast and collision domains? (Select the two best answer choices)

- A. There are two broadcast domains in the network.
- B. There are four broadcast domains in the network.
- C. There are six broadcast domains in the network.
- D. There are four collision domains in the network.
- E. There are five collision domains in the network.
- F. There are seven collision domains in the network.

Answer: A, F

Explanation:

In this network we have a hub being used in the Sales department, and a switch being used in the Production department. Based on this, we have two broadcast domains: one for each network being separated by a router. For the collision domains, we have 5 computers and one port for E1 so we have 6 collision domains total because we use a switch in the Production Department so 5 are created there, plus one collision domain for the entire Sales department because a hub is being used.

QUESTION 110:

The Certkiller corporate LAN consists of one large flat network. You decide to segment this LAN into two separate networks with a router. What will be the affect of this change?

- A. The number of broadcast domains will be decreased.
- B. It will make the broadcasting of traffic between domains more efficient between segments.
- C. It will increase the number of collisions.
- D. It will prevent segment 1's broadcasts from getting to segment 2.
- E. It will connect segment 1's broadcasts to segment 2.

Answer: D

Explanation

A router does not forward broadcast traffic. It therefore breaks up a broadcast domain, reducing unnecessary network traffic. Broadcasts from one segment will not be seen on the other segment.

Incorrect Answers:

- A. This will actually increase the number of broadcast domains from one to two.
- B. All link level traffic from segment one to segment two will now need to be routed between the two interfaces of the router. Although this will reduce the traffic on the LAN links, it does also provide a less efficient transport between the segments.
- C. Since the network size is effectively cut into half, the number of collisions should decrease dramatically.
- E. Broadcasts from one segment will be completely hidden from the other segment.

QUESTION 111:

You want to influence the root bridge selection within the Certkiller LAN. Which two values are used by spanning tree protocol to elect a root bridge? (Choose two.)

- A. Amount of RAM
- B. Speed of the links
- C. IOS Version
- D. MAC Address
- E. Bridge Priority

- F. IP Address
- G. Router ID

Answer: D, E

QUESTION 112:

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

- A. The switch will forward the frame to a specific port
- B. The switch will forward the frame to all ports except the port on which it was received
- C. The switch will return a copy of the frame out the source port
- D. The switch will not forward unicast frames
- E. The switch will remove the destination MAC from the switch table
- F. None of the above.

Answer: A

QUESTION 113:

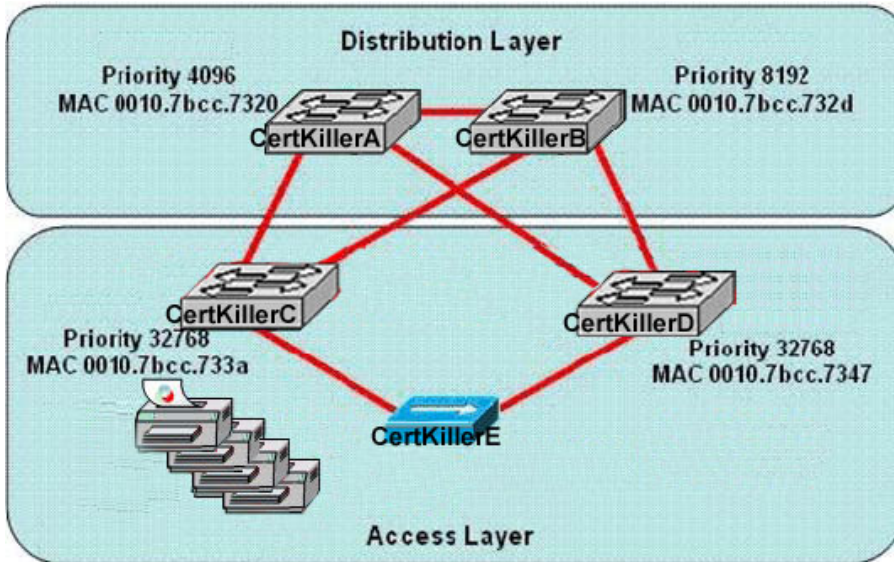
In which circumstance are multiple copies of the same unicast frame likely to be transmitted in the Certkiller Switched LAN?

- A. During high traffic periods
- B. In an improperly implemented redundant topology
- C. After broken links are re-established
- D. When upper-layer protocols require high reliability
- E. When a dual ring topology is in use
- F. None of the above

Answer: B

QUESTION 114:

Part of the Certkiller switched LAN is shown below:



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

- A. Switch Certkiller A
- B. Hub Certkiller E
- C. Switch Certkiller C
- D. Switch Certkiller B
- E. Switch Certkiller D
- F. None of the switches will provide the designated port role

Answer: C

QUESTION 115:

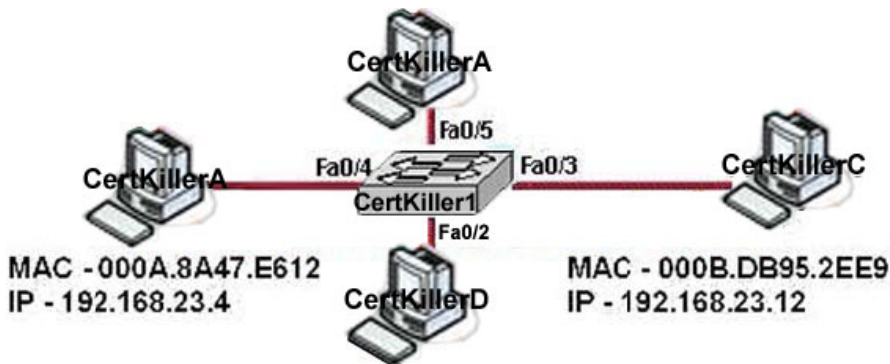
The Certkiller network administrator needs to a switch named CK1 to become the root bridge for a redundant path switched network. What can be done to ensure that CK1 will always assume the role as the root bridge?

- A. Assign the switch a higher MAC address than the other switches in the network have
- B. Establish a direct link from the switch to all other switches in the network
- C. Configure the switch full-duplex operation and configure the other switches for half-duplex operation
- D. Configure the switch so that it has lower priority than other switches in the network
- E. None of the above

Answer: D

QUESTION 116:

Four Certkiller PCs connect to a single switch as shown below:



In the Certkiller network shown above, switch Certkiller 1 has just been restarted and has passed the POST routine. Host Certkiller A (the one on the left) sends its initial frame to Host Certkiller C. What is the first thing the switch will do as regards to populating the switching table?

- A. Switch Certkiller 1 will add 192.168.23.12 to the switching table
- B. Switch Certkiller 1 will add 192.168.23.4 to the switching table
- C. Switch Certkiller 1 will add 000B.DB95.2EE9 to the switching table
- D. Switch Certkiller 1 will add 000A.8A47.E612 to the switching table
- E. None of the above

Answer: D

QUESTION 117:

CK1 is a switch in the Certkiller network. Why will CK1 never learn the broadcast address?

- A. Broadcast frames are never sent to switches
- B. A broadcast frame is never forwarded by a switch
- C. Broadcasts only use network layer addressing
- D. A broadcast address will never be the source address of a frame
- E. Broadcast addresses use an incorrect format for the switching table
- F. None of the above

Answer: D

Explanation:

There three different address types:

- * Unicast : One source to One destination
- * Broadcast: One source to multiple destination
- * Multicast: One source to multiple destination joined to group

On unicast or broadcast or multicast communication, the source address is always the unicast address but the destination address can be unicast, broadcast or multicast.

QUESTION 118:

DRAG DROP

You work as a network technician at Certkiller .com. Your boss, Mrs. Certkiller, is interested in basic switch configurations. Match the IOS command with the appropriate purpose.

Options, select from these

configure terminal

enable

ip default gateway

no shutdown

ip address

hostname

interface vlan 1

Definitions

Allows the switch to be managed from remote networks.

Allows access to configuration commands that affect the system on a whole

Allows access to high-level testing commands, such as debug.

Enables the switch management interface.

Activates the interface configuration mode for VLAN 1

Sets the switch management IP address.

Sets the system name.

Options, place here

Place here

Place here

Place here

Place here

Place here

Place here

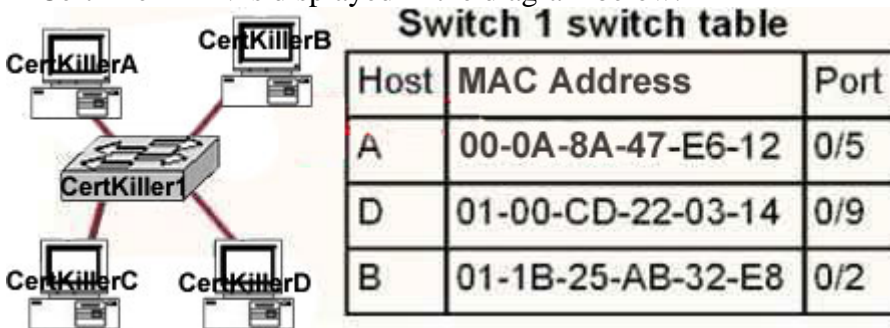
Place here

Answer:

Definitions	Options, place here
Allows the switch to be managed from remote networks.	ip default gateway
Allows access to configuration commands that affect the system on a whole	configure terminal
Allows access to high-level testing commands, such as debug.	enable
Enables the switch management interface.	no shutdown
Activates the interface configuration mode for VLAN 1	interface vlan 1
Sets the switch management IP address.	ip address
Sets the system name.	hostname

QUESTION 119:

A Certkiller LAN is displayed in the diagram below:



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

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

Answer: B

Explanation:

An Ethernet switch appears to use the same logic as a transparent bridge. However, the internal logic of the switch is optimized for performing the basic function of choosing when to forward and when to filter a frame. Just as with a transparent bridge, the basic logic of a LAN switch is as follows:

Step 1 A frame is received.

Step 2 If the destination is a broadcast or multicast, forward on all ports.

Step 3 If the destination is a unicast and the address is not in the address table, forward on all ports.

Step 4 If the destination is a unicast and the address is in the address table, forward the frame out the associated port, unless the MAC address is associated with the incoming port.

QUESTION 120:

The following was seen on a Certkiller switch.

CertKiller1 # show mac-address-table

< non-essential output omitted >

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

Frame received by SwitchA:

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

Certkiller 1 receives the frame with the addressing shown. According to the command output shown in the exhibit, how will Certkiller 1 handle this frame?

- A. It will forward the frame out port Fa0/3 only.
- B. It will drop the frame.
- C. It will flood the frame out all ports except Fa0/3.
- D. It will flood the frame out all ports.
- E. None of the above.

Answer: C

Explanation:

Switches learn the MAC addresses of PCs or workstation they are connected to their switch ports by examining the source address of frames that are received on that port. Machines may have been removed from a port, turned off, or moved to another port on

the same switch or a different switch.

This could cause confusion in frame forwarding

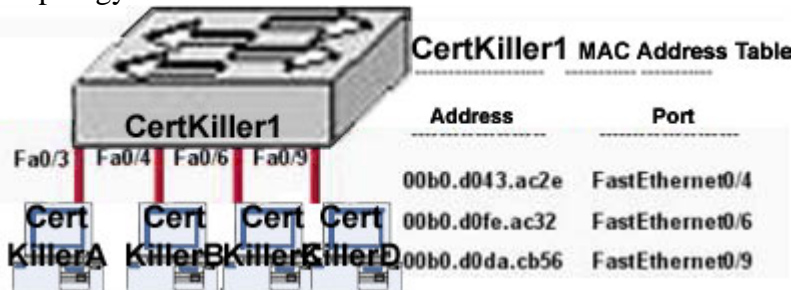
the MAC address entry is automatically discarded or ages out after 300 seconds

if there is not MAC address of destination host in MAC table, switch sends broadcast to all ports except the source to find out the destination host.

In the output there is no MAC address of the given host so the switch will flood to all ports except the source port, which is port fa 0/3.

QUESTION 121:

Refer to the topology and MAC address table shown in the exhibit:



Host Certkiller A sends a data frame to host Certkiller D. What will the Certkiller 1 switch do when it receives the frame from host A?

- A. The Certkiller 1 switch will flood the frame out of all ports except for port Fa0/3.
- B. The Certkiller 1 switch will discard the frame and send an error message back to host Certkiller A.
- C. The Certkiller 1 switch will add the destination address of the frame to the MAC address table and forward the frame to host D.
- D. The Certkiller 1 switch will add the source address and port to the MAC address table and forward the frame to host Certkiller D.
- E. None of the above

Answer: D

Explanation:

When switch receives the data frame from the host not having the MAC address already in the MAC table, it will add the MAC address to the source port on the MAC address table and sends the data frame. If the switch already has the MAC address in its table for the destination, as it is in this case, it will forward the frame directly to the destination port. If it was not already in its MAC table, then the frame would have been flooded out all ports except for the port that it came from.

QUESTION 122:

Switch Certkiller A receives the frame with the addressing shown in the exhibit.

CertKiller1 # show mac-address-table

< non-essential output omitted >

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

Frame received by CertKillerA:

Source MAC	Destination MAC	Source IP	Destination IP
00b0.d056.fe4d	00b0.d0da.cb56	192.168.40.5	192.168.40.6

According to the command output also shown in the exhibit, how will Switch CertKiller A handle this frame?

- A. It will flood the frame out all ports except Fa0/3.
- B. It will forward the frame out port Fa0/3 only.
- C. It will flood the frame out all ports.
- D. It will forward the frame out port Fa0/6 only.
- E. It will drop the frame.
- F. None of the above

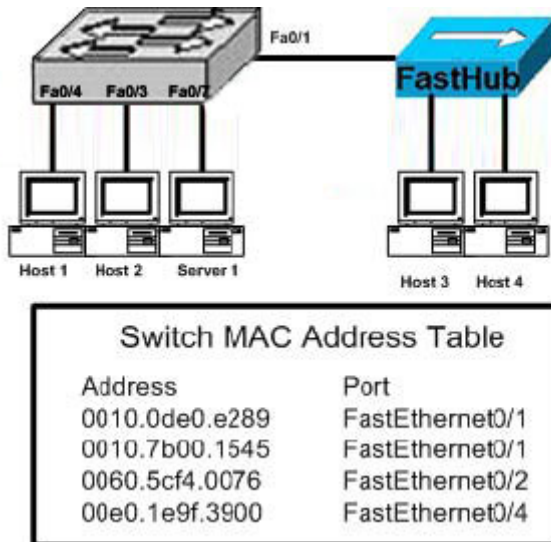
Answer: D

Explanation:

When frame receives the frame, it checks the source address on MAC table if MAC address found in MAC table it tries to forward if not in MAC table adds the Address on MAC table. After checking the source address, it checks the destination address on MAC table, if MAC address found on MAC table it forwards to proper ports otherwise floods on all ports except the source port. In this case, the MAC address shown is already in the table so it will be forwarded directly.

QUESTION 123:

Please study the exhibit shown below carefully.



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

- A. Either Host3 or Host4 has just had the NIC replaced.
- B. Data from Host3 and Host4 has been received by switch port FastEthernet 0/1.
- C. Host3 and Host4 are on two different VLANs.
- D. Data from two of the devices connected to the switch has been sent to Host3.
- E. None of the above

Answer: B

Explanation:

Switches learn the MAC addresses of PCs or workstations that are connected to their switch ports by examining the source address of frames that are received on that port. When more than one device is attached to a switch port, such as via the use of a hub as shown in this example, the switch will retain the MAC address of each of the known devices on that port.

QUESTION 124:

The following output was displayed on a Certkiller device:

CertKiller1# show mac address-table

Dynamic Addresses Count:	3		
Secure Addresses (User-defined) Count:	0		
Static Addresses (User-defined) Count:	0		
System Self Addresses Count:	41		
Total Mac addresses:	50		
Non-static Address Table			
Destination Address	Address Type	VLAN	Destination Port
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- Certkiller 1 needs to send data to host with a MAC address of 00b0.d056.efa4. What will Switch- Certkiller 1 do with this data?

- A. Switch- Certkiller 1 will send an ARP request out all its ports except the port from which the data originated
- B. Switch- Certkiller 1 will drop the data because it does not have an entry for the MAC address
- C. Switch- Certkiller 1 will forward the data to its default gateway
- D. Switch- Certkiller 1 will flood the data out all of its ports except the port from which the data originated
- E. None of the above

Answer: D

Explanation:

Switches work as follows:

Switches learn the MAC addresses of PCs or workstation they are connected to their switch ports by examining the source address of frames that are received on that port. Machines may have been removed from a port, turned off, or moved to another port on the same switch or a different switch.

This could cause confusion in frame forwarding

The MAC address entry is automatically discarded or ages out after 300 seconds if there is not MAC address of destination host in MAC table, switch sends broadcast to all ports except the source to find out the destination host.

In output there is no MAC address of given host so switch floods to all ports except the source port.

QUESTION 125:

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

- A. The system is powered up and operational.
- B. The system is sensing excessive collisions.

- C. The system is forwarding traffic.
- D. The system is not powered up.
- E. The system is malfunctioning.
- F. None of the above

Answer: E

Explanation:

While the switch powers on, it begins POST, a series of tests. POST runs automatically to verify that the switch functions properly. 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.

Note: POST failures are usually fatal. Call Cisco Systems if your switch does not pass POST.

QUESTION 126:

Some of the older Certkiller switches store the entire frame before forwarding it to the destination. What are two effects on network performance of configuring a switch to do this? (Choose two)

- A. Filtering of collision fragments only
- B. Decreased latency
- C. Increased latency
- D. Filtering of all frame errors
- E. Increase in switch operating speed
- F. Propagation of corrupted or damaged frames

Answer: C, D

Explanation:

Switches that store the entire frame before forwarding to the destination are using the store and forward process. This mode copies the entire frame into memory, computes the Cyclic Redundancy Check (CRC) for errors, and then looks up the destination MAC address and forwards the frame. This is slow but offers the best solution for error correction without affecting the entire backbone in retransmission. This gives us the best method for filtering errors from traversing the network, but at a cost of higher latency.

QUESTION 127:

The following output was displayed on a Certkiller device:

```
CertKiller2# 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,
    reliability 256, 255, txload 1/255, rxload 1/255
  Encapsulation APPA, Loopback not set
  Keepalive set (10 sec)
<output omitted>
CertKiller2#
```

While troubleshooting the installation of a new Certkiller 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 transverse this interface per second is 1500
- B. The maximum segment size that can transverse this interface is 1500 bytes
- C. The maximum packet size that can transverse this interface is 1500 bytes
- D. The maximum frame size that can transverse this interface is 1500 bytes
- E. None of the above

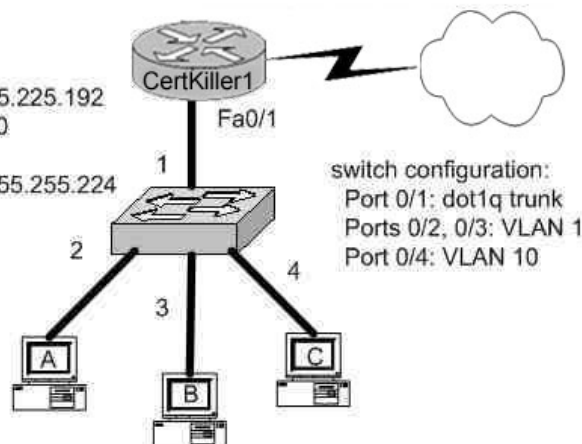
Answer: C

QUESTION 128:

A Certkiller Switch is connected as shown below:

Router configuration:

```
interface fastethernet 0/1.1
 encapsulation dot1q 1
 ip addr 192.1.1.65 255.255.255.192
interface fastethernet 0/1.10
 encapsulation dot1q 10
 ip addr 192.1.1.129 255.255.255.224
```



Which IOS commands should you enter if you wanted to link the router Certkiller 1 with switch port 1? (Select three answer choices)

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

Answer: A, C, F

Explanation:

Before you can begin, you have to get into the interface. Answer choice A is the only command in the selection that puts the IOS into interface mode. Once in the interface you have to set it to trunk mode, so choice C is correct. The switch port needs encapsulation. Answer choice E give you the choice of ISL and choice F gives you dot1q. Since the diagram suggests that the router is using 802.1Q, you must also use dot1q.

Incorrect Answers:

B, D: We wish to set up a trunk over this connection, not set up a single VLAN.
E. Both ends of the trunk must use the same trunk encapsulation type. Since the diagram shows that the router is set to 802.1Q, the switch must be set up similarly.

QUESTION 129:

As a Certkiller 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. CertK Switch(config)# ip route-default 192.168.1.115
- B. CertK Switch(config)# ip default-gateway 192.168.1.115
- C. CertK Switch(config)# ip route 192.168.1.115 0.0.0.0
- D. CertK Switch(config)# ip default-network 192.168.1.115
- E. None of the above

Answer: B

Explanation:

Use the "ip default-gateway" command 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 has connectivity to the remote networks with which a host needs to communicate.

QUESTION 130:

You need to perform some initial configuration tasks on a new Certkiller switch. 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.
- E. None of the above

Answer: B

Explanation:

Switch is a layer 2 device and doesn't use network layer for packet forwarding. The IP address may be used only for administrative purposes such as Telnet access or for network management purposes.

QUESTION 131:

You need to perform some initial configuration tasks on a new Certkiller switch.

What are the possible trunking modes for this switch port? (Choose three)

- A. Transparent
- B. Auto
- C. On
- D. Desirable
- E. Client
- F. Forwarding
- G. Learning

Answer: B, C, D

Explanation:

Here, the trunk link is identified by its physical location as the switch module number and port number. The trunking mode can be set to any of the following:

on- This setting places the port in permanent trunking mode. The corresponding switch port at the other end of the trunk should be similarly configured because negotiation is not

allowed. The encapsulation or identification mode should also be manually configured.

off-This setting places the port in permanent non-trunking mod. the port will attempt to convert the link to non-trunking mode.

desirable-Selection this port will actively attempt to convert the link into trunking mode. If the far end switch port is configured to on, desirable, or auto mode, trunking will be successfully negotiated.

auto-The port will be willing to convert the link into trunking mode. If the far end switch

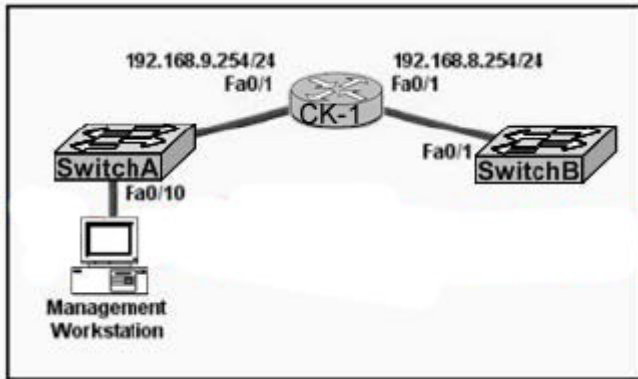
port is configured to on or desirable, trunking will be negotiated. By default, all Fast Ethernet and Gigabit Ethernet links that are capable of negotiating using DTP are configured to this mode. Because of the passive negotiation behavior, the link will never become a trunk, if both ends of the link are left to the auto default.

nonegotiate-The port is placed in permanent trunking mode, but no DTP frames are generated for negotiation. The far end switch port must be manually configured for trunking mode.

QUESTION 132:

Please study the exhibit carefully. A Certkiller technician has installed SwitchB and needs to configure it for remote access from the management workstation connected to SwitchA. Which set of commands is required to accomplish this task?

Exhibit:



- A. SwitchB(config)# interface FastEthernet 0/1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- B. SwitchB(config)# ip default-network 192.168.8.254
SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- C. SwitchB(config)# ip route 192.168.8.254 255.255.255.0
SwitchB(config)# interface FastEthernet 0/1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- D. SwitchB(config)# ip default-gateway 192.168.8.254
SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- E. SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# ip default-gateway 192.168.8.254 255.255.255.0
SwitchB(config-if)# no shutdown
- F. None of the above

Answer: D

Explanation:

IP default-gateway address is a global command that sets the default gateway so that the management interface can be reached from a remote network. This is the correct command used on Cisco switches. In this example, the interface also needs to be enable using the "no shut" command.

Incorrect Answers:

- A: The default gateway of the switch needs to be specified.
- B: The correct command for a switch is "ip default-gateway" not "ip default-network"
- C: This static route is not valid, and does not correctly specify the default route.
- E: "IP default-gateway" is a global command, not an interface command.

QUESTION 133:

An administrator would like to configure a switch over a virtual terminal connection from locations outside of the local LAN. Which of the following are required in order for the switch to be configured from a remote location? (Choose two)

- A. The switch must be reachable through a port connected to its management VLAN.
- B. The switch console port must be connected to the Ethernet LAN.
- C. The switch must be fully configured as an SNMP agent.
- D. The switch must be configured with an IP address, subnet mask, and default gateway.
- E. The switch management VLAN must be created and have a membership of at least one switch port.
- F. The switch must be connected to a router over a VLAN trunk.

Answer: A, D

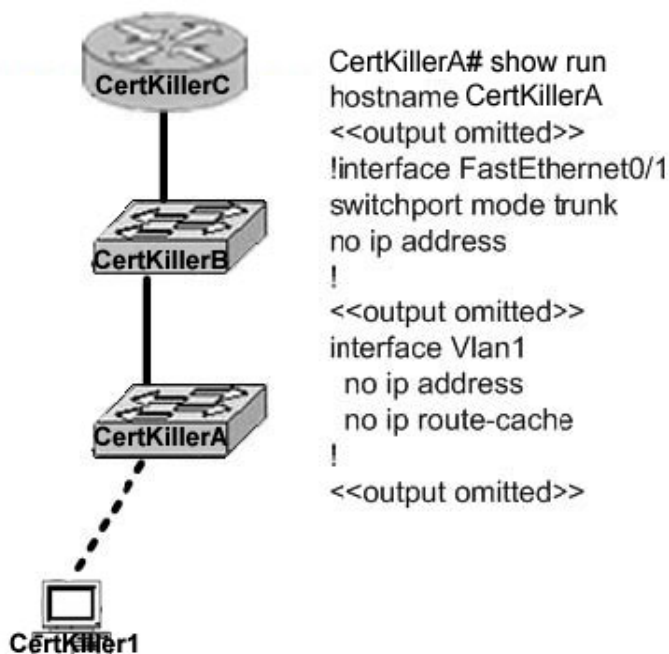
Explanation:

In order to telnet to any Cisco device, the device must be reachable from the remote location. 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

QUESTION 134:

A Certkiller LAN is shown in the diagram below:



In this network, Host Certkiller 1 is consoled into Switch Certkiller A. Telnet connections and pings run from the command prompt on Switch Certkiller A fail. Which of the following could cause this problem? Select all that apply.

- A. Switch Certkiller A is not directly connected to router Certkiller C.
- B. Switch Certkiller A does not have a default gateway assigned.
- C. Switch Certkiller A does not have a CDP entry for Switch Certkiller B or Router Certkiller C.
- D. Switch Certkiller A does not have an IP address.
- E. Port 1 on Switch Certkiller A should be an access port rather than a trunk port.

Answer: B, D

For ping and Telnet the switch should be configured with the IP address and the default gateway. IP is used for administrative purposes, and is needed so the end device will know which IP address to direct the ICMP and telnet reply traffic to.

Incorrect Answers:

- A. This is not required, since switch LANs can span multiple VLANs and switches and hubs can be connected directly together.
- C. CDP is not required in order for ping and telnet traffic to work.
- E. The port type in this case will not cause any kind of connectivity problems, since Trunk ports pass information from all VLANs by default.

QUESTION 135:

The Certkiller network administrator cannot connect to Switch CK1 over a Telnet session, although the hosts attached to Switch CK1 can ping the interface Fa0/0 of the router. Given the information in the graphic and assuming that the router and Switch2 are configured properly, which of the following commands should be issued on Switch CK1 to correct this problem?

Exhibit:

```
interface Vlan1
ip address 192.168.24.2 255.255.255.0
no ip route-cache
!
CertKillerA# show run
ip http server
!
line con 0
line vty 0 4
password cisco
login
!
end
```

- A. Switch CK1 (config)# ip default-gateway 192.168.24.1
 - B. Switch CK1 (config)# interface fa0/1
- Switch CK1 (config-if)# ip address 192.168.24.3 255.255.255.0
- C. Switch CK1 (config)# line con0
- Switch CK1 (config-line)# password cisco

- Switch CK1 (config-line)#login
D. Switch CK1 (config)# interface fa0/1
Switch CK1 (config-if)# duplex full
Switch CK1 (config-if)# speed 100
E. Switch CK1 (config)# interface fa0/1
Switch CK1 (config-if)# switchport mode trunk
F. None of the above

Answer: A

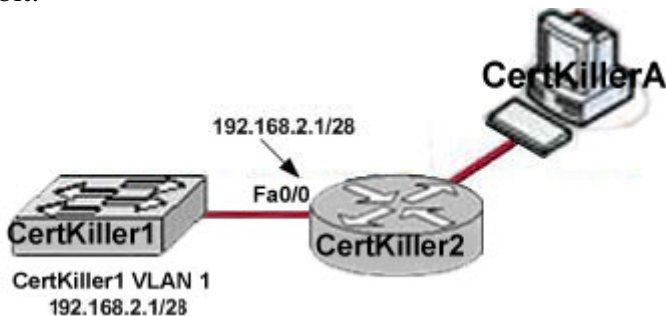
Explanation:

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.

QUESTION 136:

Exhibit:



In the Certkiller network segment shown above, host Certkiller A must be able to telnet to switch Certkiller 1 through router Certkiller 2 for management purposes. What must be configured or done for this connection to be successful?

- A. VLAN 1 on Certkiller 1
- B. A default gateway on Certkiller 1
- C. A cross-over cable connecting Certkiller 1 and Certkiller 2
- D. IP routing on Certkiller 1
- E. None of the above

Answer: B

Explanation:

In order for a switch to send traffic to a destination that is not located directly, as is the case in our example, a default gateway must be configured on the switch. This will enable it to send the traffic to router Certkiller 2 where it can be routed to host Certkiller A.

Incorrect Answers:

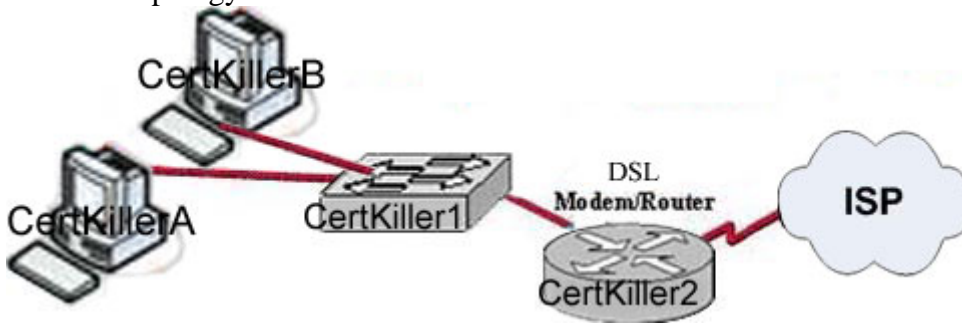
A: This is the default VLAN used and does not need to be configured.

C: A cross over cable is used to connect two switches or two routers together back to back, but a straight through cable should be used when connecting a switch to a routers.

D: IP routing does not need to be enabled, just the default gateway.

QUESTION 137:

Network topology exhibit:



Output exhibit:

```

C:\>arp -a
Interface: 192.168.1.95 --- 0X2
Internet Address      Physical Address      Type
192.168.1.254         00-60-01-2e-14-c6     dynamic
  
```

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

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

- A. Send a unicast ARP packet to the DSL modem/router
- B. Send a Layer 2 broadcast that is received by Host Certkiller B, the switch and the DSL modem/router
- C. Send unicast ICMP packets to the DSL modem/router
- D. Send Layer 3 broadcast packets to which the DSL modem/router responds
- E. None of the above

Answer: C

QUESTION 138:

While troubleshooting a connectivity problem, the Certkiller network administrator notices that a port status LED on a Cisco Catalyst Series switch is alternating between green and amber. Which condition could this indicate?

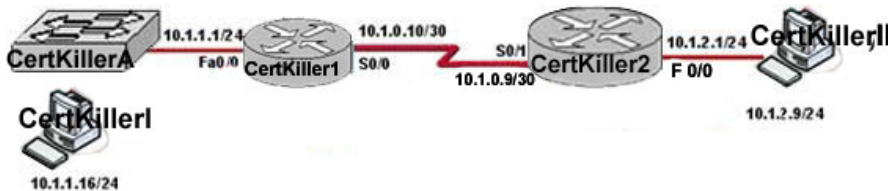
- A. The port is experiencing errors
- B. The port has an active link with normal traffic activity
- C. The port blocked by spanning tree

- D. The port is administratively disabled
- E. None of the above

Answer: A

QUESTION 139:

Two Certkiller hosts are connected as shown below:



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),

In the network shown above, a network administrator attempts to ping Host Certkiller II from Host Certkiller I and receives the results that are shown. What is a possible problem?

- A. TCP/IP is not functioning on Host Certkiller I
- B. The default gateway on Host Certkiller I is incorrect
- C. The link between Router Certkiller 1 and Router Certkiller 2 is down
- D. The link between Host Certkiller I and Switch Certkiller A is down
- E. Interface Fa0/0 on Router Certkiller 1 is down
- F. The link between Switch Certkiller A and Router Certkiller 1 is down
- G. None of the above

Answer: C

QUESTION 140:

Two Certkiller switches are connected together as shown below:



The interface status of Certkiller A is shown below:

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

<output omitted>
```

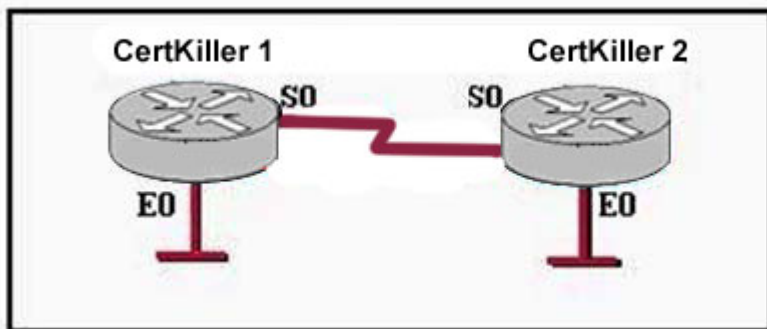
The Certkiller network administrator has verified that a functioning cable connects Switch Certkiller 1 and Switch Certkiller 2 shown above. From the output that is shown above, what two pieces of information below are true? (Choose two)

- A. Using a source MAC address of 0009.11f3.8848, Switch Certkiller 2 is sending frames to Switch Certkiller 1
- B. The status of fa0/2 should be checked on Switch Certkiller 2
- C. The interface is functional at OSI layer 1
- D. There is likely to be an IP address issue on Switch Certkiller 1 Fa0/1
- E. Interface fa0/1 on Switch Certkiller 1 is in a shutdown state
- F. Switch Certkiller B is not powered on

Answer: B, C

QUESTION 141:

Two Certkiller routers are connected as shown below:



After configuring the routers shown in the graphic, the technician decides to test and document the network. Pings from the technician's laptop to all of the interfaces on each router were successful. If a technician initiates a Telnet session to Certkiller 1 and issues the "show arp" command, which of the following items will be among the entries displayed in the output?

- A. The MAC address of the S0 interface on Certkiller 1
- B. The MAC address of the E0 interface on Certkiller 1
- C. The MAC address of the S0 interface on Certkiller 2
- D. The MAC address of the E0 interface on Certkiller 2
- E. None of the above

Answer: B

Explanation:

To display the Address Resolution Protocol (ARP) cache, enter the show arp command in EXEC mode. ARP establishes correspondences between network addresses (an IP address, for example) and Ethernet hardware addresses. A record of each correspondence is kept in a cache for a predetermined amount of time and then discarded. Serial interfaces will not appear, only the local Ethernet interfaces on the router.

QUESTION 142:

You are the administrator of the Certkiller LAN and you have been reviewing error logs of networking devices and notice a large number of errors associated with several MAC addresses. You suspect that some of the errors are being generated by the routers. Which router commands will allow you to find the ip address associated with each MAC address? (Choose two)

- A. show arp
- B. show version
- C. show address
- D. show hosts
- E. show interface
- F. show protocols

Answer: A, E

Explanation:

The "show arp" command Displays the entries in the ARP table, including their layer 2 MAC address and layer 3 IP address.

Example:

The following is the output for the show arp command on Router 1:

CK1 # show arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.3	0	0004.dd0c.ffcb	ARPA	Ethernet01
Internet	10.0.0.1	-	0004.dd0c.ff86	ARPA	Ethernet0

To see the MAC (hardware) address of the router interfaces as well as their IP addresses, use the "show interfaces" command as shown in the example below:

CK1 # show interfaces

Ethernet 0 is up, line protocol is up

Hardware is MCI Ethernet, address is 0000.0c00.750c (bia 0000.0c00.750c)

Internet address is 10.108.28.8, subnet mask is 255.255.255.0

MTU 1500 bytes, BW 10000 Kbit, DLY 100000 usec, rely 255/255, load 1/255

QUESTION 143:

The Certkiller 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. CDP
- C. DHCP
- D. DNS
- E. ICMP

Answer: A, E

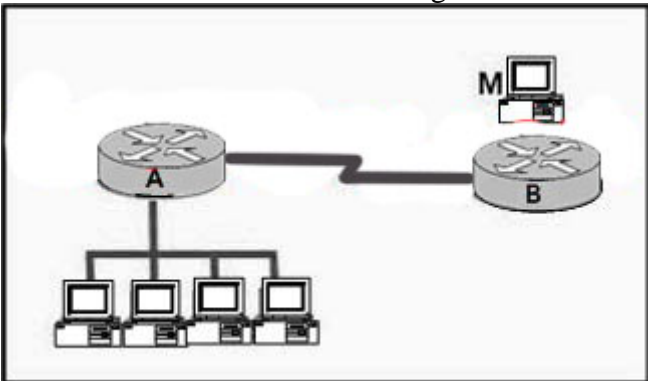
Explanation:

ARP finds the hardware address of a host from a known IP address. Here's how it works: when IP has a datagram to send, it must inform a Network Access protocol, such as Ethernet or Token Ring, of the destination's hardware address on the local network. (It has already been informed by upper-layer protocols of the destination's IP address.) If IP doesn't find the destination host's hardware address in the ARP cache, it uses ARP to find this information.

ICMP works at the Network layer and is used by IP for many different services. ICMP is a management protocol and messaging service provider for IP. Its messages are carried as IP datagrams. RFC 1256 is an annex to ICMP, which affords hosts' extended capability in discovering routes to gateways. Periodically, router advertisements are announced over the network, reporting IP addresses for the router's network interfaces. Hosts listen for these network infomercials to acquire route information. A router solicitation is a request for immediate advertisements and may be sent by a host when it starts up.

QUESTION 144:

Refer to the Certkiller network segment shown below:



In this network, The Certkiller manager on workstation M uses Telnet to log in to the command line interface of router A. The administrator wishes to discover information about active workstations on the LAN attached to router A, including their IP and MAC addresses. Which command will provide this information?

- A. show running-config
- B. show hosts
- C. show ip arp
- D. show cdp neighbors

- E. show interfaces
- F. None of the above

Answer: C

Explanation:

ARP establishes correspondences between network addresses (an IP address, for example) and LAN hardware addresses (Ethernet addresses). A record of each correspondence is kept in a cache for a predetermined amount of time and then discarded.

The following is sample output from the show ip arp command:

CK1 # show ip arp

```
Protocol Address Age(min) Hardware Addr Type Interface
Internet 172.16.233.22 9 0000.0c59.f892 ARPA Ethernet0/0
Internet 172.16.233.21 8 0000.0c07.ac00 ARPA Ethernet0/0
Internet 172.16.233.19 - 0000.0c63.1300 ARPA Ethernet0/0
Internet 172.16.233.30 9 0000.0c36.6965 ARPA Ethernet0/0
```

Reference:

http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/products_command_reference_chapter09186a008017

QUESTION 145:

Exhibit:

```
CertKiller3# 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 Address Table:
Destination Address    AddressType    VLAN    Destination 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>

CertKiller3# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge, S - Strith, H - Host, I - IGMP, - Repeater

Device ID    Local Intrfce    Holdtime    Capability    Platform    Port ID
Switch2      Fas 0/1          157         S             2950-12     Fas 0/1
Switch3      Fas 0/2          143         S             2950-12     Fas 0/5

CertKiller3#
```

You work as a network engineer at Certkiller .com. You study the exhibit carefully. You are told by your boss, Mrs. Certkiller, to study the interfaces of switch Certkiller 3 in particular. What can you tell her? (Select two)

- A. A hub is connected directly to FastEthernet0/5.

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

Answer: E, F

Explanation:

Based on the output shown, there are multiple MAC addresses from different VLANs attached to the FastEthernet 0/1 interface. Only trunks are able to pass information from devices in multiple VLANs.

QUESTION 146:

DRAG DROP

You work as a network administrator at a Certkiller office.

Your boss, Mrs. Certkiller, is interested in the CLI commands. Match the commands with the appropriate functions. Not all options are used.

Commands, select from these

telnet

tracert

ipconfig /all

arp -a

ping 10.0.0.1

ping 127.0.0.1

Definitions

Displays IP to MAC address mappings on a Windows PC

Tests VTY configuration

Displays PC network configuration

Tests TCP/IP protocol stack

Displays the list of routers on a path to a network destination

Commands, place here

Place here

Place here

Place here

Place here

Place here

Answer:

Commands, select from these

ping 10.0.0.1

Definitions

Displays IP to MAC address mappings on a Windows PC

Tests VTY configuration

Displays PC network configuration

Tests TCP/IP protocol stack

Displays the list of routers on a path to a network destination

Commands, place here

arp -a

telnet

ipconfig /all

ping 127.0.0.1

tracert

QUESTION 147:

Why would the Certkiller network administrator configure port security on a new Certkiller 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 protect the IP and MAC address of the switch and associated ports.
- E. To block unauthorized access to the switch management interfaces over common TCP ports.
- F. None of the above

Answer: C

Explanation:

You can use the port security feature to restrict input to an interface by limiting and identifying MAC addresses of the stations allowed to access the port. When you assign secure MAC addresses to a secure port, the port does not forward packets with 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 workstation attached to that port is assured the full bandwidth of the port.

If a port is configured as a secure port and the maximum number of secure MAC addresses is reached, when the MAC address of a station attempting to access the port is different from any of the identified secure MAC addresses, a security violation occurs.

Also, if a station with a secure MAC address configured or learned on one secure port attempts to access another secure port, a violation is flagged.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps628/products_configuration_guide_chapter09186a00800d6

QUESTION 148:

The Certkiller 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
- E. VTP
- F. Blocking mode
- G. None of the above

Answer: B

Explanation:

Understanding How Port Security Works:

You can use port security to block input to an Ethernet, Fast Ethernet, or Gigabit Ethernet port when the MAC address of the station attempting to access the port is different from any of the MAC addresses specified for that port. Alternatively, you can use port security to filter traffic destined to or received from a specific host based on the host MAC address.

When a secure port receives a packet, the source MAC address of the packet is compared to the list of secure source addresses that were manually configured or autoconfigured (learned) on the port. If a MAC address of a device attached to the port differs from the list of secure addresses, the port either shuts down permanently (default mode), shuts down for the time you have specified, or drops incoming packets from the insecure host. The port's behavior depends on how you configure it to respond to a security violation. If a security violation occurs, the Link LED for that port turns orange, and a link-down trap is sent to the Simple Network Management Protocol (SNMP) manager. An SNMP trap is not sent if you configure the port for restrictive violation mode. A trap is sent only if you configure the port to shut down during a security violation.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps700/products_configuration_guide_chapter09186a008007f

QUESTION 149:

The Certkiller network administrator wants to ensure that only a single web server can connect to port Fa0/1 on a catalyst switch. The server is plugged into the switch Fa0/1 port and the network administrator is about to bring the server online. What can the administrator do to ensure that only the MAC address of this server is allowed by switch port Fa0/1? (Choose two)

- A. Configure port Fa0/1 to accept connections only from the static IP address of the server
- B. Configure the MAC address of the server as a static entry associated with port Fa0/1
- C. Employ a proprietary connector type on Fa0/1 that is incompatible with other host connectors
- D. Configure port security on Fa0/1 to reject traffic with a source MAC address other than that of the server
- E. Bind the IP address of the server to its MAC address on the switch to prevent other hosts from spoofing the server IP address

Answer: B, D

QUESTION 150:

While troubleshooting an issue in the Certkiller LAN you notice that a network interface port has collision detection and carrier sensing enabled on a shared twisted pair network. From this statement, what is known about the network interface port?

- A. This is an Ethernet port operating at half duplex
- B. This is an Ethernet port operating at full duplex
- C. This is a port on a network interface card in a PC
- D. This is 10 MB/s switch port
- E. This is a 100 MB/s switch port
- F. None of the above

Answer: A

QUESTION 151:

When a switch port is used as a VLAN trunk, which of the following trunk modes are valid? (Select all that apply.)

- A. Blocking
- B. Auto
- C. Desirable
- D. On
- E. Transparent

F. Learning

Answer: B, C, D

Explanation:

A trunk port can be configured as one of the following 5 different modes: on, off, desirable, auto, or negotiate.

The table below is a summary of the configuration modes.

Mode	Function	DTP Frames Transmitted	Final State (Local Port)
Auto(default)	Makes the port willing to convert the link to a trunk. The port becomes a trunk port if the neighboring port is set to on or desirable mode.	Yes, periodic.	Trunking
On	Puts the port into permanent trunking mode and negotiates to convert the link into a trunk. The port becomes a trunk port even if the neighboring port does not agree to the change.	Yes, periodic.	Trunking, unconditionally .
Nonegotiate	Puts the port into permanent trunking mode but prevents the port from generating DTP frames. You must configure the neighboring port manually as a trunk port to establish a trunk link. This is useful for devices that do not support DTP.	No	Trunking, unconditionally .
Desirable	Makes the port actively attempt to convert the link to a trunk link. The port becomes a trunk port if the neighboring port is set to on, desirable, or auto mode.	Yes, periodic.	It will end up in trunking state only if the remote mode is on, auto, or desirable.
Off	Puts the port into permanent non-trunking mode and negotiates to convert the link into a non-trunk link. The port becomes a non-trunk port even if the neighboring port does not agree to the change.	No in steady state, but will transmit informs to speed up remote end detection after the change from on.	Non-trunking

QUESTION 152:

Which of following VLAN frame encapsulation types are configurable on a Cisco switch? (Select two answer choices.)

- A. VTP
- B. 802.1Q
- C. LLC
- D. ISL
- E. CDP
- F. PAP

Answer: B, D

Explanation:

ISL and 802.1Q are the two trunking encapsulations that can be configured on a Cisco switch. ISL is Cisco proprietary and 802.1Q is the IEEE standard method.

Incorrect Answers:

A. VTP is the VLAN Trunking Protocol, which is used to carry VLAN information across the trunks. The question is asking for the encapsulation options for the trunk, which will be used by VTP.

C. LLC is the Logical Link Control, which is a sub-layer of the data link layer.

E. CDP is the Cisco Discovery Protocol, which is used by Cisco devices to discover information on neighboring Cisco devices.

F. PAP is the Password Authentication Protocol, which is used as an authentication mechanism on PPP links.

QUESTION 153:

Certkiller users 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
- E. Improperly configured static VLAN
- F. None of the above

Answer: A

Explanation:

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 updating to the latest drivers for your NIC, or contact your NIC card vendor for additional support.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps700/products_tech_note09186a00800a7af0.shtml

QUESTION 154:

You are experiencing intermittent issues relating to congestion within the Certkiller network. What are the possible causes of congestion on this LAN? (Choose all that apply)

- A. A broadcast domain with too many hosts.
- B. Full duplex operation.
- C. Broadcast storms.
- D. Multicasting.
- E. Network Segmentation.
- F. Low bandwidth.

Answer: A, C, F

Explanation:

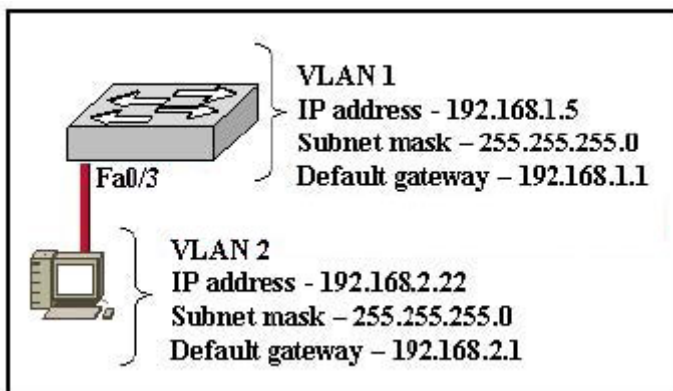
A LAN segment with too many hosts can mean that there are a large number of stations contending for bandwidth. It can also mean an increase in the number of collisions on the segment, which can cause further congestion issues. Broadcast storms are the result of a large number of broadcasts sent over the LAN. Because each station listens to these broadcast messages, congestion can occur quickly. Finally, low bandwidth can simply mean that the LAN can not process all of the LAN traffic that is being sent. This can mean that TCP sessions are retransmitted, which can lead to additional congestion.

Incorrect Answers:

- B. This can alleviate congestion, as data can be sent and received at the same time. In addition, collisions are not possible in a full duplex LAN.
- D. Multicasting can actually alleviate congestion issues, as single streams of information can reach multiple hosts at the same time, instead of using a series of point to point connections.
- E. Segmentation breaks up a large LAN into multiple, smaller LANS. This will mean fewer hosts per broadcast domain.

QUESTION 155:

Exhibit:



Refer to the graphic. A Certkiller host is connected to switch port Fa0/3 with a

crossover cable. The host and switch have been fully configured for IP connectivity as shown. However, the port indicator on switch port Fa0/3 is not on, and the host can not communicate with any other hosts including those connected to VLAN 2 on the same switch. Based on the information given, what is the problem?

- A. Switch port Fa0/3 is not configured as a trunk port.
- B. The cable is the wrong type.
- C. The switch has been assigned an incorrect subnet mask.
- D. Switch port Fa0/3 has been blocked by STP.
- E. The switch and the hosts must be in the same subnet.

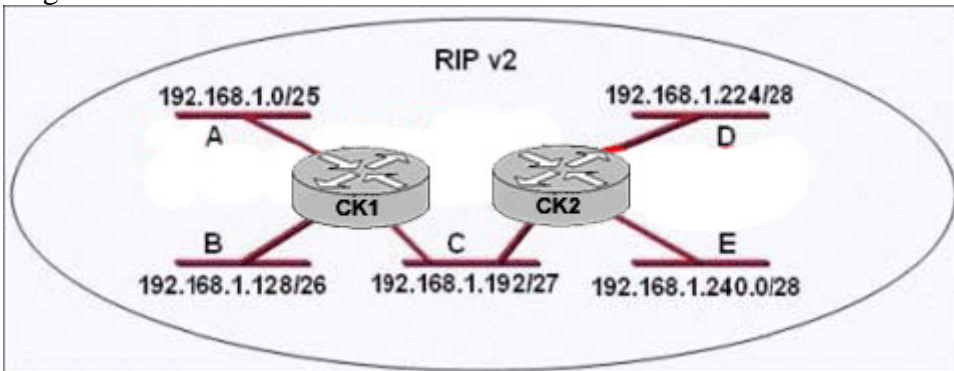
Answer: B

Explanation:

To connect two different devices, we use straight-through cables. In the scenario, a host is connected to a switch with a cross-over cable, so there will be no communication between them. Choice B is correct. Cross over cables should be used between two devices in the same layer of the OSI model, such as when connected together two routers, two switches, etc.

QUESTION 156:

The Certkiller network administrator has designed the IP scheme as shown in the diagram below:



Based on the information shown above, what effect will this addressing scheme have on the network?

- A. IP traffic between subnet A and B will be prevented.
- B. Routing information will not be exchanged.
- C. The addressing scheme will allow all IP traffic between the LANs.
- D. IP traffic between all the LANs will be prevented.
- E. None of the above

Answer: C

Explanation:

This scheme will allow for communication between all networks, and uses all IP addresses in the 192.168.1.0/24 IP network with no overlap. Note that RIPv2 is being used instead of RIPv1. RIPv2 carries subnet mask information allowing for VLSM networks like the one shown here.

QUESTION 157:

The network with the IP address 172.31.0.0/19 is to be configured on the Certkiller router with the partial configuration shown in the graphic. Which of the following statements describes the number of available subnets and hosts that will result from this configuration?

Exhibit:

```
Current configuration:
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname R1
!
ip subnet-zero
!
!
ip classless
ip route 0.0.0.0 0.0.0.0 Serial0/0
no ip http server
!
<output omitted>
```

- A. There are 7 usable subnets, with 2046 usable host addresses.
- B. There are 8 usable subnets, with 30 usable host addresses.
- C. There are 7 usable subnets, with 30 usable host addresses.
- D. There are 8 usable subnets, with 2046 usable host addresses.
- E. There are 7 usable subnets, with 8190 usable host addresses.
- F. There are 8 usable subnets, with 8190 usable host addresses.

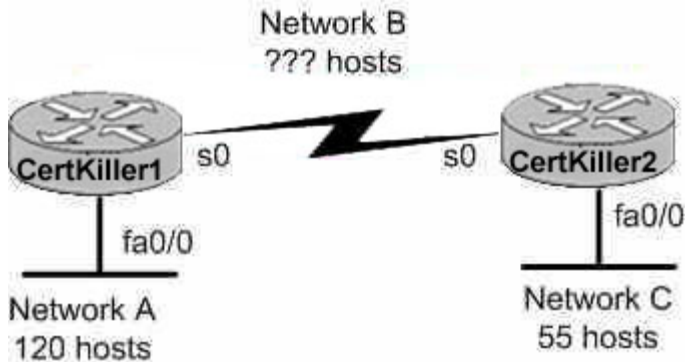
Answer: F

Explanation:

The 172.31.0.0/19 will have 3 bits in the network portion, and 13 bits in the host portion. This will allow for $2^3 = 8$ networks and $2^{13} = 8192$ hosts available for each network (8190 usable). Since the IP subnet-zero command is used the first network is available, making choice F correct.

QUESTION 158:

A portion of the Certkiller network is shown in the diagram below:



Consider the 192.1.1.0/24 network in this exhibit. This network uses RIP v2. Which combination of subnetwork assignments will satisfy the requirements for networks A, B, and C of this design? (Select three)

- A. Network A = 192.1.1.128/25
- B. Network A = 192.1.1.0/25
- C. Network B = 192.1.1.252/30
- D. Network B = 192.1.1.4/30
- E. Network C = 192.1.1.64/26
- F. Network C = 192.1.1.224/27

Answer: A, D, E

Explanation:

To properly answer this question, it is best to start from the end, which is network C. Since network C requires at least 55 host addresses, a /26 network must be used. A network mask of /26 will provide for 62 usable IP addresses while a /27 network will only provide for 30 so we must choose E. With choice E taken, hosts within the range of 192.1.1.65-192.1.1.126 will be used.

For network A, both choices A and B are using the correct subnet mask, but we are only limited to choice A since many of the hosts in choice B are already being used in network C. Finally, for network B we are left with choice D since hosts in choice C are already being used by network A.

QUESTION 159:

If an ethernet port on router CK1 was assigned an IP address of 172.16.112.1/20, what is the maximum number of hosts allowed on this LAN subnet?

- A. 2046
- B. 1024
- C. 4096
- D. 8190
- E. 4094
- F. None of the above

Answer: E

Explanation:

Since a /20 equates to 12 bits used for the subnet mask, 4094 hosts can be uniquely addressed.

Number of Bits in the Host or Subnet Field	Maximum number of Hosts or Subnets ($2^n - 2$)
1	0
2	2
3	6
4	14
5	30
6	62
7	126
8	254
9	510
10	1022
11	2046
12	4094
13	8190
14	16,382

QUESTION 160:

From where does a small network typically get its IP network addresses or IP block?

- A. From the Internet Domain Name Registry (IDNR)
- B. From the Internet Assigned Numbers Authority (IANA)

- C. From the Internet Service Provider (ISP)
- D. From the Internet Architecture Board (IAB)
- E. None of the above

Answer: C

Explanation:

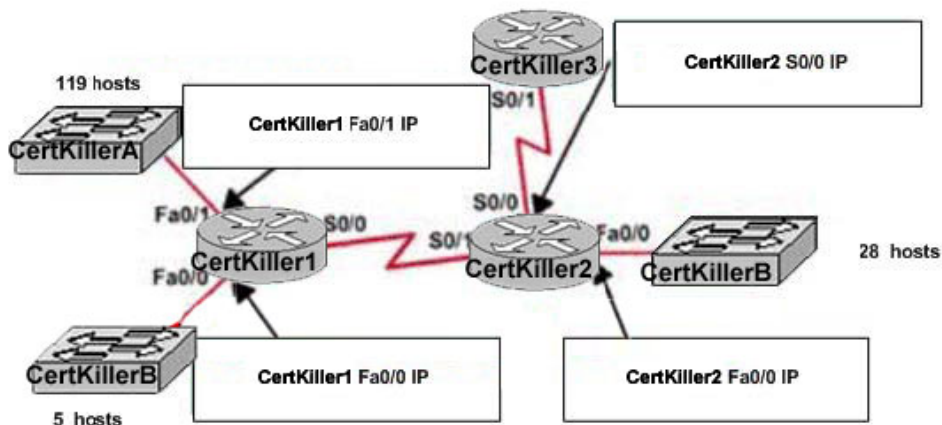
Normally a small network will be assigned a number of IP addresses from their ISP, or in some cases, such as DSL and cable modem, a single dynamic IP address will be assigned by the ISP. Only very large networks requiring a large IP block (normally more than a /20) will register with IANA, RIPE, or ARIN (American Registry of Internet Numbers) to obtain their IP addresses.

QUESTION 161:

DRAG DROP

Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.151.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

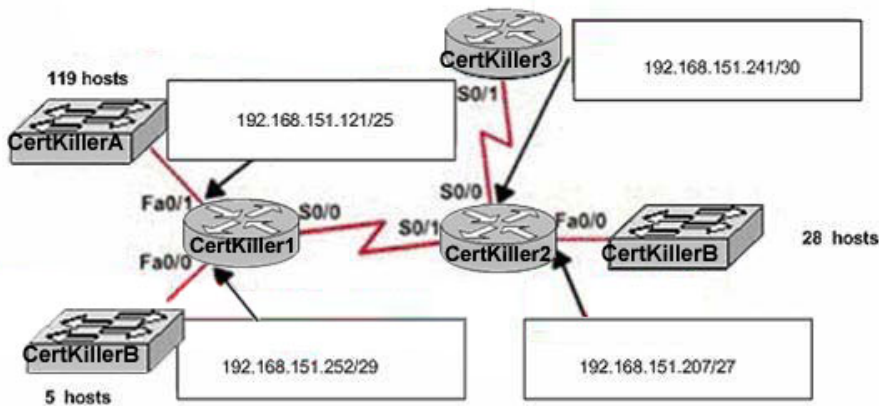
The administrator plans to configure "ip subnet-zero" and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth. Being mindful of these goals, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Move the mouse over a router to view its configuration (** This information is missing**). Not all of the host address choices will be used.



Select from these

- 192.163.151.240/30
- 192.168.151.252/29
- 192.168.151.239/28
- 192.168.151.241/30
- 192.168.151.207/27
- 192.168.151.121/25

Answer:



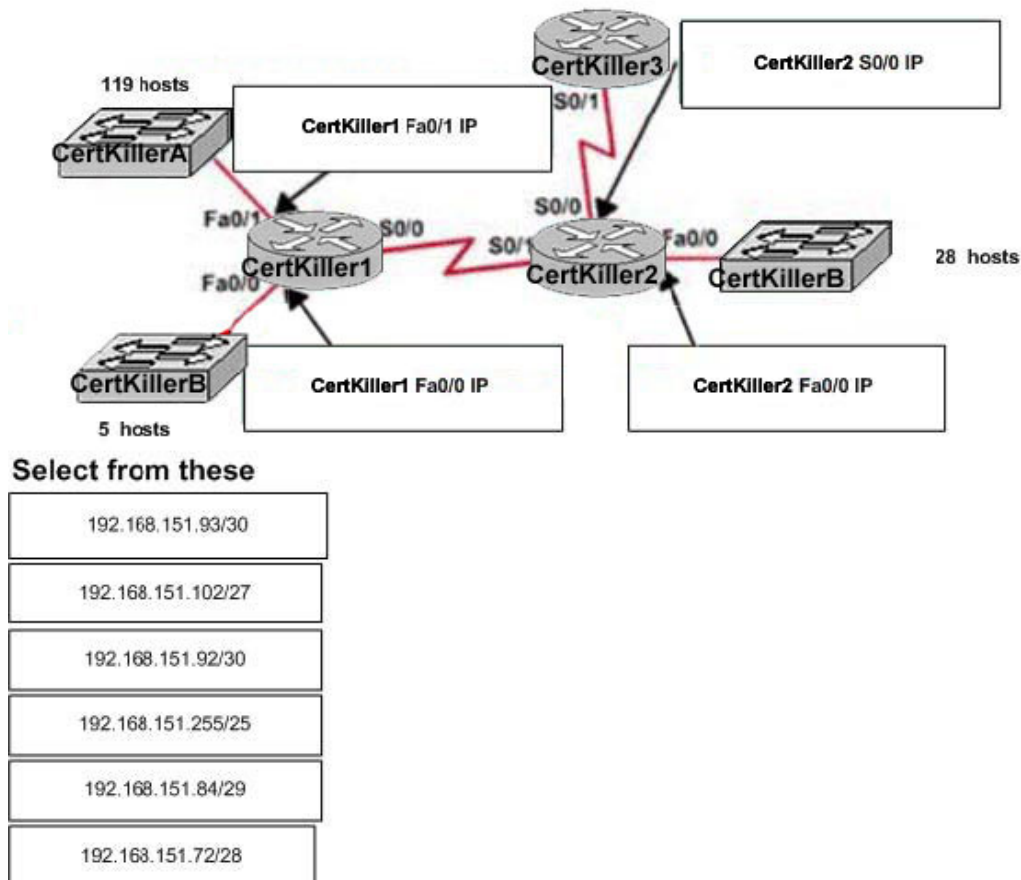
QUESTION 162:

DRAG DROP

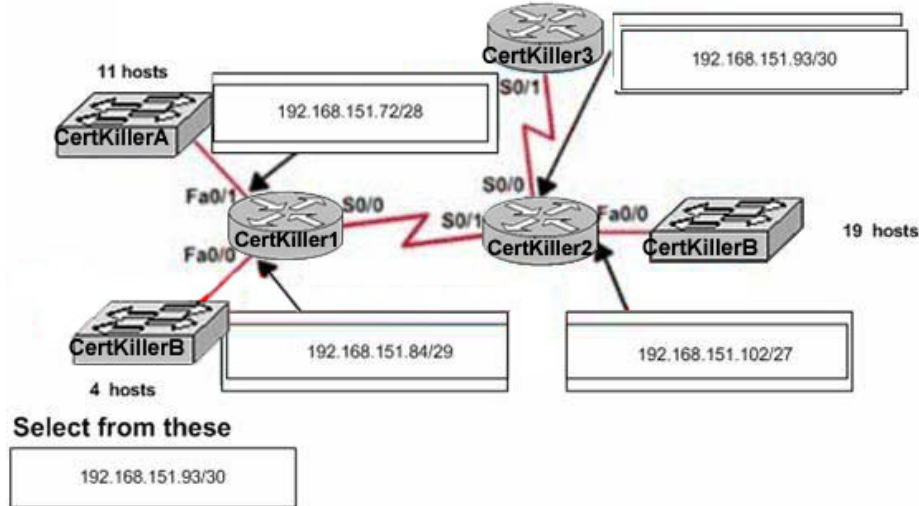
Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.151.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to 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 conserve unused addresses for future growth. Being mindful of these goals, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Move the mouse over a router to view its configuration (** This information is missing**). Not all of the host addresses on the left will be used.



Answer:



QUESTION 163:

If a host on a network has the address 172.16.45.14/30, what is the address of the subnetwork to which this host belongs?

- A. 172.16.45.0
- B. 172.16.45.4
- C. 172.16.45.8
- D. 172.16.45.12
- E. 172.16.45.18

Answer: D

Explanation:

The last octet in binary form is 00001110. Only 6 bits of this octet belong to the subnet mask. Hence, the subnetwork is 172.16.45.12.

QUESTION 164:

Which two of the addresses below are available for host addresses on the Certkiller subnet 192.168.15.19/28? (Select two answer choices)

- A. 192.168.15.17
- B. 192.168.15.14
- C. 192.168.15.29
- D. 192.168.15.16
- E. 192.168.15.31
- F. None of the above

Answer: A, C

Explanation:

The network uses a 28bit subnet (255.255.255.240). This means that 4 bits are used for the networks and 4 bits for the hosts. This allows for 14 networks and 14 hosts ($2^n - 2$). The last bit used to make 240 is the 4th bit (16) therefore the first network will be 192.168.15.16. The network will have 16 addresses (but remember that the first address is the network address and the last address is the broadcast address). In other words, the networks will be in increments of 16 beginning at 192.168.15.16/28. The IP address we are given is 192.168.15.19. Therefore the other host addresses must also be on this network. Valid IP addresses for hosts on this network are: 192.168.15.17-192.168.15.30.

Incorrect Answers:

B. This is not a valid address for this particular 28 bit subnet mask. The first network address should be 192.168.15.16.

D. This is the network address.

E. This is the broadcast address for this particular subnet.

QUESTION 165:

Certkiller has a Class C network and you need ten subnets. You wish to have as many addresses available for hosts as possible. Which one of the following subnet masks should you use?

- A. 255.255.255.192
- B. 255.255.255.224
- C. 255.255.255.240
- D. 255.255.255.248
- E. None of the above

Answer: C

Explanation:

Using the $2^n - 2$ formula, we will need to use 4 bits for subnetting, as this will provide for $2^4 - 2 = 14$ subnets. The subnet mask for 4 bits is then 255.255.255.240.

Incorrect Answers:

A. This will give us only 2 bits for the network mask, which will provide only 2 networks.

B. This will give us 3 bits for the network mask, which will provide for only 6 networks.

D. This will use 5 bits for the network mask, providing 30 networks. However, it will provide for only for 6 host addresses in each network, so C is a better choice.

QUESTION 166:

You have a single Class C IP address and a point-to-point serial link that you want to implement VLSM on. Which subnet mask is the most efficient for this point to point link?

- A. 255.255.255.0
- B. 255.255.255.240
- C. 255.255.255.248
- D. 255.255.255.252
- E. 255.255.255.254
- F. None of the above

Answer: D

Explanation:

For a single point to point link, only 2 IP addresses are required, one for the serial interface of the router at each end. Therefore, the 255.255.255.252 subnet mask is often used for these types of links, as no IP addresses are wasted.

QUESTION 167:

You have a network that supports VLSM and you need to reduce IP address waste in your point to point WAN links. Which of the masks below would you use?

- A. /38
- B. /30
- C. /27
- D. /23
- E. /18
- F. /32

Answer: B

Explanation:

For a single point to point link, only 2 IP addresses are required, one for the serial interface of the router at each end. Therefore, the 255.255.255.252 subnet mask is often used for these types of links because no IP addresses are wasted. The subnet mask 255.255.255.252 is a /30, so answer B is correct.

Incorrect Answers:

- A. The largest mask that can be used is the single IP host mask, which is /32. It is not possible to use a /38 mask, unless of course IPv6 is being used.
- C, D, E. These masks will provide for a larger number of host addresses, and since only 2 IP addresses are needed for a point to point link, these extra addresses are wasted.
- F: No available host addresses with a /32 mask

QUESTION 168:

What is the maximum number of IP addresses that can be assigned to hosts on a Certkiller subnet that uses the 255.255.255.224 subnet mask?

- A. 14
- B. 15
- C. 16
- D. 30
- E. 31
- F. 32

Answer: D

Explanation:

The subnet mask 255.255.255.224 means that there are 27 network bits. The remaining 5 bits are the host bits. The maximum possible combinations with 5 bits are $2^5 = 32$. As all zero's and all one's hosts are not allowed so, maximum number of valid hosts with the mask 255.255.255.224 are $2^5 - 2 = 32 - 2 = 30$ Hosts

QUESTION 169:

In a Certkiller network that supports VLSM, which network mask should be used for point-to-point WAN links in order to reduce waste of IP addresses?

- A. /24
- B. /30
- C. /27
- D. /26
- E. /32
- F. None of the above

Answer: B

Explanation:

A 30-bit mask is used to create subnets with two valid host addresses. This is the exact number needed for a point-to-point connection.

QUESTION 170:

The network 172.25.0.0 has been divided into eight equal subnets. Which of the following IP addresses can be assigned to hosts in the third subnet if the ip subnet-zero command is configured 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
- E. 172.25.96.17
- F. 172.25.100.16

Answer: A, C, D

Explanation:

If we divide the address 172.25.0.0 in 8 subnets, the resulting subnets will be

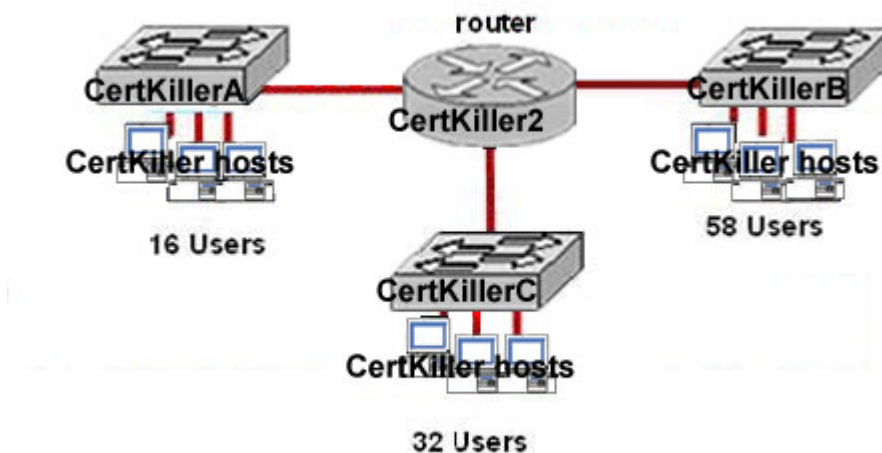
1. 172.25.0.0
2. 172.25.32.0
3. 172.25.64.0 This is the third subnet
4. 172.25.96.0
5. 172.25.128.0
6. 172.25.160.0
7. 172.25.192.0
8. 172.25.224.0

Addresses that fall in the 3rd subnet will be from 172.25.64.0 ---- 172.25.95.255

Choices A, C and D lie in this network range.

QUESTION 171:

Part of the Certkiller network is shown below:



In the Certkiller network shown above the IP address space of 128.107.7.0/24 has been allocated for all devices. All devices must use the same subnet mask and all subnets are usable. Which subnet mask is required to apply the allocated address space to the configuration that is shown?

- A. 255.255.255.192
- B. 255.255.255.128
- C. 255.255.255.0
- D. 255.255.255.224
- E. 255.255.254.0
- F. None of the above

Answer: A

Explanation:

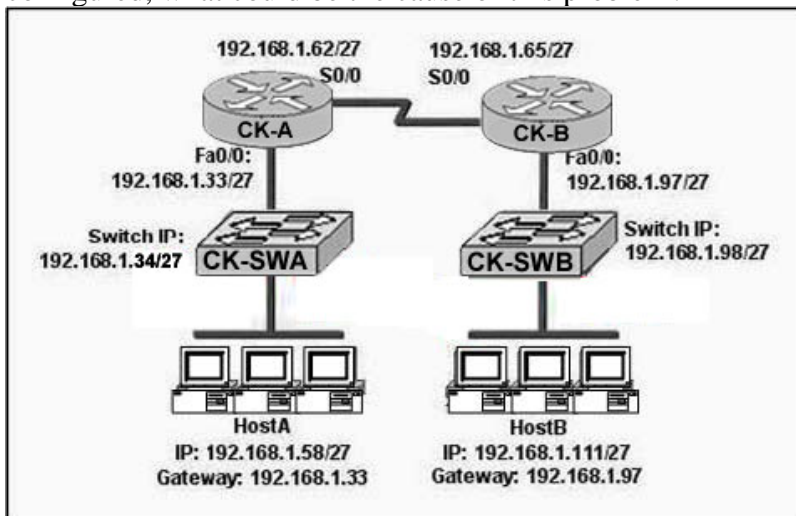
In this example the requirement is that the company needs 3 subnets and at least 58 hosts per subnet. Referring to the following formula we see that 6 bits of subnet masking is needed.

Number of Bits in the Host or Subnet Field	Maximum number of Hosts or Subnets ($2^n - 2$)
1	0
2	2
3	6
4	14
5	30
6	62
7	126
8	254

With 6 bits used for the subnet portion, we get will get 4 different subnets with 62 usable IP addresses in each. The subnet mask for this /28 network translates to 255.255.255.192.

QUESTION 172:

In the network below, HostA cannot ping HostB. Assuming routing is properly configured, what could be the cause of this problem?



A. The Fa0/0 interface on CK-B is using a broadcast address.

- B. The serial interfaces of the routers are not on the same subnet.
- C. The address of SwitchA is a subnet address.
- D. The Fa0/0 interface on router CK-A is on a subnet that can't be used.
- E. HostA is not on the same subnet as its default gateway.
- F. None of the above

Answer: B

Explanation:

A subnet mask of /27 (255.255.255.224) will have 3 bits used for the network portion and 5 bits for the host portion. This will create $2^3 = 8$ networks with $2^5 = 32$ hosts per network. From this we know that the number of subnets will be a multiple of 32, making the subnets:

1. 192.168.1.0
2. 192.168.1.32
3. 192.168.1.64
4. 192.168.1.96
5. 192.168.1.128
6. 192.168.1.160
7. 192.168.1.192
8. 192.168.1.224

From this, we can see that the serial interface of router CK-A lies within the second network shown above while the serial interface of CK-B lies within the third. For directly connected routers they should be in the same IP subnet.

QUESTION 173:

What is the subnet address of the host with an IP address of 172.16.159.159/22?

- A. 172.16.128.0
- B. 172.16.156.0
- C. 172.16.159.128
- D. 172.16.159.0
- E. 172.16.192.0
- F. 172.16.0.0
- G. None of the above

Answer: B

Explanation:

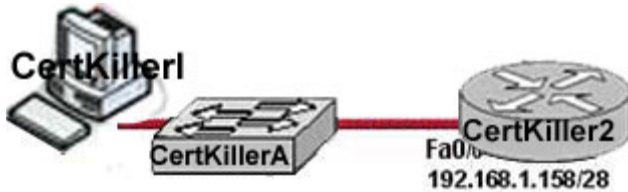
In this question there are a total of 6 bits borrowed from the host portion with the subnet mask 255.255.252.0. This will leave us 64 networks with 1022 and the IP subnets for each will be a multiple of 4. Some of the networks are as follows:

- /22 172.16.148.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.152.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.156.0 - 255.255.252.0 - 1022 hosts

/22 172.16.160.0 - 255.255.252.0 - 1022 hosts
/22 172.16.164.0 - 255.255.252.0 - 1022 hosts
/22 172.16.168.0 - 255.255.252.0 - 1022 hosts
/22 172.16.172.0 - 255.255.252.0 - 1022 hosts
/22 172.16.176.0 - 255.255.252.0 - 1022 hosts

QUESTION 174:

A Certkiller PC is connected to the LAN as shown below:



Based on the information given above, what is the IP address that should be assigned to workstation A?

- A. 192.168.1.145/28
- B. 192.168.1.143/28
- C. 192.168.1.159/28
- D. 192.168.1.144/24
- E. 192.168.1.160/27
- F. None of the above

Answer: A

QUESTION 175:

You are a systems administrator and you are about to assign static IP addresses to various servers on your network. For the network 192.168.20.24/29 the router is assigned to the first usable host address, while the last usable host address goes to your Sales server. Which one of the following commands would you enter into the IP properties box of the sales server?

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

E. IP address: 192.168.20.30
Subnet Mask 255.255.255.240
Default Gateway: 192.168.20.25

Answer: C

Explanation

A subnet mask uses 29 bits. This means that it uses 5 bits in the 4th octet. This equates to 255.255.255.248. This network has 3 bits for hosts. Using the $2^n - 2$ formula ($2^3 - 2$) in this case), we are left with 6 ($2^3 - 2 = 6$) host addresses. 192.168.20.24 is the network address. Therefore the next address (192.168.20.25) would be the first host address. This address must be assigned to the router, which serves as the gateway for the network. The last available host address would be 192.168.20.30 ($192.168.20.24 + 6$). This address is assigned to the server. The broadcast address is 192.168.20.31.

QUESTION 176:

You've been assigned a single Class C address. From this, you need 8 subnets, and your subnet mask is 255.255.255.224. Which one of the following configuration commands would you have to use before you begin?

- A. Router(config)# ip classless
- B. Router(config)# ip subnet-zero
- C. Router(config)# ip version 6
- D. Router(config)# no ip classful
- E. Router(config)# ip unnumbered
- F. Router(config)# ip all-nets

Answer: B

Explanation: To get 8 subnets from a class C address, and a mask of 255.255.255.224 use the reserved subnet space. To do this, you need the command 'ip subnet-zero.' This will allow the router to use the very first subnet, which is normally reserved and unused as the network address. Prior to Cisco IOS(r) Software Release 12.0, Cisco routers, by default, did not allow an IP address belonging to subnet zero to be configured on an interface. However, if a network engineer working with a Cisco IOS software release older than 12.0 finds it safe to use subnet zero, the ip subnet-zero command in the global configuration mode can be used to overcome this restriction. As of Cisco IOS Software Release 12.0, Cisco routers now have ip subnet-zero enabled by default, but if the network engineer feels that it is unsafe to use subnet zero, the no ip subnet-zero command can be used to restrict the use of subnet zero addresses.

In versions prior to Cisco IOS Software Release 8.3, the service subnet-zero command was used.

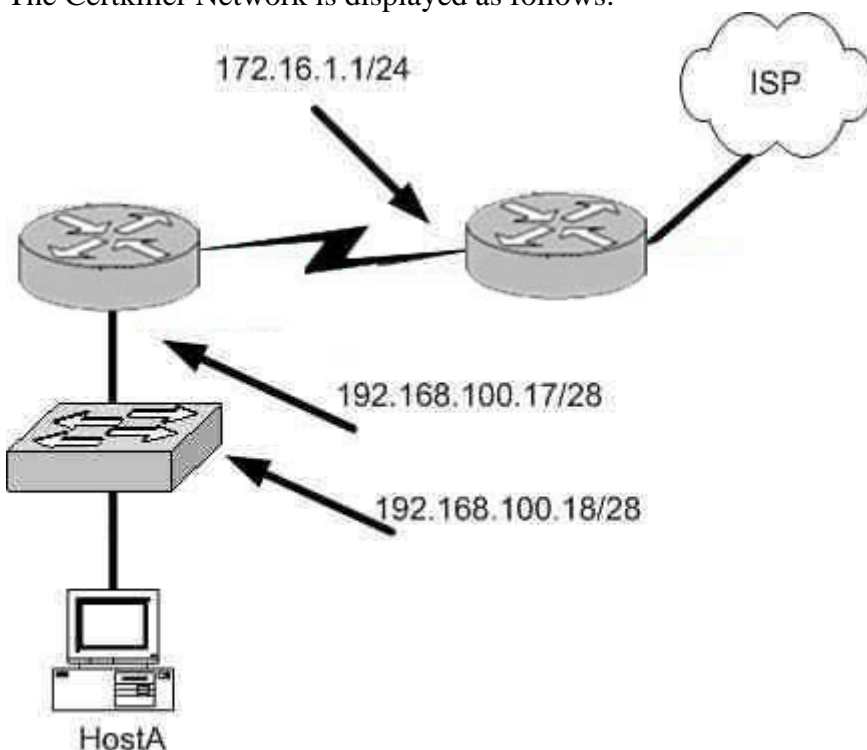
It should be noted that even though it was discouraged, the entire address space including subnet zero and the all-ones subnet have always been usable. The use of the all-ones

subnet was explicitly allowed and the use of subnet zero is explicitly allowed since Cisco IOS Software Release 12.0. Even prior to Cisco IOS Software Release 12.0, subnet zero could be used by entering the ip subnet-zero global configuration command.

On the issue of using subnet zero and the all-ones subnet, RFC 1878 states, "This practice (of excluding all-zeros and all-ones subnets) is obsolete. Modern software will be able to utilize all definable networks." Today, the use of subnet zero and the all-ones subnet is generally accepted and most vendors support their use. However, on certain networks, particularly the ones using legacy software, the use of subnet zero and the all-ones subnet can lead to problems.

QUESTION 177:

The Certkiller Network is displayed as follows:



What is a valid possible IP address configuration for Host A?

- A. IP 192.168.100.31 255.255.255.240 default-gateway 192.168.100.18
- B. IP 192.168.100.30 255.255.255.240 default-gateway 172.16.1.1
- C. IP 192.168.100.20 255.255.255.240 default-gateway 192.168.100.17
- D. IP 192.168.100.21 255.255.255.248 default-gateway 192.168.100.17
- E. IP 192.168.100.19 255.255.255.248 default-gateway 172.16.1.1

Answer: C

Explanation:

The network mask for a /28 is 255.255.255.240. The default gateway is always the IP address of the router on the local subnet, and the valid IP range for this network is

192.168.100.17 - 192.168.100.30. Choice C is the only one that meets all of these.

Incorrect Answers:

A. The IP address 192.168.100.31 is the broadcast address. It cannot be used for the host.

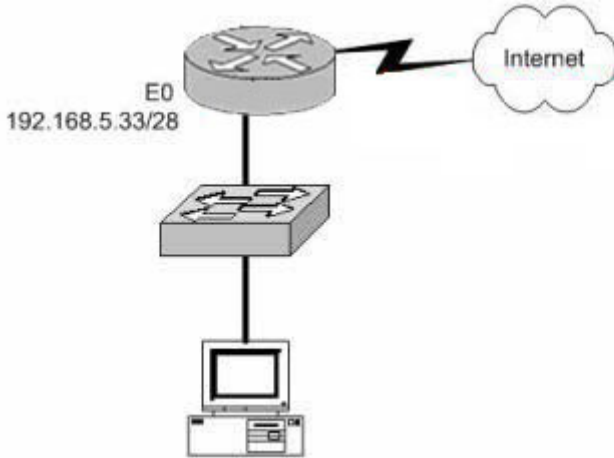
B. The default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.

D. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248.

E. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248. Also, the default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.

QUESTION 178:

A simple Certkiller network is shown below:



Based on the information above, which of the following would be a valid IP address of the PC?

- A. 192.168.5.55
- B. 192.168.5.47
- C. 192.168.5.40
- D. 192.168.5.32
- E. 192.168.5.14

Answer: C

Explanation:

The network uses a 28bit subnet (255.255.255.240). This means that 4 bits are used for the networks and 4 bits for the hosts. This allows for 14 networks and 14 hosts ($2^n - 2$). The last bit used to make 240 is the 4th bit (16) therefore the first network will be 192.168.5.16. The network will have 16 addresses (but remember that the first address is the network address and the last address is the broadcast address). In other words, the networks will be in increments of 16 beginning at 192.168.5.16/28. The router interface E0 has the IP address 192.168.5.33. Therefore it is on the 2nd network (192.169.5.32/28).

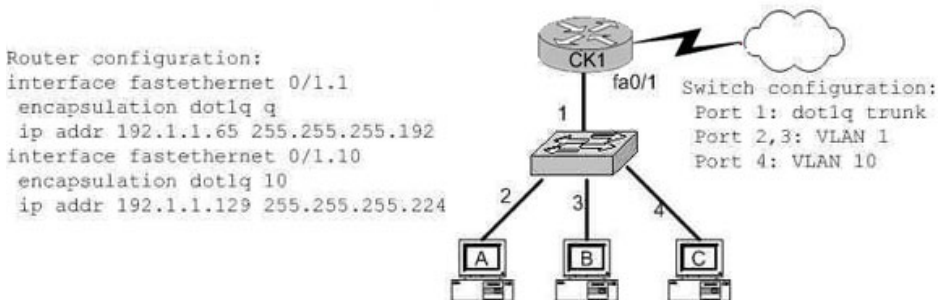
The host must also be on this network. Valid IP addresses for hosts on this network are: 192.168.5.33-192.168.5.46.

Incorrect Answers:

- A. 192.168.5.55 is on network 192.168.5.48. It is not on the same network as the router interface.
- B. This is the broadcast address.
- D. This is the network address.
- E. This is not a valid address for a 28 bit subnet mask. The first network address should be 192.168.5.16.

QUESTION 179:

An 802.1Q trunk is configured between a Certkiller switch and router CK1 as shown below:



Which of the following are valid configuration values for the host shown in the graphic? (Choose three)

- A. host A IP address: 192.1.1.65
- B. host A subnet mask: 255.255.255.224
- C. host B IP address: 192.1.1.125
- D. host B default gateway: 192.1.1.65
- E. host C IP address: 192.1.1.166
- F. host C subnet mask: 255.255.255.224

Answer: C, D, F

Explanation:

Host B resides on port 3, which is configured for VLAN 1. As shown in the configuration, the default gateway for VLAN is the IP address associated with the Fast Ethernet 0/1.1 sub-interface. Valid IP hosts for the VLAN 1 subnet is 192.1.1.65-192.1.1.126.

Incorrect Answers:

- A. The 192.1.1.65 IP address is already assigned to the router.
- B. Host A is in VLAN 1, so the subnet mask should be 255.255.255.192
- E. Host C belongs to VLAN 10, and this IP address is not in the 192.1.1.128/27 subnet.

QUESTION 180:

Which of the following addresses can be assigned to a host when using a subnet mask of 255.255.254.0? (Select three)

- A. 113.10.4.0
- B. 186.54.3.0
- C. 175.33.3.255
- D. 26.35.2.255
- E. 152.135.7.0
- F. 17.35.36.0

Answer: B, D, E

Explanation:

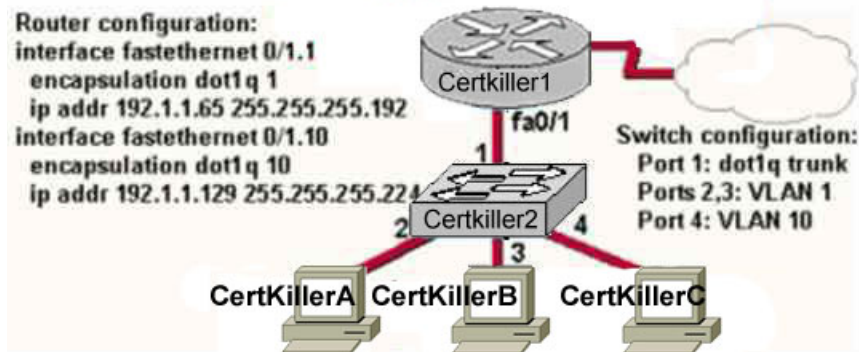
These are all valid host IP addresses within the /23 subnet.

Incorrect Answers:

- A. This is the network address for the 113.10.4.0/23 subnet.
- C. This is the broadcast address for the 175.33.2.0/23 subnet.
- F. This is the network address for the 17.35.36.0/23 subnet.

QUESTION 181:

The Certkiller network topology is depicted below:



Based on the diagram above, which of the following are valid configuration values for the hosts? Select three

- A. Host Certkiller A IP address: 192.1.1.85
- B. Host Certkiller A subnet mask: 255.255.255.224
- C. Host Certkiller B IP address: 192.1.1.125
- D. Host Certkiller B default gateway: 192.1.1.85
- E. Host Certkiller C IP address: 192.1.1.166
- F. Host Certkiller C subnet mask: 255.255.255.224

Answer: A, C, F

Explanation:

The answers A and C are right, because the ip address 192.1.1.85 and 192.1.1.125 are in the same subnet

192.1.1.64 as the ip address of the subinterface
0/1.1.

Incorrect Answers:

E. This answer is wrong because the network address of the IP address 192.1.1.166 is 192.1.1.160.

QUESTION 182:

Which command on router Certkiller A will assign the last usable IP address from the 192.168.32.128/28 subnetwork to a router interface?

- A. Certkiller A(config-if)# ip address 192.168.32.142 255.255.255.240
- B. Certkiller A(config-if)# ip address 192.168.32.143 255.255.255.240
- C. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
- D. Certkiller A(config-if)# ip address 192.168.32.145 255.255.255.240
- E. Certkiller A(config-if)# ip address 192.168.32.144 255.255.255.240
- F. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
- G. None of the above

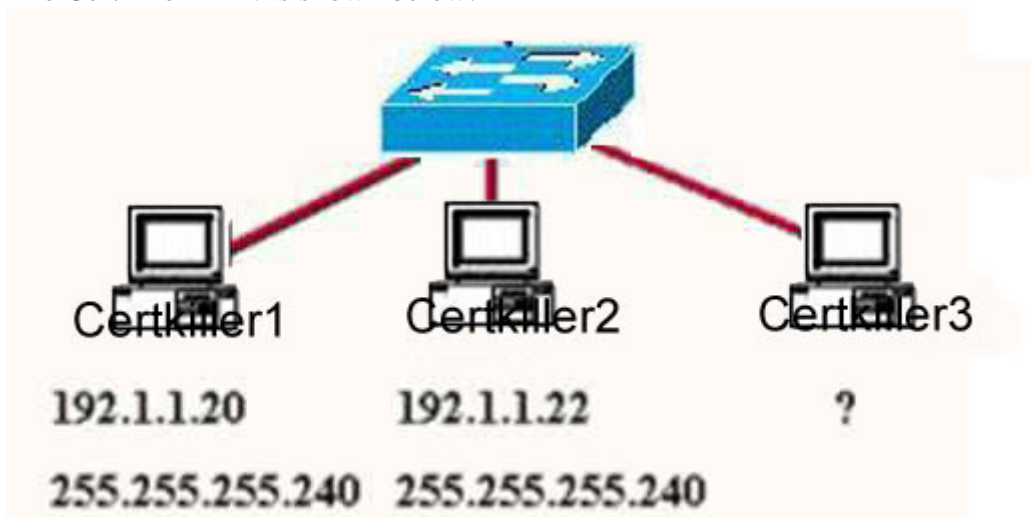
Answer: A

Explanation:

The last usable IP address would be $128 + (16-2) = 142$ because only the last 4 bits of the last octet are used for host addressing.

QUESTION 183:

The Certkiller LAN is shown below:



A Certkiller .com network administrator is adding host Certkiller 3 to the network shown in the exhibit. Which IP address can be assigned this host on this network?

- A. 192.1.1.14

- B. 192.1.1.18
- C. 192.1.1.20
- D. 192.1.1.30
- E. 192.1.1.31
- F. 192.1.1.36

Answer: B, D

Explanation:

Subnet Mask of 255.255.255.240 means 4-bits of subnetting. When we do 4-bits of subnetting, we have a total of 16 subnets having 16 hosts each. Subnets will be

192.1.1.0 ----- 191.1.1.15 (0-15)

192.1.1.16 ---- 191.1.1.31 (16-31)

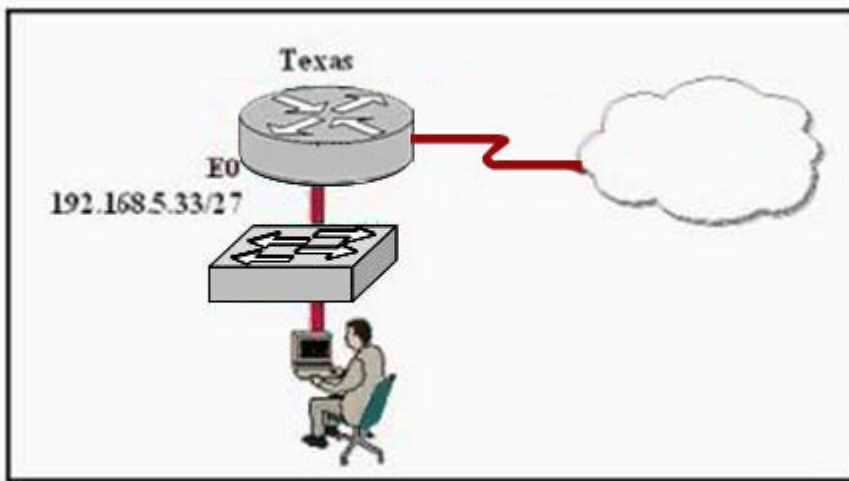
192.1.1.32 ---- 191.1.1.47 (32-47)

192.1.1.240---- 192.1.1.255 (240-255)

Only choices B and D are possible as 192.1.1.20 is already used by host Certkiller 1

QUESTION 184:

A diagram depicting a Certkiller user is shown below:



Based on the information above, which IP address should be assigned to the host?

- A. 192.168.5.5
- B. 192.168.5.32
- C. 192.168.5.40
- D. 192.168.5.63
- E. 192.168.5.75
- F. None of the above

Answer: C

Explanation:

Host address should be in same subnet of Connected Router's Interface. In exhibit Router's ethernet address is in 192.168.5.33/27 subnet then host address should be also in same subnet.

27 bits used for network and 5 bits for host.

So Network Address=256-224=32

First Subnet 32-64

So host address should be between 32-64 but 32, 64, 63 can't be used in a host address, as they are the network and broadcast addresses for the subnet, so only answer C is correct.

QUESTION 185:

A host on the Certkiller network has been configured with the IP address 10.16.3.66/23. Which two statements describe this IP address? (Choose two)

- A. The broadcast address of the subnet is 10.16.3.255 255.255.254.0.
- B. This network is not subnetted.
- C. The last valid host address in the subnet is 10.16.2.254 255.255.254.0
- D. The subnet address is 10.16.3.0 255.255.254.0.
- E. The lowest host address in the subnet is 10.16.2.1 255.255.254.0.

Answer: A, E

Explanation:

A subnet mask of /23 translates to 255.255.254.0 and will provide for up to 512 IP addresses.

If we take the 10.16.X.X network using the /23 subnet mask, the first network available is 10.16.0.0/23, which will provide host address from 10.16.0.1 to 10.16.2.254, with 10.16.2.255 being the broadcast address. The next available network in the 10.16.X.X covers our example in this question of 10.16.3.66.

In this case, the first useable IP address is (10.16.2.1 choice E), and the broadcast address is 10.16.3.255 (choice A).

In closing, the partial reference table on IPv4 subnets:

CIDR | Net mask | Addresses

-----+-----+-----		
/18	255.255.192.0	16384
/19	255.255.224.0	8192
/20	255.255.240.0	4096
/21	255.255.248.0	2048
/22	255.255.252.0	1024
/23	255.255.254.0	512
/24	255.255.255.0	256
/25	255.255.255.128	128
/26	255.255.255.192	64

/27 | 255.255.255.224 | 32
/28 | 255.255.255.240 | 16

QUESTION 186:

The Certkiller network administrator has subnetted the 172.16.0.0 network using a subnet mask of 255.255.255.192. A duplicate IP address of 172.16.2.121 has accidentally been configured on workstation CK1 in this network. The technician must assign this workstation a new IP address within that same subnetwork. Which address should be assigned to CK1 ?

- A. 172.16.1.64
- B. 172.16.1.80
- C. 172.16.2.80
- D. 172.16.2.64
- E. 172.16.2.127
- F. 172.16.2.128
- G. None of the above

Answer: C

Explanation:

A subnet mask of 255.255.255.192 (/26) will provide us with 4 subnet (2 usable) each with 62 usable hosts per network. So in our example the four networks will be:

172.16.2.1-62

172.16.2.65-126

172.16.2.129-190

172.16.2.193-254

Since we know that the host must be in the same IP subnet as 172.16.2.120, only choice C is correct.

QUESTION 187:

You need to configure NAT on a Certkiller router that is connected to the Internet. To do so, you must determine what the Inside Global IP addresses will be. What does the "Inside Global" address represent in the configuration of NAT?

- A. The summarized address for all of the internal submitted addresses
- B. A registered address that represents that represents an inside host to an outside network
- C. A globally unique, private IP address assigned to a host on the inside network
- D. The MAC address of the router used by inside hosts to connect to the Internet
- E. None of the above

Answer: B

QUESTION 188:

Which one of the following varieties of NAT utilizes different ports to map multiple IP addresses to a single globally registered IP address?

- A. Static NAT
- B. Port loading
- C. NAT Overloading
- D. Dynamic NAT
- E. Overlapping
- F. None of the above

Answer: C

Explanation:

Port address translation, or NAT overloading, uses transport layer port information to dynamically create NAT entries. This is also known as one to many network address translation.

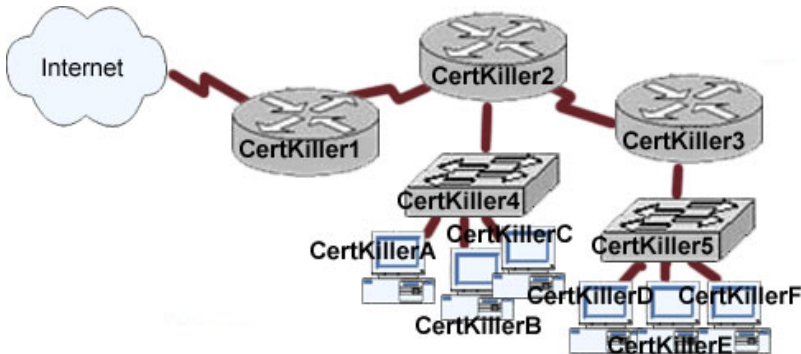
Incorrect Answers:

A. Static NAT is known as one to one NAT, and is used to map a single IP address to a single registered IP address. It is often used for servers that need to be accessed via the Internet.

B, D: This is the incorrect term, and is not used.

QUESTION 189:

Part of the Certkiller network is shown below:



The Certkiller network administrator would like to implement NAT in the Certkiller 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. All routers
- B. All routers and switches
- C. Certkiller 1 router
- D. Certkiller 2 router
- E. Certkiller 3 router
- F. None of the above

Answer: C

Explanation:

Network Address Translation (NAT) can be used to hide the private IP addressing scheme of the entire network from the Internet. To do this, NAT needs to only be configured on the router that resides between the Internet and the rest of the private internal network. In this case, it needs to only be implemented on the Corporate router.

QUESTION 190:

In any NAT (network address translation) configuration, what is the Inside Global IP address?

- A. The summarized address for all internal subnetted addresses.
- B. A private IP address assigned to a host on the inside network.
- C. A registered address that represents an inside host to an outside network.
- D. A unique IP address used on an internal network
- E. Non of the above

Answer: C

Explanation:

With NAT, Cisco defines 4 different types of addresses as follows:

- * 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.

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

- * Local address - A local address is any address that appears on the "inside" portion of the network.
- * Global address - A global address is any address that appears on the "outside" portion of the network.

QUESTION 191:

Which protocol automates all of the following functions for hosts on a network: IP configuration, IP addresses, subnet masks, default gateways, and DNS server information?

- A. CDP
- B. SNMP
- C. DHCP
- D. ARP
- E. DNS
- F. None of the above

Answer: C

Explanation:

DHCP uses the concept of the client making a request and the server supplying the IP address to the client, plus other information such as the default gateway, subnet mask, DNS IP address, and other information.

Incorrect Answers:

- A. CDP is the Cisco Discovery Protocol. It is used by Cisco devices at the data link layer to obtain information about their directly connected neighbors.
- B. SNMP is the Simple Network Management Protocol. This is used for the maintenance, management, and monitoring of network devices.
- D. ARP is the Address Resolution Protocol, which is used to resolve layer 2 MAC addresses to layer 3 IP addresses.
- E. DNS is the Domain Name Service. It is used to resolve domain names (for example, www.Certkiller.com) to IP addresses. The IP address location of primary and secondary DNS resolver servers can be obtained for hosts using DHCP.

QUESTION 192:

Which one of the following protocols uses both UDP and TCP ports for the transport layer operation?

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

Answer: E

Explanation:

TCP and UDP must use port numbers to communicate with the upper layers. Port

numbers keep track of different conversations crossing the network simultaneously. Originating-source port numbers are dynamically assigned by the source host, which will be some number starting at 1024. 1023 and below are defined in RFC 1700, which discusses what is called well-known port numbers.

Virtual circuits that do not use an application with a well-known port number are assigned port numbers randomly chosen from within a specific range instead. These port numbers identify the source and destination host in the TCP segment. Only DNS uses both UDP and TCP port 53.

QUESTION 193:

Certkiller is using private IP addressing in their network. Which of the following IP addresses is a private IP address? (Select all that apply)

- A. 12.0.0.1
- B. 168.172.19.39
- C. 172.20.14.36
- D. 172.33.194.30
- E. 192.168.42.34
- F. 11.11.11.1

Answer: C, E

Explanation:

RFC 1918 Private Address Space:

Range of IP Addresses	Class of Networks	Number of Network
10.0.0.0 to 10.255.255.255	A	1
172.16.0.0 to 172.31.255.255	B	16
192.168.0.0 to 192.168.255.255	C	256

QUESTION 194:

Certkiller is migrating to a private IP addressing scheme. Which of the following describe the use of private IP addresses? (Choose two)

- A. Addresses chosen by Certkiller .com 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 enterprise or ISPs by an Internet registry organization.

Answer: B, D

Explanation:

Private IP address space has been allocated via RFC 1918. This means the addresses are available for any use by anyone and therefore the same private IP addresses can be reused. However they are defined as not routable on the public Internet. They are used extensively in private networks due to the shortage of publicly registered IP address space and therefore network address translation is required to connect those networks to the Internet.

QUESTION 195:

Certkiller is using IP addressing according to RFC 1918. Which three address ranges are used for internal private address blocks as defined by RFC 1918? (Choose all that apply)

- A. 0.0.0.0 to 255.255.255
- B. 10.0.0.0 to 10.255.255.255
- C. 172.16.0.0 to 172.16.255.255
- D. 172.16.0.0 to 172.31.255.255
- E. 127.0.0.0 to 127.255.255.255
- F. 192.168.0.0 to 192.168.255.255
- G. 224.0.0.0 to 239.255.255.255

Answer: B, D, F

Explanation:

RFC 1918 defines three different IP address ranges as private, meaning that they can be used by any private network for internal use, and these ranges are not to be used in the Internet. The class A private range is 10.0.0.0 to 10.255.255.255. The class B address range is 172.16.0.0 to 172.31.255.255. The class C private IP address range is 192.168.0.0 to 192.168.255.255.

Incorrect Answers:

- A. The 0.0.0.0 network address is invalid and can not be used.
- C. The correct address range is 172.16.X.X through 172.31.X.X
- E. The 127.0.0.1 address is reserved for the internal loopback IP address, but the entire 127.X.X.X range is not defined in RFC 1918 as a private address range for networks.
- G. This address range describes the class D multicast address range.

QUESTION 196:

Certkiller needs to ensure their IP network can be reached from the Internet. Which of the following host addresses are members of networks that can be routed across

the public Internet? (Choose three.)

- A. 10.172.13.65
- B. 172.16.223.125
- C. 172.64.12.29
- D. 192.168.23.252
- E. 198.234.12.95
- F. 212.193.48.254

Answer: C, E, F

Explanation:

In Internet terminology, a private network is a network that uses RFC 1918 IP address space. Computers may be allocated addresses from this address space when it's necessary for them to communicate with other computing devices on an internal (non-Internet) network but not directly with the Internet.

Three blocks of IP addresses are reserved for private use and are not routed over the Internet. Companies can assign these addresses to nodes on their private LANs at any time without conflict.

CIDR

From To Representation

10.0.0.0 10.255.255.255 10/8

172.16.0.0 172.31.255.255 172.16/12

192.168.0.0 192.168.255.255 192.168/16

QUESTION 197:

Certkiller has 25 computers and decides to connect the network to the Internet.

Certkiller would like for all of the computers to have access to the Internet at the same time, but Certkiller only has four usable publicly routable IP addresses.

What should be configured on the router so that all computers can connect to the Internet simultaneously?

- A. Static NAT
- B. Global NAT
- C. Dynamic NAT
- D. Static NAT with ACLs
- E. Dynamic NAT with overload

Answer: E

Explanation:

NAT overload, also called many to one NAT or Port Address Translation (PAT) allows for many IP hosts to share a single IP address when connecting to the outside. In this case, the use of dynamic NAT with overloading will allow for the 25 hosts to use an IP address from the NAT pool, which will contain the 4 public IP addresses.

QUESTION 198:

A Certkiller router has been configured with the following command:
 IP nat pool nat-test 192.168.6.10 192.168.6.20 netmask 255.255.255.0
 This is an example of what type of NAT?

- A. Static NAT
- B. Dynamic NAT
- C. Dynamic NAT with overload
- D. Port Address Translation
- E. None of the above

Answer: B

Explanation:

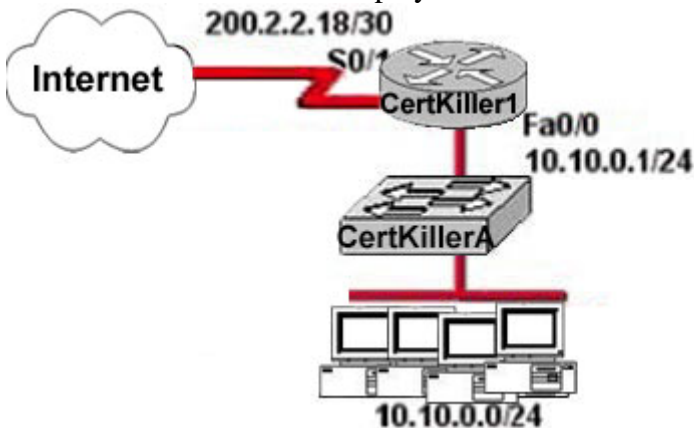
The configuration statement in this example is used to define a pool of IP addresses to be used for dynamic NAT translations.

Incorrect Answers:

- A. Static NAT is used for 1 to 1 translation entries, using the "static" configuration keyword. In this example a range of addresses are being defined for the use in a pool.
- C, D. With NAT overload, also known as Port Address Translation (PAT), the keyword "overload" is added at the end of the configuration statement.

QUESTION 199:

The Certkiller network is displayed below:



Certkiller .com wants to use NAT in network displayed in the exhibit.
 Which commands will apply the NAT configuration to the proper interfaces? Select two.

- A. Certkiller 1(config)# interface serial0/1
 Certkiller 1(config-if)# ip nat inside
- B. Certkiller 1(config)# interface serial0/1
 Certkiller 1(config-if)# ip nat outside

C. Certkiller 1(config)# interface fastethernet0/0
Certkiller 1(config-if)# ip nat inside
D. Certkiller 1(config)# interface fastethernet0/0
Certkiller 1(config-if)# ip nat outside
E. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat outside source pool 200.2.2.18 255.255.255.252
F. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat inside source 10.10.0.0 255.255.255.0

Answer: B, C

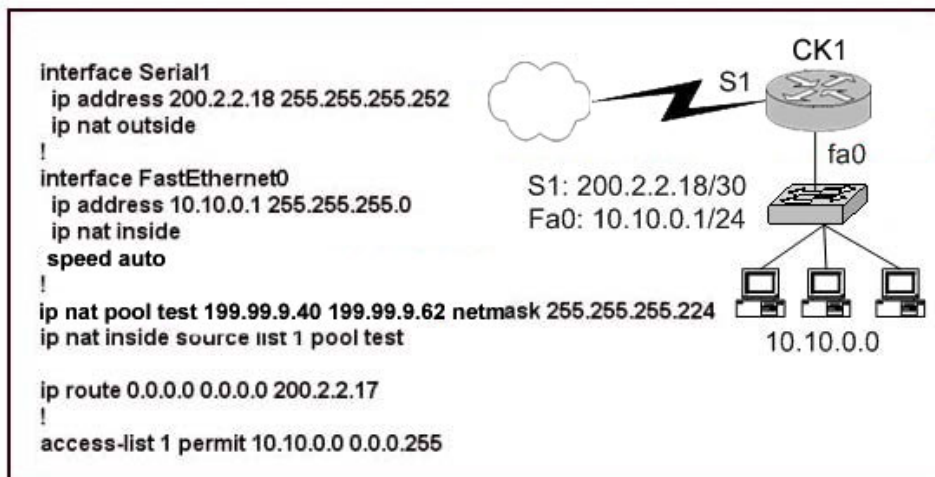
Explanation:

After creating the static NAT entries, the router needs to know which interfaces are "inside" and which are "outside." The ip nat inside and ip nat outside interface sub-commands identify each interface appropriately.

Reference: Cisco CCNA ICND, p.271

QUESTION 200:

Refer to the topology and partial configuration output shown in the graphic below:



The ip subnet-zero configuration command is also in effect on router CK1 . After this router performs network address translation, which address is a valid "inside global address"?

- A. 10.10.0.1
- B. 10.10.0.17
- C. 200.2.2.17
- D. 200.2.2.18
- E. 199.99.9.33
- F. 199.99.9.47

Answer: F

Explanation:

Regarding NAT operation, Cisco defines these terms as follows:

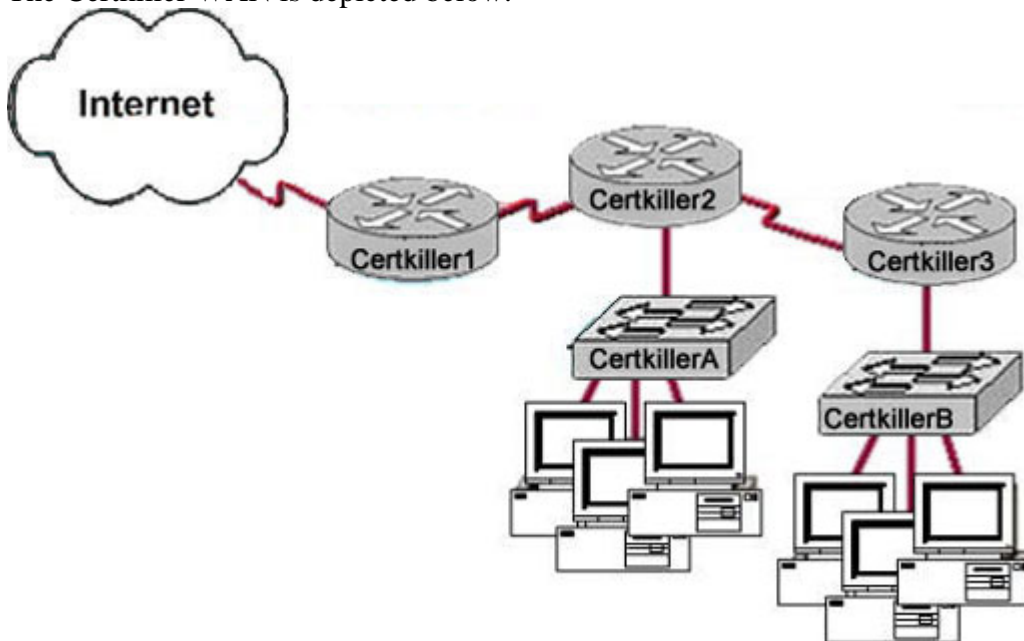
1. Inside local address - The IP address assigned to a host on the inside network. This is the address configured as a parameter of the computer's OS or received via dynamic address allocation protocols such as DHCP. The address is likely not a legitimate IP address assigned by the Network Information Center (NIC) or service provider.
2. 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. In this case, the NAT pool is used to distribute the Inside Global IP addresses.
3. 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.
4. 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.

Reference:

http://www.cisco.com/en/US/tech/CK648/CK361/technologies_tech_note09186a0080094837.shtml

QUESTION 201:

The Certkiller WAN is depicted below:



As a network technician at Certkiller .com you would like to implement NAT in the network shown in the exhibit. You would like to allow inside hosts to use a private addressing scheme. Where should NAT be configured?

- A. Certkiller 1 router
- B. Certkiller 2 router
- C. Certkiller 3 router
- D. All routers

- E. All routers and switches
- F. None of the above

Answer: A

Explanation:

NAT should always be configured on the border device. It can be either a border router or a PIX firewall connecting to the Internet.

QUESTION 202:

The administrator of the Certkiller network needs to ensure that a web server in their network is accessible from the Internet. Since the network uses private addressing, this requires an IP-to-registered-address mapping. The following command is entered on the router:

```
Certkiller 1(config)# ip nat inside source static 192.168.2.1 198.18.1.254
```

After unsuccessful results from a ping to the Internet, the administrator issues the show ip nat translations command and the output is blank. What could be the problem with the NAT configuration for this mapping?

- A. The keyword overload is missing from the command.
- B. The administrator needs to define a NAT pool first.
- C. An access list must be defined to create static NAT translations.
- D. The interfaces need to be configured for NAT.

Answer: D

Explanation:

After configuring the static NAT administrator should configure the NAT on interface in order to define which interfaces are on the outside and which are on the inside:

Example:

```
interface s0
```

```
ip nat outside àBecause s0 interface is connected to ISP
```

```
interface e0
```

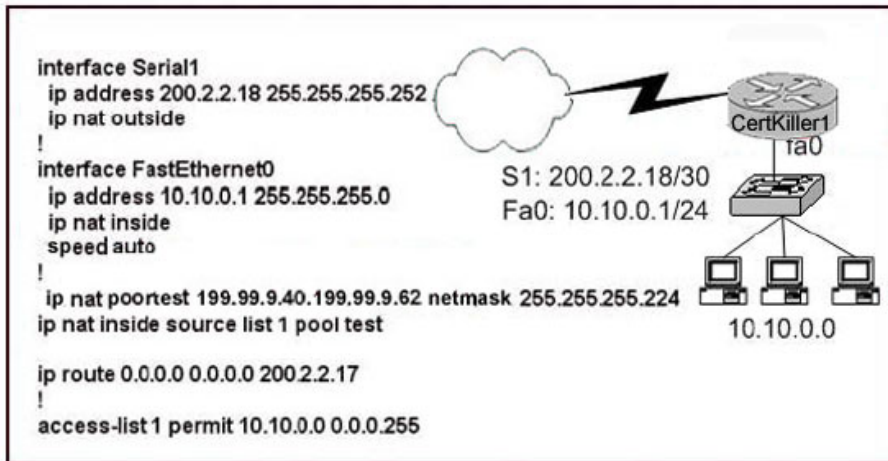
```
ip nat inside à Because e0 interface is connected to Local LAN.
```

Incorrect Answers:

A, B, C: These are all tasks that need to be configured when performing many to one NAT, also known as Port Address Translation (PAT). In this example, we are specifying a static 1-1 NAT entry.

QUESTION 203:

Part of the Certkiller network is shown below:



Refer to the topology and router configuration shown in the graphic above. A host on the Certkiller 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. 10.10.0.2
- C. 199.99.9.3
- D. 199.99.9.57
- E. 200.2.2.17
- F. 200.2.2.18
- G. None of the above

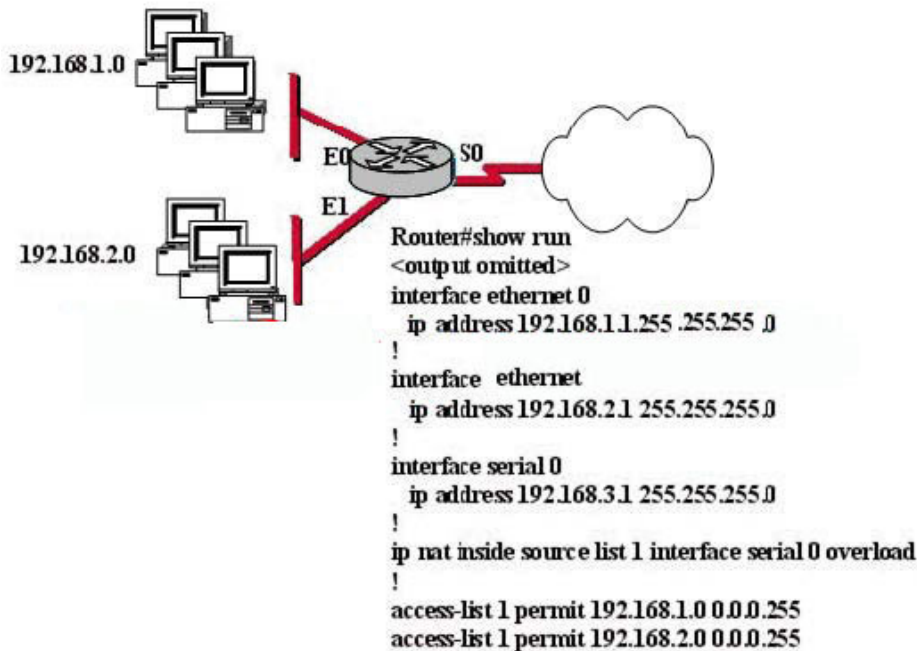
Answer: D

Explanation:

Using NAT we can translate the Source or Destination Address. In our example all source address from the 10.10.0.0 0.0.0.255 network will be translated to an IP address from the 199.99.9.40-62 pool, making only choice D correct.

QUESTION 204:

Part of the configuration of a Certkiller router is shown below:



The Certkiller network administrator has configured NAT as shown above. Clients still cannot access the Internet. What should the network administrator do to resolve this problem?

- A. Configure an IP NAT address pool.
- B. Properly configure the ACL.
- C. Apply the "ip nat" command to the S0 interface.
- D. Configure the "ip nat inside" and "ip nat outside" commands on the appropriate interfaces.
- E. None of the above

Answer: D

Explanation:

The "ip nat inside" and "ip nat outside" commands must be used from interface configuration mode to tell the router which interface is performing which role in the NAT process. The following commands show how to configure our example router:

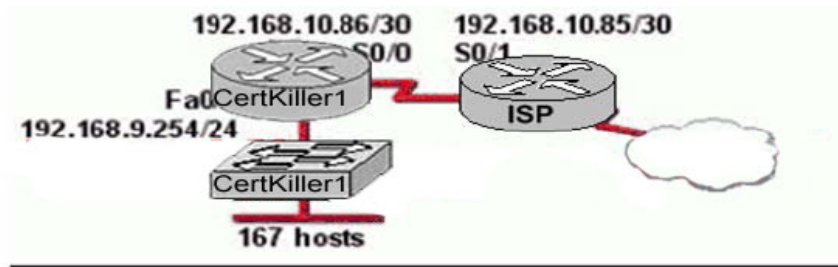
```

CK1 (config)#interface ethernet0 CK1 (config-if)#ip nat
inside CK1 (config-if)#exit CK1 (config)#interface serial0 CK1 (config-if)#ip nat
outside CK1 (config-if)#exit CK1 (config)#

```

QUESTION 205:

The Certkiller WAN is shown in the diagram below:



```

CertKiller1 (config)# ip nat pool c-pool 66.179.148.33 66.179.148.34
netmask 255.255.255.248
CertKiller1 (config)# Access-list 1 permit 192.168.9.0 0.0.0.7
CertKiller1 (config)# ip nat inside source list 1 pool c-pool overload
CertKiller1 (config)# interface fastethernet 0/0
CertKiller1 (config-if)# ip nat inside
CertKiller1 (config)# interface serial 0/0
CertKiller1 (config-if)# ip nat outside

```

Study the Exhibit carefully and sequence of configuration commands shown in the graphic. The network at Certkiller 1 has just been configured for NAT as shown.

Initial tests indicate that the network is functioning properly.

However, several users report that they cannot access the Internet. What is the problem?

- A. The NAT pool does not have enough IP addresses.
- B. The access list is not permitting all of the LAN host addresses to be translated.
- C. The NAT inside and NAT outside interfaces are reversed.
- D. The link between the Certkiller routers and the Certkiller 2 ISP
- E. None of the above

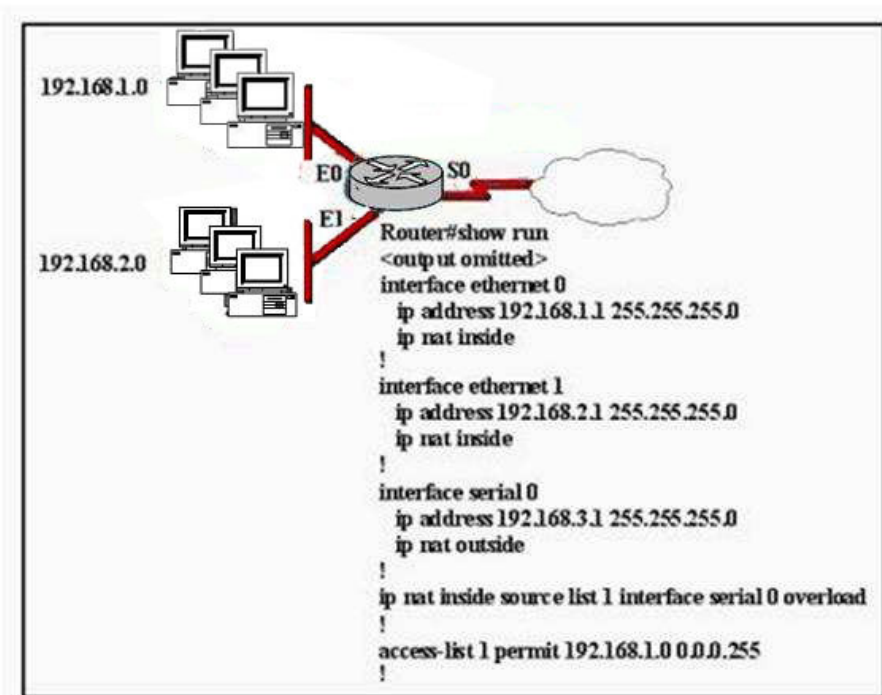
Answer: B

Explanation:

The source of the IP address hosts that should be translated is specified in access list 1, which only specifies 192.168.9.0 0.0.0.7. This will only translate host 192.168.9.1-192.168.9.7. The correct syntax should have been:
access-list 1 permit 192.168.9.0 0.0.0.255

QUESTION 206:

The Certkiller network is shown below:



The network administrator has configured NAT as shown in the graphic. Some clients can access the Internet while others cannot. What should the network administrator do to resolve this problem?

- 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.
- E. None of the above.

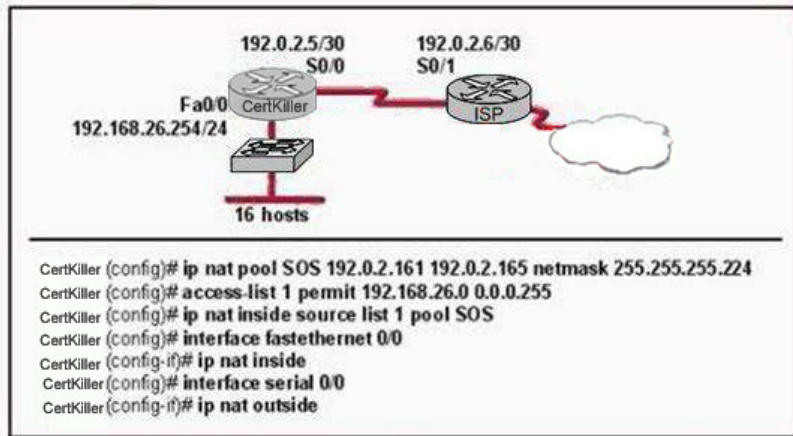
Answer: B

Explanation:

In the exhibit the ACL is only configured for the 192.168.1.0/24 network. In order to make Internet access available to all clients of both networks the access list 1 needs to include both 192.168.1.0/24 and 192.168.2.0/0.

QUESTION 207:

The Certkiller network is shown below:



The network at the Certkiller 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. What is the problem?

- 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 IP address of the Fa0/0 interface is not usable.
- E. The S0/1 interface of the ISP router is in the wrong subnet.

Answer: B

Explanation:

According to the configuration shown above, the NAT pool only specifies 5 IP addresses (192.0.2.161-165) while there are 16 hosts on the network that need to be translated. This explains why everything functions well for the first hosts, but not for the rest. To fix this issue, more IP addresses need to be specified in the NAT pool named SOS, or alternatively the "overload" keyword could be used to specify many to one address translation, or PAT.

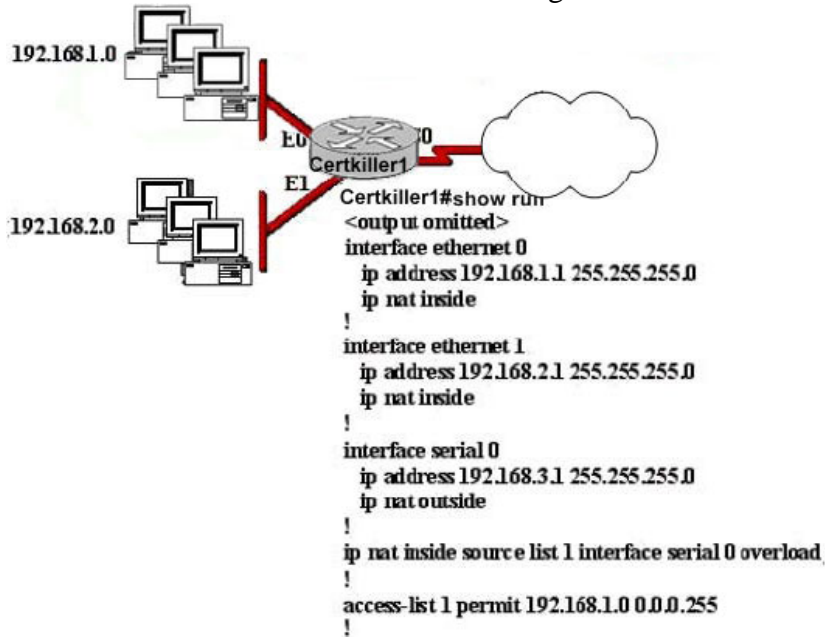
Several internal addresses can be NATed to only one or a few external addresses by using a feature called Port Address Translation (PAT) which is also referred to as "overload", a subset of NAT functionality.

PAT uses unique source port numbers on the Inside Global IP address to distinguish between translations. Because the port number is encoded in 16 bits, the total number could theoretically be as high as 65,536 per IP address. PAT will attempt to preserve the original source port, if this source port is already allocated PAT will attempt to find the first available port number starting from the beginning of the appropriate port group 0-5111, 512-1023 or 1024-65535. If there is still no port available from the appropriate group and more than one IP address is configured, PAT will move to the next IP address and try to allocate the original source port again. This continues until it runs out of available ports and IP addresses.

Alternatively, we could have configured port address translation, or NAT overload, to provide Internet access to the given number of hosts.

QUESTION 208:

The Certkiller network is shown in the diagram below:



The network administrator has configured NAT as shown in the exhibit. Some clients can access the Internet while others cannot.

What should the network administrator do to resolve this problem?

- 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.
- E. Configure the ip nat inside and ip nat outside commands

Answer: B

Explanation:

"Some clients can access the Internet while others cannot." this is a huge hint that tell us either:

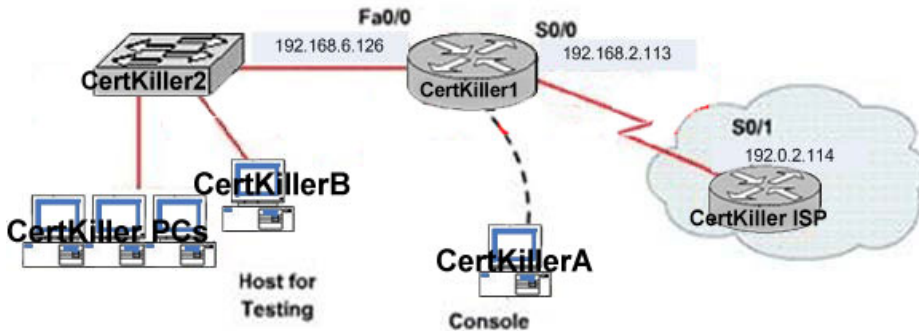
1. ACL is blocking some people
2. You are not using overload when you should
3. That you are using 2 inside subnets like in this example & 1 of those does not have the IP NAT INSIDE statement against it.

In this example, the access list specified is only allowing users on the 192.168.1.0/24 subnet should be translated, so all of the users on E1 (192.168.2.X/24 subnet) will not get translated, and will therefore not be able to reach the Internet.

QUESTION 209:

SIMULATION

Network topology exhibit:



You work as a network technician at Certkiller .com. Study the exhibit carefully. You are required to perform configurations to enable internet access. The Certkiller ISP has given you six public IP addresses in the 198.18.32.65 198.18.32.70/29 range. Certkiller .com has 62 clients that needs to have simultaneous internet access. These local hosts use private IP addresses in the 192.168.6.65 - 192.168.6.126/26 range. You need to configure Router Certkiller 1 using the Certkiller A console. You have already made basic router configuration. You have also configured the appropriate NAT interfaces; NAT inside and NAT outside respectively. Now you are required to finish the configuration of Certkiller 1.

Answer:

Explanation:

Certkiller 1:

Certkiller 1#Config t

Certkiller 1(Config)#interface fa0/0

Certkiller 1(Config-if)#ip nat inside

Certkiller 1(Config)#interface S0/0

Certkiller 1(Config-if)#ip nat outside

Certkiller 1(Config-if)#exit

Certkiller 1(Config)#access-list 1 permit 192.168.6.65 0.0.0.62

Certkiller 1(Config)#access-list 1 deny any

Certkiller 1(Config)#ip nat pool nat_test 198.18.32.65 198.18.32.70 prefix-length 29

Certkiller 1(Config)#ip nat inside source list 1 pool nat_test overload

QUESTION 210:

You work as a network technician at Certkiller .com. Study the exhibit carefully.

```
CertKiller2 # show running-config
Current configuration:
!
version 12.1
!Hostname ABC
!
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 directed-broadcast
 ip nat inside
!
interface Serial 0/0
 description 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
```

Based on the output shown above, what should you do to allow the Certkiller workstations connected to the fastethernet0/0 interface to obtain an IP Address?

- A. Apply access-group 14 to interface FastEthernet 0/0
- B. Add access-list 14 permit any any to the access list configuration
- C. Configure the IP address of interface FastEthernet 0/0 to 10.90.201.1
- D. Add an interface description to the FastEthernet 0/0 interface configuration.
- E. None of the above

Answer: C

Explanation:

According to question and exhibit:

Router is configured for DHCP, which can provide the IP Address to host. And Host is connected on fastethernet0/0 interface. IP Address is not assigned on host connected interface. Until assigning the same subnet of pool on interface, host unable to obtain IP Address from Router.

QUESTION 211:

Your Certkiller trainee Jack is curious about the function of a DHCP Server. In particular she wants to know how the process of dynamically assigning IP addresses to hosts work. What should you tell her?

- A. Addresses are allocated after a negotiation between the server and the host to determine the length of the agreement.
- B. Addresses are permanently assigned so that the hosts uses the same address at all times.

- C. Addresses are assigned for a fixed period of time. At the end of the period, a new request for an address must be made, and another address is then assigned.
- D. Addresses are leased to hosts. A host will usually keep the same address by periodically contacting the DHCP server to renew the lease.
- E. None of the answer choices are correct.

Answer: D

Explanation:

As you know, DHCP clients lease their IP addresses from DHCP servers. When this lease expires, that IP address can no longer be utilized by the DHCP client. For that reason, DHCP client must periodically renew their IP address leases, preferably before the lease has expired or is about to expire.

DHCP client passes through the renewing and rebinding states to renew its IP address lease.

Renewing state: The DHCP client first attempts to renew its lease when 50 percent of the lease time has expired. To renew its lease, the DHCP client sends a directed DHCPREQUEST message to the DHCP server that provided the original lease. If renewal is allowed, the DHCP server automatically renews the lease by responding with a DHCPACK message. This new IP address lease contains not only the original IP address if still available (or another IP address otherwise) but any TCP/IP client configuration information.

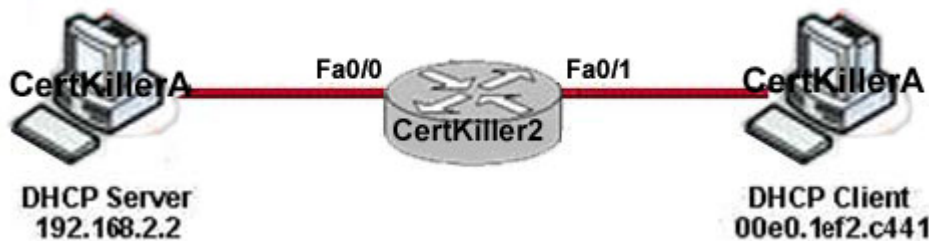
Rebinding state:

If, for whatever reason, the DHCP client is not able to communicate with the original DHCP server the executed its lease, it attempts another approach called rebinding. Here the DHCP client attempts to contact any available DHCP server when 87.5 percent of the lease time has expired. The leasing process is akin to that detailed over the last several pages.

Reference: <http://www.windowsitlibrary.com/Content/329/08/5.html>

QUESTION 212:

Network Topology Exhibit:



Certkiller 2 Fa0/0 exhibit:

```
interface FastEthernet0/0
ip address 192.168.2.1 255.255.255.0
no ip directed broadcast
```

Certkiller 2 Fa0/1 exhibit:

```
interface FastEthernet0/1
ip address 192.168.1.1 255.255.255.0
no ip directed broadcast
ip helper-address 192.168.2.2
```

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

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

Answer: A

Explanation:

ipconfig is a command line utility available on all versions of Microsoft Windows starting with Windows NT. ipconfig is designed to be run from the Windows command prompt. This utility allows you to get the IP address information of a Windows computer. It also allows some control over active TCP/IP connections. ipconfig is an alternative to the older 'winipcfg' utility. Using the release and renew options will force the PC to try to obtain an IP address again from the DHCP server.

ipconfig /release

This option terminates any active TCP/IP connections on all network adapters and releases those IP addresses for use by other applications. 'ipconfig /release' can be used with specific Windows connection names. In this case, the command will affect only the specified connections and not all. The command accepts either full connection names or wildcard names.

ipconfig /renew

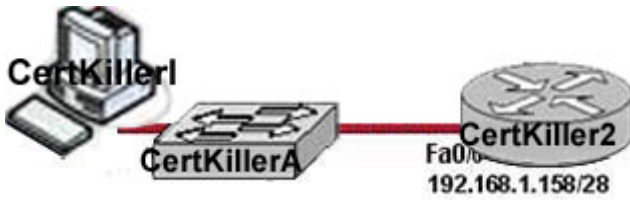
This option re-establishes TCP/IP connections on all network adapters. As with the release option, ipconfig /renew takes an optional connection name specifier.

Both /renew and /release options only work on clients configured for dynamic (DHCP) addressing.

Reference: <http://compnetworking.about.com/od/workingwithipaddresses/a/ipconfig.htm>

QUESTION 213:k

A Certkiller PC is connected to the LAN as shown below:



Based on the information given above, what is the IP address that should be assigned to workstation A?

- A. 192.168.1.145/28
- B. 192.168.1.143/28
- C. 192.168.1.159/28
- D. 192.168.1.144/24
- E. 192.168.1.160/27
- F. None of the above

Answer: A

QUESTION 214:

You are a systems administrator and you are about to assign static IP addresses to various servers on your network. For the network 192.168.20.24/29 the router is assigned to the first usable host address, while the last usable host address goes to your Sales server. Which one of the following commands would you enter into the IP properties box of the sales server?

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

Answer: C

Explanation

A subnet mask uses 29 bits. This means that it uses 5 bits in the 4th octet. This equates to 255.255.255.248. This network has 3 bits for hosts. Using the $2^n - 2$ formula ($2^3 - 2$) in this case), we are left with 6 ($2^3 - 2 = 6$) host addresses. 192.168.20.24 is the network address. Therefore the next address (192.168.20.25) would be the first host address. This address must be assigned to the router, which serves as the gateway for the network. The last available host address would be 192.168.20.30 ($192.168.20.24 + 6$). This address is assigned to the server. The broadcast address is 192.168.20.31.

QUESTION 215:

You've been assigned a single Class C address. From this, you need 8 subnets, and your subnet mask is 255.255.255.224. Which one of the following configuration commands would you have to use before you begin?

- A. Router(config)# ip classless
- B. Router(config)# ip subnet-zero
- C. Router(config)# ip version 6
- D. Router(config)# no ip classful
- E. Router(config)# ip unnumbered
- F. Router(config)# ip all-nets

Answer: B

Explanation:

To get 8 subnets from a class C address, and a mask of 255.255.255.224 use the reserved subnet space. To do this, you need the command 'ip subnet-zero.' This will allow the router to use the very first subnet, which is normally reserved and unused as the network address. Prior to Cisco IOS(r) Software Release 12.0, Cisco routers, by default, did not allow an IP address belonging to subnet zero to be configured on an interface. However, if a network engineer working with a Cisco IOS software release older than 12.0 finds it safe to use subnet zero, the ip subnet-zero command in the global configuration mode can be used to overcome this restriction. As of Cisco IOS Software Release 12.0, Cisco routers now have ip subnet-zero enabled by default, but if the network engineer feels that it is unsafe to use subnet zero, the no ip subnet-zero command can be used to restrict the use of subnet zero addresses. In versions prior to Cisco IOS Software Release 8.3, the service subnet-zero command was used.

It should be noted that even though it was discouraged, the entire address space including subnet zero and the all-ones subnet have always been usable. The use of the all-ones subnet was explicitly allowed and the use of subnet zero is explicitly allowed since Cisco IOS Software Release 12.0. Even prior to Cisco IOS Software Release 12.0, subnet zero could be used by entering the ip subnet-zero global configuration command.

On the issue of using subnet zero and the all-ones subnet, RFC 1878 states, "This practice (of excluding all-zeros and all-ones subnets) is obsolete. Modern software will be able to utilize all definable networks." Today, the use of subnet zero and the all-ones subnet is generally accepted and most vendors support their use. However, on certain networks, particularly the ones using legacy software, the use of subnet zero and the all-ones subnet can lead to problems.

QUESTION 216:

Three Certkiller routers are connected as shown below:



Taking the information shown above, which command line below would correctly configure serial port0 on the Certkiller 2 router with the LAST usable host addresses on the 192.216.32.32 subnet?

- A. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248
- B. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.240
- C. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248
- D. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248 no shut
- E. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248 no shut
- F. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.248

Answer: F

Explanation:

F is the correct answer, as the last usable IP address on this subnet is 192.216.32.38. The subnet mask for a /29 is 255.255.255.248

Mask/29 11111111.11111111.11111111.11111000 255.255.255.248

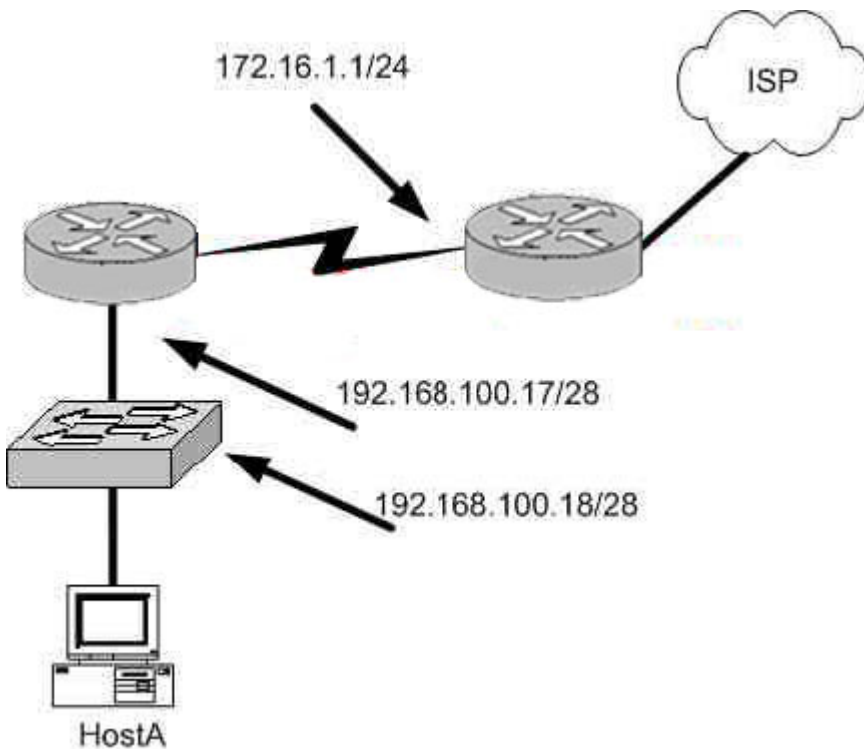
Subnet 11000000.11011000.00100000.00100000 192.216.32.32

Broadcast 11000000.11011000.00100000.00100111 192.216.32.39

Address range = 192.216.32.33 - 192.216.32.38

QUESTION 217:

The Certkiller Network is displayed as follows:



What is a valid possible IP address configuration for Host A?

- A. IP 192.168.100.31 255.255.255.240 default-gateway 192.168.100.18
- B. IP 192.168.100.30 255.255.255.240 default-gateway 172.16.1.1
- C. IP 192.168.100.20 255.255.255.240 default-gateway 192.168.100.17
- D. IP 192.168.100.21 255.255.255.248 default-gateway 192.168.100.17
- E. IP 192.168.100.19 255.255.255.248 default-gateway 172.16.1.1

Answer: C

Explanation:

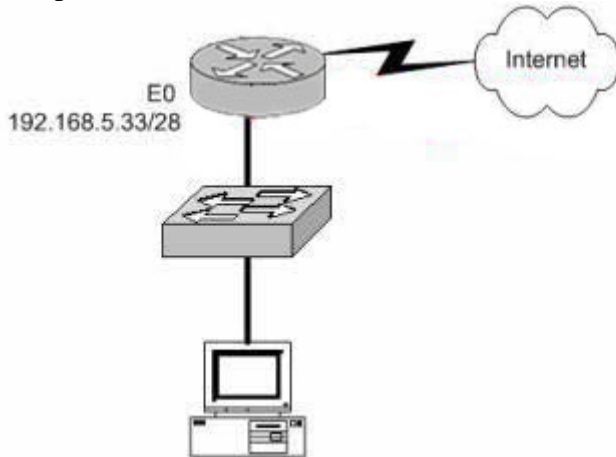
The network mask for a /28 is 255.255.255.240. The default gateway is always the IP address of the router on the local subnet, and the valid IP range for this network is 192.168.100.17 - 192.168.100.30. Choice C is the only one that meets all of these.

Incorrect Answers:

- A. The IP address 192.168.100.31 is the broadcast address. It cannot be used for the host.
- B. The default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.
- D. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248.
- E. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248. Also, the default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.

QUESTION 218:

A simple Certkiller network is shown below:



Based on the information above, which of the following would be a valid IP address of the PC?

- A. 192.168.5.55
- B. 192.168.5.47
- C. 192.168.5.40
- D. 192.168.5.32
- E. 192.168.5.14

Answer: C

Explanation:

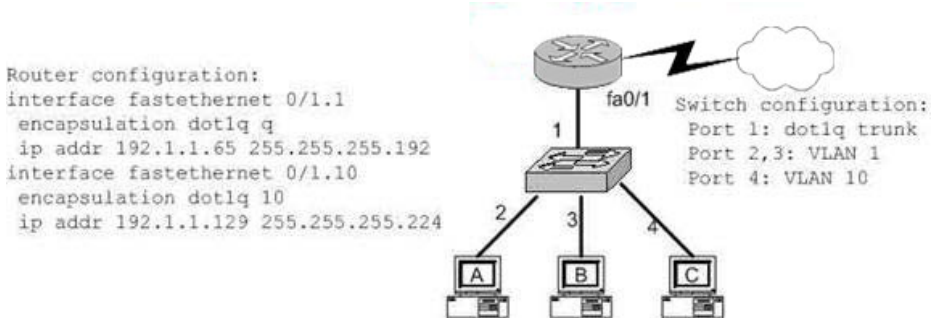
The network uses a 28bit subnet (255.255.255.240). This means that 4 bits are used for the networks and 4 bits for the hosts. This allows for 14 networks and 14 hosts ($2^n - 2$). The last bit used to make 240 is the 4th bit (16) therefore the first network will be 192.168.5.16. The network will have 16 addresses (but remember that the first address is the network address and the last address is the broadcast address). In other words, the networks will be in increments of 16 beginning at 192.168.5.16/28. The router interface E0 has the IP address 192.168.5.33. Therefore it is on the 2nd network (192.168.5.32/28). The host must also be on this network. Valid IP addresses for hosts on this network are: 192.168.5.33-192.168.5.46.

Incorrect Answers:

- A. 192.168.5.55 is on network 192.168.5.48. It is not on the same network as the router interface.
- B. This is the broadcast address.
- D. This is the network address.
- E. This is not a valid address for a 28 bit subnet mask. The first network address should be 192.168.5.16.

QUESTION 219:

An 802.1Q trunk is configured between a Certkiller switch and router CK1 as shown below:



Which of the following are valid configuration values for the host shown in the graphic? (Choose three)

- A. host A IP address: 192.1.1.65
- B. host A subnet mask: 255.255.255.224
- C. host B IP address: 192.1.1.125
- D. host B default gateway: 192.1.1.65
- E. host C IP address: 192.1.1.166
- F. host C subnet mask: 255.255.255.224

Answer: C, D, F

Explanation:

Host B resides on port 3, which is configured for VLAN 1. As shown in the configuration, the default gateway for VLAN is the IP address associated with the Fast Ethernet 0/1.1 sub-interface. Valid IP hosts for the VLAN 1 subnet is 192.1.1.65-192.1.1.126.

Incorrect Answers:

- A. The 192.1.1.65 IP address is already assigned to the router.
- B. Host A is in VLAN 1, so the subnet mask should be 255.255.255.192
- E. Host C belongs to VLAN 10, and this IP address is not in the 192.1.1.128/27 subnet.

QUESTION 220:

Which of the following addresses can be assigned to a host when using a subnet mask of 255.255.254.0? (Select three)

- A. 113.10.4.0
- B. 186.54.3.0
- C. 175.33.3.255
- D. 26.35.2.255
- E. 152.135.7.0
- F. 17.35.36.0

Answer: B, D, E

Explanation:

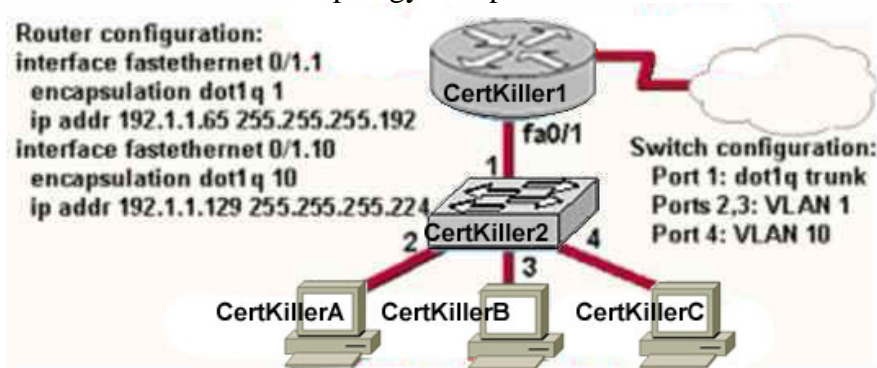
These are all valid host IP addresses within the /23 subnet.

Incorrect Answers:

- A. This is the network address for the 113.10.4.0/23 subnet.
- C. This is the broadcast address for the 175.33.2.0/23 subnet.
- F. This is the network address for the 17.35.36.0/23 subnet.

QUESTION 221:

The Certkiller network topology is depicted below:



Based on the diagram above, which of the following are valid configuration values for the hosts? Select three

- A. Host Certkiller A IP address: 192.1.1.85
- B. Host Certkiller A subnet mask: 255.255.255.224
- C. Host Certkiller B IP address: 192.1.1.125
- D. Host Certkiller B default gateway: 192.1.1.85
- E. Host Certkiller C IP address: 192.1.1.166
- F. Host Certkiller C subnet mask: 255.255.255.224

Answer: A, C, F

Explanation:

The answers A and C are right, because the ip address 192.1.1.85 and 192.1.1.125 are in the same subnet 192.1.1.64 as the ip address of the subinterface 0/1.1.

Incorrect Answers:

- E. This answer is wrong because the network address of the IP address 192.1.1.166 is 192.1.1.160.

QUESTION 222:

Which command on router Certkiller A will assign the last usable IP address from the 192.168.32.128/28 subnetwork to a router interface?

- A. Certkiller A(config-if)# ip address 192.168.32.142 255.255.255.240

- B. Certkiller A(config-if)# ip address 192.168.32.143 255.255.255.240
- C. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
- D. Certkiller A(config-if)# ip address 192.168.32.145 255.255.255.240
- E. Certkiller A(config-if)# ip address 192.168.32.144 255.255.255.240
- F. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
- G. None of the above

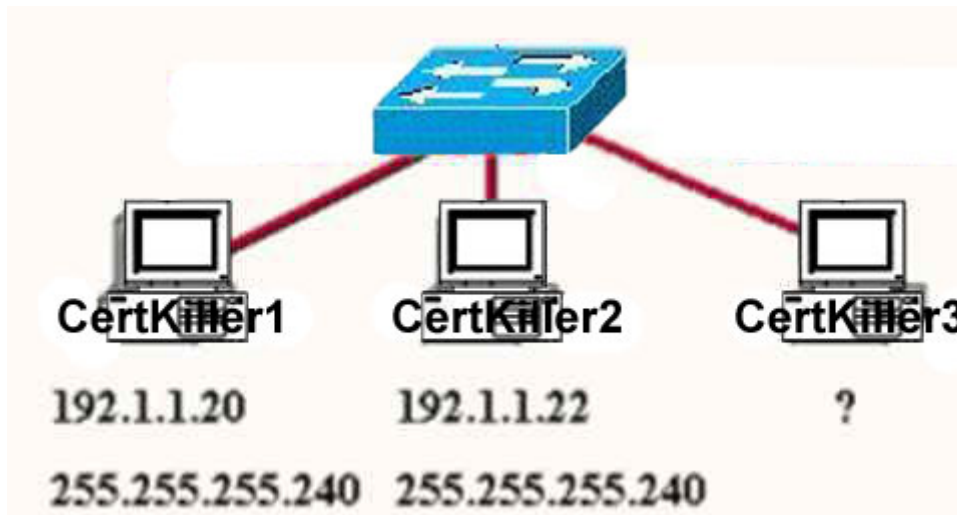
Answer: A

Explanation:

The last usable IP address would be $128 + (16-2) = 142$ because only the last 4 bits of the last octet are used for host addressing.

QUESTION 223:

The Certkiller LAN is shown below:



A Certkiller .com network administrator is adding host Certkiller 3 to the network shown in the exhibit. Which IP address can be assigned this host on this network?

- A. 192.1.1.14
- B. 192.1.1.18
- C. 192.1.1.20
- D. 192.1.1.30
- E. 192.1.1.31
- F. 192.1.1.36

Answer: B, D

Explanation:

Subnet Mask of 255.255.255.240 means 4-bits of subnetting. When we do 4-bits of subnetting, we have a total of 16 subnets having 16 hosts each. Subnets will be 192.1.1.0 ----- 191.1.1.15 (0-15)

192.1.1.16 ---- 191.1.1.31 (16-31)

192.1.1.32 ---- 191.1.1.47 (32-47)

|||

|||

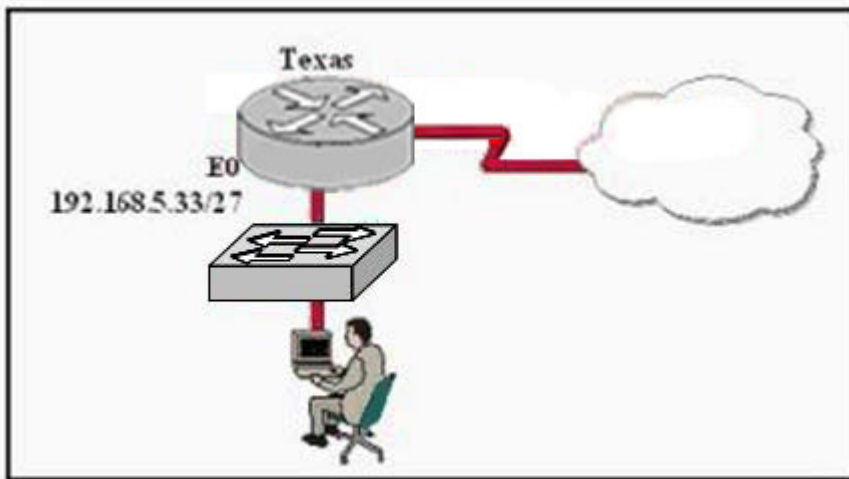
|||

192.1.1.240---- 192.1.1.255 (240-255)

Only choices B and D are possible as 192.1.1.20 is already used by host Certkiller 1

QUESTION 224:

A diagram depicting a Certkiller user is shown below:



Based on the information above, which IP address should be assigned to the host?

- A. 192.168.5.5
- B. 192.168.5.32
- C. 192.168.5.40
- D. 192.168.5.63
- E. 192.168.5.75
- F. None of the above

Answer: C

Explanation:

Host address should be in same subnet of Connected Router's Interface. In exhibit Router's ethernet address is in 192.168.5.33/27 subnet then host address should be also in same subnet.

27 bits used for network and 5 bits for host.

So Network Address=256-224=32

First Subnet 32-64

So Host address should be between 32-64 but 32, 64, 63 can't be used in a host address, as they are the network and broadcast addresses for the subnet, so only answer C is correct.

QUESTION 225:

Certkiller is opening a new branch office. Assuming a subnet mask of 255.255.248.0, which three addresses are valid host IP addresses that could be used in this office? (Choose three.)

- A. 172.16.20.0
- B. 172.16.24.0
- C. 172.16.8.0
- D. 172.16.16.0
- E. 172.16.31.0
- F. 172.16.9.0

Answer: A, E, F

Explanation:

For the 255.255.248.0 subnet mask the following is true.

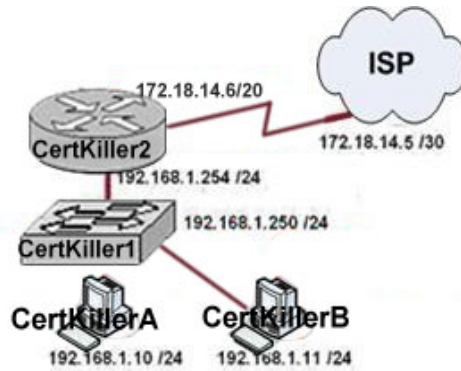
1. $2-2=30$ subnets
2. $2-2=2,046$ hosts per subnet
3. $256-248=8.0, 16.0, 24.0, 32.0, 40.0, 48.0, 56.0, 64.0$, etc.
4. Broadcast for the 8.0 subnet is 15.255. Broadcast for the 16.0 subnet is 23.255, etc.
5. The valid hosts are:

Subnet	8.0	16.0	24.0	32.0	40.0	48.0	56.0	64.0
first host	8.1	16.1	24.1	32.1	40.1	48.1	56.1	64.1
last host	15.254	23.254	31.254	39.254	47.254	55.254	63.254	71.254
broadcas	t15.255	23.255	31.255	39.255	47.255	55.255	63.255	71.255

Reference: <http://articles.techrepublic.com.com/5100-6350-5033673.html>

QUESTION 226:

A small office Certkiller network is shown below:



ipconfig exhibit:

```
C:\> Ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection:
    Connection-specific DNS Suffix  . :
    IP Address. . . . . : 192.168.1.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 
```

The output shown above is from host CertkillerA. What value should be displayed for the Default Gateway of the ipconfig output for this host?

- A. 172.18.14.6
- B. 192.168.1.11
- C. 192.168.1.10
- D. 192.168.1.254
- E. 192.168.1.250
- F. 172.18.14.5
- G. None of the above

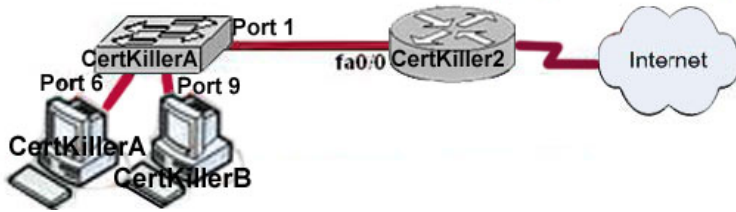
Answer: D

Explanation:

The default gateway setting, which creates the default route in the IP routing table, is a critical part of the configuration of a TCP/IP host. The role of the default gateway is to provide the next-hop IP address and interface for all destinations that are not located on its subnet. Without a default gateway, communication with remote destination is not possible, unless additional routes are added to the IP routing table. The default gateway must be the router's interface that is on the same IP subnet as the hosts. In this case it router Certkiller 2 is the default gateway router, and it's LAN interface with IP address 192.168.1.254 would be used.

QUESTION 227:

The Certkiller network topology exhibit is shown below:



Configuration exhibit:

Switch CertKillerA configuration:

```
Port1: dot1q trunk
VLAN 1: Ports 2, 3, 4
VLAN 10: Ports 5, 6, 7
VLAN 20: Ports 8, 9, 10, 11, 12
```

Router CertKiller2 configuration:

```
interface fa0/0.1
 encapsulation dot1q 1
 ip address 192.168.1.14 255.255.255.248
interface fa0/0.10
 encapsulation dot1q 10
 ip address 192.168.1.78 255.255.255.224
interface fa0/0.20
 encapsulation dot1q 20
 ip address 192.168.1.130 255.255.255.192
```

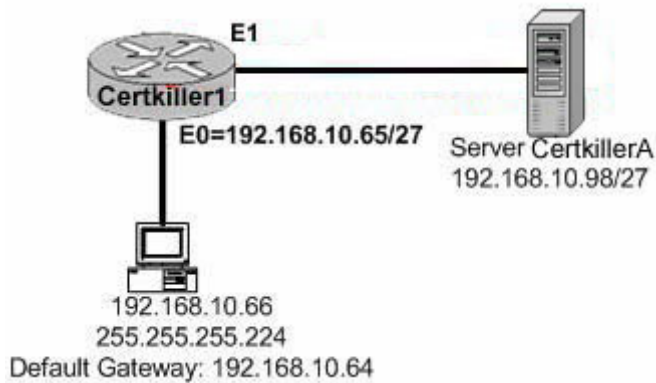
The Certkiller network administrator is adding two new hosts to switch Certkiller A. Of the following choices, which values could be used for the configuration of these hosts? (Choose three.)

- A. Host Certkiller B IP Address: 192.168.1.128
- B. Host Certkiller A default gateway: 192.168.1.78
- C. Host Certkiller A IP Address: 192.168.1.64
- D. Host Certkiller B IP Address: 192.168.1.190
- E. Host Certkiller A IP address: 192.168.1.79
- F. Host Certkiller B default gateway: 192.168.1.129

Answer: B, D, E

QUESTION 228:

The new Certkiller location is displayed below:



A new PC is installed on the LAN of the Certkiller 1 router as shown above. This PC is unable to connect to the Certkiller A server located on the Ethernet 1 network. What is the cause of this?

- A. IP address of the Ethernet 0 router interface is wrong
- B. Server is using an invalid IP address
- C. Workstation default gateway is set incorrectly
- D. Workstation subnet mask is incorrect
- E. Workstation IP address is invalid
- F. None of the above

Answer: C

Explanation:

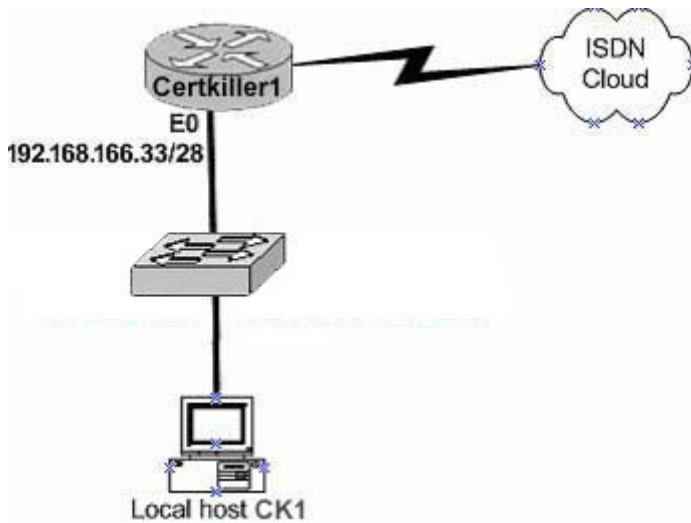
The default gateway of the host (192.168.10.64) is wrong. 192.168.10.64 is the network address of the host's network in this question. The default gateway should be the address of the local interface of the router. In this case: 192.168.10.65.

Incorrect Answers:

- A: The IP address of the Ethernet0 interface is valid.
- B: The IP address of the server is valid.
- D: The network uses a 27 bit subnet mask which equates to 255.255.255.224.
- E: The IP host address 192.168.10.66 is a valid host address on the subnet.

QUESTION 229:

A new LAN is being implemented on the Certkiller 1 network as shown below:



The local host CK1 can't access any of the resources on the other networks. The configuration of CK1 is as follows:

hostaddress:192.168.166.45

subnetmask:255.255.255.240

defaultgateway: ..192.168.166.32

What is the underlying cause of this problem?

- A. The default gateway is a network address.
- B. The default gateway is on a different subnet address as the host.
- C. The IP address of the host is on a different subnet.
- D. The host subnet mask is incompatible to the subnet mask of the attached router interface.

Answer: A

Explanation:

The range of the subnet used in this question is 192.168.166.32 to 192.168.166.47.

192.168.166.32 is the network address and 192.168.166.47 is the broadcast. This leaves the usable host address range of 192.168.166.33 to 192.168.166.46.

The default gateway for the host should be 192.168.166.33.

Incorrect Answers:

B: The default gateway is on the same network but it is a network address.

C: The host address is correct.

D: The subnet mask 255.255.255.240 uses 28 bits and is therefore correct.

QUESTION 230:

While troubleshooting a connectivity issue from a PC you obtain the following information:

Local PC IP address: 190.0.3.35/24

Default Gateway: 190.0.3.1

Remote Server: 190.0.5.250/24

You then conduct the following tests from the local PC:

Ping 127.0.0.1 - Unsuccessful

Ping 190.0.3.35 - Successful

Ping 190.0.3.1 - Unsuccessful

Ping 190.0.5.250 - Unsuccessful

What is the underlying cause of this problem?

- A. TCP/IP not correctly installed
- B. Local physical layer problem
- C. NIC not functioning
- D. Remote physical layer problem
- E. None of the above

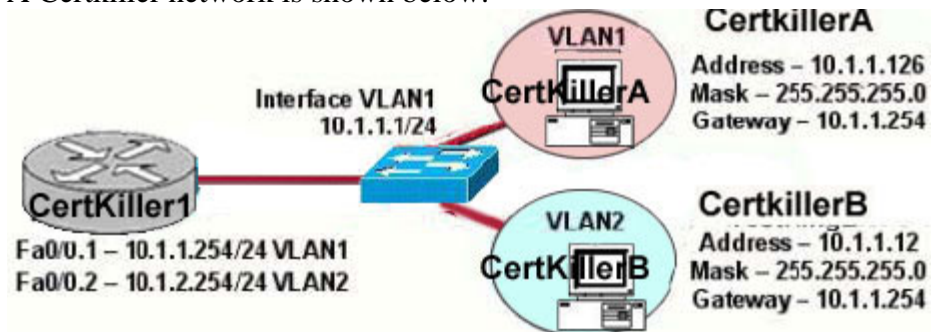
Answer: A

Explanation:

Every Windows based PC uses the 127.0.0.1 as the local loopback IP address. Every PC will respond to this local IP address if the TCP/IP stack is correctly installed and running on the machine. If you cannot ping the loopback address of 127.0.0.1, then something is wrong with the TCP/IP protocol stack.

QUESTION 231:

A Certkiller network is shown below:



The network shown in the exhibit above is experiencing connectivity problems.

Which of the following will correct the problems? (Select two)

- A. Configure the gateway on Certkiller A as 10.1.1.1.
- B. Configure the gateway on Certkiller B as 10.1.2.254.
- C. Configure the IP address of Certkiller A as 10.1.2.2.
- D. Configure the IP address of Certkiller B as 10.1.2.2.
- E. Configure the masks on both hosts to be 255.255.255.224.
- F. Configure the masks on both hosts to be 255.255.255.240.

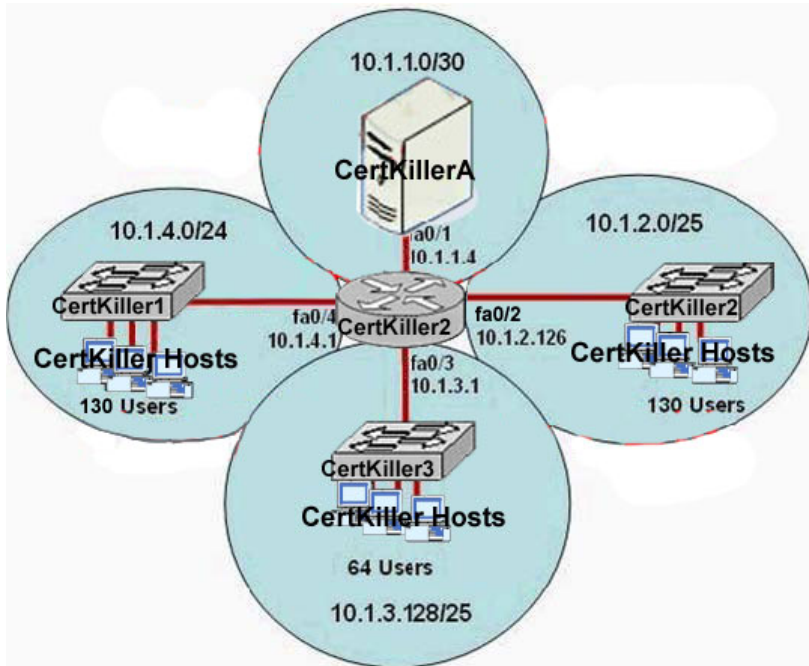
Answer: B, D

Explanation:

All devices must have their default gateways set to an IP address that is in the same IP network that the station is in. Based on the diagram above, Certkiller B is in VLAN2, so the default gateway for this device should be the IP address of the VLAN 2 interface on the router. In addition, the IP addresses of both devices reside within the same IP subnet. Since they belong to different VLANs, the best method to ensure proper connectivity would be to give Certkiller B an IP address within the same IP range as the VLAN that it belongs to, which is VLAN2 in this example.

QUESTION 232:

Part of the Certkiller network is shown below:



A junior network associate has created the network design shown above. The goal of this network design is to provide the most efficient use of IP address space in a network expansion. Each circle defines a network segment and the number of users required on that segment. An IP subnet number and default gateway address are shown for each segment.

Based on the information shown above, what are three problems with the network design as shown? (Choose three)

- A. The IP subnet 10.1.1.0/30 is invalid for a segment with a single server.
- B. Network 10.1.3.128/25 requires more user address space.
- C. Network 10.1.2.0/25 requires more user address space.
- D. Interface fa0/2 has an invalid IP address for the subnet on which it resides.
- E. Interface fa0/1 has an invalid IP address for the subnet on which it resides.
- F. Interface fa0/3 has an incorrect IP address

Answer: C, E, F

Explanation:

C: A /25 will provide for 128 IP addresses (126 usable) so a larger subnet mask should be used. A /24 will provide for up to 254 usable addresses.

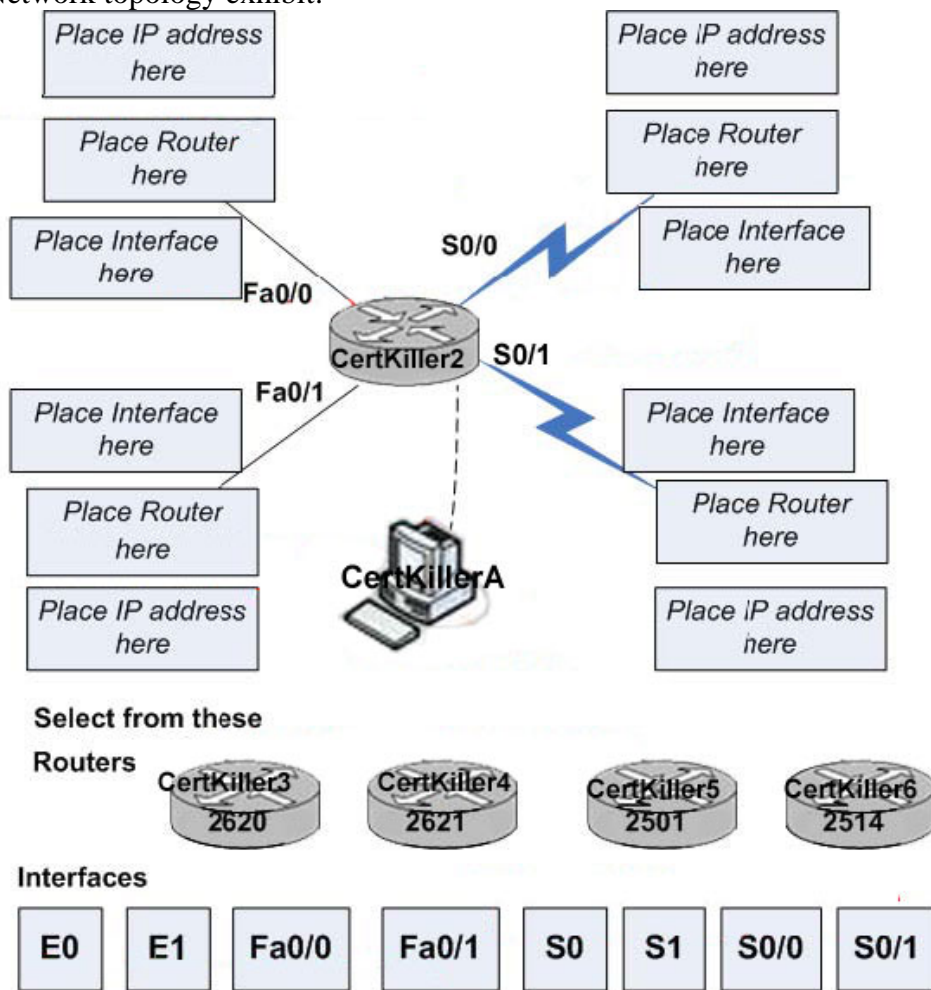
E: The 10.1.1.0/30 network will allow for only 2 usable IP addresses. In this network, 10.1.1.0 is reserved for the network address, and 10.1.1.3 is the broadcast address, so only 10.1.1.1 or 10.1.1.2 can be used for the fa0/1 IP address.

F: The 10.1.3.1 IP address is in the 10.1.3.0/25 network, not the 10.1.3.0/25 network. A more appropriate IP address for this interface would be 10.1.3.129

QUESTION 233:

DRAG DROP

Network topology exhibit:



You work as a network technician at Certkiller.com. Study the network topology exhibit carefully. The network is incomplete. Your task is to complete the Certkiller .com network. You need to select the correct router types, IP addresses and interface types respectively.

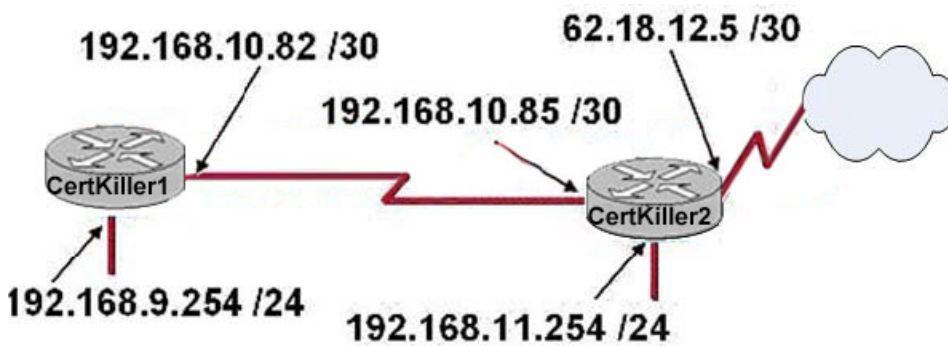
Use the Certkiller II PC connected to the Certkiller 1 router to access further information that is required to complete the task.

Note: The console information is missing in this scenario.

Answer:

QUESTION 234:

Exhibit:



After the router interfaces shown in the diagram have been configured, it is discovered that hosts in the Certkiller 1 LAN cannot access the Internet. Further testing reveals additional connectivity issues. What will fix this problem?

- A. Change the subnet mask of the Certkiller 2 router LAN interface.
- B. Change the address of the Certkiller 1 router WAN interface.
- C. Change the address of the Certkiller 2 router interface to the Internet.
- D. Change the address of the Certkiller 1 router LAN interface.
- E. Change the address of the Certkiller 2 router LAN interface.
- F. Change the subnet mask of the Certkiller 2 router interface to the Internet.
- G. None of the above

Answer: B

Explanation:

In order for two routers to be able to send and receive traffic across a point to point serial link, the IP addresses of the two serial interfaces across this link needs to be in the same IP subnet. Since we are using a /30 in this case, only 2 valid IP addresses are usable but as we can see in this example the 192.168.10.82/30 and 192.168.10.85/30 IP addresses reside in two different subnets.

QUESTION 235:

Exhibit:

```

CertKiller3# configure terminal
CertKiller3(config)# interface fastethernet 0/0
CertKiller3(config-if)# ip address 192.168.1.17 255.255.255.0
CertKiller3(config-if)# no shutdown
CertKiller3(config-if)# interface serial 0/0
CertKiller3(config-if)# ip address 192.168.1.65 255.255.255.240
CertKiller3(config-if)# no shutdown

```

70 192.168.1.0 overlaps with FastEthernet0/0

You work as a network technician at a Certkiller office. After configuring two interfaces on the Certkiller 3 router as shown, you notice an error message. What should be done to fix this error?

- A. The subnet mask of the serial interface on Certkiller 3 should be changed to 255.255.255.0.
- B. The subnet mask of the FastEthernet interface on Certkiller 3 should be changed to 255.255.255.240.
- C. The serial interface must be configured first.
- D. The serial interface must use the address 192.168.1.2.
- E. The address of the FastEthernet interface should be changed to 192.168.1.66.

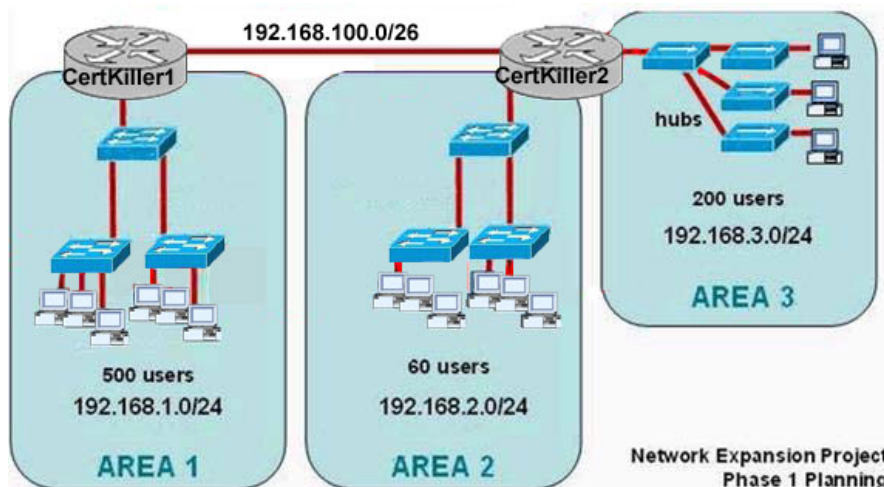
Answer: B

Explanation:

Cisco routers will not allow you to configure two interfaces that belong to the same IP subnet. In this case, by giving the serial 0/0 interface an IP address of 192.168.1.65, it would belong to this /28 subnet but it would also belong to the 192.168.1.17/24 subnet. You need to ensure that two interfaces are given IP addresses and subnet masks so that they belong to different subnets, and given the options only the option of changing the mask of the FE interface to an /28 will accomplish this.

QUESTION 236:

Exhibit:



The junior network support staff at Certkiller provided the diagram as a

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

192.168.1.1 through 192.168.5.255

192.168.100.1 through 198.168.100.255

There are three problems with this IP addressing design. What are they? (Choose three)

- A. The broadcast domain in AREA 1 is too large for IP to function.
- B. The AREA 3 IP address space is inadequate for the number of users.
- C. AREA 2 could use a mask of /25 to conserve IP address space.
- D. The router-to-router connection is wasting address space.
- E. The network address space that is provided requires a single network-wide mask.
- F. The AREA 1 IP address space is inadequate for the number of users.

Answer: C, D, F

Explanation:

C: Since there are only 60 users on this LAN, a /25 could be used as that will provide for up to 128 IP addresses (126 usable). In fact, since there are only 60 users, a /26 could be used as that will provide for up to 62 usable IP addresses. However, this would not accommodate any kind of growth and could cause problems in the future.

D: On point to point serial router links, a /30 is generally used as this will allow for only 2 usable IP addresses, which is all that is needed. In this case, a /26 has been assigned.

F: In this area, there are 500 users, but a /24 will only provide for 254 usable IP addresses. A /23 or larger will be needed to accommodate this many users.

QUESTION 237:

The following output was shown on router Certkiller 3:

CertKiller3 # show running-config

<some output text omitted>

routertrip

network 10.0.0.0

!

ip classless

CertKiller3# show ip route

<some output text omitted>

Gateway of last resorts 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

Refer to the output of the two show commands in the exhibit above. If the Certkiller

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 Certkiller 3?

- A. The packets will be routed out the Fa0/0 interface
- B. The packets will be discarded
- C. The packets will be routed out the S0/0 interface
- D. The packets will be routed out the S0/1 interface
- E. None of the above

Answer: D

QUESTION 238:

Router CK1 receives information about network 192.168.111.0/24 from multiple sources. What will CK1 consider the most reliable information about the path to that network?

- A. An OSPF update for network 192.168.111.0/16
- B. A static route to network 192.168.111.0/24
- C. A Directly connected interface with an address of 192.168.111.254/24
- D. A RIP update for network 192.168.111.0/24
- E. A Default route with a next hop address of 192.168.111.1
- F. A static route to network 192.168.111.0/24 with a local serial interface configured as the next hop
- G. None of the above

Answer: C

QUESTION 239:

Router CK1 has just received a packet and needs to route it. What two actions must this router take in order to route incoming packets? (Choose two)

- A. Inspect the routing table to select the best path to the destination network addresses.
- B. Validate sources of routing information.
- C. Inspect the ARP table to verify a legitimate source MAC address for each packet.
- D. Identify the destination network address of each packet.
- E. Verify the receipt of routed packets by the next hop router.
- F. Identify the source network address of each packet.

Answer: A, D

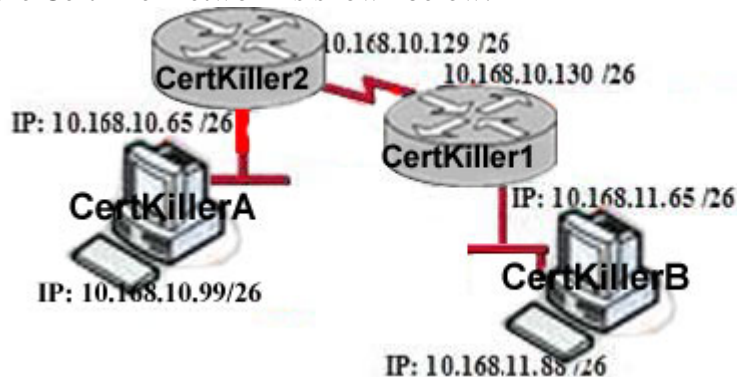
Explanation:

The router decides how to forward an incoming packet by finding the routes that "match" the destination address of the packet, and then forwarding it according to the most narrowly applicable one. A packet matches a route in the following way: a packet has

(among other things) a destination address in its header, a route contains either a network or a host address, a network mask (netmask), and instructions on how to forward a packet using the route. The packet matches the route if its destination address is part of the address subspace defined by the network address or exactly matches the host address of the route. A route is more narrowly applicable than another if the address subspace defined by its network address contains fewer actual addresses than the other, which is indicated by the netmask. An entry with a host address, rather than a network address, is the narrowest kind.

QUESTION 240:

Part of the Certkiller network is shown below:



In this network, host Certkiller A has established communications with host Certkiller B for the first time. What enabled router Certkiller 2 to forward this traffic in the appropriate direction to reach the network to which host Certkiller B is attached?

- A. A default gateway
- B. TCP/IP
- C. A routing protocol
- D. DHCP
- E. A Layer 4 protocol
- F. DNS
- G. None of the above

Answer: C

Explanation:

Routing is the process of selecting paths in a network along which to send data or physical traffic. In order for routers to know how to forward traffic to the correct destinations located on other IP networks, a routing protocol must be enabled, either via the use of a dynamic routing protocol such as RIP or EIGRP, or through the use of static routes.

QUESTION 241:

CertKillerA # show version

Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-D-M), Version 12.2(13b), RELEASE SOFTWARE
(fc1)

Copyright (c) 1986-2003 by cisco Systems, Inc.

Compiled Wed 19-Feb-03 16:08 by pwade

Image text-base: 0x8000808C, data-base: 0x80B4599C

ROM: System Bootstrap, Version 12.2(7r) [cmong 7r], RELEASE SOFTWARE (fc1)

Router uptime is 3 days

System returned to ROM by power-on

System image file is "flash:c2600-d-mz.122-13b bin"

cisco 2620XM (MPC860P) processor (revision 0x100) with 28672K/4096K bytes of
memory.

Processor board ID JAE07170HVK (4011562896)

M860 processor: part number 5, mask 2

Bridging software.

X.25 software, Version 3.0.0.

1 FastEthernet/IEEE 802.3 interface(s)

2 Low-speed serial(sync/async) network interface(s)

32K bytes of non-volatile configuration memory.

16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102 (will be 0x2100 at next reload)

You work as a network technician at Certkiller .com. Study the exhibit carefully.

What will router Certkiller A do when it starts up next time?

- A. start the limited IOS in ROM
- B. start in ROM monitor mode
- C. retrieve configuration information from the running-config file
- D. look for startup instructions in NVRAM
- E. load IOS from flash

Answer: B

Explanation:

RAM-Sometimes called DRAM for dynamic random-access memory, RAM is used by the router just as it is used by any other computer: for working storage. The running or active configuration file is stored here.

ROM-This type of memory (read-only memory) stores a bootable IOS image, which typically is not used for normal operation. ROM contains the code that is used to boot the router until the router knows where to get the full IOS image or as a backup bootable image, in case there are problems.

Flash memory-Either an EEPROM or a PCMCIA card, Flash memory stores fully functional IOS images and is the default location where the router gets its IOS at boot time. Flash memory also can be used to store any other files, including configuration files.

NVRAM-Nonvolatile RAM stores the initial or startup configuration file.

IOS on a router uses a configuration file for the initial configuration at router startup and

the active, running configuration file. The startup configuration file is in NVRAM; the other file, which is in RAM, is the one that the router uses during operation. When the router first comes up, the router copies the stored configuration file from NVRAM into RAM, so the running and startup configuration files are identical at that point. Also, exterior to the router, configuration files can be stored as ASCII text files anywhere using TFTP or FTP.

The boot process follows this basic litany:

1. The router performs a power-on self-test (POST) to discover and verify the hardware.
2. The router loads and runs bootstrap code from ROM.
3. The router finds the IOS or other software and loads it.
4. The router finds the configuration file and loads it into running config.

Two configuration tools tell the router what OS to load:

1. The configuration register
2. The boot system configuration command

First, the configuration register tells the router whether to use a full-featured IOS, ROMMON, or the limited-feature IOS, which also is called RXBOOT mode. The configuration register is a 16-bit software register in the router, and its value is set using the

config-register global configuration command. (Some older routers had a hardware configuration register with jumpers on the processor card, to set bits to a value of 0 or 1.)

On most Cisco routers, the default Configuration Register setting is hexadecimal 2102.

Boot System Commands	Result
No boot command	Tries loading the following (in order): first file in flash; broadcasts looking for TFTP server and a default filename; IOS in ROM; or uses ROM Monitor.
boot system ROM	IOS from ROM is loaded.
boot system flash	The first file from Flash memory is loaded.
boot system flash <i>filename</i>	IOS with the name <i>filename</i> is loaded from Flash memory.
boot system tftp <i>filename</i> 10.1.1.1	IOS with the name <i>filename</i> is loaded from the TFTP server.
Multiple boot system commands, any variety	An attempt occurs to load IOS based on the first boot command the in configuration. If that fails, the second boot command is used, and so on, until one is successful.

0x2102 : Default, which loads the IOS from Flash Memory

0x2100 : Boot the router in ROM Monitor Mode

0x2142: Boot the router bypassing the startup configuration

QUESTION 242:

During startup, router CK1 displays the following error message:

boot: cannot open "flash:"

What will CK1 do next?

A. It will attempt to locate the configuration file from a TFTP server. If this fails, it will initiate the setup dialog.

- B. It will attempt to locate the IOS from a TFTP server. If this fails, it will load a limited IOS from ROM.
- C. It will attempt to locate the configuration file from a TFTP server. If this fails, it will load a limited configuration from ROM.
- D. Because of damaged flash memory, the router will fail the POST.
- E. It will attempt to locate the IOS from a TFTP server. If this fails, it will initiate the setup dialog.
- F. None of the above

Answer: B

Explanation:

The boot sequence of a Cisco router is shown below:

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

Reference: <http://www.svrops.com/svrops/documents/ciscoboot.htm>

QUESTION 243:

After logging into a router and typing in a few show commands, you press the up arrow key. What will this do?

- A. It will recall the previous command line
- B. It will move the cursor one line up
- C. It will redisplay the current command line
- D. It will capitalize the command line

E. None of the above

Answer: A

Explanation:

The up arrow key is used to recall the previous command line entry. The commands that were entered previously can be displayed by repeatedly pressing the up arrow key, or by entering the "show history" command.

QUESTION 244:

After working on a router, some problems arise and you wish to view the commands that you recently entered. Which IOS command opens the history buffer and displays the most recently entered commands?

- A. Show history
- B. Show buffers
- C. Show typed commands
- D. Show terminal buffer
- E. Show command
- F. None of the above

Answer: A

Explanation:

The router will buffer previously entered commands. By default, the "show history" command will display the previous ten commands that were entered. To see the contents of the buffer you enter the show history command.

Incorrect Answers:

- B. This command will show the memory buffer information
- C, D. These are invalid commands.

QUESTION 245:

You have just purchased a brand new router and wish to have the router prompt you through the initial configuration commands. Which router mode does this describe?

- A. ROM Monitor mode
- B. SETUP mode
- C. Autoflash mode
- D. RXBOOT mode
- E. None of the above

Answer: B

Explanation:

Setup mode is a convenient mode that walks you through the setup procedure by prompting you with specific questions and options one by one.

QUESTION 246:

After working all night and successfully configuring a Cisco router for the Certkiller network you save your changes on the startup config, reboot the router, and go out for a cigarette. When you return, none of your changes are active and the router boots to the initial configuration mode! Which of the choices below indicates the source of your problem?

- A. Hardware failure in NVRAM prevents the router from loading the config
- B. Startup-config in flash is corrupt and cannot be analyzed
- C. Router configuration-register set to bypass startup configuration
- D. Startup-config in NVRAM is corrupt and cannot be analyzed
- E. None of the above

Answer: C

Explanation:

The default configuration-register setting of 0x2102 loads the IOS from flash and the configuration from NVRAM.

However, for password recovery, you can set the register to 0x2142 and the startup-config file in NVRAM will be bypassed. The problem described here is that the config register was not changed back to 0x2102 before the router was rebooted, so the active configuration is bypassed. Simply setting the config register back to 0x2102 will fix this problem.

Incorrect Answers:

A, B, D. All of these describe hardware or software errors. In the event that this is the problem, errors will be generated and the router will fail to boot properly. In these cases, the router will not return to the initial startup configuration.

QUESTION 247:

While working in setup mode, a configuration line is typed incorrectly. What should you do to exit setup mode, without executing or saving any of the mistakes you made? (Select two answer choices)

- A. Type exit at the setup dialog.
- B. Type close at the setup dialog.
- C. Press the Ctrl-C key combination.
- D. Press the Ctrl-X key combination.
- E. Issue the copy startup-config command.
- F. Issue the 'write e' command.
- G. Issue the "write mem" command

Answer: C

Explanation:

Here is the partial output from new router while it boots up:

At any point you may enter a question mark '?' for help.

Refer to the 'Getting Started' Guide for additional help.

Use ctrl-c to abort configuration dialog at any prompt.

Incorrect Answers:

A. The Exit command can not be used during setup mode.

B. This is an invalid command

E. This command is used to save the configuration stored on NVRAM to a location.

F. This will have the effect of erasing the running configuration, and setting the router configuration back to the factory default settings.

G. This is an old command that is still supported on the latest Cisco IOS. It is short for "write memory" and has the same effect as the "copy running-config startup-config" command.

QUESTION 248:

You are a senior network administrator at Certkiller , and while performing the password recovery procedure on your 2500 series Cisco router, you type in the following command:

o/r0x2142

What is the purpose of this command?

A. It is used to restart the router.

B. It is used to bypass the configuration in NVRAM.

C. It is used to enter ROM Monitor mode.

D. It is used to view the lost password.

E. It is used to save the changes to the configuration.

Answer: B

Explanation:

Theo/r 0x2142 command changes the value of config-register to 2142 in a Cisco 2500 series router, so that the Router ignores the NVRAM contents and reverts to the initial setup configuration mode when it boots.

QUESTION 249:

Refer to the exhibit below. A Certkiller technician wants to upload a new IOS in the 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?

Exhibit:

```
CK1# 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 or processor board System flash (Read/Write)
```

- A. 4 MB
- B. 5 MB
- C. 8 MB
- D. 3 MB
- E. 7 MB
- F. None of the above

Answer: A

Explanation:

Based on the output provided, the total amount of flash memory available is 8388608 bytes (8 MB), but the existing IOS is using up 3803056 bytes (3 MB), so in order to fit both IOS files into the flash the new image must be no greater than the amount of available memory, which is 4585552 bytes (4 MB).

QUESTION 250:

Refer to the diagram. What is the largest configuration file that can be stored on this router?

Exhibit:

```
DD# show version
Cisco IOS Software, 1841 Software (C1841-IPBASE-M), Version 12.4(1a),
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Fri 27-May-05 12:32 by hqluong

ROM: System Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE (fc1)

N-East uptime is 5 days, 49 minute
System returned to ROM by reload at 15:11:00 UTC Thu Jun 8 2006
System image file is "flash:c1841-ipbase-mz.124-1a.bin"

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0932W21Y
2 FastEthernet interfaces
2 Low-speed serial(sync/async) interfaces
DRAM configuration is 64 bits wide with parity disabled.
191K bytes of NVRAM.
31360K bytes of ATA CompactFlash (Read/Write)

Configuration register is 0x2102

DD#
```

- A. 31369K bytes
- B. 16384K bytes
- C. 191K bytes
- D. 114688K bytes
- E. None of the above

Answer: C

Explanation:

Non-Volatile Random Access Memory (NVRAM) is used as the storage location for the router's startup configuration file. After the router loads its IOS image, the settings found in the startup configuration are applied. When changes are made to a router's running configuration, they should always be saved to the startup configuration (stored in NVRAM) or they will be lost when the router shuts down. Remember that the running configuration is stored in RAM, which is erased when the router is powered down. On a Cisco 2500 series router, NVRAM is a relatively tiny 32KB in size. In this example, the file size is only 191K, so the config file must not exceed this.

QUESTION 251:

Why might the Certkiller network administrator set the configuration register to 0x2142 on a 2600 series Cisco router?

- A. To boot the IOS from ROM
- B. To reset the console password

- C. To upload a new version of the configuration file
- D. To upload a new version of the IOS
- E. To allow a new memory upgrade to be recognized by the router
- F. None of the above

Answer: B

Explanation:

About 99 percent of the time someone uses a config-register, it's more than likely because of a lost router password. The two config-registers for recovering passwords are 0x2102 and 0x2142.

The first config-register, 0x2102, is the normal config-register if you boot the router from internal Flash. You can see this config-register by using the show version command. In this output, you'll notice the last line says, "Configuration register is 0x2102." This is normal.

But let's say you forgot the router's password. To recover this password (as long as it's unencrypted), boot the router and bypass the startup-config using config-register 0x2142; you should then be able to see the password in the startup-config. You can use the same method for encrypted passwords, but you'll need to overwrite the original password with a new one. To change the configuration register, enter the following:

```
Router(config)# config-register 0x2142
```

This will instruct the router to bypass the configuration and boot up as if it were a brand new router using factory default settings.

QUESTION 252:

After making some network changes you power off and then power on your Cisco router named CK1 . What sequence of events occurs when CK1 is powered up?

- A. Perform POST, locate configuration statements, apply configuration statements, locate Cisco IOS software, and load Cisco IOS software.
- B. Locate Cisco IOS software, load Cisco IOS software, locate configuration statements, apply configuration statements, and perform POST.
- C. Test software routines, POST, load configuration files, load Cisco IOS software, test Cisco IOS software.
- D. Perform POST, locate Cisco IOS software, load the Cisco IOS software, locate configuration statements, and apply configuration statements.
- E. Load and test IOS, load configuration files, test software routines, POST.
- F. None of the above

Answer: D

Explanation:

Upon initial start up, Cisco routers perform the following steps in order:

1. The router performs a power-on self-test (POST) to discover and verify the hardware.
2. The router loads and runs bootstrap code from ROM.

3. The router finds the IOS or other software and loads it.
 4. The router finds the configuration file and loads it into running config.
-

QUESTION 253:

You are the network administrator at Certkiller . You need to perform password recovery on Router CK1 . What must you modify in the password recovery process? (Choose two.)

- A. Configuration register
- B. NVRAM
- C. Boot flash
- D. CMOS
- E. Flash

Answer: A, B

Explanation:

Recovering a Lost Password

This section describes how to recover a lost enable password and how to enter a new enable secret password.

Password recovery consists of the following major processes:

Determining the Configuration Register Value

1. With this process, you determine the configuration of the router, so that you may restore the configuration after the password is recovered.

Resetting the Router

1. With this process, you reconfigure the router to its initial startup configuration. You then display the enable password, if one is used.

Resetting the Password

1. If you are using an enable secret password, you enter a new password with this process. You then restore the router to its prior configuration.

Resetting the Configuration Register Value

1. If you are using an enable password, you use this process to restore the router to its prior configuration.
-

QUESTION 254:

How can a Certkiller administrator determine if a router has been configured when it is first powered up?

- A. A configured router prompts for a password
- B. A configured router goes to the privileged mode prompt
- C. An un configured router goes into the setup dialog
- D. An un configured router goes to the enable mode prompt

Answer: C

Explanation:

If a non-configured router is started, then it goes into setup mode and ask for the minimum configuration parameters (hostname, IP address to interfaces, enable password, etc). If the router is already configured it boots by implementing the saved startup-config.

QUESTION 255:

What will cause a Certkiller router to enter setup mode? (Choose two)

- A. The configuration file is missing in NVRAM.
- B. The configuration register is set to 0x2100.
- C. Boot system commands are misconfigured in the running-configuration.
- D. The setup command was issued from the privileged mode prompt.
- E. The IOS is missing.
- F. The IOS is corrupt.

Answer: A, D

Explanation:

When router boots up, it checks the valid configuration into NVRAM and tries to load the configuration. If there is not configuration router automatically goes into setup dialog. From setup dialog, you able to configuration the basic configuration. As well you can run the setup command manually from privileged mode using the setup command.

QUESTION 256:

Refer to the graphic. A network associate is planning to copy a new IOS image into the Certkiller 1 router. This new image requires 8 MB of flash memory and 32 MB of RAM. How will the IOS proceed with the copy process?

CertKiller1#show flash

```
System flash directory:
File Length Name/status
 1 8760520 c4500-js-mz.122-7b.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.

Answer: A

Explanation:

According to the output shown above, the existing IOS is 8760520 bytes (8M) and the total size of the flash on this device is 24567K (24M). The new IOS only requires an additional 8 MB, so it will be copied on to the flash directly and both images will reside on the flash. The existing IOS is only overwritten if there is insufficient space to hold both.

QUESTION 257:

What is the default configuration register setting on most Cisco routers?

- A. 0x2104
- B. 0x2012
- C. 0x2210
- D. 0x2102
- E. 0x2142
- F. None of the above

Answer: D

Explanation:

About 99 percent of the time someone uses a config-register, it's more than likely because of a lost router password. Normally, the two config-registers for recovering passwords are 0x2102 and 0x2142.

The first config-register, 0x2102, is the normal config-register if you boot the router from internal Flash. You can see this config-register by using the show version command. In this output, you'll notice the last line says, "Configuration register is 0x2102." This is normal.

QUESTION 258:

During the boot sequence, a Certkiller 2800 series router needs to locate and load an operating system. What is the default order the router uses to find an operating system?

- A. ROM, TFTP server, Flash
- B. Flash, TFTP server, ROM
- C. Flash, NVRAM, TFTP server
- D. Flash, ROM, TFTP server
- E. Flash, TFTP server, RAM

Answer: B

Explanation:

Booting up the Router:

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.

Reference: <http://www.svrops.com/svrops/documents/ciscoboot.htm>

QUESTION 259:

What will a new Certkiller router do during startup if a configuration file is not located in NVRAM?

- A. It will search for the configuration file in the locations specified by boot system commands.
- 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.
- E. 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.

Answer: C

Explanation:

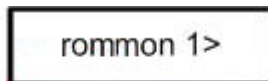
When a router boots and is able to locate the IOS it begins to load the configuration file. The configuration file, saved in NVRAM, is loaded into main memory and executed one line at a time. These configuration commands start routing processes, supply addresses for interfaces, and set media characteristics.

If no configuration file exists in NVRAM, the router attempts a network boot and sends a broadcast request for the file on a TFTP server. If this is also not found, the operating system executes a question-driven initial configuration routine called the system configuration dialog.

QUESTION 260:

A Certkiller router boots to the prompt shown in the exhibit below. What does this signify, and how should the network administrator respond?

Exhibit:



- A. This prompt signifies that the configuration file was not found in flash memory. The network administrator should use TFTP to transfer a configuration file to the router.
- B. This prompt signifies that the IOS image in flash memory is invalid or corrupt. The network administrator should use TFTP to transfer an IOS image to the router.

- C. This prompt signifies that the configuration file was not found in NVRAM. The network administrator should follow the prompts to enter a basic configuration.
- D. This prompt signifies that the router could not authenticate the user. The network administrator should modify the IOS image and reboot the router.

Answer: B

Explanation:

The default boot sequence for Cisco IOS software:

1. NVRAM
2. Flash (sequential)
3. TFTP server (network boot)
4. ROM (partial IOS)

If a router boots up in ROM mode as shown in this example, it means that the router was unsuccessfully able to find a valid IOS to boot from, and a valid IOS image will need to be loaded onto it.

QUESTION 261:

A Certkiller router boots up in ROMMON mode. What is ROM Monitor (ROMMON)?

- A. A memory component for storing the saved configuration file
- B. A memory management tool
- C. An operating system used for hardware troubleshooting and for password recovery
- D. Temporary storage space for the router operating files
- E. The source of the primary Cisco IOS software image
- F. None of the above

Answer: C

Explanation:

The ROM Monitor is a very limited code set that enables you to perform elementary functions to manually get the router or switch back to a functioning state. You can perform low-level diagnostics and even copy a new IOS file to the Cisco device over the console port. It is also used after the break sequence is issued during bootup for password recovery use.

QUESTION 262:

Which type of cable should be used to make a connection between the Fa0/0 port on a router and the Fa0/0 port switch?

- A. Rollover cable
- B. Console cable
- C. Crossover cable

- D. Straight-through cable
- E. Serial cable

Answer: D

Explanation:

Straight-through cables are used to connect host to switch (or hub) and router to switch (or hub).

	Hub	Switch	Router	Workstation
Hub	Crossover	Crossover	Straight	Straight
Switch	Crossover	Crossover	Straight	Straight
Router	Straight	Straight	Crossover	Crossover
Workstation	Straight	Straight	Crossover	Crossover

QUESTION 263:

You are trying to connect directly into the LAN port of a Certkiller router. You want to telnet to the local Cisco router using TCP/IP but cannot create a session. What should you do to resolve the problem?

- A. Use a straight-through cable to connect your computer's COM port to the router's console port.
- B. Use a crossover cable to connect your computer's COM port to the router's console port.
- C. Use a straight-through cable to connect your computer's COM port to the router's Ethernet port.
- D. Use a crossover cable to connect your computer's Ethernet port to the router's Ethernet port.
- E. Use a rollover cable to connect your computer's Ethernet port to the router's Ethernet port.
- F. Use a straight-through cable to connect your computer's Ethernet port to the router's Ethernet port.
- G. None of the above

Answer: D

Explanation:

In order to connect directly to a router via telnet, you must connect to the router via one of the LAN ports. When connecting directly to the Ethernet port with a PC without the use of a switch or hub, a crossover cable must be used.

Incorrect Answers:

- A, B, C. In order to telnet directly into the router via a TCP/IP connection, the COM port of the PC can not be used. The COM port is used for direct terminal emulation programs such as HyperTerminal.
- E. Rollover cables are used for console connections into the router, not for TCP/IP

connections.

F. Straight through cables are used for connections into a switch or hub from the PC. It will not work for direct Ethernet connections into the router.

QUESTION 264:

Refer to the exhibit shown below.

```
CK1# show interfaces 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 1544Kbits, DLY 20000 usec, rely 255/255, load 9/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  <some output omitted>
```

Based on the output shown above, What could be possible causes for the "Serial0/0 is down" interface status on this Certkiller router? (Choose two)

- A. The bandwidth is set too low.
- B. A protocol mismatch exists.
- C. A Layer 1 problem exists.
- D. An incorrect cable is being used.
- E. There is an incorrect IP address on the Serial 0/0 interface.

Answer: C, D

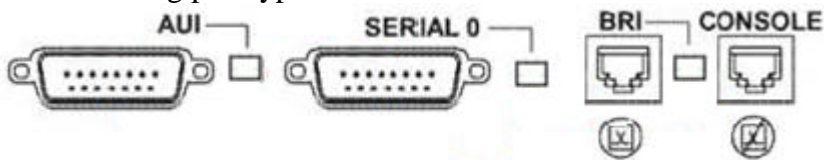
Explanation:

Status Line Condition	Possible Problem	Solution
Serial x is up, line protocol is up	—	This is the proper status line condition. No action is required.
Serial x is down, line protocol is down (DTE mode)	<p>The router is not sensing a CD signal (that is, the CD is not active).</p> <p>A telephone company problem has occurred—line is down or is not connected to CSU/DSU.</p> <p>Cabling is faulty or incorrect.</p> <p>Hardware failure has occurred (CSU/DSU).</p>	<ol style="list-style-type: none"> 1. Check the LEDs on the CSU/DSU to see whether the CD is active, or insert a breakout box on the line to check for the CD signal. 2. Verify that you are using the proper cable and interface (see your hardware installation documentation). 3. Insert a breakout box and check all control leads. 4. Contact your leased-line or other carrier service to see whether there is a problem. 5. Swap faulty parts. 6. If you suspect faulty router hardware, change the serial line to another port. If the connection comes up, the previously connected interface has a problem.

Reference: http://www.cisco.com/univercd/cc/td/doc/cisintwk/itg_v1/tr1915.htm

QUESTION 265:

The following port types are installed on a Certkiller device:



From the choices shown above, which port can be used for a WAN T1 connection?

- A. Console
- B. Serial 0
- C. AUI
- D. BRI
- E. None of the above

Answer: B

Explanation:

From the choices above, only the serial connection can be used for a data T1. In this case, the serial interface would connect to an external CSU/DSU.

Incorrect Answers:

A: The router includes an asynchronous serial console port and an auxiliary port. The

console and auxiliary ports provide access to the router either locally using a console terminal connected to the console port, or remotely using a modem connected to the auxiliary port.

C: For flexibility, some Cisco routers provide a generic AUI connector for Ethernet ports. These AUI ports are designed to connect to an external transceiver for conversion to a specific media type (such as twisted pair, coax, or fiber).

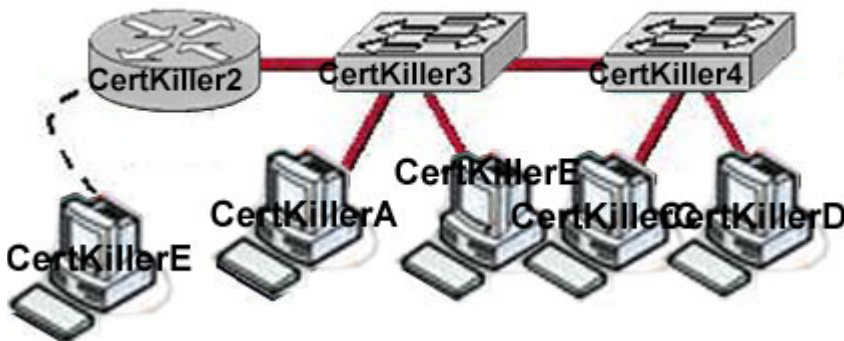
D: BRI ports are used to connect to ISDN links, not T1.

Reference:

http://www.ieng.net/univercd/cc/td/doc/product/access/acs_mod/2800/hw/03_hw.htm#wp1033227

QUESTION 266:

Exhibit:



You need to provide the cables needed for a new Certkiller office. Based on the graphic, which types of cables are required to interconnect the devices shown? (Choose three)

- A. Rollover cable
- B. RJ-11 cable
- C. USB cable
- D. Crossover cable
- E. Straight-through cable
- F. V.35 cable

Answer: A, D, E

Explanation:

Crossover Cables are used to Connect:

Host to Host (Peer to Peer) Networking

Switch to Switch

Hub to Hub

Computer to Router's Ethernet Port

Straight through Cable are used for:

Host to Switch

Host to Hub

Switch to Router

Serial Cables are for:

Router's Serial Port to Serial Port

Rollover Cable:

To connect Router/Switch Console port.

In this example, one switch is connected with another switch using a crossover cable. The switch connected with the router uses a straight through cable and the PC Connects to the router's console port using the console rollover cable.

QUESTION 267:

RIP version 2 is being used as the routing protocol within the Certkiller network.

What does RIP version 2 use to prevent routing loops? (Choose two)

- A. CIDR
- B. Split horizon
- C. Authentication
- D. Classless masking
- E. Hold-down timers
- F. Multicast routing updates
- G. Path Vectoring

Answer: B, E

Explanation:

Distance Vector routing protocols employ the split horizon mechanism to reduce the possibility of routing loops. Split horizon blocks information about routes from being advertised by a router out of any interface from which that information originated.

RIP versions 1 and 2 also use the concept of hold timers. When a destination has become unreachable (or the metric has increased enough to cause poisoning), the destination goes into "holddown". During this state, no new path will be accepted for the same destination for this amount of time. The hold time indicates how long this state should last.

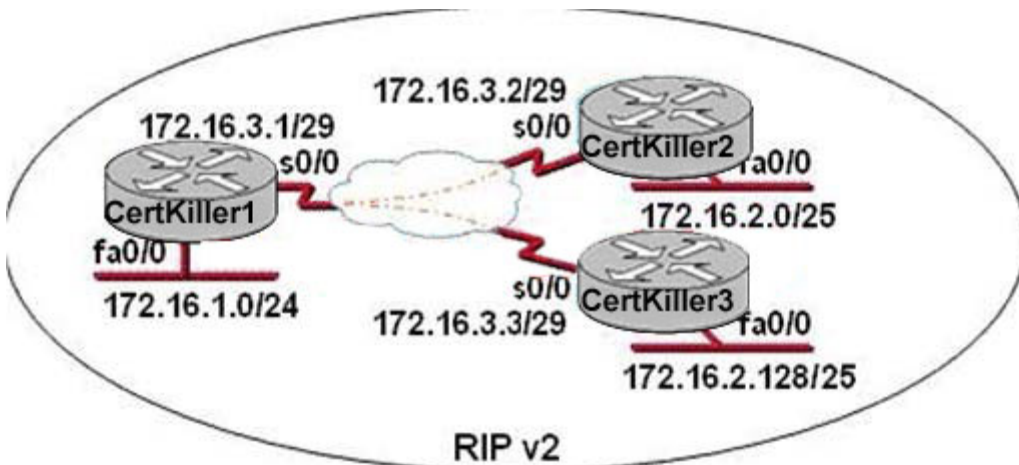
Incorrect Answers:

A, C, D, F. Although these are all features and functions of RIP version 2, they are not mechanisms used to prevent routing loops.

G. Path Vectoring is a concept used by BGP routers. RIP version 1 and 2 are considered to be distance vector routing protocols.

QUESTION 268:

Refer to the following Certkiller network:



S0/0 on CK1 is configured as a multipoint interface to communicate with CK2 and CK3 in the hub-and-spoke Frame Relay topology shown in the exhibit. Originally, static routes were configured between these routers to successfully route traffic between the attached networks. What will need to be done in order to use RIP v2 in place of the static routes?

- A. Configure the no ip subnet-zero command on CK1 , CK2 , and CK3 .
- B. Dynamic routing protocols such as RIP v2 cannot be used across Frame Relay networks.
- C. Configure the s0/0 interface on CK1 as two subinterfaces and configure point-to-point links to CK2 and CK3 .
- D. Change the 172.16.2.0/25 and 172.16.2.128/25 subnetworks so that at least two bits are borrowed from the last octet.
- E. Change the network address configurations to eliminate the discontinuous 172.16.2.0/25 and 172.16.2.128/25 subnetworks.

Answer: C

Explanation:

For Dynamic Routing in Hub-and spoke topology, configure the subinterface for each link then define the link as point to point. One reason for the use of subinterfaces is to circumvent the rule of split horizon. Split horizon dictates that a route cannot be advertised out the same interface upon which it was learned in the first place. This can be a problem in hub and spoke frame relay networks, but by using pt-pt subinterfaces this problem will be eliminated.

QUESTION 269:

The following output was shown on router CK1 :

```
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. The IP address 10.10.10.8 is configured on S0/1.
- E. This route is using the default administrative distance.

Answer: A, E

Explanation:

When issuing the "show ip route" command, the first number in the brackets is the administrative distance of the information source; the second number is the metric for the route. In this case, the value of 120 is the default AD for RIP routes, and the 2 represents the metric, which is the number of router hops in RIP.

QUESTION 270:

Part of the Certkiller WAN is shown below:



The Certkiller 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 Certkiller 1 goes down. In which two ways will the routers in this network respond to this change? (Choose two)

- A. All routers will reference their topology database to determine if any backup routes to the 192.168.1.0 network are known.
- B. Routers router Certkiller 2 and router Certkiller 3 mark the route as inaccessible and will not accept any further routing updates from router Certkiller 1 until their hold-down timers expire.
- C. When router Certkiller 2 learns from router Certkiller 1 that the link to the 192.168.1.0 network has been lost, router Certkiller 2 will respond by sending a route back to router Certkiller 1 with an infinite metric to the 192.168.1.0 network.
- D. Because of the split-horizon rule, router Certkiller 2 will be prevented from sending erroneous information to router Certkiller 1 about connectivity to the 192.168.1.0 network.
- E. router Certkiller 1 will send LSAs to router Certkiller 2 and router Certkiller 3 informing them of this change, and then all routers will send periodic updates at an increased rate until the network again converges.

Answer: C, D

Explanation:

RIP version 2 will send triggered updates when the topology changes like when a link goes down.

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 as 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.

Reference: <http://www.ethanbanks.net/?m=200702>

QUESTION 271:

The Certkiller WAN is migrating from RIPv1 to RIPv2. Which three statements are correct about RIP version 2? (Choose three)

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

Answer: B, C, E

QUESTION 272:

SIMULATION

Network topology exhibit:



You work as a network technician at Certkiller.com. Study the network topology exhibit carefully. You are stationed at the Rome office of Certkiller .com. You have upgraded the Rome LAN by adding the Certkiller 3 router to the network. You are now required to finish the installation. The following steps remains:

* make the initial router configurations:

The following configurations are required:

Router name: Certkiller 3

Enable Secret password: Certkiller enable

Access user EXEC mode password: Certkiller exec

Telnet access password: Certkiller telenet

Configure the IP addresses (IPv4 not IPv6) as follows:

Serial network: 209.1675.201.0/27. Assign the second assignable host address to Certkiller 3.

Ethernet network: 192.0.2.128/28: Assign the last assignable host address to Certkiller 3.

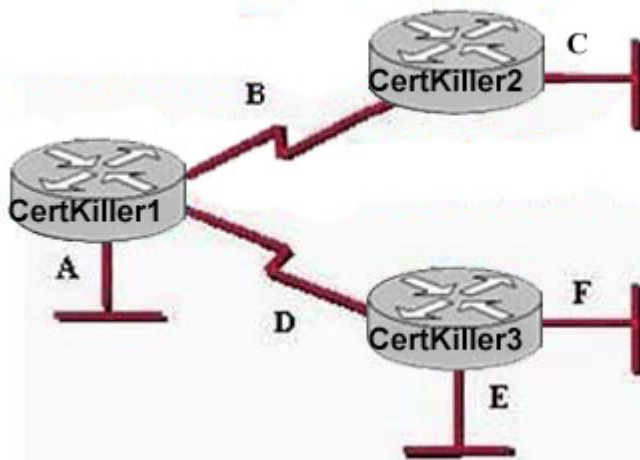
* configure RIP V2 as the routing protocol

Use PC Certkiller 2 to configure Certkiller 3 using the command line interface.

Answer:

QUESTION 273:

Network topology exhibit:



Certkiller uses RIP as the routing protocol. This RIP network has been fully operational for two days. Each routing table is complete. Which networks will be included in the next routing update from the Certkiller 1 router to the Certkiller 3 router?

A: A, B, C, D, E, F

B: A, C

C: A, B, C, D

D: B, D

E: D, E, F

F: A, B, C

Answer: F

QUESTION 274:

Which one of the following commands would you enter to terminate a VTY line session?

- A. close
- B. disable
- C. disconnect
- D. suspend
- E. exit
- F. None of the above

Answer: E

Explanation:

A VTY line is a telnet session. To end a telnet session from a remote device, enter the exit or logout command.

Incorrect Answers:

A, B, C, D. These are all invalid commands.

QUESTION 275:

You work as a network engineer at Certkiller .com. You are required to allow establishment of a Telnet session with a router Certkiller C.
Which set command must be configured?

- A. Certkiller C(config)# line console 0
Certkiller C(config-line)# enable password Certkiller
- B. Certkiller C(config)# line console 0
Certkiller C(config-line)# enable secret Certkiller
Certkiller C(config-line)# login
- C. Certkiller C(config)# line console 0
Certkiller C(config-line)# password Certkiller
Certkiller C(config-line)# login
- D. Certkiller C(config)# line vty 0
Certkiller C(config-line)# enable password Certkiller
- E. Certkiller C(config)# line vty 0
Certkiller C(config-line)# enable secret Certkiller
Certkiller C(config-line)# login
- F. Certkiller C(config)# line vty 0
Certkiller C(config-line)# password Certkiller
Certkiller C(config-line)# login

Answer: F

Explanation:

CLI Password Configuration:

Access From	Password Type	Configuration
-------------	---------------	---------------

Console	Console password	Line console 0 Login Password Certkiller
Auxiliary	Auxiliary password	Line aux 0 Login Password ckrules
Telnet	Vty password	Line vty 0 4 Login Password Certkillerrules

QUESTION 276:

Which sequence of actions will allow telnet traffic from a Certkiller user's PC to a router using TCP/IP?

- A. Connect the PC's COM port to the router's console port using a straight-through cable.
- B. Connect the PC's COM port to the router's console port using a crossover cable.
- C. Connect the PC's COM port to the router's Ethernet port using a straight-through cable.
- D. Connect the PC's Ethernet port to the router's Ethernet port using a crossover cable.
- E. Connect the PC's Ethernet port to the router's Ethernet port using a rollover cable.
- F. Connect the PC's Ethernet port to the router's Ethernet port using a straight-through cable.
- G. None of the above

Answer: D

Explanation:

A crossover cable is used to directly connect a switch to a switch, a hub to a hub, a host to a host, or a host's Ethernet port to a router's Ethernet interface. If your Router's interface is configured with IP addressing and telnet service is enabled you can log through the telnet program into your router.

Incorrect Answers:

A, B, C: The COM port is used for direct terminal connections to a router, via the use of terminal emulation programs such as HyperTerminal.

E: A rollover cable is used to connect via a console connection.

F: A straight through cable would be used if there was a LAN switch or a hub in place, but when connecting to the router directly from a PC a cross over cable should be used.

QUESTION 277:

You are given a PC, a router, and a cable. Select the correct combination that will allow you to log into router CK1 locally using a terminal emulation program such as HyperTerminal.

- A. Connect the PC's COM port to the router's console port using a straight-through cable.
- B. Connect the PC's COM port to the router's console port using a rollover cable.
- C. Connect the PC's COM port to the router's Ethernet port using a straight-through cable.
- D. Connect the PC's Ethernet port to the router's Ethernet port using a rollover cable.
- E. Connect the PC's Ethernet port to the router's Ethernet port using a straight-through cable.
- F. None of the above

Answer: B

Explanation:

To connect the Router in Console port to configure using HyperTerminal, you required the Rollover Cable, which connects the PC's COM port to the router's Console port.

Incorrect Answers:

A, C, E: Straight Cables are used for: Host to switch, Switch to Router.

D: Rollover cables are used for Console/COM connections, not for IP traffic over the Ethernet ports.

QUESTION 278:

Which router console commands shown below are used to manage telnet sessions to other routers? (Select three)

- A. Certkiller D# disconnect 3
- B. Certkiller D# exit session 2
- C. Certkiller D# kill connection 1
- D. Certkiller D# show sessions
- E. Certkiller D# show connection all
- F. Certkiller D# resume 4

Answer: A, D, F

Explanation:

Function	Command Options
Telnet to another device	Use telnet exec command. Just type the host or IP address from exec mode.
Suspend a Telnet session	Press the key sequence Ctrl-Shift-6, then x
Discover currently suspended Telnet session	Use the where exec command Use the show sessions exec command
Resume a suspended Telnet session	Use the resume command, with no parameter, to reconnect to the most recently suspended Telnet. Use the resume x command, where x is the number of the suspended Telnet session based on the output of show sessions. Just press Enter in exec mode to resume to the most recently suspended Telnet session.
Terminate a suspended telnet	Resume connection, and log out using the quit command. Use the disconnect command on the router you Telnetted from.

Reference: Cisco Press CCNA Study Guide, p.392

QUESTION 279:

Part of the configuration of router CK1 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 CK1 ?

- 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.
- E. It allows seven failed login attempts before the VTY lines are temporarily shutdown.
- F. None of the above.

Answer: D

Explanation:

Secure Shell (SSH) is a protocol which provides a secure remote access connection to network devices. Communication between the client and server is encrypted in both SSH version 1 and SSH version 2. If you want to prevent non-SSH connections, add the

"transport input ssh" command under the lines to limit the router to SSH connections only. Straight (non-SSH) Telnets are refused.

Reference: www.cisco.com/warp/public/707/ssh.shtml

QUESTION 280:

You need to make changes to a new Certkiller router. By which prompt is the global configuration mode on this router identified?

- A. Router(config-line)#
- B. Router(config-router)#
- C. Router#
- D. Router(config)#
- E. Router>
- F. Router(config-if)#
- G. None of the above

Answer: D

Explanation:

There are many different configuration modes. Each of these makes changes to the device configuration. To ensure that those configuration changes are not lost if the router reboots, you must copy the running configuration to the startup configuration. The type and number of configuration submodes depends on the type of router, the Cisco IOS version, and the components installed on the router:

- Global configuration mode- The command for accessing the global configuration mode is configure terminal. In the global configuration mode, the router continues to display its host name followed by (config) and the # symbol:

```
RouterA#configure terminal
```

```
RouterA(config)#
```

The global configuration mode is where you can make "global" changes to the configuration of the router. A common example of a global configuration is the creation of an access list. From the global configuration mode, you can move to a position that enables you to configure specific components of the router, such as the router interfaces; virtual private network (VPN) components (sump, crypto, and so on); CLI connections (line); authentication, authorization, and accounting (AAA) server groups; and many more. To exit to the privileged global configuration mode, use the key combination Ctrl-Z or type the command "end."

QUESTION 281:

You need to configure a new Cisco router for remote access on the Certkiller network. How many simultaneous telnet sessions does this Cisco router support by default?

- A. 4

- B. 2
- C. 5
- D. 1
- E. 6
- F. 0

Answer: C

Explanation:

Telnet sessions use virtual terminal sessions, which are configured under the "line vty" portion of the configuration. There are 5 total vty sessions that can be configured, numbered 0-4.

QUESTION 282:

The interface status of a Certkiller router is shown below:

```
CertKillerC # show interfaces 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. Certkiller C(config-if)# enable
- B. Certkiller C(config-if)# no keepalive
- C. Certkiller C(config-if)# encapsulation pop
- D. Certkiller C(config-if)# no shutdown
- E. Certkiller C(config-if)# clock rate 56000
- F. Certkiller C(config-if)# line protocol up

Answer: D

Explanation:

no shutdown	Enable the interface and the configuration changes you have just made on the interface.	
Serial0 is administratively down, line protocol is up.	<p>The possible causes for this state are</p> <ul style="list-style-type: none"> • The serial interface has been disabled with the shutdown interface configuration command. • Different interfaces on the router are using the same IP address. 	<p>The following are some steps you can take to isolate the problem:</p> <ul style="list-style-type: none"> • Use the show configuration privileged EXEC command to display the serial port configuration. If "shutdown" is displayed after "interface Serial0," use the no shutdown interface configuration command to enable the interface. • Use the show interface privileged EXEC command to display the IP addresses for all router interfaces. Use the ip address interface configuration command to assign unique IP addresses to the router interfaces.

QUESTION 283:

Which of the following commands displays the configurable parameters and statistics of all interfaces on a router?

- A. show interfaces
- B. show processes
- C. show running-config
- D. show versions
- E. show startup-config

Answer: A

Explanation:

Use the show interfaces EXEC command to display statistics for all interfaces configured on the router or access server. The resulting output varies, depending on the network for which an interface has been configured.

The following is an example from the show interfaces command. Because your display will depend on the type and number of interface cards in your router or access server, only a portion of the display is shown.

CK1 #showinterfaces

Ethernet0 is up, line protocol is up

Hardware is MCI Ethernet, address is 0000.0c00.750c (bia 0000.0c00.750c)

Internet address is 131.108.28.8, subnet mask is 255.255.255.0

MTU 1500 bytes, BW 10000 Kbit, DLY 1000000 usec, rely 255/255, load 1/255

Encapsulation ARPA, loopback not set, keepalive set (10 sec)

ARP type: ARPA, ARP timeout 4:00:00

Last input 0:00:00, output 0:00:00, output hang never

Lastclearingof"showinterface"counters0:00:00
Outputqueue0/40,0drops;inputqueue0/75,0drops
Fiveminuteinputrate0bits/sec,0packets/sec
Fiveminuteoutputrate2000bits/sec,4packets/sec
1127576packetsinput,447251251bytes,0nobuffer
Received354125broadcasts,0runts,0giants,57186*throttles
0inputerrors,0CRC,0frame,0overrun,0ignored,0abort
5332142packetsoutput,496316039bytes,0under runs
0outputerrors,432collisions,0interfaceresets,0restarts
Reference:
http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/12cgcr/inter_r/irshowin.htm

QUESTION 284:

The following was seen on a Certkiller router in Huntsville:

```
Huntsville#show interfaces FastEthernet 0/0
FastEthernet0/0 is up, line protocol is up
  Hardware is AmdFE, address is 000c.ce8d.8720 (bia 000c.ce8d.8720)
  Internet address is 10.1.1.2/24
  MTU 1500 bytes, BW 10000 Kbit, DLY 100 usec, reliability 255/255,
txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mbps 100BaseTII/PX
  ARP tupe: ARPA, ARP Timeout 04:00:00
    < - output omitted - >
  119413 packets input, 52453050 bytes
  Received 117055 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 watchdog
  0 input packets with dribble condition detected
  67922 packets output, 9993123 bytes, 0 underruns
  0 output errors, 0 collisions, 6 interface resets
    < - output omitted - >
```

Refer to the router output shown in the graphic. What can be assumed about the network attached to this router interface?

- A. The network hosts are attached to a hub.
- B. The interface is being used at near maximum capacity.
- C. There should never be any collisions in this network.
- D. The network has an excessive number of errors.
- E. The network is using an unusual Ethernet encapsulation.
- F. None of the above

Answer: C

Explanation:

Based on the output shown, this interface is configured to operate in full duplex mode. Full-duplex is a data communications term that refers to the ability to send and receive data at the same time.

Legacy Ethernet is half-duplex, meaning information can move in only one direction at a time. In a totally switched network, nodes only communicate with the switch and never directly with each other. Switched networks also employ either twisted pair or fiber optic cabling, both of which use separate conductors for sending and receiving data. In this type of environment, Ethernet stations can forgo the collision detection process and transmit at will, since they are the only potential devices that can access the medium. This allows end stations to transmit to the switch at the same time that the switch transmits to them, achieving a collision-free environment.

Reference: <http://computer.howstuffworks.com/ethernet15.htm>

QUESTION 285:

Refer to the output of the three Certkiller router commands shown in the exhibit. A new technician has been told to add a new LAN to the company router. Why has the technician received the error message that is shown following the last command?

<pre>CertKiller1 # show version Cisco Internetwork Operating System Software IOS (tm) C2600 Software (C2600-D03S-M), Version 12.1(5)T12, RELEASE SOFTWARE (fc1) TAC Support: http://www.cisco.com/tac Copyright (c) 1986 2002 by cisco Systems, Inc Copyright (c) 1986 2002 by cisco Systems, Inc Image text bars 080080088080, data date 0x01169028 ROM: System Bootstrap, Version 12.2(10n)1, RELEASE SOFTWARE (fc1) Router uptime is 10 minutes System returned to ROM by power-on System image file is "flash:c2600-d03s-mz.121-5.T12.bin" cisco 2621 (MPC860) processor (revision 0x00) with 44032K/5120K bytes of memory Processor board ID JAD06390AR4 (617842770) M860 processor: part number 0, mask 49 Bridging software. X.25 software, Version 3.0.0. Basic Rate ISDN software, Version 1.1. 2 FastEthernet/IEEE 802.3 interface(s) 2 Low-speed serial(sync/async) network interface(s) 1 ISDN Basic Rate interface(s) 32K bytes of non-volatile configuration memory. 16384K bytes of processor board System flash (Read/Write) Configuration register is 0x2102</pre>	<pre>CertKiller1 # configure terminal Enter configuration commands, one per line. End with CNTL/Z. CertKiller1 (config)# interface e0 % Invalid input detected at '^' marker.</pre>
--	---

- A. The command was entered from the wrong prompt.
- B. The router does not support LAN interfaces that use Ethernet.
- C. The interface was already configured.
- D. The IOS software loaded on the router is outdated.
- E. The interface type does not exist on this router platform.
- F. None of the above

Answer: E

Explanation:

The show version command displays the information regarding version of IOS, name of IOS image, configuration register as well all interface name of router. According to the output of show version, there is no ethernet interface so trying to configure the invalid interface. What the technician needs to enter is "interface fastethernet 0" not "ethernet 0".

QUESTION 286:

In the Certkiller router below, serial0/0 does not respond to a ping request from a host on the FastEthernet0/0 LAN.

CertKiller3# show ip interface brief

Interface	IP Address	OK?	Method Status	Protoco
FastEthernet0/0	192.168.16.1	YES	NVRAM up	up
Serial0/0	192.168.15.2	YES	NVRAM administratively down	down
FastEthernet0/	192.168.17.1	YES	NVRAM up	up
Serial0/1	unassigned	YES	NVRAM administratively down	down

Based on the information above, how can this problem be corrected?

- A. Correct the IP address for interface Serial 0/0.
- B. Change the encapsulation type on interface Serial 0/0.
- C. Correct the IP address for interface FastEthernet 0/0.
- D. Enable auto configuration on the Serial 0/0 interface.
- E. Enable the Serial 0/0 interface.
- F. None of the above

Answer: E

Explanation:

The status of the interface shows "administratively down" which means that the interface was manually shut down, or it was never enabled in the first place. This interface needs to be enabled using the "no shutdown" command under interface serial 0/0 in the configuration.

QUESTION 287:

An administrator issues the show ip interface s0/0 command and the output displays that interface Serial0/0 is up, line protocol is up

What does "line protocol is up" specifically indicate about the interface?

- A. The cable is attached properly.
- B. CDP has discovered the connected device.
- C. Keepalives are being received on the interface.
- D. A carrier detect signal has been received from the connected device.
- E. IP is correctly configured on the interface.

Answer: C

Explanation:

Serial 0/0 is up, line protocol is up is the proper status line condition.

Line serial0/0 is up: This statement represents that the physical connection is good.

Line protocol is up: This represents that the data link layer is OK, meaning that layer 2 keepalives are being received on the interface.

When the line protocol goes down, a possible problem is keep-alive not being sent by remote router.

QUESTION 288:

You need to configure the interfaces on a new Certkiller router, but first you need to enter the global configuration mode. Which command is used on router Certkiller 3 to reach this mode?

- A. Certkiller 3# router
- B. Certkiller 3# setup
- C. Certkiller 3# interface
- D. Certkiller 3> enable
- E. Certkiller 3# configure terminal

Answer: E

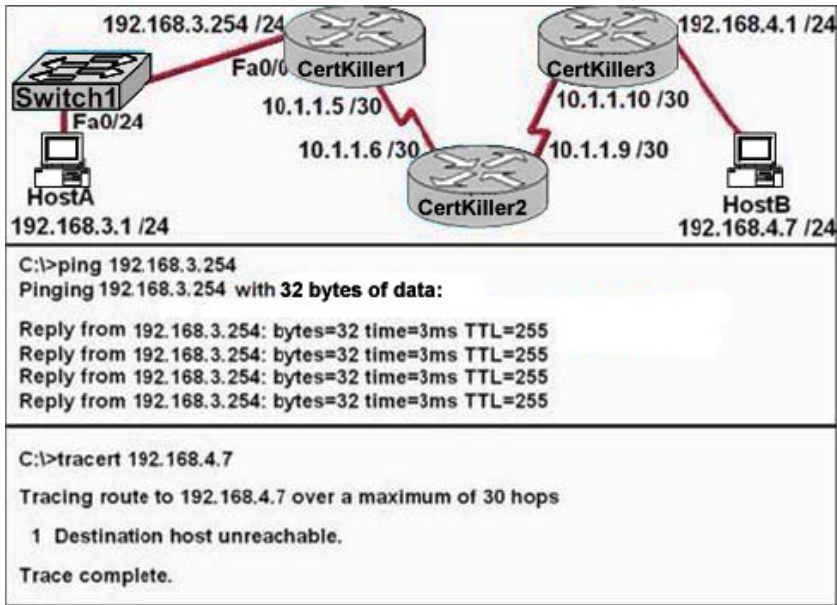
Explanation:

Global configuration mode is the mode that allows you to configure the router and it takes effect immediately. You can enter into the global configuration mode using "configure terminal" command.

Interface configuration mode allows you to configure the interface on a particular interface such as setting the IP address, setting bandwidth, clock rate, encapsulation type, duplex, speed, etc. Use the "interface interface-name" command to enter into the interface configuration mode.

QUESTION 289:

In the network shown below, The Certkiller technician is testing connection problems. What is the problem indicated by the output from HostA?



- A. The gateway address of HostA is incorrect or not configured.
- B. An access list is applied to an interface of Certkiller 3.
- C. The routing on Certkiller 2 is not functioning properly.
- D. The Fa0/24 interface of Switch1 is down.
- E. None of the above

Answer: A

Explanation:

Since pings sent to router Certkiller 1 are successful, we know that basic connectivity exists at least to the first hop toward the destination. However, when we perform a traceroute to the destination, the first hop does not show up at all. This is due to the fact that the host does not have a default gateway specified, and therefore does not know where to send traffic with a destination address in a different subnet.

Incorrect Answers:

- B: Although this may indeed be true, if this were the problem, then the trace routes would at least reach router Certkiller 3.
- C: If this were the problem, then the traceroute would have at least reached the first hop.
- D: If this were true, then pings sent to 192.168.3.254 would be unsuccessful.

QUESTION 290:

Regarding the extended ping command; which of the statements below are true?
(Select all valid answer choices)

- 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.
- E. With the extended ping command you can specify the datagram size.

Answer: B, D, E

Explanation:

The extended ping command works only at the privileged EXEC command line. Some of the extended ping command values include the datagram size and timeout value as shown:

Datagram size [100]: Size of the ping packet (in bytes). Default: 100 bytes.

Timeout in seconds [2]:

Timeout interval. Default: 2 (seconds). The ping is declared successful only if the ECHO REPLY packet is received before this time interval.

Incorrect Answers:

- A. Regular pings are available in both user and privileged mode, but not extended pings.
- C. Ports can not be specified.

QUESTION 291:

When you use the ping command to send ICMP messages across a network, what's the most common request/reply pair you'll see? (Select one answer choice)

- A. Echo request and Echo reply
- B. ICMP hold and ICMP send
- C. ICMP request and ICMP reply
- D. Echo off and Echo on
- E. None of the above

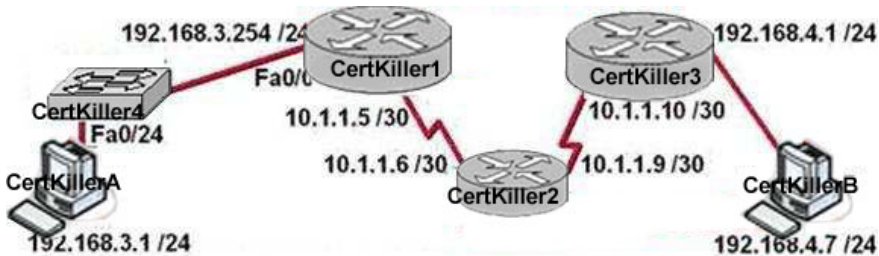
Answer: A

Explanation:

The ICMP protocol uses Echo request and Echo reply with the Ping command. The PING utility is the most commonly used message to verify connectivity to a remote device within the network.

QUESTION 292:

Part of the Certkiller network is shown below:



Ping exhibit:


```
C:\>ping 192.168.3.254
```

```
Pinging 192.168.3.254 with 32 bytes of data:
```

```
Reply from 192.168.3.254: byters=32 time=3ms TTL=255
```

```
Reply from 192.168.3.254: bytes=32 time=4ms TTL=255
```

```
Reply from 192.168.3.254: byters=32 time=3ms TTL=255
```

```
Reply from 192.168.3.254: byters=32 time=3ms TTL=255
```

Tracert exhibit:

```
C:\>tracert 192.168.4.7
```

```
Tracing route to 192.168.4.7 over a maximum of 30 hops
```

```
  1  Destination host unreachable.
```

```
Trace complete.
```

You work as a network technician at Certkiller .com. You are testing connection problems in the network and your PC (host Certkiller A) has provided the output shown above. What is the problem indicated by this output?

- A. The routing on Router Certkiller 2 is not functioning properly.
- B. The Fa0/24 interface of Switch Certkiller 4 is down.
- C. An access list is applied to an interface of Router Certkiller 3.
- D. The gateway address of Host Certkiller A is incorrect or not configured.
- E. None of the above

Answer: D

Explanation:

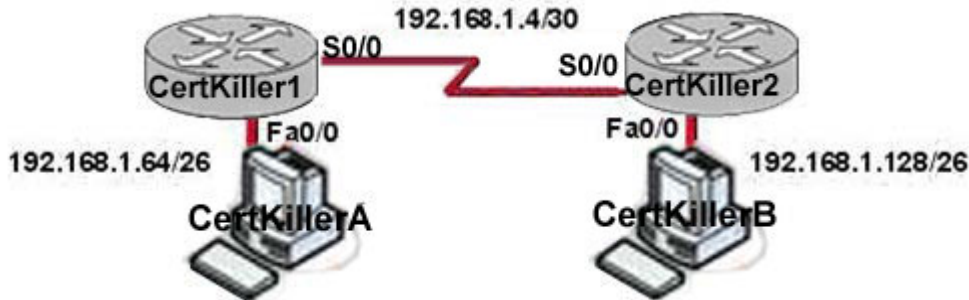
Destination Host Unreachable - This error message means that no local or remote route exists for a destination host at the sending host or at a router. Troubleshoot the local host or the router's routing table. In this case, the local host does not have a route to the destination, which means that the default gateway has not been configured.

Incorrect Answers:

- A: If this were the case, the "Destination host unreachable" message would have come from the router (default gateway), not the local host.
- B: If this were true, the IP address of the default gateway would not be reachable.
- C: Based on the output shown above, the traffic is not even being sent to the router at all so an access list problem can be ruled out until traffic gets sent from the host to the default gateway.

QUESTION 293:

Network Topology Exhibit:



Certkiller 1 configuration exhibit:

CertKiller1 configuration:

```
interface fa0/0
ip address 192.168.1.65 255.255.255.192
no shutdown
interface serial 0/0
ip address 192.168.1.5 255.255.255.252
no shutdown
```

Certkiller 2 configuration exhibit:

CertKiller2 configuration:

```
interface fa0/0
ip address 192.168.1.129 255.255.255.192
no shutdown
interface serial 0/0
ip address 192.168.1.6 255.255.255.252
no shutdown
ip route 192.168.1.64 255.255.255.192 s0/0
```

You need to ensure connectivity between two new Certkiller offices. You apply the configurations in the exhibit into the two new routers Certkiller 1 and Certkiller 2. Otherwise, the routers are configured with their default configurations. A ping from Host Certkiller A to Host Certkiller B fails, but you are able to ping the S0/0 interface of Certkiller 2 from Host Certkiller A. The configurations of the hosts have been verified as correct. What could be the cause of the problem?

- A. The interfaces on Certkiller 2 are not configured properly.
- B. The serial cable on Certkiller 1 needs to be replaced.
- C. The IP addressing scheme has overlapping subnetworks.
- D. Router Certkiller 1 has no route to the 192.168.1.128 network.
- E. The ip subnet-zero command must be configured on both routers.

Answer: D

Explanation:

Since Certkiller 1 does not have any static routes or dynamic routing configured on it, it will only be able to ping directly connected interfaces. This explains why pings work across the serial interface, but not to any networks beyond the directly connected network.

Incorrect Answers:

A: The interface configuration appear to be correct, and the fact the pings on directly connected interfaces work validates this.

B: If there was a problem with the serial cable then pings across the connection would fail.

C, E: The ip addressing is valid, and there is no need to the "ip subnet-zero" command to be used since this command is useful for network addressing, but not for IP routing.

QUESTION 294:

You need to configure a default route on a Certkiller router. Which command will configure a default route on a router?

- A. CK1 (config)# ip route 0.0.0.0 10.1.1.0 10.1.1.1
- B. CK1 (config)# ip default-route 10.1.1.0
- C. CK1 (config)# ip default-gateway 10.1.1.0
- D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 10.1.1.1

Answer: D

Explanation:

The command "IP route 0.0.0.0 0.0.0.0 <ip-address of the interface>" command is used to configure a default route on a router. In this case, a default route with a next hop IP address of 10.1.1.1 was configured.

Incorrect Answers:

A. This will be an invalid route, since the "10.1.1.0" value will specify the network mask, which in this case is invalid.

B, C. These commands are invalid. The command "ip default-network" could be used, but not "ip default-route" or "ip default-gateway". IP default-gateway is used on switches, not routers.

QUESTION 295:

Static routing needs to be configured on router CK1 . In which situation would the use of a static route be appropriate?

- A. To configure a route to the first Layer 3 device on the network segment.
- B. To configure a route from an ISP router into a corporate network.
- C. To configure a route when the administrative distance of the current routing protocol is too low.
- D. To reach a network is more than 15 hops away.
- E. To provide access to the Internet for enterprise hosts.
- F. None of the above

Answer: B

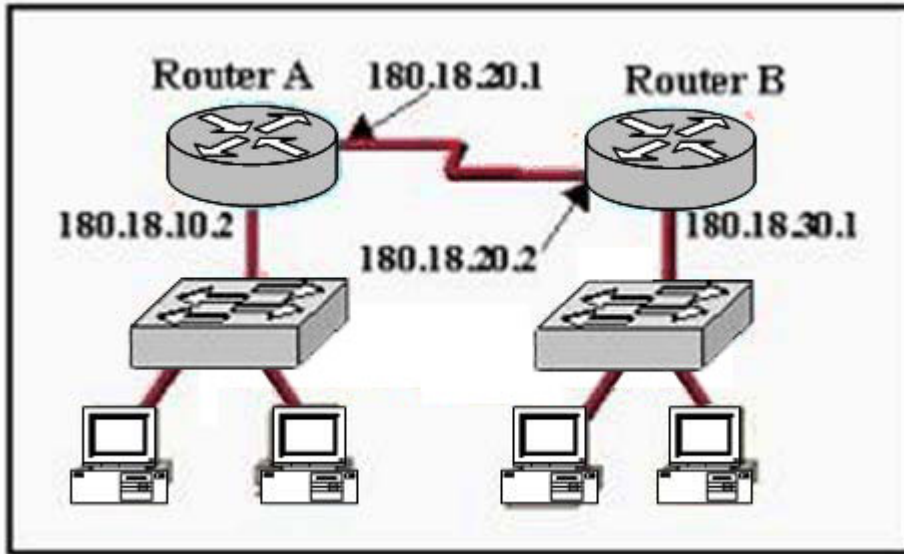
Explanation:

Static routes are special routes that the network administrator manually enters into the router configuration. Stub networks are the ideal candidate for static routes.

There is no need to run a routing protocol over the WAN links between an ISP Router and a corporate network when only a single Internet link exists.

QUESTION 296:

The Certkiller network is shown below:



Based on this information, which of the following will configure a static route on Router A to network 180.18.30.0/24 with an administrative distance of 90?

- A. Router(config)# ip route 90 180.18.20.1 255.255.255.0 182.18.20.2
- B. Router(config)# ip route 180.18.20.1 255.255.255.0 182.18.30.0 90
- C. Router(config)# ip route 180.18.30.1 255.255.255.0 182.18.20.1 90
- D. Router(config)# ip route 90 180.18.30.0 255.255.255.0 182.18.20.2
- E. Router(config)# ip route 180.18.30.0 255.255.255.0 182.18.20.2 90

Answer: E

Explanation:

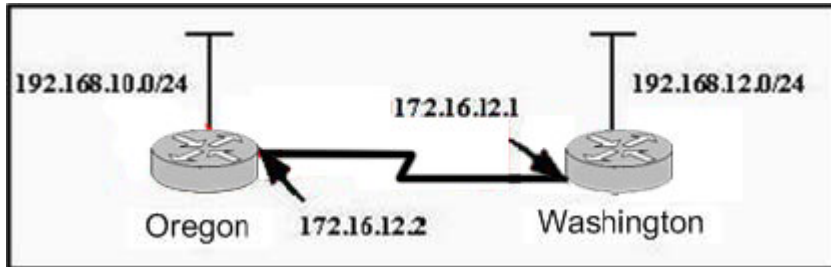
Static route entries consist of the destination IP network address, the IP address of the next hop router, and the metric (hop count) for the route. A static route that points to the next hop IP address has an Administrative distance of 1. If the static route points to an outgoing interface, the static route has the Administrative distance of 0.

One common reason to change the administrative distance of a route is when you use Static Routes to backup an existing IGP route. This is normally used to bring up a backup link when the primary fails. In this example, choice E specifies that to reach the 180.18.30.0/24 network, forward this traffic to the router with the next hop IP address of 182.18.20.2 (Router B) using an administrative distance of 90.

QUESTION 297:

The network administrator of the Oregon 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.)

Exhibit:



- 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. Traffic for network 172.16.12.0 is forwarded to the 192.168.12.0 network.
- E. The command invokes a dynamic routing protocol for 192.168.12.0.
- F. The command establishes a static route.

Answer: A, F

Explanation:

In order to configure a static route the router has to be in global configuration mode.

`ip route network prefix mask {address | interface} [distance]`

network - the destination network

mask - is the subnet mask for that network

address - IP address of the next hop router

interface - or the interface the traffic is to leave by

distance - (optional) the administrative distance of the route

There are other parameters but these have been removed as they are not relevant to the CCNA exam.

Example:

`iproute 10.0.0.0 255.0.0.0 131.108.3.4 110`

10.0.0.0 is the destination network. 255.0.0.0 is the subnet mask for that network and 131.108.3.4 is the next hop for the router to use. The 110 is the administrative distance which we will look at later on.

QUESTION 298:

Which of the commands below can you use to configure a default route on router CK1 ? (Select two answer choices)

- A. CK1 (config)# `ip route 0.0.0.0 0.0.0.0 E0`
- B. CK1 (config)# `ip route 0.0.0.0 255.255.255.255 S0`

- C. CK1 (config-interface)# ip route 255.255.255.255 0.0.0.0 192.168.1.21
- D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 192.168.1.21
- E. CK1 (config)# ip route 0.0.0.0 192.168.1.21 255.255.255.255
- F. CK1 # ip default-network 0.0.0.0 192.168.1.21 255.255.255.255

Answer: A, D

Explanation:

There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, like the example in A. The other way is to specify the IP address of the next hop router, such as the example in D. The ip route 0.0.0.0 0.0.0.0 command uses the fact that network 0.0.0.0 is used by Cisco IOS software to represent the default network.

Reference: CCNA ICND Exam Certification Guide By Wendell Odem Pg.524

Incorrect Answers:

- B. All zero's must used for the subnet mask of a default route, not all 1's.
- C. The default route is made in global configuration mode.
- D, E. A subnet mask is not needed after the next hop router is specified.

QUESTION 299:

Which of the following commands would you use to configure a default route to any destination NOT found in the routing table of router CK1 ?

- A. CK1 (config)# ip default-route 0.0.0.0 255.255.255.255 s0
- B. CK1 (config)# ip route 0.0.0.0 255.255.255.255 s0
- C. CK1 (config)# ip default-route 0.0.0.0 0.0.0.0 s0
- D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 s0
- E. CK1 (config)# ip route any any e0
- F. None of the above

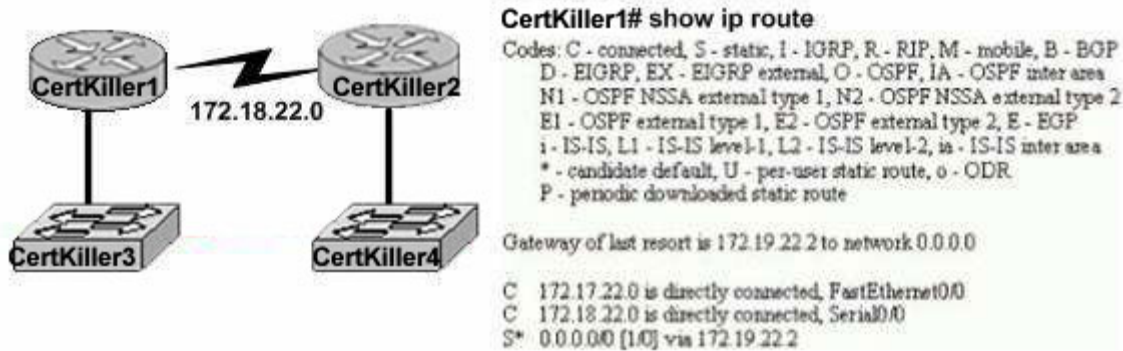
Answer: D

Explanation:

Choice D is the correct syntax for configuring a gateway of last resort. Note that an alternative way is to specify the IP address of the next hop router, for example, "ip route 0.0.0.0 0.0.0.0 10.1.1.1."

QUESTION 300:

The topology of the Certkiller network is displayed below, along with the routing table of the Certkiller 1 router:



172.17.22.0 172.31.5.0

Changes to the Certkiller network were made, and now users on the Certkiller 3 LAN are not able to connect to the Certkiller 4 LAN. Based on the information above, what could be the reason for this?

- A. The Fast Ethernet interface is disabled.
- B. The neighbor relationship table is not updated.
- C. A static route is configured incorrectly.
- D. The routing table on Certkiller 1 is not updated.
- E. IP routing is not enabled.

Answer: C

Explanation:

On the bottom line of the command output for 'show ip route' you can see that there is an asterisk by the letter S. The S stands for static route, and the static route is incorrectly configured.

Incorrect Answers:

- A. If this were true, then the users on the LAN would be unable to connect to anything outside of their own network.
- B. It appears that only a single static route is being used on the Certkiller 1 router. Neighbors do not need to be established for static routes.
- D. The routing table consists of a single static route, which is configured incorrectly. The routing tables do not become updated dynamically when static routes are used.
- E. This is not true, as a static route has been configured.

QUESTION 301:

Some of the Certkiller 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.

Answer: B, D

Explanation:

Routers use default routing as a last resort when all other methods (directly connected, static, or dynamic) have been exhausted. For stub networks, a single default static route could be used to provide connectivity to the entire network. This is desirable for stub networks where only a single link connects the remote location to the rest of the networks. Because all of the traffic only has one link to use, a single default route will make the routing table as small as possible, while providing for connectivity to networks not in the routing table, since as traffic destined for the Internet.

Incorrect Answers:

- A. Although default routes are normally statically assigned, these routes can still go down. If the interface used as the default route should go down, or the next hop IP address of the default route become unreachable, the static default route will go down.
- C. Using static routes, including default routes, is the least CPU-intensive method of routing.
- E. To influence the way incoming traffic from the Internet gets to a corporation, BGP routing would be used, not default routing.

QUESTION 302:

You have just configured a static default route on router CK1 . What is the purpose of a default route?

- A. It is a route to be used when the routing protocol fails.
- B. It is a route configured by an ISP that sends traffic into a corporate network.
- C. It is a route used when a packet is destined for a remote network that is not listed in the routing table.
- D. It is a route manually configured for a specific remote network for which a routing protocol is not configured.
- E. It is used to send traffic to a stub network.
- F. None of the above

Answer: C

Explanation:

Every IP host needs to have a default route either manually configured or dynamically learned. Default routes provide end hosts a way out of their local subnet and routers with a router of last resort if no other route (specifically relating to the destination) exists in the routers route table.

Routers use default routing as a last resort when all other methods (directly connected, static, or dynamic) have been exhausted. Routers inspect received datagrams to identify the logical Network layer address of the ultimate destination. If a directly connected static or dynamic route exists within the router's route table, it forwards the datagram. If the destination remains unknown, that is, no method of routing has resulted in a

learned route; it forces the router to use a default route. Typically, administrators implement default routes on point-to-point (a link with only two routers) or dial-up connections, linking Certkiller .com's network to the outside work.

Reference: <http://www.informit.com/articles/article.asp?p=26129&seqNum=4&rl=1>

QUESTION 303:

On router CK1 the following configuration command was entered:

```
ip route 0.0.0.0 0.0.0.0 192.168.1.2
```

What is the result of adding this command to this router when it is already configured for dynamic routing?

- A. It configures the router to block routing updates from being sent to IP address 192.168.1.2.
- B. It configures the router to send all packets to IP address 192.168.1.2 if the packets match no other entry in the routing table.
- C. It configures the router to drop all packets for which the destination network is unknown.
- D. It configures the router to send all packets to IP address 192.168.1.2.
- E. It configures the router as a firewall, blocking all packets from IP address 192.168.1.2.
- F. None of the above

Answer: B

Explanation:

There is a special kind of static route called a default route, which is what this example is showing. Sometimes a default route is called a "zero / zero" route. This is because the network and subnet you are specifying, as the destination for the traffic it would match, are all zeros. A default route says "for any traffic that does not match a specific route in the routing table, send that traffic to this destination". In other words, a default route is a "catch-all".

QUESTION 304:

If NVRAM in a Certkiller router lacks boot system commands, where does this router look for the Cisco IOS by default?

- A. ROM
- B. RAM
- C. Flash
- D. Bootstrap
- E. Startup-.config
- F. None of the above

Answer: C

Explanation:

Flash memory - Either an EEPROM or a PCMCIA card, Flash memory stores fully functional IOS images and is the default location where the router gets its IOS at boot time. Flash memory also can be used to store any other files, including configuration files.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) page 187

QUESTION 305:

When you power up a Certkiller router; in what memory is the start-up configuration normally stored in?

- A. RAM
- B. ROM
- C. FLASH
- D. NVRAM
- E. None of the above

Answer: D

Explanation:

The startup configuration is stored in the Non-Volatile RAM.

Incorrect Answers:

A, B: No configuration information is stored in RAM or ROM.

C. The IOS is normally stored in the flash memory, not the saved configuration.

QUESTION 306:

You are the administrator of the Certkiller network and you have forgotten the password to one of your routers. After completing the password recovery procedure the router returned to its normal operation. The config-register was set back to the initial default value. What is this value?

- A. 0x2112
- B. 0x2104
- C. 0x2102
- D. 0x2142
- E. 0x2100

Answer: C

Explanation:

The config-register's default factory setting is 0x2102. The following display the possible configuration register values and their meanings:

Configuration Register Setting	Router Behavior
0x102	Ignores break 9600 console baud
0x1202	1200 baud rate
0x2101	Boots into bootstrap Ignores break Boots into ROM if initial boot fails 9600 console baud rate
0x2102	Ignores break Boots into ROM if initial boot fails 9600 console baud rate default value for most platforms
0x2120	Boots into ROMmon 19200 console speed
0x2122	Ignores break Boots into ROM if initial boot fails 19200 console baud rate
0x2124	NetBoot Ignores break Boots into ROM if initial boot fails 19200 console speed
0x2142	Ignores break Boots into ROM if initial boot fails 9600 console baud rate Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration)
0x2902	Ignores break Boots into ROM if initial boot fails 4800 console baud rate
0x2922	Ignores break Boots into ROM if initial boot fails 38400 console baud rate
0x3122	Ignores break Boots into ROM if initial boot fails 57600 console baud rate
0x3902	Ignores break Boots into ROM if initial boot fails 2400 console baud rate
0x3922	Ignores break Boots into ROM if initial boot fails 115200 console baud rate

Incorrect Answers:

D. This is the setting that would be used during the password recovery procedure.

Reference:

http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a008022493f.shtml

QUESTION 307:

You issued the following command on router Certkiller 3:

```
CertKiller3#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 IOS image on the TFTP server is corrupt.
- D. The new IOS image is not correct for this router platform.
- E. There is not enough disk space on the TFTP server for the IOS image.
- F. None of the above

Answer: A

Explanation:

The problem shown here is that the destination file is not reachable. When copying files via TFTP the first step is to ensure that there is connectivity to the TFTP server. You should perform the following steps:

1. Verify that the TFTP server has IP connectivity to the router.
 2. Check the IP addresses of the TFTP server and the router or access server targeted for the TFTP software upgrade.
 3. Ping the router or access server to verify that a network connection exists between them.
-

QUESTION 308:

The relevant system information regarding a Certkiller router is shown in the following display:

System image file is "flash: c2600-das35-mz.120.5.T1"

Cisco2621(MPC860)processor(revision 0x600) with 53248K/12288K bytes of memory

Processor board ID JAD05280307(3536592999)

M860 processor part number 0, mark 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 terminal line(s)

32K bytes of non-volatile configuration memory

16384 bytes of processor board system flash (Read/Write)

Refer to the partial Command output shown. Which two statements are correct regarding the router hardware? (Choose Two)

- 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 32 KB.
- E. FLASH Size is 16384 KB (16 MB)
- F. FLASH Size is 65536 KB (64 MB)

Answer: C, E

Explanation:

The RAM is found by adding up the memory, so in this case it is 53248K+12288K = 65536K. The Flash is found at the very bottom of the output, which is shown as 16384K
How Do I Know What Platform I Have?

Type the show version command at the enable command prompt of the router to see the platform, RAM, flash memory, and current version of code you are running.

This example shows a Cisco 2600 router with 48 MB of RAM (43617 K + 5534 K), 16 MB of flash memory (16384 K), and a code image called flash:c2600-jk8s-mz.122-6.bin.

```
wilson#show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-JK8S-M), Version 12.2(6), RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Compiled Wed 07-Nov-01 21:07 by pwade
Image text-base: 0x80008088, data-base: 0x814FF2C4

ROM: System Bootstrap, Version 11.3(2)XA3, PLATFORM SPECIFIC RELEASE SOFTWARE (fc1)

wilson uptime is 1 week, 2 days, 7 hours, 41 minutes
System returned to ROM by power-on
System image file is "flash:c2600-jk8s-mz.122-6.bin"

cisco 2611 (MPC860) processor (revision 0x202) with 43617K/5534K bytes of memory.
Processor board ID JAB03050692 (209339592)
M860 processor: part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TNS3270 Emulation software.
2 Ethernet/IEEE 802.3 interface(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102

wilson#
```

Reference:

http://www.cisco.com/en/US/products/sw/secursw/ps1018/products_tech_note09186a00800949e4.shtml

QUESTION 309:

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: C

Explanation:

By default, a Cisco IOS router will normally boot up from flash where the IOS is stored. If the IOS is not found or has become corrupted, the router will then send an all hosts broadcast (255.255.255.255) to find a TFTP server to download the IOS from. Should that fail, the router will boot up in ROM Monitor mode as a last resort.

QUESTION 310:

See the following exhibit below:

system image file is "flash;c2600-ik8033-mz.122-8.Ts.bin

cisco 2620 (MPC860 processor (revision 0x200) with 16384/2048k
bytes of
memory
processor board ID JAD05076EF6
M860 processor: part number 0, mask 49.
Bridging software
x.25 software version 3.0.0
1 Fast Ethernet (IEEE 802.3 interface (s)
2 Low speed serial (synch/asynch) network interface (s)
32k bytes of non-volatile configuration memory.
16384k bytes of processor board System Flash (Read/Write)
configuration register is 0x2142

A router consistently loses its configuration each time it reboots. Given the output shown in the graphic, what is the cause of this problem?

- A. The processor is overheating.
- B. Configuration register is misconfigured.
- C. There is no problem.
- D. Cisco products are inferior compared to Nortel products. Migrate to Nortel instead.
- E. None of the above

Answer: B

Explanation:

The value of the register 0x2142 means that the router should omit the startup configuration when it loads. To solve this problem change the value of the register to 0x2102

QUESTION 311:

A Cisco router has been configured, and the copy running-config startup-config command has been issued. When the router is power cycled, the router prompts with:

"Would you like to enter the initial configuration dialog? [yes/no]"

Why has this occurred?

- A. There is an error in the router DRAM.
- B. The IOS image is corrupt.
- C. The configuration register is set to 0x2142.
- D. The TFTP server that contains the router configuration file is unreachable.
- E. A boot system configuration command has placed the router into setup mode.

Answer: C

Explanation:

When the configuration setting is set to 0x2142, the router will ignore the contents of the NVRAM information. More specifically, this setting will:

1. Ignores break
2. Boots into ROM if initial boot fails
3. 9600 console baud rate
4. Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration)

QUESTION 312:

What is the purpose of using the copy flash tftp command on a router?

- A. To copy an IOS image to the router
- B. To create a backup copy of the IOS
- C. To move the IOS image from a server to the router
- D. To backup the router configuration to a server

Answer: B

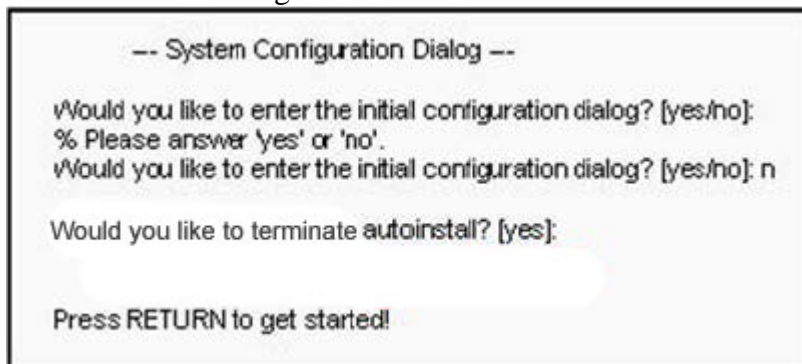
Explanation:

When upgrading the IOS on a router, if there is enough space to copy the system image file, then the original one can be retained and the new file can be copied in the additional memory space. If there is not enough space available, as in this case, then the existing file from the Flash is erased while downloading a new one. It is a good practice to backup the existing system image to the TFTP server using the "copy flash tftp" command.

Reference: <http://www.cisco.com/warp/public/63/copyimage.html>

QUESTION 313:

Refer to the following exhibit:



The Certkiller network administrator configures a new router and enters the copy startup-config running-config command on the router. He powers down the router and sets it up at a remote location. When the router starts, it enters the system configuration dialog as shown. What is the cause of the problem?

- A. The network administrator failed to save the configuration.
- B. The configuration register is set to 0x2100.
- C. The boot system flash command is missing from the configuration.

- D. The configuration register is set to 0x2102.
- E. The router is configured with the boot system startup command.
- F. None of the above

Answer: A

Explanation:

This output is what you get when the router doesn't have a valid startup configuration in NVRAM. When the administrator issued the "copy start run" command, the existing config was then overwritten by the startup config, which in a new router is the factory default (unconfigured) settings. What the administrator meant to issue was the "copy run start" command to save the configuration, not the "copy start run" as shown here.

QUESTION 314:

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. show running-config
- B. show version
- C. the version of the bootstrap software present on the router
- D. the amount of available ROM
- E. the amount of available flash and RAM memory
- F. show processes

Answer: B, E

Explanation:

To upgrade the IOS, the first two steps are:

1. Download the Cisco IOS software image to your workstation or PC.
2. Install the new Cisco IOS software image in the outbound directory of the TFTP server.

The TFTP server looks for the router's Cisco IOS software image in this directory. Make sure that the image you want to copy to your Flash is in this directory.

Check the memory requirements needed for the Software image being upgraded, which is mentioned in the Downloads download page. Using the show version command, verify that you have enough memory.

QUESTION 315:

DRAG DROP

You work as a network administrator at Certkiller .com.

Your boss, Mrs. Certkiller, tells you to match the commands with the appropriate descriptions. One of the commands listed below will not be used.

Options, select from these

CertKiller3#copy running-config tftp

CertKiller3#copy running-config startup-config

CertKiller3#copy tftp running-config

CertKiller3#copy flash tftp

CertKiller3#copy tftp flash

CertKiller3#copy flash running-config

Definitions

Backup the current IOS image

Merge a backup configuration with the configuration in RAM

Replace the IOS image

Make a backup copy of the configuration in RAM

Make the configuration in RAM the configuration the router will use on startup

Options, place here

Place here

Place here

Place here

Place here

Place here

Answer:

Options, select from these

CertKiller3#copy flash tftp

Definitions

Backup the current IOS image

Merge a backup configuration with the configuration in RAM

Replace the IOS image

Make a backup copy of the configuration in RAM

Make the configuration in RAM the configuration the router will use on startup

Options, place here

CertKiller3#copy flash tftp

CertKiller3#copy tftp running-config

CertKiller3#copy tftp flash

CertKiller3#copy running-config tftp

CertKiller3#copy running-config startup-config

QUESTION 316:

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
- F. None of the above

Answer: D

Explanation:

To display the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images, use the show version command in EXEC mode.

Example:

The following is sample output from the show version command:

Router1> show version

Cisco Internetwork Operating System Software

IOS (tm) 7200 Software (C7200-J-M), Experimental Version 11.3(19970915:164752) [hampton-nitro-baseline 249]
Copyright (c) 1986-1997 by cisco Systems, Inc.
Compiled Wed 08-Oct-97 06:39 by hampton
Image text-base: 0x60008900, data-base: 0x60B98000
ROM: System Bootstrap, Version 11.1(11855) [beta 2], INTERIM SOFTWARE
BOOTFLASH: 7200 Software (C7200-BOOT-M), Version 11.1(472), RELEASE
Router1 uptime is 23 hours, 33 minutes
cisco 7206 (NPE150) processor with 57344K/8192K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0 (512KB Level 2 Cache)
Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
8 Ethernet/IEEE 802.3 interface(s)
2 FastEthernet/IEEE 802.3 interface(s)
4 Token Ring/IEEE 802.5 interface(s)
4 Serial network interface(s)
1 FDDI network interface(s)
125K bytes of non-volatile configuration memory.
1024K bytes of packet SRAM memory.
20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
20480K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x2102

QUESTION 317:

After logging into a router, you type in "enable" and then enter the correct password when prompted. What is the current router prompt symbol at this point?

- A. >
- B. #
- C. ?
- D. *
- E. All of the above
- F. None of the above

Answer: B

Explanation:

When you enter the privileged mode by typing enable the router prompt will change to a # character.

Incorrect Answers:

- A. This is the prompt given after initially logging on.
 - C, D. These are not valid router prompts.
-

QUESTION 318:

In the Cisco IOS, what is the definition of a global command?

- A. A command that can be entered in any configuration mode.
- B. A command that supports all protocols.
- C. A command that is implemented in all IOS versions.
- D. A command that is set once and affects the entire router.
- E. A command that is available in every release of IOS.

Answer: D

Explanation:

When you enter global configuration mode and enter a command, it is applied to the running configuration file that is currently running in ram. The configuration of a global command affects the entire router. An example of a global command is one used for the hostname of the router.

Incorrect Answers:

- A. Global configuration commands must be performed while in global configuration mode. For example, when you are in the interface configuration mode, you most likely will need to exit out into global mode to type in the commands.
 - B. Global commands do not necessarily support every protocol.
 - C. This is not necessarily true, since there are certain global commands that are supported on one feature set that are not on a different feature set of IOS.
 - E. Global commands can become outdated, and can be replaced by newer commands in the newer releases of IOS.
-

QUESTION 319:

Which of the following commands will display the name of the IOS image file being used in a Certkiller router?

- A. Router# show IOS
- B. Router# show version
- C. Router# show image
- D. Router# show protocols
- E. Router# show flash

Answer: B, E

Explanation:

Different Cisco IOS versions and feature sets will ultimately dictate the size of the IOS file and the amount of Flash and DRAM memory required to run the IOS. If you are

planning to upgrade to a new IOS, you must make sure that you have enough memory (the more, the better) in your device. To see the amount of Flash you have and the current IOS file stored in Flash memory, utilize the show flash command as follows:

```
Router>show flash
System flash directory:
File Length Name/status
1 5510192 c2600-is-mz.120-3.T3.bin[5510256 bytes used, 2878352 available, 8388608 total]
8192K bytes of processor board System flash (Read/Write)
```

Typically, the filename of the IOS file in Flash correctly reflects the actual IOS version running currently on the device. However, an administrator can easily change the filename to his or her own purposes, or there could be multiple IOS files stored on the Flash and you are not sure which one is running currently. To ensure the correct version of IOS, use the widely practical show version command.

Incorrect Answers:

A, C. These are invalid commands.

D. The command "show protocols" will show the routed protocols in use by the router and by interface conditions and their IP address, if configured.

QUESTION 320:

After making changes to the router, you issue the "copy running-config startup-config" command to save changes. After reloading the router, the router comes up in setup mode. You again make changes, save them, and reboot. Again, the router comes up in setup mode.

What is the most likely cause of this?

- A. The NVRAM is corrupted.
- B. The boot system commands were omitted in the configuration.
- C. The configuration register setting is incorrect.
- D. The upgraded configuration incompatible with the hardware platform.
- E. The upgraded IOS incompatible with the hardware.
- F. None of the above

Answer: C

Explanation:

When you enter the command, "copy running-config startup-config" you save your current settings to NVRAM. The problem described in this question is that it appears the router is set to bypass the NVRAM, making it come up in the initial configuration dialog. The most likely cause of a router with the configuration register settings set incorrectly is that the router recently went through the password recovery procedure.

QUESTION 321:

You need to upgrade the IOS of an existing router on your network. The new IOS image is located on a TFTP server that you have set up within the network. What command should you issue in order to download the new IOS version?

- A. Router# copy tftp flash
- B. Router# copy flash run
- C. Router(config)# restore flash
- D. Router(config)# repair flash
- E. Router# copy flash tftp
- F. Router# copy start flash
- G. None of the above

Answer: A

Explanation:

The command "copy tftp flash" will copy the new IOS version upgrade from your networks TFTP server (assuming of course you have a TFTP server with the new version of IOS standing by).

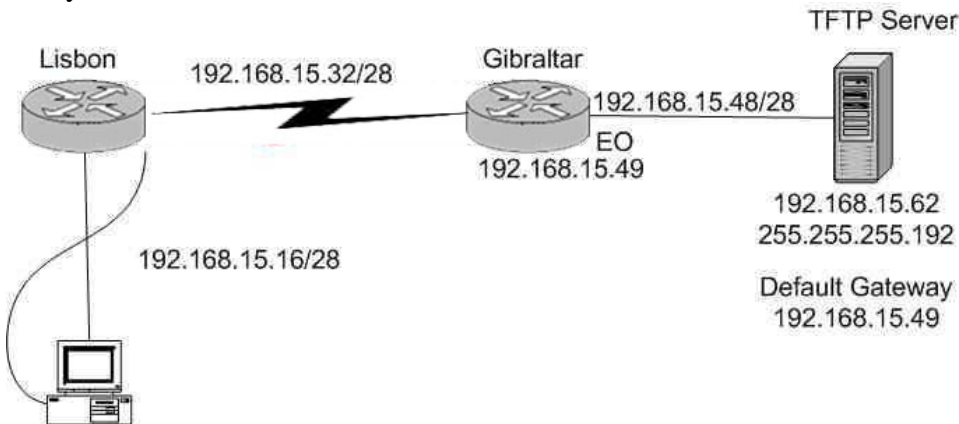
Incorrect Answers:

C, D. The copy tftp flash command should be issued from the enable command prompt. It is not necessary to go into configuration mode.

E. This will have the reverse effect, and will copy the IOS image on your router onto a folder in your TFTP server.

QUESTION 322:

Study the exhibit below:



The Certkiller systems administrator in Lisbon has configured a new router to connect with his company's head office in Gibraltar. He attempted to create and save an image file of the new router on the TFTP server in Gibraltar but failed. Based on the information given by above exhibit, what is the underlying problem?

- A. The IP address of the TFTP server not correct.
- B. There is an incorrect subnet mask of the TFTP server.
- C. The default gateway of the TFTP server not properly set.
- D. The subnet mask on the Lisbon router not correct
- E. There is an incorrect IP address configured on E0 of the Gibraltar router
- F. None of the above

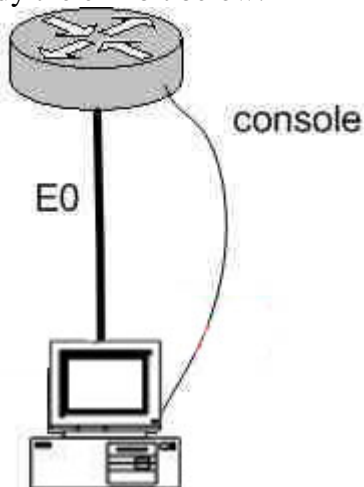
Answer: B

Explanation:

An incorrect subnet mask on the TFTP server is the cause of this problem. If you look at the subnet masks of all the other devices you'll notice that they are /28. If you rewrite the subnet mask of the TFTP server, of 255.255.255.192 you'll notice that it translates to a subnet mask of /26. A subnet mask of 255.255.255.240, which is a /28, applied to the TFTP server will fix this problem.

QUESTION 323:

Study the exhibit below:



You just connected your computer directly to the E0 port of a router and you're running a console session. Which of the following steps below are required to successfully implement the "copy flash tftp" command and upload the flash image onto the TFTP server? (Select three answer choices)

- A. TFTP server software must be activated.
- B. TFTP server software must be running on the administrator's workstation.
- C. There must be space in the flash memory of the router to accommodate the file to be copied.
- D. The copy flash tftp command must provide the IP address of the administrator's workstation.
- E. The administrator's workstation must be on the same subnet as the router E0 interface.
- F. The Ethernet connection between the router and the administrator's workstation must be via straight-through cable.

Answer: B, D, E

Explanation:

The sole purpose of the 'copy flash tftp' command is to copy the routers configuration file to the TFTP server to save it. The first logical variable for this operation is that the TFTP software is actually running. So B is correct. D is correct because the IOS won't be able

to send off if it doesn't even know where the TFTP server is. Finally, TFTP server must be on the same subnet as the connectivity must be direct and the TFTP and router will need to know how to reach each other.

Incorrect Answers:

A. The TFTP can't just be activated, it has to be running in the right place.

C. This is not valid because you aren't downloading into the flash, you're uploading out of the flash, so space isn't a concern.

F. A cross over cable must be used when connecting from a PC directly into the router's Ethernet interface.

QUESTION 324:

What kind of information can you deduce from an IOS image file name? (Select three answer choices)

- A. Distribution channel failures
- B. Feature capabilities
- C. Memory capacity needs
- D. Hardware product platform
- E. Programming language requirements
- F. Run location and compression status

Answer: B, D, F

Explanation:

Image Naming Conventions:

You can identify the platform, features, and image location by the name of the image. The naming convention is platform-features-type for images that are stored on a UNIX system.

The platform variable indicates which platforms can use this image. Examples of platform variables include rsp (Cisco 7000 series with RSP7000 and Cisco 7500 series), c1600 (Cisco 1600 series), and c1005 (Cisco 1005).

The features variable identifies the feature sets supported by the image.

The type field can contain the following characters:

f-The image runs from Flash memory.

m-The image runs from RAM.

r-The image runs from ROM.

l-The image is relocatable.

z-The image is zip compressed.

x-The image is mzip compressed.

QUESTION 325:

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
- E. Router# show running-config
- F. All of the above

Answer: B

Explanation:

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.

QUESTION 326:

The "show version" command was issued on a Certkiller router as shown below:

System Image file is "Flash: C2600-ik8035-m2.122-8.T5.bin"

Cisco 2620(MPC860)processor(revision 0x200) with 16384/2048K bytes of memory

Processor board ID JAD05076EF6
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)
32K bytes of non-volatile configuration memory
16384 bytes of processor board system flash (Read/Write)
Configuration register is 0x2102

The Network administrator at Certkiller .com wants to upgrade the IOS of this router. The new Image requires 64 MB of RAM & 16 MB for Storage of the File. Given the Output Shown in the Graphic, which of the following is true?

- A. This router meets the requirements for the new image.
- B. This router will require a DRAM upgrade to meet the requirements for the Image.
- C. This router will require a FLASH upgrade to meet the requirements for the Image.
- D. This router will require a NVRAM upgrade to meet the requirements for the Image.

Answer: B

Explanation:

Based on the output above, the router above will not require a Flash memory upgrade, as

only 16 MB is required and the Certkiller router does indeed have 16 MB of flash (16384 bytes). However, a DRAM upgrade is required, as 64 MB of RAM is needed but this router has only slightly more than 16 MB as shown by the 16384/2048 value.

QUESTION 327:

You are a trainee technician at Certkiller , 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.
- E. Make sure that the server can load and run the bootstrap code.

Answer: A, C, D

Explanation:

In order to properly back up the Cisco IOS image onto a Windows server, you should ensure that the server is reachable and that you have the proper permissions to save files to the server. In addition to this, the server will need enough space to hold the backup file.

Incorrect Answers:

E. In order to simply back up the IOS file, the server needs to only be able to save it to a hard disk. It does not need to load, read, or boot the image.

QUESTION 328:

Router CK1 is not operating as expected and you want to verify that the router booted using the correct IOS image. Which command should be used to determine which IOS is running on the router?

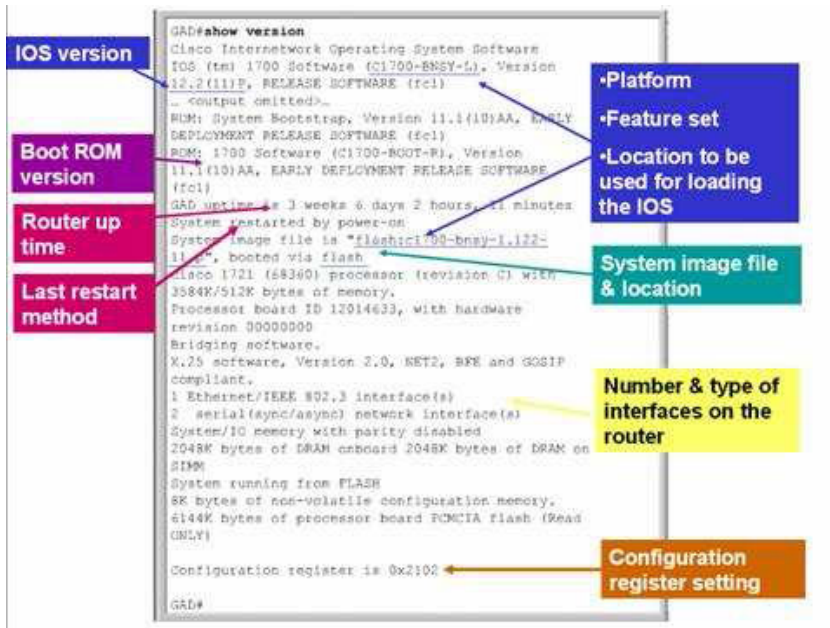
- A. show memory
- B. show flash
- C. show version
- D. show startup-config
- E. show config-register
- F. None of the above

Answer: C

Explanation:

The "show version" command displays info about the router and IOS running in RAM as

shown below:



QUESTION 329:

Refer to the output shown below. Why was this message received?

```

Certkiller1#telnet 10.3.1.2
Laying 10.3.1.2... Open

Password required, but None set
[Connection to 10.3.1.2 closed by foreign host]
Certkiller1#_
  
```

- A. The login command has not been set on CON 0.
- B. The login command has not been set on the VTY ports.
- C. No enable password has been set.
- D. No VTY password has been set.
- E. No enable secret password has been set.
- F. No console password has been set.

Answer: D

Explanation:

This error is generated due to no telnet being set. For security reasons, the Cisco router will not allow telnet access until a password has been set. You need to set the telnet password using the following example:

```
Router(config)#line vty 0 4
```

```
Router(config-line)#password telnet
```

```
Router(Config-line)#login
```

QUESTION 330:

You wish to increase the security of all of the routers within the Certkiller network. What can be done to secure the virtual terminal interfaces on a router? (Choose two)

- A. Administratively shut down the interface.
- B. Physically secure the interface.
- C. Create an access list and apply it to the virtual terminal interfaces with the access-group command.
- D. Configure a virtual terminal password and login process.
- E. Enter an access list and apply it to the virtual terminal interfaces using the access-class command.

Answer: D, E

Explanation:

There are a total of 5 logical Virtual terminal interfaces in a Cisco router (lines 0-4) and they are used for remote access into the device via telnet. Configuring these interfaces correctly with a login and password information can be used for security, as each user will be prompted for a password in order to obtain access. A second method is to use the "access-class" command. Combined with an access list, this command can be used to specify the hosts or networks that will be allow access to the device.

Incorrect Answers:

- A. Virtual terminal interfaces are logical interfaces that can not be manually shut down.
- B. Virtual terminal lines are logical interfaces that reside within a router, so there is nothing that can be physically secured.
- C. This command is used with access-lists for LAN and WAN interfaces, but is not used for the VTY lines.

QUESTION 331:

On router CK1 , the Certkiller network administrator issued the "service password-encryption" command. What is the effect of this configuration command?

- A. Only passwords configured after the command has been entered will be encrypted.
- B. Only the enable password will be encrypted.
- C. It will encrypt all current and future passwords.
- D. Only the enable secret password will be encrypted.
- E. It will encrypt the secret password and remove the enable secret password from the configuration.
- F. None of the above

Answer: C

QUESTION 332:

You want the text "Unauthorized access prohibited!" to be displayed before the login prompt every time someone tries to initiate a Telnet session to a Certkiller router, as shown in the example below:

```
Router#telnet 192.168.15.1
```

```
Trying 192.168.15.1 ... Open
```

```
Unauthorized access prohibited!
```

```
User Access Verification
```

```
Password:
```

Which command can be used to configure this message?

- A. login banner x Unauthorized access prohibited! X
- B. banner exec y Unauthorized access prohibited! Y
- C. banner motd x Unauthorized access prohibited! X
- D. vty motd "Unauthorized access prohibited!"
- E. None of the above

Answer: C

Explanation:

The message text that is displayed when users log into the router is called the "message of the day" banner, and it can be changed with the "banner motd" command as shown in answer choice C.

QUESTION 333:

A Certkiller router was configured as shown below:

```
CertKillerC(config)#enable password certkiller1
```

```
CertKillerC(config)# enable secret certkiller2
```

```
CertKillerC(config)# line vty 0 4
```

```
CertKillerC(config-line)# password certkiller3
```

```
CertKillerC(config-line)# exit
```

```
CertKillerC(config)# no enable certkiller2
```

A Certkiller .com technician is connected to the router console port. After configuring the commands displayed in the exhibit, the technician log out and then logs back in at the console. Which password does the technician need to enter at the router prompt get back into the privileged EXEC mode?

- A. Certkiller 1
- B. Certkiller 2
- C. Certkiller 3
- D. A password would not be required.

Answer: B

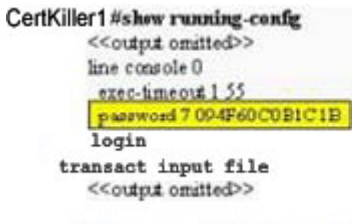
Explanation:

Certkiller 2 is the answer because the enable secret password is used to log back to the router before the enable password is used. The enable secret password always overwrites the enable password.

Answer C is incorrect because this is for the vty and not the console, so it will be required for the initial telnet login.

QUESTION 334:

Refer to the graphic. Although the console password was set to " Certkiller ", it displays in the router configuration as shown. What command caused the password to be stored like this?



```
CertKiller1#show running-config
<<output omitted>>
line console 0
  exec-timeout 1 55
  password 7 094F60C0B1C1B
  login
transact input file
<<output omitted>>
```

- A. Certkiller 1(config)# encrypt password
- B. Certkiller 1(config)# password-encryption md 7
- C. Certkiller 1(config-line)# exec-timeout 1 55
- D. Certkiller 1(config)# service password-encryption
- E. None of the above

Answer: D

Explanation:

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

QUESTION 335:

DRAG DROP

You work as a network administrator at Certkiller .com.

Your boss, Mrs. Certkiller, is interested in password configuration commands.

Match the commands below with the appropriate tasks. Note that one of the commands will not be used.

Options, select from these

line console 0
password certkiller0

enable password certkiller4

line vty 0 4
password certkiller1

enable secret certkiller4

service password-encryption

login password certkiller4

Definitions

Set privileged mode clear text password

Place here

Encrypt all clear text passwords

Place here

Set privileged mode encrypted password

Place here

Set password to allow Telnet connections

Place here

Protect access to the user mode prompt

Place here

Answer:

Options, select from these

login password certkiller3

Definitions

Set privileged mode clear text password

enable password certkiller4

Encrypt all clear text passwords

service password-encryption

Set privileged mode encrypted password

enable secret certkiller5

Set password to allow Telnet connections

line vty 0 4
password certkiller1

Protect access to the user mode prompt

line console 0
password certkiller0

QUESTION 336:

Which of the following IOS commands could you use to troubleshoot a router connectivity problem on an IP network? (Select all valid answers)

- A. show ip route
- B. ipconfig
- C. tracert
- D. show interfaces
- E. traceroute
- F. ping
- G. All of the above

Answer: A, D, E, F

Explanation:

- A. The show ip route command displays the IP route table.
- D. The show interfaces EXEC command to display statistics for all interfaces configured on the router or access server.
- E. Traceroute is a valid router command, used to trace the path to a destination, and provide the latency associated with each hop.
- F. The ping command tests connectivity to a remote node.

Incorrect Answers:

- B, C. These are commands used on PC hosts. They are invalid router commands.

QUESTION 337:

What IOS command verifies connectivity between two hosts on the Certkiller network by sending and receiving ICMP echo messages?

- A. ping
- B. tracert
- C. netstat
- D. show cdp neighbors detail
- E. show ip route
- F. traceroute
- G. ipconfig

Answer: A

Explanation:

Packet Internet Groper (PING) uses ICMP echo requests and replies to verify network connectivity. It is most commonly used to verify connectivity to another device and to monitor the operational status of a device.

QUESTION 338:

Part of the Certkiller network is shown below:



In this network segment, host Certkiller A is trying to communicate with Host Certkiller B. The e0 interface on Router Certkiller 3 is down. Which of the following are true? (Choose two.)

- A. Router Certkiller 3 will send a Source Quench message type.
- B. Router Certkiller 3 will use ICMP to inform Host Certkiller A, Router Certkiller 1, and Router Certkiller 2 that Host Certkiller B cannot be reached.
- C. Router Certkiller 3 will send a Router Selection message type.
- D. Router Certkiller 3 will send a Destination Unreachable message type.
- E. Router Certkiller 3 will use ICMP to inform Router Certkiller 2 that Host Certkiller B cannot be reached.
- F. Router Certkiller 3 will use ICMP to inform Host Certkiller A that Host Certkiller B cannot be reached.

Answer: D, F

QUESTION 339:

What kind of message does a PING send out to test connectivity?

- A. ICMP echo request
- B. Information interrupt request
- C. Timestamp reply
- D. Source quench
- E. None of the above

Answer: A

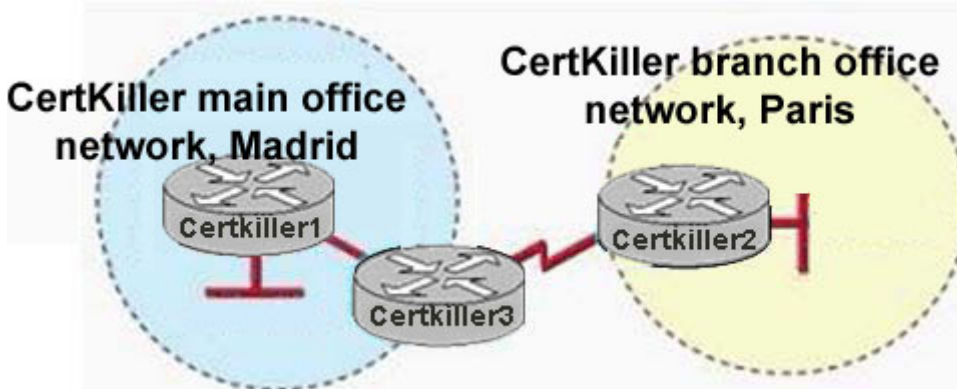
Explanation:

The ping command sends an ICMP echo request packet to the stated destination address. The TCP/IP software at the destination then replies to the ping echo request packet with a similar packet, called the ICMP echo reply.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 146

QUESTION 340:

Two Certkiller offices are shown below:



You work as a network technician at Certkiller .com. Please study the exhibit carefully. A person is trying to send a file from a host on the Certkiller main office network in Madrid to a server on the Certkiller branch office network in Paris. The file transfer fails. The host on the Certkiller main office can communicate with other hosts on the local network. Which command, issued from router Certkiller 1, would be the most useful for troubleshooting this problem?

- A. show interfaces
- B. show version
- C. show flash:
- D. show controllers serial
- E. show history
- F. None of the above

Answer: A

Explanation:

This problem is most likely due to a communication problem with the ftp server. Using the show interface command can be used to verify the IP address, speed, errors,, configuration, etc. One of the first steps in troubleshooting any connectivity issue is to issue the "show interfaces" command to ensure that all of the interfaces are up and active.

Incorrect Answers:

- A: This is used to verify the version of IOS that the router is using.
- B: This is used to see the contents of the flash memory.
- D: This command displays the past commands that were issued in the router.
- E: This should only be used after it has been determined that the serial interface is indeed faulty.

QUESTION 341:

Why was the "show processes" command used on a Certkiller router before a debug command was entered on it?

- A. To verify that the CPU utilization is low enough to handle the effects of a debug command
- B. To verify the amount of space in flash memory
- C. To view the number of timers that are currently in use
- D. To check if the load meter file has enough space left to store the output of the debug command
- E. To verify the IOS version that is running
- F. None of the above

Answer: A

Explanation:

The show processes command displays information about the active processes. Issue the show processes cpu command to display detailed CPU utilization statistics on these processes and the show processes memory command to show the amount of memory used.

The following is a sample output of the show processes command:

CK1 #show processes

CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%

PID Q Ty PC Runtime(ms) Invoked uSecs Stacks TTY Process

1 C sp 602F3AF0 0 1627 0 2600/3000 0 Load Meter

2 L we 60C5BE00 4 136 29 5572/6000 0 CEF Scanner

3 L st 602D90F8 1676 837 2002 5740/6000 0 Check heaps

4 C we 602D08F8 0 1 0 5568/6000 0 Chunk Manager

5 C we 602DF0E8 0 1 0 5592/6000 0 Pool Manager

6 M st 60251E38 0 2 0 5560/6000 0 Timers

7 M we 600D4940 0 2 0 5568/6000 0 Serial Backgroun

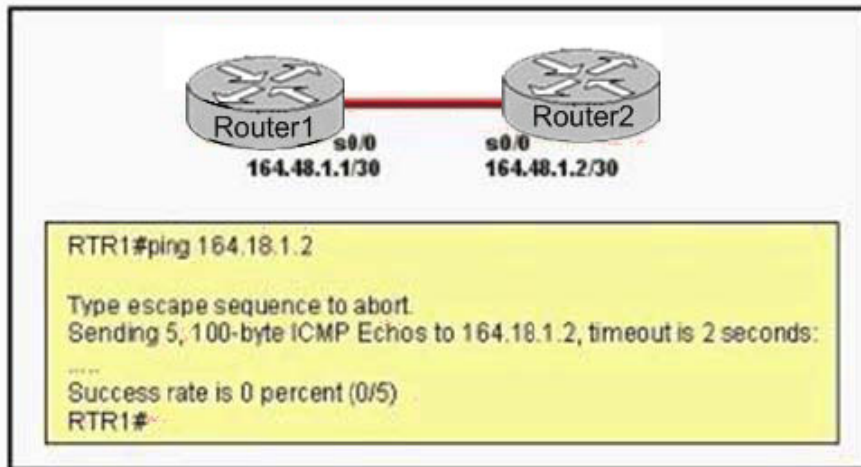
8 M we 6034B718 0 1 0 2584/3000 0 OIR Handler

9 M we 603FA3C8 0 1 0 5612/6000 0 IPC Zone Manager

It is always a good idea to check the CPU utilization levels before doing anything that may increase the CPU load, such as using debug commands.

QUESTION 342:

Two Certkiller routers are directly connected as shown below:



A network administrator cannot access Router2 from Router1. The interface is up and the line protocol is up on interface serial 0/0 on Router1. What command can the administrator enter on Router1 to verify the IP address of the serial interface on Router2?

- A. telnet 164.18.1.2
- B. show arp
- C. show cdp neighbors detail
- D. show interfaces
- E. show ip route
- F. trace 164.18.1.2
- G. None of the above

Answer: C

Explanation:

CDP is the Cisco proprietary protocol developed by Cisco. It is used to collect the information of locally attached or remote devices. If you are unable to ping but are connected, you can use the `show cdp neighbors detail` command to collect the Router's ID, interface, assigned IP address, platform, etc.

The following is sample output for the `show cdp neighbors detail` command.

CK1 #show cdp neighbors detail

Device ID: lab-7206

Entry address(es):

IP address: 172.19.169.83

Platform: cisco 7206VXR, Capabilities: Router

Interface: Ethernet0, Port ID (outgoing port): FastEthernet0/0/0

Holdtime : 123 sec

Version :

Cisco Internetwork Operating System Software

IOS (tm) 5800 Software (C5800-P4-M), Version 12.1(2)

Copyright (c) 1986-2002 by Cisco Systems, Inc.

advertisement version: 2

Duplex: half

QUESTION 343:

Exhibit:

```
00:34:43: RIP: received 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 routes
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 50, sending
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 192.168.11.2:11003 192.168.11.1:23 seq 4063973782
      ACK 4061200175 WIN 4049
```

While troubleshooting an issue on router CK1, you notice the 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.
- E. Enter the terminal monitor command.
- F. None of the above

Answer: A

Explanation:

The output shown in this example is a result of one or more debug commands that have been used to troubleshoot an issue. Using debug commands might slow down traffic on busy networks. To see the current debug command settings, enter the show debug command. To stop the debug output, enter the no debug command. To stop all debug messages from being displayed, enter the no debug all command.

QUESTION 344:

A new Certkiller is using an IEEE 802.11b wireless LAN. What is the maximum data rate specified for this WLAN?

- A. 11 mbps
- B. 100 mbps
- C. 54 mbps
- D. 10 mbps
- E. 1000 mbps
- F. 16 mbps

G. None of the above

Answer: A

Explanation:

The maximum speed for 802.11b is 11 Mbps.

Incorrect Answers:

A. This is the maximum speed for legacy Ethernet networks.

C. This is the maximum speed supported by the other prevalent wireless standards, 802.11a and 802.11g.

D, E. This is the maximum speed of Ethernet and Gig E connections.

F. This is the maximum data rate for token ring.

QUESTION 345:

Which IEEE standard is used to define Wi-Fi?

A. IEEE 802.3

B. IEEE 802.5

C. IEEE 802.11h

D. IEEE 802.11c

E. IEEE 802.11

Answer: E

Explanation:

IEEE 802.11 was the original standard for wireless networks. However, the standard had a few ambiguities allowed for potential problems with compatibility between devices. To ensure compatibility, a group of companies formed the Wireless Ethernet Compatibility Alliance (WECA), which has come to be known as the Wi-Fi Alliance, to ensure that their products would work together. The term Wi-Fi is now used to refer to any IEEE 802.11 wireless network products that have passed the Wi-Fi Alliance certification tests.

Incorrect Answers:

A. This is the standard used for Ethernet networks.

B. This is the standard used in Token Ring networks.

C, D: These standards are not currently used. The most prevalent types of wireless 802.11 networks are 802.11a, 802.11b, and 802.11g.

QUESTION 346:

802.1b is being utilized in the Certkiller wireless network. Which spread spectrum technology does the 802.1b standard define for operation in this network?

A. FHSS

B. IR

C. DSSS and FHSS

- D. DSSS
- E. IR, FHSS and DSSS
- F. None of the above

Answer: D

Explanation:

In telecommunications, direct-sequence spread spectrum (DSSS) is a modulation technique. As with other spread spectrum technologies, the transmitted signal takes up more bandwidth than the information signal that is being modulated. The name 'spread spectrum' comes from the fact that the carrier signals occur over the full bandwidth (spectrum) of a device's transmitting frequency.

QUESTION 347:

Two Certkiller workers have established wireless communication directly between their wireless laptops. What type of wireless topology has been created by these Certkiller employees?

- A. ESS
- B. IBSS
- C. SSID
- D. BSS
- E. None of the above

Answer: B

Explanation:

An independent BSS (IBSS) is an ad-hoc network that contains no access points, which means they can not connect to any other basic service set.

QUESTION 348:

Three access points have been installed and configured to cover a small remote Certkiller office. What term defines the wireless topology?

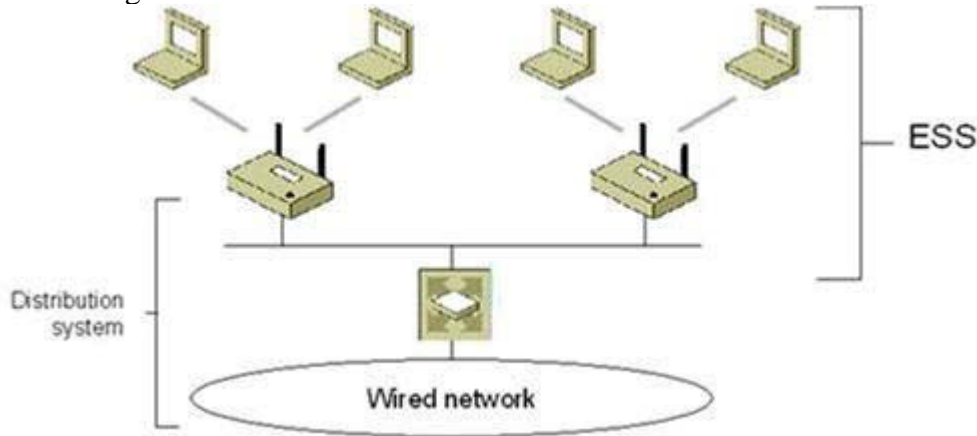
- A. SSID
- B. BSS
- C. ESS
- D. IBSS
- E. ASS
- F. None of the above

Answer: C

Explanation:

A single wireless AP supporting one or multiple wireless clients is known as a Basic Service Set (BSS). A set of two or more wireless APs connected to the same wired network is known as an Extended Service Set (ESS). An ESS is a single logical network segment (also known as a subnet), and is identified by its SSID

See the Figure:



QUESTION 349:

A single 802.11g access point has been configured and installed in the center of a square shaped Certkiller office. A few wireless Certkiller 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. Null SSID
- B. Mismatched TKIP encryption
- C. Cordless phones
- D. Antenna type or direction
- E. Mismatched SSID
- F. Metal file cabinets
- G. Microwave ovens in the break room

Answer: C, D, F

Explanation:

C: If you have cordless phones or other wireless electronics in your home or office, your computer might not be able to "hear" your router over the noise from the other wireless devices. To quiet the noise, avoid wireless electronics that use the 2.8GHz frequency. Instead, look for cordless phones that use the 5.8GHz or 900MHz frequencies.

D: The antennas supplied with your router are designed to be omni-directional, meaning they broadcast in all directions around the router. If your router is near an outside wall, half of the wireless signals will be sent outside your office, and much of your router's power will be wasted.



Standard antenna

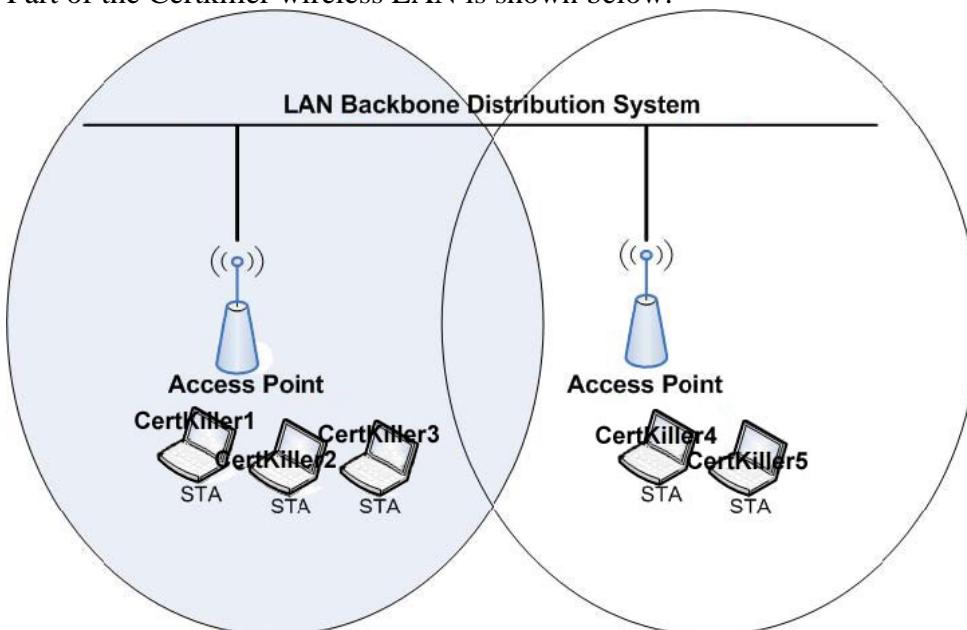
Hi-gain antenna

Since most users operate at peak efficiency in our example, it could be that a few of the users are simply placed too far from the antenna, or the antenna is not placed in the center of the office.

F: Metal, walls, and floors will interfere with your router's wireless signals. The closer your router is to these obstructions, the more severe the interference, and the weaker your connection will be.

QUESTION 350:

Part of the Certkiller wireless LAN is shown below:



What two facts can be determined from the diagram of the Certkiller WLAN shown above? (Choose two)

- A. Access points in each cell must be configured to use channel 1
- B. The network diagram represents an extended service set (ESS)
- C. The two AP's should be configured to operate on different channels
- D. The area of overlap of the two cells represents a basic service set (BSS)
- E. The area of overlap must be less than 10% of the area to ensure connectivity
- F. There are too many hosts on this WLAN

Answer: B, C

QUESTION 351:

You are responsible for securing the Certkiller Wireless LAN using WPA. Which two statements 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 the use of a dynamic encryption keys that change each time a client establishes a connection
- C. It includes authentication by PSK
- D. It specifies use of a static encryption key that must be changed frequently to enhance security

Answer: B, C

Explanation:

WPA is a more powerful security technology for Wi-Fi networks than WEP. It provides strong data protection by using encryption as well as strong access controls and user authentication. WPA utilizes 128-bit encryption keys and dynamic session keys to ensure your wireless network's privacy and enterprise security.

There are two basic forms of WPA:

WPA Enterprise (requires a Radius server)

WPA Personal (also Known as WPA-PSK)

Either can use TKIP or AES for encryption. Not all WPA hardware supports AES.

WPA-PSK is basically an authentication mechanism in which users provide some form of credentials to verify that they should be allowed access to a network. This requires a single password entered into each WLAN node (Access Points, Wireless Routers, client adapters, bridges). As long as the passwords match, a client will be granted access to a WLAN.

Encryption mechanisms used for WPA and WPA-PSK are the same. The only difference between the two is in WPA-PSK, authentication is reduced to a simple common password, instead of user-specific credentials.

The Pre-Shared Key (PSK) mode of WPA is considered vulnerable to the same risks as any other shared password system - dictionary attacks for example. Another issue may be key management difficulties such as removing a user once access has been granted where the key is shared among multiple users, not likely in a home environment.

Reference: http://www.dslreports.com/faq/wifisecurity/2.2_WPA

QUESTION 352:

In an effort to increase security within the Certkiller 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 includes authentication by PSK

- D. It specifies the use of dynamic encryption keys that change each time a client establishes a connection
- E. It requires that all access points and wireless devices use the same encryption key
- F. WPA works only with Cisco access points

Answer: C, D

QUESTION 353:

Certkiller has chosen WPA over WEP in their wireless network. What is one reason why WPA encryption is preferred over WEP in this network?

- A. The WPA key values remain the same until the client configuration is changed.
- B. The values of WPA keys can change dynamically while the system is used.
- C. The access point and the client are manually configured with different WPA key values.
- D. A WPA key is longer and requires more special characters than the WEP key.
- E. None of the above

Answer: B

QUESTION 354:

You need to determine the proper security settings on a new Certkiller WLAN-capable office. Which encryption type would WPA2 use in this office?

- A. PSK
- B. AES-CCMP
- C. PPK via IV
- D. TKIP/MIC
- E. None of the above

Answer: B

Explanation:

In 2004, the IEEE 802.11i task group responsible for Wi-Fi security for the WLAN provided a series of recommendations to fix known problems with Wireless Equivalent Privacy (WEP). Its recommendations included using encryption techniques known as Advanced Encryption Standard Counter-Mode Cipher Block Chaining (AES-CCMP) or AES for short.

AES is not the end of the story, as the industry had a problem when it moved from WEP to AES. What could be done, for example, about legacy devices that could not support the upgrade to AES? The IEEE 802.11i task group recommended using the Temporal Key Integrity Protocol (TKIP). As a patch, TKIP is not as secure as AES, but it protects against all currently known attacks.

The urgent need to fix WEP caused the Wi-Fi Alliance to develop security patch

recommendations for Wi-Fi Protected Access (WPA) before the IEEE finalized standards. WPA was drawn from an early draft of the IEEE 802.11i standard, and there are significant differences between WPA and TKIP. What is similar is that neither the WPA patch for WEP nor the TKIP patch is as secure as AES.

The Wi-Fi Alliance later came out with a new security recommendation-WPA, version 2 (WPA2)-to make WPA consistent with IEEE 802.11i standards. One improvement to WPA2 was the recommendation to use AES-CCMP encryption mode. WPA2 has thus become synonymous with AES.

The table below summarizes the different encryption algorithms used for WLAN privacy.

WLAN Encryption Options		
Most secure	AES-CCMP/WPA2	They are resistant to all
		known crypto-analysis
Believed secure	TKIP and WPA patch to	They offer defense
	WEP	against currently known
		attacks
Weak security	WEP	They can be cracked by
		analyzing a sufficient amount of data
		transmission.

Reference: <http://www.convergedigest.com/bp-bbw/bp1.asp?ID=465&ctgy=Mesh>

QUESTION 355:

You need to add a wireless access point to a new Certkiller 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
- E. None of the above

Answer: C

QUESTION 356:

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
- E. Cable
- F. None of the above

Answer: C

Explanation:

A good example of the range of an infrared is a television remote control or a garage door opener. Infrared networks are capable of high data rates, but they are limited in the distance between the infrared points, and also by the fact that a line of sight between the nodes is usually required.

Incorrect Answers:

A, D: Although these are both wireless methods, the data rate capabilities are somewhat limited, especially when compared to infrared links.

B, E: Although these are both capable of relatively high data rates, they do not use wireless technology.

QUESTION 357:

You need to troubleshoot an interference issue with the Certkiller wireless LAN. Which two devices can interfere with the operation of this network because they operate on similar frequencies? (Choose two)

- A. Microwave oven
- B. AM radio
- C. Toaster
- D. Copier
- E. Cordless phone
- F. IP phone
- G. I-pod

Answer: A, E

QUESTION 358:

You need to create a security plan for the Certkiller network. What should be part of a comprehensive network security plan?

- A. Delay deployment of software patches and updates until their effect on end-user equipment is well known and widely reported
- B. Minimize network overhead by deactivating automatic antivirus client updates
- C. Encourage users to use personal information in their passwords to minimize the likelihood of passwords being forgotten
- D. Physically secure network equipment from potential access by unauthorized individuals
- E. Allow users to develop their own approach to network security
- F. None of the above

Answer: D

Explanation:

Computer systems and networks are vulnerable to physical attack; therefore, procedures should be implemented to ensure that systems and networks are physically secure. Physical access to a system or network provides the opportunity for an intruder to damage, steal, or corrupt computer equipment, software, and information. When computer systems are networked with other departments or agencies for the purpose of sharing information, it is critical that each party to the network take appropriate measures to ensure that its system will not be physically breached, thereby compromising the entire network. Physical security procedures may be the least expensive to implement but can also be the most costly if not implemented. The most expensive and sophisticated computer protection software can be overcome once an intruder obtains physical access to the network.

QUESTION 359:

As the Certkiller network security administrator, you are concerned with the various possible network attacks. Which type of attack is characterized by a flood of packets that are requesting a TCP connection to a server?

- A. Trojan Horse
- B. Reconnaissance
- C. Denial of Service
- D. Brute Force
- E. Virus
- F. None of the above

Answer: C

Explanation:

A denial-of-service attack (DoS attack) is an attempt to make a computer resource unavailable to its intended users. Although the means to, motives for and targets of a DoS attack may vary, it generally comprises the concerted, malevolent efforts of a person or persons to prevent an Internet site or service from functioning efficiently or at all,

temporarily or indefinitely. Among these are Network connectivity attacks. These attacks overload the victim with TCP packets so that its TCP/IP stack is not able to handle any further connections, and processing queues are completely full with nonsense malicious packets. As a consequence of this attack, legitimate connections are denied. One classic example of a network connectivity attack is a SYN Flood

QUESTION 360:

The Certkiller 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. Use a firewall to restrict access from the outside to the network devices
- B. Allow unrestricted access to the console or VTY ports
- C. Prevent the loss of passwords by disabling encryption
- D. Always use Telnet to access the device command line because its data is automatically encrypted
- E. Use SSH or another encrypted and authenticated transport to access device configurations
- F. Use easy to remember passwords so that they are not forgotten

Answer: A, E

Explanation:

Whenever the trusted (inside) part of the network connects to an untrusted (outside, or internet) network, the use of a firewall should be implemented to ensure only legitimate traffic is allowed within the enterprise. SSH is a secure alternative to telnet that encrypts the traffic so that data carried within can not be "sniffed." It is always recommended to use SSH over telnet whenever possible.

QUESTION 361:

You want to enable telnet access to a Certkiller router as securely as possible. Which of the following commands would you execute if you wanted to enable others to establish a telnet session on a Cisco router?

- A. Certkiller 1(config)# line console 0
Certkiller 1(config-if)# enable password Certkiller
- B. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)#enable password Certkiller
- C. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)#enable secret Certkiller
Certkiller 1(config-line)# login
- D. Certkiller 1(config)# line console 0
Certkiller 1(config-line)#enable secret Certkiller
Certkiller 1(config-line)#login

E. Certkiller 1(config)#line console 0
Certkiller 1(config-line)# password Certkiller
Certkiller 1(config-line)#login
F. Certkiller 1(config)#line vty 0
Certkiller 1(config-line)#password Certkiller
Certkiller 1(config-line)#login

Answer: F

Explanation:

Telnet sessions use virtual terminal sessions, which are configured under the "line vty" portion of the configuration. There are 5 total vty sessions that can be configured, numbered 0-4. In order to be prompted for a password, one must be configured. Choice F gives the 3 commands needed to allow a single telnet session.

Incorrect Answers:

A, B, C, D. The telnet password needs to be configured in addition to the enable password. Without the initial password configured, users that try to telnet to the router will receive a "password required, but none set" message.
D, E. Telnet uses VTY ports, not the console port.

QUESTION 362:

You want to increase the security in the Certkiller network. What are the two security appliances that can be installed in this network? (Choose two)

- A. SDM
- B. ATM
- C. IDS
- D. IOX
- E. IPS
- F. IOS
- G. FR

Answer: C, E

QUESTION 363:

Certkiller University has a small campus where 25 faculty members are located. The faculty offices and student computers are currently on the same network. The faculty is concerned about students being able to capture packets going across the network and obtain sensitive material. What could a network administrator do to protect faculty network traffic from student connections?

- A. Install anti-virus software on the student computers.
- B. Put the faculty computers in a separate VLAN.
- C. Power down the switches that connect to faculty computers when they are not in use.

- D. Remove the student computers from the network and put them on a peer-to-peer network.
- E. Create an access list that blocks the students from the Internet where the hacking trolls are located.
- F. None of the above

Answer: B

Explanation:

Main Functions of a VLAN:

1. The VLAN can group several broadcast domains into multiple logical subnets.
2. You can accomplish network additions, moves, and changes by configuring a port into the appropriate VLAN.
 1. You can place a group of users who need high security into a VLAN so that no users outside of the VLAN can communicate with them.
 2. As a logical grouping of users by function, VLANs can be considered independent from their physical or geographic locations.
 3. VLANs can enhance network security.
 4. VLANs increase the number of broadcast domains while decreasing their size.

QUESTION 364:

What are three valid reasons to assign ports on VLANs on a new Certkiller LAN switch? (Choose three)

- A. To make VTP easier to implement
- B. To isolate broadcast traffic
- C. To increase the size of the collision domain
- D. To allow more devices to connect to the network
- E. To logically group hosts according to function
- F. To increase network security

Answer: B, E, F

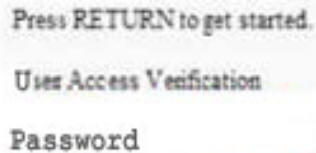
Explanation:

Main Functions of a VLAN (see previous question):

1. The VLAN can group several broadcast domains into multiple logical subnets.
 2. You can accomplish network additions, moves, and changes by configuring a port into the appropriate VLAN.
 1. You can place a group of users who need high security into a VLAN so that no users outside of the VLAN can communicate with them.
 2. As a logical grouping of users by function, VLANs can be considered independent from their physical or geographic locations.
 3. VLANs can enhance network security.
 4. VLANs increase the number of broadcast domains while decreasing their size.
-

QUESTION 365:

What set of router configuration commands causes the message shown in the exhibit below?



```
Press RETURN to get started.  
User Access Verification  
Password
```

- A. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# service password-encryption
Certkiller 1(config-line)# login
- B. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable password cisco
Certkiller 1(config-line)# login
- C. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable password cisco
Certkiller 1(config-line)# logging synchronous
- D. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable secret cisco
Certkiller 1(config-line)# login
- E. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# password cisco
Certkiller 1(config-line)# login
- F. None of the above

Answer: E

Explanation:

Use the line con 0 command to configure the console line. Use the login and password commands to configure the console for login with a password. Here is an example using the Battle Creek router:

```
Battle>enable
```

```
Password:*****
```

```
CK1 #conf term
```

```
CK1 (config)#line con 0
```

```
CK1 (config-line)#login
```

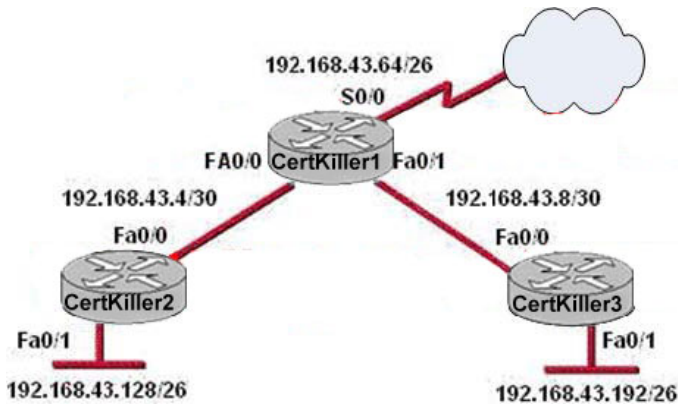
```
CK1 (config-line)#password oatmeal
```

```
CK1 (config-line)#^Z
```

The "login" command is needed to enforce users to log in to the router using the console connection.

QUESTION 366:

Refer to the Certkiller network shown below:



For security reasons, information about Certkiller 1, including platform and IP addresses, should not be accessible from the Internet. This information should, however, be accessible to devices on the internal networks of Certkiller 1. Which command or series of commands will accomplish these objectives?

- A. Certkiller 1(config)#no cdp enable
- B. Certkiller 1(config)#no cdp run
- C. Certkiller 1(config)#interface s0/0
Certkiller 1(config-if)#no cdp run
- D. Certkiller 1(config)#interface s0/0
Certkiller 1(config-if)#no cdp enable
- E. None of the above

Answer: D

Explanation:

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

To disable the CDP on particular interface use the "no cdp enable" command. To disable CDP on the entire router use the "no cdp run" in global configuration mode.

QUESTION 367:

Of the following choices below, only three could be used as WAN encapsulation methods, as opposed to LAN encapsulation. Which three are they? (Choose three)

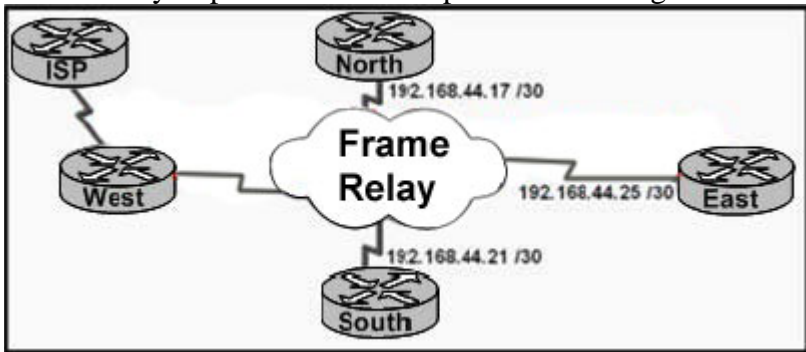
- A. FDDI
- B. HDLC
- C. Frame Relay
- D. PPP
- E. Token Ring
- F. Ethernet

G. VTP

Answer: B, C, D

QUESTION 368:

In the Certkiller network shown below, an associate has the task of planning a Frame Relay implementation to replace the existing WAN infrastructure.



The addresses for the North, East, and South branch offices have been assigned as shown in the diagram. Which type of topology should be implemented in this network?

- A. Extended star
- B. Ring
- C. Hub and spoke
- D. Bus
- E. Full mesh

Answer: C

Explanation:

In a Fully meshed environment, every router has a PVC defined to every other router and in a Non-fully meshed environment (or Hub and Spoke) PVCs are only defined between routers that need to communicate. In this example, a /30 IP subnet mask is used at each remote location. This mask allows for only two hosts on the network, which will be used for the local router's frame relay interface, and the hub router's interface. In this example, all site to site (spoke) traffic will need to traverse through the main (hub) location.

QUESTION 369:

What can the Certkiller network administrator utilize by using PPP (Point to Point Protocol) as the Layer 2 encapsulation? (Choose three)

- A. Compression
- B. QOS
- C. Sliding windows
- D. VLAN support

- E. Authentication
- F. Multilink support

Answer: A, E, F

QUESTION 370:

You need to establish a point to point circuit between a Cisco router and a Juniper router on the Certkiller network. You are having difficulty in establishing this serial link between a Cisco router and another vendor. Both routers are configured for HDLC encapsulation. Which statements are true regarding this configuration?

(Choose two)

- A. HDLC requires a clock rate to be configured on the routers at both ends of the serial link.
- B. The Cisco HDLC frame uses a proprietary "Type" field that may not be compatible with equipment of other vendors.
- C. PPP encapsulation is recommended for serial links between equipment from multiple vendors.
- D. Usernames must be configured at both ends of the HDLC serial link
- E. There is a mismatch in the HDLC authentication password configurations.
- F. The HDLC vendor type must be enabled on the Cisco router.

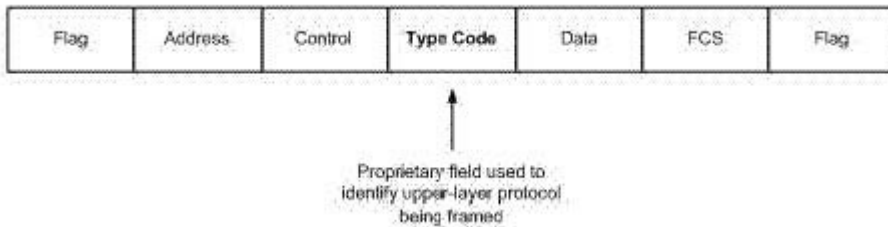
Answer: B, C

Explanation:

The High Level Data Link Control protocol (HDLC) is the default encapsulation used on the synchronous serial interfaces of a Cisco router.

HDLC is a Data Link layer protocol used to encapsulate and transmit packets over point-to-point links. It handles the transfer of data in full duplex, as well as link management functions. As an OSI standard, many vendors implement the HDLC protocol in their equipment. Unfortunately, these implementations are usually not interoperable. The reason is that when the HDLC frame format was defined, it did not include a field to identify the Network layer protocol that it was framing. As such, the OSI version of HDLC assumes that any link using HDLC is running only a single Network layer protocol like IP. Of course, many networks run IP, IPX, and other Layer 3 protocols simultaneously. This has led vendors (including Cisco) to implement HDLC using a proprietary frame format that includes a type code field, thus allowing the Network layer protocol within a frame to be properly identified.

The Cisco HDLC frame is illustrated in the figure below.



Because of the proprietary nature of vendor HDLC implementations, you should only use HDLC framing on point-to-point links when the router at each end of a link is from the same vendor. In cases where you want to connect equipment from different vendors over a leased line, the Point-to-Point Protocol (PPP) should be used. Always remember that the router on both sides of a point-to-point link must be using the same data framing method in order to communicate.

Reference: <http://www.2000trainers.com/cisco-ccna-11/ccna-hdlc/>

QUESTION 371:

The Certkiller WAN connection is shown below:



Based on this diagram, 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. CSU/DSU
- B. modem
- C. WAN switch
- D. ATM switch
- E. Frame Relay switch
- F. ISDN TA

Answer: A, B

Explanation:

DTE is an abbreviation for Data Terminal Equipment, and refers to an end instrument that converts user information into signals for transmission, or reconverts the received signals into user information. A DTE device communicates with the Data Circuit-terminating Equipment (DCE), such as a modem or CSU/DSU.

A DTE is the functional unit of a data station that serves as a data source or a data sink and provides for the data communication control function to be performed in accordance with link protocol.

The data terminal equipment (DTE) may be a single piece of equipment or an interconnected subsystem of multiple pieces of equipment that perform all the required

functions necessary to permit users to communicate. A user interacts with the DTE (e.g. through a Human-Machine Interface), or the DTE may be the user.

Usually, the DTE device is the terminal (or a computer emulating a terminal), and the DCE is a modem.

A CSU/DSU (Channel Service Unit/Data Service Unit) is a hardware device about the size of an external modem that converts a digital data frame from the communications technology used on a local area network (LAN) into a frame appropriate to a wide-area network (WAN) and vice versa. The DSU provides an interface to the data terminal equipment (DTE) using a standard (EIA/CCITT) interface. It also provides testing capabilities.

QUESTION 372:

You are configuring the serial interface of your Cisco router; which of the following are valid encapsulation types you can use? (Select all that apply)

- A. Token Ring
- B. Ethernet
- C. HDLC
- D. PPP
- E. Frame Relay
- F. CHAP

Answer: C, D, E

Explanation:

HDLC, Frame Relay, and PPP are the most common encapsulation types set for serial interfaces in a Cisco router. HDLC is often used in point to point circuits with Cisco routers on each end. HDLC is Cisco proprietary and offers an alternative to PPP.

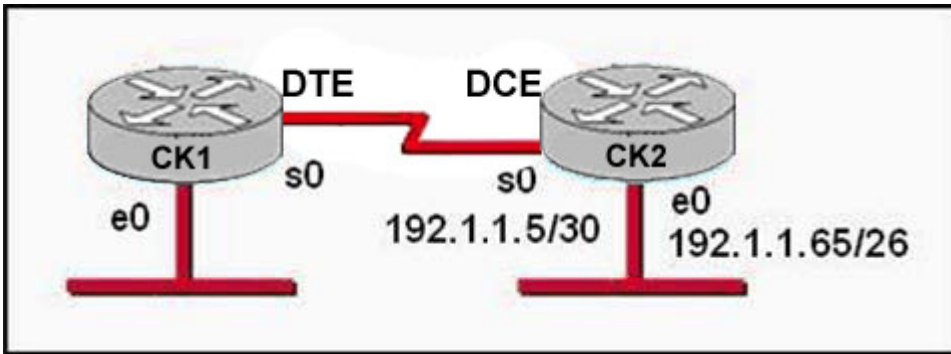
Incorrect Answers:

A, B. Token Ring and Ethernet aren't encapsulation types used on serial interfaces; they are types of LAN networks.

F. CHAP is the Challenge Authentication Protocol. It is used for authentication on PPP links.

QUESTION 373:

Two Certkiller routers are connected as shown in the diagram below:



Which series of commands will configure router CK1 for LAN-to-LAN communication with router CK2 ? The enterprise network address is 192.1.1.0/24 and the routing protocol in use is RIPv2. (Choose three)

- A. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.129 255.255.255.192
CK1 (config-if)# no shutdown
- B. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.97 255.255.255.192
CK1 (config-if)# no shutdown
- C. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.4 255.255.255.252
CK1 (config-if)# clock rate 56000
- D. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.6 255.255.255.252
CK1 (config-if)# no shutdown
- E. CK1 (config)# router rip
CK1 (config-router)# network 192.1.1.4
CK1 (config-router)# network 192.1.1.128
- F. CK1 (config)# router rip
CK1 (config-router)# version 2
CK1 (config-router)# network 192.1.1.0

Answer: A, D, F

Explanation:

To establish connectivity on router CK1 the first step is to configure the interfaces with the correct IP address and enable them with the "no shutdown" command as shown in answer choices A and D. The final step is to enable the RIP routing process. Since this network uses VLSM, RIP version 2 will be required to establish connectivity. RIP version 1 is the default RIP version, but it does not support VLSM.

Incorrect Answers:

B: The IP address in use here will conflict with the LAN network configured on CK2 .

C: the 192.168.1.4/30 address is a network address, not a host address.

E: In this example we are required to use RIP version 2, not 1. In addition, the IP networks shown are not required. Since RIP assumes classful routing, we only need the single 192.168.1.0 network to be added to the routing process.

QUESTION 374:

A network administrator needs to configure a serial link between the main office and a remote location. The router at the remote office is a non-Cisco router. How should the network administrator configure the serial interface of the main office router to make the connection?

- A. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# no shut
- B. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# encapsulation ppp
Main(config-if)# no shut
- C. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# encapsulation frame-relay
Main(config-if)# authentication chap
Main(config-if)# no shut
- D. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# encapsulation ietf

Answer: B

Explanation:

The default encapsulation on a serial interface is the Cisco proprietary HDLC. When connecting to routers from another vendor, we will need to use the standards based PPP, which is correctly defined in choice B.

Incorrect Answers:

A: This is not a correct answer because no encapsulation is defined, so the default HDLC will be used, which is a Cisco proprietary protocol.

C: CHAP authentication is only used by PPP, not HDLC.

D: IETF itself is not an encapsulation option on an interface; it is used in frame relay networks, where the encapsulation can be frame relay IETF, but not simply IETF alone.

QUESTION 375:

Two Certkiller routers are connected as shown below:



Certkiller 1 configuration exhibit:

```

CertKiller1 # show interfaces s0
Serial0 is up line protocol is up
Hardware is HD645/0
Internet address is 192.168.10.1/24
MTU 1500 bytes, BW 1544 Kbit,
reliability 255/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)

```

Certkiller 2 configuration exhibit:

```

CertKiller2 # show interfaces s1
Serial0 is up line protocol is up
Hardware is HD645/0
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)

```

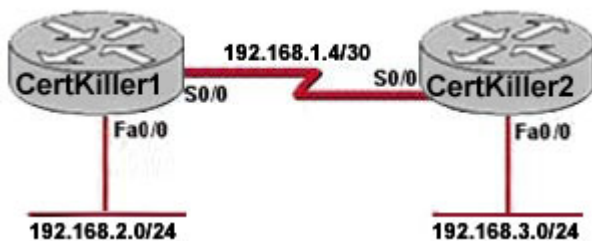
Two routers named Certkiller 1 and Certkiller 2 are connected by their serial interfaces as shown above, but there is no data connectivity between them. The Certkiller 1 router is known to have a correct configuration. Given the partial configurations shown in the exhibit, what is the problem on the Certkiller 2 router that is causing the lack of connectivity?

- A. The serial line encapsulations are incompatible.
- B. The subnet mask is incorrect.
- C. The maximum transmission unit (MTU) size is too large.
- D. The IP address is incorrect.
- E. A loopback is not set.
- F. The bandwidth setting is incompatible with the connected interface.
- G. None of the above

Answer: D

QUESTION 376:

Part of the Certkiller network is shown below:



Certkiller 1 configuration exhibit:

```

CertKiller2 # show ip interface brief

```

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 Certkiller 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 Certkiller 1, what are two possible reasons for the failure? (Choose two)

- A. The cable that is connected to S0/0 on Router Certkiller 1 is faulty.
- B. The encapsulation that is configured on S0/0 of Router Certkiller 2 does not match the encapsulation that is configured on S0/0 of Router Certkiller 1.
- C. The IP address that is configured on S0/0 of Router Certkiller 2 is not in the correct subnet.
- D. Interface S0/0 on Router Certkiller 1 is not receiving a clock signal from the CSU/DSU.
- E. Interface S0/0 on Router Certkiller 2 is administratively down.
- F. Interface S0/0 on Router Certkiller 1 is configured with an incorrect subnet mask.

Answer: B, D

QUESTION 377:

The two Certkiller Lab routers shown below are interconnected with back-to-back cables between their serial interfaces. How should the serial interface of the Certkiller 1 router be configured to establish Layer 3 connectivity between the two routers?



- A. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# clock rate 64000
Certkiller 1(config-if)# no shutdown
- B. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# ip address 192.168.10.3 255.255.255.0
Certkiller 1(config-if)# clock rate 64000
- C. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# ip address 192.168.10.3 255.255.255.0
Certkiller 1(config-if)# clock rate 64000

Certkiller 1(config-if)# no shutdown
 D. Certkiller 1(config)#interface serial 3
 Certkiller 1(config-if)# ip address 192.168.10.3 255.255.255.0
 Certkiller 1(config-if)# no shutdown
 E. None of the above

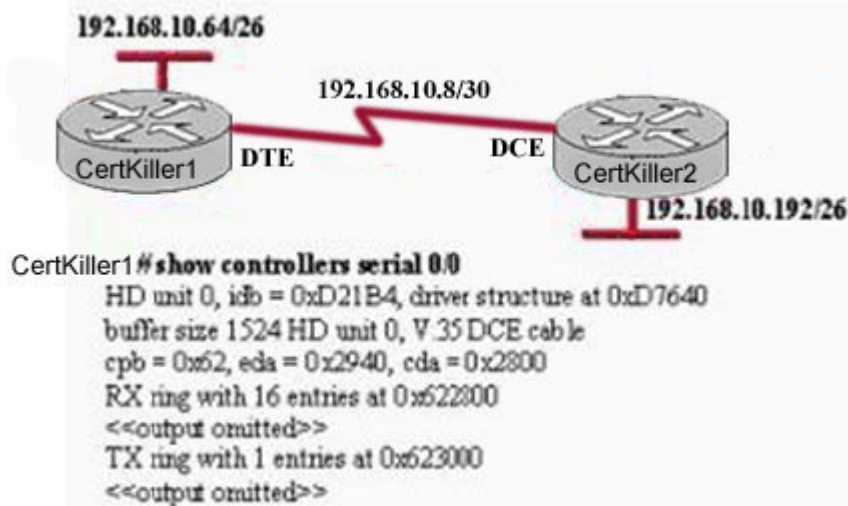
Answer: D

Explanation:

When examining the interface using the show controllers command, the DTE cable is connected so there is no need to specify the clock rate and bandwidth; just specify the IP address and bring up the interface. Only the DCE side of the serial to serial connection is required to specify the clock rate.

QUESTION 378:

An administrator cannot connect from Certkiller 1 to Certkiller 2. To troubleshoot this problem, the administrator has entered the command shown in the exhibit.



Based on the output shown, what could be the problem?

- A. The serial interface has a full buffer.
- B. The serial interface is configured for half duplex.
- C. The serial interface has the wrong type of cable attached.
- D. The serial interface does not have a cable attached.
- E. The serial interface is configured for the wrong frame size.

Answer: C

Explanation:

According to the figure DTE cable should connect to Certkiller 1 on interface but while examining using show controllers serial 0/0 command it showing that a DCE is connected so the wrong type of cable is being used.

QUESTION 379:

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 up, line protocol is down
- C. Serial 0 is down, line protocol is down
- D. Serial 0 is down, line protocol is up
- E. Serial 0 is administratively down, line protocol is down
- F. Serial 0 is administratively down, line protocol is up

Answer: E

Explanation:

To bring down an interface for administrative reasons and, as a side effect, remove the connected router from the routing table, you can use the shutdown interface subcommand. To enable the interface back up, issue the "no shutdown" configuration command.

Incorrect Answers:

- A. This is the status of a fully operational interface.
- B, C. These are the results of line problems or configuration errors.
- D, F. These two interface conditions should never be seen.

QUESTION 380:

DRAG DROP

You work as a network administrator at Certkiller .com. You are required to configure router Certkiller 2. In particular, you must set the IP address on a serial interface. Select the appropriate command. Not all commands are used.

Options, select from these

CertKiller2(config-if)#ip address 198.18.2.63.255.255.255.224	CertKiller2(config-if)#ip address 10.8.5.255 255.255.252.0
CertKiller2#interface s0/0	CertKiller2(config-if)#banner mold ! T1 to WAN !
CertKiller2(config)#description T1 to WAN	CertKiller2(config-if)#no shutdown
CertKiller2(config-if)#enable interface	CertKiller2#configure terminal
CertKiller2(config)#ip address 172.16.20.21 255.255.255.0	CertKiller2(config)#interface s0/0

Descriptions

Enter global configuration mode
Enter interface configuration mode
Configure the interface IP address
Enable the interface
Label the interface

Options, place here

Place here
Place here
Place here
Place here
Place here

Answer:

Options, select from these

CertKiller2(config-if)#ip address 198.18.2.63.255.255.255.224

CertKiller2#interface s0/0

CertKiller2(config-if)#banner mold ! T1 to WAN !

CertKiller2(config-if)#enable interface

CertKiller2(config)#ip address 172.16.20.21 255.255.255.0

Descriptions

Enter global configuration mode

Enter interface configuration mode

Configure the interface IP address

Enable the interface

Label the interface

Options, place here

CertKiller2#configure terminal

CertKiller2(config)#interface s0/0

CertKiller2(config)#ip address 172.16.20.21 255.255.255.0

CertKiller2(config-if)#no shutdown

CertKiller2(config)#description T1 to WAN

QUESTION 381:

Router Certkiller 1 exhibit:

CertKiller1# show running-config

<some subnettext omitted>

enable password certkiller

!

hostname CertKiller1

Username CertKiller2 password certkiller

interface serial 0/0

ip address 10.0.8.1 255.255.248.0

encapsulation ppp

ppp authentication chap

Router Certkiller 2 exhibit:

CertKiller2# show running-config

<some subnettext omitted>

enable password certkillerx

hostname CertKiller2

Username CertKiller1 password certkiller

interface serial 0/0

ip address 10.0.15.2 255.255.248.0

encapsulation ppp

ppp authentication chap

Referring to the command outputs from the Certkiller routers shown above, which of the following reasons would you attribute the connectivity problem between the two routers?

- A. The authentication needs to be changed to PAP for both routers.
- B. The serial IP addresses of routers are not on the same subnet.
- C. The username/password combination is incorrectly configured.
- D. The router names are incorrectly configured.
- E. None of the above

Answer: C

Explanation:

When configuring for CHAP authentication, you must enter the other router's user name and password. In this case on router Certkiller 2 has entered incorrect router Certkiller 1's password, which is "cisco1" (it must be "cisco"). As a result CHAP authentication will fail, therefore the connection establishment between the routers will be refused.

Reference:

CCNA Self-Study CCNA ICND Exam Certification Guide Chapter 9 page 315

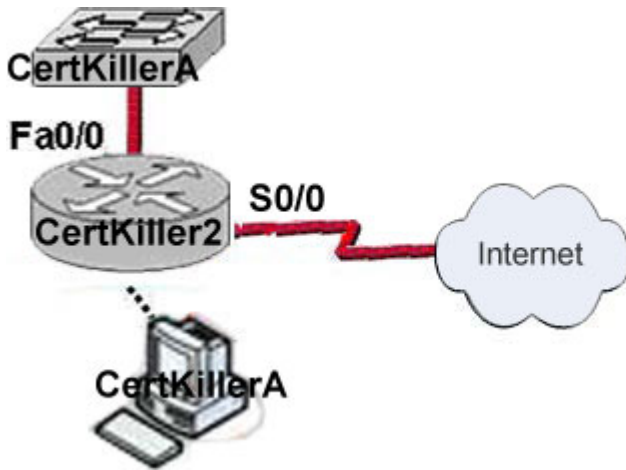
ISBN: 1-58720-083-x

Incorrect Answers:

- A. Either PAP or CHAP can be used for these routers.
- B. Although this appears to be true at first glance, the subnet mask is 255.255.248.0, and the IP addresses on each side of the link are indeed on the same subnet.
- D. The hostnames are configured correctly, but the passwords do not match.

QUESTION 382:

Part of the Certkiller network is shown below:



The network administrator is configuring router Certkiller 2 to connect to a non-Cisco (Juniper) network. Which two commands would be applied to the S0/0 WAN interface, but not to the Fa0/0 LAN interface? (Choose two.)

- A. ip address
- B. authentication pap
- C. encapsulation ppp
- D. speed
- E. no shutdown

Answer: B, C

Explanation:

Since we are connecting to a non Cisco device, we must use PPP on the serial interface. PAP authentication is an optional parameter that can also used on this interface.

Incorrect Answers:

A, E: Although are indeed configurable on the serial interface, they are also configured on the LAN interface and we are being asked to choose the options that apply to the serial interface only.

D: This is a parameter that can only be set on an Ethernet interface, not on the serial interface.

QUESTION 383:

Network topology exhibit:



Certkiller 1 configuration exhibit:

CertKiller1# show controllers s0/0

Interface Serial0/0

Hardware is PowerQUICC MPC860

DTE V.35 clocks stopped.

idb at 0x81 DE2098 driver data structure at 0x81DE4DF4

SCC Registers.

Certkiller 2 configuration exhibit:

CertKiller2# show ip interface s0/0

Serial0/0 is up, line protocol is down

Internet address is 192.168.1.2/24

Broadcast address is 255.255.255.255

***Note that some output might have been omitted from the configurations exhibits.

The Certkiller 1 and Certkiller 2 routers are directly connected through their serial interfaces for purposes of testing. Based on the output shown in the exhibit, what must be done to make the serial line operational?

- A. Use the no shutdown command on the Certkiller 1 router.
- B. Change the IP address on the Certkiller 2 router.
- C. Configure the serial 0/0 interface on the Certkiller 2 router with a clockrate.
- D. Start the clock on the Certkiller 1 router.
- E. Replace the broken cable between the two devices.
- F. None of the above

Answer: C

Explanation:

Refer to the following example provided by Cisco:



The default serial encapsulation on Cisco routers is Cisco HDLC, so it does not need to be explicitly configured on the router. As a result, the encapsulation type is not displayed in the configuration.

With a back-to-back serial connection, the router connected to the DCE end of the cable provides the clock signal for the serial link. The clockrate command in the interface configuration mode enables the router at the DCE end of the cable (Prasit, in this example) to provide the clock signal for the serial link. Issue the show controllers command to determine which end of the cable is connected to the serial interface.

In this configuration, the DCE end of the cable is connected to Prasit (the clockrate command is issued), and the DTE end is connected to Spicey.

Configurations

This document uses the configurations shown below.

Prasit

```
interface Serial0
```

```
ip address 5.0.2.1 255.255.255.0
```

```
clockrate 64000
```

```
no cdp enable
```

Spicey

```
interface Serial1
```

```
ip address 5.0.2.2 255.255.255.0
```

```
no cdp enable
```

Reference:

http://www.cisco.com/en/US/tech/CK713/CK317/technologies_configuration_example09186a00800944ff.shtml

QUESTION 384:

Network Topology Exhibit:



Certkiller 1 configuration Exhibit:

```
CertKiller#1 show run
Building configuration
<output omitted>
interface Serial0/0
ip address 172.16.5.2 255.255.255.252
no ip proxy-arp
encapsulation ppp
mtu 1496
<output omitted>
CertKiller#1
```

Certkiller 2 configuration Exhibit:

```
CertKiller#2 show run
Building configuration
<output omitted>
interface Serial1/1
ip address 172.16.5.1 255.255.255.252
no ip proxy-arp
mtu 1496
<output omitted>
CertKiller#2
```

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

- A. The serial cable is bad.
- B. The MTU is incorrectly configured.
- C. The IP addresses are not in the same subnet.
- D. The Layer 2 framing is misconfigured.
- E. None of the above.

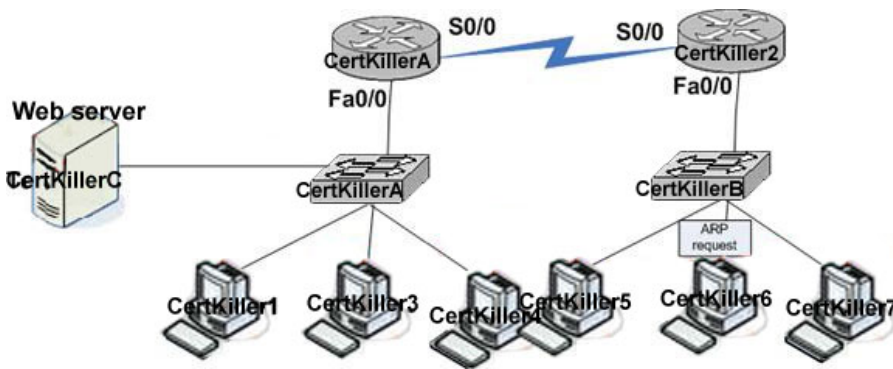
Answer: D

Explanation:

HDLC and PPP are layer 2 protocols. HDLC is actually the default protocol on all Cisco serial interfaces. If you do a show running-config on a Cisco router, your serial interfaces (by default) won't have any encapsulation. This is because they are configured to the default of HDLC. If you do a show interface serial 0/0, you'll see that you are running HDLC. This is the case with router Certkiller 2, as the default encapsulation is used. In router Certkiller 1, we see that the serial interface has been set to use PPP. Since both sides of a point to point circuit must match, the layer 2 framing is the most likely cause of the problem.

Certkiller Communications, Scenario

Certkiller network topology exhibit:



You work as a network administrator for Certkiller .com. There has been recent problem with the network and you have been ordered to investigate these problems. Your boss, Mrs. Certkiller, tells you that she have had some problems while accessing the Certkiller C internal Certkiller web server on another LAN within the Certkiller WAN. Her PC is named Certkiller 6.

In particular you will examine the communication between the PC Certkiller 6 and the web server Certkiller C.

Certkiller Communications, (4 Questions)

QUESTION 385:

Note: Please refer to the Certkiller Communications scenario.

Your boss Certkiller at PC Certkiller 6 starts communicating with the Certkiller C internal web server. Her PC sends out an ARP request. How will the other devices in the network act upon this request?

- A. Router Certkiller A will respond with the IP address of the web server Certkiller C.
- B. Switch Certkiller B will reply with the MAC address of the server.
- C. Router Certkiller 2 will respond with the MAC address of its Fa0/0 interface.
- D. Hosts Certkiller 4 and Certkiller 5 will respond that the destination is not on the local LAN.
- E. Router Certkiller 2 will forward the ARP request to router Certkiller A.
- F. Switch Certkiller B will block the request since the server is not on the LAN.

Answer: C

QUESTION 386:

Note: Please refer to the Certkiller Communications scenario.

The Certkiller 6 PC has sent the ARP request, and has now received the ARP reply. Certkiller 6 now build a packet that will be sent to Certkiller C web server in order to establish the communication.

What information will be placed in the header of this packet? (Select two)

- A. The source address will be the IP address of the Fa0/0 interface of Router Certkiller 2.
- B. The source address will be the IP address of the Fa0/0 interface of Switch Certkiller B.

- C. The source address will be the IP address of PC Certkiller 6.
- D. The destination address will be the IP address of interface Fa0/0 of Router Certkiller 2.
- E. The destination address will be the IP address of interface Fa0/0 of Router Certkiller A.
- F. The destination address will be the IP address of interface S0/0 of Router Certkiller 2.
- G. The destination address will be the IP address of interface S0/0 of Router Certkiller A.
- H. The destination address will be the IP address of the Certkiller 3 web server.

Answer: C, H

QUESTION 387:

Note: Please refer to the Certkiller Communications scenario.

The Certkiller 6 PC has sent the ARP request, received an ARP Reply, and sent a packet to the Certkiller C web server. The Ethernet frame has now been received by Router Certkiller A and will now be delivered to the local LAN. Consider the addressing of the Ethernet frame that now has been created by Router Certkiller A. Which two statements apply in this context? Select two.

- A. The source address will be the MAC address of PC Certkiller 6.
- B. The source address will be the MAC address of interface S0/0 of router Certkiller A
- C. The source address will be the MAC address of interface S0/0 of router Certkiller 2.
- D. The source address will be the MAC address of interface Fa0/0 of router Certkiller A
- E. The source address will be the MAC address of interface Fa0/0 of router Certkiller 2.
- F. The destination address will be the MAC address of Switch Certkiller A port attached to the Certkiller C web server.
- G. The destination address will be the IP address of Switch Certkiller A port attached to the Certkiller C web server.
- H. The destination address will be the MAC address of Switch Certkiller A port attached to the Certkiller A Fa0/0 interface..
- I. The destination address will be the MAC address of the Certkiller C web server.

Answer: D, I

QUESTION 388:

Note: Please refer to the Certkiller Communications scenario.

Certkiller has opened two Internet Explorer windows on her local PC Certkiller 6. She uses them to simultaneously access the local web server Certkiller C at the time to browse WWW documents on the intranet.

What mechanism makes the data to end up in the correct Internet Explorer window?

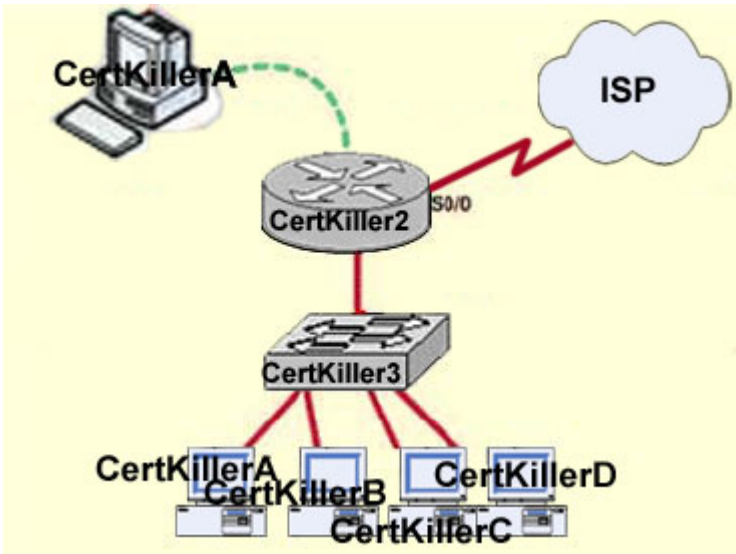
- A. The OSI application layer tracks the conversations and directs them to the correct browser.
- B. The IP Source addresses of the packets will be used to direct the data to the correct browser window.

- 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.
- E. None of the above

Answer: A

Certkiller , Scenario

Certkiller network topology exhibit:



You work as a network administrator for Certkiller .com. You are required to troubleshooting the Certkiller network, which is displayed in the exhibit. In particular you need to use the Certkiller A terminal to access the Certkiller 2 router. In particular you need use the command line interface and miscellaneous show command to retrieve information in order to answer the questions in this scenario. Note: the show command information is not available in this scenario yet.

Certkiller (5 Questions)

QUESTION 389:

Including the address on the router Certkiller 1 FastEthernet interface, how many hosts can have IP addresses on the LAN to which router Certkiller 1 is connected?

- A. 4
- B. 126
- C. 64
- D. 8
- E. 6
- F. 16
- G. 32

- H. 14
- I. 128
- J. 62
- K. 30

Answer:

QUESTION 290:

What is the bandwidth on the WAN interface of router Certkiller 1?

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

Answer:

QUESTION 391:

The hosts in the LAN are not able to connect to the Internet.
Which commands will correct this issue?

- A. Certkiller 1(conf)#interface s0/1
Certkiller 1(conf-if)#ip address 10.11.12.13 255.255.255.252
- B. Certkiller 1(conf)#interface s0/1
Certkiller 1(conf-if)#no shutdown
- C. Certkiller 1(conf)#interface fa0/0
Certkiller 1(conf-if)#no shutdown
- D. Certkiller 1(conf)#interface s0/0
Certkiller 1(conf-if)#ip address 10.11.12.13 255.255.255.252
- E. Certkiller 1(conf)#interface fa0/1
Certkiller 1(conf-if)#no shutdown
- F. Certkiller 1(conf)#interface s0/0
Certkiller 1(conf-if)#no shutdown

Answer:

QUESTION 392:

What is the subnet broadcast address of the LAN connected to router Certkiller 1?

- A. 192.168.136.31
- B. 255.255.255.255

- C. 192.168.136.63
- D. 192.168.136.127
- E. 192.168.136.15

Answer:

QUESTION 393:

What interfaces on router Certkiller 1 have not had any configurations applied?
Select two.

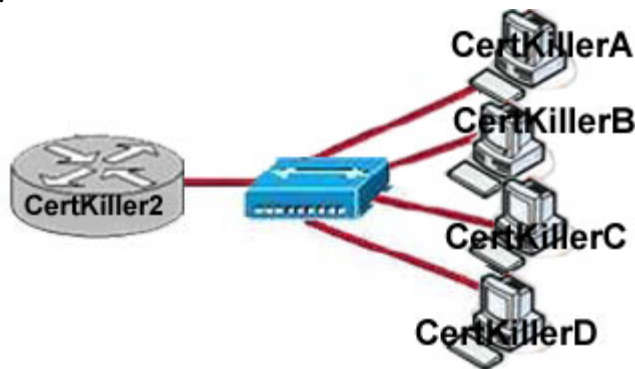
- A. Serial 0
- B. Ethernet 0
- C. Serial 0/1
- D. FastEthernet 0/0
- E. Serial 0/0
- F. FastEthernet 0/1

Answer:

Mixed Questions

QUESTION 394:

Exhibit:



In the Certkiller network segment shown, you are considering replacing the hub with a new Cisco switch. What two results would occur if this hub were to be replaced with a switch that is configured with one Ethernet VLAN? (Select two)

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

Answer: B, D

Explanation:

Collision Domain: A group of Ethernet or Fast Ethernet devices in a CSMA/CD LAN that are connected by repeaters and compete for access on the network. Only one device in the collision domain may transmit at any one time, and the other devices in the domain listen to the network in order to avoid data collisions. A collision domain is sometimes referred to as an Ethernet segment.

Broadcast Domain: Broadcasting sends a message to everyone on the local network (subnet). An example for Broadcasting would be DHCP Request from a Client PC. The Client is asking for a IP Address, but the client does not know how to reach the DHCP Server. So the client sends a DHCP Discover packet to EVERY PC in the local subnet (Broadcast). But only the DHCP Server will answer to the Request.

How to count them?

Broadcast Domain:

No matter how many hosts or devices are connected together, if they are connected with a repeater, hub, switch or bridge, all these devices are in ONE Broadcast domain (assuming a single VLAN). A Router is used to separate Broadcast-Domains (we could also call them Subnets - or call them VLANs).

So, if a router stands between all these devices, we have TWO broadcast domains.

Collision Domain:

Each connection from a single PC to a Layer 2 switch is ONE Collision domain. For example, if 5 PCs are connected with separate cables to a switch, we have 5 Collision domains. If this switch is connected to another switch or a router, we have one collision domain more.

If 5 Devices are connected to a Hub, this is ONE Collision Domain. Each device that is connected to a Layer 1 device (repeater, hub) will reside in ONE single collision domain.

QUESTION 395:

A receiving host on the Certkiller network named CK1 computes the checksum on a frame and determines that the frame is damaged. The frame is then discarded. At which OSI layer did this happen?

- A. Application
- B. Presentation
- C. Session
- D. Transport
- E. Internet
- F. Data Link
- G. Physical

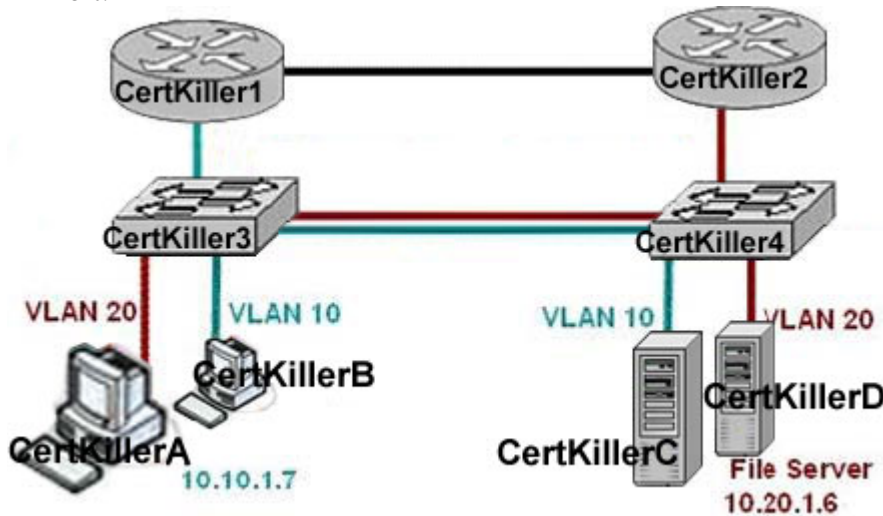
Answer: F

Explanation:

The Data Link layer provides the physical transmission of the data and handles error notification, network topology, and flow control. The Data Link layer formats the message into pieces; each called a data frame, and adds a customized header containing the hardware destination and source address. Protocols Data Unit (PDU) on Datalink layer is called frame. According to this question the frame is damaged and discarded which will happen at the Data Link layer.

QUESTION 396:

Exhibit:



You are evaluating the efficiency of the current Certkiller network. RIPv2 is enabled on all Layer 3 devices in the network. In this network, which devices participate in passing traffic from the PC at 10.10.1.7 to File Server Certkiller A at 10.20.1.6 in the order that they will forward traffic from source to destination?

- A. Switch Certkiller 3, Router Certkiller 1, Router Certkiller 2, Switch Certkiller Certkiller 4
- B. Switch Certkiller 3, Router Certkiller 1, Switch Certkiller 3, Switch Certkiller Certkiller 4
- C. Switch Certkiller 3, Switch Certkiller Certkiller 4, Router Certkiller 2, Switch Certkiller 4
- D. Switch Certkiller 3, Switch Certkiller Certkiller 4
- E. None of the above

Answer: A

Explanation:

When data traffic is sent from the PC having the 10.10.1.7 IP address to the PC with 10.20.1.6 it goes through Switch Certkiller 3, Router Certkiller 1, Router Certkiller 2, Switch Certkiller Certkiller 4. Since the PC and server reside on different IP subnets traffic will need to go through a router.

The gateway IP address of PC 10.10.1.7 is the router Certkiller 1's Ethernet IP. So when sending the data it goes to gateway through Certkiller 3 switch. When packet reached to Certkiller 1 router it forwards to the Certkiller 2 router based on the routing table. Finally, router Certkiller 2 forwards the packets to the Certkiller 4 switch.

QUESTION 397:**DRAG DROP**

You work as a network administrator at Certkiller .com. Your boss, Mrs. Certkiller, is interested in network user applications. Match the application with the proper applications.

Options, select from these

database	E-mail
Web browser	collaboration
Instant message	IP telephony

Definitions

Creates a space where users can interact on common projects
Provides a way to look at and interact with information on the Internet
Allows users to store and retrieve information from central location.
Allows users to create and send text to other users in real time.
Allows users to send messages and files to users on or outside their network

Options, place here

Place here
Place here
Place here
Place here
Place here

Answer:

Options, select from these

	IP telephony
Definitions	Options, place here
Creates a space where users can interact on common projects	collaboration
Provides a way to look at and interact with information on the Internet	Web browser
Allows users to store and retrieve information from central location.	database
Allows users to create and send text to other users in real time.	Instant message
Allows users to send messages and files to users on or outside their network	E-mail

QUESTION 398:

What is the purpose of an Address Resolution Protocol (ARP) request message?

- A. It creates a session by passing a header with destination Layer 2 address to the transport layer.
- B. It binds the IP address of a host to the network that it is on.
- C. It encapsulates the Layer 3 address and then passes the packet to Layer 2.
- D. It builds a correlation between an IP address and a MAC address.
- E. It provides connectivity and path selection between hosts on a network.
- F. None of the above

Answer: D

Explanation:

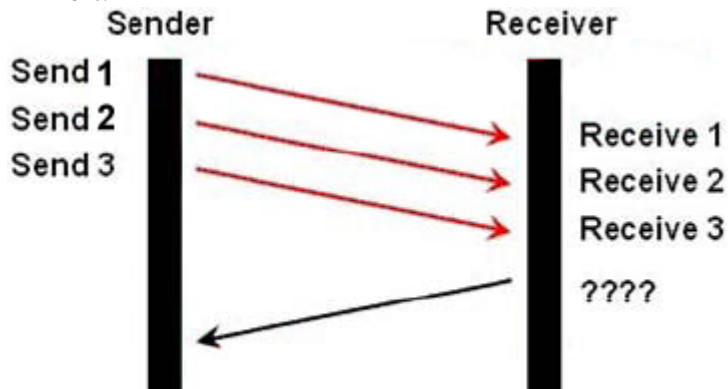
Address Resolution Protocol (ARP) finds the hardware address of a host from a known IP address. When IP has a datagram to send, it must inform a Network Access protocol, such as Ethernet or Token Ring, of the destination's hardware address on the local network. (It has already been informed by upper-layer protocols of the destination's IP address.) If IP doesn't find the destination host's hardware address in the ARP cache, it uses ARP to find this information.

This is the protocol operates on Network Layer. Source device sends the ARP broadcast

to resolve the MAC address of destination device.
You can display the ARP table using the "show arp" command.

QUESTION 399:

Exhibit:



You work as a network administrator at Certkiller .com. You study the exhibit carefully. A TCP/IP transfer is diagrammed in the exhibit. A window size of three has been negotiated for this data transfer. Which message will be returned from the receiver to the sender as part of this TCP/IP transfer?

- A. Send ACK 6
- B. Send ACK 3
- C. Send ACK 7
- D. Send ACK 1-3
- E. Send ACK 4
- F. Send ACK 4-6
- G. Send ACK 0

Answer: E

Explanation:

TCP is known as a reliable service. Reliable data delivery ensures the integrity of a stream of data sent from one machine to the other through a fully functional data link. It guarantees that the data won't be duplicated or lost. This is achieved through something called positive acknowledgment with retransmission, a technique that requires a receiving machine to communicate with the transmitting source by sending an acknowledgment message back to the sender when it receives data.

The sender documents each segment it sends and waits for this acknowledgment before sending the next segment. When it sends a segment, the transmitting machine starts a timer and retransmits if it expires before an acknowledgment is returned from the receiving end. In this case, 3 segments were received, so the receiver sends back an ACK value of 4 as it is expecting the 4th segment next.

QUESTION 400:

Exhibit:

CertKiller5# 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
GigabitEthernet1/2	unassigned	YES	manual	down	down
Vlan1	192.168.1.100	YES	manual	administratively down	down

In the Certkiller switched, network you are unable to connect remotely to switch Certkiller 5. You initiate a console session and execute the "show ip interface brief" command as shown. Why did the remote connection fail?

- A. The switch does not have a management IP address assigned.
- B. The Gigabit Ethernet interfaces are not up.
- C. VLAN1 is shut down.
- D. The switch needs to have a clock rate entered on one of its interfaces.
- E. None of the above

Answer: C

Explanation:

The virtual LAN Interface can be enabled or disabled with shutdown/no shutdown command. If your interface is down, it will display administratively down status. You can bring up an interface having administratively down interface using no shutdown command. Since the only IP configured on the switch belongs to VLAN 1, it needs to be enabled for you to remotely access the device.

QUESTION 401:

Exhibit #1:

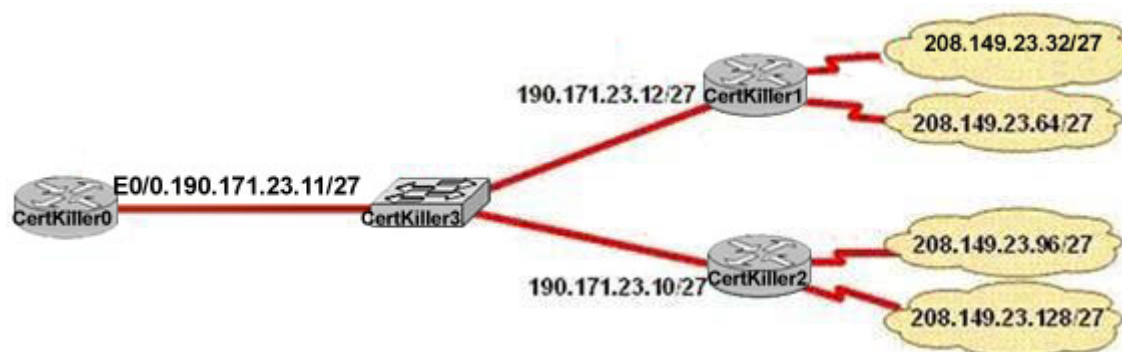


Exhibit #2:

```
CertKiller0 # 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 [120/11] via 190.171.23.10, 00:00:22, Ethernet0/0

CertKiller0#
```

You work as a network administrator at Certkiller .com. You study the exhibits carefully. What is the most likely reason for disparity between the actual network numbers at the branches and the routes in the routing table on Certkiller 0?

- A. Certkiller 1 is configured to only send RIPv1 updates.
- B. Certkiller 0 is configured to receive only RIPv1 updates.
- C. Certkiller 2 is configured to send both RIPv1 and RIPv2 updates.
- D. Certkiller 0 is configured to only receive RIPv2 updates.
- E. None of the above

Answer: A

Explanation:

The default version of RIP is version 1, which doesn't supports multicast updates, classless networks, and authentication. It appears that Certkiller 1 router is configured with RIP v1 so it's sending only v1 packets, which means only the classful network of 208.149.23.0/24 is being advertised. However, it appears that Certkiller 2 is indeed using RIPv2 as both the /27 networks are being advertised from that router.

If you wish to enable to RIP version 2 on router use following command:

Router(Config)#router rip

Router(Config-router)#version 2

QUESTION 402:

Exhibit #1:

```
CertKiller3# banner motd #
Enter TEXT message. End with the character '#'.
This system is the property of CertKiller.com.

For systems help, please contact our help desk at #5555. Any activity on this
system will be logged.#

CertKiller3#
```

MOTD Configuration

Exhibit #2:

```
Router con0 is now available

Press RETURN to get started.

This system is the property of CertKiller.com.

For systems help, please contact our help desk at
CertKiller3>
```

Login Screen Dialog

You work as a network administrator at Certkiller .com. You study the exhibits carefully. On an external router Certkiller 3, the network administrator enters the MOTD configuration that is shown in the upper box. You then log into Certkiller 3 router and see the login screen dialg that is shown in the lower box.

Why does the intended message not display?

- A. The banner message exceeds the number of characters allowed.
- B. The network administrator defined an illegal delimiting character in the MOTD command.
- C. The MOTD delimiting character appeared in the body of the text.
- D. MOTD banner text may contain only letters and numbers.
- E. The IOS image on this router does not support the MOTD configuration shown.
- F. None of the above

Answer: C

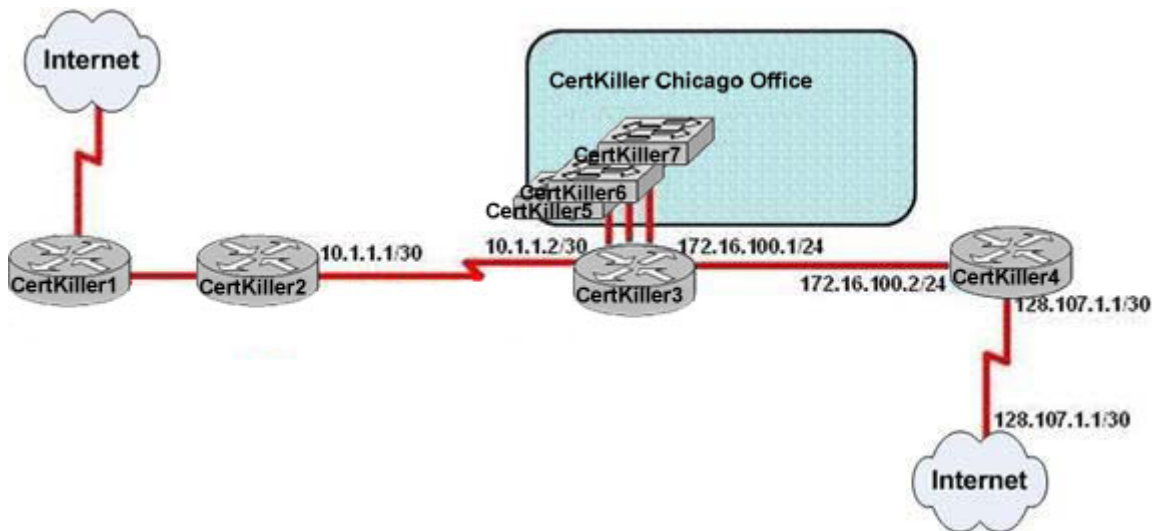
Explanation:

The banner is displayed whenever anyone logs in to your Cisco router. The syntax is "banner motd # ". MOTD stands for "Message Of The Day".

symbol signifies the start of the banner message to the router. You will be prompted for the message to be displayed. You need to enter "#" symbol at the end of the message, signifying that the msg has ended. In this case, the # was included in the body of the message, but the router considers it to be the end of the message so only the text preceding the "#" will be displayed.

QUESTION 403:

Network topology exhibit:



You work as a network administrator at Certkiller .com. You study the exhibit carefully. 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 Certkiller 3 router to direct traffic toward the Internet over the most direct path available. What configuration on the Certkiller 3 router will establish a route toward the Internet for traffic that originates from workstations on the Certkiller Chicago Office LAN?

- A. ip route 0.0.0.0 255.255.255.255 172.16.100.2
- B. ip route 0.0.0.0 255.255.255.0 172.16.100.2
- C. ip route 0.0.0.0 0.0.0.0 172.16.100.2
- D. ip route 0.0.0.0 0.0.0.0 128.107.1.1
- E. ip route 0.0.0.0 0.0.0.0 172.16.100.1
- F. ip route 0.0.0.0 255.255.255.252 128.107.1.1

Answer: C

Explanation:

We use default routing to send packets with a remote destination network not in the routing table to the next-hop router. You should generally only use default routing on stub networks-those with only one exit path out of the network.

According to exhibit, all traffic towards Internet that originates from workstations should forward to Certkiller 4 Router.

Syntax for default route is:

ip route <Remote_Network> <Netmask> <Next_Hop_Address>.

QUESTION 404:

Exhibit #1:

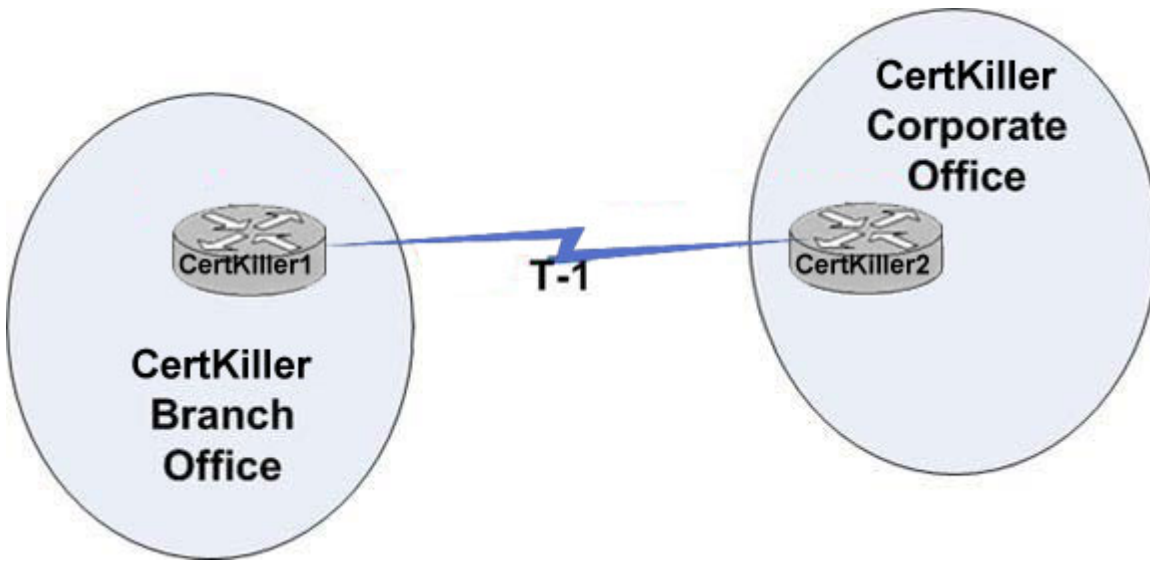


Exhibit #2:

```

CertKiller2 # show interface serial 0/0
Serial0/0 is up, line protocol is down
Hardware is PowerQUICC Serial
Internet address is 172.16.10.1/30
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255 load 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
<output omitted>
  
```

You work as a network administrator at Certkiller .com. You study the exhibits carefully. The Certkiller corporate office and branch office have been attached through two non-Cisco routers over a highly reliable WAN connection over a year. A new Cisco router has been installed to replace the hardware at the branch location. Since the installation, IP communication cannot be verified across the link. Given the output on router Certkiller 1, what could be a logical first step to take to resolve this problem?

- A. Ensure an exact match between the bandwidth setting on Certkiller 1 and Certkiller 2
- B. Change the encapsulation on Certkiller 1 to PPP.
- C. Change the bandwidth setting on Certkiller 1 to match the actual line speed.
- D. Verify successful DCE communication between the two sites.
- E. Verify Layer 1 communication on the Certkiller 1 Serial 0/ interface.

Answer: B

Encapsulation:

The High Level Data Link Control protocol (HDLC) is the default encapsulation used on the synchronous serial interfaces of a Cisco router.

Because of the proprietary nature of vendor HDLC implementations, you should only use HDLC framing on point-to-point links when the router at each end of a link is from the same vendor. In cases where you want to connect equipment from different vendors over a leased line, the Point-to-Point Protocol (PPP) should be used. Always remember that the router on both sides of a point-to-point link must be using the same data framing

method in order to communicate.

Reference: <http://www.2000trainers.com/cisco-ccna-11/ccna-hdlc/>

QUESTION 405:

Exhibit:

CertKiller2# show interface s0/0/0

Serial0/0/0 is administratively down, line protocol is down

You need to troubleshoot an issue on the Certkiller network. Based on the output shown in the exhibit, what is the reason that the interface status shows "administratively down, line protocol down"?

- A. The wrong type of cable is connected to the interface.
- B. There is no encapsulation type configured.
- C. The interface needs to be configured as a DTE device
- D. There is a mismatch in encapsulation types.
- E. The interface has been configured with the shutdown command.
- F. The interface is not receiving any keepalives.
- G. None of the above

Answer: E

Explanation:

To be an effective troubleshooter, you have to know how things look when all is well, not just when something is broken! When an interface is functioning correctly, this is what we see at the top of the show interface output. I'll use Serial0 for all examples in this section.

Example1: Normal operational status:

Router1#show int serial0

Serial0 is up, line protocol is up

Example2: Interface is administratively down:

CK1 #show int serial0

Serial0 is administratively down, line protocol is down

Administratively down means the interface is indeed shut down using the "shutdown" interface command. Open the interface with no shutdown.

CK1 (config)#int serial0

Router1(config-if)#no shutdown

Always wait a minute or so to come up after enabling a serial interface.

CK1 #show interface serial0

Serial0 is up, line protocol is up

QUESTION 406:

What are two characteristics of Telnet? (Choose two.)

- A. It requires an enterprise license in order to be implemented.
- B. It is more secure than SSH.
- C. It is no longer supported on Cisco network devices.
- D. It sends data in clear text format.
- E. It requires that the destination device be configured to support Telnet connections.

Answer: D,E

QUESTION 407:

Which two practices help secure the configuration utilities on wireless access points from unauthorized access? (Choose two.)

- A. assigning a private IP address to the AP
- B. configuring a new administrator password
- C. changing the default SSID value
- D. configuring traffic filtering
- E. changing the mixed mode setting to single mode

Answer: B,C

QUESTION 408:

The command `ip route 192.168.100.160 255.255.255.224 192.168.10.2 20` was issued on a router. No routing protocols or other static routes are configured on the router. Which statement is true about this command?

- A. The interface with IP address 192.168.10.2 is on this router.
- B. The number 20 indicates the number of hops to the destination network.
- C. The command sets a gateway of last resort for the router.
- D. Packets that are destined for host 192.168.100.190 will be sent to 192.168.10.2.
- E. The command creates a static route for all IP traffic with the source address 192.168.100.180.

Answer: D

QUESTION 409:

Which command is used on a Cisco router named Certkiller 2 to reach the global configuration mode?

- A. Certkiller 2# interface
- B. Certkiller 2# configure terminal
- C. Certkiller 2# setup
- D. Certkiller 2# router

E. Certkiller 2> enable

Answer: B

QUESTION 410:

In the configuration of NAT, what does the keyword overload signify?

- A. If the number of available IP addresses is exceeded, excess traffic will use the specified address pool.
- B. The pool of IP addresses has been exhausted.
- C. Multiple internal hosts will use one IP address to access external network resources.
- D. When bandwidth is insufficient, some hosts will not be allowed to access network translation.

Answer: C

QUESTION 411:

WAN data link encapsulation types include which of the following? (Choose two.)

- A. Frame Relay
- B. T1
- C. PPP
- D. DSL
- E. ISDN

Answer: A,C

Explanation:

WAN supports: frame relay, ISDN, LAPB, HDLC, PPP, and ATM.

QUESTION 412:

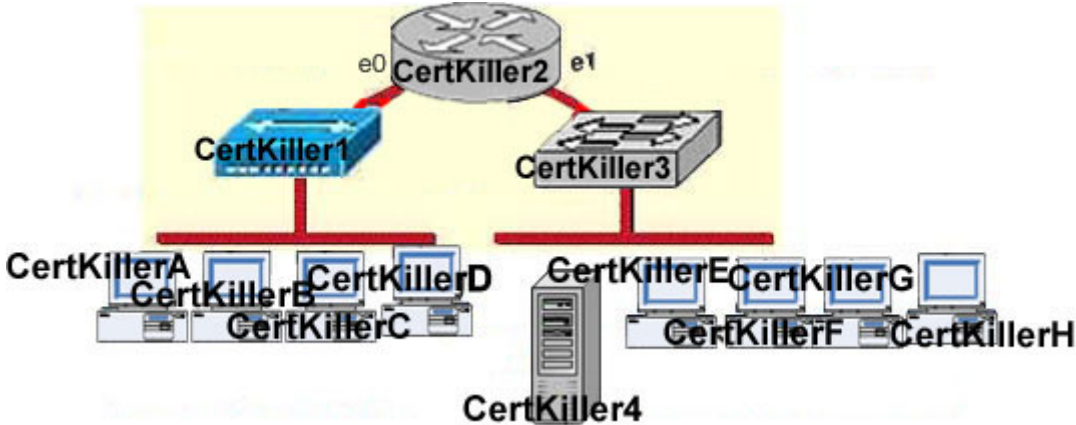
Which command will set the default gateway to 192.168.12.1 on a Cisco switch named Certkiller 3?

- A. Certkiller 3(config)# ip route 192.168.12.1 0.0.0.0
- B. Certkiller 3(config)# ip route-default 192.168.12.1
- C. Certkiller 3(config)# ip default-network 192.168.12.1
- D. Certkiller 3(config)# ip default-gateway 192.168.12.1

Answer: D

QUESTION 413:

Exhibit:



You work as a network administrator at Certkiller .com. You study the exhibit carefully. Host Certkiller A is communicating with the server Certkiller 4. What will be the source MAC address of the frames received by Host Certkiller A from the server?

- A. the MAC address of router interface e1
- B. the MAC address of the server network interface
- C. the MAC address of host Certkiller A
- D. the MAC address of router interface e0

Answer: D

QUESTION 414:

Network topology exhibit:



Certkiller 1 exhibit:

```

CertKiller1 # show controllers s0/0
Interface Serial0/0
Hardware is PowerQUICC MPC860
DTE V.35 clocks stopped.
idb at 0x81DE2098, driver data structure at 0x81DE4DF4
SCC Registers:

CertKiller1 # show ip interface s0/0
Serial0/0 is up, line protocol is down
Internet address is 192.168.1.2/24
Broadcast address is 255.255.255.255

<some output omitted>

```

The Certkiller 1 and Certkiller 2 routers are directly connected through their serial interfaces for purposes of testing. Based on the output shown in the exhibit, what must be done to make the serial line operational?

- A. Start the clock on the Certkiller 1 router.
- B. Replace the broken cable between the two devices.
- C. Configure the serial 0/0 interface on the Certkiller 2 router with a clockrate.
- D. Use the no shutdown command on the Certkiller 1 router.
- E. Change the IP address on the Certkiller 2 router.

Answer: C

Explanation:

From the graphic we know that the Certkiller 1 interface is normal, but the line protocol is down, while Certkiller 1 as a DTE device need no clockrate configuration, so we need to configure the serial 0/0 interface on the Certkiller 2 router with a clockrate.

QUESTION 415:

Exhibit:

CertKiller1# show ip interface brief					
Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.16.1	YES	NVRAM	up	up
Serial0/0	192.168.15.2	YES	NVRAM	administratively down	down
FastEthernet0/1	192.168.17.1	YES	NVRAM	up	up
Serial0/1	unassigned	YES	NVRAM	administratively down	down

You work as a network administrator at Certkiller .com. You study the exhibit carefully. Serial0/0 does not respond to a ping request from a host on the FastEthernet0/0 LAN. How can this problem be corrected?

- A. Change the encapsulation type on Serial 0/0.
- B. Correct the IP address for FastEthernet 0/0.
- C. Enable autoconfiguration on the Serial 0/0 interface.
- D. Enable the Serial 0/0 interface.
- E. Correct the IP address for Serial 0/0.

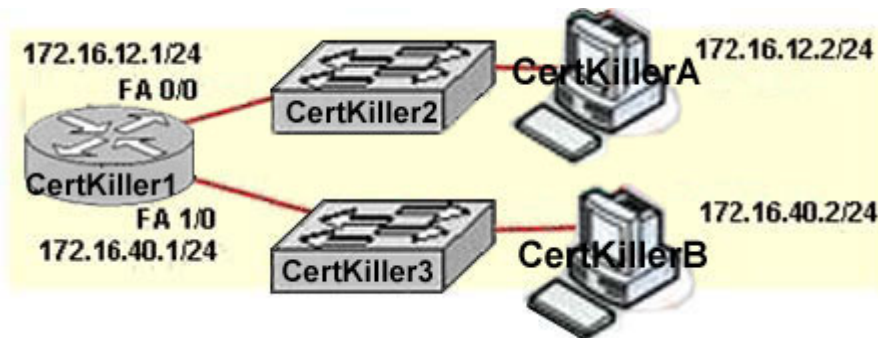
Answer: D

Explanation:

The above interface information shows that Serial0/0 is down. You just need to enable the interface.

QUESTION 416:

Network Topology Exhibit:



Certkiller 1 exhibit:

```
CertKiller1#show arp
Protocol Address      Age (min) Hardware Addr  Type   Interface
Internet 172.16.12.1      -         0001.4210.3BA9  ARPA   FastEthernet0/0
Internet 172.16.12.2      0         0010.111A.7AB0  ARPA   FastEthernet0/0
Internet 172.16.40.1      -         00D0.FF59.4A85  ARPA   FastEthernet1/0
Internet 172.16.40.2      0         00E0.80B7.EAB1  ARPA   FastEthernet1/0
CertKiller1#
```

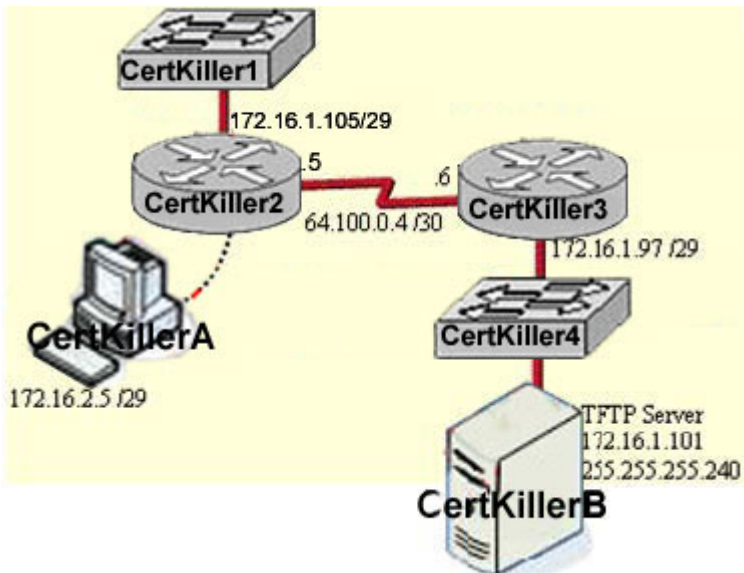
You work as a network administrator at Certkiller .com. You study the exhibit carefully. Terminal Certkiller A pings Terminal Certkiller B. What three things will Certkiller 1 router do with the data that is received from Terminal Certkiller A? (Choose three.)

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

Answer: A,B,E

QUESTION 417:

Exhibit:



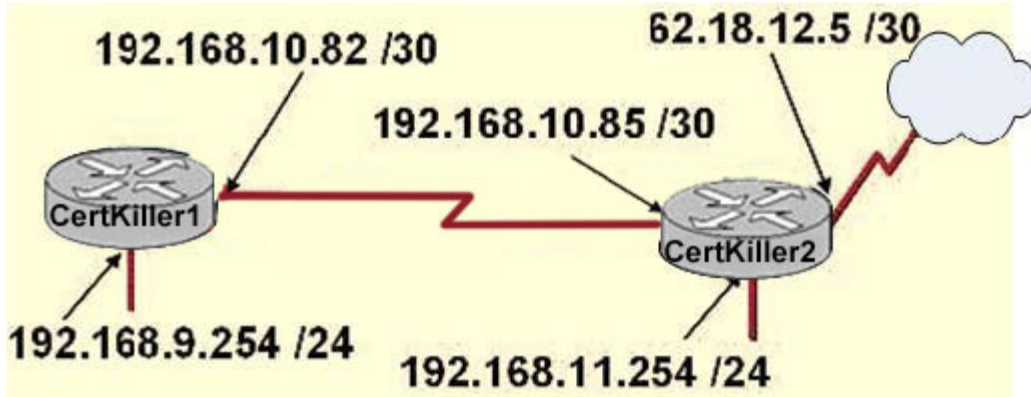
You work as a network administrator at Certkiller .com. You study the exhibit carefully. A network administrator has recently installed a new router named Certkiller 2 and has established a console connection with the new router. You are unable to backup the configuration file and IOS to a TFTP server Certkiller B. What is the cause of this problem?

- A. The Certkiller B server has an incorrect IP address.
- B. The Certkiller B server has an incorrect subnet mask.
- C. The Certkiller 1 router has an incorrect subnet mask.
- D. The Ethernet port on the Certkiller 1 router has an incorrect IP address.
- E. The Ethernet port on the Certkiller 2 router has an incorrect IP address.
- F. The network administrator computer has an incorrect IP address.

Answer: B

QUESTION 418:

After the router interfaces shown in the diagram have been configured, it is discovered that hosts in the Certkiller 1 network cannot access the Internet. Further testing reveals additional connectivity issues. What will fix this problem?
Exhibit:

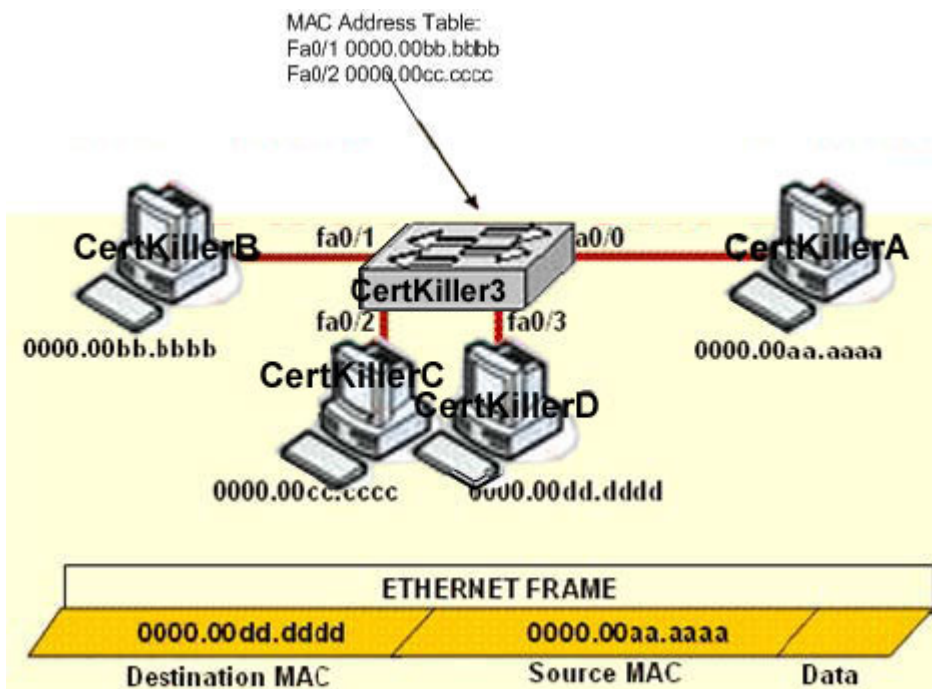


- A. Change the address of the Certkiller 1 router LAN interface.
- B. Change the subnet mask of the Certkiller 2 router interface to the Internet.
- C. Change the address of the Certkiller 2 router LAN interface.
- D. Change the address of the Certkiller 1 router WAN interface.
- E. Change the address of the Certkiller 2 router interface to the Internet.
- F. Change the subnet mask of the Certkiller 2 router LAN interface.

Answer: D

QUESTION 419:

Exhibit:



You work as a network administrator at Certkiller .com. You study the exhibit carefully. The ports that are shown are the only active ports on the switch. The MAC address table is shown in its entirety. The Ethernet frame that is shown arrives at the switch.

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

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

Answer: D,E

QUESTION 420:

Exhibit:



The image shows a 'Port Settings' dialog box with the following configuration:

Setting	Value
Bits per second	19200
Data bits	8
Parity	None
Stop bits	1
Flow control	None

You work as a network administrator at Certkiller .com. You study the exhibit carefully. A network technician is attempting to use HyperTerminal to configure a new router using the settings shown. What is the reason the technician is unable to connect to the router?

- A. The stop bits should be set to 2.
- B. The data bits should be set to 6.
- C. The bits per second should be set to 9600.
- D. Flow control should be set to hardware.
- E. Parity should be set to mark.

Answer: C

QUESTION 421:

Exhibit:

```

CertKiller1# copy startup-config tftp
Address or name of remote host []? 192.168.2.167
Destination filename [router-config]?
!!!!!!
1476 bytes copied in 0.080 secs (5950 bytes/sec)
CertKiller1#

```

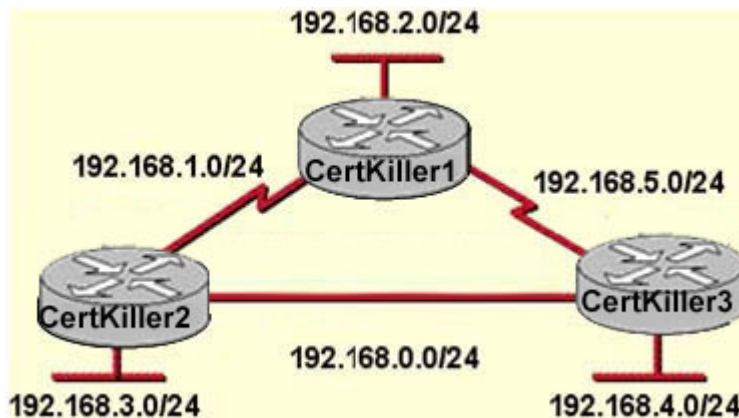
You work as a network administrator at Certkiller .com. You study the exhibit carefully. What does the address 192.168.2.167 represent?

- A. the TFTP server to which the file router-config is being transferred
- B. the router to which the file startup-config is being transferred
- C. the router to which the file router-config is being transferred
- D. the router from which the file startup-config is being transferred
- E. the TFTP server from which the file startup-config is being transferred
- F. the TFTP server from which the file router-config is being transferred

Answer: A

QUESTION 422:

Exhibit:



You work as a network administrator at Certkiller .com. You study the exhibit carefully. Router Certkiller 1 and Router Certkiller 3 are already configured with RIPv2. What are the minimum network commands that are required on Router Certkiller 2 for all networks to converge?

- A. (config-router)# network 192.168.0.0
(config-router)# network 192.168.1.0
- B. (config-router)# network 192.168.2.0
(config-router)# network 192.168.3.0
(config-router)# network 192.168.4.0
- C. (config-router)# network 192.168.0.0
(config-router)# network 192.168.1.0
(config-router)# network 192.168.3.0
- D. (config-router)# network 192.168.0.0
(config-router)# network 192.168.1.0
(config-router)# network 192.168.3.0

Answer: D