
QUESTION 301
Router CK1 has Long Haul GBIC interface. You wish to connect it to router CK2 across your Metropolitan Area Network (MAN) using Single Mode Fiber. What is the maximum distance that router CK2 can be placed away from CK1 ?

A. 2 km
B. 10 km
C. 100 meters.
D. None of the above.

Answer: B

Explanation:
Single Mode fiber allows 10 km of distance.
Incorrect Answers:

A. 2 km is the distance limitation for multimode fiber, not single mode.
C. 100 meters is the maximum distance limitation for CAT5 Ethernet, not for single mode fiber.

QUESTION 302
Which of the following are standards for physical WAN interfaces? (Choose all that apply)

A. 802.11
B. HSSI
C. V.35
D. RFC 1711
E. 802.5
F. 802.3
G. EIA/TIA 232
H. ISO 8648

Answer: B, C, G

Explanation:
EIA/TIA 232, EIA/TIA 449 EIA 530, and V.35 are for Interfaces that connect Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange. HSSI is a high speed serial interface supporting higher speed circuits.
Incorrect Answers:

A. 802.11 defines standards for wireless networks.
D. RFC 1711 defines classifications in email routing. It has absolutely nothing to do with WAN interfaces.
E. IEEE 802.5 is Token-Ring.

F. IEEE 802.3 is Ethernet.
H. ISO 8648 is an architectural model of the OSI Network Layer.

QUESTION 303
The Certkiller network is implementing VOIP on the frame relay/ATM internetworking network as displayed below:


```
hostname CK1
!
interface Serial0/0
  bandwidth 128
  encapsulation frame-relay IETF
!
interface Serial0/0.101
  bandwidth 128
  ip address 192.168.1.1 255.255.255.0
  frame-relay interface-dlci 101 IETF
```

```
hostname CK2
!
interface ATM0/0
 mtu 1500
 no ip address
 atm framing chitplcp
 no atm ilmi-keepalive
!
Interface ATM0/0.101
  bandwidth 128
  ip address 192.168.1.2 255.255.255.0
  pvc 1/101
    vbr-nrt 128 128
    broadcast
    encapsulation aal5nlpid
```

Voice quality on the network is being affected by FTP traffic. What is required to enable fragmentation of the large FTP packets?

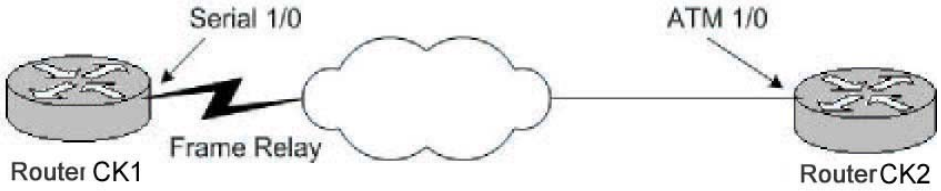
A. Configure FRF.12 fragmentation on the Frame Relay interface.
B. Fragmentation is already provided by default from the ATM network.
C. Fragmentation is not supported with frame relay to ATM service internetworking.
D. Configure MLPPP on the Frame Relay and ATM interfaces.
E. Configure PPP link fragmentation and interleaving on the CK1 and CK2 routers.

Answer: A

Explanation:
The purpose of end-to-end FRF.12 fragmentation is to support real-time and non-realtime data packets on lower-speed links without causing excessive delay to the real-time data. FRF.12 fragmentation is defined by the FRF.12 Implementation Agreement. This standard was developed to allow long data frames to be fragmented into smaller pieces (fragments) and interleaved with real-time frames. In this way, real-time and non-realtime data frames can be carried together on lower-speed links without causing excessive delay to the real-time traffic.
End-to-end FRF.12 fragmentation is recommended for use on permanent virtual circuits (PVCs) that share links with other PVCs that are transporting voice and on PVCs transporting Voice over IP (VoIP). Although VoIP packets should not be fragmented, they can be interleaved with fragmented packets.
Incorrect Answers:
B. Fragmentation adjustments are not normally performed on ATM networks, since all data transmissions are sent using fixed length, 53 byte ATM cells.
C. Fragmentation support is available, via the FRF.12 standard.

D, E. MLPPP and LFI are features of PPP encapsulated serial circuits. Frame relay and ATM networks can not be configured using PPP encapsulation.

QUESTION 304
Two routers, CK1 and CK2 , are configured for OSPF. Router CK2 is the HQ router with an ATM DS3, while router CK1 is a remote router connected via Frame Relay. These two locations are connected via Frame Relay to ATM internetworking as shown below:



Router CK1 shows the EXSTART state for neighbor Router CK2 .
Router CK2 shoes the EXCHANGE state for neighbor Router CK1 .
What would be the most probable reason for this?

A. Multicast address 224.0.0.5 is being filtered at router CK1 .
B. Multicast address 224.0.0.6 is being filtered at router CK2 .
C. There is an MTU mismatch.
D. This is the normal OSPF operation.
E. There is an OSPF network type mismatch.

Answer: C

Explanation:
This problem is caused by MTUs being mismatched.
Incorrect Answers:
A, B. OSPF uses multicast addresses 224.0.0.5 and 224.0.0.6 for routing updates, but these addresses are only used on multi-access network such as a LAN segment. Even if these two routers were connected this way, the neighbor relationship would not reach past the first stage if these packets were filtered.
D. The correct OSPF operation would be a 2 way exchange.
E. With an OSPF network type mismatch, the routers would not even be able to reach the exchange/exstart stage.
Reference:
http://www.cisco.com/warp/public/104/12.html

QUESTION 305
When troubleshooting a T1 problem on your network, you discover that a number of RED alarms are being generated. What does this red alarm on a T1 indicate?

A. The CSU cannot synchronize with the framing pattern on the T1 line.
B. The far end equipment has a problem with the signal it is receiving from the upstream equipment.
C. There is an alarm on the line upstream form the equipment connected to the port

generating the alarm.
D. There is an alarm from the equipment connected to the port generating the alarm.
E. The CSU is in a loopback.

Answer: A

Explanation:
A RED alarm is known as a Transmit Sending Remote Alarm.
A Red alarm is declared when the channel service unit (CSU) cannot synchronize with the framing pattern on the T1 line.
Reference:
http://www.cisco.com/en/US/tech/ CK7 13/ CK6 28/technologies_tech_note09186a00801069ff.shtml#topic5

QUESTION 306
With regard to PPPoA, which of the following statements are true? (Choose all that apply.)

A. PPPoA contains information about NCP LCP and supports all AAL.
B. PPPoA uses adaptation layer 5 (AAL5) as the framed protocol and is used primarily in xDSL.
C. PPPoA is not a standard based protocol.
D. In PPPoA architecture, IP address allocation for the subscriber CPE uses IPCP negotiation.
E. PPPoA supports all ppp features except password PAP CHAP.

Answer: B, D

Explanation:
Point-to-Point Protocol (PPP) (RFC 1331) provides a standard method of encapsulating higher layer protocols across point-to-point connections. It extends the High-Level Data Link Control (HDLC) packet structure with a 16-bit protocol identifier that contains information about the content of the packet.
The packet contains three types of information:
• Link Control Protocol (LCP) negotiates link parameters, packet size, or type of authentication
• Network Control Protocol (NCP) contains information about higher layer protocols including IP and IPX, and their control protocols (IPCP for IP)
• Data frames containing data
PPP over ATM adaptation layer 5 (AAL5) (RFC 2364) uses AAL5 as the framed protocol, which supports both PVC and SVC. PPPoA was primarily implemented as part of ADSL. It relies on RFC1483, operating in either Logical Link Control-Subnetwork Access Protocol (LLC-SNAP) or VC-Mux mode. A customer premise equipment (CPE) device encapsulates the PPP session based on this RFC for transport across the ADSL loop and the digital subscriber line access multiplexer (DSLAM).
Incorrect Answers:

A. PPPoA does not support every AAL and uses only AAL5.
C. PPPoA is standards based.
E. CHAP (Challenge authentication protocol) is supported in PPPoA.
Reference:
http://www.cisco.com/warp/public/794/pppoa_arch.html

QUESTION 307
Under one of the serial interfaces of your router you see the following configured:
Interface serial 0/0
Encapsulation PPP
IP address 10.1.1.1 255.255.255.252
Invert txclock
What is a reason for the "invert txclock" command being configured?

A. It synchronizes TXD and RXD clocks.
B. It corrects systems that use long cables that experience high error rates when operating at the higher transmission speeds.
C. It is used for adjusting the transmit clock properties of the PPP negotiation process.
D. It inverts the phase of the local clock used for timing incoming data the serial line.
E. It is used to allow the interface to provide clocking, rather than receiving clocking from the line.

Answer: B

Explanation:
Systems that use long cables or cables that are not transmitting the TxC signal (transmit echoed clock line, also known as TXCE or SCTE clock) can experience high error rates when operating at the higher transmission speeds. For example, if a PA-8T synchronous serial port adapter is reporting a high number of error packets, a phase shift might be the problem. Inverting the clock might correct this shift.
Incorrect Answers:
B. The invert txclock command is not related to PPP.
E. This describes the purpose of the clocking source configuration for a serial line. The correct configuration command for determining the clocking source is "clock source".

QUESTION 308
A router has a T1 private line connection, with the encapsulation type set to HDLC. Which of the following are transfer modes that could be supported over this HDLC circuit? (Choose all that apply)

A. LAPB
B. ARB
C. ABM
D. ARM

E. NRM
F. LAPD

Answer: A, C, D, and E

Explanation:
The following are all transfer types supported by HDLC:
ARM - Asynchronous Response Mode. It is an HDLC communication mode involving one primary and at least one secondary, where either the primary or one of the secondaries can initiate transmissions.
ABM - Asynchronous Balanced Mode. It is an HDLC and derivative protocol, communication mode supporting peer-oriented point-to-point communications between two stations, where either station can initiate transmission.
NRM - Normal Response Mode
LAPB - Link Access Procedure Balanced
Incorrect Answers:
B, F. ARB and LAPD are not acronyms that apply to HDLC.

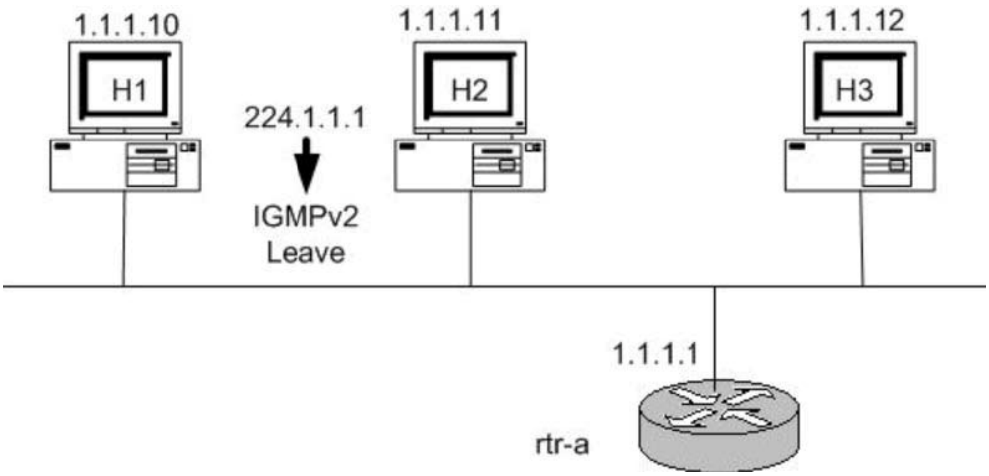
QUESTION 309
A Certkiller branch office uses Telnet and FTP to access an application at the main office over a point to point T1 HDLC link. You wish to increase the performance over this link through the use of a compression algorithm. What compression type will provide the best performance improvement?

A. Compressed Real-time Transport Protocol
B. TCP header compression
C. Stacker compression
D. Predictor compression

Answer: C

Explanation:
You can configure point-to-point software compression for all LAPB, PPP, and HDLC encapsulations using either the predictor or stacker compression methods. Compression reduces the size of frames via lossless data compression. HDLC encapsulations support the Stacker compression algorithm. PPP and LAPB encapsulations support both predictor and Stacker compression algorithms.
When compression is performed in software installed in the router's main processor, it might significantly affect system performance.
Compression requires that both ends of the serial link be configured to use compression.

QUESTION 310
Part of the Certkiller IP multicast network is shown below:



H1, H2, H3, and rtr-a are all IGMP version 2 devices. Host 2 and Host 3 belong to the 224.1.1.1 group. After a while, H2 sends out an IGMPv2 Leave message to leave the 224.1.1.1 group. How will rtr-a react to this leave message?

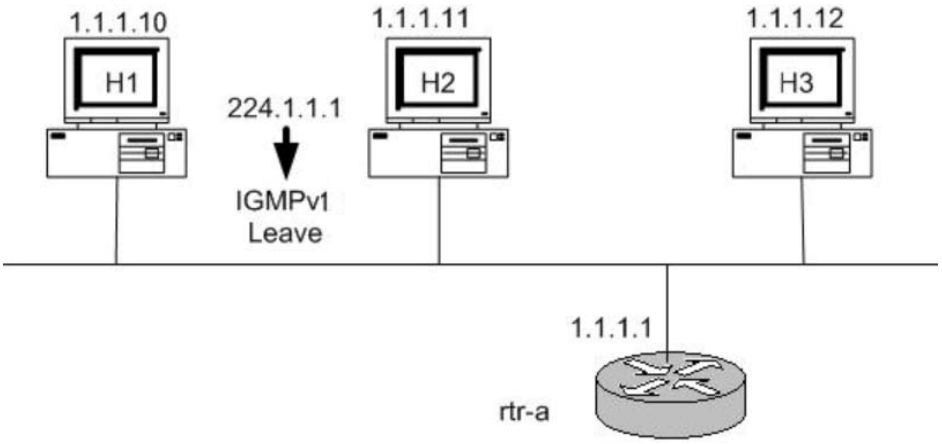
A. It will send an IGMPv2 Query to the all multicast hosts address 224.255.255.255.
B. It will send an IGMPv2 Group Specific Query to 224.1.1.1
C. It will send an IGMPv2 Leave Acknowledgement to Hosts H1 and H3.
D. It will send an IGMPv2 General Query to 224.1.1.1
E. It will send an IGMPv2 Group Specific Query to 224.0.0.1.

Answer: B

Explanation:
In IGMP version 2, a Leave message is responded by a group specific query from the router to check if there are any additional hosts participating in the multicast session. The group specific query is always destined for the multicast address that is being used.
Incorrect Answers:

A. The address 224.255.255.255 would never be used in this situation. In fact, the notion of a multicast "broadcast" does not exist.
C. Lave messages are not acknowledged.
D. General Query messages are not used.
E. The group specific query is always destined for the multicast address that is being used, which is 224.1.1.1 in this case.

QUESTION 311
The Certkiller network has a mix of IGMP version 1 and version 2 devices in its IP multicast network as shown below:



H1 and H2 are both IGMPv2 speakers and are also members of group 224.1.1.15.
H3 is an IGMPv1 speaker and sends an IGMPv1 Membership Report to join group 224.1.1.15.
What will happen?

A. The router rtr-a will do nothing, since there are already members of group 224.1.1.15 on the subnet.
B. The router rtr-a will ignore all IGMPv2 Leave messages while the IGMPv1 host is a member of group 224.1.1.15.
C. The router rtr-a will stop sending IGMPv2 Group-Specific queries in response to IGMPv1 Leaves received on this subnet for groups 224.1.1.15, while the IGMPv1 hosts is a member of group 224.1.1.15.
D. The router rtr-a will ignore the IGMPv1 Membership Report because router rtr-a is an IGMPv2 speaker and IGMPv1 are not compatible.

Answer: B

Explanation:
With IGMP version 1 and version 2 on the same network, routers will revert to v1, so the router will ignore the leave requests from all v2 members as long as the v1 member is still active for that multicast session.
Incorrect Answers:

A. Although there are already members on the same segment, the routers must be aware of the fact that there are a mix of v1 and v2 devices, so that the v2 leave messages can be ignored.
C. When the v1 device leaves the multicast session, the router must still send the group query out to see if the v2 devices are also still actively participating in the multicast session.
D. IGMP version 2 was designed to be backward compatible with version 1.
Reference:
"CCIE Professional Development Routing TCP/IP Volume II" by Jeff Doyle and Jennifer De Haven Carroll, Page 414.

QUESTION 312
IGMP is used to dynamically register individual hosts in a multicast group on a particular LAN. Hosts identify group memberships by sending IGMP messages to their local multicast router. Under IGMP, routers listen to IGMP messages and periodically send out queries to discover which groups are active or inactive on a particular subnet.
Hosts need to actively communicate to the local multicast router that they intend to leave a group. If there are no replies, the router rimes out the group and stops forwarding the traffic. In order for this to work, what needs to be implemented?

A. IGMPv1
B. IGMPv2
C. IGMPv3
D. IGMPv4
E. CGMP

Answer: B

Explanation:
The Internet Group Management Protocol (IGMP) is used by IP hosts to report their host group memberships to any immediately neighboring multicast routers. IGMP messages are encapsulated in IP datagrams, with an IP protocol number of 2. IGMP has versions IGMP v1, v2 and v3.
In IGMPv2, leave messages were added to the protocol. This allowed group membership termination to be quickly reported to the routing protocol, which is important for highbandwidth multicast groups and/or subnets with highly volatile group membership.
Incorrect Answers:

A. IGMPv1: Hosts can join multicast groups. There were no leave messages. Routers were using a time-out based mechanism to discover the groups that are of no interest to the members.
C. IGMPv3: Major revision of the protocol. It allows hosts to specify the list of hosts from which they want to receive traffic from. Traffic from other hosts is blocked inside the network. It also allows hosts to block inside the network packets that come from sources that sent unwanted traffic.
D. IGMPv4 is not yet in use.
E. CGMP is the Cisco Group Management Protocol (CGMP) which is a multicast protocol used by Cisco LAN switches, and not routers.

QUESTION 313
In the Certkiller network, hosts need to actively communicate to the local multicast router that they intend to leave a group. The router then sends out a group-specific query and determines if any remaining hosts are interested in receiving the traffic. If there are no replies, the router times out the group and stops forwarding the traffic. In order for this to work, what needs to be implemented?

A. IGMPv1
B. IGMPv2
C. IGMP snooping
D. DVMRO
E. CGMP
F. RGMP

Answer: B

Explanation:
IGMP version 2 is the Industry-standard protocol for managing multicast group membership, including support for IGMP-leave messages and group-specific queries. Leave Group message is a new type different from IGMP version 1. Membership Report is issued by host that want to join a specific multicast group (GDA). When IGMP router receive the Membership Report, it will add the GDA to the multicast routing table and start forwarding the IGMP traffic to this group. Membership Queries are issued by router at regular intervals to check whether there is still a host interested in the GDA in that segment. Host Membership Reports are sent either when the host wants to receive GDA traffic or response for a membership query from IGMP router.
If a host does not want to receive the IGMP traffic any more, it sends a Leave Group message. When the multicast router receives this Leave Group message, it removes the GDA from the multicast routing table. In addition, IGMP multicast routers periodically send Host Membership Query messages (hereinafter called Queries) to discover which host groups have members on their attached local networks. If no Reports are received for a particular group after some number of Queries, the routers assume that that group has no local members and that they need not forward remotely-originated multicasts for that group onto the local network. In addition, IGMP version 2 has leave mechanisms.
Incorrect Answers:

A. In IGMP version 1, hosts can join multicast groups. There were no leave messages. Routers were using a time-out based mechanism to discover the groups that are of no interest to the members.
D, F. These are incorrect terms for this IP multicasting functionality.
E. CGMP is used between Cisco switches and routers to provide for IP multicast information to be passed between the two.

QUESTION 314
The default behaviour for a Layer 2 switch is to forward all multicast traffic to every port that belongs to the destination LAN on the switch. This behavior reduces the efficiency of the switch, whose purpose is to limit traffic to the ports that need to receive the data. In an effort to increase the efficiency of the Certkiller network, you wish to utilize different protocols on the LAN.
Choose the correct protocols to handle IP multicast efficiently in the Certkiller layer 2 switched IP network. (Select the best choice).

A. Use Router-Port Group Mangement Protocol (RGMP) on subnets that include end

users or receiver clients. Use Cisco Group Management Protocol (CGMP), IGMP Snooping on routed segments that contain only routers, such as in a collapsed backbone.
B. Use Router-Port Group Mangement Protocol (RGMP) on subnets that include end users or receiver clients and routes segments that contain only routers, such as in a collapsed backbone.
C. Use Cisco Group Management Protocol (CGMP), IGMP Snooping on subnets that include end users or receiver clients. Use Router-Port Group Management Protocol (RGMP) on routed segments that contain only routers, such as in a collapsed backbone.
D. Use Cisco Group Management Protocol (CGMP) on subnets that include end users or receiver clients and routed segments that contain only routers, such as in a collapsed backbone.
E. Use IGMP Snooping on subnets that include end users or receiver clients and routed segments that contain only routers, such as in a collapsed backbone.

Answer: C

Explanation:
The purpose of Cisco Group Management Protocol (CGMP) and Internet Group Management Protocol (IGMP) snooping is to restrain multicast traffic in a switched network. By default, a LAN switch floods multicast traffic within the broadcast domain. This can consume a lot of bandwidth if many multicast servers are sending streams to the segment.
IGMP snooping is a feature that allows the switch to "listen in" on the IGMP conversations between hosts and routers. When a switch hears an IGMP report from a host for a given multicast group, the switch adds the host's port number to the GDA list for that group. And, when the switch hears an IGMP Leave, it removes the host's port from the CAM table entry.
RGMP constrains multicast traffic that exits the Cisco Router through ports to which only disinterested multicast routers are connected. RGMP reduces network congestion by forwarding multicast traffic to only those routers that are configured to receive it.
Note: To use RGMP, you must enable IGMP snooping on the Cisco router. IGMP snooping constrains multicast traffic that exits through LAN ports to which hosts are connected. IGMP snooping does not constrain traffic that exits through LAN ports to which one or more multicast routers are connected.

QUESTION 315
How are Layer 3 multicast IP addresses mapped to Token Ring MAC addresses? (Choose all that apply).

A. All IP Multicast addresses are mapped to broadcast MAC address FFFF.FFFF.FFFF.
B. All IP Multicast addresses are mapped to network MAC address 0000.0000.0000.
C. All IP Multicast addresses are mapped to Functional Address C000.0004.0000.
D. In the same method as is used in Ethernet networks.

E. Token ring MAC addresses are not mapped to IP multicast addresses.

Answer: A, C

Explanation:
By default, IP multicast datagrams on Token Ring LAN segments used the MAC-level broadcast address 0xFFFF.FFFF.FFFF. That places an unnecessary burden on all devices that do not participate in IP multicast. The IP multicast over Token Ring LANs feature defines a way to map IP multicast addresses to a single Token Ring MAC address.
This feature defines the Token Ring functional address (0xc000.0004.0000) that should be used over Token Ring. A functional address is a severely restricted form of multicast addressing implemented on Token Ring interfaces. Only 31 functional addresses are available. A bit in the destination MAC address designates it as a functional address.
The implementation used by Cisco Systems complies with RFC 1469, IP Multicast over Token-Ring Local Area Networks.
Reference:
See RFC 1469, IP Multicast over Token-Ring Local Area Networks
Also see
http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/113ed_cr/np1_c/1cmulti.htm#21101

QUESTION 316
The IANA owns a block of Ethernet MAC address that start with 01:00:5E in haxadecimal formal. Half of this block is allocated for multicast addresses. The range from 0100.5e00.0000 through 0100.5e7f.ffff is the available range of Ethernet MAC address for IP multicast.
This allocation allow for 23 bits in the Ethernet address to correspond to the IP multicast group address. The mapping places the lower 23 bits of the IP multicast group address into these available 23 bits in the Ethernet address.
Because the upper five bits of the IP multicast address are dropped in this mapping, the resulting address in not unique. In fact, 32 different multicast group IDs map to the same Ethernet address.
225.1.1.1 and 237.1.1.1 have been assigned to map to the same multicast MAC address on a Layer 2 switch. What will occur?

A. If one user is subscribed to Group A (as designated by 225.1.1.1) and the other user is subscribed to Group B (as designated by 237.1.1.1), they would both receive only the streams meant for them. Group A would go to 225.1.1.1 and group B would go to 237.1.1.1
B. If one user is subscribed to Group A (as designated by 237.1.1.1) and the other user is subscribed to Group B (as designated by 225.1.1.1), they would both receive only the first stream that reached the network.
C. If one user is subscribed to Group A (as designated by 225.1.1.1) and the other user is subscribed to Group B (as designated by 237.1.1.1), they would both receive both streams, A and B streams.
D. If one user is subscribed to Group A (as designated by 225.1.1.1) and the other

user is subscribed to Group B (as designated by 237.1.1.1), both of them would not receive A and B streams.
E. None of the above

Answer: C

Explanation:
Although mathematically there are 32 possibilities for overlap of addresses it is very unlikely to happen in real life. If it does, the impact is that another set of stations receives the multicast traffic. This is still far preferable to ALL stations receiving the traffic. This is always the case where two IP multicast addresses share the same MAC address.

QUESTION 317
Which IP address maps to the Ethernet multicast MAC address of 01-00-5e-10-20-02? (Choose all that apply)

A. 224.128.10.2
B. 225.128.10.2
C. 224.10.20.2
D. 225.10.20.2
E. 239.144.32.2
F. 224.16.32.2
G. All of the above
H. None of the above

Answer: E, F

Explanation:
Ethernet interfaces map the lower 23 bits of the IP multicast address to the lower 23 bits of the MAC 0100.5e00.0000. As an example, the IP multicast address 224.0.0.2 is mapped to the MAC layer as 0100.5e00.0002.
• HEX 01 = 00-5e (all Multicast Addresses);
• HEX 10 = 00010000 - could be both 16 and 144 (decimal) due to the fact that we ignore the first bit of the second octet when converting to binary;
• HEX 20 = 00100000 = 32;
• HEX 02 = 00000010 = 2.

QUESTION 318
What is the class D IP address range 239.0.0.0-239.255.255.255 used for?

A. Administratively Scoped multicast traffic meant for internal use.
B. Link-local multicast traffic made up of network control messages meant to stay in the local subnet.
C. Global Internet multicast traffic meant to travel throughout the Internet.
D. Any valid multicast data stream for use with multicast applications.
E. Routing protocol use.

Answer: A

Explanation:
The 239 address range is reserved for IP multicast traffic that is to be used for internal use only. It is similar to RFC 1918 private IP address space, except instead of specifying unicast address ranges it specifies multicast.
Incorrect Answers:
B, E. Link level multicast messages, such as those used by routing protocols, use the 224.0.0.0 address range. For example, IGRP uses 224.0.0.10 and OSPF uses 224.0.0.5 and 224.0.0.6.
C, D. This address range should never be seen in the Internet. It is reserved for private use only.
Reference:
Jeff Doyle Volume II chapter on IP Multicast.

QUESTION 319
You wish to implement a multicast video application over your private, internal network. To do this, you need to use a private multicast range of IP addresses across your network. Which IP range should you use?

A. 224.0.0.0 - 224.255.255.255
B. 226.0.0.0 - 226.255.255.255
C. 241.0.0.0 - 241.255.255.255
D. 239.0.0.0 - 239.255.255.255
E. 240.0.0.0 - 254.255.255.255.

Answer: D

Explanation:
The reserved, administratively scoped IPv4 multicast address space is defined to be the range 239.0.0.0 to 239.255.255.255. Administratively scoped multicast addresses are for use only on a private network and are not to be used on the Internet.
Reference:
RFC 2365 - http://www.faqs.org/rfcs/rfc2365.html

QUESTION 320
The Certkiller network is using IP multicast within to conserve bandwidth during the training video seminars. In this IP multicast network, which of the following correctly describes scoping?

A. Scoping is the restriction of multicast data transport to certain limited regions of the network. There are two types: TTL scoping and administrative scoping.
B. Scoping is used by SSM to locate the sources and receivers in certain limited regions of the network. There are two types: TTL scoping and administrative scoping.

C. Scoping is a process used in MSDP to locate the sources and receivers in different AS.
D. PIM dense mode uses scoping to locate the sources and receivers in order to built shared trees.

Answer: A

Explanation:
Traditionally, IP multicast uses a Time to Live (TTL) parameter in an IP multicast application and multicast routers to control the multicast distribution. When you define the TTL value in an IP multicast application, contents don't transmit beyond the TTL value. For example, if you set Site Server's Active Channel Multicaster TTL value to 10, you ensure that Site Server's Web contents don't multicast beyond 10 router hops. Each multicast packet carries a TTL value in its IP header. Just as in unicast, every time a multicast router forwards a multicast packet, the router decreases the packet's TTL by 1. As an alternative to TTL scoping, the Internet Engineering Task Force (IETF) proposed Administratively Scoped IP Multicast as an Internet standard in its Request for Comments (RFC) 2365 in July 1998. Administrative scoping lets you scope a multicast to a certain network boundary (e.g., within your organization) by using an administratively scoped address. IETF has designated IP multicast addresses between 239.0.0.0 and 239.255.255.255 as administratively scoped addresses for local use in intranets. You can configure routers that support administratively scoped addressing on the border of your network to confine your private multicast region. You can also define multiple isolated multicast regions in your network so that sensitive multicast data will travel only within a designated area.

QUESTION 321
The Certkiller network is implementing IP multicast and they want to ensure that the IP addresses they used are contained within the Certkiller autonomous system. What is the range of limited scope/administrative scope addresses that should be used?

A. Addresses in the 232.0.0.0/8 range
B. Addresses in the 239.0.0.0/8 range
C. Addresses in the 224.0.0.0/8 range
D. Addresses in the 229.0.0.0/8 range
E. Addresses in the 234.0.0.0/8 range
F. None of the above

Answer: B
Explanation
The range of addresses from 239.0.0.0 through 239.255.255.255 contains limited scope addresses or administratively scoped addresses. These are defined by RFC 2365 to be constrained to a local group or organization. Routers are typically configured with filters to prevent multicast traffic in this address range from flowing outside an autonomous system (AS) or any user-defined domain. Within an autonomous system or domain, the

limited scope address range can be further subdivided so those local multicast boundaries can be defined. This also allows for address reuse among these smaller domains. These addresses are the IP multicast version of the private, RFC 1918, addresses used for unicast.
Reference: http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/ipmulti.htm

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QUESTION 322
In an IP multicast network, the more sources an application has, the less frequently traffic is sent from each end. Each time a source starts to send packets, protocol operations take place and a forwarding state is established. For applications with a large number of sources, this state can time-out before the source would to only create a large number of sources, this state can time-out before sources would not only create a large amount of forwarding state (requiring memory), but they could also require high CPU usage o the routing processor due to the accounting of frequently changing state. In addition, the signaling within the router between the routing processor and forwarding hardware can become another potential bottleneck of continuously large amount of traffic signaling must go to the routing processor and equally large amounts of forwarding state changes must go to the forwarding engine(s).
The Certkiller network is implementing IP multicast, and they wish to avoid the problems described above. Based on this information, what IP multicast technology would you recommend?
Caution: This protocol should avoid maintaining source-specific forwarding state, thereby reducing the amount of memory needed by the number of sources per multicast group, requiring much less traffic signaling in the protocol, preventing the "bursty source" problem, saving on CPU requirements for protocol operations and avoiding potential internal performance limits.

A. PIM Dense Mode (PIM DM)
B. PIM Sparse Mode (PIM SM)
C. Distance Vector Multicast Routing Protocol (DVMRP)
D. Multicast Open Shortest Path First (MOSPF)
E. Bi-directional PIM

Answer: E

Explanation:
Bidirectional-PIM is a variant of the Protocol Independent Multicast (PIM) suite of routing protocols for IP multicast. In PIM, packet traffic for a multicast group is routed according to the rules of the mode configured for that multicast group. The Cisco IOS implementation of PIM supports three modes for a multicast group:
• Bidirectional mode
• Dense mode
• Sparse mode
A router can simultaneously support all three modes or any combination of them for different multicast groups. In bidirectional mode, traffic is routed only along a

bidirectional shared tree that is rooted at the rendezvous point (RP) for the group. In bidir-PIM, the IP address of the RP acts as the key to having all routers establish a loopfree spanning tree topology rooted in that IP address. This IP address need not be a router, but can be any unassigned IP address on a network that is reachable throughout the PIM domain. Using this technique is the preferred configuration for establishing a redundant RP configuration for bidir-PIM.
In PIM dense mode (PIM-DM), PIM-SM, and most other multicast routing protocols such as Distance Vector Multicast Routing Protocol (DVMRP) and Multicast Open Shortest Path First (MOSPF), protocol operations and maintenance of packet forwarding state depend on signaling the presence or expiration of traffic (where "signaling" refers to both the packet forwarding engine to routing protocol process within the routers and the packet exchange part of the routing protocol). Triggering PIM assert messages, PIM register messages, and source tree forwarding state are all examples of traffic signaling. There are several advantages to traffic signaling, but they can lead to problems for applications with a large number of sources. For example, the more sources an application has, the less frequently traffic is sent from each sender. Each time a source starts to send packets, protocol operations take place and forwarding state is established. For applications with a large number of sources, this state can time out before the source sends again, resulting in "bursty sources." Therefore, applications with a large number of sources would not only create a large amount of forwarding state (requiring memory), but they also could require high CPU usage on the Route Processor due to the accounting of frequently changing state. In addition, the signaling within the router between the Route Processor and forwarding hardware can become a bottleneck if continuously large amounts of traffic signaling must go to the Route Processor and equally large amounts of forwarding state changes must go to the forwarding engines.
Bidir-PIM solves all these problems. Not only does bidir-PIM avoid maintaining sourcespecific forwarding state, therefore reducing the amount of memory needed by the number of sources per multicast group, but it also does not require any traffic signaling in the protocol. Thus, bidir-PIM prevents the "bursty source" problem, saving on CPU requirements for protocol operations and avoiding potential router internal performance limits.
Reference:http://www.cisco.com/en/US/products/sw/iosswrel/ps1612/products_feature_guide09186a0080080a41.html

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QUESTION 323
You are a technician at Certkiller . Your newly appointed Certkiller trainee wants to know which IP protocol is used to send PIMv2 control messages.
What would your reply be?

A. UDP
B. TCP
C. BGP
D. Protocol number 107
E. Protocol number 103

Answer: E

Explanation:
All PIM control messages have protocol number 103.
Reference:
http://www.ietf.org/proceedings/99mar/I-D/draft-ietf-pim-v2-dm-01.txt

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QUESTION 324
IP multicast addresses in the range of 224.0.0.0 through 224.0.0.255 are reserved for what purpose?

A. It is reserved for Administratively Scoped multicast traffic intended to remain inside a private network.
B. It is reserved for Administratively Scoped multicast traffic that is not supposed to be transmitted onto the Internet.
C. It is reserved for link-local multicast traffic consisting of network control messages that is not supposed to leave the local subnet.
D. Any valid multicast data stream used by multicast applications.
E. Global Internet multicast traffic intended to travel throughout the Internet.

Answer: C

Explanation:
As found in RFC1112. These addresses are used by many routing protocols such as OSPF and RIPv2, in order to sent updates to all neighbors on the same segment.
Incorrect Answers:
A, B. Administratively Scoped IP multicast addresses are contained in the 239.0.0.0-239.255.255.255 range.
D, E. The 224.0.0.0/8 network range is not intended to be used outside of the local subnet link.

QUESTION 325
Which of the following PIMv2 Sparse mode control messages are also used in PIM Dense mode? (Choose all that apply.)

A. Graft
B. Join
C. Prune
D. Register
E. Assert
F. Hello
G. Register

Answer: B, C, E, and F
PIM-DM uses the following PIMV2 messages.
- Hello
- Join/Prune

- Graft
- Graft-Ack
- Assert

PIM-SM uses the following PIMV2 messages
- Hello
- Bootstrap
- Candidate-RP-Advertisement
- Join/Prune
- Assert
- Register
- Register-Stop

Reference:
'CCIE Professional Development Routing TCP/IP Volume 2' in the section 'Understanding IP Multicast Routing' pages 475 and 488.

QUESTION 326
What best describes the Source Specific Multicast (SSM) functionality?

A. SSM is an extension of the DVMRP protocol that allows for an efficient data delivery mechanism in one-to-many communications.
B. SSM requires MSDP to discover the active sources in other PIM domains.
C. In SSM routing of multicast traffic is entirely accomplished with source trees. The RP is used to direct receivers to the appropriate source tree.
D. Using SSM, the receiver application can signal its intention to join a particular source by using the INCLUDE mode in IGMPv3.
E. None of the above

Answer: D

Explanation:
The Internet Standard Multicast (ISM) service is described in RFC 1112, Host Extensions for IP Multicasting. This service consists of the delivery of IP datagrams from any source to a group of receivers called the multicast host group. The datagram traffic for the multicast host group consists of datagrams with an arbitrary IP unicast source address S and the multicast group address G as the IP destination address. Systems will receive this traffic by becoming members of the host group. Membership to a host group simply requires signalling the host group through IGMP Version 1, 2, or 3.
In SSM, delivery of datagrams is based on (S, G) channels. Traffic for one (S, G) channel consists of datagrams with an IP unicast source address S and the multicast group address G as the IP destination address. Systems will receive this traffic by becoming members of the (S, G) channel. In both SSM and ISM, no signalling is required to become a source. However, in SSM, receivers must subscribe or unsubscribe to (S, G) channels to receive or not receive traffic from specific sources. In other words, receivers can receive traffic only from (S, G) channels to which they are subscribed, whereas in ISM, receivers need not know the IP addresses of sources from which they receive their traffic. The proposed standard approach for channel subscription signalling utilizes IGMP INCLUDE mode

membership reports, which are supported only in IGMPv3.
Incorrect Answers:

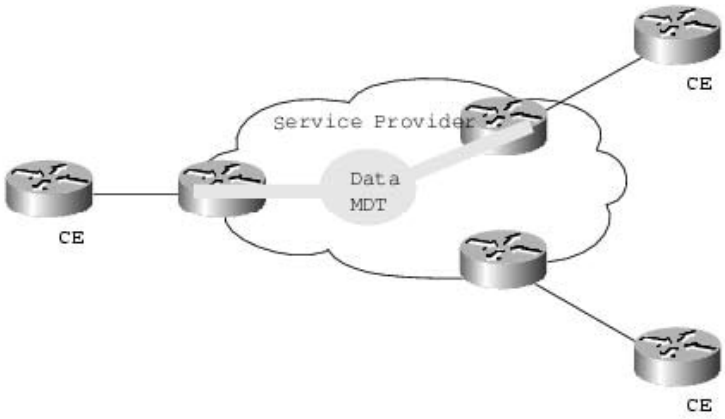
A. SSM is associated with PIM in IPv6 multicast networks. It is not associated with DVMP.
B. SSM builds off of PIM-SM, but also requires an update to IGMP. IGMP version 3 includes a larger header, where the source address can be specified, in addition to the group address. This means that a router no longer needs to communicate with an RP in order to locate the source, and also means that MSDP is no longer needed since its only purpose is to pass information among RPs.
C. PIM-SSM is made possible by IGMPv3. Because hosts can now indicate interest in specific sources using IGMPv3, PIM can create state directly along the path to those sources using SSM. SSM does not require a rendezvous point (RP) to operate.

QUESTION 327
The Certkiller network is setting up a VPN for the IP multicast traffic. What best describes the MDT role in MVPN operations?

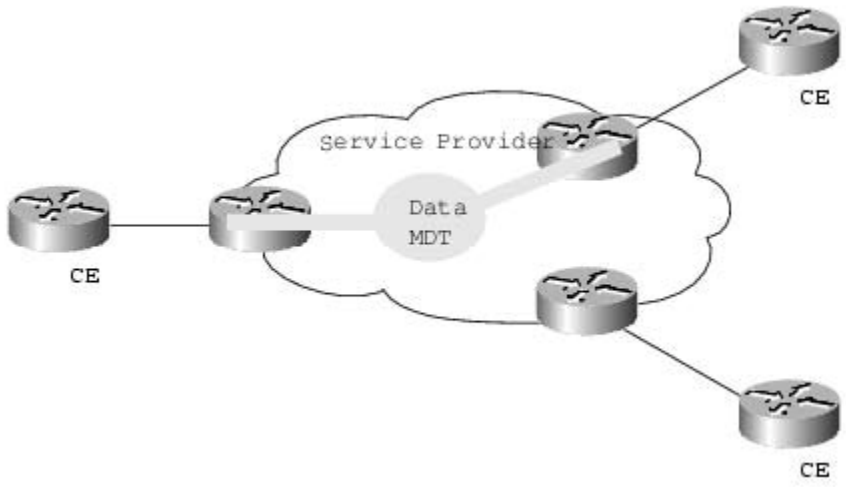
A. PE routers that have CE routers who are intended recipients of the data only join data MDT. PE routers signal use of data-MDT via a UDP packet on port 3232, which is sent via the default MDT: This packet contains an all-PIM routers message, indicating the group is joined if required.
B. CE routers do not have a PIM adjacency across the provider network with remote CE routers, but rather have an adjacency with their local routes an the PE router. When the PE router receives an MDT packet. It performs an RPF check. During the transmission of the packet through the Provider network, the normal RPF rules apply. However, at the remote's PE, the router needs to ensure that the originating PE router was the correct one for that CE. It does this by checking the BGP next hop address of the customer's packet's source address. This next hop address should be the source address of the MDT packet. The PE also checks that there is a PIM neighbor relationship with the remote PE.
C. A unique Group address is required to be used as MDT for each particular customer. A unique source address for the Multicast packet in the provider network is also required. This source address is recommended to be the address of the loopback interface, which is used as the source for the IBGP, as this address is used for the RPF check at remote PE.
D. PE routers are the only routers that need to be MVPN aware and able to signal to remote PE's information regarding the MVPN. It is therefore fundamental that all PE routers have a BGP relationship with each other. Either directly or via a Route Reflector. The source address of the Default-MDT will be the same address used to source the IBGP sessions with the remote PE routers that belong to the same VPN and MVRF.
E. All of the above.

Answer: E

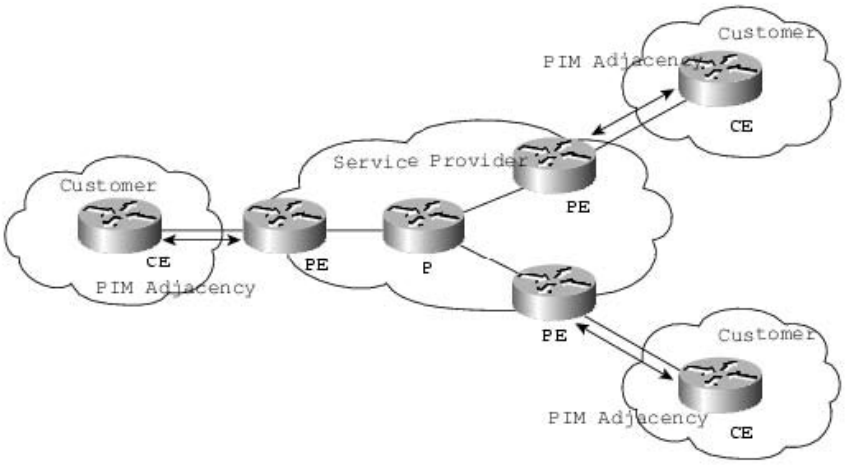
Explanation:
Cisco MVPN Details:
While there are significant deployment obstacles to each of the preceding MVPN solutions, Multicast Domains is the most attractive alternative because:
• The provider must configure a native IP multicast network within their core network; this includes both the P and PE routers.
• IP Multicast is a mature technology that has been deployed since Cisco IOS Software 10.0. This minimizes risk for the provider network, because a new feature will not have to be introduced into its core to support MVPNs.
Multicast Domain Solution
This method originally had less than optimal performance, because it requires that all PE routers connected to a customer receive all of that customer's Multicast data regardless of the presence of an interested receiver in that location. When enhancements resolved this characteristic with a new methodology, it became a truly attractive solution.
Figure 3
Default MDT Concept



The aforementioned enhancement is the addition of ephemeral trees that are created `on the fly'. These trees distribute multicast group data that exceeds a certain configured threshold of Bandwidth (BW) to only those PE who have joined this new tree. These are tress are called MDT-data trees. The word data is appended as these groups are designed to be used for groups that will require a higher amount of bandwidth to deliver their data.
Figure 4
Data MDT Concept

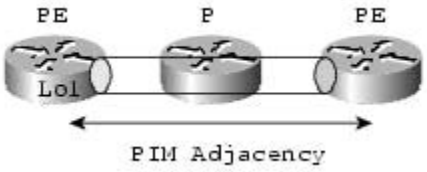


This diagram indicates that the Data MDT is only joined by those PE routers that have CE routers who are intended recipients of the data.
PE routers signal use of Data-MDT via a UDP packet on port number 3232, which is sent via the default MDT. This packet contains an all-PIM routers message, indicating the group to be joined if required.
Interaction of Customer and Providers Multicast Network
It is important to remember that the customer's IP Multicast network has no relationship to the provider's multicast network. From the perspective of the provider, the customer's IP Multicast packets are merely data to the provider's distinctive IP Multicast network.
It is important to understand that PIM, and in particular PIM-SM, are the only supported multicast protocols for MVPN. Bi-Dir PIM may be supported in the future, when it is deemed stable enough for the core of a provider network.
Figure 5
Customer PIM Adjacencies



CE routers do not have a PIM adjacency across the provider network with remote CE routers, but rather have an adjacency with their local routers and the PE router.
When the PE router receives an MDT packet, it performs an RPF check. During the transmission of the packet through the Provider network, the normal RPF rules apply. However, at the remote's PE, the router needs to ensure that the originating PE router was

the correct one for that CE. It does this by checking the BGP next hop address of the customer's packet's source address. This next hop address should be the source address of the MDT packet. The PE also checks that there is a PIM neighbourship with the remote PE.
Currently, only a single MVRF is supported per customer. This limitation precludes the customer also receiving Internet or any other outside domain's Multicast traffic
A unique Group address is required to be used as MDT for each particular customer. A unique source address for the Multicast packet in the provider network is also required. This source address is recommended to be the address of the loopback interface, which is used as the source for the IBGP, as this address is used for the RPF check at remote PE.
If the provider uses MDT-data groups, then these will also need to be configured. These MDT-data groups must be unique for each customer.
The PE routers must have a PIM adjacency to each other. No other routing protocols may use these MTIs.
Figure 6
Provider's PIM Adjacencies



BGP Requirements
PE routers are the only routers that need to be MVPN aware and able to signal to remote PE's information regarding the MVPN. It is therefore fundamental that all PE routers have a BGP relationship with each other. Either directly or via a Route Reflector.
The source address of the Default-MDT will be the same address used to source the iBGP sessions with the remote PE routers that belong to the same VPN and MVRF. When PIM-SSM is used for transport inside the provider core, it is via this BGP relationship that the PEs indicate that they are MVPN capable and provide for source discovery. This capability is indicated via the updated BGP message.
Reference:http://www.cisco.com/en/US/tech/ CK8 28/technologies_white_paper09186a008 00a3db6.shtml

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QUESTION 328
An enterprise customer runs their core network as an ISP network where they have different Autonomous Systems (AS). The BGP core runs OSPF for Intra-connection only. Data center A is in AS 1, data center B is in AS 2, and data center C is in AS 3. The remote locations will be running an IGP and redistribute their routes into BGP core. They would like to enable multicast throughout their network to support multicast applications.
Based upon the scenario, what would be the LEAST EFFECTIVE way to implement IP multicast?

A. This network runs essentially as an ISP's network with a BGP core and different AS. To implement multicast in this network they can enable MBGP over the BGP backbone.

B. This is customer's internal network and not a transit provider in the inter-domain SP routing. As log as there is no incongruence (between multicast and unicast topologies), there is no need to run MBGP. They simply run PIM-SM and MSDP for redundancy.
C. Running MBGP, besides BGP, should present negligible overhead and if done together with the introduction of IP multicast will help to avoid problems later on when the network has grown and some incongruence needs to be supported. At that point, the customer may need to upgrade to MBGP throughout the network to have the transitive nature of incongruence supported correctly, and this may then become an obstacle in deployment. Therefore, MBGP should be implemented.
D. It should be determined what IP multicast applications the customer is intending to run. Source Specific Multicast (SSM) should be recommended to the customer, since it would allow them to overcome MSDP and thus reduce the complexity of IP multicast in their deployment.
E. PIM uses the unicast routing information to perform the multicast forwarding function. They can simply implement Inter AS PIM (IAPIM) to exchange the multicast routing information. This would be the easiest way to implement multicast in the current network where they leverage all the current unicast routing protocol information to populate the multicast routing table, including Enhanced Interior Gateway Routing Protocol (EIGRP), Open Shortest path First (OSPF), Border Gateway Protocol (BGP), and static routes. This approach would also cause less processing on the routers as PIM does not send and receive routing updates between routers.

Answer: B

Explanation:
The Multicast Source Discovery Protocol (MSDP) is a mechanism to connect multiple PIM sparse-mode (SM) domains. MSDP allows multicast sources for a group to be known to all rendezvous point(s) in different domains. Each PIM-SM domain uses its own rendezvous points and does not need to depend on them in other domains. A rendezvous point runs MSDP over TCP to discover multicast sources in other domains. MSDP is also used to announce sources sending to a group. These announcements must originate at the domain's Rendezvous Point. MSDP depends heavily on MP-BGP for interdomain operation. Because of this, choice B is the least effective choice since it recommends running MSDP without MGBP.

QUESTION 329
Certkiller .com runs a large IP multicast network with thousands of sources and thousands of groups and uses (S, G) entries for forwarding. The applications that are using IP multicast do not require a minimum latency and there is a sever impact on resources on routers and high memory consumption from the size of the multicast routing table.
What would be the right solution in this particular scenario which will decrease the resource issues on the routers, reduce the amount of memory needed by the large multicast routing tables and minimize the amount of state in each router?

A. Continue using (S, G) entries but add a rendezvous point (RP) in the topology
B. Use (*,G) entries with sources trees and a rendezvous point (RP) in the topology
C. Use shared trees with a rendezvous point (RP) in the topology
D. Use combination of source trees and shared trees without rendezvous point (RP) in the topology
E. Use PIM Sparse mode with (S,G) and (*,G) entries

Answer: C

Explanation:
Shortest path trees have the advantage of creating the optimal path between the source and the receivers. This guarantees the minimum amount of network latency for forwarding multicast traffic. This optimization does come with a price, though: The routers must maintain path information for each source. In a network that has thousands of sources and thousands of groups, this can quickly become a resource issue on the routers. Memory consumption from the size of the multicast routing table is a factor that network designers must take into consideration.
Unlike source trees that have their root at the source, shared trees use a single common root placed at some chosen point in the network. This shared root is called the rendezvous point (RP).Shared trees have the advantage of requiring the minimum amount of state in each router. This lowers the overall memory requirements for a network that allows only shared trees. The disadvantage of shared trees is that, under certain circumstances, the paths between the source and receivers might not be the optimal paths-which might introduce some latency in packet delivery. Network designers must carefully consider the placement of the RP when implementing an environment with only shared trees.
Incorrect Answers:
A, E: Because of the potentially large number of difference multicast sources in this particular network, the use of individual (S, G) entries should be avoided.
B, D: The simplest form of a multicast distribution tree is a source tree whose root is the source of the multicast tree and whose branches form a spanning tree through the network to the receivers. Because this tree uses the shortest path through the network, it is also referred to as a shortest path tree (SPT). The shortest-path tree requires more memory than the shared tree, but reduces delay. Because we want to reduce the amount of memory needed, these choices are incorrect.
Reference:
http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/ipmulti.htm#xtocid18

QUESTION 330
Which of the following is used to calculate the upstream neighbor interface for a multicast route entry in a PIMv2 Sparse Mode network?

A. The address of the Mapping Agent.
B. The address of a directly connected member of the multicast group.
C. The address of the currently active Rendezvous Point for the multicast group.
D. The address of the PIM neighbor that sent the PIM Join message.

E. The address of the PIM neighbor that sent the PIM Hello message.

Answer: C

Explanation:
The address of the upstream neighbor in any PIMv2 Sparse Mode network is always calculated via the neighbor closest to the Rendezvous Point (RP).
Incorrect Answers:

A. The upstream neighbor for a multicast group is calculated from the RP, not the mapping agent.
B. The directly connected multicast neighbor would only be used if it were the nearest upstream neighbor toward the RP, which will not always be the case.
D, E. The neighbor that sends the PIM messages is not necessarily going to be the same neighbor that is upstream toward the RP, so these choices are also incorrect.
Reference:
CCIE Professional Development Routing TCP/IP Volume II by Jeff Doyle and Jennifer De Haven Carroll, Page 492.

QUESTION 331
What best describes PIM functionality?

A. PIM uses the multicast routing information to perform the multicast forwarding function. PIM is a multicast routing protocol, and uses the multicast routing table to perform the RFP check. Like other routing protocols, PIM sends and receives routing updates between routers.
B. PIM uses unicast routing protocol information that populates the unicast routing table, including EIGRP, OSPF, BGP, and static routes.
C. PIM uses the multicast and unicast routing information to perform the multicast forwarding function. PIM uses the multicast routing table to perform the RPF check. Like other routing protocols, PIM does not send and receive routing updates between routers.
D. PIM uses multicast routing protocols to populate the multicast routing table, including Distance Vector Multicast Routing Protocol (DVMPR); Multicast OSPF (MOSPF), Multicast BGP

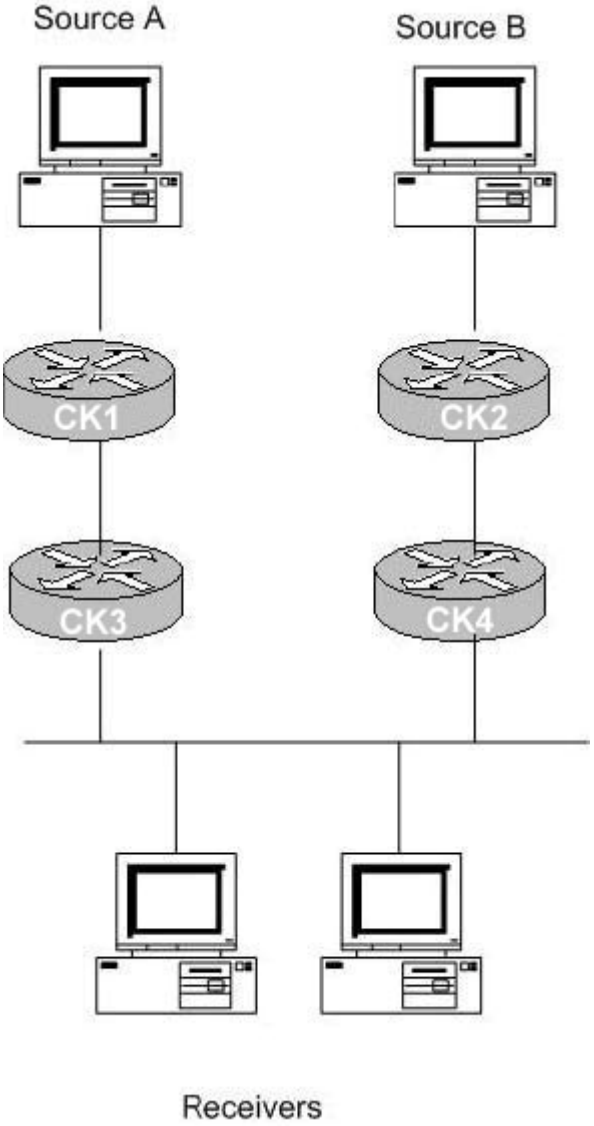
Answer: B

Explanation:
Protocol-independent multicast (PIM) gets its name from the fact that it is IP routing protocol-independent. PIM can leverage whichever unicast routing protocols are used to populate the unicast routing table, including EIGRP, OSPF, BGP, or static routes. PIM uses this unicast routing information to perform the multicast forwarding function, so it is IP protocol-independent. Although PIM is called a multicast routing protocol, it actually uses the unicast routing table to perform the reverse path forwarding (RPF) check function instead of building up a completely independent multicast routing table. PIM

does not send and receive multicast routing updates between routers like other routing protocols do.

QUESTION 332

The Certkiller network is shown in the following exhibit:



Router CK1 is configured as follows:
ip multicast-routing
interface loopback0
ip address 192.168.1.1 255.255.255.0
ip pim send-RP-announce loopback0 scope 16 group-list 1
ip pim send-RP-discovery loopback0 scope 16
access-list 1 permit 239.0.0.0 0.255.255.255
Router CK2 is configured as follows:
ip multicast-routing
interface loopback 0
ip address 192.168.11.1 255.255.255.0

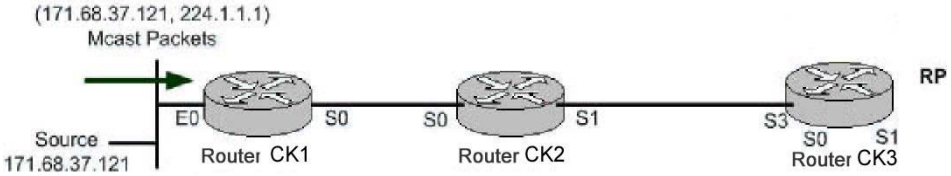
ip pim send-RP-announce loopback0 scope 16 group-list 1
ip pim send-RP-discovery loopback0 scope 16
access-list 1 permit 239.0.0.0 0.255.255.255
Which of the routers will take on the function of Mapping Agent and source Auto-RP Discovery messages to the 224.0.1.40 group?

A. Router CK1
B. Router CK2
C. Both Router CK1 and Router CK2
D. Neither, since the access lists configured do not match 224.0.1.40 multicast traffic.

Answer: C

Explanation:
If several RPs announce themselves for a multicast group range, the mapping agent chooses only one, which is the RP with the highest IP address. However, this is for selecting the RP. There is no election process for selecting the mapping agent that will source auto-RP discovery message. Both A and B will source this message.
Incorrect Answers:
A, B. If only one router were elected as a mapping agent, this would adversely affect the other source, since it would not have a mapping agent.
B. This would be the correct choice if the question were related to the RP election, and not the mapping agent election. When multiple routers contend to be the Rendezvous Point, the router with the highest IP address wins the tie-breaker and will be elected as the RP. However, there can be multiple mapping agents in the network, as would be the case in this situation.
D. All PIM-enabled routers automatically join the Cisco RP discovery group (224.0.1.40) that allows them to receive all group-to-RP mapping information. This information is distributed by an entity called RP mapping agent. Therefore, the access list is irrelevant in this case.

QUESTION 333
The Certkiller network is shown in the following exhibit:



While troubleshooting a problem with the IP multicast network, you see the following on router CK1 :
(*, 224.1.1.1), 00:00:03/00:00:00, RP 171.68.28.140, flags:
SP
Incoming interface: Serial0, RPF nbr 171.68.28.191,
Outgoing interfaces list: Null
(171.68.37.121/32, 224.1.1.1), 00:00:03/00:02:56, flags FPT
Incoming interface: Ethernet0, RPF nbr 0.0.0.0, Registering

Outgoing interface list: Null
Which of the following could be the cause of the "Registering" condition on CK1 ?
(Choose all that apply)

A. Router CK1 has incorrectly calculated the RPF interface for the source (171.68.37.121) as Serial1.
B. Router CK3 (RP) failed to send a "Register-Stop" message to Router CK2 .
C. Router CK2 is IGMP version 1 while Router CK1 is an IGMP version 2 speaker.
D. PIM is not enabled on Router CK2 .
E. Registering is the normal operational status of an operational multicast session.

Answer: B, D

Explanation:
The Rendezvous Point will need to send a "Register Stop" in order to clear the registration process, and all routers in between the RP and the multicast source must be multicast enabled.
Incorrect Answers:

A. The output shows that this is not the problem, as router CK1 is correctly calculating the incoming interface as Ethernet 0.
C. IGMP is used by hosts, and IGMP version 2 is backwards compatible with version 1.
Reference:
Developing IP Multicast Networks, (from page 259, PIM register process).

QUESTION 334
What interface command must be configured for auto-rp to function properly?

A. ip pim dense-mode
B. ip pim sparse-dense-mode
C. ip pim sparse-mode
D. ip multicast helper

Answer: B

Explanation:
RPs are used by senders to a multicast group to announce their existence and by receivers of multicast packets to learn about new senders.
Auto-RP is a feature that automates the distribution of group-to-RP mappings in a PIM network. Auto-RP has the following benefits:
• Configuring the use of multiple RPs within a network to serve different group ranges is easy.
• Auto-RP allows load splitting among different RPs and arrangement of RPs according to the location of group participants.
• Auto-RP avoids inconsistent, manual RP configurations that can cause connectivity problems.

Example configuration using Auto-RP:
ip multicast-routing
interface ethernet 0/0
ip pim sparse-dense-mode
ip pim send-rp-announce ethernet 0 scope 16 group-list 1
ip pim rp-address 10.8.0.20 1
Incorrect Answers:

A. Rendezvous points are used in sparse mode multicasts, not dense mode.
C. If router interfaces are configured in sparse mode only a static RP address must also configured.
D. This is an invalid command.

QUESTION 335
The Certkiller network is utilizing IP multicast technology. Along with this, router CK1 is configured as an anycast Rendezvous Point (RP). What best describes the functionality of Anycast RP?

A. Anycast RP is a useful application of MSDP, MBGP and SSM that configures a multicast sparse mode network to provide for fault tolerance and load sharing within a single multicast domain.
B. Only a maximum of two RPs are configured with the same IP address (for example, 10.0.0.10) on loopback interfaces. The loopback address should not be configured as a host address (with a 32-bit mask). All the downstream routers are configured so that they know that 10.0.0.10 is the IP address of their local RP.
C. IP routing automatically selects the topologically closest RP for each source and receiver. Because some sources use only one RP and some receivers a different RP, MBGP enables RPs to exchange information about active sources. All the RPs are configured to be MSDP peers of each other.
D. Each RP will know about the active sources in its own area. If RP fails, IP routing converges and backup RP would become the active RP os this areas using HSRP.
E. Anycast RP is an implementation strategy that allows load sharing and redundancy in PIM sparse mode (PIM-SM) networks by configuring two or more RPs that have the same IP asddress anda CK using Multicast Source Discovery Protocol to share active source information.

Answer: E

Explanation:
IP multicast is deployed as an integral component in mission-critical networked applications throughout the world. These applications must be robust, hardened, and scalable to deliver the reliability that users demand.
Using Anycast RP is an implementation strategy that provides load sharing and redundancy in Protocol Independent Multicast sparse mode (PIM-SM) networks. Anycast RP allows two or more rendezvous points (RPs) to share the load for source registration and the ability to act as hot backup routers for each other. Multicast Source Discovery

Protocol (MSDP) is the key protocol that makes Anycast RP possible.
The main purpose of an Anycast RP implementation is that the downstream multicast routers will "see" just one address for an RP.
Reference:
http://www.cisco.com/en/US/tech/ CK8 28/technologies_white_paper09186a00800d6b60.shtml#57583

QUESTION 336
The Certkiller network is using multicasting for corporate video training sessions. All routers in the Certkiller network are enabled for IP multicast. How are these video streaming multicast packets forwarded by these routers? (Choose all that apply)

A. When a multicast packet arrives at a router, the router performs a Reverse Path forwarding (RPF) check on the packet. If the RPF check succeeds, the packet is forwarded, otherwise, it is dropped.
B. When traffic is flowing down the source tree the router looks up the source address in the unicast routing table to determine if the packet has arrived on the interface that is on the reverse path back to the source, if the packet has arrived on the interface leading back to source, the PRF check succeeds and the packets is forward. Otherwise, it is dropped.
C. When traffic is flowing down the source tree the router looks up the source address in the multicast routing table to determine if the packet has arrived on the interface that is on the reverse path back to the source. If the packet has arrived on the interface leading back to the source, the PRF check successfully the packets is forwarded. Otherwise, it is dropped.
D. When traffic is flowing down the source tree the router looks up the source address in the multicast routing table to determine if the packet has arrived on the interface that is on the reverse path back to the source and forward path to the receiver. If the reverse path and forward path is found successfully the packet is forwarded. Otherwise, it is dropped.
E. When a multicast packet arrives at a router, the router does not have to perform an RPF check on the packet. The router looks up the source address in the unicast routing table to determine if the destination path is present. If this succeeds the packet is forwarded. Otherwise, it is dropped.

Answer: A, B

Explanation:
Multicast Forwarding
In unicast routing, traffic is routed through the network along a single path from the source to the destination host. A unicast router does not consider the source address; it considers only the destination address and how to forward the traffic toward that destination. The router scans through its routing table for the destination address and then forwards a single copy of the unicast packet out the correct interface in the direction of the destination.

In multicast forwarding, the source is sending traffic to an arbitrary group of hosts that are represented by a multicast group address. The multicast router must determine which direction is the upstream direction (toward the source) and which one is the downstream direction (or directions). If there are multiple downstream paths, the router replicates the packet and forwards it down the appropriate downstream paths (best unicast route metric)-which is not necessarily all paths. Forwarding multicast traffic away from the source, rather than to the receiver, is called Reverse Path Forwarding (RPF). RPF is described in the following section.
Reverse Path Forwarding (RPF)
PIM uses the unicast routing information to create a distribution tree along the reverse path from the receivers towards the source. The multicast routers then forward packets along the distribution tree from the source to the receivers. RPF is a key concept in multicast forwarding. It enables routers to correctly forward multicast traffic down the distribution tree. RPF makes use of the existing unicast routing table to determine the upstream and downstream neighbors. A router will forward a multicast packet only if it is received on the upstream interface. This RPF check helps to guarantee that the distribution tree will be loop-free.
RPF Check
When a multicast packet arrives at a router, the router performs an RPF check on the packet. If the RPF check succeeds, the packet is forwarded. Otherwise, it is dropped.
For traffic flowing down a source tree, the RPF check procedure works as follows:
1. The router looks up the source address in the unicast routing table to determine if the packet has arrived on the interface that is on the reverse path back to the source.
2. If the packet has arrived on the interface leading back to the source, the RPF check succeeds and the packet is forwarded.
3. If the RPF check in Step 2 fails, the packet is dropped.
Incorrect Answers:
C, D. The RPF lookup is done on the unicast routing table, not the multicast routing table.
E. RPF checks must be done in order to maintain a loop free multicast topology.

QUESTION 337
While troubleshooting an IP multicast issue, you issue the "show ip mroute" command:
Router#show ip mroute 236.2.3.23
IP Multicast Routing table
Flags: D - Dense, S - Sparse, C - Connected, L - Local, P - Pruned
R - RP-bit set, F - Register flag, T - SPT-bit set, J - JOIN SPT
X - Proxy Join Timer Running
Timers: uptime/Expires
Interface state: Interface, next-hop or VCD, State/Mode
(*, 236.2.3.23), 00:09:49/00:04:23 RP 10.1.24.1, flags: SC
Incoming interface: Serial1.708, RPF nbr 10.1.20.2
Outgoing interface list:

Ethernet0, Forward/Sparse, 00:09:50/00:04:12
You are trying to trace this multicast address back to the source of this multicast shared tree. Based on the information above, what is the IP address of the upstream neighbor?

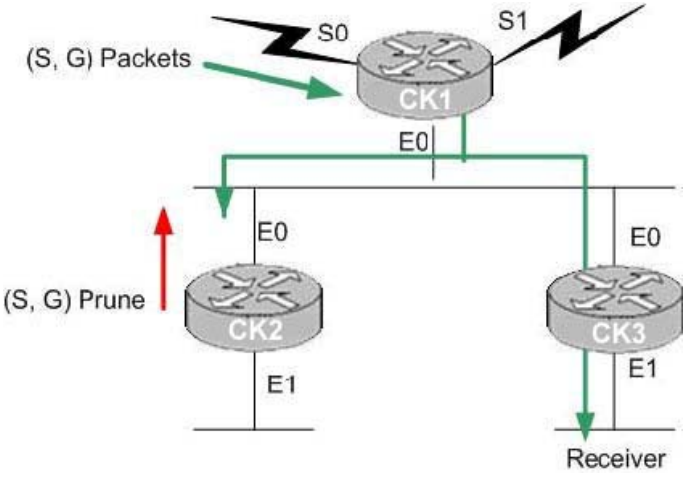
A. 10.1.24.1
B. 10.1.24.2
C. 10.1.20.2
D. 10.1.20.3
E. 236.2.3.23

Answer: C

Explanation:
The upstream neighbor is the IP address associated with the Reverse Path Forwarding Neighbor (RPF nbr), which is 10.1.20.2 in this case.
Incorrect Answers:

A. 10.1.24.1 is the IP address of the Rendezvous Point in this example, not the upstream neighbor.
E. 236.2.3.23 is the IP address of the IP multicast session.

QUESTION 338
Part of the Certkiller IP multicast network is shown below:



Router CK2 sends a (S, G) Prune message to the LAN segment. Will this cause router CK1 to stop the multicast flow to router CK3 ?

A. No. After seeing the Prune message from router CK2 , Router CK3 will send a Join message to router CK1 to override the Prune.
B. No. After seeing the Prune message from router CK2 , Router CK3 will send a Join message to router CK2 to override the Prune.
C. No. After seeing the Prune message from router CK2 , Router CK3 will send a Graft message to router CK2 to override the Prune from router CK2 .
D. Yes. Router CK3 will need to send a new Join message to re-join the multicast

session.
E. It depends on whether the routers are IGMP version 1 or IGMP version 2.

Answer: A

Explanation:
After a prune, the router waits for joins, if none arrive, then the router drops the Group. In this case, router CK1 will hear the Join message from CK3 to prevent the flow of multicast traffic from being cut off to CK3 .
Incorrect Answers:
B. Router CK2 will send a Join message to the upstream neighbor, which is CK1 in this case, not CK2 .
C. No graft messages will be sent in this case.
E. IGMP versions are irrelevant.

QUESTION 339
What is the primary purpose for the RPF check in IP multicast networks?

A. To establish reverse flow path of multicast traffic from the receiver to the source.
B. To prevent multicast traffic looping through the network.
C. To determine interfaces inclusion in the outgoing interface list.
D. To prevent the movement of unauthorized multicast traffic.

Answer: B

Explanation:
Reverse Path Forwarding (RPF) provides loop avoidance. It is an algorithm used to forward multicast packets. The RPF rules are: If a router receives a datagram on an interface that it uses to send unicast packets to the source of that packet, then the packet has arrived on the RPF interface. If the packet arrives on the RPF interface, a router forwards the packet out the interfaces that are present in the outgoing interface list of a multicast routing table entry. If the packet does not arrive on the RPF interface, the packet is silently discarded.

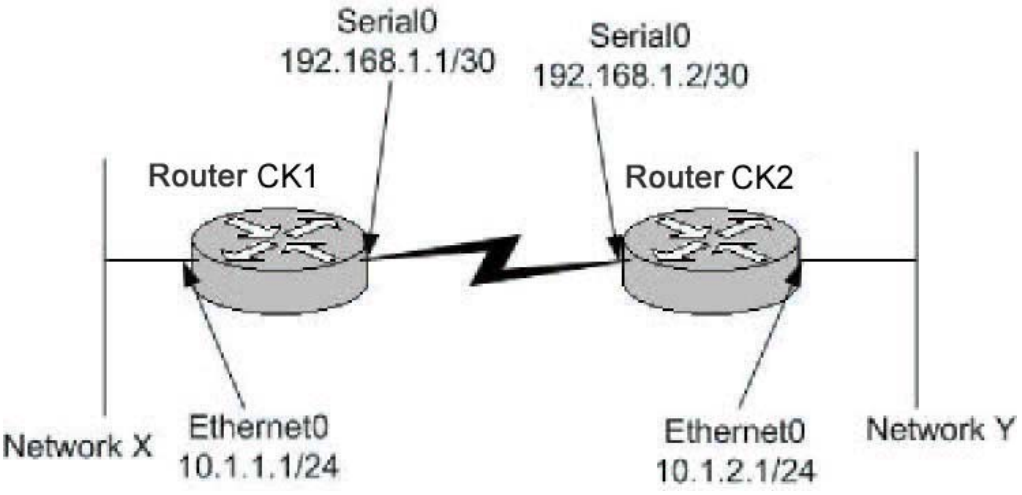
QUESTION 340
Which Multicast Protocols use Reverse Path Forwarding (RPF) information when sending multicast traffic streams to the receivers within the Certkiller network? (Select two)

A. DVMRP
B. PIM Sparse Mode
C. PIM Dense Mode
D. Multicast OSPF
E. PIM Sparse-Dense Mode

Answer: A, C

Explanation:
DVMRP uses a technique known as Reverse Path Forwarding. When a router receives a packet, it floods the packet out of all paths except the one that leads back to the packet's source. Doing so allows a data stream to reach all LANs (possibly multiple times). If a router is attached to a set of LANs that do not want to receive a particular multicast group, the router can send a "prune" message back up the distribution tree to stop subsequent packets from traveling where there are no members.
Dense-mode PIM uses Reverse Path Forwarding and looks a lot like DVMRP. The most significant difference between DVMRP and dense-mode PIM is that PIM works with whatever unicast protocol is being used; PIM does not require any particular unicast protocol.
Incorrect Answers:
B. Sparse-mode PIM is optimized for environments where there are many multipoint data streams. Each data stream goes to a relatively small number of the LANs in the internetwork. For these types of groups, Reverse Path Forwarding techniques waste bandwidth. Sparse-mode PIM works by defining a Rendezvous Point. When a sender wants to send data, it first sends to the Rendezvous Point.
D. Multicast OSPF (MOSPF) was defined as an extension to the OSPF unicast routing protocol. OSPF works by having each router in a network understand all of the available links in the network. Each OSPF router calculates routes from itself to all possible destinations.
MOSPF works by including multicast information in OSPF link state advertisements. An MOSPF router learns which multicast groups are active on which LANs.
MOSPF builds a distribution tree for each source/group pair and computes a tree for active sources sending to the group. The tree state is cached, and trees must be recomputed when a link state change occurs or when the cache times out.

QUESTION 341
The Certkiller network consists of network X and Y that are connected via Router CK1 and Router CK2 . The Certkiller network is shown in the following exhibit:



You wish to set up an IPSec VPN between routers CK1 and CK2 . Now, which of the following crypto access-lists must be configured on Router CK1 in order to send

LAN to LAN traffic across the encrypted VPN tunnel?

A. access-list 101 permit ip host 192.168.1.1 host 192.168.1.2
B. access-list 101 permit ip 10.1.1.0.0.0.0.255 host 192.168.1.2
C. access-list 101 permit ip 10.1.1.0.0.0.0.255 10.1.2.0.0.0.0.255
D. access-list 101 permit ip 10.1.1.0.0.0.0.255 10.1.2.0.0.0.0.255
access-list 101 permit ip 10.1.2.0.0.0.0.255 10.1.1.0.0.0.0.255
E. access-list 10 permit ip 10.1.1.0.0.0.0.255 10.1.2.0.0.0.0.255

Answer: C

Explanation:
The format of the command for configuring IPSec is shown below:
access-list 101 permit "Source Network Addresses on X" "Destination Network Subnets on Y"
Incorrect Answers:

A. You define the traffic that is to be sent over the encrypted tunnel, which is all traffic from subnet X to subnet Y, not the serial interfaces.
B. This would only be useful for traffic going from subnet X to the serial interface of CK2 , not for LAN to LAN traffic.
D. You only need to specify the traffic from X to Y on router CK1 , as this is the traffic that will be encrypted. The second line of this access list would need to be applied to router CK2 only.
E. Access list 100 or higher must be used, as this is an extended access list.

QUESTION 342
You try to perform a traceroute to an Internet destination from your PC, but the Traceroute hangs when it reaches the router. Currently, there is an inbound accesslist applied to the serial interface on the Internet router with a single line: "accesslist 101 permit tcp any any".
What access-list entry may you need to be added to the access-list in order to get traceroute to work?

A. access-list 101 permit tcp any any
B. access-list 101 permit icmp any any time-exceeded
access-list 101 permit icmp any any port-unreachable
C. access-list 101 permit icmp any any time-exceeded
access-list 101 permit icmp any any echo-reply
D. access-list 101 permit icmp any any echo
access-list 101 permit icmp any any net-unreachable
E. access-list 101 permit udp any any
access-list 101 permit icmp any any protocol-unreachable

Answer: B

Explanation:
Port-unreachable and time-exceeded are the ICMP messages that Cisco traceroute uses, so these ports must be permitted to allow the traceroute to go through.
Incorrect Answers:
A, C, D, E. None of these options give us both the time-exceeded and port-unreachable ICMP ports that need to be opened in the access list to allow traceroute through.

QUESTION 343
You are writing an access list on a router to prevent users on the Ethernet LAN connected to Ethernet interface 0 from accessing a TFTP server (10.1.1.5) located on the LAN connected to Ethernet interface 1. Which of the following would be the correct configuration change if applying the ACL inbound on the Ethernet 0 interface?

A. access-list 1 deny tcp 0.0.0.0 255.255.255.255 10.1.1.5. 0.0.0.0 eq 69
B. access-list 100 deny tcp 0.0.0.0 255.255.255.255 10.1.1.5. 0.0.0.0 eq 69
C. access-list 100 deny tcp 0.0.0.0 255.255.255.255 10.1.1.5. 0.0.0.0 eq 68
D. access-list 100 deny tcp 10.1.1.5 0.0.0.0 0.0.0.0 255.255.255.255 eq 69
E. access-list 100 deny tcp 0.0.0.0 255.255.255.255 10.1.1.5. 0.0.0.0 eq port 68
F. None of the above

Answer: F

Explanation:
TFTP uses UDP port 69, so choice F would be the correct access list entry. An extended access list is needed when filtering based on source and destination address, as well as layer 4 port information. However, all of the choices listed are filtering based on TCP ports, and since TFTP uses UDP none are correct.
Incorrect Answers:

A. This is an invalid command, since using source and destination information along with port numbers requires an extended access list.
B. This would be the correct choice if UDP was specified as the transport layer protocol instead of TCP.
C, E. In addition to incorrectly specifying TCP instead of UDP, the port number of 68 is also incorrect.
D. The order of the IP address arrangement is incorrect. This access list will block all TCP port 69 traffic sourced from the TFTP server, not destined to it. This choice is also incorrectly using TCP instead of UDP.

QUESTION 344
You wish to allow only telnet traffic to a server with an IP address 10.1.1.100. You add the following access list on the router:
access-list 101 permit tcp any host 10.1.1.100 eq telnet
access-list 101 deny ip any any
You then apply this access list to the inbound direction of the serial interface.

Which types of packets will be permitted through the router after this change?
(Choose all that apply)

A. A non-fragment packet en route to the server on port 21.
B. A non-initial fragment packet en route to the server on port 23.
C. A non-initial fragment packet passing through to another host that's not 10.1.1.100.
D. A non-initial fragment packet going to the server on port 21.
E. An initial-fragment or non-fragment packet en route to the server on port 23.

Answer: B, D, E

Explanation:
B, E: Telnet (port 23) is permitted by ACL.
D: A non initial fragment destined to the server will indeed be permitted. The reason for this is that the first line of ACL has some L3 and some L4 information which needs to be matched for a packet to be permitted.
Since a non initial frame matches the L3 information it will pass the layer 3 check. Moreover, since it is a non initial frame it will contain no L4 information in it. Hence the packet will be permitted.
Incorrect Answers:
A, C. For non-initial fragments, only telnet packets going to the 10.1.1.100 address will be allowed.

QUESTION 345
The following access list is configured on router CK1 :
access-list 100 deny udp 0.0.0.0 255.255.255.255 10.1.1.5 0.0.0.0 eq 69
What does the access-list accomplish?
Note: Assume that all other traffic is permitted with a permit all statement at the end of the access list.

A. It blocks all incoming traffic arriving on E0 from accessing any FTP server.
B. It blocks all incoming traffic, except traffic addresses to 10.1.1.5, from accessing any FTP servers.
C. It blocks all incoming traffic arriving on E0 from accessing the FTP server with an address of 10.1.1.5.
D. It blocks all incoming UDP traffic.
E. This access list is trying to block traffic from accessing a TFTP server. However, this is only half of what is needed to accomplish that. You would also need the following:
access-list deny tcp 0.0.0.0 255.255.255.255 10.1.1.5 0.0.0.0 eq 69

Answer: E

Explanation:
The access list shown above is designed to block UDP port 69 traffic from all sources to

the destination device with the IP address of 10.1.1.5. Port 69 is used for TFTP. Both TCP and UDP ports are used with the TFTP application, so in order to block all TFTP traffic another access list block TCP port 69 should also be applied.
Incorrect Answers:
A, B: TFTP traffic is being blocked, not FTP. In addition, this traffic is being blocked only for traffic destined to a single server, not all traffic.
C. TFTP uses port 69, not FTP. FTP uses ports 20 and 21. Since TFTP uses both TCP and UDP, both ports will need to be filtered.
D. Only UDP port 69 traffic destined to a single server is being filtered, not all UDP traffic.
Reference: http://www.ibiblio.org/security/articles/ports.html

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QUESTION 346
Private VLANs are set up in a Cisco switch for 3 ports as shown below:
tamer (enable) show pvlan
Primary Secondary Secondary-Type Port
------- --------- -------------- -------
500 501 community 5/37
500 502 isolated 5/38-39
tamer (enable) show pvlan mapping
Port Primary Secondary
---- -------- ---------
15/1 500 501-502
interface vlan 500
ip address 10.10.10.2 255.255.255.0
ip proxy-arp
A PC called TKHost is plugged in to port 5/38, using ip address 10.10.10.137/24.
Based on the information above, TKHost has which of the following?

A. Layer 3 connectivity with Port 5/37 and port 5/39.
B. Layer 2 connectivity with Port 5/39 but not with port 5/37.
C. Layer 3 connectivity with Port 5/39 but not with port 5/37.
D. Layer 2 connectivity with Port 5/37 and port 5/39.
E. None of the above.

Answer: A
Private VLAN ports can be one of the following:
• Promiscuous- A promiscuous port can communicate with all interfaces, including the isolated and community ports within a PVLAN.
• Isolated- An isolated port has complete Layer 2 separation from the other ports within the same PVLAN, but not from the promiscuous ports. PVLANs block all traffic to isolated ports except traffic from promiscuous ports. Traffic from isolated port is forwarded only to promiscuous ports.
• Community- Community ports communicate among themselves and with their promiscuous ports. These interfaces are separated at Layer 2 from all other interfaces in other communities or isolated ports within their PVLAN.

In this case TKHost is in an isolated VLAN, so it will have complete layer 2 separation from all other ports. However, there is nothing preventing routing from taking place, and with inter-vlan routing TKHost will have layer 3 connectivity to the other ports.

QUESTION 347
The Certkiller network administrator wants to authenticate LAN users attached to ports on the existing Catalyst 6509 switch. In order to do this, the following is configured:
aaa new-model
username myname password abc123
aaa authentication ppp access-dotx local
aaa authentication login access1 local
aaa authentication dotlx default radius
dotlx system-auth-control
tacacs-server host 192.168.1.15 key qvert123
radius-server host 192.168.2.27 key poiuy098
!
interface fastethernet 5/1
dotlx port control auto
What is the effect of the configuration on users attempting to access FastEthernet 5/1?

A. They will be authenticated via ppp using the local database.
B. The will be authenticated via ppp using the server at IP address 192.168.1.15.
C. They will be authenticated via ppp using the server at IP address 192.168.2.27
D. They will be authenticated via 802.1x using the local database.
E. They will be authenticated via 802.1x using the server at IP address 192.168.1.150.
F. They will be authenticated via 802.1x using the server at IP address 192.168.2.27.

Answer: F

Explanation:
When you enable 802.1X port-based authentication, note the following syntax information:
• To create a default list that is used when a named list is not specified in the authentication command, use the default keyword followed by the methods that are to be used in default situations. The default method list is automatically applied to all interfaces.
• Enter at least one of these keywords:
- group radius-Use the list of all RADIUS servers for authentication.
- none-Use no authentication. The client is automatically authenticated by the switch without using the information supplied by the client.
This example shows how to enable AAA and 802.1X on Fast Ethernet port 5/1:
Router# configure terminal
CK1 (config)# aaa new-model

```
CK1 (config)# aaa authentication dot1x default group radius
CK1 (config)# dot1x system-auth-control
CK1 (config)# interface fastethernet 5/1
CK1 (config-if)# dot1x port-control auto
CK1 (config-if)# end
```

In this example, the default 802.1x authentication method is configured to be RADIUS, and the RADIUS server is located at IP address 192.168.2.27.

QUESTION 348

For security reasons, you wish to maintain a degree of logical separation between your servers and the rest of the LAN. The servers should be able to see broadcasts and multicasts only from each other and the default gateway. They should not see this type of traffic from other LAN devices. What kind of ports should be configured for these servers on the Catalyst switch?

A. Span Ports.
B. Private Ports.
C. Community Ports.
D. Isolated Ports.
E. Promiscuous Ports.
F. Access Ports.

Answer: C

Explanation:
Private VLANs provide Layer-2 isolation between ports within the same private VLAN on the Catalyst 6000 family switches. Ports belonging to a private VLAN are associated with a common set of supporting VLANs that are used to create the private VLAN structure.
There are three types of private VLAN ports: promiscuous, isolated, and community. Community ports communicate among themselves and with their promiscuous ports. These ports are isolated at Layer 2 from all other ports in other communities or isolated ports within their private VLAN. They communicate directly only with each other and their default gateway.
Incorrect Answers:

A. SPAN ports are used for network analyzers to capture data packets. They do not provide any level of security between users.
B. This question is an example of a type of private VLAN. However, there is no notion of a private port.
D. A promiscuous port communicates with all other private VLAN ports and is the port used to communicate with devices such as routers, LocalDirector, backup servers, and administrative workstations.
E. An isolated port has complete Layer 2 separation from all other ports within the same private VLAN with the exception of the promiscuous port.
F. Access ports do not exist.

QUESTION 349
Based on the VLAN Access Control List (VACL) configuration below, how many total mask entries are required in the Ternary Content Addressable table?
set security acl ip Control_Access permit host 100.1.1.100
set security acl ip Control_Access deny 100.14.11.0 255.255.255.0
set security acl ip Control_Access permit host 172.16.84.99
set security acl ip Control_Access deny 177.163.4.0 255.255.255.128
set security acl ip Control_Access permit host 72.16.82.3
set security acl ip Control_Access deny host 175.17.1.4
set security acl ip Control_Access permit host 191.169.99.150
set security acl ip Control_Access deny host 191.169.230.1

A. 2
B. 3
C. 4
D. 6
E. 8

Answer: B

Explanation:
There will be 3: One to cover the 6 separate host (255.255.255.255) masks, one for the 255.255.255.128 mask, and the third for the 255.255.255.0 mask.
Ternary CAM (TCAM) is a hardware piece of memory designed for rapid table lookups by the ACL engine on the PFC and PFC2. The ACL engine performs ACL lookups based on packets passing through the switch's hardware. The result of the ACL engine lookup into the TCAM determines how the switch handles a packet. For example, the packet might be permitted or denied. The TCAM has a limited number of entries that are populated with mask values and pattern values.
Incorrect Answers:
A, C. In the example above there are 3 different subnet masks, not 2 or 4.
D. Although there are 6 different entries with host masks (255.255.255.255), we need to account for the other two mask entries.
E. Although there are a total of 8 VLAN access control entries in this example, there are only a total of 6 of them share a single mask entry and will be counted as only one in the TCAM.
References:
For a detailed discussion on TCAM refer the link below.
http://www.cisco.com/en/US/products/hw/switches/ps708/products_white_paper09186a00800c9470.shtml

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QUESTION 350
With regard to the use of VLAN Access Control Lists (VACL) on a Catalyst 6500 series switch, which of the following are true statements? (Choose all that apply.)

A. VACLs can be used to forward, drop, and redirect traffic based on Layer 2 and Layer 3 information.
B. VACLs cannot be used when using QoS on the switch.
C. VACLs can be used together with router interface access lists.
D. VACLs can be used for traffic that is being Layer 3 switched.
E. VACLs cause extra latency for traffic passing through the switch.

Answer: A, C, D

Explanation:
VACLs are similar to Router/IOS ACLs in terms of their definition, but they are used by Catalyst 6000 family switches to access control all packets it switches, including packets bridged within a VLAN. It can be used to act on layer 2 and 3 information, and can be used in conjunction with RACL's.
Incorrect Answers:
B. VACLs can be used when using QoS on the switch. VACLs cause extra latency for traffic passing through the switch. For a detailed discussion on VACLs please go through the link below.
E. VACLs can be configured on a Catalyst 6500 at L2 without the need for an additional router. They are enforced at wire speed so there is no performance penalty in configuring VACLs on a Catalyst 6500. Since the lookup of VACLs is performed in hardware, regardless of the size of the access list, the forwarding rate remains unchanged.
Reference:
http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/sw_6_3/confg_gd/acc_list.htm#1052397

QUESTION 351
A new Catalyst 6500 running Cat OS was recently installed in the Certkiller network. In order to increase the security of your LAN, you configure this Catalyst switch using port security. What statement is true about port security?

A. Port security can be configured on a trunk port.
B. Prot security can be configured on a SPAN destination port.
C. If a security violation occurs, the Link LED for that port turns orange, and a linkdown trap is sent to the Simple Network Management Protocol (SNMP) manager.
D. Port security can be configured on a SPAN source port.
E. Static CAM entries can be configured on a port configured with port security.
F. Ports that were disabled due to security violations will be automatically reenabled when the host with the valid MAC address is re-connected.

Answer: C

Explanation:
Port Security Configuration Guidelines
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_chapter09186a008007fa13.html#xtocid256011
Incorrect Answers:
A, B, D, E. These incorrect answers can be summarized in the following statements:
• You cannot configure port security on the trunk port of a 6500 with Cat OS.
• You cannot enable port security on a SPAN destination port of the 6500 with Cat OS.
• You cannot configure dynamic, static, or permanent CAM entries on a secure port.
• When you enable port security on a port, any static or dynamic CAM entries associated with the port are cleared; any currently configured permanent CAM entries are treated as secure.
F. When a port becomes disabled due to a security violation, the switch port can only be enabled again after manual intervention.
Reference:http://www.cisco.com/en/US/products/hw/switches/ps708/products_configuration_guide_chapter09186a008007fb16.html

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QUESTION 352
After properly configuring multiple VLANs, a The Certkiller network has decided to increase the security of its VLAN environment. Which of the following can be done on a switched network to enhance security measures? (Choose all that apply).

A. If a port is connected to a "Foreign" device, make sure to disable CDP, DTP, PagP, UDLD, and any other unnecessary protocol, and to enable Uplinkfst/BPDU guard on it.
B. Enable the rootguard feature to prevent a directly or indirectly connected STPcapable device to affect the location of the root bridge.
C. Configure the VTP domains appropriately or turn off VTP altogether if you want to limit or prevent possible undesirable protocol interactions with regard to network-wide VLAN configuration.
D. Disable all unused ports and place them in an unused VLAN to avoid unauthorized access.
E. Set the native VLAN ID to match the port VLAN ID (PVID) of any 802.1Q trunks to prevent spoofing from one VLAN to another.

Answer: B, C, D

Explanation:

The root guard feature is designed to provide a way to enforce the root bridge placement in the network, and to prevent unauthorized devices from becoming the root.
Turning off VTP if it is not used is generally a good idea, as a new switch with a higher ID value that is inserted into the VTP domain can be used to modify and delete all of the VLANs in an existing network.
It is also a best practice to disable and isolate all unused ports, as this will prevent unauthorized users from entering the LAN, and plugging into the network via an unused port.
Incorrect Answers:

A. UDLD is a useful feature that provides no security risks. It is recommended to have this feature enabled. BPDU guard and root guard are similar, but their impact is different. BPDU guard disables the port upon BPDU reception if portfast is enabled on the port. This effectively denies devices behind such ports to participate in STP.
E. If a user's native VLAN I D is the same as the port VLAN ID (PVID) of the 802.1Q trunk, then the user can send frames from his VLAN and have them "hop" to other VLANs. This weakness is part of the 802.1Q specification and does not apply to Cisco ISL trunking ports.
The workaround for this threat is to ensure that every 802.1Q trunking port has a PVID, or native VLAN ID, that is unique throughout the campus network.

QUESTION 353
Passwords for Enterprise guests should normally be:

A. Easy to remember
B. Time limited to the guest visit
C. Be the same as the username
D. Be at least 10 characters
E. Contain uppercase letters

Answer: B

Explanation:
When guest access is required for visitors to the enterprise, the most important security measures that should be taken is to ensure that the guest user access is restricted to only the network resources that are needed, and for the passwords to only be active for the duration of the visit. This will prevent future unauthorized access into the network using these passwords.
Incorrect Answers:

A. Generally, passwords should be somewhat easy to remember for the users, while remaining secure. It is more important to use passwords that are not easily guessed than to provide for an easy to remember one.
C. This should never be done, since it is so easily guessed.
D. Although having enough characters to provide for a secure password is essential, secure passwords can be created with the use of fewer than 10 characters. For regular

users, enforcing a rule of long passwords may be preferred, it is generally not necessary for guest access.
E. Although passwords should indeed contain a mix of lower and upper case letters, as well as numerical and special characters, this is not necessarily a requirement for guest users.

QUESTION 354
When segmenting guest traffic across the enterprise wireless network you should take which of the following approaches?

A. Always give guest traffic higher priority
B. Always give guest traffic lower priority
C. Separate guest traffic as close to the edge as possible
D. Use a firewall
E. Use Access Lists
F. None of the above

Answer: C

Explanation:
You should consider the following implementation criteria before deploying wireless VLANs:
• Use policy groups (a set of filters) to map wired polices to the wireless side.
• Use IEEE 802.1x to control user access to VLANs by using either RADIUS-based VLAN assignment or RADIUS-based SSID access control.
• Use separate VLANs to implement different classes of service.
• Adhere to any other criteria specific to your organization's network infrastructure.
Based on these criteria, you could choose to deploy wireless VLANs using the following strategies:
• Segmentation by user groups-you can segment your WLAN user community and enforce a different security policy for each user group. For example, you could create three wired and wireless VLANs in an enterprise environment for full- and part-time employees, as well as providing guest access.
• Segmentation by device types-You can segment your WLAN to enable different devices with different security levels to access the network. For example, you have handheld devices that support only 40- or 128-bit static WEP coexisting with other devices using IEEE 802.1x with dynamic WEP in the same ESS. Each of these devices would be isolated into separate VLANs.
For segmenting guest users from the rest of the network, the guest VLAN traffic should be segmented at the network edge, before the traffic reaches the core of the network. This is generally done at the VLAN level, before guest traffic reaches a router access list or firewall.

QUESTION 355
What are the differences between TACACS+ and RADIUS? (Choose all that apply)

A. TACACS+ uses UDP while RADIUS uses TCP for transport.
B. RADIUS and TACACS+ encrypts the entire body of the packet.
C. RADIUS is an IETF standard, while TACACS+ is not.
D. TACACS+ sends a separate request for authorization, while RADIUS uses the same request for authentication and authorization.
E. RADIUS offers multi-protocol support while TACACS+ does not.

Answer: C, D

Explanation:
• RADIUS uses UDP while TACACS+ uses TCP.
• RADIUS encrypts only the password in the access-request packet, from the client to the server. The remainder of the packet is unencrypted while TACACS+ encrypts the entire body of the packet but leaves a standard TACACS+ header.
• RADIUS combines authentication and authorization while TACACS+ uses the AAA architecture, which separates authentication, authorization, and accounting.
• TACACS+ offers multiprotocol support while RADIUS does not support AppleTalk Remote Access (ARA) protocol, NetBIOS Frame Protocol Control protocol, Novell Asynchronous Services Interface (NASI) and X.25 PAD connection.
• RADIUS does not allow users to control which commands can be executed on a router and which cannot. Therefore, RADIUS is not as useful for router management or as flexible for terminal services. TACACS+ on the other hand does allow users to control the authorization of router commands on a per-user or per-group basis.
Reference:
TACACS+ and RADIUS Comparison, http://www.cisco.com/warp/public/480/10.html

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QUESTION 356
You want to prevent all telnet access to your Cisco router. In doing so, you type in the following:
line vty 0 4
no login
password cisco
Will this prevent all telnet access to the router as desired?

A. Yes. The "no login" command disables all telnet access, even though the password is cisco.
B. Yes. The VTY password is needed but not set, so all access will be denied.
C. No. The VTY password is cisco.
D. No. No password is needed for VTY access.
E. No. The password is login.

Answer: D

Explanation:

"No Login" will not prompt users for any initial login, allowing them to access the router without a password.

QUESTION 357
A new TACACS+ server is configured to provide authentication to a NAS for remote access users. A user tries to connect to the network and fails. The NAS reports a FAIL message. What could be the problem? (Choose all that apply).

A. The TACACS+ service is not running on the server.
B. The password for this user is incorrect.
C. The username does not exist in the TACACS+ user database.
D. The NAS server lost its route to the TACACS+ server.
E. The TACACS+ server is down.

Answer: B, C

Explanation:
A FAIL condition is a result of incorrect username/password information. It means that an authentication request was successfully received, but that it had failed.
A FAIL response is significantly different from an ERROR. A FAIL means that the user has not met the criteria contained in the applicable authentication database to be successfully authenticated. Authentication ends with a FAIL response. An ERROR means that the security server has not responded to an authentication query. Because of this, no authentication has been attempted. Only when an ERROR is detected will AAA select the next authentication method defined in the authentication method list.
Reference:
http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/secur_c/scprt1/scdaaa.htm
Incorrect Answers:
A, D, E. These would have resulted in an ERROR condition instead of a FAIL condition. With an error, the NAS would query the next authentication method.

QUESTION 358
While setting up remote access for your network, you type in the "aaa new-model" configuration line in your Cisco router. Which authentication methods have you disabled as a result of this change? (Choose all that apply.)

A. RADIUS
B. RADIUS+
C. Extended TACACS (XTACACS)
D. TACACS
E. TACACS+
F. Kerberos

Answer: C, D

Explanation:
When you enable AAA, you can no longer access the commands to configure the older deprecated protocols, TACACS or Extended TACACS. If you decided to use TACACS or Extended TACACS in your security solution, do not enable AAA.

QUESTION 359
With regard to IPSec, which of the following are true?

A. IPSec supports Multicast.
B. IPSec does not support Multicast.
C. IPSec supports Multicast in IOS 12.x or later.
D. IPSec supports Multicast in IOS 10.x or earlier.
E. IPSec supports Multicast only in combination with GRE tunnels.

Answer: B

Explanation:
IPSec does not support multicast, as secure IPSec tunnels are always between unicast hosts.
Incorrect Answers:
C, D, E. Cisco does not support IPSec protection for multicast traffic on any IOS release.

QUESTION 360
You are setting up a secure connection to another company's device. You are not certain that they are using Cisco so you want your router to manually exchange the RSA public keys between each other. How should you configure your router?

A. Use IPSec with RSA signatures
B. Use IPSec with RSA encrypted nonces
C. Use IPSec with manual keying
D. Use Cisco Encryption Technology
E. Use IPSec using preshared keys
F. Use IPSec using RSA authentication

Answer: C

Explanation:
Manual keying is usually only necessary when configuring a Cisco device to encrypt traffic to another vendor's device, which does not support IKE. If IKE is configurable on both devices, it is preferable to using manual keying.
Incorrect Answers:
A, B, F. In this question we want the keys to be exchanged manually, so this not the best choice.
E. Preshared keys are static keys that do not change, but they can not be keyed manually.
Reference:
Cisco - "Configuring IPSec Manual Keying between Routers"

QUESTION 361
Which of the following are security services provided by IPSec?

A. Data integrity
B. Data origin authentication
C. Data confidentiality
D. Protection for multicast/broadcast traffic
E. Anti-replay

Answer: A, B, C, and E

Explanation:
Data integrity, data origin authentication, data confidentiality, and protection from replay are all security features and functions of IPSec
Incorrect Answers:
D. IPSec provides no security against multicast and broadcast traffic. In fact, IPSec does not support multicast traffic.

QUESTION 362
You wish to change the IKE policies of your IPSec configuration in your site to site router VPN. Which of the following are valid ISAKMP policy parameters that can be changed in the configurations?

A. Security Association's lifetime
B. Encryption algorithm
C. Hash algorithm
D. Authentication method
E. Diffie-Hellman group identifier
F. All of the above
G. None of the above

Answer: F
There are five parameters to define in each IKE policy:

Parameter	**Accepted Values**	**Keyword**	**Default Value**
encryption algorithm	56-bit DES-CBC	**des**	56-bit DES-CBC
hash algorithm	SHA-1 (HMAC variant) MD5 (HMAC variant)	**sha** **md5**	SHA-1
authentication method	RSA signatures RSA encrypted	**rsa-sig** **rsa-encr**	RSA signatures

	nonces pre-shared keys	**pre-share**	
Diffie- Hellman group identifier	768-bit Diffie-Hellman or 1024-bit Diffie-Hellman	**1** **2**	768-bit Diffie-Hellman
security association's lifetime			

QUESTION 363
Unauthorized access to Cisco devices can be prevented through different privilege level settings. How many of these privilege levels exist?

A. 5
B. 16
C. 4
D. 0
E. 15

Answer: B

Explanation:
There are 16 privilege-levels (0 to 15, inclusive).
Incorrect Answers:

A. This is the default number of vty sessions that can be placed on a router for remote telnet access (vty levels 0-4, inclusive).
E. The highest level is level 15, but we must also count the lowest level (level 0) for a total of 16.

QUESTION 364
Router CK1 has been configured for authentication as shown in the following display:
enable secret 483924
!
aaa new-model
username myname password abc123
aaa authentication login default enable
aaa authentication login access1 local
aaa authentication login access2 radius tacacs+
aaa authentication login access3 tacacs+ local

tacacs-server host 192.168.1.15 key qwert123
radius-server host 192.168.2.27 key poiuy098
!
Line console 0
login authentication access3
!
line vty 0 4
password dfgh456
login
What method is being used to secure the console port of this router?

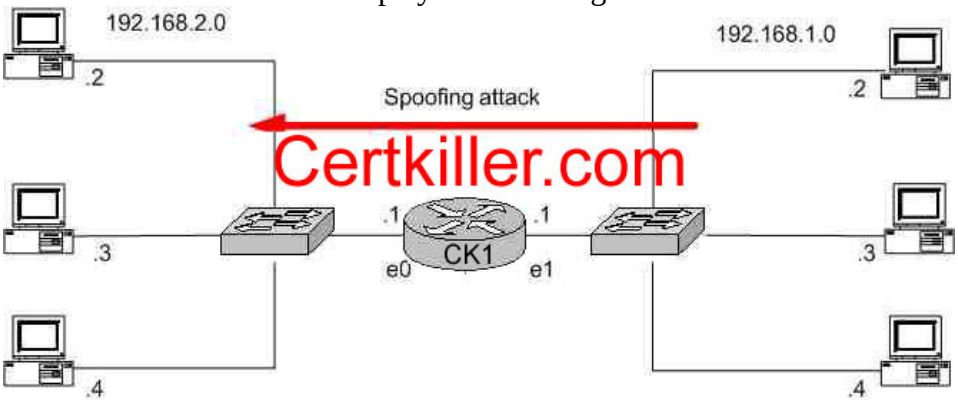
A. Authentication is being done using the local database.
B. Authentication is being done using the login password dfgh456.
C. Authentication is being done using the enable password as a default
D. Authentication is being done using the server at IP address 192.168.1.15. If a connection to that server fails, the local database will be used.
E. Authentication is being done using the server at IP address 192.168.2.27

Answer: D

Explanation:
The router is using the keyword access3 for authentication for the console port. Access3 points to two different methods for authentication; the first is TACACS+ which is located at 192.168.1.15. If the authentication connection to the server fails, then the local database will be used as a backup.
Incorrect Answers:

A. Based on the configuration file above, TACAS+ is the primary authentication method and the local database is to only be used as a backup method.
B. This is the password that is to be used for Telnet access, not the console password.
C. The enable password is not used, since the login authentication information is taken from the "access3" keyword.
E. This is the IP address of the RADIUS server, not the TACACS+ server.

QUESTION 365
The Certkiller Network is displayed in the diagram below:



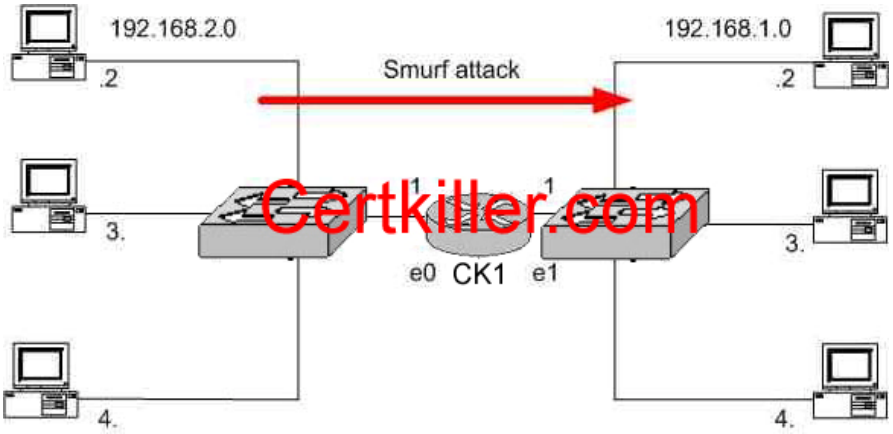
You want to block all IP spoofing attacks that originate on the 192.168.1.0 network using a spoofed address outside the 192.168.1.0 range form being sent into the 192.168.2.0 network. However, all other traffic must be permitted. No access lists currently exist on the router. Which of the following configurations would accomplish this task when applied to E1 on CK1 as an input filter?

A. access-list 1 permit 192.168.1.0 0.0.0.255
B. access-list 100 permit ip any 192.168.2.0 0.0.0.255
C. access-list 1 deny 192.168.2.0 0.0.0.255
access-list 1 permit any
D. access-list 1 deny 192.168.2.0 0.0.0.255
access-list 1 deny 192.168.1.0 0.0.0.255
access-list 1 permit any
E. access-list 100 deny ip 192.168.2.0 0.0.0.255 any
access-list 100 permit ip any any

Answer: A

Explanation:
The access list in choice A will prevent all incoming traffic sourced from the 192.168.2.0/24 network from interface Ethernet 1 of router CK1 due to the implicit deny all. In the diagram above, hosts on the 192.168.2.0 network should only be a used as a destination for traffic coming from this interface. Only traffic sourced from 192.168.1.0/24 should be seen in the input direction of this interface on CK1 . If any traffic does not match the access list on choice A it could only be the result of a spoofed IP address and should be dropped.
Incorrect Answers:
B. This will allow all traffic (from any source) to reach the 192.168.2.0 network. This will not prevent spoofed IP addresses from the network on E1 to go through.
C. This would prevent spoofed packets that were spoofed only from the 192.168.2.0/24 network. This will not prevent all spoofed addresses outside of the 192.168.1.0 network, as required.
D. This will prevent the two networks from communicating at all.
E. This choice could also be used to prevent the spoofed traffic as required, but it will only prevent spoofed traffic that is IP based. Therefore, the access list in choice C is a better fit for this situation.

QUESTION 366
The Certkiller network is displayed in the exhibit below:



You want to block all Smurf attacks that originate on the 192.168.2.0 network from being sent into the 192.168.1.0 network. However, all other traffic must be permitted. No access lists currently exist on the router. Which of the following configuration excerpt would accomplish this task when applied to E0 on CK1 as an input filter?

A. access-list 1 permit 192.168.2.0 0.0.0.255
access-list 1 deny any
B. access-list 1 deny 192.168.1.0 0.0.0.255
access-list 1 permit any
C. access-list 100 permit ip any 192.168.1.0 0.0.0.255
acess-list 100 deny ip any any
D. access-list 100 deny icmp any 192.168.1.255 0.0.0.0 echo
access-list 100 permit icmp any 192.168.1.0 0.0.0.255 echo
eccess-list 100 permit ip any any
E. access-list 100 deny icmp any 192.168.1.255 0.0.0.0 echo-reply
access-list 100 permit icmp any any echo-reply
access-list 100 permit ip any any

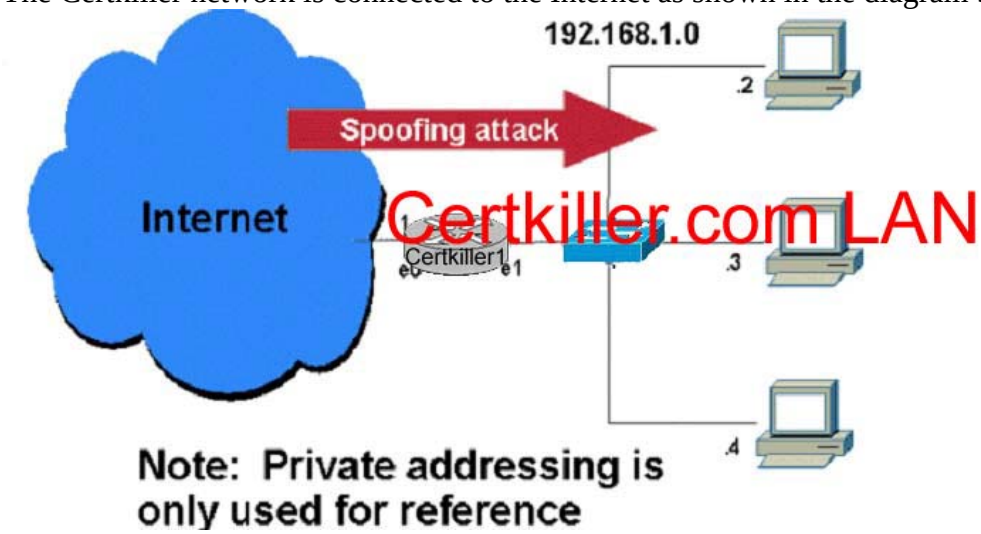
Answer: D

Explanation:
Anatomy of a SMURF Attack
A SMURF attack (named after the program used to perform the attack) is a method by which an attacker can send a moderate amount of traffic and cause a virtual explosion of traffic at the intended target. The method used is as follows:
• The attacker sends ICMP Echo Request packets where the source IP address has been forged to be that of the target of the attack.
• The attacker sends these ICMP datagrams to addresses of remote LANs broadcast addresses, using so-called directed broadcast addresses. These datagrams are thus broadcast out on the LANs by the connected router.
• All the hosts which are "alive" on the LAN each pick up a copy of the ICMP Echo Request datagram (as they should), and sends an ICMP Echo Reply datagram back to what they think is the source. If many hosts are "alive" on the LAN, the amplification factor can be considerably (100+ is not uncommon).

• The attacker can use largish packets (typically up to ethernet maximum) to increase the "effectiveness" of the attack, and the faster network connection the attacker has, the more damage he can inflict on the target and the target's network.
Not only can the attacker cause problems for the target host, the influx of traffic can in fact be so great as to have a seriously negative effect on the upstream network(s) from the target. In fact, those institutions being abused as amplifier networks can also be similarly affected, in that their network connection can be swamped by the Echo Reply packets destined for the target.
In this example, answer choice D is correct as it prevents all ICMP messages destined to the broadcast IP address.
Note: The Cisco IOS command "no ip directed-broadcasts" is also an effective way to prevent smurf and fraggle attacks on the network.
Incorrect Answers:

A. This will permit all traffic sourced from the 192.168.2.0/24 network, including the smurf attack packets.
B. This choice will deny all traffic sourced from the 192.168.1.0 incoming on the e0 interface. Although this is probably a good choice, as it will effectively prevent all spoofed IP traffic (as the 192.168.1.0/24 network should never be a source IP address in the incoming direction of this interface) we wish to only prevent the smurfed traffic, so E is a better choice.
C. This choice will only permit traffic that is destined to the 192.168.1.0 network. If additional networks exist behind the 192.168.1.0 network, such as traffic to the Internet, it will not be allowed through the CK1 router.
E. It would be preferable to stop the attack before the replies are sent, rather than simply filtering the replies.

QUESTION 367
The Certkiller network is connected to the Internet as shown in the diagram below:



Certkiller 1 is currently configured and passing traffic. You want to block all IP spoofing attacks that originate in the Internet from being sent into the 192.168.1.0 network. However, normal traffic must be permitted. No access lists currently exist

on the router. What configuration excerpt would accomplish this task when applied to Certkiller 1?

A. access-list 100 permit ip any 192.168.1.0 0.0.0.255
access-list 100 deny any any
interface Ethernet 0
access-group 100 in
B. ip cef
interface Ethernet 0
ip verify unicast reverse-path
C. ip cef
interface Ethernet 1
ip verify unicast reverse-path
D. access-list 100 permit icmp 192.168.1.0 0.0.0.255 any echo
access list 100 deny ip any any
interface Ethernet 1
access-group 100 out
E. access-list 100 permit icmp 192.168.1.0 0.0.0.255 any echo
access list 100 deny ip any any
interface Ethernet 0
access-group 100 in

Answer: B

Explanation:
Use the ip verify unicast reverse-path interface command to mitigate problems caused by malformed or forged (spoofed) IP source addresses that pass through a router. Malformed or forged source addresses can indicate denial-of-service (DoS) attacks based on source IP address spoofing.
When Unicast RPF is enabled on an interface, the router examines all packets received on that interface. The router checks to make sure that the source address appears in the routing table and matches the interface on which the packet was received. This "look backwards" ability is available only when Cisco Express Forwarding (CEF) is enabled on the router because the lookup relies on the presence of the Forwarding Information Base (FIB). CEF generates the FIB as part of its operation.
Unicast RPF is an input function and is applied only on the input interface of a router at the upstream end of a connection.
Reference:http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/products_command_reference_chapter09186a00800ca7cf.html

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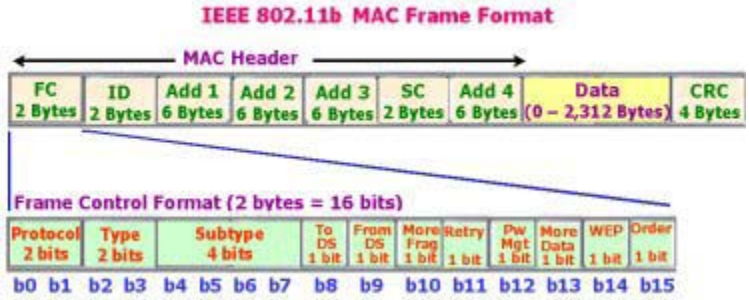
QUESTION 368
While troubleshooting some intermittent 802.11b wireless LAN problems, you use a protocol analyzer. While looking at the wireless LAN packets, which of the following should you find as part of the Frame Control Field? (Choose all that apply)

A. Duration
B. Power Management
C. Order
D. Wired Equivalent Privacy
E. Retry
F. More Fragment

Answer: B, C, D, E, F

Explanation:
The IEEE 802.11b MAC Frame Format Contains the following:
• Frame Control (FC): protocol version and frame type (management, data and control).
• Duration/ID (ID)
o Station ID is used for Power-Save poll message frame type.
o The duration value is used for the Network Allocation Vector (NAV) calculation.
• Address fields (1-4) contain up to 4 addresses (source, destination, sender and receiver addresses) depending on the frame control field (the ToDS and FromDS bits).
• Sequence Control consists of fragment number and sequence number. It is used to represent the order of different fragments belonging to the same frame and to recognize packet duplications.
• Data is information that is transmitted or received.
• CRC contains a 32-bit Cyclic Redundancy Check (CRC).



The Frame Control Format contains all of the following:
• Protocol Version indicates the version of IEEE 802.11 standard.
• Type & Subtype: Type - Management, Control and Data , Subtype - RTS, CTS, ACK etc
• To DS is set to 1 when the frame is sent to Distribution System (DS)
• From DS is set to 1 when the frame is received from the Distribution System (DS)
• More Fragment is set to 1 when there are more fragments belonging to the same frame following the current fragment
• Retry indicates that this fragment is a retransmission of a previously transmitted fragment. (For receiver to recognize duplicate transmissions of frames)
• Power Management indicates the power management mode that the station will be in after the transmission of the frame.
• More Data indicates that there are more frames buffered to this station.

• WEP indicates that the frame body is encrypted according to the WEP (wired equivalent privacy) algorithm.
• Order indicates that the frame is being sent using the Strictly-Ordered service class.
Incorrect Answers:

A. Duration is not a part of the FCF.

QUESTION 369
When comparing wireless Point to Point (p2p) and Point to Multipoint (p2mp) networks, which of the following statements are true?

A. There are more bridges in a p2p network.
B. There are more root bridges in a p2mp network.
C. There is one root bridge and one or more non-root bridges in a p2mp network
D. There is higher throughput in p2mp network.
E. P2p networks are more secure

Answer: C
Wireless bridges can be deployed to establish a direct link between two sites. The network traffic between the two sites is bridged or forwarded to the other bridge as if it were within one network. This is called a point-to-point link.
A point-to-multipoint wireless link is an expansion of the point-to-point link in which one centralized bridge can establish multiple point-to-point links. Using point-to-multipoint connections, multiple remote sites, such as buildings, can be linked together into a single logical network. In a point-to-multipoint architecture, these remote sites are linked to a single root bridge at a centralized site.
Incorrect Answers:

A. In a point to point wireless connection there are only 2 bridges.
B. There is only 1 root bridge in a multipoint network, while both bridges in a p2p network are considered to be root bridges.
D. Because in a multipoint wireless network, such as a hot spot, the bandwidth is shared between the nodes there is less throughput.
E. There are no security advantages to either method.

QUESTION 370
A wireless system based on the 802.1X standard is being implemented on the Certkiller network. What are the three main components of an 802.1X architecture?

A. Authenticator, Certificate Server, Authentication Server
B. Client, Authenticator, Certificate Server
C. Authenticator, Authentication Server, Supplicant
D. Client, Authentication Server, Supplicant
E. Certificate Server, Supplicant, Authenticator

Answer: C

Explanation:
802.1X authentication for wireless LANs has three main components: The Supplicant (usually the client software); the Authenticator (usually the access point); and the Authentication Server (usually a Remote Authentication Dial-In User Service server, although RADIUS is not specifically required by 802.1X).
The client tries to connect to the access point. The access point detects the client and enables the client's port. It forces the port into an unauthorized state, so only 802.1X traffic is forwarded. Traffic such as Dynamic Host Configuration Protocol, HTTP, FTP, Simple Mail Transfer Protocol and Post Office Protocol 3 is blocked. The client then sends an EAP-start message.
The access point will then reply with an EAP-request identity message to obtain the client's identity. The client's EAP-response packet containing the client's identity is forwarded to the authentication server.
The authentication server is configured to authenticate clients with a specific authentication algorithm. The result is an accept or reject packet from the authentication server to the access point.
Upon receiving the accept packet, the access point will transition the client's port to an authorized state, and traffic will be forwarded.

QUESTION 371
CCX version 1 and version 2 require support for:

A. WEP, Wi-Fi compliance, Cisco pre-standard TKIP
B. WPA Compliance, and WPA 2 Compliance
C. Cisco LEAP, support multiple SSIDs/VLANs, pre-standard eDCF
D. AES Encryption
E. All of the above

Answer: A

Explanation:
Makers of 802.11 wireless LAN clients now can make their products support special security features offered in Cisco wireless networks under Cisco Compatible Extensions (CCX), a licensing and testing program used to certify compatibility within Cisco wireless networks.
Cisco has already developed a CCX specification that includes the company's implementations of strong user authentication and encryption, Rossi said. CCX Version 1 includes compliance with the Cisco Wireless Security Suite, compatibility with Cisco's mechanism for assigning WLAN clients to virtual LANs, and full Wi-Fi and 802.11 standards compliance, according to the company.
CCX Version 2 will add support for the IEEE 802.1x authentication type PEAP (Protected Extensible Authentication Protocol) and compliance with WPA (Wi-Fi Protected Access) when using various 802.1x authentication types. It also will have some new Cisco WLAN capabilities that improve roaming and WLAN

management. WPA is a specification developed by the Wi-Fi Alliance industry group.
Incorrect Answers:
B, C. These are all functions of CCX version 2 only and were not supported in version 1.
D. AES is the advanced encryption standard, used to increase the security of standard DES and 3DES encryption schemes. AES will be supported with CCX version 3.

QUESTION 372
The Certkiller network is replacing the 802.11 a/b devices with 802.11g devices.
What statement is FALSE about the 802.11g standard?

A. It operates in the same frequency spectrum as 802.11b.
B. It has the same number of non overlapping channels as 802.11a.
C. It requires antennas specific to the 2.4 GHz band.
D. All statements above are true about the 802.11g standard.
E. None of the above statements are correct.

Answer: B

Explanation:
802.11g is an extension to 802.11b, the basis of the majority of wireless LANs in existence today. 802.11g will broaden 802.11b's data rates to 54 Mbps within the 2.4 GHz band using OFDM (orthogonal frequency division multiplexing) technology.
Because of backward compatibility, an 802.11b radio card will interface directly with an 802.11g access point (and vice versa) at 11 Mbps or lower depending on range. You should be able to upgrade the newer 802.11b access points to be 802.11g compliant via relatively easy firmware upgrades.
Similar to 802.11b, 802.11g operates in the 2.4GHz band, and the transmitted signal uses approximately 30MHz, which is one third of the band. This limits the number of nonoverlapping 802.11g channels to three, which is the same as 802.11b.
A big difference with 802.11a is that it operates in the 5GHz frequency band with twelve separate non-overlapping channels. As a result, you can have up to twelve access points set to different channels in the same area without them interfering with each other. This makes access point channel assignment much easier and significantly increases the throughput the wireless LAN can deliver within a given area. In addition, RF interference is much less likely because of the less-crowded 5 GHz band.
Reference: http://www.wi-fiplanet.com/tutorials/article.php/1009431

QUESTION 373
The IEEE standard controlling client network access in WPA authentication is:

A. EAP-TLS
B. EAP
C. 802.1X
D. 802.1Q
E. All of the above

Answer: C

Explanation:
The IEEE 802.1x standard defines 802.1x port-based authentication as a client-server based access control and authentication protocol that restricts unauthorized clients from connecting to a LAN through publicly accessible ports. The authentication server validates each client connected to a switch port before making available any services offered by the switch or the LAN.
Until the client is authenticated, 802.1x access control allows only Extensible Authentication Protocol over LAN (EAPOL) traffic through the port to which the client is connected. After authentication is successful, normal traffic can pass through the port.
In a Cisco wireless network, the 802.1X standard and the Extensible Authentication Protocol are synonomous, but the industry standard is the 802.1X method, making choice C the best answer.

QUESTION 374
What device can function as a Wireless Domain Server capable of RF aggregation?

A. BR1300
B. AP1200
C. WLSM
D. AP1100
E. All of the above

Answer: E

Explanation:
Cisco SWAN Wireless Domain Services
Cisco SWAN Wireless Domain Services (WDS) is a collection of Cisco IOS Software features that expand WLAN client mobility, simplify WLAN deployment and management, and enhance WLAN security. These services-supported today on access points, Cisco and Cisco Compatible client devices, and the Cisco Catalyst 6500 Series WLSM, and other Cisco LAN switches and routers in 2005-include radio management aggregation, fast secure roaming, client tracking, and WAN link remote site survivability.
Cisco SWAN WDS radio management aggregation supports RF managed services such as rogue access point detection for WLAN threat defense, interference detection, assisted site surveys, and self-healing WLANs.
Reference:http://www.cisco.com/en/US/products/ps6108/products_data_sheet0900aecd801b914f.html

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QUESTION 375
You are in the planning stages for the new Certkiller wireless network, and are determining the types of antennas that should be utilized. Which are the four basic antenna types that can be used?

A. Dipole, non-pole, ground effect, bipole

B. Omnidirectional, patch, yagi, parabola
C. High gain, omni, point to point, point to multi-point
D. Wall mount, mast mount, pole mount, window mount
E. Directional, omni-directional, dipole, distributed

Answer: B

Explanation:
The basic antenna types and their descriptions are provided below:
Omnidirectional Antennas:
An omnidirectional antenna provides a 360-degree radiation pattern. This type of antenna is used when coverage in all directions is required and when communicating with wireless client devices. Antennas in this category are available in different gain ratings (typically 2.2 to 12 dBi).
Directional Antennas:
A directional antenna provides a stronger radiation pattern in a specific direction by focusing the radiation energy to provide a greater coverage distance. Directional antennas include the Yagi antenna, the patch antenna, and the parabolic dish antenna.

QUESTION 376
You have been assigned the task of setting up access points within a building for wireless users. The best position for an Access Point in a corporate wireless network is: (Select the best answer).

A. The center of the building
B. In a position determined by a site survey
C. At the edges of the building
D. At the edge of the coverage area shown by the site survey in the ceiling or the floor
E. Away from any metal or glass

Answer: B

Explanation:
Because of differences in component configuration, placement, and physical environment, every network application is a unique installation. Before installing the system, you should perform a site survey to determine the optimum utilization of networking components and to maximize range, coverage, and network performance. Consider the following operating and environmental conditions when performing a site survey:
• Data rates - Sensitivity and range are inversely proportional to data bit rates. The maximum radio range is achieved at the lowest workable data rate. A decrease in receiver threshold sensitivity occurs as the radio data increases.
• Antenna type and placement - Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, range increases in proportion to antenna height.

• Physical environment - Clear or open areas provide better radio range than closed or filled areas. Also, the less cluttered the work environment, the greater the range.
• Obstructions - A physical obstruction such as metal shelving or a steel pillar can hinder performance of the client adapter. Avoid locating the workstation in a location where there is a metal barrier between the sending and receiving antennas.
• Building materials - Radio penetration is greatly influenced by the building material used in construction. For example, drywall construction allows greater range than concrete blocks. Metal or steel construction is a barrier to radio signals.

QUESTION 377
A new Cisco Wirless network is being installed in a Certkiller location, and you need to determine the best antenna to be used. What is the fundamental difference between an omni-directional and directional antenna?

A. Cisco omni-directional antennas always have the letter "0" in their part number.
B. Omni-directionla antennas always look like straight rods.
C. Directional antennas always look like a dish.
D. Omni-directional antennas distribute RF energy in a relatively even manner in most directions while directional antennas uswe most of the available RF energy in a specific direction with a specific RF coverage shape.
E. There is no real technical difference, omni-directional and directional antennas are both dipoles.

Answer: D

Explanation:
Omnidirectional Antennas
An omnidirectional antenna provides a 360-degree radiation pattern. This type of antenna is used when coverage in all directions is required and when communicating with wireless client devices. Antennas in this category are available in different gain ratings (typically 2.2 to 12 dBi).
Directional Antennas
A directional antenna provides a stronger radiation pattern in a specific direction by focusing the radiation energy to provide a greater coverage distance. Directional antennas include the Yagi antenna, the patch antenna, and the parabolic dish antenna.
Parabolic dishes have very high gain (typically 21 dBi) along with a very narrow radiation angle (typically 12.5 degrees) and must be accurately aimed at the other antenna. Yagi antennas have high gain (typically 13.5 dBi) and a wider radiation angle (typically 25 to 30 degrees). Yagi antennas must also be properly aimed at the other antenna. Patch antennas have high gain (typically 6 dBi) and a relatively broad radiation angle. The patch antenna is more tolerant of orientation, but must still be positioned to face the direction of the other antenna.
Reference:

http://www.cisco.com/en/US/products/hw/wireless/ps458/products_installation_guide_chapter09186a008007f74a.html

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QUESTION 378
You need to purchase a number of Wi-Fi handsets for the Certkiller network and need to compare and contrast the different options. Identify the primary Wi-Fi voice handset vendors other than Cisco:

A. Symbol
B. Nortel
C. Avaya
D. Spectralink

Answer: D

Explanation:
Wireless handset pioneer SpectraLink is the most sought-after partner in the VoWi-Fi industry. PBX vendors want to offer a range of handset options, and SpectraLink's product line includes everything from small, stripped-down models to ruggedized devices with push-to-talk capabilities. Now that Symbol Technologies is focused on voiceenabling mobile terminals, the choices have pretty much come down to reselling SpectraLink's handsets or building your own, or using Cisco.
SpectraLink recently enhanced its 802.11 offerings with a docking station that includes an integrated speakerphone and charging cradle. The vendor boasts another asset in its SpectraLink Voice Priority protocol, which is supported by established vendors and WLAN start-ups alike.
Reference: http://www.networkworld.com/research/2004/0503vowifi.html

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QUESTION 379
The Certkiller network is performing site surveys at all of their location in order to plan for the installation of wireless networking devices. In terms of wireless networking, what are leading indicators of links with excessive occlusion (blockage with physical elements)?

A. Coverage area less than 10 square meters at signals greater than-65 dBm
B. Drips in RF signal in excess of 20 dBm over distances of less than two meters
C. Inability to physically see the infrastructure device
D. Distance in excess of 20 meters from an infrastructure device in a carpeted environment
E. All of the above.

Answer: C

Explanation:
Occlusion is defined as an obstruction or a closure of a passageway or vessel. If the wireless access point can not be physically seen, then there is an excessive amount of

physical elements (boxes, walls, warehouse shelving, etc) that is blocking the view. This can lead to poor wireless signals.

QUESTION 380
What are the main advantages of the Cisco SWAN architecture?

A. Security
B. Layer 3 mobility
C. Visibility and management of the wireless network
D. Centralized Management
E. None of the above

Answer: D

Explanation:
The Cisco Structured Wireless-Aware Network (SWAN) provides the framework to integrate and extend wired and wireless networks to deliver the lowest possible total cost of ownership for companies deploying wireless LANs (WLANs). Cisco SWAN extends "wireless awareness" into important elements of the network infrastructure, providing the same level of security, scalability, reliability, ease of deployment, and management for wireless LANs that organizations have come to expect from their wired LANs.
From small businesses to large-scale enterprise multinational companies; within WLAN campus deployments or branch offices; at universities; in retail, manufacturing, or healthcare industries; or at hot spot locations, Cisco SWAN reduces overall operational expenses by simplifying network deployment, operations and management. With Cisco SWAN, several, hundreds, or thousands of central or remotely located Cisco Aironet Series access points can be managed from a single management console. Cisco SWAN's flexibility allows network managers to design networks to meet their specific needs, whether implementing a highly integrated network design or a simple overlay network.
Reference:http://www.cisco.com/en/US/netsol/ns340/ns394/ns348/ns337/networking_solutions_package.html

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QUESTION 381
As the administrator of the Certkiller network, you are considering the benefits and disadvantages of installing a wireless LAN at your Headquarters office. In weighing in these considerations, what is NOT a reason for deploying wireless in a corporate environment?

A. There is a need to eliminate rouge Access Points in the organization and increase LAN security.
B. The organization needs to provide greater mobility to users.
C. Wireless is cheaper to deploy than a wired network.
D. The employer wishes to obtain greater productivity from the employees.
E. All of the above are wireless networking features

Answer: A

Explanation:
Although there are many benefits for deploying a wireless network from a cost and productivity perspective, it can introduce some security issues. Access points can be difficult to secure, and sometimes corporate employees will install their own access points within the office in order to increase the range. In addition, weak security measures are often used in wireless networks. The original IEEE 802.11 security standard had modest security goals in Wired Equivalent Privacy (WEP), including native authentication, where users are required to prove they are authorized for access and encryption to provide data protection. The protocols in WEP are now easily defeated.
Incorrect Answers:
B. A major goal of the use of wireless networks is to provide for a more mobile workforce.
C. Wireless networks can be cheaper to deploy in a new office environment, as the added costs associated with CAT5 cable drops are eliminated. In addition, fewer switches are needed, since each access point can handle many users, but only requires one switch port.
D. This is true as users can now carry their laptops with them to other areas of a building, such as conference rooms, enabling them to continue working even during meetings and conferences.

QUESTION 382
The WLSE is being configured for managing the Certkiller WLAN. When the WLSE generates an alarm, what actions can the device take?

A. Send an e-mail to an administrator
B. Disable the switch port that the rouge Access Point is connected to
C. Send a message to a syslog server
D. Generate an SNMP trap
E. All of the above

Answer: E

Explanation:
When a fault is detected, the WLSE can send automated notifications in the form of SNMP traps, syslog messages, and email alerts. You can specify multiple recipients for each notification type, and choose to deliver the message using either a plain text or XML format.

QUESTION 383
The Certkiller network plans to implement the use of Public Wireless hot spots and security issues are a concern. Which of the following are primary requirements in PWLAN security? (Choose all that apply)

A. Encryption of user data
B. IPSec encryption
C. Accounting of time, and throughput

D. 802.1x
E. Broadcast SSIDs

Answer: A, D

Explanation:
Two of the chief security concerns for public wireless (PWLAN) use is user authentication, which is addressed with the 802.1x/EAP suite of protocols, and the encryption of individual user data.
The Cisco PWLAN solution has implemented numerous features in the Cisco IOS Software for Cisco's access zone routers (AZR) that help mitigate the risk of session hijacking associated with malicious IP spoofing activity.
Operators can take advantage of key features available in Cisco access points to prevent local peer attacks as well as preventing man-in-the-middle spoofing of infrastructure addresses.
Cisco access points support all 802.1x/EAP methods available today, in addition to supporting WPA for air link encryption.

QUESTION 384
A wireless LAN needs to be implemented in a new Certkiller location. How is a baseline RF environment established?

A. With a carefully detailed RF site survey and supporting documentation.
B. With a carefully detailed RF site survey only.
C. By using WLSE's Assisted Site Survey feature.
D. Usually with a spectrum analyzer

Answer: A

Explanation:
To establish the feasibility of any wireless LAN (WLAN) or radio frequency (RF) project, a site survey, complete with supporting documentation, should be performed. A WLAN site survey takes into account the radius around one or more Access Points and the structural components of the facility to determine coverage. This survey involves verifying a clear line of site between points, consulting topographical maps, and global positioning systems to pinpoint locations and to evaluate needs relating to mounting equipment and towers. A number of documents are generated from this survey including a Bill of Materials, requirements for tower and antenna placement, drawings and siterelated documents including construction materials, and a plan to implement.

QUESTION 385
When implementing corporate guest access an important consideration of the RF coverage is:

A. That the area RF coverage should offer high data rates only.
B. That the RF coverage offers low latency roaming.

C. That the area of RF coverage avoids leakage outside the building as much as possible.
D. That the RF coverage is as secure as possible.
E. That the area RF coverage is as large as possible.

Answer: C

Explanation:
When setting up a wireless network for corporate guest access, an important consideration is to ensure that the radio frequency coverage is maintained within the building. The leaking of the RF coverage to the outside leaves the potential for unauthorized access from unknown, outside users. When RF access leaks to the outside, hackers are able to pick up the signals and obtain unatuhorized wireless Internet access.

QUESTION 386
A site survey needs to be completed at one of the remote Certkiller locations. How does a site survey confirm a deployment plan?

A. By auditing the signal strengths in selected physical areas.
B. By auditing the channel selections in selected physical areas.
C. By auditing the various direction antenna performances in specific physical areas.
D. By ensuring an optimal number of RF instrastructure devices are deployed
E. All of the above

Answer: E

Explanation:
A site survey should be completed at every wireless location in order to optimize the wireless network infrastructure.
Keep the following guidelines in mind when preparing to perform a site survey:
• Perform the site survey when the RF link is functioning with all other systems and noise sources operational.
• Execute the site survey entirely from the mobile station.
• When using the active mode, conduct the site survey with all variables set to operational values.
Additional Information
Also consider the following operating and environmental conditions when performing a site survey:
• Data rates-Sensitivity and range are inversely proportional to data bit rates. Therefore, the maximum radio range is achieved at the lowest workable data rate, and a decrease in receiver threshold sensitivity occurs as the radio data increases.
• Antenna type and placement-Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, range increases in proportion to antenna height.
• Physical environment-Clear or open areas provide better radio range than closed or filled areas. Also, the less cluttered the work environment, the greater

the range.
• Obstructions-A physical obstruction such as metal shelving or a steel pillar can hinder the performance of wireless devices. Avoid placing these devices in a location where a metal barrier is between the sending and receiving antennas.
• Building materials-Radio penetration is greatly influenced by the building material used in construction. For example, drywall construction allows greater range than concrete blocks, and metal or steel construction is a barrier to radio signals.
Reference:
http://www.cisco.com/en/US/products/hw/wireless/ps4555/products_installation_and_configuration_guide_chapter09186a008007f846.html

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QUESTION 387
Certkiller is using the WLSE to manage their Cisco wireless network. What network connectivity tools are available on the WLSE administration page?

A. Ping and traceroute only
B. SNMP reachable, Ping and Traceroute only
C. Ping, Traceroute, and SNMP reachable only
D. Ping, traceroute, nslookup, tcp port scan, SNMP reachable only
E. Ping, Traceroute, L2 Traceroute, nslookup, and SNMP reachable only

Answer: D

Explanation:
The following chart display the various connectivity tools available on the WLSE administration interface:

Connectivity Tools		
Button	Description	Results
Ping	Tests device reachability.	If successful, statistics are displayed on the packets transmitted and received.
Traceroute	Detects routing errors between the WLSE and a device.	If successful, the routes to the device are displayed.
NSLookup	Looks up hostname or IP address information via the name server.	If successful, displays the name server name and IP address and the device name

		and IP address.
TCP Port Scan	Finds the active ports on a device.	Displays the active ports.
SNMP Reachable	Tries to reach a device by using SNMP. To reach a device by using SNMP, the device's credentials must be in the WLSE database. To check credentials, select Administration > Devices > Discover > Device Credentials > SNMP Communities.	If the device is reachable, its sysObjID is displayed. If no sysObjID is returned: • The query may be timing out because the device is busy or is remotely located. • The SNMP agent in the device may not be functioning.

Reference:http://www.cisco.com/en/US/products/sw/cscowork/ps3915/products_user_guide_chapter09186a00801d08a8.html

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QUESTION 388
What is NOT an optimal method for detecting co-channel reference?

A. A properly planned and documented site survey, with continued monitoring of the radiating environment.
B. Well enforced policies on the deployment of rogue APs.
C. Deploying WLSE
D. Deploying SWAN

Answer: B

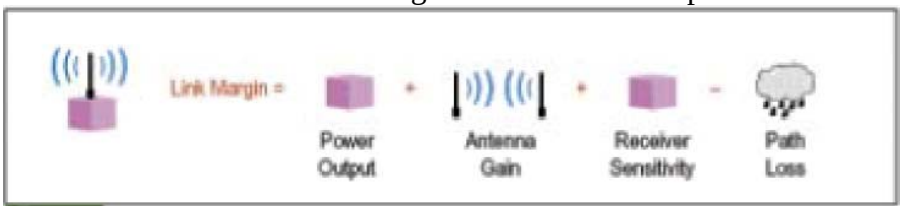
Explanation:
The use of rogue Access Points (APs) should be completely avoided within an enterprise wireless LAN. Simply establishing a policy against the deployment of rogue APs alone will not be effective. The Wireless site should be continuously maintained and monitored to ensure that the introduction of outside access points does not occur, via the Cisco SWAN model through the use of the WLSE.

QUESTION 389
The Certkiller WLAN is experiencing problems associated with poor link margins. What are the leading indicators of insufficient link margin?

A. Difference of less than 10 dBm from signal to node
B. Links works fine initially but flaps or goes down shortly after being turned up
C. Competing sources of 802.11 arrive in the radiating area
D. Link initially deployed at full power settings on infrastructure and client devices but link still goes down shortly after being turned up.
E. All of the above

Answer: E

Explanation:
Transmission range in a system is determined by link margin calculations. Figure 1 shows the overall link margin of a system that includes transmission power output, antenna gain, receiver sensitivity and path loss. Such path loss is due to cable and antenna attenuation, air content and obstacles preventing line-of-sight conditions. Achieving long range with wireless transceiver modules requires an effective combination of output power, antenna gain and receiver sensitivity. Each of these specifications can have dramatic effects on the link margin of a wireless link path.



All of the answer choices are symptoms that can be caused by problems associated with poor link margin.

QUESTION 390
A Certkiller user has an 802.11g/a capable client card. They are able to associate to a Cisco BR1300 without any trouble; however, they are not able to associate to a Cisco BR1400, although all the wireless settings appear to be correctly configured. What is the most likely explanation?

A. The BR1300 is hard-coded not to accept client associations, while the 1400 is capable of this feature.
B. 802.11a bridging uses the UNII-3 frequency band which is in a different frequency band than what 802.11a clients use.
C. The BR1400 can only accept one associated connection, which is already taken up by the radio on the other end of the bridge link.
D. The BR1400 uses a unique MAC layer protocol implementation that prevents any clients from associating.
E. The user is trying associate to the root bridge of the 802.11a bridging link. Only non-root bridges can accept a client association.
F. None of the above

Answer: D

Explanation:
The BR1400 is designed for building to building connectivity and only supports the Root BR and Non-Root BR roles, and does not support client associations. Only other BR1400s can associate to a root BR1400. However, multiple non-root BR devices can connect to the root BR1400. If the bridge is associated and is the root bridge, its default IP address is 10.0.0.1. If it is a non-root bridge, it is given an IP address by the root bridge. The IP address is found from the MAC address by browsing the root bridge Association window or using Cisco's supplied IPSU utility. This bridge is designed for building-to-building wireless connectivity.
Reference: http://www.cisco.com/en/US/about/ac123/ac114/ac173/Q3-04/netpro_express.html

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QUESTION 391
The Certkiller wireless network appears to be having some problems related to cochannel interference. Which are good indicators that interference problems are from a co-channel or adjacent channel source?

A. WLSE indicates levels of 2.4 GHz RF in excess of -45 dBm from non-AP sources within 5 meters of 802.11 clients.
B. Non native radios with signals within 10 dB of the closest 802.11 infrastructure device.
C. Rogue APs operating on the same channel near approved infrastructure devices.
D. Non-native radios with higher gain antennas then the closest approved 802.11 infrastructure device.

Answer: C

Explanation:
A limited number of available channels results in limited network capacity. When access points set to the same channel are within range of each other, they become mutual interferers, degrading the performance of each device. This relatively small number of channels and resulting cochannel interference limits wireless LAN capacity when operating in the narrow 2.4-GHz band. When the access points, both approved and rogue, operate on the same channel, interference can occur when the are positioned close to each other.

QUESTION 392
A new WLSE is being installed at the Certkiller NOC. Which are the primary functions of the Wireless LAN Solutions Engine 1130? (Select three)

A. Fault monitoring
B. Authentication Server 802.1X clients
C. Configuration Management

D. Wireless client management
E. Radio Management

Answer: A, C, E

Explanation:
The WLSE has the following major features:
• Configuration-Allows you to apply configuration changes to access points.
• Fault and policy monitoring-Monitors device fault and performance conditions, LEAP server responses, and policy misconfigurations.
• Reporting-Allows you to track device, client and security information. You can email, print, and export reports.
• Firmware-Allows you to upgrade the firmware on access points and bridges.
• Radio management-Helps you manage your WLAN radio environment.
• WLSE administration-Manage WLSE software, including software upgrades, monitoring the WLSE, backing up data, and using two WLSEs as a redundant, highly available WLAN management solution.
• Deployment Wizard-Configures and discovers access points used in a Cisco Structured Wireless-Aware Network (SWAN) framework.
The WLSE operates by gathering fault, performance, and configuration information about Cisco devices that it discovers in your network. The devices must be properly configured for discovery. After devices are discovered, you decide which devices to manage with the WLSE.
Reference:
http://www.cisco.com/en/US/products/sw/cscowork/ps3915/products_installation_guide_chapter09186a00803629e5.html

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QUESTION 393
You are experiencing some 802.1x issues on one of the Certkiller locations. When troubleshooting 802.1X authentications, what command is most useful?

A. debug dot11 aaa authenticator all
B. debug aaa authenticator all
C. debug dot11 aaa radius all
D. debug dot11 802.1x all
E. debug 802.1x all

Answer: A

Explanation:
Use the debug dot11 aaa privileged EXEC command to activate debugging of dot11 authentication, authorization, and accounting (AAA) operations.
debug dot11 aaa authenticator all-Shows the various negotiations that a client goes through as it associates and authenticates through the 802.1x or EAP process. This debug was introduced in Cisco IOS Software Release 12.2(15)J

A. This command obsoletes
debug dot11 aaa dot1x all in that and later releases.

QUESTION 394
Certkiller is utilizing VOIP on a wireless LAN. How many simultaneous WLAN VOIP calls can be supported by an AP with Quality of Service enabled, assuming that the G.711 codec is used?

A. 64
B. 12
C. 8
D. 7
E. None without proxy ARP enabled

Answer: D

Explanation:
The following network capacity guidelines apply to sizing the Wireless IP Telephony network:
• No more than 7 concurrent G.711 calls per AP.
• No more than 8 concurrent G.729 calls per AP.
Reference:http://www.cisco.com/en/US/products/hw/phones/ps379/products_implementation_design_guide_chapter09186a00802a0a05.html

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QUESTION 395
What is eDCA?

A. The difference in the delay used by 802.11 management frames, and data frames
B. The time taken between the when a channel becomes free and a radio tries to send a frame
C. The standard 802.11 contention mechanism
D. A mechanism for adjusting the random backoff of WLAN traffic based in traffic classification
E. An authentication type for handheld devices

Answer: D

Explanation:
EDCA (Enhanced Distributed Channel Access) was specified in the 802.11e draft. EDCA, also known as prioritized DCF, improves on DCF by giving higher-priority traffic an advantage during contention. Instead of waiting the normal period before transmitting after the back-off period expires, higher-priority traffic can attempt to transmit only after a PIFS (point coordination function interframe space) period and associated back-off time. Using the EDCA scheme, nodes that offer high-priority traffic, an example being VoIP phones, have a higher probability of gaining channel access than the nodes offering lower-priority traffic, such as PC downloads.

QUESTION 396
The Certkiller network is utilizing Voice over Wireless LANs to provide for a mobile workforce. How would you design frequency overlap for voice over WLAN versus 802.11 for data only?

A. You would ensure that all areas where an 802.11 voice call could be initiated is covered by at least two RF infrastructure devices.
B. You would configure all the RF instrastructure devices to select optimal channels as required.
C. You would ensure each cell is at least 20% overlapped by second RF infrastructure device.
D. You would ensure all infrastructure RF devices were set to maximum power.
E. None of the above.

Answer: C

Explanation:
The critical components in the wireless network are the access points (APs) that provide the "hot spots" or wireless links to the network. Cisco requires that Cisco IOS is running on the APs that support voice calls since Cisco IOS provides features for managing voice traffic.
The AP has a transmission range or coverage area that depends on its type of antenna and transmission power. The access point coverage range generally varies from 500 to 1000 feet. To provide effective coverage, access points need a range overlap of approximately 20 percent to allow uninterrupted connections as phone users roam from one access point to another.
Reference:
http://www.cisco.com/en/US/products/hw/phones/ps379/products_administration_guide_chapter09186a008024662c.html

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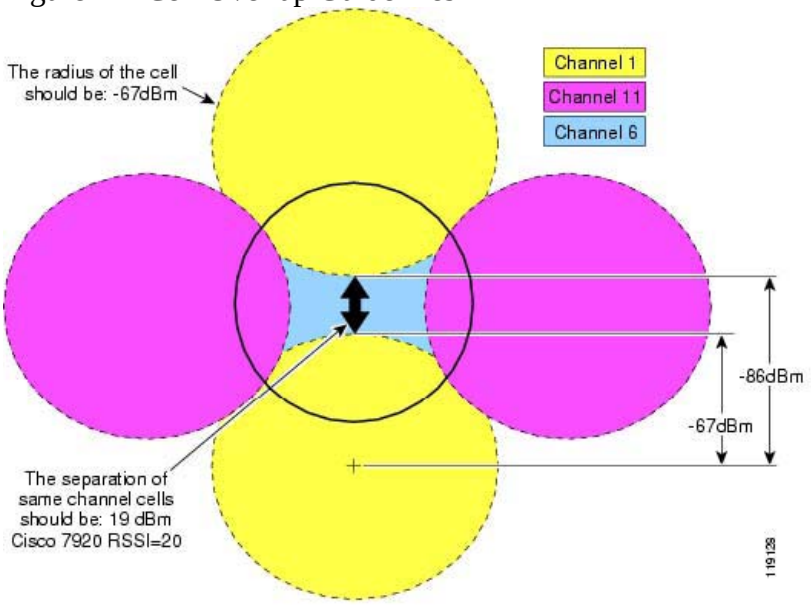
QUESTION 397
The Certkiller network plans on using VOIP phones over the Wireless data network. When deploying a low latency wireless network, what are the key guidelines that should be maintained?

A. The access points requirements.
B. Use fixed channels, static WEP keys, all AP on the same channel.
C. Dynamic channels, diversity antenna, overlapping channels with more than 20% RSSI
D. Use fixed channels, diversity antenna, same transmit power on phone as the AP, overlapping channels have less than 20% RSSI.
E. Use fixed channels, CCKM, all AP on the channel, diversity antennas.

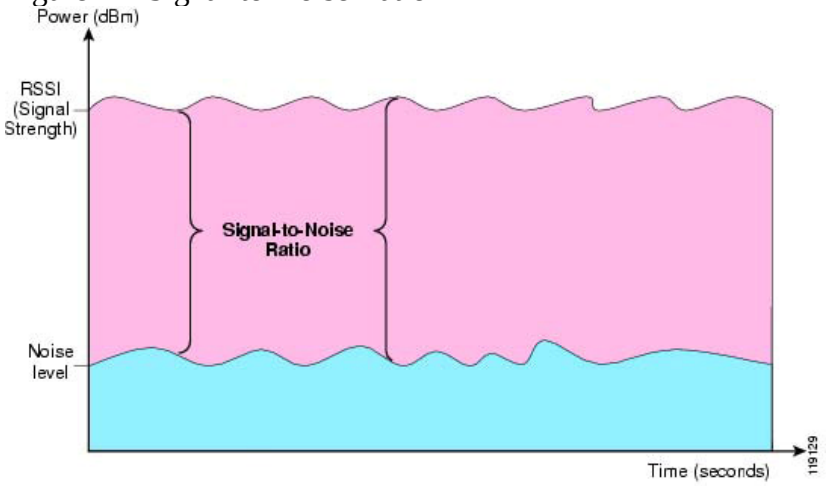
Answer: D

Explanation:
Recommended Environment for A Low Latency, VOIP network:
• Deploy a minimum of two APs on non-overlapping channels, with a Received Signal Strength Indicator (RSSI) that is greater than 35 at all times in the phone's site survey utility.
• Deploy no more than one AP per overlapping channel set, with a received signal strength indicator (RSSI) that is greater than 35.
- Although APs might appear to have an RSSI that is less than 35 (on overlapping APs), this situation can still cause interference and should be minimized as much as possible. (This interference or noise will degrade voice quality.)
- Noise is additive. Having three extra APs on the same channel, all with low RSSI, can be as harmful as a single extra AP with a higher RSSI.
Figure 2-1 shows a typical deployment, with a 15% to 20% overlap of a given AP's cell from each of the adjoining cells. This configuration provides almost complete redundancy throughout the cell, thus complying with the above requirements.
Figure 2-1 Cell Overlap Guidelines



• Two of the APs (including the one with which the wireless phone is associated) must have an RSSI that is greater than 35 (which is equivalent to a receiver threshold of -67 decibels per milliwatt) and a channel utilization QoS Basis Service Set (QBSS) load that is less than 45. This requirement provides for smoother roaming and a backup AP if one of the APs suddenly becomes unavailable or busy.
The QBSS load represents the percentage of time that the channel is in use by the AP. The overall channel load might be much higher than the QBSS load because several APs could be sharing the same RF channel and background or environmental noise could add to the load too. The Cisco 7920 Wireless IP Phone uses the QBSS load in its roaming algorithm. The measured QBSS load will vary, depending on the time of day when you perform the site survey. For example, at night (when the network is largely idle), the QBSS load will usually be very low. Therefore, you should perform the site survey during peak hours. You can reduce the QBSS load by adding APs as needed.
• Maintain at least 11 Mbps of available link speed at all times for data clients as well

as voice clients.
• Maintain an AP coverage overlap of at least 15% to 20%.
Note: In certain situations, data rates below 11 Mbps must be enabled for legacy devices. This lower speed will affect voice quality and the RF environment, and it is not the recommended setting. If you have to enable both 11 Mbps and 2 Mbps, these low speeds will reduce the number of simultaneous calls that each AP can handle and will also increase the overlap because they will extend the range of the APs.
• Maintain a packet error rate (PER) no higher than 1% (or a success rate of 99%).
• Maintain a minimum signal-to-noise ratio (SNR) of 25 dB (see Figure 2-2).
Figure 2-2 Signal-to-Noise Ratio



• Try to use the same transmit power on the AP and on the phones. If the transmit power of the APs varies, set the transmit power of the phones to the highest transmit power of the APs.
• All AP antennas must use diversity.
• APs in an optimal setting can handle seven G.711 or eight G.729 concurrent phone calls. If more concurrent phone calls are needed in a single location (a high usage area, for example), plan to have load-balancing APs available during the site survey. Overlapped basic service sets (BSSs, or APs sharing the same RF channel) reduce the number of concurrent phone calls per AP.
Reference:
http://www.cisco.com/en/US/products/hw/phones/ps379/products_implementation_design_guide_chapter09186a00802a036a.html

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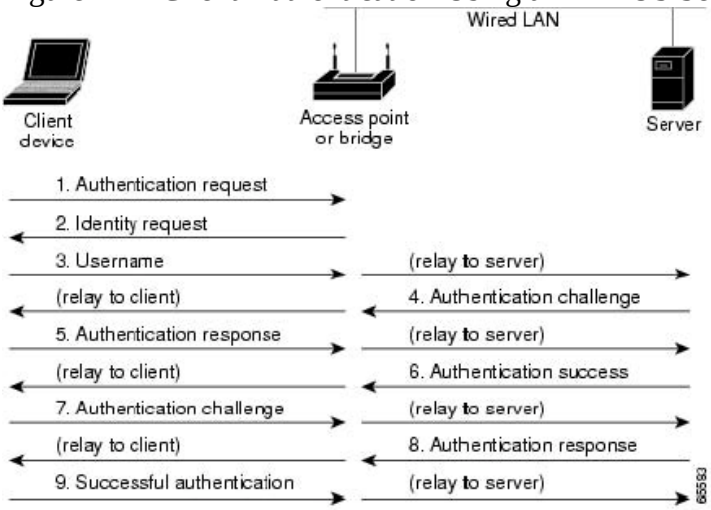
QUESTION 398
Within the Certkiller WLAN, fast secure roaming needs to be implemented to support wireless VOIP. What components are necessary when implementing fast secure L3 roaming?

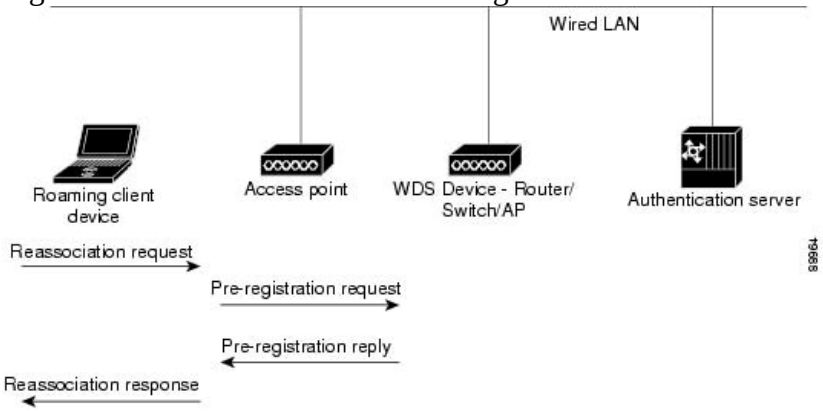
A. AP, clients, WLSE
B. AP, CCX clients
C. AP, CCX clients WLSE
D. AP and clients
E. AP, CCX clients, WLSM

Answer: B

Explanation:
Access points in many wireless LANs serve mobile client devices that roam from access point to access point throughout the installation. Some applications running on client devices require fast reassociation when they roam to a different access point. Voice applications, for example, require seamless roaming to prevent delays and gaps in conversation.
During normal operation, LEAP-enabled client devices mutually authenticate with a new access point by performing a complete LEAP authentication, including communication with the main RADIUS server, as in Figure 11-1.
Figure 11-1 Client Authentication Using a RADIUS Server (Normal operation)



When you configure your wireless LAN for fast, secure roaming, however, LEAPenabled client devices roam from one access point to another without involving the main server. Using Cisco Centralized Key Management (CCKM), an access point configured to provide Wireless Domain Services (WDS) takes the place of the RADIUS server and authenticates the client so quickly that there is no perceptible delay in voice or other time-sensitive applications. Figure 11-2 shows client authentication using CCKM.
Figure 11-2 Client Reassociation Using CCKM and a WDS Access Point



The WDS access point maintains a cache of credentials for CCKM-capable client devices on your wireless LAN. When a CCKM-capable client roams from one access point to another, the client sends a reassociation request to the new access point, and the new access point relays the request to the WDS access point. The WDS access point forwards the client's credentials to the new access point, and the new access point sends the reassociation response to the client. Only two packets pass between the client and the new access point, greatly shortening the reassociation time. The client also uses the reassociation response to generate the unicast key.
Since the AP acts as the WDS, only a CCKM client and AP is required to configure the fast secure L3 roaming feature.
Reference:
http://www.cisco.com/en/US/products/ps5861/products_configuration_guide_chapter09186a008021e5d9.html#wp1052156

QUESTION 399
The Certkiller network has recently installed a Cisco Works Wireless LAN Solutions Engine (WLSE) to aid in the maintenance and management of the wireless LAN devices. When upgrading the firmware on access points, the WLSE can perform which of the following functions? (Choose the best option)

A. Upgrade firmware, validate the target AP type and convert configurations from VxWorks to IOS all at a scheduled time/date
B. Upgrade firmware of the access point only
C. Upgrade firmware, and convert configurations from VxWorks to IOS at a scheduled time/date
D. Update firmware, and convert configuration from VxWorks to IOS immediately

Answer: A

Explanation:
The WLSE is a hardware and software solution for managing Cisco wireless devices. The configuration feature allows you to apply a set of configuration changes to access points and connected switch ports. Using the firmware feature, you can upgrade the firmware on access points and bridges. You can also use the WLSE to schedule tasks to be performed at a later date, and to convert non-IOS (VxWorks) configuration file versions to IOS versions. Upon completion of any scheduled tasks, the WLSE attempts to verify that the task had indeed completed successfully.

QUESTION 400
The Certkiller network is utilizing the Cisco Wireless LAN Solution Engine (WLSE) to manage the structured WLAN. The WLSE Location Manager performs which of the following functions:

A. Discovers the location of APs, and the links them with imported site survey data
B. Is a separate module in the Catalyst 6500 providing location based services for Mobile Applications

C. Builds a database of APs location, that is used in device grouping, and radio management
D. Contains the location of AP management devices, allowing them to correlate GPS data
E. None of the above.

Answer: C

Explanation:
The CiscoWorks WLSE is a centralized, systems-level solution for managing the entire Cisco Aironet wireless LAN (WLAN) infrastructure. The advanced radio frequency (RF) and device management features of the CiscoWorks WLSE simplify the everyday operation of WLANs, ensure smooth deployment, enhance security, and maximize network availability, while reducing deployment and operating expense. The CiscoWorks WLSE enables administrators to detect, locate, and mitigate rogue access points and RF interference. The assisted site survey feature automates the previously manual, expensive, and time consuming process of determining optimal access point settings including transmit power and channel selection. The CiscoWorks WLSE automatically configures access points and bridges, assures the consistent application of security policies, and proactively monitors faults and performance. The CiscoWorks WLSE is a core component of the Cisco Structured Wireless-Aware Network.
The Location Manager is a GUI that displays wireless access points and bridges on a building floor plan. The location of rogue access points and RF interference is represented visually on the floor plan, as is the coverage area of each access point.

QUESTION 401
What is the primary purpose of a template in the WLSE?

A. A template is used to model the RF distribution pattern from Access Points in Location Manager.
B. Templates are used to set up a model for setting alarm levels in the WLSE.
C. A template is used as create a configuration model for Access Points in the network.
D. Templates push out configuration files to the Access Points.
E. Templates are used to generate firmware upgrades to the WLAN components.

Answer: C

Explanation:
The WLSE is a GUI based Cisco works based tool used to maintain and manage Cisco Wireless networks. It centrally identifies and configures Access Points (AP) in customerdefined groups and reports on throughput and client associations, enabling optimized wireless network performance and overall operational efficiency. WLSE's centralized management capabilities are further enhanced with an integrated template-based configuration tool for added configuration ease and improved productivity. You can think of a configuration template as a configuration update file for an access point. This

file might contain the update for only one parameter or a complete access point configuration.

QUESTION 402
The Cisco Compatible Extensions Program (CCX) provides which of the following with regards to wireless networking?

A. A way for Cisco to avoid joining the standards bodies for wireless LAN
B. Cheaper wireless network.
C. A more secure wireless network.
D. Faster wireless network with faster L3 roaming times.
E. A way for Cisco to accelerate the deployment of wireless features.

Answer: E

Explanation:
The Cisco Compatible Extensions Program for WLAN devices provides tested compatibility with licensed Cisco infrastructure innovations. Compatibility is assured through extensive, independent testing of third-party. The Cisco Compatible Extensions Program enables the widespread availability of wireless client devices that take advantage of the Cisco wireless network, accelerating the availability of innovative features while maintaining interoperability.

QUESTION 403
As part of the new Certkiller wireless network implementation, the use of the WLSE Radio Manger is planned. What are the main functions of the Radio Manager in the WLSE?

A. Rogue access point detection, interference detection and client walk about
B. Client walkabout, AP scanning, RM assisted configuration, self healing and auto re-site survey
C. Client walkabout, interference detection, rogue access point detection, location based services.
D. RM assisted configuration, rouge access point detection, interference detection, location based services.
E. None of the above.

Answer: C

Explanation:
Radio Management
The Radio Manager tab displays information to help you manage your WLAN radio environment. All the device information shown under this tab is polled from the managed devices in your network.
The Radio Manager tab includes these options:
• Radio Monitoring

• AP Radio Scan
• Client Walkabout
• Location Manager
• RM Assisted Configuration
• Manage RM Measurements
The Radio Manager features simplify the deployment, expansion, and day-to-day management of the WLAN by:
• Automatically configuring network-wide radio parameters during initial deployment and network expansion.
• Continuously monitoring the radio environment, detecting interference and rogue APs, and alerting the WLAN administrator to radio network changes.
• Providing information to help visualize the network radio topology, including the path loss between APs and RF coverage
The Radio Manager provides these features:
• Rogue AP detection
• Interference detection
• Automatic radio parameter generation
The Radio Manager can generate optimal values for the radio parameters of a given group of APs. Each set of radio parameters can modify the following:
• AP frequency
• AP transmit power
• AP beacon interval
You can also choose to run these features manually. The following table summarizes which procedures produce the data required by the different Radio Manager features:

Feature	**Run these procedures**	**Results are used in:**
Rogue AP detection	Radio Monitoring AP Radio Scan	Location Manager Faults
Interference detection	Radio Monitoring	Faults
Automatic radio parameter generation	AP Radio Scan Client Walkabout (recommended)	RM Assisted Configuration Location Manager Radio Manager Reports

The results produced by these features constitute the radio knowledge base. This knowledge base is saved in the WLSE database and accessed by other Radio Manager features.

QUESTION 404
The new Cisco WDS features are being implemented in the Certkiller wireless network. What is true of the Wireless Domain Service (WDS)?

A. It runs only on an AP, connects to WLSE, responsible for all authentications from other APs on the subnet.

B. It runs only on an AP, implements CCKM, implements QoS for the wireless traffic.
C. It often runs on the AP, implements CCKM, securely connects to other APs on the subnet, connects to the WLSE and delegates Radio Management jobs from the WLSE to all other APs.
D. It connects the WLSE to the other APs on the subnet and delegates RM jobs from the WLSE.
E. Often runs on the AP, securely connects to other APs on the subnet, connects to the WLSE and delegates Radio Management jobs from the WLSE to all other APs.

Answer: A

Explanation:
WDS is a new feature for access points in Cisco IOS Software. WDS is a core functionality that enables other features such as Fast Secure Roaming, Wireless LAN Solution Engine (WLSE) interaction, and Radio Management. Relationships between the access points that participate in WDS must be established before any of these other WDS-based features can work. One of the primary purposes for WDS is to eliminate the need to have the authentication server validate user credentials every time and thereby reduce the time required for client authentications.
Client authentication is defined by one or more client server groups on the WDS access points.
When a client attempts to associate to an infrastructure access point, the infrastructure access point passes the user's credentials to the WDS access point for evaluation. If it is the first time that the WDS access point has seen a given user's credentials, it uses the authentication server to validate the credentials. The WDS access point then caches the user's credentials, so it does not have to return to the authentication server when that user attempts authentication again (for example, reauthentication for rekeying, for roaming, or for when the user starts up the client device).

QUESTION 405
A new Cisco Works Wireless LAN Sloutions Engine (WLSE) is being implemented into the Certkiller network. This WLSE does NOT perform what network management function?

A. Aggregating SNMP and syslogs from its managed APs.
B. SNMP queries of the APs
C. The aggregation of Radio Management data
D. CDP Discovery
E. The WLSE performs none of the above functions.

Answer: A

Explanation:
CiscoWorks WLSE may be transparently integrated with other network management

systems, operations support systems, and CiscoWorks applications through syslog messages, Simple Network Management Protocol (SNMP) traps, and an Extensible Markup Language (XML) interface. Although the WLSE can be used with Syslog and SNMP servers, it can not be used as a Syslog or SNMP server. Syslog and SNMP messages can not be effectively sent to the WLSE from the access points.
Incorrect Answers:
B. One of the tools available via the WLSE is the SNMP Query Tool. This tool allows you to find the value of a specified SNMP variable. Normally, this tool is used under the direction of Cisco TAC when they are assisting you with troubleshooting a problem.
C. Following are some of the WLSE radio management features that are supported: Radio Monitoring, AP Radio Scan, Client Walkabout, RM Assisted Configuration, Self Healing, Auto Re-Site Survey, Location Manager.
D. By default, the WLSE runs a CDP discovery every 24 hours.
Reference:
http://www.cisco.com/en/US/products/sw/cscowork/ps3915/products_data_sheet0900aecd801d706e.html

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QUESTION 406
An SSG is being utilized within the Certkiller Public Wireless LAN. What best describes the function of an SSG in a Public Wireless LAN (PWLAN)?

A. The SSG provides connectivity, client address management, security services, and routing across a WAN from each wireless access point to the service provider data center.
B. The SSG providees subscriber authentication and maintains the state of all users in the hotspot.
C. The SSG is an http proxy that provides captive portal capabilities to the service provider hot spot network.
D. 'The SSG is a central device that allows wireless clients to cross layer three subnets with sub-second roam times.
E. The SSG provides central management for the PWLAN hotspot network

Answer: B

Explanation:
Access control of the PWLAN is based on the extremely flexible Cisco IOS Service Selection Gateway (SSG) technology that is now available across a broad range of platforms, including the Cisco 2651XM Router , Cisco 2691 Router, Cisco 3725 Router, Cisco 3745 Router, Cisco 7200 Series, and Cisco 7301 Router. Together with the Cisco CNS Subscriber Edge Services Manager (SESM), the Cisco SSG provides subscriber authentication, service selection, service connection, and accounting capabilities to subscribers of Internet and intranet services.
The Cisco CNS SESM works with the Cisco SSG to provide complete control over the subscriber experience, supporting customization and personalization based on device, client, location, service, and other criteria to offer higher value to end users and maximize service and advertising revenue.

The Cisco SSG access control platform can proxy EAP authentication messages from hot-spot access points and automatically create user sessions upon successful EAP authentication, thereby eliminating the need for "double authentication," first at Layer 2 with 802.1x/EAP and then at Layer 3 through the Web portal. This feature allows an operator to take advantage of the Cisco SSG for centralized accounting record generation for both 802.1x/EAP and Web-authenticated users.
Reference:
http://www.cisco.com/en/US/netsol/ns341/ns396/ns177/ns436/netbr09186a00801f9f3d.html

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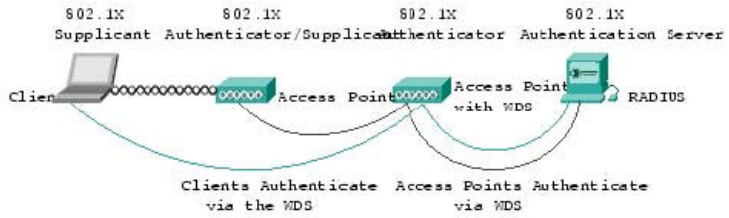
QUESTION 407
In the Wireless Certkiller network, Layer 2 Fast Secure Roaming technology has been implemented. Layer 2 Fast Secure Roaming is enabled by what type of device?

A. An ACS or other AAA server
B. A device running as a WDS
C. The Ethernet switch
D. The WLSE
E. A firewall

Answer: B

Explanation:
In Layer 2 Fast Secure Roaming, the Wireless Domain Services (WDS) act as a central authentication entity that supports a fast client rekey, rather than requiring a full RADIUS reauthentication each time the client roams. All access points and clients in a L2 domain 802.1X authenticate to a RADIUS server via the WDS that performs the role of 802.1X authenticator. Because all clients and access points authenticate via the WDS, the WDS is able to establish shared keys between itself and every other entity in the L2 domain. These shared keys enable CCKM fast secure roaming. The following diageam illustrates access points and clients authenticating to WDS.



The WDS function is written in Cisco IOS Software and initially runs on Cisco IOS Software on Cisco Aironet access points only. In the future, WDS be available in Cisco router and switch infrastructure products.
At least one WDS is required per L2 domain. The CCKM architecture supports WDS redundancy via a MAC-layer multicast primary WDS election process. If redundant WDS are configured, the WDS with the highest priority is elected to be the primary WDS. If equal or no priorities are configured, a primary is dynamically determined. Redundancy provides a cold backup. If the primary WDS fails, all authenticated clients

continue to operate, until a roaming event occurs, at which point the client completes a full initial authentication to the RADIUS server, via the backup WDS. All access points in a L2 domain dynamically learn the address of the active WDS via an L2 multicast. The address of the WDS is not configured in any access point.
Reference:
http://www.cisco.com/en/US/products/hw/wireless/ps430/prod_technical_reference09186a00801c5223.html#wp39137

QUESTION 408
The WLSE and the WLSM perform which roles in the wireless network?

A. WLSE is responsible for management and the WLSM is responsible for Mobility.
B. WLSE is responsible for security and the WLSM is responsible for Management.
C. WLSM is responsible for management and the WLSE is responsible for Mobility.
D. WLSM is responsible for security and the WLSE is responsible for Management.
E. WLSE is responsible for security and the WLSM is responsible for Mobility.

Answer: A

Explanation:
The Cisco Wireless LAN Services Module (WLSM) integrates wired and wireless network services in very large enterprises. It also enables fast secure inter-subnet roaming, which is particularly important for latency-sensitive applications such as wireless voice. Its fundamental purpose is to provide for mobile wireless networking.
The CiscoWorks Wireless LAN Solution Engine (WLSE) manages and secures the radiofrequency (RF) airspace - to deliver the scalable management, security, and RF control enterprises required to deploy very large, stable wireless networks.
Reference: http://www.cisco.com/en/US/about/ac123/ac114/ac173/Q3-04/ent_routed.html

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QUESTION 409
The IP precedence can be determined as:

A. The ToS byte is the IP precedence
B. The middle 4 bits of the ToS byte
C. The 3 left most bits of the ToS byte
D. The 3 right most bits of the ToS byte
E. The right most bit of the ToS byte

Answer:

QUESTION 410
What IOS command would be used to reset the cost calculation process so that highspeed interfaces can be correctly calculated?

A. (config-if)#ip ospf cost xxx

B. (config-if)# ip ospf interface-speed xxx
C. (config-if)# ip ospf auto-cost reference-bandwidth xxx
D. (config-router)# ospf auto-cost reference-bandwidth xxx
E. (config)# ip ospf auto-cost reference-bandwidth xxx

Answer:

QUESTION 411
What IEEE 802-x standard supports eight adjacent channels in the UUNI-1 and UUNI-2 bands designated for indoor use?

A. 802.11g
B. 802.11a
C. 802.11b
D. 802.11i
E. None of the above

Answer:

QUESTION 412
SWAN deployment are most often deployed in what types of networks?

A. large enterprises
B. branch offices
C. Hot spots
D. Campus Environments
E. All of the above

Answer:

QUESTION 413
On SNMPv3 which message types are classified as Unconfirmed Class PDU? Select all that apply.

A. Get
B. Trap
C. Inform
D. Report
E. Response

Answer:

QUESTION 414
What command will clear all routes from a routing table on a Cisco router?

A. clear ip route all

B. clear ip route
C. clear all route ip
D. clear ip route neighbor
E. None of the above

Answer:

QUESTION 415
What is not part of MIB-2 (RFC1213)?

A. System
B. Enterprises
C. Transmission
D. TCP
E. Rmon

Answer:

QUESTION 416
Which "show" commands will display the status of a Frame-Relay PVC? Select all that apply.

A. show frame releay pvc
B. show frame-releay pvc
C. show frame-relay interface
D. show frame-relay lmi
E. show frame-relay map
F. show frame relay interface

Answer:

QUESTION 417
Exhibit, Network topology table

Which routes are displayed in Certkiller 1 routing table? Select all that apply.

A. 172.l6.1.48/28
B. 172.l6.1.128/24
C. 172.l6.1.128/25
D. 172.l6.1.128/26
E. 172.l6.1.128/27

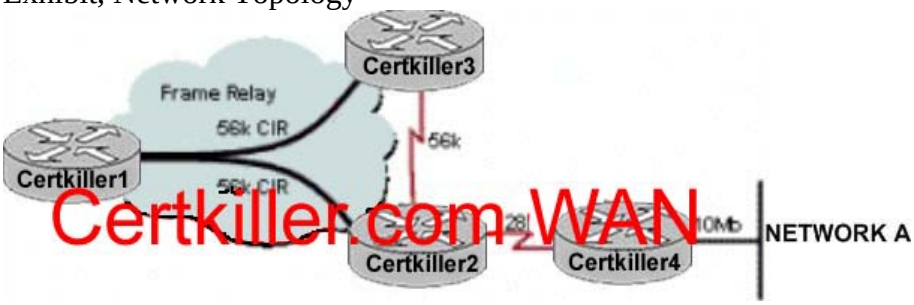
Answer:

QUESTION 418
In SNMP what is an example of a manged devices (sometimes called network elements)?

A. Routers and Switches
B. Hubs and Bridges
C. Printers, Firewalls and Servers
D. All of the above

Answer:

QUESTION 419
Exhibit, Network Topology



What is the effect on routing updates if router Certkiller 1 learns about network A

from router Certkiller 2?

A. Router Certkiller 1 will advertise the route to network A to router Certkiller 3.
B. Router Certkiller 1 will advertise the route to network A to router Certkiller 2 and Certkiller 3.
C. Router Certkiller 1 will load balance between router Certkiller 2 and router Certkiller 3.
D. Router Certkiller 1 will not advertise the route to network A to router Certkiller 3.

Answer:

QUESTION 420
Why do point to multipoint links usually have less maximum range than a point to point link?

A. The total sum of the energy is distributed across numerous radios in a point to multi-point architecture versus most of the RF energy being distributed between only two points in a point to point architecture.
B. Point to point antennas usually employ higher gain antennas at both link to point links.
C. Point to multi-point archetectures require lower power settings than point to point links.
D. On a statistical basis, a point link is more likely to be a greater distance than point to multi-point
E. All of the above.

Answer: