



Exam : 640-801

**Title : Cisco® Certified Network Associate
(CCNA®)**

Ver : 05.24.07

QUESTION 1

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

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

Answer: C, D, E

Explanation:

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

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

Incorrect Answers:

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

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

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

QUESTION 2

Routers perform which of the following functions? (Select Three)

- A. Packet switching
- B. Collision prevention on a LAN segment.
- C. Packet filtering
- D. Broadcast domain enlargement
- E. Broadcast forwarding
- F. Internetwork communication

Answer: A, C, F

Explanation:

A. Routers work in Layer 3 of the OSI Model. A major function of the router is to route

packets between networks.

C. Through the use of access lists, routers can permit and deny traffic using layer 3 and layer 4 packet information.

F. The primary purpose of a router is to route traffic between different networks, allowing for internetworking.

Incorrect Answers:

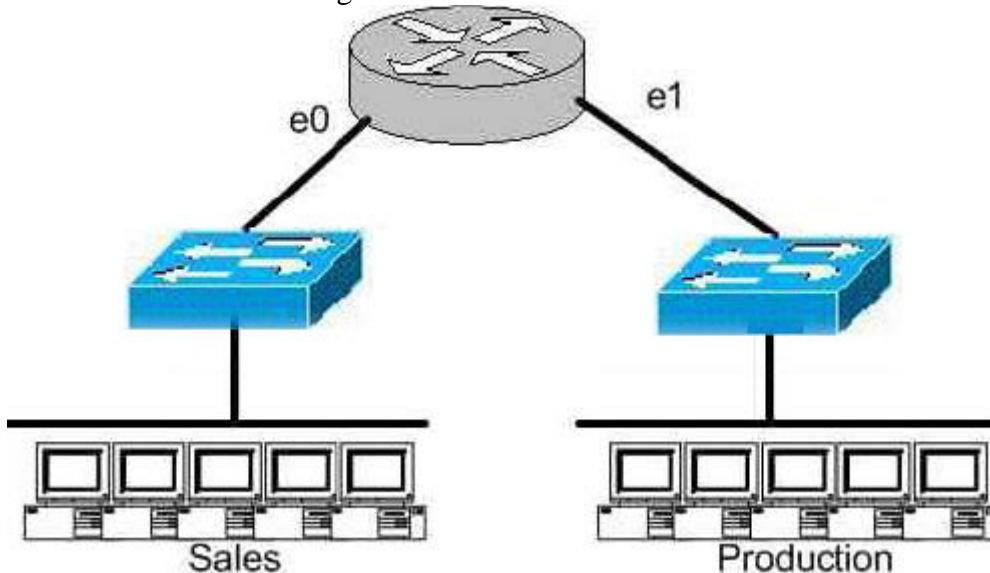
B. While routers can be used to segment LANs, which will reduce the amount of collisions; it can not prevent all collisions from occurring. As long as there are 2 or more devices on a LAN segment, the possibility of a collision exists, whether a router is used or not.

D. The broadcast domain of a LAN is often segmented through the use of a router. This results in reducing the size of the broadcast domain.

E. Routers do not forward broadcast traffic.

QUESTION 3

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



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

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

Answer: A, F

Explanation:

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

QUESTION 4

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

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

Answer: D

Explanation

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

Incorrect Answers:

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

QUESTION 5

Which of the following are benefits of segmenting a network with a router? (Select all that apply)

- A. Broadcasts are not forwarded across the router.
- B. All broadcasts are completely eliminated.
- C. Adding a router to the network decreases latency.
- D. Filtering can occur based on Layer 3 information.
- E. Routers are more efficient than switches and will process the data more quickly.
- F. None of the above.

Answer: A, D

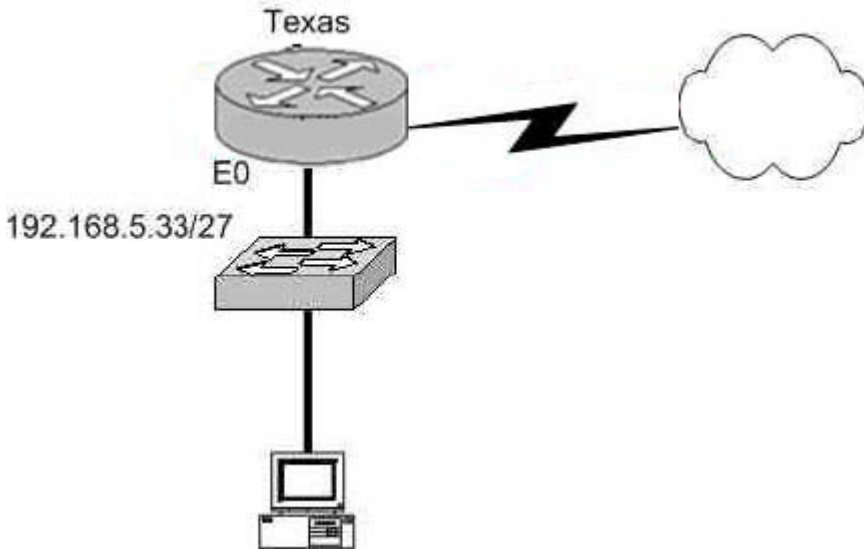
Explanation

Routers do not forward broadcast messages and therefore breaks up a broadcast domain. In addition, routers can be used to filter network information with the use of access lists. Incorrect Answers:

- B. Broadcasts will still be present on the LAN segments. They will be reduced, because routers will block broadcasts from one network to the other.
- C. Adding routers, or hops, to any network will actually increase the latency.
- E. The switching process is faster than the routing process. Since routers must do a layer 3 destination based lookup in order to reach destinations, they will process data more slowly than switches.

QUESTION 6

The Certkiller Texas branch network is displayed in the following diagram:



Of the following choices, which IP address should be assigned to the PC host?

- A. 192.168.5.5
- B. 192.168.5.32
- C. 192.168.5.40
- D. 192.168.5.63
- E. 192.168.5.75

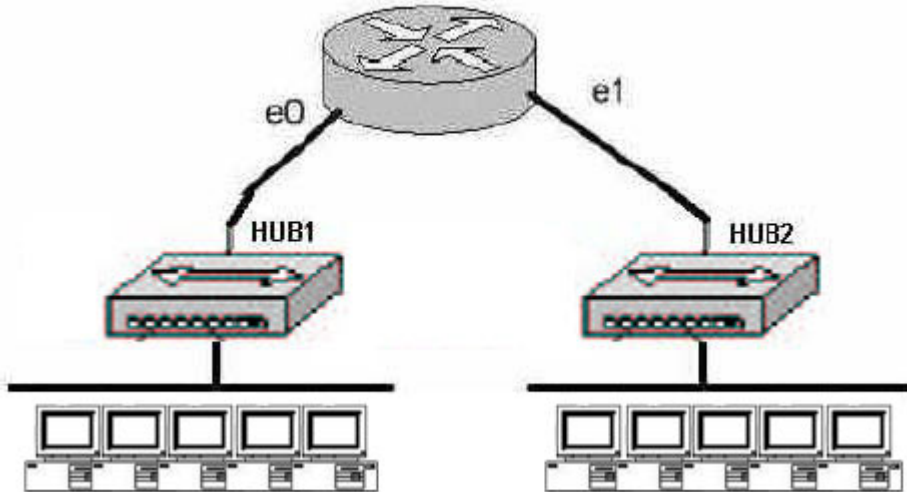
Answer: C.

Explanation:

The subnet mask used on this Ethernet segment is /27, which translates to 255.255.255.224. Valid hosts on the 192.168.5.33/27 subnet are 192.168.5.33-192.168.5.62, with 192.168.5.32 used as the network IP address and 192.168.5.63 used as the broadcast IP address. Therefore, only choice C falls within the usable IP range.

QUESTION 7

The Certkiller .com network is displayed in the diagram below:



Based on the diagram above, how many collision domains are present in the Certkiller .com network?

- A. One
- B. Two
- C. Three
- D. Four
- E. Five
- F. Six
- G. Fourteen

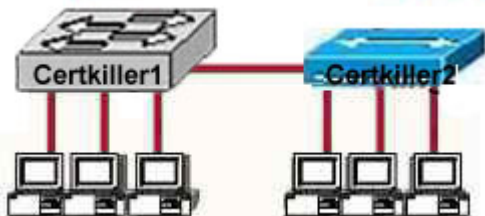
Answer: B

Explanation:

Since hubs are being used for both Ethernet segments, there are a total of two collision domains. Routers do not forward broadcast and are used to segment LANs, so Certkiller A consists of one collision domain while Certkiller B consists of the second collision domain.

QUESTION 8

The Certkiller network is displayed in the following diagram:



Based on the diagram shown above, which of the devices shown can transmit simultaneously without causing collisions?

- A. All hosts
- B. Only hosts attached to the switch

- C. All hosts attached to the hub and one host attached to the switch
- D. All hosts attached to the switch and one host attached to the hub

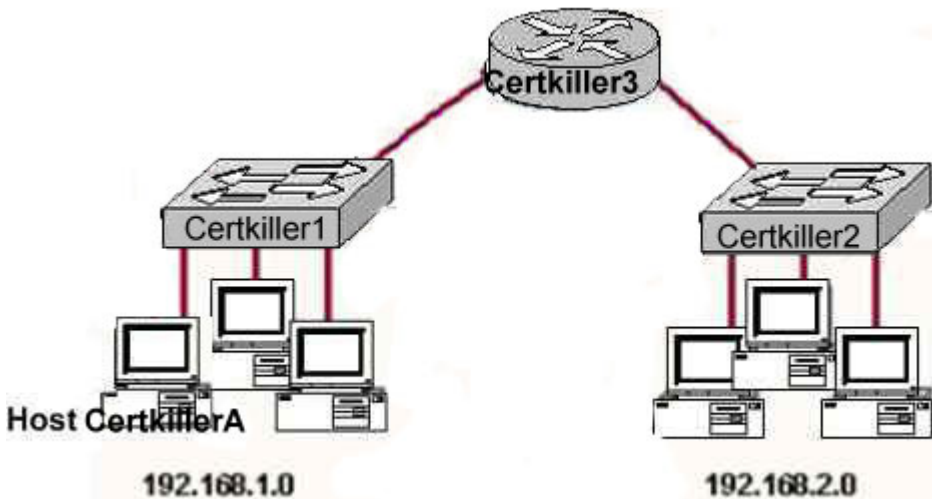
Answer: B

Explanation:

Unlike hubs, a switch is the device which is used to avoid collisions. When two computers communicate through a switch they make their own collision domain. So, there is no chance of collisions. Whenever a hub is included, it supports on half duplex communication and works via CSMA/CD technology, so there is always a chance of collision. In fact, some collisions are a normal occurrence in CSMA/CD.

QUESTION 9

The Certkiller network is displayed in the diagram below:



Referring to the devices shown above, which statements are true in this scenario?
(Select two)

- A. All the devices in both networks will receive a broadcast to 255.255.255.255 sent by host Certkiller A.
- B. Only the devices in network 192.168.1.0 will receive a broadcast to 255.255.255.255 sent by host Certkiller A.
- C. All the devices on both networks are members of the same collision domain.
- D. The hosts on the 192.168.1.0 network form one collision domain, and the hosts on the 192.168.2.0 network form a second collision domain.
- E. Each host is in a separate collision domain.

Answer: B, E

Explanation:

Since the devices shown in the diagram are switches, B is in fact correct. D is not correct. If the diagram used hubs and not switches then yes, there would only be two collision domains, but the diagram has switches. The author may have intended to state broadcast

domains which would have been correct as well.

Answer E is also correct, since the network is comprised of switches each host will be in a separate collision domain.

QUESTION 10

Given the choices below, which address represents a unicast address?

- A. 224.1.5.2
- B. FFFF. FFFF. FFFF.
- C. 192.168.24.59/30
- D. 255.255.255.255
- E. 172.31.128.255/18

Answer: E

Explanation:

172.31.128.255 is the only unicast address. It seems to be a broadcast address, because of 255 in the last octet. However, the broadcast address for this network is actually 172.31.131.255.

Incorrect Answers:

- A: 224.1.5.2 is a multicast address.
 - B: This is a broadcast layer 2 (data link) address.
 - C: Using a /30 for the subnet mask, this IP address becomes the broadcast address.
 - D: This is a broadcast IP address.
-

QUESTION 11

With regards to bridges and switches, which of the following statements are true? (Choose three)

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

Answer: B, D, F

Explanation:

B, F: Both are layer 2 (data link) devices designed to forward layer 2 broadcasts and multicast addresses.

D: Switches do have more ports than bridges. Bridges normally use two ports to bridge LANs together while switches typically come in 24 or 48 ports.

QUESTION 12

Which Layer 1 devices can be used to extend the area covered by a single LAN

segment? (Select two)

- A. Switch
- B. Router
- C. NIC
- D. hub
- E. Repeater
- F. RJ-45 transceiver

Answer: D, E

Explanation:

Both hub, Repeater, Router and Switch repeat the packet. But only hub and Repeater do not segment the network. Repeaters and Hubs are contained in layer one of the OSI model (Physical layer) while a switch lies in layer two and a router is in layer 3.

QUESTION 13

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

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

Answer: A, B, C

Explanation:

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

CDP discovers several useful details from the neighboring device:

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

QUESTION 14

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

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

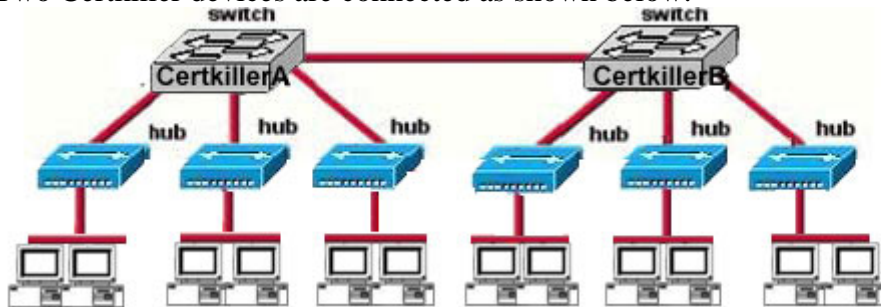
Answer: D

Explanation:

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

QUESTION 15

Two Certkiller devices are connected as shown below:



How many broadcast domains are shown in the graphic assuming only the default VLAN is configured on the switches?

- A. One
- B. Two
- C. Six
- D. Twelve

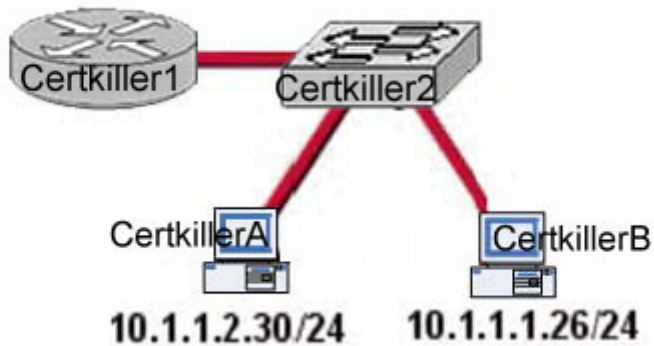
Answer: A

Explanation:

There is only one broadcast domain because switches and hubs do not segment the broadcast domains when only a single VLAN is configured. Only layer 3 devices can segment the broadcast domains, or VLAN-capable switches where multiple VLANs are configured. By default, all ports in a switch belong to VLAN 1 so in this case the entire network will consist of one large broadcast domain.

QUESTION 16

Exhibit:



Study the Exhibit carefully. What switch functionality will prevent Layer 2 broadcasts from moving between the networks shown?

- A. VLAN
- B. STP
- C. ISL
- D. VTP

Answer: A

Explanation:

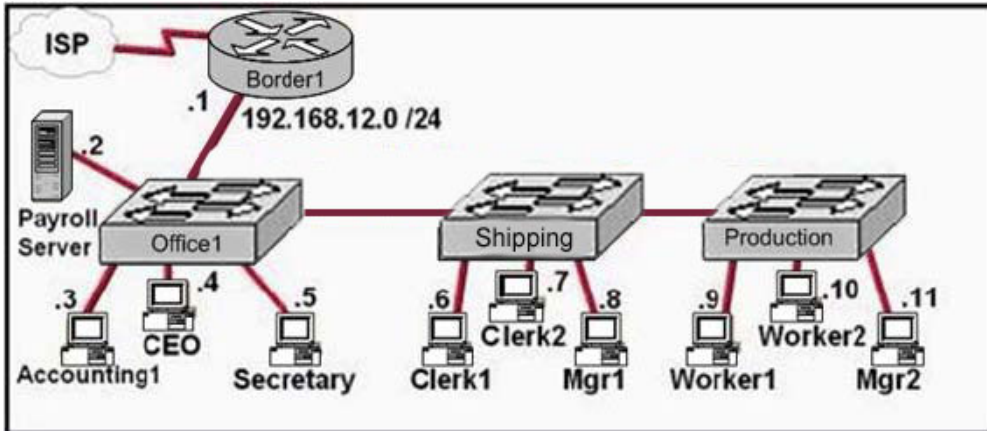
Broadcasts occur in every protocol, but how often they occur depends upon three things:

1. The type of protocol
2. The application(s) running on the internetwork
3. How these services are used

Since switches have become more cost-effective lately, many companies are replacing their flat hub networks with a pure switched network and VLAN environment. All devices in a VLAN are members of the same broadcast domain and receive all broadcasts. The broadcasts, by default, are filtered from all ports on a switch that are not members of the same VLAN. This is great because it offers all the benefits you gain with a switched design without the serious anguish you would experience if all your users were in the same broadcast domain!

QUESTION 17

The Certkiller network is shown in the following exhibit:



Certkiller is concerned about unauthorized access to the Payroll Server. The Accounting1, CEO, Mgr1, and Mgr2 workstations should be the only computers with access to the Payroll Server. What two technologies should be implemented to help prevent unauthorized access to the server? (Choose two.)

- A. Access lists
- B. Encrypted router passwords
- C. STP
- D. VLANs
- E. VTP
- F. Wireless LANs

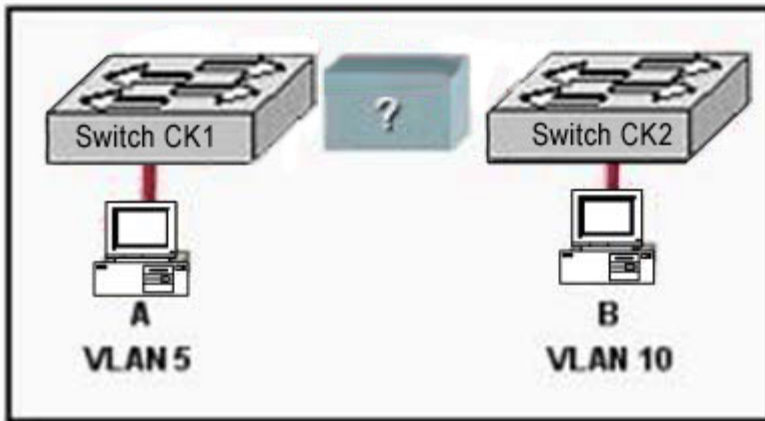
Answer: A, D

Explanation:

Layer 2 switched networks are typically designed as flat networks from a broadcast perspective. Every broadcast packet that is transmitted is seen by every device on the network, regardless of whether the device needs to receive that data or not. By default, routers allow broadcasts only within the originating network, but switches forward broadcasts to all segments. The reason it's called a flat network is because it's one broadcast domain, not because its design is physically flat. VLAN helps to control the broadcast for entire LAN, as well as VLAN helps to implement for Secure LAN design. Access List is another most important security tool in Cisco router, using access list we can allow or deny certain services to certain host or network.

QUESTION 18

Exhibit:



Refer to the exhibit shown above. What is required to allow communication between host A and host B?

- A. A CSU/DSU connected to the switches with crossover cables
- B. A router connected to the switches with straight-through cables
- C. A router connected to the switches with crossover cables
- D. A straight-through cable only
- E. A crossover cable only

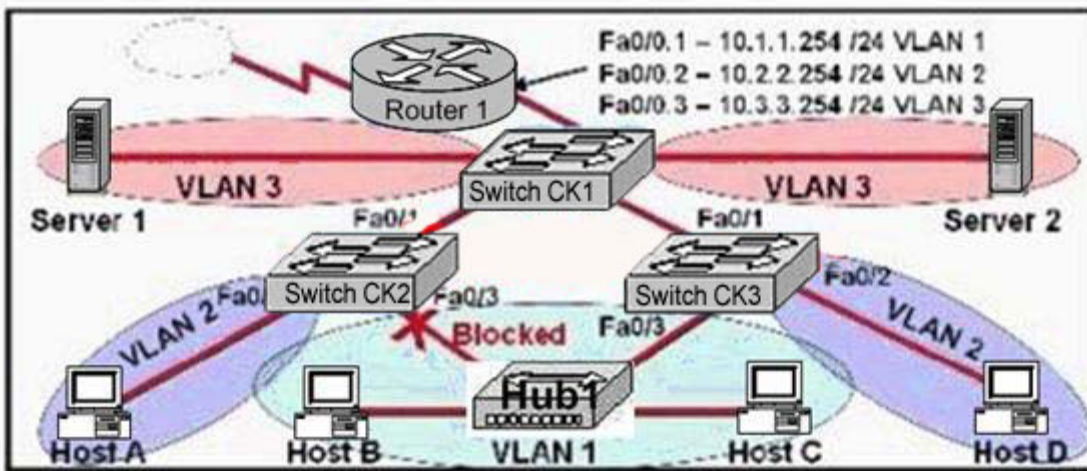
Answer: B

Explanation:

There are two different VLANs in the figure so we will require a router to make inter-VLAN communication. In addition, the switch should connect with the router using the straight-through cable to router for the trunk. Straight-through cable is used to connect two different devices like, switch to router, host to switch. Since we need to insert a router for communication between the two switches, straight through cables will be used between the switches and the router.

QUESTION 19

The Certkiller network is shown in the following exhibit:



Based on this diagram, which of the following is true?

- A. Switch CK2 is the root bridge.
- B. Spanning Tree is not running.
- C. Host D and Server 1 are in the same network.
- D. No collisions can occur in traffic between Host B and Host C.
- E. If Fa0/0 is down on Router 1, Host A cannot access Server 1.
- F. If Fa0/1 is down on Switch 3, Host C cannot access Server 2.

Answer: E

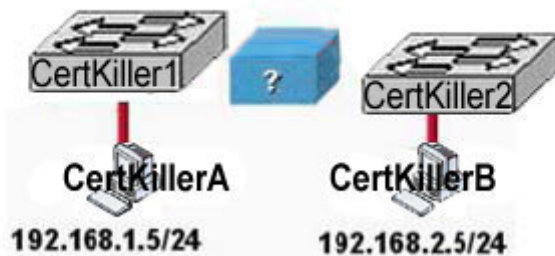
Explanation:

A VLAN is a group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same LAN segment.

The above diagram is configured with inter-VLAN communication so the router has a great role to make communication between different VLAN. When router's port configured with trunk goes down all host can't communicate with other host in different VLAN.

QUESTION 20

Refer to the exhibit shown below. What is needed to allow host A to ping host B?



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

Answer: C

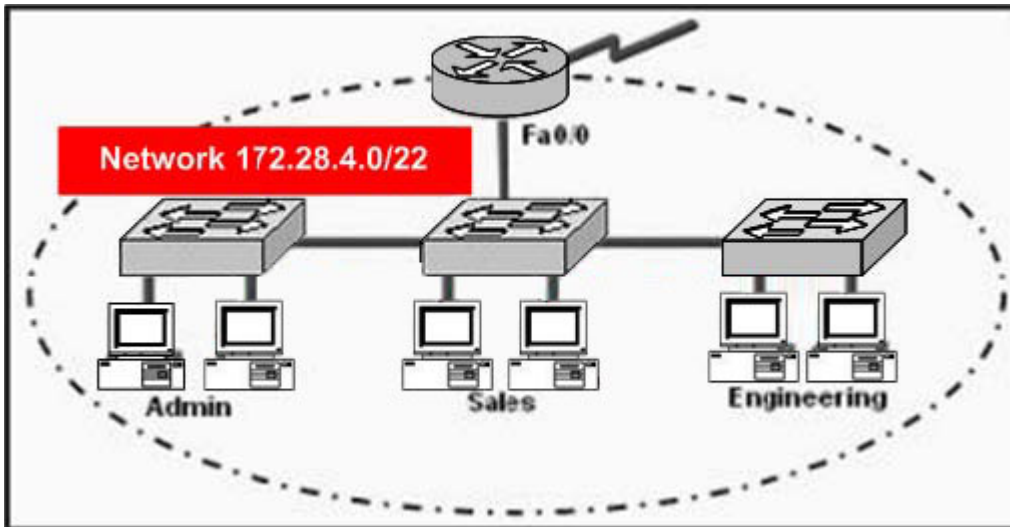
Explanation:

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

QUESTION 21

The corporate LAN shown in the Certkiller network uses IP network 172.28.4.0/22 for all departments. All workstations use 172.28.4.1 as a default gateway address. Network administrators have recently become concerned that excessive broadcasts are slowing network performance. Which change is most likely to reduce broadcast traffic on the corporate LAN?

Exhibit:



- A. Configure an access control list on the router to prevent broadcast forwarding.
- B. Configure each NIC and switch port to operate at full duplex.
- C. Change the router-to-switch connection from Fast Ethernet to Gigabit Ethernet.
- D. Implement VLANs after creating IP subnets for each department.
- E. Increase the number of switches in the network closet of each department.

Answer: D

Explanation:

Switches using VLANs create the same division of the network into separate broadcast

domains but do not have the latency problems of a router. Switches are also a more cost-effective solution.

There are several benefits to using VLANs, including:

1. Increased performance
2. Improved manageability
3. Network tuning and simplification of software configurations
4. Physical topology independence
5. Increased security options

Increased performance

Switched networks by nature will increase performance over shared media devices in use today, primarily by reducing the size of collision domains. Grouping users into logical networks will also increase performance by limiting broadcast traffic to users performing similar functions or within individual workgroups. Additionally, less traffic will need to be routed, and the latency added by routers will be reduced.

QUESTION 22

DRAG DROP

Select from these

crossover
null modem
straight-through
rollover
9-25 pin serial

Place here

Switch access port to router
Switch to switch
PC COM port to switch

Answer:

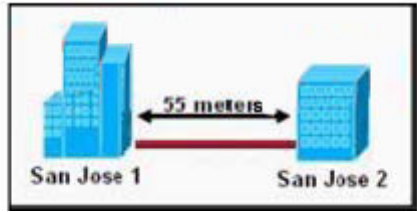
Place here

straight-through
crossover
rollover

QUESTION 23

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

Exhibit:



- A. STP cable
- B. Coaxial cable
- C. Fiber optic cable
- D. UTP cable
- E. None of the above

Answer: C

Explanation:

Since fiber optic cable does not carry electrical charges, all electrical cable problems disappear. When fiber optic cable (outdoor quality) is used to link buildings, grounding problems, ground loops, and voltage spikes are eliminated and fiber-optic cable is all so immune to electronic eavesdropping. The other options (STP, Coax, and UTP) are all copper based and prone to electrical interferences.

QUESTION 24

You have the binary number 10011101. Convert it to its decimal and hexadecimal equivalents. (Select two answer choices)

- A. 158
- B. 0x9D
- C. 156
- D. 157
- E. 0x19
- F. 0x9F

Answer: B, D

Explanation:

$$10011101 = 128+0+0+16+8+4+0+1 = 157$$

For hexadecimal, we break up the binary number 10011101 into the 2 parts:

1001 = 9 and 1101 = 13, this is D in hexadecimal, so the number is 0x9D. We can further verify by taking the hex number 9D and converting it to decimal by taking 16 times 9, and then adding 13 for D ($0x9D = (16 \times 9) + 13 = 157$).

QUESTION 25

The subnet mask on the serial interface of a router is expressed in binary as 11111000 for the last octet. How do you express the binary number 11111000 in decimal?

- A. 210
- B. 224
- C. 240
- D. 248
- E. 252

Answer: D

Explanation:

$128 + 64 + 32 + 16 + 8 = 248$. Since this is the last octet of the interface, the subnet mask would be expressed as a /29.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 559

Incorrect Answers:

- A. The number 210 would be 11010010 in binary.
- B. The number 224 would be 11100000 in binary.
- C. The number 240 would be 11110000 in binary
- E. The number 252 would be 11111100 in binary. This is known as a /30 and is used often in point-point links, since there are only 2 available addresses for use in this subnet.

QUESTION 26

Which one of the binary number ranges shown below corresponds to the value of the first octet in Class B address range?

- A. 10000000-11101111
- B. 11000000-11101111
- C. 10000000-10111111
- D. 10000000-11111111
- E. 11000000-10111111

Answer: C

Explanation:

Class B addresses are in the range 128.0.0.0 through 191.255.255.255.

In binary, the first octet (128 through 191) equates to 10000000-10111111

Incorrect Answers:

- A. Binary 10000000 does equate to 128 but binary 11101111 equates to 239
- B. Binary 11000000 equates to 192 and binary 11101111 equates to 239
- D. Binary 10000000 does equate to 128 but binary 11011111 equates to 223
- E. Binary 11000000 equates to 192 but binary 10111111 does equate to 191

QUESTION 27

How would the number 231 be expressed as a binary number?

- A. 11011011
- B. 11110011
- C. 11100111
- D. 11111001
- E. 11010011

Answer: C

Explanation

Decimal number 231 equates to 11100111 in binary (128+64+32+0+0+4+2+1)

Incorrect Answers:

- A: Binary 11011011 equates to 219 (128+64+0+16+8+0+2+1)
- B: Binary 11110011 equates to 243 (128+64+32+16+0+0+2+1)
- D: Binary 11101011 equates to 249 (128+64+32+16+8+0+0+1)
- E: Binary 11010011 equates to 211 (128+64+0+16+0+0+2+1)

QUESTION 28

How would the number 172 be expressed in binary form?

- A. 10010010
- B. 10011001
- C. 10101100
- D. 10101110

Answer: C

Explanation:

10101100= 128 + 0 + 32 + 0 + 8 + 4 + 0 + 0 = 172

Incorrect Answers:

- A. Binary 10010010 = 128+0+0+16+0+0+2+0=146
- B. Binary 10011001 = 128+0+0+16+8+0+0+1=153
- D. Binary 10101110 = 128+0+32+0+8+4+2+0= 174

QUESTION 29

The MAC address for your PC NIC is: C9-3F-32-B4-DC-19. What is the address of the OUI portion of this NIC card, expressed as a binary number?

- A. 11001100-00111111-00011000
- B. 11000110-11000000-00011111
- C. 11001110-00011111-01100000
- D. 11001001-00111111-00110010
- E. 11001100-01111000-00011000
- F. 11111000-01100111-00011001

Answer: D

Explanation:

The first half of the address identifies the manufacturer of the card. This code, which is assigned to each manufacturer by the IEEE, is called the organizationally unique identifier (OUI). In this example, the OUI is C9-3F-32. If we take this number and convert it to decimal form we have:

$$C9 = (12 \times 16) + 9 = 201$$

$$3F = (3 \times 16) + 15 = 63$$

$$32 = (3 \times 16) + 2 = 50$$

So, in decimal we have 201.63.50. If we then convert this to binary, we have:

$$201 = 11001001$$

$$63 = 00111111$$

$$50 = 00110010$$

So the correct answer is D: 11001001-00111111-00110010

QUESTION 30

How do you express the binary number 10110011 in decimal form?

- A. 91
- B. 155
- C. 179
- D. 180
- E. 201
- F. 227

Answer: C

Explanation:

If you arrange the binary number 10110011, against the place value and multiply the values, and add them up, you get the correct answer.

1 0 1 1 0 0 1 1

128 64 32 16 8 4 2 1

$$128 + 0 + 32 + 16 + 0 + 0 + 2 + 1 = 179$$

QUESTION 31

DRAG DROP

Convert the hex and decimal numbers on the left into binary, and match them to their corresponding slot on the right. (Not all of the hexadecimal and decimal numbers will be used)

640-801

F1	10101010
1F	11000000
192 (decimal)	11110001
96 (decimal)	10011111
9F	
F9	
85 (decimal)	
170 (decimal)	

Answer:

10101010	170 (decimal)
11000000	192 (decimal)
11110001	F1
10011111	9F

Explanation:

170 (Decimal) = 10101010

192 (Decimal) = 11000000

F1 (241 = Decimal) = 11110001

9F (159 = Decimal) = 10011111

The following chart displays all of the possible IP address numbers, expressed in decimal, hexadecimal, and binary:

[640-801](#)

DEC	HEX	BIN	DEC	HEX	BIN	DEC	HEX	BIN
0	00	00000000	43	2B	00101011	86	56	01010110
1	01	00000001	44	2C	00101100	87	57	01010111
2	02	00000010	45	2D	00101101	88	58	01011000
3	03	00000011	46	2E	00101110	89	59	01011001
4	04	00000100	47	2F	00101111	90	5A	01011010
5	05	00000101	48	30	00110000	91	5B	01011011
6	06	00000110	49	31	00110001	92	5C	01011100
7	07	00000111	50	32	00110010	93	5D	01011101
8	08	00001000	51	33	00110011	94	5E	01011110
9	09	00001001	52	34	00110100	95	5F	01011111
10	0A	00001010	53	35	00110101	96	60	01100000
11	0B	00001011	54	36	00110110	97	61	01100001
12	0C	00001100	55	37	00110111	98	62	01100010
13	0D	00001101	56	38	00111000	99	63	01100011
14	0E	00001110	57	39	00111001	100	64	01100100
15	0F	00001111	58	3A	00111010	101	65	01100101
16	10	00010000	59	3B	00111011	102	66	01100110
17	11	00010001	60	3C	00111100	103	67	01100111
18	12	00010010	61	3D	00111101	104	68	01101000
19	13	00010011	62	3E	00111110	105	69	01101001
20	14	00010100	63	3F	00111111	106	6A	01101010
21	15	00010101	64	40	01000000	107	6B	01101011
22	16	00010110	65	41	01000001	108	6C	01101100
23	17	00010111	66	42	01000010	109	6D	01101101
24	18	00011000	67	43	01000011	110	6E	01101110
25	19	00011001	68	44	01000100	111	6F	01101111
26	1A	00011010	69	45	01000101	112	70	01110000
27	1B	00011011	70	46	01000110	113	71	01110001
28	1C	00011100	71	47	01000111	114	72	01110010
29	1D	00011101	72	48	01001000	115	73	01110011
30	1E	00011110	73	49	01001001	116	74	01110100
31	1F	00011111	74	4A	01001010	117	75	01110101
32	20	00100000	75	4B	01001011	118	76	01110110
33	21	00100001	76	4C	01001100	119	77	01110111
34	22	00100010	77	4D	01001101	120	78	01111000
35	23	00100011	78	4E	01001110	121	79	01111001
36	24	00100100	79	4F	01001111	122	7A	01111010
37	25	00100101	80	50	01010000	123	7B	01111011
38	26	00100110	81	51	01010001	124	7C	01111100
39	27	00100111	82	52	01010010	125	7D	01111101
40	28	00101000	83	53	01010011	126	7E	01111110
41	29	00101001	84	54	01010100	127	7F	01111111
42	2A	00101010	85	55	01010101			

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DEC	HEX	BIN	DEC	HEX	BIN	DEC	HEX	BIN
128	80	10000000	171	AB	10101011	214	D6	11010110
129	81	10000001	172	AC	10101100	215	D7	11010111
130	82	10000010	173	AD	10101101	216	D8	11011000
131	83	10000011	174	AE	10101110	217	D9	11011001
132	84	10000100	175	AF	10101111	218	DA	11011010
133	85	10000101	176	B0	10110000	219	DB	11011011
134	86	10000110	177	B1	10110001	220	DC	11011100
135	87	10000111	178	B2	10110010	221	DD	11011101
136	88	10001000	179	B3	10110011	222	DE	11011110
137	89	10001001	180	B4	10110100	223	DF	11011111
138	8A	10001010	181	B5	10110101	224	E0	11100000
139	8B	10001011	182	B6	10110110	225	E1	11100001
140	8C	10001100	183	B7	10110111	226	E2	11100010
141	8D	10001101	184	B8	10111000	227	E3	11100011
142	8E	10001110	185	B9	10111001	228	E4	11100100
143	8F	10001111	186	BA	10111010	229	E5	11100101
144	90	10010000	187	BB	10111011	230	E6	11100110
145	91	10010001	188	BC	10111100	231	E7	11100111
146	92	10010010	189	BD	10111101	232	E8	11101000
147	93	10010011	190	BE	10111110	233	E9	11101001
148	94	10010100	191	BF	10111111	234	EA	11101010
149	95	10010101	192	C0	11000000	235	EB	11101011
150	96	10010110	193	C1	11000001	236	EC	11101100
151	97	10010111	194	C2	11000010	237	ED	11101101
152	98	10011000	195	C3	11000011	238	EE	11101110
153	99	10011001	196	C4	11000100	239	EF	11101111
154	9A	10011010	197	C5	11000101	240	F0	11110000
155	9B	10011011	198	C6	11000110	241	F1	11110001
156	9C	10011100	199	C7	11000111	242	F2	11110010
157	9D	10011101	200	C8	11001000	243	F3	11110011
158	9E	10011110	201	C9	11001001	244	F4	11110100
159	9F	10011111	202	CA	11001010	245	F5	11110101
160	A0	10100000	203	CB	11001011	246	F6	11110110
161	A1	10100001	204	CC	11001100	247	F7	11110111
162	A2	10100010	205	CD	11001101	248	F8	11111000
163	A3	10100011	206	CE	11001110	249	F9	11111001
164	A4	10100100	207	CF	11001111	250	FA	11111010
165	A5	10100101	208	D0	11010000	251	FB	11111011
166	A6	10100110	209	D1	11010001	252	FC	11111100
167	A7	10100111	210	D2	11010010	253	FD	11111101
168	A8	10101000	211	D3	11010011	254	FE	11111110
169	A9	10101001	212	D4	11010100	255	FF	11111111
170	AA	10101010	213	D5	11010101			

QUESTION 32

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

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

Answer: A, C

Explanation:

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

Incorrect Answers:

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

QUESTION 33

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

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

Answer: C

Explanation:

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

Incorrect Answers:

- A. This will give us only 2 bits for the network mask, which will provide only 2 networks.
- B. This will give us 3 bits for the network mask, which will provide for only 6 networks.
- D. This will use 5 bits for the network mask, providing 30 networks. However, it will provide for only for 6 host addresses in each network, so C is a better choice.

QUESTION 34

Which of the following is an example of a valid unicast host IP address?

- A. 172.31.128.255./18
- B. 255.255.255.255
- C. 192.168.24.59/30
- D. FFFF.FFFF.FFFF
- E. 224.1.5.2

F. All of the above

Answer: A

Explanation

The address 172.32.128.255 /18 is 10101100.00011111.10000000.11111111 in binary, so this is indeed a valid host address.

Incorrect Answers:

B. This is the all 1's broadcast address.

C. Although at first glance this answer would appear to be a valid IP address, the /30 means the network mask is 255.255.255.252, and the 192.168.24.59 address is the broadcast address for the 192.168.24.56/30 network.

D. This is the all 1's broadcast MAC address

E. This is a multicast IP address.

QUESTION 35

How many subnetworks and hosts are available per subnet if you apply a /28 mask to the 210.10.2.0 class C network?

A. 30 networks and 6 hosts.

B. 6 networks and 30 hosts.

C. 8 networks and 32 hosts.

D. 32 networks and 18 hosts.

E. 16 networks and 14 hosts.

F. None of the above

Answer: E

Explanation:

A 28 bit subnet mask (11111111.11111111.11111111.11110000) applied to a class C network uses a 4 bits for networks, and leaves 4 bits for hosts. Using the $2^n - 2$ formula, we have $2^4 - 2$ (or $2 \times 2 \times 2 \times 2 - 2$) which gives us 14 for the number of hosts, and the number of networks is $2^4 = 16$.

Incorrect Answers:

A. This would be the result of a /29 (255.255.255.248) network.

B. This would be the result of a /27 (255.255.255.224) network.

C. This is not possible, as we must subtract two from the subnets and hosts for the network and broadcast addresses.

D. This is not a possible combination of networks and hosts.

QUESTION 36

The Certkiller network was assigned the Class C network 199.166.131.0 from the ISP. If the administrator at Certkiller were to subnet this class C network using the 255.255.255.224 subnet mask, how many hosts will they be able to support on each subnet?

- A. 14
- B. 16
- C. 30
- D. 32
- E. 62
- F. 64

Answer: C

Explanation:

The subnet mask 255.255.255.224 is a 27 bit mask (11111111.11111111.11111111.11100000). It uses 3 bits from the last octet for the network ID, leaving 5 bits for host addresses. We can calculate the number of hosts supported by this subnet by using the $2^n - 2$ formula where n represents the number of host bits. In this case it will be 5. $2^5 - 2$ gives us 30.

Incorrect Answers:

- A. Subnet mask 255.255.255.240 will give us 14 host addresses.
- B. Subnet mask 255.255.255.240 will give us a total of 16 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.
- D. Subnet mask 255.255.255.224 will give us a total of 32 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.
- E. Subnet mask 255.255.255.192 will give us 62 host addresses.
- F. Subnet mask 255.255.255.192 will give us a total of 64 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.

QUESTION 37

What is the subnet for the host IP address 172.16.210.0/22?

- A. 172.16.42.0
- B. 172.16.107.0
- C. 172.16.208.0
- D. 172.16.252.0
- E. 172.16.254.0
- F. None of the above

Answer: C

Explanation:

This question is much easier than it appears when you convert it to binary and do the Boolean operation as shown below:

IP address 172.16.210.0 = 10101100.00010000.11010010.00000000

/22 mask = 11111111.11111111.11111100.00000000

AND result = 11111111.11111111.11010000.00000000

AND in decimal= 172 . 16 . 208 . 0

QUESTION 38

What is the subnet for the host IP address 201.100.5.68/28?

- A. 201.100.5.0
- B. 201.100.5.32
- C. 201.100.5.64
- D. 201.100.5.65
- E. 201.100.5.31
- F. 201.100.5.1

Answer: C

Explanation:

This question is much easier than it appears when you convert it to binary and do the Boolean operation as shown below:

IP address 201.100.5.68 = 11001001.01100100.00000101.01000100

/28 mask = 11111111.11111111.11111111.11000000

AND result = 11001001.01100100.00000101.01000000

AND in decimal= 200 . 100 . 5 . 64

QUESTION 39

Exhibit:

- A. 01100100.00001010.11101011.00100111
- B. 10101100.00010010.10011110.00001111
- C. 11000000.10100111.10110010.01000101

3 addresses are shown in binary form in the exhibit.

Regarding these three binary addresses in the above exhibit; which statements below are correct? (Select three)

- A. Address C is a public Class C address.
- B. Address C is a private Class C address.
- C. Address B is a public Class B address.
- D. Address A is a public Class A address.
- E. Address B is a private Class B address.
- F. Address A is a private Class A address.

Answer: A, D, E

Explanation:

- A. Address C converts to 192.167.178.69 in decimal, which is a public class C address.
- D. Address A converts to 100.10.235.39, which is a public class A IP address.
- E. Address B converts to 172.18.158.15, which is a private (RFC 1918) IP address.

QUESTION 40

What is the IP address range for the first octet in a class B address, in binary form?

- A. 00000111-10001111
- B. 00000011-10011111
- C. 10000000-10111111
- D. 11000000-11011111
- E. 11100000-11101111
- F. None of the above

Answer: C

Explanation:

The class B address range is 128.0.0.0-191.255.255.255. When looking at the first octet alone, the range is 128-191. The binary number for 128 is 10000000 and the binary number for 191 is 10111111, so the value range is 10000000-10111111.

QUESTION 41

Which one of the binary bit patterns below denotes a Class B address?

- A. 0xxxxxxx
- B. 10xxxxxx
- C. 110xxxxx
- D. 1110xxxx
- E. 11110xxx

Answer: B

Explanation:

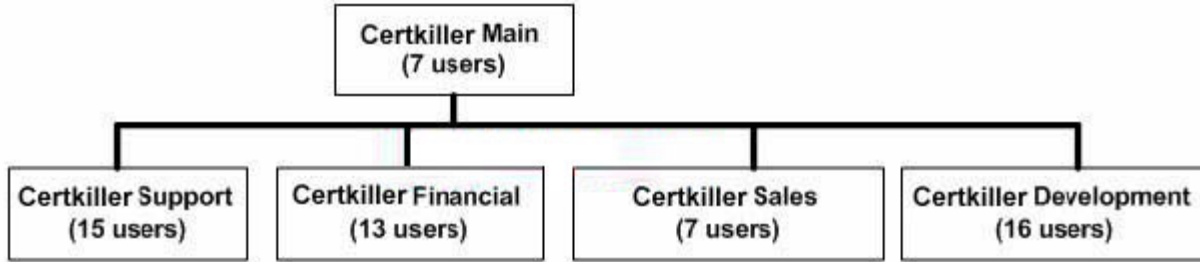
Class B addresses start with a binary of 10. The valid class B range is 128.0.0.0-191.255.255.255.

Incorrect Answers:

- A. Class A addresses start with 0, as they are addresses that are less than 128.
 - C. Class C addresses start with 110, for a value of 192.0.0.0-223.255.255.255
 - D. Class D addresses start with 1110. They are reserved for multicast use
 - E. Class E addresses start with 11110. They are currently reserved for experimental use.
-

QUESTION 42

The Certkiller network consists of 5 different departments as shown below:



You are a systems administrator at Certkiller and you've just acquired a new Class C IP network. Which of one of the subnet masks below is capable of providing one useful subnet for each of the above departments (support, financial, sales & development) while still allowing enough usable host addresses to meet the needs of each department?

- A. 255.255.255.128
- B. 255.255.255.192
- C. 255.255.255.224
- D. 255.255.255.240
- E. 255.255.255.248
- F. 255.255.255.252

Answer: C

Explanation:

The network currently consists of 5 subnets. We need to subnet the Class C network into at least 5 subnets. This requires that we use 3 bits for the network address. Using the formula $2^n - 2$ we get 6. This also leaves us with 5 bits for hosts, which gives us 30 hosts.

Incorrect Answers:

- A. Only 1 bit is required to give us 128 but 1 bit gives us 0 subnets. 2 bits are required to give us 192 but 2 bits gives us only 2 subnets. This is too few.
- D. 4 bits are required to give us 240. This gives us 14 subnets. However we are left with 4 bits for hosts leaving us with 14 host addresses. Two of the networks require more than 14 hosts so this will not do.
- E. 5 bits are required to give us 248. This gives us 30 subnets. However we are left with 3 bits for hosts leaving us with 6 host addresses. All the networks require more than 6 hosts so this will not do.
- F. 6 bits are required to give us 252. This gives us 62 subnets. However we are left with 2 bits for hosts leaving us with 2 host addresses. This is too few.

QUESTION 43

Your network uses the 172.12.0.0 class B address. You need to support 459 hosts per subnet, while accommodating the maximum number of subnets. Which mask would you use?

- A. 255.255.0.0.
- B. 255.255.128.0.
- C. 255.255.224.0.

D. 255.255.254.0.

Answer: D

Explanation:

To obtain 459 hosts the number of host bits will be 9. This can support a maximum of 510 hosts. To keep 9 bits for hosts means the last bit in the 3rd octet will be 0. This gives 255.255.254.0 as the subnet mask.

QUESTION 44

Using a subnet mask of 255.255.255.224, which of the IP addresses below can you assign to the hosts on this subnet? (Select all that apply)

- A. 16.23.118.63
- B. 87.45.16.159
- C. 92.11.178.93
- D. 134.178.18.56
- E. 192.168.16.87
- F. 217.168.166.192

Answer: C, D, E

Explanation:

Since the subnet mask is 255.255.255.224, the number of network hosts that is available is 30. Every network boundary will be a multiple of 32. This means that every subnet will be a multiple (0, 32, 64, 96, 128, 160, 192, 224) and the broadcast address for each of these subnets will be one less this number (31, 63, 95, 127, 159, 191, 223). Therefore, any IP address that does not end in one of these numbers will be a valid host IP address.

- C. Valid Host in subnetwork 2 (92.11.178.64 to 92.11.178.95)
- D. Valid Host in subnetwork 1 (134.178.18.32 to 134.178.18.63)
- E. Valid Host in subnetwork 2 (192.168.16.64 to 192.168.16.95)

Incorrect Answers:

- A. This will be the broadcast address for the 16.23.118.32/27 network.
- B. This will be the broadcast address for the 87.45.16.128/27 network
- F. This will be the network address for the 217.168.166.192/27 network.

QUESTION 45

Your ISP has assigned you the following IP address and subnet mask:

IP address: 199.141.27.0

Subnet mask: 255.255.255.240

Which of the following addresses can be allocated to hosts on the resulting subnet? (Select all that apply)

- A. 199.141.27.2
- B. 199.141.27.175

- C. 199.141.27.13
- D. 199.141.27.11
- E. 199.141.27.208
- F. 199.141.27.112

Answer: A, C, D

Explanation:

IP address = 11001000.10001101.00011011.00000000 = 199.141.27.0

Subnet mask = 11111111.11111111.11111111.11110000 = 255.255.255.240

Subnet # = 11001000.10001101.00011011.00000000 = 199.141.27.0

Broadcast = 11001000.10001101.00011011.00001111 = 199.141.27.15

The valid IP address range = 199.141.27.1 - 199.141.27.14

QUESTION 46

The IP network 210.106.14.0 is subnetted using a /24 mask. How many usable networks and host addresses can be obtained from this?

- A. 1 network with 254 hosts
- B. 4 networks with 128 hosts
- C. 2 networks with 24 hosts
- D. 6 networks with 64 hosts
- E. 8 networks with 36 hosts

Answer: A

Explanation:

A subnet with 24 bits on would be 255.255.255.0. Since this is a class C network, this subnet can have only 1 network and 254 usable hosts.

QUESTION 47

Given that you have a class B IP address network range, which of the subnet masks below will allow for 100 subnets with 500 usable host addresses per subnet?

- A. 255.255.0.0
- B. 255.255.224.0
- C. 255.255.254.0
- D. 255.255.255.0
- E. 255.255.255.224

Answer: C

Explanation:

Using the $2^n - 2$ formula for host addresses, $2^9 - 2 = 510$ host address, so a 9-bit subnet mask will provide the required number of host addresses. If these 9 bits are used for the hosts in a class B network, then the remaining 7 bits are used for the number of networks.

Again using the $2n-2$ formula, we have $2n-2 = 126$ networks that are available.

Incorrect Answers:

- A. This will provide for only 1 network with $2^{16}-2 = 65534$ hosts
- B. This will provide for 6 networks with 8190 host addresses.
- D. This will provide 254 networks and 254 hosts.
- E. This will provide 2046 different networks, but each network will have only 30 hosts.

QUESTION 48

You have a class C network, and you need to design it for 5 usable subnets with each subnet handling a minimum of 18 hosts each. Which of the following network masks should you use?

- A. 225.225.224.0.
- B. 225.225.240.0.
- C. 225.225.255.0.
- D. 255.255.255.224
- E. 225.225.255.240

Answer: D

Explanation:

The default subnet mask for class C network is 255.255.255.0. If one has to create 5 subnets, then 3 bits are required. With 3 bits we can create 6 subnets. The remaining 5 bits are used for Hosts. One can create 30 hosts using 5 bits in host field. This matches with the requirement.

Incorrect Answers:

- A, B: This is an illegal subnet mask for a class C network, as the third octet can not be divided when using a class C network.
- C. This is the default subnet mask for a class C network. It provides for one network, with 254 usable host IP addresses.
- E. This subnet mask will provide for 14 separate networks with 14 hosts each. This does not meet the requirement of a minimum of 18 hosts.

QUESTION 49

The 213.115.77.0 network was subnetted using a /28 subnet mask. How many usable subnets and host addresses per subnet were created as a result of this?

- A. 2 networks with 62 hosts
- B. 6 networks with 30 hosts
- C. 16 networks and 16 hosts
- D. 62 networks and 2 hosts
- E. 14 networks and 14 hosts
- F. None of the above

Answer: F

Explanation:

A class C subnet with a 28 bit mask requires 4 bits for the network address, leaving 4 bits for host addresses. Using the $2^n - 2$ formula ($2^4 - 2$ in this case) we have 14 host addresses and 16 network addresses.

Incorrect Answers:

- A. This would be the result of a /26 network mask
- B. This would be the result of a /27 network mask
- C. Remember we need to always subtract two for the network and broadcast addresses, so this answer is incorrect.
- D. This would be the result of a /30 network mask.

QUESTION 50

The 201.145.32.0 network is subnetted using a /26 mask. How many networks and IP hosts per network exists using this subnet mask?

- A. 4 networks with 62 hosts
- B. 64 networks and 4 hosts
- C. 4 networks and 62 hosts
- D. 62 networks and 2 hosts
- E. 6 network and 30 hosts

Answer: C

Explanation:

A class C network with a 26 bit mask requires 2 bits for the network address, leaving 6 bits for host addresses. Using the $2^n - 2$ formula (2^2 for the network and $2^6 - 2$ for hosts) we have 4 network addresses and 62 host addresses.

Incorrect Answers:

- A, B: This is not a possible combination. No network mask will provide for 64 usable hosts, because we must always subtract 2 for the network and broadcast address.
- D. This would be the result of a /30 mask.
- E. This would be the result of a /27 network mask.

QUESTION 51

You have a class B network with a 255.255.255.0 mask. Which of the statements below are true of this network? (Select all valid answers)

- A. There are 254 usable subnets.
- B. There are 256 usable hosts per subnet.
- C. There are 50 usable subnets.
- D. There are 254 usable hosts per subnet.
- E. There are 24 usable hosts per subnet.
- F. There is one usable network.

Answer: A, D

Explanation:

The default subnet mask for Class B is 255.255.0.0. Thus an extra 8 bits have been used for the network portion, leaving 8 for hosts. The $2^n - 2$ formula (28 - 2 in this case for both the network and IP hosts) gives us 254 networks and 254 hosts per network.

Incorrect Answers:

B. We must remember to always subtract 2 (one for the network, and one for the broadcast) so the result is 254, not 256.

C, E: No possible network mask would give us this exact number of subnets or hosts.

F. This would be true if this were a class C network, not a class B.

QUESTION 52

How many usable IP addresses can you get from a conventional Class C address?

- A. 128
- B. 192
- C. 254
- D. 256
- E. 510

Answer: C

Explanation:

Class C addresses range from 192.0.0.0 through 223.225.225.225 and default subnet mask of 255.255.255.0. In Class C addresses, the first 24 bits are used as for the network ID while only the last 8 bits is used for the host ID. Using the $2^n - 2$ formula, we can calculate that Class C addresses can support a maximum of 254 (28-2) hosts.

Incorrect Answers:

D. Note that the question asked for the number of usable addresses, and not the total number of all addresses. We must subtract 2 for the network and broadcast addresses to calculate the number of usable addresses in any subnet.

QUESTION 53

Your ISP assigned you a full class B address space. From this, you need at least 300 sub-networks that can support at least 50 hosts each. Which of the subnet masks below are capable of satisfying your needs? (Select two).

- A. 255.255.255.0
- B. 255.255.255.128
- C. 255.255.252.0
- D. 255.255.255.224
- E. 255.255.255.192
- F. 255.255.248.0

Answer: B, E

Explanation:

Requirement in the question is that the company needs 300 subnets and 50 hosts per subnet.

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

With 9 bits used for the subnet portion, we get 510 subnets and using the remaining 7 bits for the hosts gives us 126 hosts per subnet. The subnet mask will be 255.255.255.128

With 10 bits used for the subnet portion, we get 1022 subnets and then using the remaining 6 bits for hosts provides 62 hosts per subnet. The subnet mask will be 255.255.255.192 in this case which will also fulfill the requirement.

QUESTION 54

A Certkiller PC has the IP address 172.16.209.10 /22. What is the subnet of this address?

- A. 172.16.42.0
- B. 172.16.107.0
- C. 172.16.208.0
- D. 172.16.252.0
- E. 172.16.254.0

Answer: C

Explanation:

172.16.209.10/22 translates to 10101100.00010000.11010001.00001010 in binary form.

The network portion is 22 bits, so after the logical AND comparison the network address translates to 10101100.00010000.110100001.00001010. Converting the network portion to decimal results in the address 172.16.208.0/22

QUESTION 55

You've been assigned the CIDR (classless inter domain routing) block of 115.64.4.0/22 from your ISP. Which of the IP addresses below can you use for a host? (Select all valid answers)

- A. 115.64.8.32
- B. 115.64.7.64
- C. 115.64.6.255
- D. 115.64.3.255
- E. 115.64.5.128
- F. 115.64.12.128

Answer: B, C, E

Explanation:

115.64.4.0 = 01110011.01000000.00000100.00000000

Subnet mask = 11111111.11111111.11111100.00000000 = 255.255.252.0

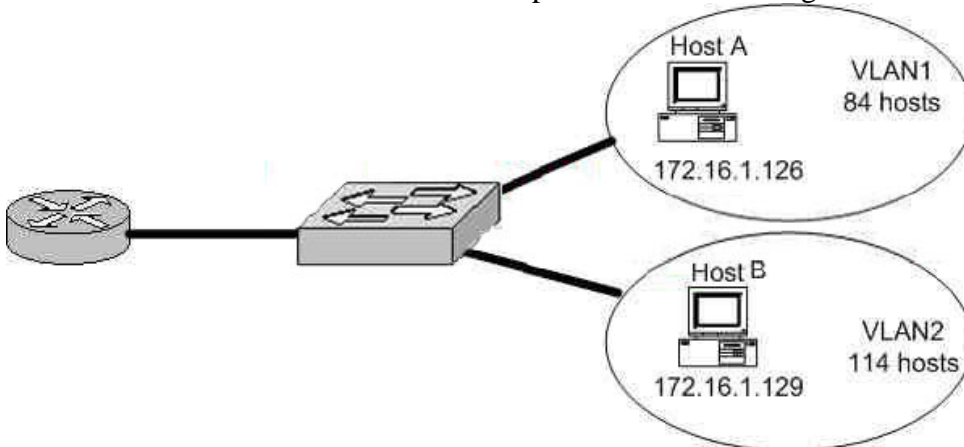
Subnet number = 01110011.01000000.00000100.00000000 = 115.64.4.0

Broadcast = 01110011.01000000.00000111.11111111 = 115.64.7.255

Valid address range = 115.64.4.1 - 115.64.7.254

QUESTION 56

A Certkiller remote office branch is set up as shown in the diagram below:



All of the hosts in the above exhibit are connected with each other via the single Catalyst switch. Which of the following statements correctly describe the addressing scheme of this network? (Select three)

- A. The subnet mask in use is 255.255.255.192.
- B. The subnet mask in use is 255.255.255.128.
- C. The IP address 172.16.1.25 can be assigned to hosts in VLAN1.

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- D. The IP address 172.16.1.205 can be assigned to hosts in VLAN1
- E. The LAN interface of the router is configured with one IP address.
- F. The LAN interface of the router is configured with multiple IP addresses.

Answer: B, C, F

Explanation:

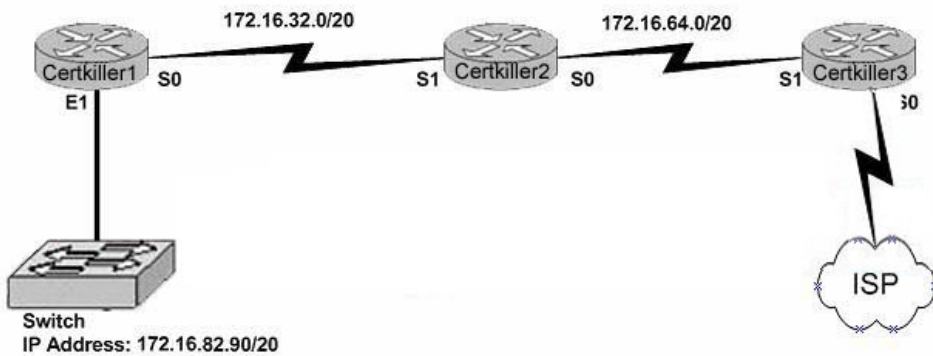
Based on the diagram above, the subnet mask used for each VLAN is 255.255.255.128. This means that hosts in VLAN 1 will be addressed 172.16.1.1-172.16.1.126, with 172.16.1.127 being used as the broadcast address. Hosts in VLAN 2 will be addressed 172.16.1.129-172.16.1.254. Because there is only one LAN interface on the router, sub interfaces will be used, so the router's LAN interface will be configured with 2 IP addresses, one for VLAN 1 and 1 for VLAN 2.

Incorrect Answers:

- A. This subnet mask will only provide 62 host IP addresses, and the diagram shows that as many as 114 host IP addresses are needed.
- D. This IP address can be used in VLAN 2, not VLAN 1.
- E. Since there are 2 subnets in this network, each separate network will require a distinct default gateway IP address, so 2 IP addresses will be required on the LAN interface of the router.

QUESTION 57

The Certkiller network is shown in the following diagram:



In the above network diagram, what are the broadcast addresses of the subnets?
(Select three)

- A. 172.16.82.255
- B. 172.16.95.255
- C. 172.16.64.255
- D. 172.16.32.255
- E. 172.16.47.255
- F. 172.16.79.255

Answer: B, E, F

Explanation:

The subnets in the network are subnetted Class B addresses. A /20 subnet mask means that the subnet addresses increment by a factor of 16. For example: 172.16.16.0, 172.16.32.0, 172.16.48.0, 172.16.64.0 etc. The broadcast address is the last IP address before the next subnet address.

B. The switch IP address (172.16.82.90) is in the 172.16.80.0 subnet. 172.16.95.255 is the broadcast address for the 172.16.80.0 subnet.

E. This is the broadcast address for the 172.16.32.0 subnet.

F. This is the broadcast address for the 172.16.64.0 subnet.

QUESTION 58

Which one of the following varieties of NAT utilizes different ports to map multiple IP addresses to a single globally registered IP address?

- A. Static NAT
- B. Port loading
- C. NAT Overloading
- D. Dynamic NAT
- E. None of the above

Answer: C

Explanation:

Port address translation, or NAT overloading, uses transport layer port information to dynamically create NAT entries. This is also known as one to many network address translation.

Incorrect Answers:

A. Static NAT is known as one to one NAT, and is used to map a single IP address to a single registered IP address. It is often used for servers that need to be accessed via the Internet.

B, D: This is the incorrect term, and is not used.

QUESTION 59

On the topic of VLSM, which one of the following statements best describes the concept of the route aggregation?

- A. Deleting unusable addresses through the creation of many subnets.
- B. Combining routes to multiple networks into one supernet.
- C. Reclaiming unused space by means of changing the subnet size.
- D. Calculating the available host addresses in the AS.

Answer: B

Explanation:

In the networking world route aggregate means combining routes to multiple networks

into one. This is also known as route summarization or supernetting. It is normally used to reduce the number of route entries in the routing table by advertising numerous routes into one larger route.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 236.

QUESTION 60

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

- A. 255.255.255.0
- B. 255.255.255.240
- C. 255.255.255.248
- D. 255.255.255.252
- E. 255.255.255.254

Answer: D

Explanation:

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

QUESTION 61

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

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

Answer: B

Explanation:

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

Incorrect Answers:

- A. The largest mask that can be used is the single IP host mask, which is /32. It is not possible to use a /38 mask, unless of course IPv6 is being used.
- C, D, E. These masks will provide for a larger number of host addresses, and since only 2

IP addresses are needed for a point to point link, these extra addresses are wasted.
F: No available host addresses with a /32 mask

QUESTION 62

How would you express the binary number: 10101010 in its decimal and hexadecimal forms?

- A. Decimal=160, hexadecimal=00
- B. Decimal=170, hexadecimal=AA
- C. Decimal=180, hexadecimal=BB
- D. Decimal=190, hexadecimal=CC

Answer: B

Explanation:

For the binary equivalent of 10101010 to Decimal, the answer is $128+32+8+2=170$.
For the hexadecimal number, we need to break up the binary number into two bytes of 1010 and 1010. Each one in binary is then 10 and 10, which is A and A in hexadecimal.

QUESTION 63

Which of the following IP hosts would be valid for PC users, assuming that a /27 network mask was used for all of the networks? (Choose all that apply.)

- A. 15.234.118.63
- B. 83.121.178.93
- C. 134.178.18.56
- D. 192.168.19.37
- E. 201.45.116.159
- F. 217.63.12.192

Answer: B, C, D

Explanation:

With a 255.255.255.224 network mask, the network boundaries will be a multiple of 32, so any network will have a multiple of 32 (32, 64, 96, 128, 160, 192, 224) in the last octet. If we subtract 1 from each of these numbers (so we have 31, 63, 95, etc), we know that any IP address ending in any of these numbers will be a broadcast address.

Valid Address Current host range

83.121.178.93 83.121.178.65 to 82.121.178.94

134.178.18.56 134.178.18.33 to 134.178.18.62

192.168.19.37 192.168.19.33 to 192.168.19.62

Incorrect Answers:

- A. This is the broadcast address for the 15.234.118.32/27 network.
 - E. This is the broadcast address for the 201.45.116.128/27 network.
 - F. This is the network address for the 217.63.12.192/27 network.
-

QUESTION 64

You are the network administrator at Certkiller . Certkiller has been provided with the network address 165.100.27.0/24. The Certkiller CEO wants to know how many subnetworks this address provides, and how many hosts can be supported on each subnet.

What would your reply be? (Choose all that apply)

- A. One network with 254 hosts.
- B. 254 networks with 254 hosts per network.
- C. 65,534 networks with 255 hosts per network.
- D. 30 networks with 64 hosts per network.
- E. 254 networks with 65,534 per network.

Answer: A

When we have address 165.100.27.0/24 the number of networks is 1 with 254 hosts because this address is already subnetted and valid hosts range are 165.100.27.1-165.100.27.254, making the right answer

A. If the address was 165.100.0.0/24 then right answer is B.

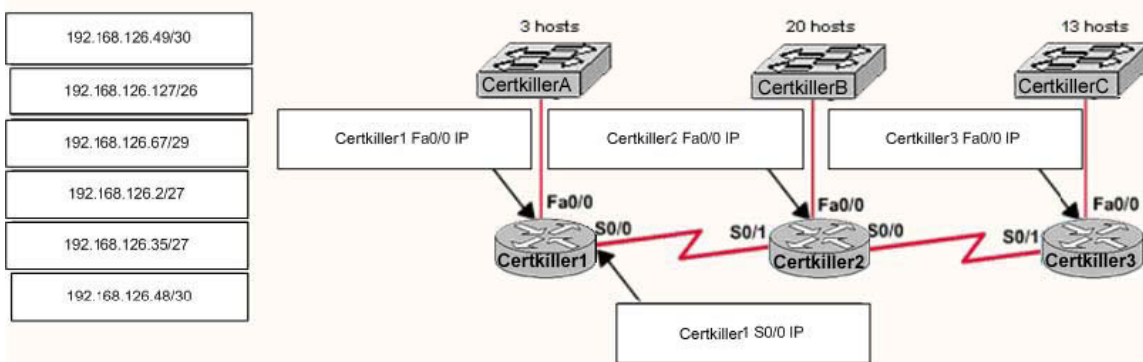
QUESTION 65

DRAG DROP

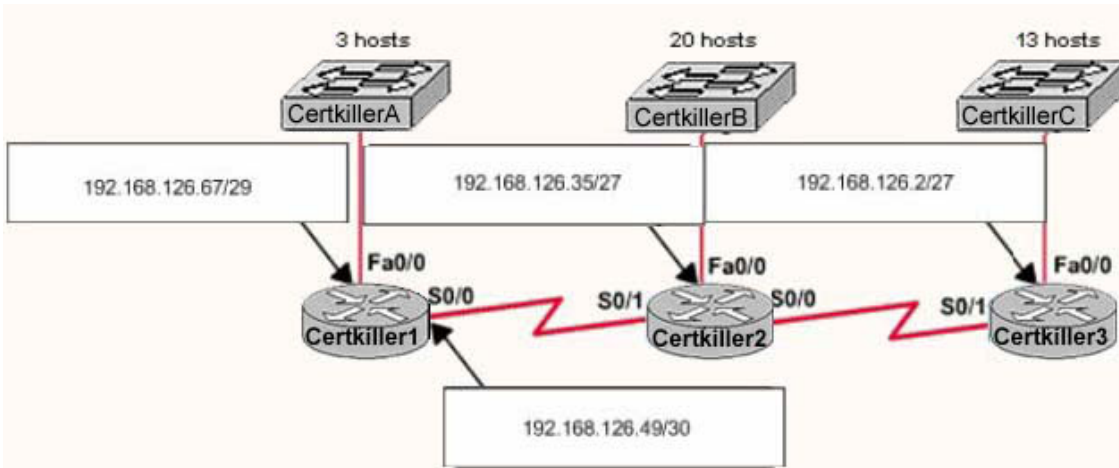
Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.126.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time converse unused addresses for future growth.

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



Answer:



Explanation:

Certkiller 1 Fa0/0 192.168.126.67/29

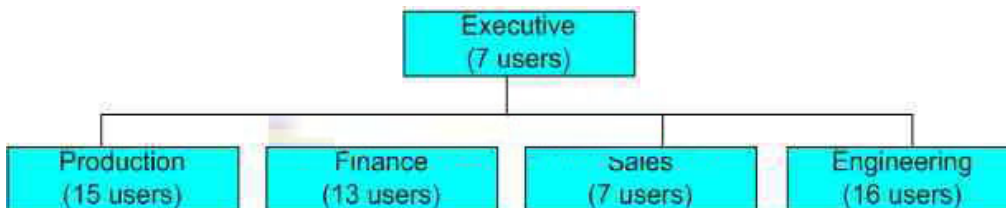
Certkiller 1 S0/0 192.168.126.49/30

Certkiller 2 Fa0/0 and Certkiller 3 Fa0/0 both can have either of the following

192.168.126.35/27 or 192.168.126.2/27

QUESTION 66

The Certkiller network has been divided into 5 separate departments as displayed below:



Using a Class C IP network, which subnet mask will provide one usable subnet per department while allowing enough usable host addresses for each department specified in the graphic?

- A. 255.255.255.0
- B. 255.255.255.192
- C. 255.255.255.224
- D. 255.255.255.240
- E. 255.255.255.248
- F. 255.255.255.252

Answer: C

Explanation:

Choice C will provide for 8 separate subnets with 30 usable hosts per subnet. Since we only require 5 different subnets with at most 16 users, this will suffice.

Incorrect Answers:

A. This will only provide 1 network with 254 hosts. This question requires 5 different networks.

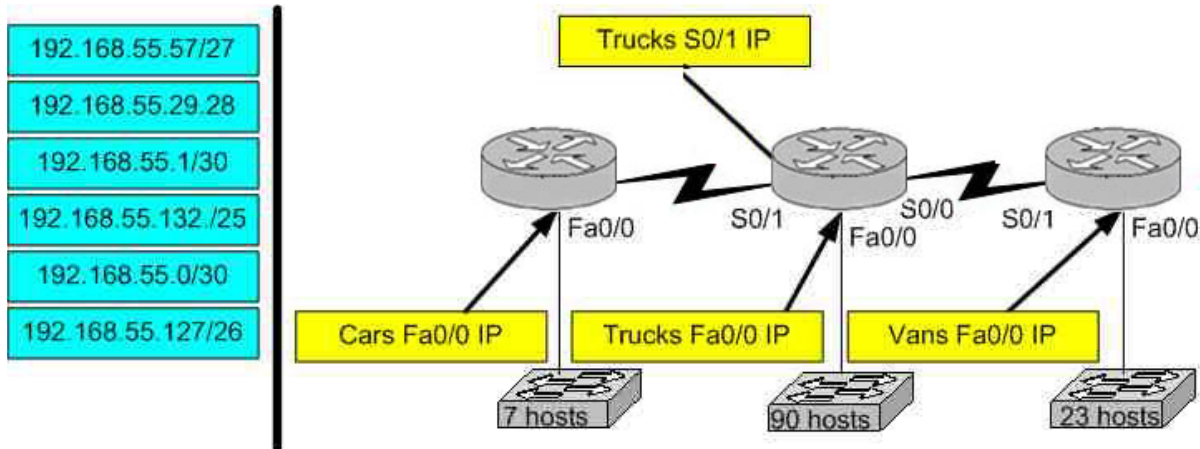
- B. This will only provide 4 networks, with 62 hosts per network.
 D. This will provide for 14 networks, but with only 14 hosts per network so there will not be enough hosts for the Production and Engineering LANs.
 E. This will provide for 62 different networks, but each with only 2 usable hosts per network.

QUESTION 67**DRAG DROP**

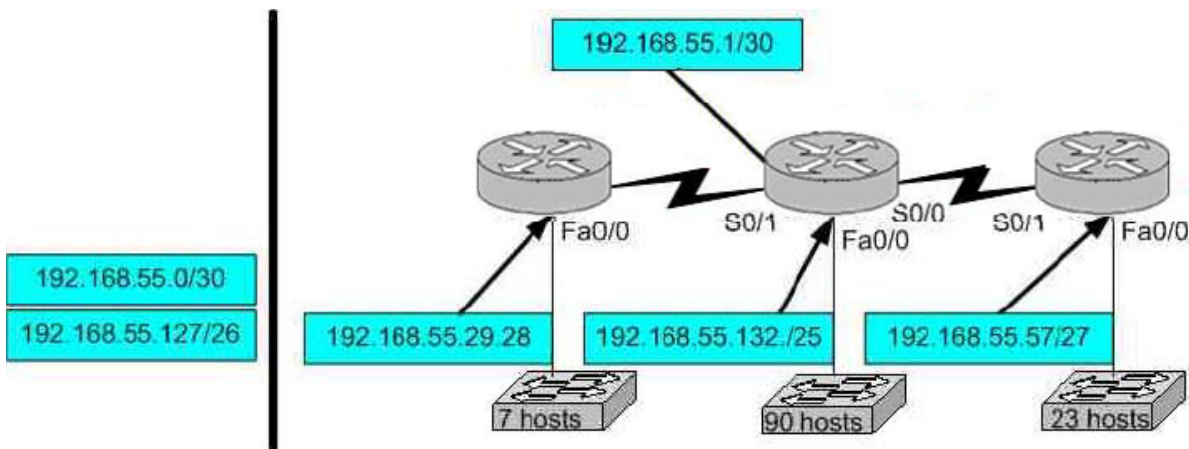
Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.55.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth.

Being mindful of these goals, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Not all of the host addresses on the left will be used.



Answer:



QUESTION 68

You are the network administrator at Certkiller . Certkiller has been assigned the class C IP address 189.66.1.0 by its Internet Service Provider. If you divide the network range by using the 255.255.255.224 subnet mask, how many hosts can be supported on each network?

- A. 14
- B. 16
- C. 30
- D. 32
- E. 62
- F. 64

Answer: C

Explanation:

The subnet mask 255.255.255.224 is a 27 bit mask (11111111.11111111.11111111.11100000). It uses 3 bits from the host Id for the network ID, leaving 5 bits for host addresses. We can calculate the number of hosts supported by this subnet by using the $2^n - 2$ formula where n represents the number of host bits. In this case it will be 5. $2^5 - 2$ gives us 30.

Incorrect Answers:

- A. Subnet mask 255.255.255.240 will give us 14 host addresses.
- B. Subnet mask 255.255.255.240 will give us a total of 16 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.
- D. Subnet mask 255.255.255.224 will give us a total of 32 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.
- E. Subnet mask 255.255.255.192 will give us 62 host addresses.
- F. Subnet mask 255.255.255.192 will give us a total of 64 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.

QUESTION 69

Which of the following statements are true regarding a network using a subnet mask of 255.255.248.0? (Choose three)

- A. It corresponds to a Class A address with 13 bits borrowed.
- B. It corresponds to a Class B address with 4 bits borrowed.
- C. The network address of the last subnet will have 248 in the 3rd octet.
- D. The first 21 bits make the host portion of the address.
- E. This subnet mask allows for 16 total subnets to be created.
- F. The subnetwork numbers will be in multiples of 8.

Answer: A, C, F

Explanation:

This subnet mask includes the first 5 bits within the third octet, so for a class A address 13 bits will be used for the mask (8 bits in the second octet plus 5 in the third).

Since the first 5 bits are used in this octet, that means that remaining 3 bits in this octet will be available for hosts, so each network will be a factor of 8, making the last available subnet with a .248 in the third octet.

QUESTION 70

Which of the following IP addresses is a private IP address? Select all that apply.

- A. 12.0.0.1
- B. 168.172.19.39
- C. 172.20.14.36
- D. 172.33.194.30
- E. 192.168.42.34

Answer: C, E

Explanation:

RFC 1918 Private Address Space:

Range of IP Addresses	Class of Networks	Number of Network
10.0.0.0 to 10.255.255.255	A	1
172.16.0.0 to 172.31.255.255	B	16
192.168.0.0 to 192.168.255.255	C	256

QUESTION 71

What is the network address for a host with the IP address 201.100.5.68/28?

- A. 201.100.5.0
- B. 201.100.5.32
- C. 201.100.5.64
- D. 201.100.5.65
- E. 201.100.5.31
- F. 201.100.5.1

Answer: C

Explanation:

This is a C ip with a subnet mask of 255.255.255.240

the host 201.100.5.68/28 belong to the second subnet which is 201.100.5.64
this is determined by doing the following:
subnets? $2^4 - 2 = 14$
hosts? $2^4 - 2 = 14$
valid subnet range? $256 - 240 = 16$
 $16 + 16 = 32, 16 + 32 = 48, 16 + 48 = 64, 64 + 16 = 80$ and so as you can see the ip
201.100.5.68 belongs to the second subnet which is .64

QUESTION 72

Which of the following IP addresses fall into the CIDR block of 115.54.4.0/22? Select three

- A. 115.54.8.32
- B. 115.54.7.64
- C. 115.54.6.255
- D. 115.54.3.32
- E. 115.54.5.128
- F. 115.54.12.128

Answer: B, C, E

Explanation:

Given the CIDR block of 115.54.4.0 /22 the subnet mask is 255.255.252.0.
This gives us the IP address range of 115.54.4.1 to 115.54.7.254. Therefore, 115.54.5.128 (E), 115.54.6.255 (C) and 115.54.7.64 (B) are correct.

QUESTION 73

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

- A. 1024
- B. 2046
- C. 4094
- D. 4096
- E. 8190

Answer: C

Explanation:

Given IP address of 172.16.112.1 / 20,
subnet mask: 255.255.240.0
max. num of hosts = $((2^{12}) - 2) = 4096 - 2 = 4094$

QUESTION 74

You work as network consultant. Your customer, Certkiller Inc, has a class C network license. Certkiller wants you to subnet the network to provide a separate

subnet for each of its 5 departments. Each subnet must support at least 24 hosts. Which network mask should you use?

- A. 255.255.255.192
- B. 255.255.255.224
- C. 255.255.255.240
- D. 255.255.255.248
- E. 255.255.255.252
- F. 255.255.255.254

Answer: B

Explanation:

The default subnet mask for class C network is 255.255.255.0. If one has to create 5 subnets, then 3 bits are required. With 3 bits we can create 6 subnets. Remaining 5 bits are used for Hosts. One can create 30 hosts using 5 bits in host field. This matches with requirement.

QUESTION 75

Your Certkiller trainee Bob asks you what 11111001 binary is in decimal. What should you tell him?

- A. 6
- B. 193
- C. 225
- D. 241
- E. 249

Answer: E

Explanation:

The binary number 11111001 translates to $128 + 64 + 32 + 16 + 8 + 1 = 249$

QUESTION 76

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

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

Answer: D

Explanation:

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

QUESTION 77

Which of the following IP addresses for the network 27.35.16.32/28 can be assigned to hosts? (Choose three)

- A. 27.35.16.32
- B. 27.35.16.33
- C. 27.35.16.48
- D. 27.35.16.47
- E. 27.35.16.45
- F. 27.35.16.44

Answer: B, E, F

Explanation:

25 26 27 /28

.128 64 32 16 8 4 2 1

/28 0 0 0 0 1 1 1 1

network 32 0 0 1 0 0 0 0 0

next network 0 0 1 1 0 0 0 0 0

(which equals 48)

Range of host values are:

RANGE 0 0 1 0 0 0 0 1

TO RANGE 0 0 1 0 1 1 1 0

network is 32

the next network is $32 + 16 = 48$

the range is $32 + 1$ to $48 - 2$.

this results in a range 33 to 46.

Incorrect Answers:

32 cannot be used it is the network; 47 cannot be used it is the broadcast.

A, C: These choices are both network addresses.

D. This is a broadcast address.

QUESTION 78

DRAG DROP

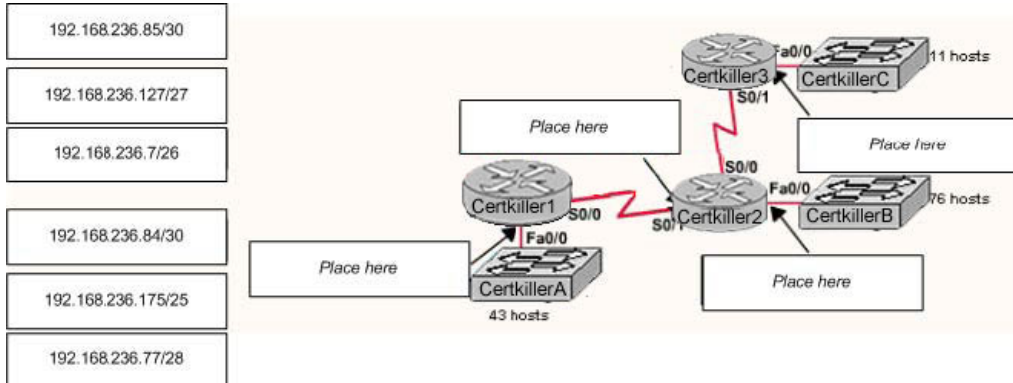
Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.236.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to configure ip subnet-zero and use RIP v2 as the routing

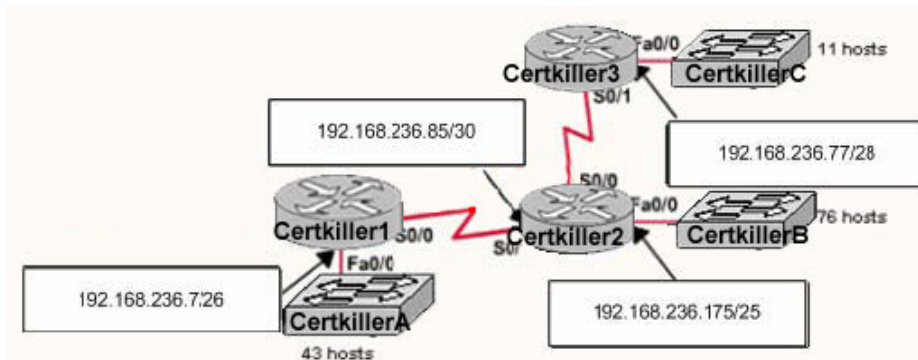
640-801

protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth.

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



Answer:



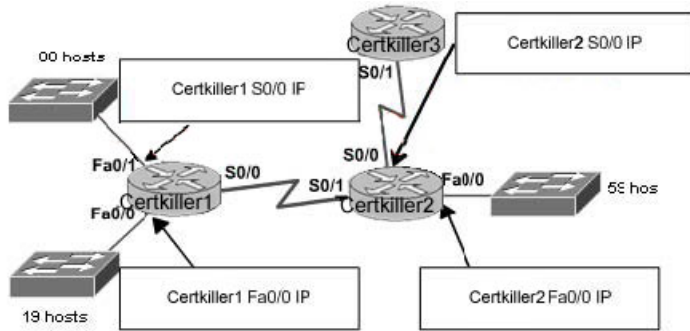
QUESTION 79

DRAG DROP

Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.132.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth.

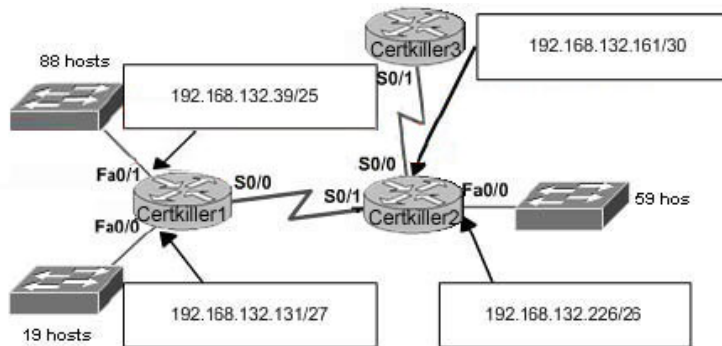
Being mindful of these goals, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Move the mouse over a router to view its configuration (** This information is missing**). Not all of the host addresses on the left will be used.



Select from these:

- | | |
|--------------------|--------------------|
| 192.168.132.131/27 | 192.168.132.226/26 |
| 192.168.132.161/30 | 192.168.132.199/28 |
| 192.168.132.160/30 | 192.168.132.36/25 |

Answer:



Select from these:

- | | |
|--------------------|--------------------|
| 192.168.132.160/30 | 192.168.132.199/28 |
|--------------------|--------------------|

QUESTION 80

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

- A. /24
- B. /30
- C. /27
- D. /26
- E. /32

Answer: B

Explanation:

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

QUESTION 81

The network 172.25.0.0 has been divided into eight equal subnets. Which of the following IP addresses can be assigned to hosts in the third subnet if the ip subnet-zero command is configured on the router? (Choose three)

- A. 172.25.78.243
- B. 172.25.98.16
- C. 172.25.72.0
- D. 172.25.94.255
- E. 172.25.96.17
- F. 172.25.100.16

Answer: A, C, D

Explanation:

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

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

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

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

QUESTION 82

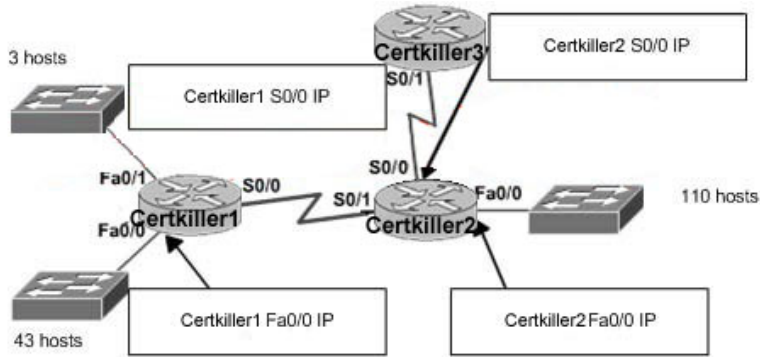
DRAG DROP

Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.199.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth.

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

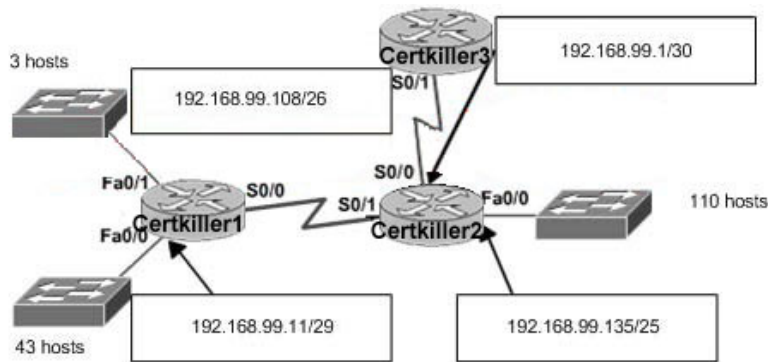
640-801



Select from these:

- | | |
|-------------------|-------------------|
| 192.168.99.135/25 | 192.168.99.108/26 |
| 192.168.99.63/27 | 192.168.99.11/29 |
| 192.168.99.1/30 | 192.168.99.1/30 |

Answer:



Select from these:

- | |
|------------------|
| 192.168.99.63/27 |
| 192.168.99.0/30 |

QUESTION 83

DRAG DROP

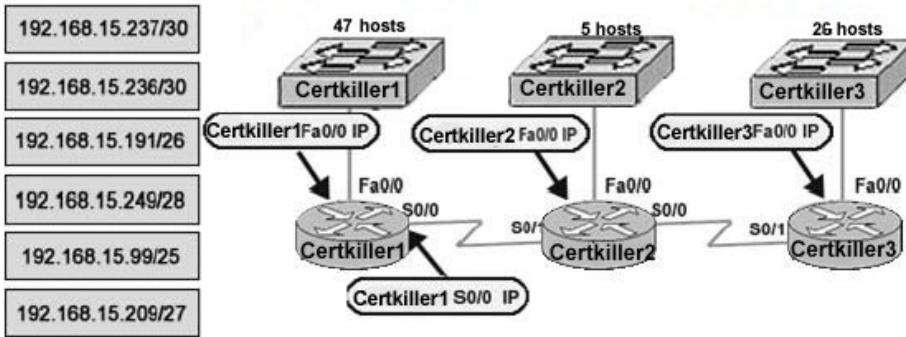
Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.197.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth.

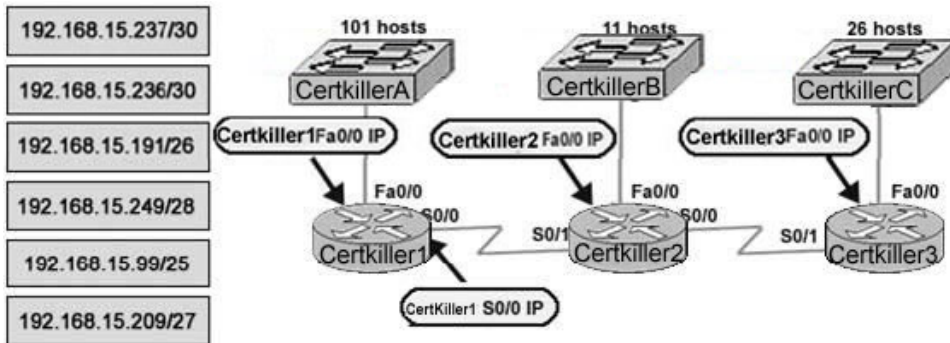
Being mindful of these goals, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Move the mouse over a router

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to view its configuration (** This information is missing**). Not all of the host addresses on the left will be used.



Answer:



QUESTION 84

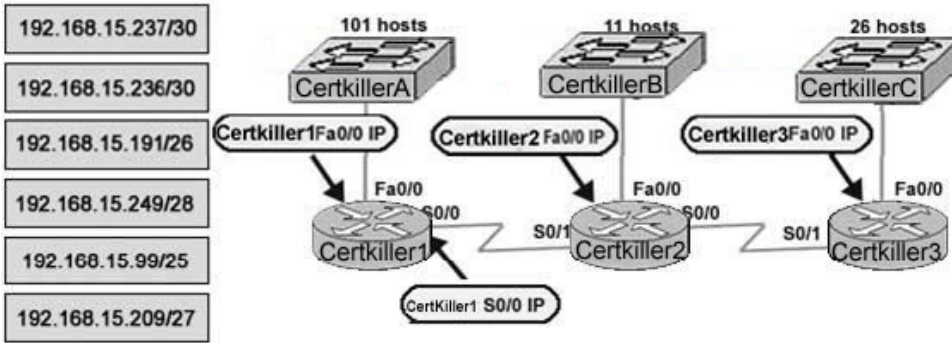
DRAG DROP

Certkiller has three locations and has plans to redesign the network accordingly. The networking team received 192.168.15.0 to use as the addressing for entire network from the administrator. After subnetting the address, the team is ready to assign the address.

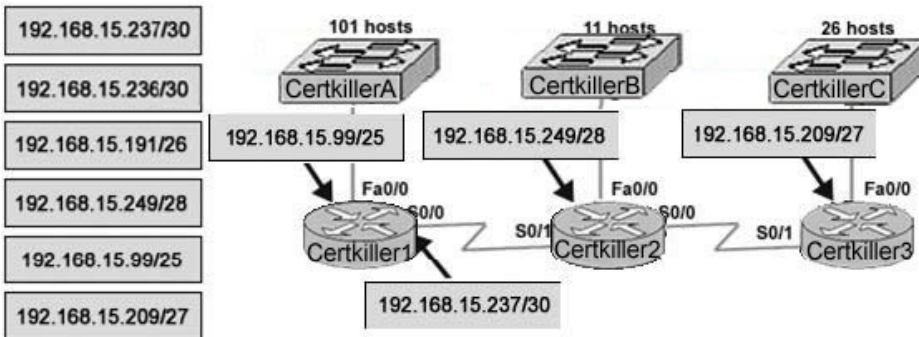
The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth.

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

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Answer:

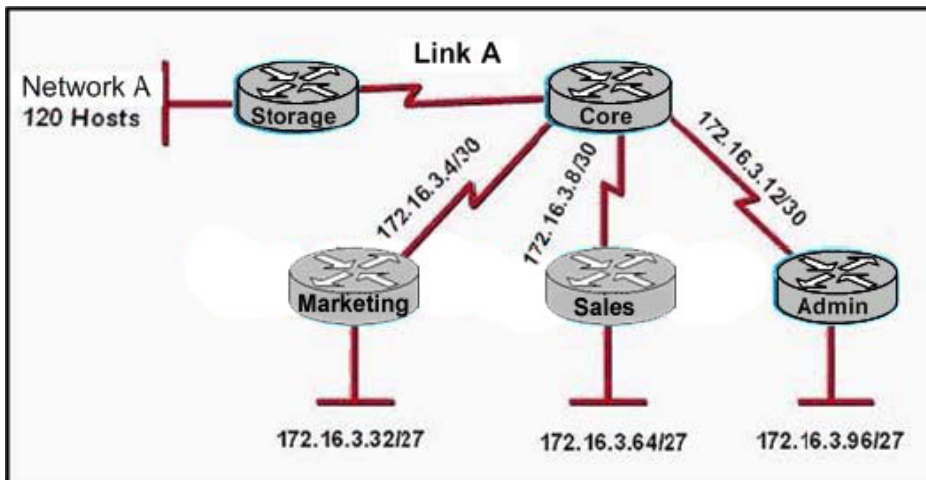


QUESTION 85

Exhibit:

Please study the exhibit carefully. All of the routers in the Certkiller network are configured with the "ip subnet-zero" command. Which network addresses should be used for Link A and Network A? (Choose two)

Exhibit:



- A. Link A - 172.16.3.0/30
- B. Link A - 172.16.3.40/30
- C. Network A - 172.16.3.128/25
- D. Link A - 172.16.3.112/30

- E. Network A - 172.16.3.48/26
- F. Network A - 172.16.3.192/26

Answer: A, C

Explanation:

If a network address is subnetted, the first subnet obtained after subnetting the network address is called subnet zero.

Consider a Class B address, 172.16.0.0. By default the Class B address 172.16.0.0 has 16 bits reserved for representing the host portion, thus allowing 65534 (2¹⁶-2) valid host addresses. If network 172.16.0.0/16 is subnetted by borrowing three bits from the host portion, eight (2³) subnets are obtained. The table below is an example showing the subnets obtained by subnetting the address 172.16.0.0, the resulting subnet mask, the corresponding broadcast addresses, and the range of valid host addresses.

Subnet Address	Subnet Mask	Broadcast Address	Valid Host Range
172.16.0.0	255.255.224.0	172.16.31.255	172.16.0.1 to 172.16.31.254
172.16.32.0	255.255.224.0	172.16.63.255	172.16.32.1 to 172.16.63.254
172.16.64.0	255.255.224.0	172.16.95.255	172.16.64.1 to 172.16.95.254
172.16.96.0	255.255.224.0	172.16.127.255	172.16.96.1 to 172.16.127.254
172.16.128.0	255.255.224.0	172.16.159.255	172.16.128.1 to 172.16.159.254
172.16.160.0	255.255.224.0	172.16.191.255	172.16.160.1 to 172.16.191.254
172.16.192.0	255.255.224.0	172.16.223.255	172.16.192.1 to 172.16.223.254
172.16.224.0	255.255.224.0	172.16.255.255	172.16.224.1 to 172.16.255.254

In the example above, the first subnet (subnet 172.16.0.0/19) is called subnet zero.

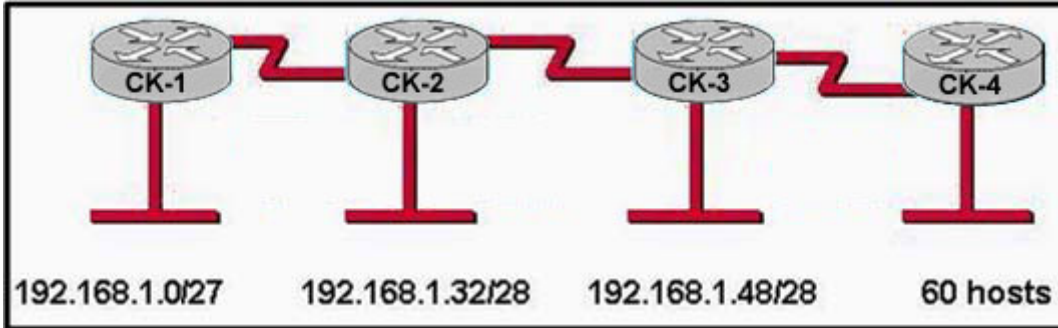
The class of the network subnetted and the number of subnets obtained after subnetting have no role in determining subnet zero. It is the first subnet obtained when subnetting the network address. Also, when you write the binary equivalent of the subnet zero address, all the subnet bits (bits 17, 18, and 19 in this case) are zeros. Subnet zero is also known as the all-zeros subnet.

In this example, link A will use the zero subnet of 172.16.30./30, while network A will need a /25 to support the 120 hosts. Answer C will support up to 128 (126 usable) hosts while options E and F will only support 62 usable IP addresses.

QUESTION 86

A new subnet with 60 hosts has been added to the Certkiller network shown below. Which subnet address should this network use to provide enough usable addresses while wasting the fewest addresses?

Exhibit:



- A. 192.168.1.56/27
- B. 192.168.1.64/26
- C. 192.168.1.56/26
- D. 192.168.1.64/27

Answer: B

Explanation:

A subnet mask of 255.255.255.192 (/26) will be needed to support 60 hosts. Option B will allow for this number of hosts, and the next available IP subnet in the 192.168.1.0 subnet that is not already used in the network is 192.168.1.64.

Incorrect Answers:

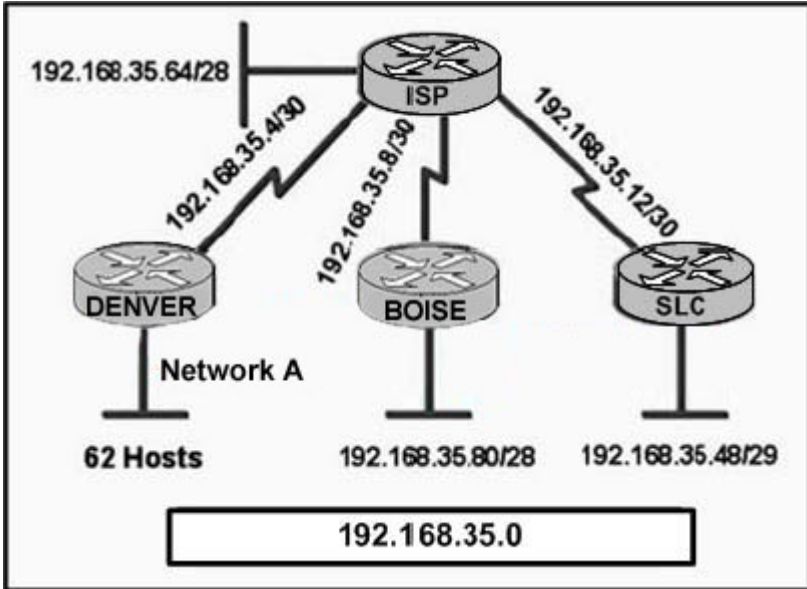
A, D: A /27 subnet mask will only support up to 30 hosts.

C: This network will conflict with the 192.168.1.48/28 network that is already in use, as the range of IP addresses used in this network is 192.168.1.48-192.168.1.63.

QUESTION 87

In the Certkiller network shown below, which subnet address could a network administrator use for Network A on the left?

Exhibit:



- A. 192.168.35.64/26
- B. 192.168.35.32/27
- C. 192.168.35.128/26
- D. 192.168.35.192/27
- E. 192.168.35.96/27

Answer: C

Explanation:

In order to support 62 hosts, a /26 will be needed, leaving only options A and C. The IP network in option A will conflict with the 192.168.35.64/28 that is already in use, leaving only choice C as the correct answer.

Incorrect Answers:

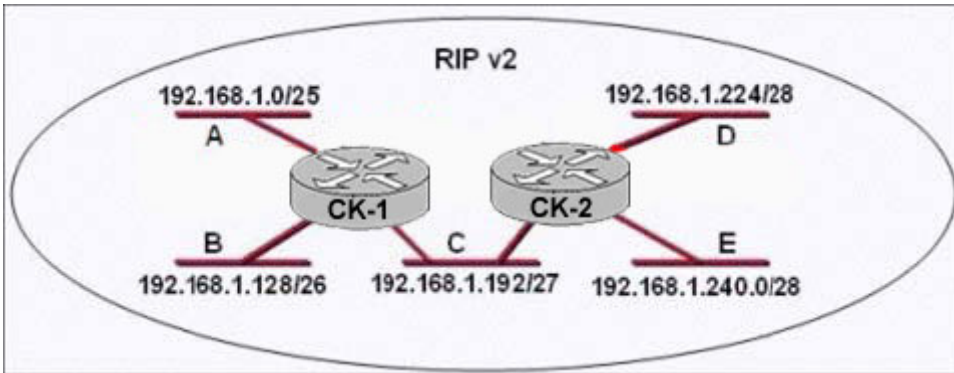
A: This will conflict with a network that is already in use, causing there to be duplicate IP addresses assigned in the network.

B, D, E: A /27 will only support 30 hosts.

QUESTION 88

The Certkiller network administrator has designed the IP scheme as shown in the diagram below. What effect will this addressing scheme have on the network?

Exhibit:



- A. IP traffic between subnet A and B will be prevented.
- B. Routing information will not be exchanged.
- C. The addressing scheme will allow all IP traffic between the LANs.
- D. IP traffic between all the LANs will be prevented.

Answer: C

Explanation:

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

QUESTION 89

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

Exhibit:

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

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

Answer: F

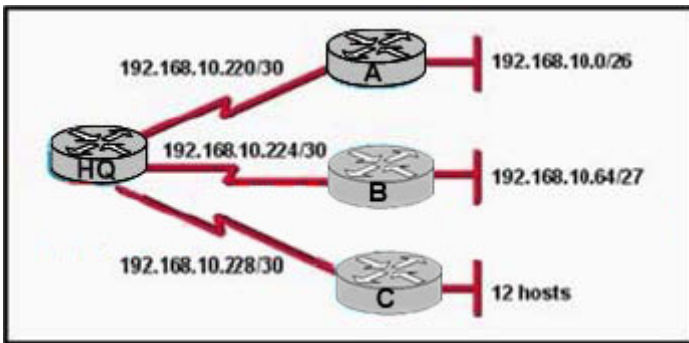
Explanation:

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

QUESTION 90

A new subnet with 12 hosts in the Certkiller network has been added. Which subnet address should this network use to provide enough useable addresses while wasting the fewest addresses?

Exhibit:



- A. 192.168.10.80/29
- B. 192.168.10.96/28
- C. 192.168.10.80/28
- D. 192.168.10.96/29

Answer: B

Explanation:

A /29 subnet mask will only support 6 IP hosts. A subnet mask of 255.255.255.240 (/28) will support up to 14 hosts, leaving only options B and C as viable. Option C will overlap with the existing 192.168.10.64/27 network, which will cause duplicate IP addresses to be assigned in the network.

QUESTION 91

Certkiller .com has the following addressing scheme requirements:
-uses a Class B IP address

- currently has 60 subnets
- has a maximum of 1000 computers on any network segment
- needs to leave the fewest unused addresses in each subnet
- uses RIP v1

Which subnet mask is appropriate to use in this network?

- A. 255.255.252.0
- B. 255.255.248.0
- C. 255.255.255.0
- D. 255.255.255.128
- E. 255.255.255.248
- F. 255.255.240.0

Answer: A

Explanation:

A subnet mask of 255.255.255.252 (/22) will result in 6 bits for the network portion and 10 bits for the host portion. This will allow for $2^6 = 64$ IP subnets (62 usable), with each one supporting $2^{10} = 1024$ hosts (1022 usable IP addresses). This meets the requirements of 60 subnets with 1000 maximum hosts per subnet.

QUESTION 92

When designing OSPF networks; what is the purpose of using a hierarchical design? (Select all choices that apply)

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

Answer: B, C, D

Explanation:

An OSPF network designed in a hierarchical fashion with different areas is used because a small change in the topology of a single area won't force every router to run the SPF algorithm. Changes in one area are limited to that area only, not to every router within the entire network. Confining the topology changes to one area reduces the overhead and speeds the convergence of the network.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 194

Incorrect Answers:

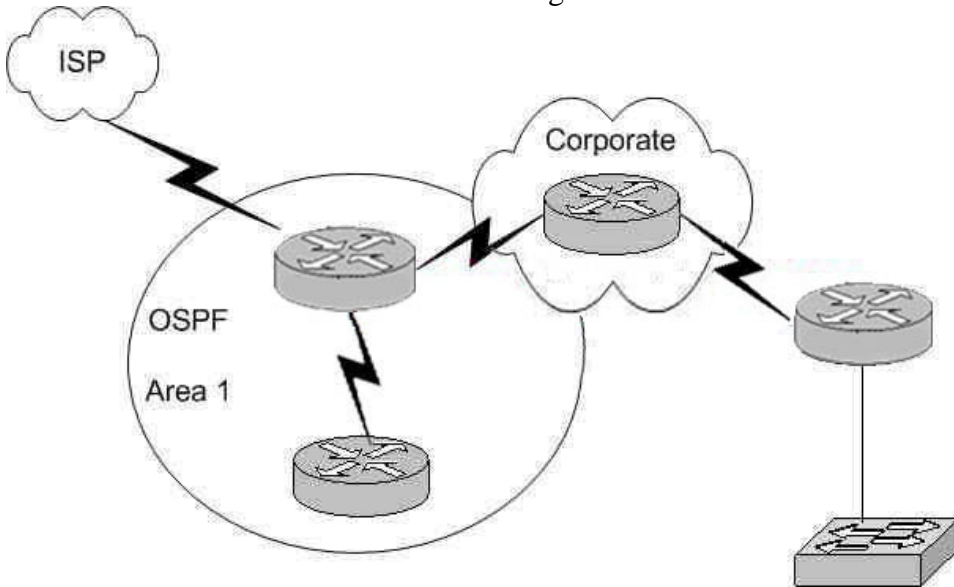
- A. This choice is incorrect because a hierarchical design actually adds complexity to the router configuration.
- E. This is incorrect because a hierarchical design will not eliminate the need for routers.

In fact, segmenting the network into multiple areas may actually require the use of additional routers.

F. The use of a hierarchical design will in no way reduce the latency involved. If additional routers are implemented in order to segment the network into additional areas, then the latency involved may actually increase.

QUESTION 93

The Certkiller network is shown in the diagram below:



In this diagram, OSPF is used as the routing protocol between the corporate office and the offices on the left side of the diagram. An ISDN link provides connectivity from the central corporate router to the remote sales office on the right side of the diagram. Which type of route should the corporate office use to reach the router on the right side of the diagram if the overhead on the ISDN link is to be kept to a minimum?

- A. A RIP route
- B. An OSPF route
- C. A static route
- D. A default route
- E. A dynamic route
- F. None of the above

Answer: C

Explanation:

A static route uses the least amount of overhead because no routing protocol information will be exchanged over the ISDN link. As long as the ISDN link is up, the static route will always remain in the routing table of the corporate router.

Incorrect Answers:

A. This will not only provide additional overhead on the ISDN link as the RIP information is passed from one side to the other, but it will add additional overhead and

complexity to the corporate router because now two routing protocols will need to be running. With this choice, RIP and OSPF will need to be configured on the corporate router.

B. This will add the overhead of LSP information being passed between the two routers over the ISDN link.

D. Although a default route can be a type of static route, in this case a default route will be a poor choice because then traffic destined to the Internet will go to remote office on the right side, instead of towards the ISP on the left.

E. All dynamic routing protocols will add some level of overhead. Static routes will not increase the traffic level at all over the ISDN link.

QUESTION 94

You are a network administrator and you need to implement a routing protocol on your network that provides:

- * Scalability
- * VLSM support
- * Minimal overhead
- * Support for connecting networks using routers of multiple vendors

Which of the following routing protocol would best serve your needs?

- A. VTP
- B. RIP version 1
- C. EIGRP
- D. OSPF
- E. IGRP
- F. CDP

Answer: D

Explanation:

Since one of the requirements is that the routing protocol must support other vendors, our only choices are RIP and OSPF. Since RIP version 1 does not support VLSM, OSPF is the only choice.

Incorrect Answers:

A. VTP is the VLAN Trunking Protocol. This is not a routing protocol.

B. RIP version one does not support VLSM. Note that RIPv2 does support VLSM, and would be a valid choice.

C, E: EIGRP and IGRP are Cisco proprietary routing protocols, and are not supported by other vendors.

F. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches, and it is not a routing protocol.

QUESTION 95

You need to configure a single router into load balancing traffic across 4 unequal cost paths. Which routing protocols can satisfy this requirement? (Select two)

- A. RIP v1
- B. RIP v2
- C. IGRP
- D. EIGRP
- E. OSPF
- F. IS-IS

Answer: C, D

Explanation:

In general, load balancing is the capability of a router to distribute traffic over all its network ports that are the same distance from the destination address. Load balancing increases the utilization of network segments, thus increasing effective network bandwidth. There are two types of load balancing: equal cost path and unequal cost path. Every routing protocol supports equal cost path load balancing. In addition to that, IGRP and EIGRP also support unequal cost path load balancing, which is known as variance. The variance command instructs the router to include routes with a metric less than n times the minimum metric route for that destination, where n is the number specified by the variance command. The variable n can take a value between 1 and 128, with the default being 1, which means equal cost load balancing (variance<n> for example. Traffic is also distributed proportionally among unequal cost links, with respect to the metric.

QUESTION 96

You need to choose a routing protocol for a new Certkiller network. This network will be running IP, IPX, and Appletalk, and you wish to utilize only one routing protocol. Which one would be the best choice?

- A. OSPF
- B. EIGRP
- C. RIP v2
- D. IGRP
- E. RIP v1

Answer: B

Explanation:

Only EIGRP provides routing protocol support for IP, IPX, and Appletalk networks.

QUESTION 97

Which of the routing protocols shown below support both VLSM and route summarization? (Select three)

- A. IGRP
- B. EIGRP

- C. RIP v1
- D. RIP v2
- E. OSPF
- F. VTP
- G. CDP

Answer: B, D, E

Explanation:

EIGRP and OSPF support Variable Length Subnet Masks (VLSM) and provide for both automatic and manual route summarization configurations. RIPv2 is an enhanced version of RIP, and overcame some of the limitations of RIP by introducing support for VLSM.

Incorrect Answers:

A, C: IGRP and RIP are relatively old and simplistic routing protocols that were developed before the concepts of VLSM and route summarization.

F. VTP is the VLAN Trunking Protocol, used in switched LAN environments to carry VLAN information. It is not a routing protocol.

G. CDP is the Cisco Discovery Protocol, used between neighboring Cisco devices to automatically discover information. It is not a routing protocol.

QUESTION 98

Which of the following routing protocols support the use of VLSM (Variable Length Subnet Masking)? (Select three)

- A. RIPv1
- B. EIGRP
- C. OSPF
- D. IGRP
- E. RIPv2

Answer: B, C, E

Explanation:

Static routing, OSPF, IS-IS, EIGRP, BGP, and RIP version 2 all support VLSM.

Incorrect Answers:

A, D: RIPv1 and IGRP do not support VLSM.

Reference: Sybex CCNA Study Guide edition 4, Page 123

QUESTION 99

Which of the following routing protocols do NOT support VLSM (variable length subnet masking)? (Choose all that apply).

- A. RIPv1
- B. IGRP
- C. EIGRP
- D. OSPF

- E. IS-IS
- F. RIPv2

Answer: A, B

Explanation:

RIP version 1 and IGRP are classful IP routing protocols. They do not support variable length subnet masks.

Incorrect Answers:

C, D, E, F. Static routing, OSPF, IS-IS, EIGRP, BGP, and RIP version 2 all support VLSM.

QUESTION 100

You need to implement the use of a routing protocol that meets the following requirements:

1. Converges quickly
2. Supports VLSM, CIDR, IP, and IPX.
3. Uses minimal bandwidth for routing updates.

Which one of the following routing protocols would be the best choice?

- A. RIPv1
- B. RIPv2
- C. IGRP
- D. OSPF
- E. EIGRP

Answer: E

Explanation:

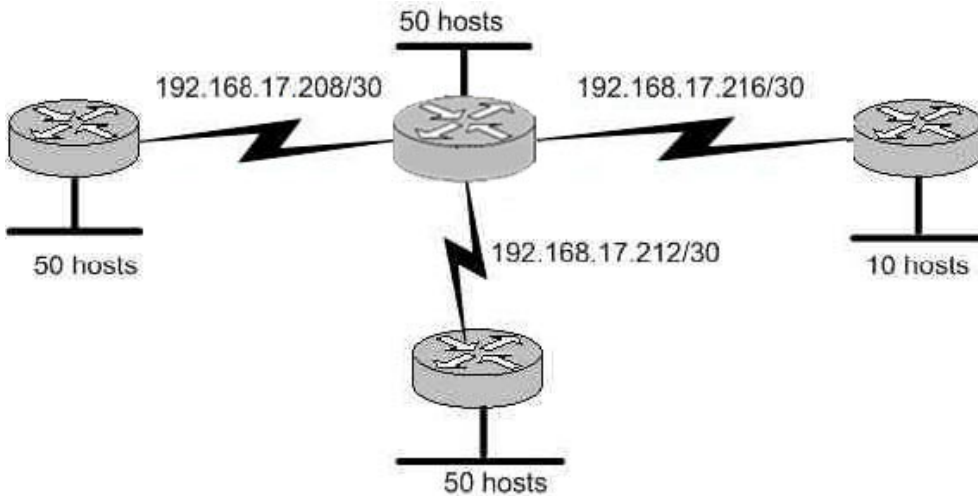
EIGRP would be the best choice as it provides support for VLSM and CIDR, has faster convergence times than other protocols, is scalable, and supports IP, IPX, and Appletalk. EIGRP is a Cisco proprietary routing protocol, so it will not work with other vendors. However, the requirements of the question made no mention of the use of non-Cisco routers, so it will not be an issue in this case.

Incorrect Answers:

- A, C: Both of these routing protocols do not support VLSM.
- B. While RIPv2 supports VLSM, it provides no support for IPX. The IPX RIP protocol is similar in function to RIP version 1. Both versions of RIP also consume more bandwidth than EIGRP.
- D. OSPF does not support IPX.

QUESTION 101

See the Certkiller WAN diagram below:



Certkiller has four offices, each with its own network, as shown in the graphic. Three of the networks have approximately 50 hosts each, and one network has 10 hosts. The multi-vendor routers are connected by serial links that use separate subnetwork numbers. The Certkiller network has leased one Class C address to be used for all networks and serial links, and they do not wish to replace any of their existing routers.

Which routing protocol would be most appropriate for this scenario?

- A. TCP/IP
- B. RIP version 1
- C. RIP version 2
- D. IGRP
- E. EIGRP
- F. All of the above are acceptable

Answer: C

Explanation:

The question describes 2 important requirements. The first is the fact that a routing protocol that supports VLSM is needed, as specified by the fact that one class C address range is to be used for all networks. The second important requirement is that routers from multiple vendors are being used, so the routing protocol chosen must be non-proprietary. RIP version 2 is a standards based routing protocol that supports variable length subnet masking (VLSM). Note that OSPF would also be a viable choice, but it was not one of the answer choices.

Incorrect Answers:

- A. This is not a routing protocol.
- B. RIP version 1 does not support VLSM
- D, E: Although these both support VLSM, IGRP and EIGRP are Cisco proprietary routing protocols which are not supported by other router vendors.

QUESTION 102

RIP version 2 is being used as the routing protocol within the Certkiller network.

What does RIP version 2 use to prevent routing loops? (Choose two)

- A. CIDR
- B. Split horizon
- C. Authentication
- D. Classless masking
- E. Hold-down timers
- F. Multicast routing updates
- G. Path Vectoring

Answer: B, E

Explanation:

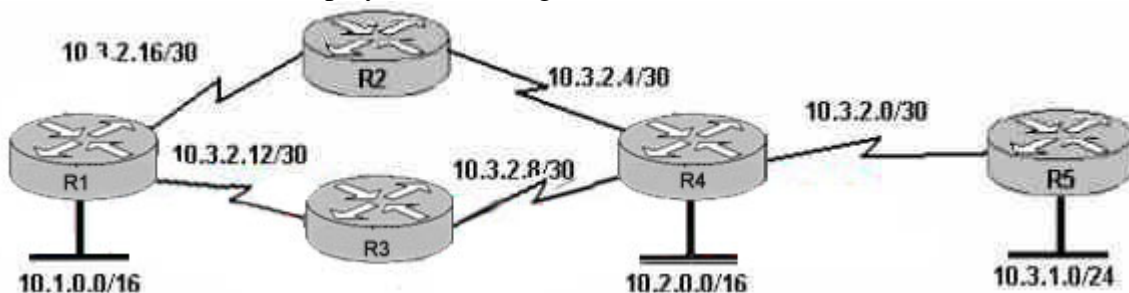
Distance Vector routing protocols employ the split horizon mechanism to reduce the possibility of routing loops. Split horizon blocks information about routes from being advertised by a router out of any interface from which that information originated. RIP versions 1 and 2 also use the concept of hold timers. When a destination has become unreachable (or the metric has increased enough to cause poisoning), the destination goes into "holddown". During this state, no new path will be accepted for the same destination for this amount of time. The hold time indicates how long this state should last.

Incorrect Answers:

A, C, D, F. Although these are all features and functions of RIP version 2, they are not mechanisms used to prevent routing loops.
G. Path Vectoring is a concept used by BGP routers. RIP version 1 and 2 are considered to be distance vector routing protocols.

QUESTION 103

The Certkiller WAN is displayed in the diagram below:



Based on the information shown above, which routing protocols can be used within the Certkiller network show in the diagram? (Choose three).

- A. RIP v1
- B. RIP v2
- C. IGRP
- D. OSPF
- E. BGP
- F. EIGRP

Answer: B, D, F

Explanation: the exhibit showed routers with Variable Length Subnet Mask (VLSM), and asked which 3 protocols can be used. 3 protocols that support VLSM are RIP v2, OSPF and EIGRP.

Incorrect Answers:

A, C: Both of these routing protocols do not support VLSM information.

E. BGP is used for external routing between different autonomous systems, and is not generally used within a single AS.

QUESTION 104

The Certkiller Network consists of the following 5 IP networks:

NETWORK 1: 192.168.10.0/26

NETWORK 2: 192.168.10.64/27

NETWORK 3: 192.168.10.96/27

NETWORK 4: 192.168.10.128/30

NETWORK 5: 192.168.10.132/30

Which of the following routing protocols will support this IP addressing scheme?

(Choose all that apply).

A. RIP version 1

B. RIP version 2

C. IGRP

D. EIGRP

E. OSPF

F. BGP

Answer: B, D, E

Explanation:

Because this network is using IP subnets with variable length subnet masks, only routing protocols that support VLSM will fit this particular case. The routing protocols that support VLSM are RIP v2, EIGRP and OSPF.

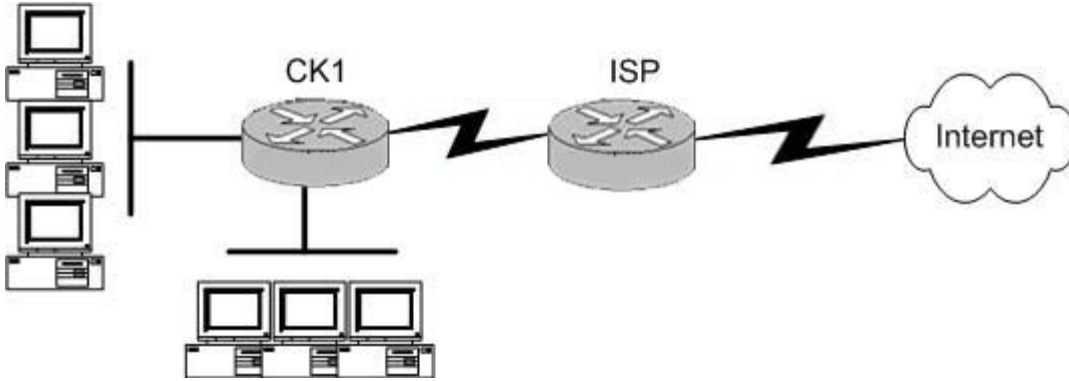
Incorrect Answers:

A, C: RIP version 1 and IGRP do not support VLSM information within the routing updates.

F. BGP is used for inter-AS routing, such as the Internet. It is not normally used as an Interior routing protocol.

QUESTION 105

The Certkiller network is displayed in the diagram shown below:



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

- A. BGP on both the routers.
- B. RIP on both the routers.
- C. Default routes on both routers.
- D. BGP on the ISP router and a static route on CK1 .
- E. A default route on CK1 and a static route on the ISP router.

Answer: E

Explanation:

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

Incorrect Answers:

- A, D: BGP is not needed on networks that contain only a single link to the Internet.
- B. Interior routing protocols are generally not supported with an ISP.
- C. A default route on the ISP router would send all of their customers Internet traffic to the Certkiller network, and not the Internet.

QUESTION 106

What is the purpose of the OSPF router ID in a DR/BDR election?

- A. It is used with the OSPF priority values to determine which OSPF router will become the DR or BDR in a point-to-point network
- B. It is used with the OSPF priority values to determine which interface will be used to form a neighbor relationship with another OSPF router
- C. It is used with the OSPF priority values to determine which router will become the DR or BDR in a multi access network
- D. It is used to determine which interfaces will send Hello packets to neighboring OSPF

routers

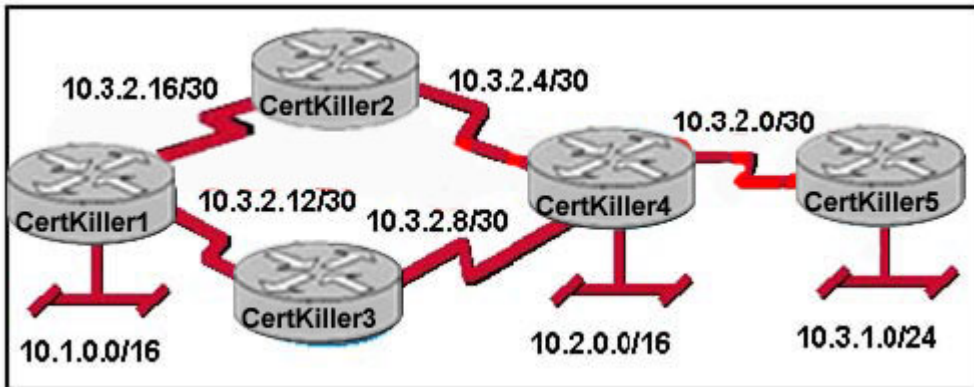
Answer: C

Explanation:

The router ID is the highest IP address or the highest IP address among loopback addresses (if one is configured) on the Cisco router or can be configured manually by "router-id x.x.x.x". Once the router ID is chosen, it will not be changed unless the OSPF process is reset(clear ip ospf process xx) or the router is reloaded. The IP address of router ID doesn't need to be reachable, but it is used to determine which will router will become the DR or BDR in a multi-access network.

QUESTION 107

The Certkiller network is shown in the following exhibit:



Which routing protocols can be used within the enterprise network shown in the diagram? (Choose three.)

- A. RIP v1
- B. RIP v2
- C. IGRP
- D. OSPF
- E. BGP
- F. EIGRP

Answer: B, D, F

Explanation:

In this network there are IP subnets which use variable length subnet masks. RIP V2, OSPF and EIGRP are the interior routing protocols that support VLSM.

QUESTION 108

What is the advantage of using a multipoint interface instead of point-to-point subinterfaces when configuring a Frame Relay hub in a hub-and-spoke topology?

- A. It avoids split-horizon issues with distance vector routing protocols.

- B. IP addresses can be conserved if VLSM is not being used for subnetting.
- C. A multipoint interface offers greater security compared to point-to-point subinterface configurations.
- D. The multiple IP network addresses required for a multipoint interface provide greater addressing flexibility over point-to-point configurations.

Answer: B

Explanation:

Frame Relay supports two types of interfaces: point-to-point and multipoint. The one you choose determines whether you need to use the configuration commands that ensure IP address to data-link connection identifier (DLCI) mappings. After configuring the PVC itself, you must tell the router which PVC to use in order to reach a specific destination.

Let's look at these options:

1. Point-to-point subinterface - With point-to-point subinterfaces, each pair of routers has its own subnet. If you put the PVC on a point-to-point subinterface, the router assumes that there is only one point-to-point PVC configured on the subinterface. Therefore, any IP packets with a destination IP address in the same subnet are forwarded on this VC. This is the simplest way to configure the mapping and is therefore the recommended method. Use the frame-relay interface-dlci command to assign a DLCI to a specified Frame Relay subinterface.
2. Multipoint networks - Multipoint networks have three or more routers in the same subnet. If you put the PVC in a point-to-multipoint subinterface or in the main interface (which is multipoint by default), you need to either configure a static mapping or enable inverse Address Resolution Protocol (ARP) for dynamic mapping.

QUESTION 109

Certkiller .com is merging with several local businesses that use routers from multiple vendors. Which routing protocol would work best to connect Certkiller .com with the enterprise networks it has acquired by providing scalability and VLSM support while minimizing network overhead?

- A. IGRP
- B. EIGRP
- C. OSPF
- D. RIP v2
- E. RIP v1

Answer: C

Explanation:

RIP (both version 1 and version 2) is standards based, providing inter-operability support between vendors. RIPv2 is an enhancement to the first version and contains the following enhancements:

1. Support for variable length subnet masks (VLSM) (Because of this, RIP doesn't assume that all networks are classful.)

- 2. Multicast routing updates
- 3. Authentication with an encrypted password for routing updates

Incorrect Answers:

A, B: IGRP and EIGRP are Cisco proprietary routing protocols that are not supported by other vendors.

C: OSPF is a CPU-intensive protocol, and very large OSPF networks can experience routing and update traffic problems that seriously impact network performance. In addition, routers in large OSPF networks require large amounts of memory.

E: RIPv1 does not support VLSM.

QUESTION 110

Which one of the following commands would you enter to terminate a VTY line session?

- A. close
- B. disable
- C. disconnect
- D. suspend
- E. exit
- F. None of the above

Answer: E

Explanation:

A VTY line is a telnet session. To end a telnet session from a remote device, enter the exit or logout command.

Incorrect Answers:

A, B, C, D. These are all invalid commands.

QUESTION 111

You are implementing a new frame relay network to provide connectivity between your offices. To do this, you set up the frame relay network using point-to-point subinterfaces.

Which of the following does NOT need to be configured?

- A. The Frame Relay encapsulation on the physical interface.
- B. The local DLCI on each subinterface.
- C. An IP address on the physical interface.
- D. The subinterface type as point-to-point.

Answer: C

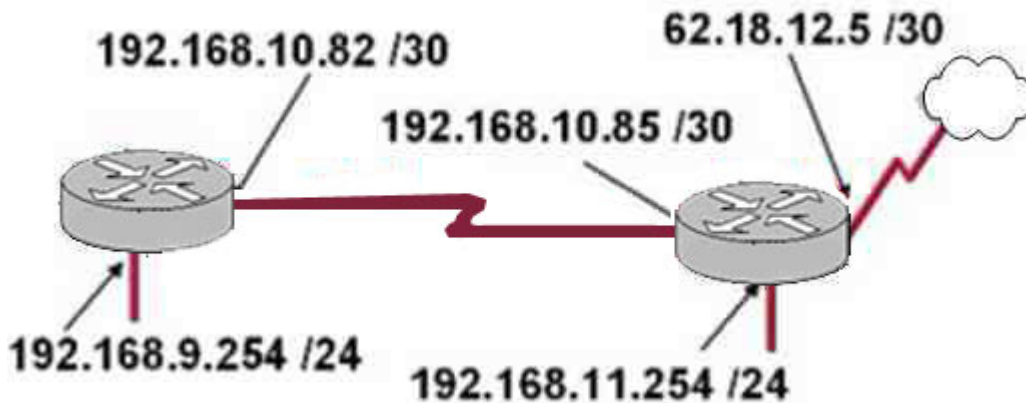
Explanation:

When using point to point subinterfaces in a frame relay network, the subinterfaces will each have their own IP addresses and will each be contained within their own IP subnet. The physical interface does not require an IP address.

Incorrect Answers:

- A. The physical interface will need to be configured with a layer two encapsulation type, so in this case it must be frame relay.
- B. The subinterfaces will have the local DLCI assigned to each one, using the "frame-relay interface-dlci" command for each of the subinterfaces.
- D. Each subinterface should be configured as a point to point network type.

QUESTION 112



After the router interfaces shown in the diagram have been configured, it is discovered that hosts in the Branch LAN cannot access the Internet. Further testing reveals additional connectivity issues. What will fix this problem?

- A. Change the address of the Branch router LAN interface.
- B. Change the address of the Branch router WAN interface.
- C. Change the subnet mask of the HQ router LAN interface.
- D. Change the address of the HQ router LAN interface.
- E. Change the address of the HQ router interface to the Internet.
- F. Change the subnet mask of the HQ router interface to the Internet.

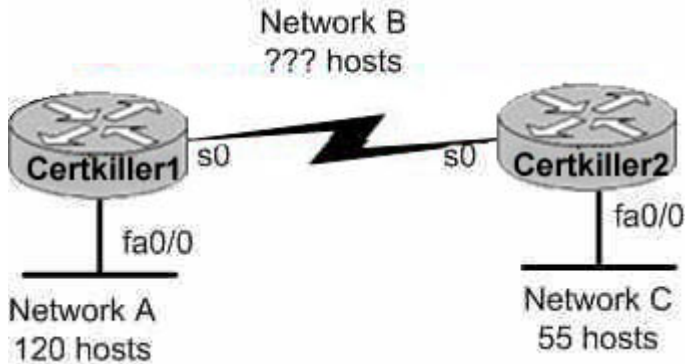
Answer: B

Explanation:

The serial line connection between the Branch office and the HQ office should have interfaces that belong in the same subnet. Based on the diagram above, the WAN interface of the Branch router is configured with an IP address that is in a different IP network than the serial interface of the HQ router. As it is set up currently, no traffic will pass from the Branch router to the HQ until these two interfaces are in the same subnet.

QUESTION 113

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



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

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

Answer: A, D, E

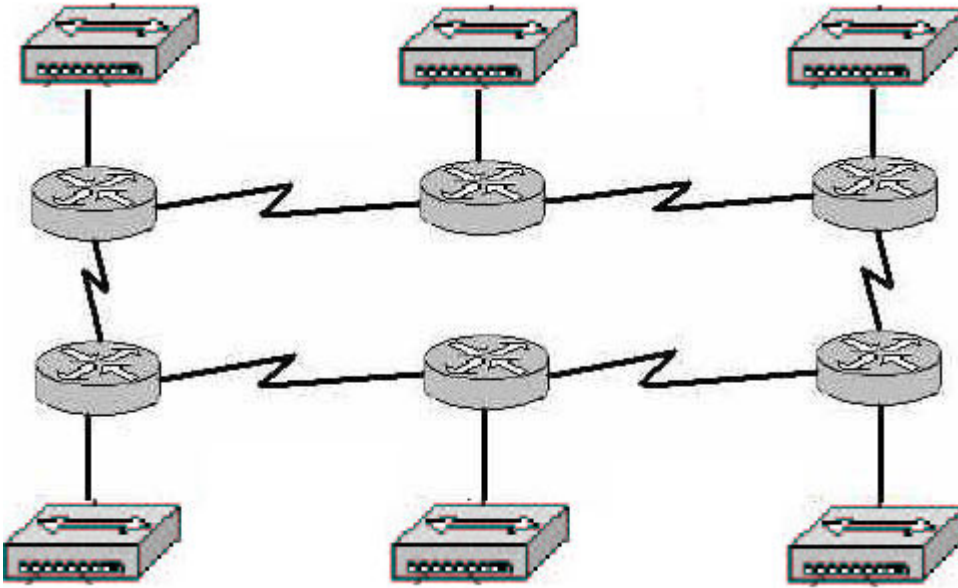
Explanation:

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

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

QUESTION 114

The Certkiller network topology is displayed in the following diagram:



Assume that RIP v1 is the only routing protocol in use. What is the Maximum number of usable IP address that can be supported on each LAN if the Certkiller network is using one Class C address block?

- A. 14
- B. 16
- C. 30
- D. 32
- E. 62
- F. 64

Answer: A

Explanation:

RIP version 1 does not support VLSM information, so all networks must have the same subnet mask. In the network above, there are a total of 12 networks (6 LANs and 6 different point to point WAN connections). Therefore, if each of the 12 networks use the 255.255.255.240 subnet mask, there will be a total of 16 networks with 14 usable hosts on each LAN.

Incorrect Answers:

- B. There are only 14 usable IP addresses in the 255.255.255.240 subnet mask, not 16, since we must subtract 2 for the network and broadcast IP addresses.
- C, E: These options will not provide enough separate networks. A total of 12 are required due to the use of a protocol that does not support VLSM.
- D, F. These options omit the fact that we must subtract 2 addresses from the usable range for the network and broadcast IP addresses for each subnet.

QUESTION 115

You are a technician at Certkiller . Your newly appointed Certkiller trainee wants to

know what the CDP is.

What would your reply be? (Choose all that apply.)

- A. It is globally enabled by default on Cisco routers.
- B. It is globally enabled by default on all routers.
- C. It is a proprietary protocol.
- D. It is a non-proprietary protocol.
- E. It can be used to gather hardware and protocol information about neighbor devices.

Answer: A, C, E

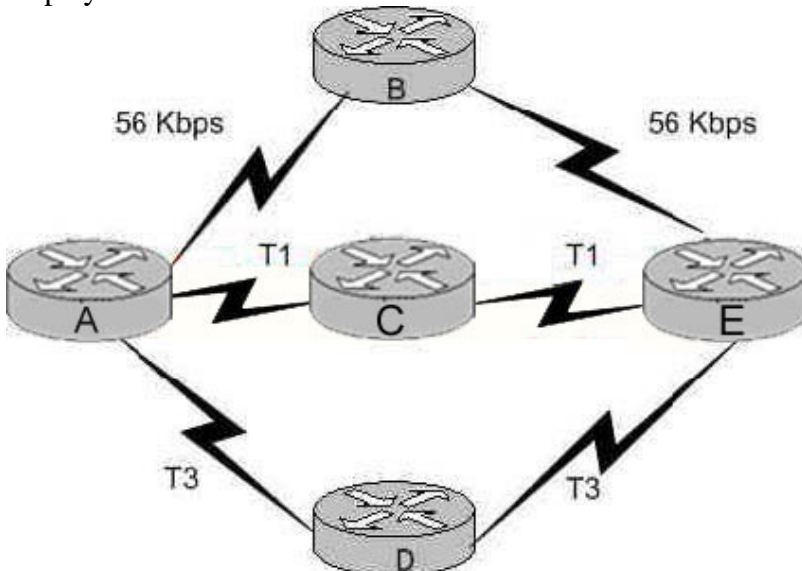
Explanation:

Cisco Discovery Protocol (CDP) is a Cisco proprietary protocol designed to help administrators collect information about local and remote devices. You can use the CDP to gather hardware and protocol information about neighbor devices, which can be useful for troubleshooting and documenting the network.

The CDP discovers basic information about neighboring routers and switches, without needing to know the passwords for the neighboring devices. CDP supports any LAN, HDLC, Frame Relay, and ATM interface- in fact; it supports any interface that supports the use of SNAP headers. The router or switch can discover Layer 2 and layer 3 addressing details of neighboring router without even configuring that Layer 3 protocol - this is because CDP is not dependant on any particular Layer 3 protocol.

QUESTION 116

Five different routers are connected via varying point to point circuit types as displayed below:



Which of the following statements are true regarding how router A will chose a path to router E? (Choose three)

- A. If RIP is the routing protocol, router A will determine all paths have an equal cost.
- B. If RIP is the routing protocol, router A will install only the ADE path in its routing

table.

C. If IGRP is the routing protocol, router A will determine that path ACE has the lowest cost.

D. If IGRP is the routing protocol, router A will determine that path ADE has the lowest cost.

E. If RIP and IGRP are both configured on router A, the router will use the route information learned by IGRP.

F. If RIP and IGRP are both configured on router A, the router will use the route information learned by RIP.

Answer: A, D, E

Explanation:

RIP simply uses hop counts as the metric for path determination, so RIP will see all routes as equal in this case. IGRP uses bandwidth and delay, by default, so it will prefer the paths over the T3 links. By default, IGRP routes are always preferred over RIP routes because IGRP has a lower Administrative Distance (AD) than RIP. The AD of IGRP is 100 while the AD of RIP is 120.

QUESTION 117

You work as a network engineer at Certkiller .com. You are required to allow establishment of a Telnet session with a router Certkiller C.

Which set command must be configured?

A. Certkiller C(config)# line console 0
Certkiller C(config-line)# enable password Certkiller

B. Certkiller C(config)# line console 0
Certkiller C(config-line)# enable secret Certkiller
Certkiller C(config-line)# login

C. Certkiller C(config)# line console 0
Certkiller C(config-line)# password Certkiller
Certkiller C(config-line)# login

D. Certkiller C(config)# line vty 0
Certkiller C(config-line)# enable password Certkiller

E. Certkiller C(config)# line vty 0
Certkiller C(config-line)# enable secret Certkiller
Certkiller C(config-line)# login

F. Certkiller C(config)# line vty 0
Certkiller C(config-line)# password Certkiller
Certkiller C(config-line)# login

Answer: F

Explanation:

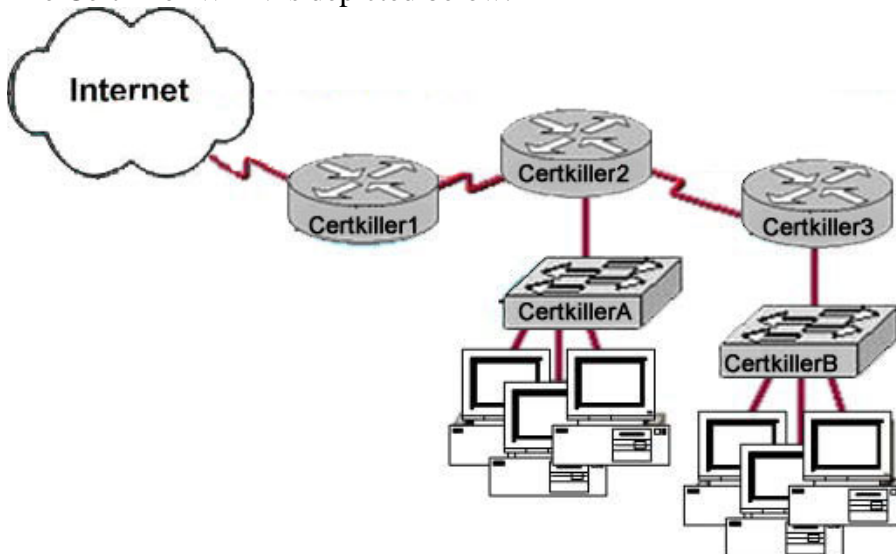
CLI Password Configuration:

Access From	Password Type	Configuration
-------------	---------------	---------------

Console	Console password	Line console 0 Login Password faith
Auxiliary	Auxiliary password	Line aux 0 Login Password hope
Telnet	Vty password	Line vty 0 4 Login Password love

QUESTION 118

The Certkiller WAN is depicted below:



As a network technician at Certkiller .com you would like to implement NAT in the network shown in the exhibit. You would like to allow inside hosts to use a private addressing scheme. Where should NAT be configured?

- A. Certkiller 1 router
- B. Certkiller 2 router
- C. Certkiller 3 router
- D. All routers
- E. All routers and switches

Answer: A

Explanation:

NAT should always be configured on the border device. It can be either a border router or a PIX firewall connecting to the Internet.

QUESTION 119

Which command will configure a default route on a router?

- A. router(config)# ip route 0.0.0.0 10.1.1.0 10.1.1.1
- B. router(config)# ip default-route 10.1.1.0
- C. router(config)# ip default-gateway 10.1.1.0
- D. router(config)# ip route 0.0.0.0 0.0.0.0 10.1.1.1

Answer: D

Explanation:

The command "IP route 0.0.0.0 0.0.0.0 <ip-address of the interface>" command is used to configure a default route on a router. In this case, a default route with a next hop IP address of 10.1.1.1 was configured.

Incorrect Answers:

- A. This will be an invalid route, since the "10.1.1.0" value will specify the network mask, which in this case is invalid.
- B, C. These commands are invalid. The command "ip default-network" could be used, but not "ip default-route" or "ip default-gateway". IP default-gateway is used on switches, not routers.

QUESTION 120

In which situation would the use of a static route be appropriate?

- A. To configure a route to the first Layer 3 device on the network segment.
- B. To configure a route from an ISP router into a corporate network.
- C. To configure a route when the administrative distance of the current routing protocol is too low.
- D. To reach a network is more than 15 hops away.
- E. To provide access to the Internet for enterprise hosts.

Answer: B

Explanation:

Static routes are special routes that the network administrator manually enters into the router configuration. Stub networks are the ideal candidate for static routes. There is no need to run a routing protocol over the WAN links between an ISP Router and a corporate network when only a single Internet link exists.

QUESTION 121

The Certkiller WAN connection is shown below:



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

- A. CSU/DSU
- B. modem
- C. WAN switch
- D. ATM switch
- E. Frame Relay switch
- F. ISDN TA

Answer: A, B

Explanation:

DTE is an abbreviation for Data Terminal Equipment, and refers to an end instrument that converts user information into signals for transmission, or reconverts the received signals into user information. A DTE device communicates with the Data Circuit-terminating Equipment (DCE), such as a modem or CSU/DSU.

A DTE is the functional unit of a data station that serves as a data source or a data sink and provides for the data communication control function to be performed in accordance with link protocol.

The data terminal equipment (DTE) may be a single piece of equipment or an interconnected subsystem of multiple pieces of equipment that perform all the required functions necessary to permit users to communicate. A user interacts with the DTE (e.g. through a Human-Machine Interface), or the DTE may be the user.

Usually, the DTE device is the terminal (or a computer emulating a terminal), and the DCE is a modem.

A CSU/DSU (Channel Service Unit/Data Service Unit) is a hardware device about the size of an external modem that converts a digital data frame from the communications technology used on a local area network (LAN) into a frame appropriate to a wide-area network (WAN) and vice versa. The DSU provides an interface to the data terminal equipment (DTE) using a standard (EIA/CCITT) interface. It also provides testing capabilities.

QUESTION 122

Which sequence of actions will allow telnet traffic from a user's PC to a router using TCP/IP?

- A. Connect the PC's COM port to the router's console port using a straight-through cable.
- B. Connect the PC's COM port to the router's console port using a crossover cable.
- C. Connect the PC's COM port to the router's Ethernet port using a straight-through cable.
- D. Connect the PC's Ethernet port to the router's Ethernet port using a crossover cable.
- E. Connect the PC's Ethernet port to the router's Ethernet port using a rollover cable.
- F. Connect the PC's Ethernet port to the router's Ethernet port using a straight-through cable.

Answer: D

Explanation:

A crossover cable is used to directly connect a switch to a switch, a hub to a hub, a host to a host, or a host's Ethernet port to a router's Ethernet interface. If your Router's interface is configured with IP addressing and telnet service is enabled you can log through the telnet program into your router.

Incorrect Answers:

A, B, C: The COM port is used for direct terminal connections to a router, via the use of terminal emulation programs such as hyperterminal.

E: A rollover cable is used to connect via a console connection.

F: A straight through cable would be used if there was a LAN switch or a hub in place, but when connecting to the router directly from a PC a cross over cable should be used.

QUESTION 123

You are given a PC, a router, and a cable. Select the correct combination that will allow you to log into the router locally using a terminal emulation program such as HyperTerminal.

A. Connect the PC's COM port to the router's console port using a straight-through cable.

B. Connect the PC's COM port to the router's console port using a rollover cable.

C. Connect the PC's COM port to the router's Ethernet port using a straight-through cable.

D. Connect the PC's Ethernet port to the router's Ethernet port using a rollover cable.

E. Connect the PC's Ethernet port to the router's Ethernet port using a straight-through cable.

Answer: B

Explanation:

To connect the Router in Console port to configure using HyperTerminal, you required the Rollover Cable, which connects the PC's COM port to the router's Console port.

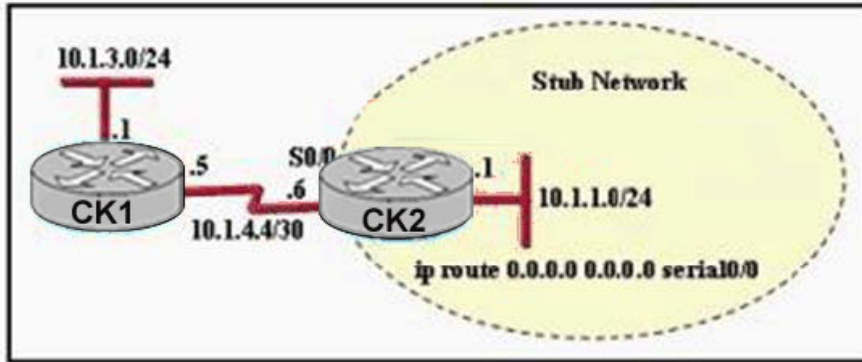
Incorrect Answers:

A, C, E: Straight Cables are used for: Host to switch, Switch to Router.

D: Rollover cables are used for Console/COM connections, not for IP traffic over the Ethernet ports.

QUESTION 124

The Certkiller network is shown below:



In this network, subnet 10.1.3.0/24 is unknown to router CK2. Which router command will prevent router CK2 from dropping a packet destined for the 10.1.3.0/24 network if a default route is configured?

- A. ip classless
- B. ip default-network
- C. network 10.1.1.0
- D. network 10.1.1.0.0.0.0.255 area 0

Answer: A

Explanation:

All Cisco routers are classful routers, meaning that they expect a default subnet mask on each interface of the router. When a router receives a packet for a destination subnet that's not in the routing table, it will drop packets by default. If you are using the default routing, you should use the ip classless command because it is possible that no remote subnet will be in routing table. In more recent versions of IOS "ip classless" is enabled by default.

QUESTION 125

The Certkiller network is replacing all of their hubs with new switches. How does a switch differ from a hub?

- A. A switch operates at a lower, more efficient layer of the OSI model.
- B. A switch does not induce any latency into the frame transfer time.
- C. A switch decreases the number of collision domains.
- D. A switch tracks MAC addresses of directly-connected devices.
- E. A switch decreases the number of broadcast domains.

Answer: D

Explanation:

Some of the features and functions of a switch include:

- | A switch is essentially a fast, multi-port bridge, which can contain dozens of ports.
- | Rather than creating two collision domains, each port creates its own collision domain.
- | In a network of twenty nodes, twenty collision domains exist if each node is plugged

into its own switch port.

If an uplink port is included, one switch creates twenty-one single-node collision domains.

A switch dynamically builds and maintains a Content-Addressable Memory (CAM) table, holding all of the necessary MAC information for each port.

For a detailed description of how switches operate, and their key differences to hubs, see the reference link below.

Reference: <http://www.cisco.com/warp/public/473/lan-switch-cisco.shtml>

QUESTION 126

A network associate needs to configure a router by connecting a remote computer to the router through the router auxiliary port. Which two statements describe the hardware required to make the connection to the router? (Choose two.)

- A. The auxiliary port must be connected to a modem.
- B. The auxiliary port must be connected to an Ethernet LAN.
- C. The technician needs an RJ-45 to DB25 adapter.
- D. The technician needs an Ethernet transceiver.

Answer: A, C

Explanation:

Connecting to the Auxiliary Port

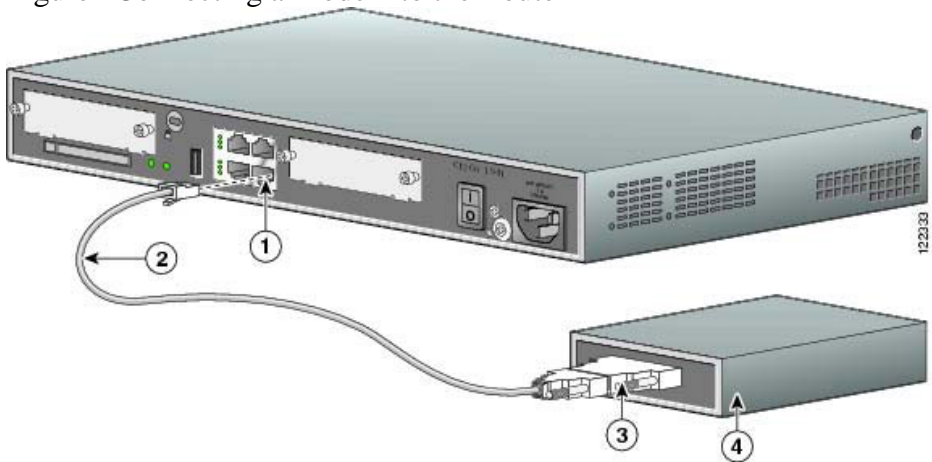
When a modem is connected to the auxiliary port, a remote user can dial in to the router and configure it. Use the light blue console cable and the DB-9-to-DB-25 connector adapter that came in the router accessory kit.

To connect a modem to the router, follow these steps:

Step 1

Connect the RJ-45 end of the adapter cable to the black AUX port on the router. (See Figure2 below)

Figure2 Connecting a Modem to the Router



1	Aux port (RJ-45)	3	DB-9-to-DB-25 modem adapter
---	------------------	---	-----------------------------

2	Light blue console cable	4	Modem
---	--------------------------	---	-------

Step 2

Connect the DB-9 end of the console cable to the DB-9 end of the modem adapter.

Step 3

Connect the DB-25 end of the modem adapter to the modem.

Reference:

http://www.exio.com/en/US/products/ps5853/products_installation_guide_chapter09186a00802c36a5.html

QUESTION 127

It has become necessary to configure an existing serial interface to accept a second Frame Relay virtual circuit. Which of the following procedures are required to accomplish this task? (Choose three.)

- A. Encapsulate the physical interface with multipoint PPP.
- B. Configure static Frame Relay map entries for each subinterface network.
- C. Disable split horizon to prevent routing loops between the subinterface networks.
- D. Remove the IP address from the physical interface.
- E. Create the virtual interfaces with the interface command.
- F. Configure each subinterface with its own IP address.

Answer: D, E, F

Explanation:

Normally, when only one logical virtual circuit (PVC) is assigned to a router it is placed on the physical serial interface. To accept a second PVC, subinterfaces must be created, with each PVC using its own logical interface as shown in the example below:

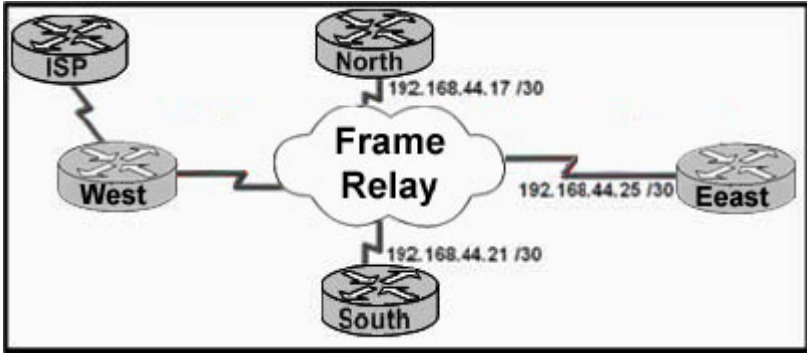
```
interface serial 0
encapsulation frame-relay
interface serial 0.1 point-to-point
ip address 10.0.1.1 255.255.255.0
frame-relay interface-dlci 142
interface serial 0.2 multipoint
ip address 10.0.2.1 255.255.255.0
frame-relay map 10.0.2.2 118
```

In this example, two virtual circuits are used (one pt-pt and one point-multipoint), each with its own IP address. Note that the physical serial 0 interface was not assigned an IP address.

QUESTION 128

In the network shown below, an associate has the task of planning a Frame Relay implementation to replace the existing WAN infrastructure. The addresses for the North, East, and South branch offices have been assigned as shown in the diagram. Which type of topology should be implemented?

Exhibit:



- A. Extended star
- B. Ring
- C. Hub and spoke
- D. Bus
- E. Full mesh

Answer: C

Explanation:

In a Fully meshed environment, every router has a PVC defined to every other router and in a Non-fully meshed environment (or Hub and Spoke) PVCs are only defined between routers that need to communicate. In this example, a /30 IP subnet mask is used at each remote location. This mask allows for only two hosts on the network, which will be used for the local router's frame relay interface, and the hub router's interface. In this example, all site to site (spoke) traffic will need to traverse through the main (hub) location.

QUESTION 129

When are packets processed in an inbound access list?

- A. Before they are routed to an outbound interface.
- B. After they are routed for outbound traffic.
- C. After they are routed to an outbound interface while queuing.
- D. Before and after they are routed to an outbound interface.
- E. Depends on the configuration of the interface
- F. None of the above

Answer: A

Explanation:

When a packet is received on an interface with an inbound access list configured, the packets are matched against the access list to determine if they should be permitted or denied. After this check, the packets are processed by the routing function. The access list check is always done first.

Incorrect Answers:

- B, C. The packets are always processed by the inbound access list prior to being routed.
- D. All packets are always checked against a specific access list only once. While packets

traversing through a router may be checked against different access lists for each interface and in each direction (inbound and outbound), each access list is always only consulted once.

QUESTION 130

Which of the following are benefits provided with access control lists (ACLs)?
(Select all that apply)

- A. ACLs monitor the number of bytes and packets.
- B. Virus detection.
- C. ACLs identify interesting traffic for DDR.
- D. ACLs provide IP route filtering.
- E. ACLs provide high network availability.
- F. ACLs classify and organize network traffic.

Answer: C, D

Explanation:

IP access control lists allow a router to discard some packets based on criteria defined by the network engineer. The goal of these filters is to prevent unwanted traffic in the network - whether to prevent hackers from penetrating the network or just to prevent employees from using systems they should not be using.

IP access lists can also be used to filter routing updates, to match packets for prioritization, to match packets for prioritization, to match packets for VPN tunneling, and to match packets for implementing quality of service features. It is also used to specify the interesting traffic, which is used to trigger ISDN and Dial on Demand Routing (DDR) calls.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 427

Incorrect Answers:

- A, F: ACLs do not provide for management and traffic analysis functions such as the monitoring and organization of network packets.
 - B. While ACLs can be used to filter out some unwanted traffic; they can not be used to routinely provide for virus detection and removal.
 - E. ACLs alone do not provide for any additional level of network availability.
-

QUESTION 131

DRAG DROP

On the exhibit below, match the access list conditions on the left side with the corresponding design goal on the right side. (Not all the conditions will be used)

640-801

Select all from here, access List Condition

- deny icmp any 192.168.47.5 0.0.0.0
- permit ip 192.168.45.32 0.0.0.31 192.168.47.32 0.0.0.15
- deny icmp any 192.168.47.5 0.0.0.31
- permit tcp any 192.168.47.4 0.0.0.0 eq 80
- permit tcp 192.168.47.4 0.0.0.0 any eq
- deny ip any 192.168.47.32 0.0.0.15

Place here

- place here
- place here
- place here
- place here

Design Goals

- Allow all web access to server 192.168.47.4
- Block all IP access to subnet 192.168.47.32/28
- Block all ping messages to server 192.168.47.5/27
- Allow access from subnet 192.168.45.32/27 to subnet 192.168.47.32/28

Answer:

Select all from here, access List Condition

- deny icmp any 192.168.47.5 0.0.0.31
- permit tcp 192.168.47.4 0.0.0.0 any eq

Place here

- permit tcp any 192.168.47.4 0.0.0.0 eq 80
- deny ip any 192.168.47.32 0.0.0.15
- deny icmp any 192.168.47.5 0.0.0.0
- permit ip 192.168.45.32 0.0.0.31 192.168.47.32 0.0.0.15

Design Goals

- Allow all web access to server 192.168.47.4
- Allow all access to server 192.168.47.4/28
- Allow all access to server 192.168.47.4/27
- Allow access from subnet 192.168.45.32/27 to subnet 192.168.47.32/28

Explanation:

1. permit tcp any 192.168.47.4 0.0.0.0 eq 80 Allow all Web access to server 192.168.47.4
2. deny ip any 192.168.47.32 0.0.0.15 Block all IP access to subnet 192.168.47.32/28
3. deny icmp any 192.168.47.5 0.0.0.0 Block all ping messages only to server 192.168.47.5/27

Note: Should be deny icmp any 192.168.47.5 0.0.0.0 to block all ping messages ONLY to server ... with 0.0.0.0 wildcard

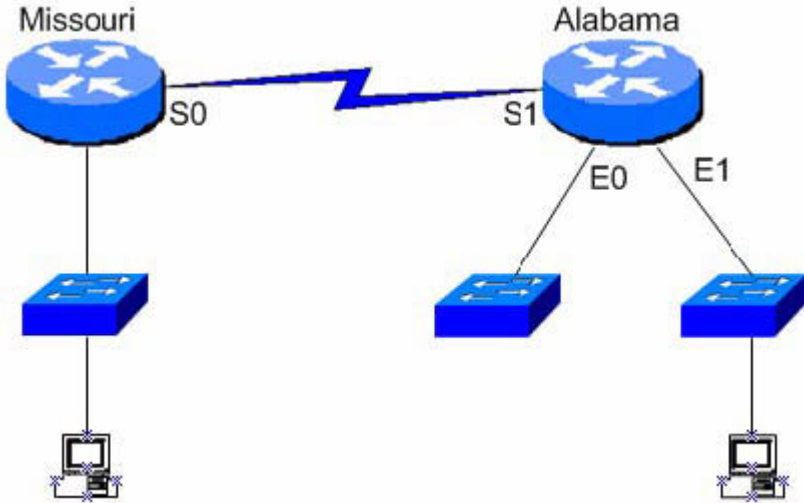
4. permit ip 192.168.45.32 0.0.0.31 192.168.47.32 0.0.0.15 Allow access from subnet 192.168.45.32/27 to subnet 192.168.47.32/28

QUESTION 132

DRAG DROP

The Certkiller network consists of the Missouri and Alabama routers as shown below:

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You are a network administrator of a large corporation situated in the United States.

The network interfaces are:

Missouri: e0 - 192.168.35.17/28; s0- 192.168.35.33/28;

Alabama: e0- 192.168.35.49/28 e1 - 192.168.35.65/28, s1 -192.168.35.34/28.

The address of the accounting server is:

Accounting Server: 192.168.35.66/28.

With your mouse; drag the access list conditions on the left with their corresponding objectives on the right. (Please note: Not all of the options on the left are going to be used.)

deny ip 192.168.35.35 0.0.0.0 host 192.168.35.66	Block only the users attached to the e0 interface of the Missouri router from access to the accounting server.
deny ip 192.168.35.16 0.0.0.15 host 192.168.35.66	Block a user from the Alabama e0 network from access to the accounting server.
permit ip any any	Prevent all users from outside the enterprise network from accessing the accounting server.
permit ip 192.168.35.0 0.0.0.255 host 192.168.35.66	

Answer:

Block only the users attached to the e0 interface of the Missouri router from access to the accounting server.	deny ip 192.168.35.16 0.0.0.15 host 192.168.35.66
Block a user from the Alabama e0 network from access to the accounting server.	deny ip 192.168.35.35 0.0.0.0 host 192.168.35.66
Prevent all users from outside the enterprise network from accessing the accounting server.	permit ip 192.168.35.0 0.0.0.255 host 192.168.35.66

permit ip any any

QUESTION 133

DRAG DROP

Choose the correct access list statements form the left and drag them to their

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corresponding IP address on the right. (Not all the access list statements are used.)

access-list 2 deny 172.26.48.0 0.0.15.255	172.26.92.10	Place here
access-list 3 deny 172.26.64.0 0.0.31.255	172.26.198.94	Place here
access-list 4 deny 172.26.128.0 0.0.31.255	172.26.50.173	Place here
access-list 5 deny 172.26.192.0 0.0.31.254	172.26.144.17	Place here
access-list 6 deny 172.26.192.1 0.0.31.254		

Answer:

	172.26.92.10	access-list 3 deny 172.26.64.0 0.0.31.255
	172.26.198.94	access-list 6 deny 172.26.192.1 0.0.31.254
	172.26.50.173	access-list 2 deny 172.26.48.0 0.0.15.255
access-list 5 deny 172.26.192.0 0.0.31.254	172.26.144.17	access-list 4 deny 172.26.128.0 0.0.31.255

Explanation:

172.26.192.0 = 172.26.11000000.00000000

0.0.31.254 = 0.0.00011111.11111110

172.26.198.94 = 172.26.11000110.01011110

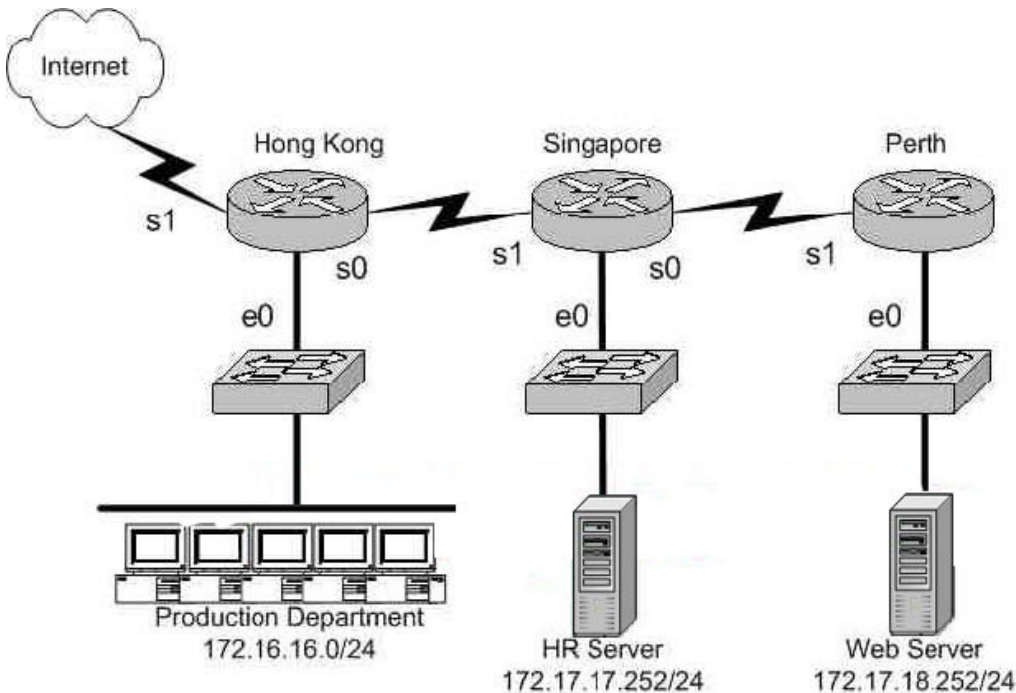
Since only 0 should be matched, the last bit HAS to be 0

In case of access-list 6 deny 172.26.192.1 0.0.31.254

the last bit is 1 and then the matched address would not go through

QUESTION 134

The Certkiller worldwide WAN is shown in the exhibit below:



On the Hong Kong router an access list is needed that will accomplish the following:

1. Allow a Telnet connection to the HR Server through the Internet
2. Allow internet HTTP traffic to access the webserver
3. Block any other traffic from the internet to everything else

Which of the following access list statements are capable of accomplishing these three goals? (Select all that apply)

- A. access-list 101 permit tcp any 172.17.18.252 0.0.0.0 eq 80
- B. access-list 1 permit tcp any 172.17.17.252 0.0.0.0 eq 23
- C. access-list 101 permit tcp 172.17.17.252 0.0.0.0 any eq 23
- D. access-list 101 deny tcp any 172.17.17.252 0.0.0.0 eq 23
- E. access-list 101 deny tcp any 172.17.18.252 0.0.0.0 eq 80
- F. access-list 101 permit tcp any 172.17.17.252 0.0.0.0 eq 23

Answer: A, F

Explanation:

Because of the implicit deny rule at the end of every access list, only two choices need to be made, as the final requirement is automatic.

- A. This is correct as we need to allow the access list to allow port 80 connections (port 80 = HTTP) from anywhere, to the web server's IP address.
- F. This will fulfill the first requirement, as it allows port 23 (Telnet) traffic from anywhere.

Incorrect Answers:

B. The answer asks you to create an access list, a single one. The answer choices require you to choose two answers. For two statements to be on the same list, you need them to have the same number. So answer choice B can be ruled out by process of elimination. In

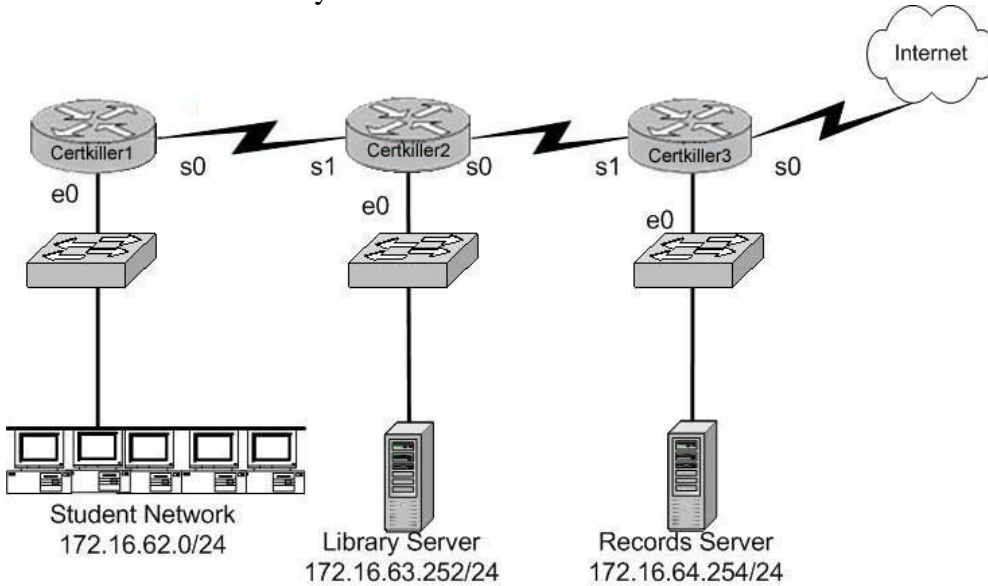
addition to this, access list 1 is an illegal number, since we need an extended access list to use source and destination information, and extended access lists are in the 100-199 range.

C. This is incorrect as it allows telnet traffic from the HR server to the Internet, but we need it to be the other way around.

D, E: Because of the implicit deny any rule; we need to only be concerned with the access rules that permit traffic.

QUESTION 135

The Certkiller University network is shown below:



In the above network, an access list was created in order to prevent students and outsiders on the internet from changing student files in the Records Server, while still allowing other departments in the enterprise access. The access control list was applied to the e0 interface of the Certkiller 3 router going outbound. Which two of the following conditions below were contained in the access control list? (Select two answer choices)

- A. permit 172.16.64.254 0.0.0.0 172.16.0.0 0.0.255.255
- B. permit 172.16.0.0 0.0.255.255 172.16.64.254 0.0.0.0
- C. deny 172.16.64.254 0.0.0.0 172.16.62.0 0.0.0.255
- D. deny 172.16.62.0 0.0.0.255 172.16.64.254 0.0.0.0
- E. deny 172.16.64.254 0.0.0.0 any
- F. permit any any

Answer: B, D

Explanation:

Answer choice B and D together will specifically deny the students and the internet from accessing the Records Server, while still allowing access to the Library Server. It is important to note that the rules in any access list are consulted in order. Because of this, the actual access list used in this case would need to have choice D first, and then choice

B. If this was not done, then traffic coming from the students would be first allowed, before the rule denying them was consulted. The rule to prevent traffic from the Internet to the records server is handled by the implicit deny any rule.

QUESTION 136

Which one of the access control list statements below will deny all telnet connections to subnet 10.10.1.0/24?

- A. access-list 15 deny telnet any 10.10.1.0 0.0.0.255 eq 23
- B. access-list 115 deny udp any 10.10.1.0 eq telnet
- C. access-list 15 deny tcp 10.10.1.0 255.255.255.0 eq telnet
- D. access-list 115 deny tcp any 10.10.1.0 0.0.0.255 eq 23
- E. access-list 15 deny udp any 10.10.1.0 255.255.255.0 eq 23

Answer: D

Explanation:

Telnet uses port TCP port 23. Since we are using source and destination IP address information, an extended access list is required. Extended access lists are access lists in the 100-199 range.

Incorrect Answers:

- A, C, E. These access lists are numbered 15. Standard access lists are numbered 1-99, and in this case an extended access lists is required.
 - B. This access list specifies UDP port 23, and TCP port 23 is the port used by telnet.
-

QUESTION 137

Which of the following answer choices are correct characteristics of named access list? (Select all that apply)

- A. You can delete individual statements in a named access list
- B. Named access lists require a numbered range from 1000 to 1099.
- C. Named access lists must be specified as standard or extended.
- D. You can use the ip access-list command to create named access lists.
- E. You cannot delete individual statements in a named access list.
- F. You can use the ip name-group command to apply named access lists.

Answer: A, C, D

Explanation:

Named access lists have two advantages over numbered access lists: the first one being that a name is easier to remember and the second being the fact that you can delete individual statements in a named access list. That makes A correct.

When you create a named access list you use the ip access-list command, and you have to specify whether it's standard or extended (since there are no numbers). So C and D are both correct. An example from the textbook is the command, "ip access-list extended Barney"

Incorrect Answers:

B. Named access lists don't require a number range from 1000 to 1099 so B is incorrect.

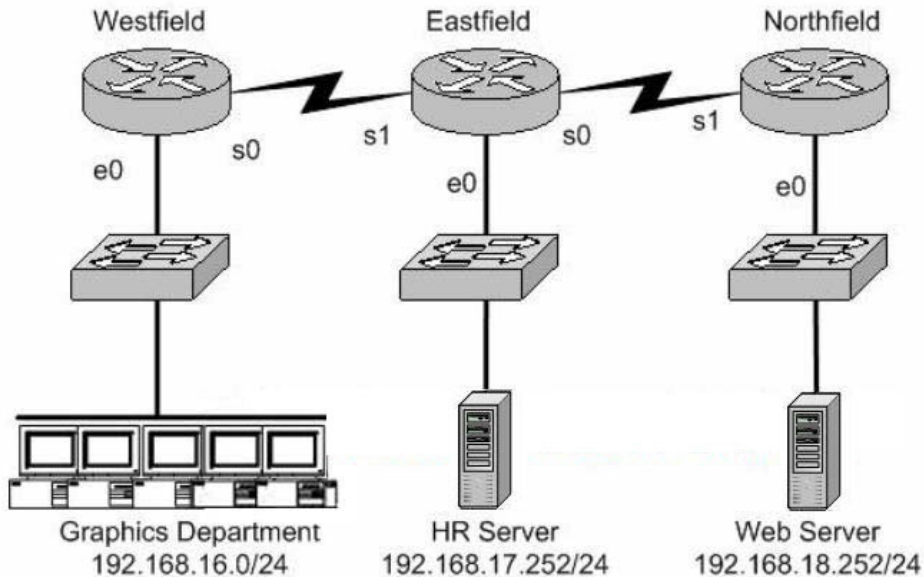
E. Answer choice E is not true.

F. This is incorrect because the command `ip name-group` is absolutely unnecessary.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Pages 443-445

QUESTION 138

The Certkiller WAN is displayed below:



An access list needs to be implemented that will block users from the Graphics Department from telnetting to the HR server; and this list is to be implemented on the Ethernet 0 interface of the Westfield router for the inbound direction. All other office communications should be allowed. Which of the following answer choices would accomplish this?

- A. `deny tcp 192.168.16.0 0.0.0.255 192.168.17.252 0.0.0.0 eq 23`
`permit ip any any`
- B. `permit ip any any`
`deny tcp 192.168.16.0 0.0.0.255 192.172.252 0.0.0.0 eq 23`
- C. `permit ip any any`
`deny tcp 192.168.17.252 0.0.0.0 192.168.0 0.0.0.255 eq 23`
- D. `deny tcp 192.168.18.262 0.0.0.0 192.168.16.0 0.0.0.255 eq 23`
`permit ip any any`

Answer: A

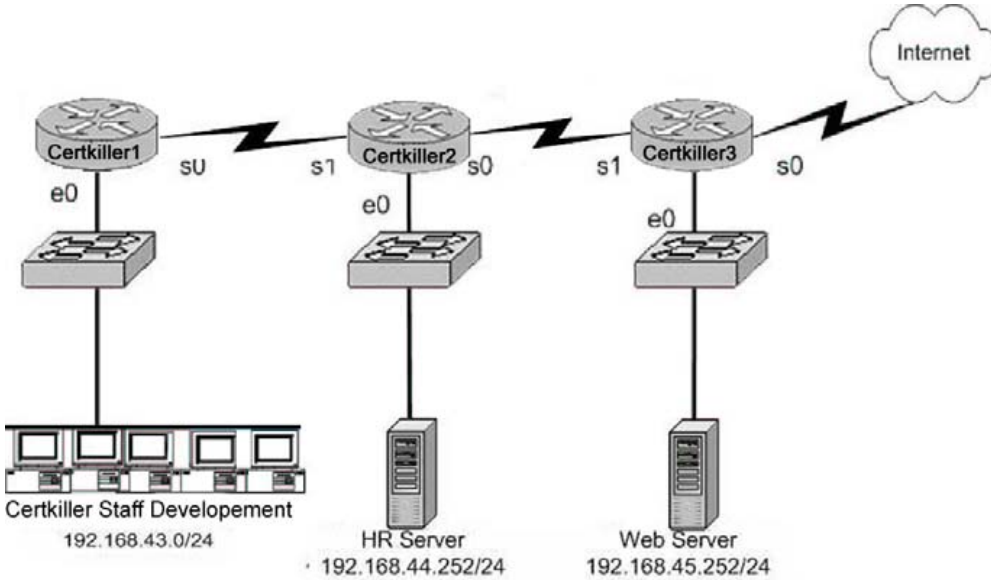
Explanation:

The syntax for an access list is the source address first then the destination address. In this case the source address is 192.168.16.0/24 and the destination address 192.168.17.252. The "permit ip any any" statement is required because of the implicit

deny all at the end of every access list. Generally speaking, all access lists require at least one permit statement, otherwise all traffic will be denied through the interface.

QUESTION 139

The Certkiller WAN is shown below:



Your goal is to allow FTP access to the HR server, while blocking out all other traffic. Which of the access list configurations below will fulfill your goal? (Select two answer choices)

- A. Access-list 101 Permit tcp any 192.168.44.252 0.0.0.0 eq 21
- B. Access-list 101 Permit tcp any 192.168.44.252 0.0.0.0 eq 20
- C. Access-list 101 Permit tcp 192.168.44.252 0.0.0.0 any eq 20
- D. Access-list 101 Permit tcp 192.168.44.252 0.0.0.0 any eq 21
- E. Access-list 101 Deny tcp any 192.168.44.255 0.0.0.0 gt 21
- F. Access-list 101 Permit tcp 192.168.44.255 0.0.0.0 any gt 21

Answer: A, B

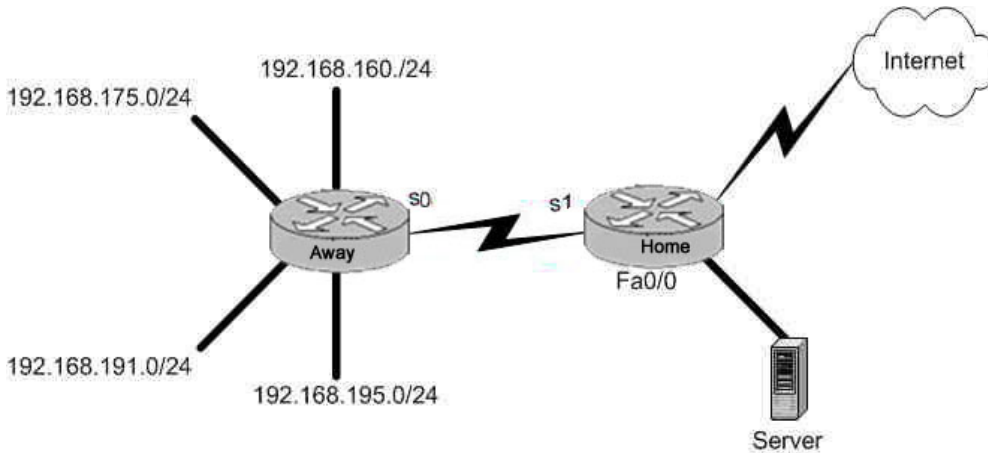
Explanation:

FTP uses two ports: TCP port 20 and TCP port 21. you want to allow all hosts (ANY) to access the HR server (192.168.44.252 0.0.0.0) through ftp (eq 20 & eq 21) and the implicit deny any rule will block everything else.

QUESTION 140

The Certkiller Network is displayed in the flowing diagram:

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You need to place an access list on the Fa0 interface of the Home router; that will deny access to all hosts that lie within the range 192.168.160.0-192.168.191.0. Hosts in the 192.168.195.0 network should be granted full access. Which one of the following answer choices fulfills your needs?

- A. access-list 1 deny 192.168.163.0 0.0.0.255
- B. access-list 1 deny 192.168.128.0 0.0.127.255
- C. access-list 1 deny 192.168.160.0 0.0.255.255
- D. access-list 1 deny 192.168.160.0 0.0.31.255

Answer: D

Explanation:

This question is really more of an inverse subnet masking questions than a security question. Your goal is to block access to the host range 192.168.160.0- 192.168.191.0 while allowing everything else (including hosts from 192.168.195.0) full access. Answer choice D is correct because the address and mask are numbered correctly.

QUESTION 141

Which of the following access list statements would deny traffic from a specific host?

- A. Router(config)# access-list 1 deny 172.31.212.74 any
- B. Router(config)# access-list 1 deny 10.6.111.48 host
- C. Router(config)# access-list 1 deny 172.16.4.13 0.0.0.0
- D. Router(config)# access-list 1 deny 192.168.14.132 255.255.255.0
- E. Router(config)# access-list 1 deny 192.168.166.127 255.255.255.255

Answer: C

Explanation:

Only choice C is the correct syntax for a specific host. The access list is denying all traffic from the host with IP address 172.16.4.13. It is important to note that in an access list, the subnet mask is the inverse. Normally, a host subnet mask is 255.255.255.255, but

in an access list it is 0.0.0.0.

Incorrect Answers:

- A. The syntax is incorrect here, as there is no subnet mask at all specified.
- B. This would be an acceptable choice, if the "host" keyword were placed in front of the IP address, not after.
- D. The subnet mask here includes the entire class C network here, not an individual host.
- E. In an access list, the subnet mask is an inverse mask. The mask specified here would be equivalent to all 0's in a subnet mask, meaning that the don't care bits apply to the entire address.

QUESTION 142

Which IP address and wildcard mask would you use in your ACL to block all the hosts in the subnet 192.168.16.43/28?

- A. 192.168.16.32 0.0.0.16
- B. 192.168.16.43 0.0.0.212
- C. 192.168.16.0 0.0.0.15
- D. 192.168.16.32 0.0.0.15
- E. 192.168.16.0 0.0.0.31
- F. 192.168.16.16 0.0.0.31

Answer: D

Explanation:

Since there are 28 bits in the subnet mask, we can find the inverse mask by reversing the 1's and 0's.

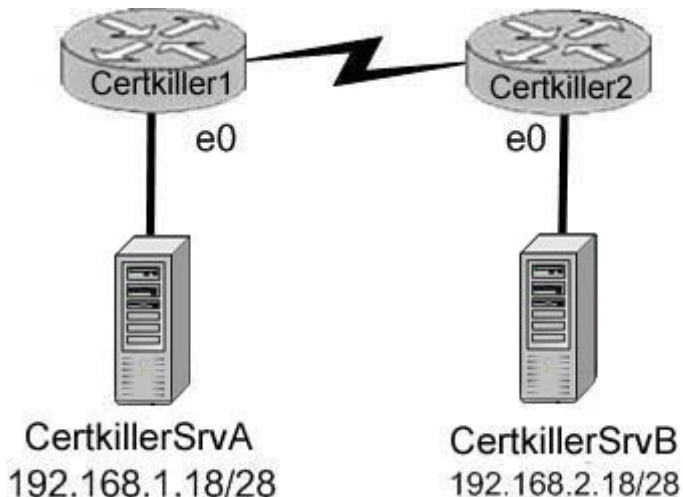
/28 = 11111111.11111111.11111111.11110000

/28 Inverse = 00000000.00000000.00000000.00001111 = 192.168.16.32/15

The address 192.168.16.32 and the wildcard mask 0.0.0.15 is the correct answer as shown. This will match all addresses in the 192.168.16.32-192.168.16.47 range.

QUESTION 143

Two Certkiller routers are connected together as shown below:



In order to control access on the Certkiller network, the following access list is created:

```
access-list 101 permit tcp 192.168.1.16 0.0.0.15 192.168.2.16
0.0.0.15 eq 23
```

What would happen if you applied the following ACL to any one of the Certkiller routers in the above exhibit? On what interface and what direction should you apply it? Once applied, what will this access list accomplish? (Select all valid answer choices)

- A. Telnet traffic from 192.168.1.16 0.0.0.15 to 168.2.16 0.0.0.15 is allowed.
- B. SMTP traffic from 192.168.1.16 0.0.0.15 to 168.2.16 0.0.0.15 is allowed.
- C. The ACL is configured to allow traffic from one specific host to another.
- D. The ACL should be applied inbound to the e0 interface of Router Certkiller 1.
- E. The ACL should be applied outbound to the e0 interface of Router Certkiller 1.

Answer: A, D

Explanation:

This is a two part question. The first part is the type of traffic that will match this specific access list entry. Since telnet uses TCP port 23, choice B is correct.

Next, to determine which interface and which direction to apply the access list, we see that the source of the traffic is the 192.168.1.16/28 network, while the destination is the 192.168.2.16/28 network. Therefore, only choice D makes sense.

Incorrect Answers:

B. SMTP uses TCP port 25.

C. There is a /15 network mask for both the source and destination in this access list, which translates to a /28 network.

E. This would not be useful if applied to the outbound, as no traffic would match then.

Note that if this answer had stated that the access list be placed on the outbound serial (WAN) interface, then this would have been an acceptable choice.

QUESTION 144

A standard IP access list is applied to an Ethernet interface of a router. What does

this standard access list filter on?

- A. The source and destination addresses
- B. The destination port number
- C. The destination address
- D. The source address
- E. All of the above

Answer: D

Explanation:

The standard IP access-list will only filter on the source address contained in the packet. Extended access lists can filter on the source and destination address and port information.

QUESTION 145

The Certkiller network is subnetted using 29 bits for the subnet mask. Which wild card mask should be used to configure an extended access list to permit or deny access to an entire subnetwork?

- A. 255.255.255.224
- B. 255.255.255.248
- C. 0.0.0.224
- D. 0.0.0.8
- E. 0.0.0.7
- F. 0.0.0.3

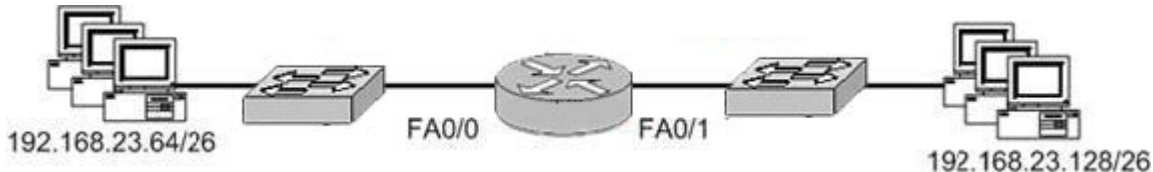
Answer: E

Explanation:

Class C wild card masks start with 0.0.0.x. The subnet used in this example is 29 bits, or subnet mask 255.255.255.248. Therefore, we are left with 7 hosts in the final octet (255-248) so the answer is 0.0.0.7.

QUESTION 146

Part of the Certkiller network is shown below:



The Certkiller network administrator wants to prevent computers on the 192.168.23.64/26 subnet from accessing the 192.168.23.128/26 subnet via FTP. All other hosts should be allowed to access. What commands should be entered on the router to accomplish this task?

- A. Router(config)#access-list 101 deny tcp 192.168.23.64 0.0.0.63 192.168.23.128

```
0.0.0.63 eq ftp
Router(config)#access-list 101 permit ip any any
Router(config)#interface fa0/0
Router(config-if)#ip access-group 101 in
B. Router(config)#access-list 101 deny tcp 192.168.23.64 0.0.255 192.168.23.128
0.0.0.255 eq ftp
Router(config)#access-list 101 permit ip any any
Router(config)#interface fa0/0
Router(config-if)#ip access-group 101 in
C. Router(config)#access-list 101 deny tcp 192.168.23.64 0.0.0.63 192.168.23.128
0.0.0.63 eq ftp
Router(config)#access-list 101 permit ip any any
Router(config)#interface fa0/0
Router(config-if)#access-list 101 out
D. Router(config)#access-list 101 deny tcp 192.168.23.64 0.0.0.255 192.168.23.128
0.0.0.255 eq ftp
Router(config)#access-list 101 permit ip any any
Router(config)#interface fa0/1
Router(config-if)#ip access-group 101 in
E. Router(config)#access-list 101 deny tcp 192.168.23.128 0.0.0.63 192.168.23.64
0.0.0.63 eq ftp
Router(config)#access-list 101 permit ip any any
Router(config)#interface fa0/1
Router(config-if)#ip access-group 101 in
F. Router(config)#access-list 101 deny tcp 192.168.23.128 0.0.0.255 192.168.23.128
0.0.0.255 eq ftp
Router(config)#access-list 101 permit ip any any
Router(config)#interface fa0/1
Router(config-if)#ip access-group 101 out
```

Answer: A

Explanation:

Only choice A specifies the correct wildcard mask and direction. If we apply the access list to interface FA0/0, we need to specify incoming FTP traffic from the 192.168.23.64/26 network to the 192.168.23.128/26 network.

Incorrect Answers:

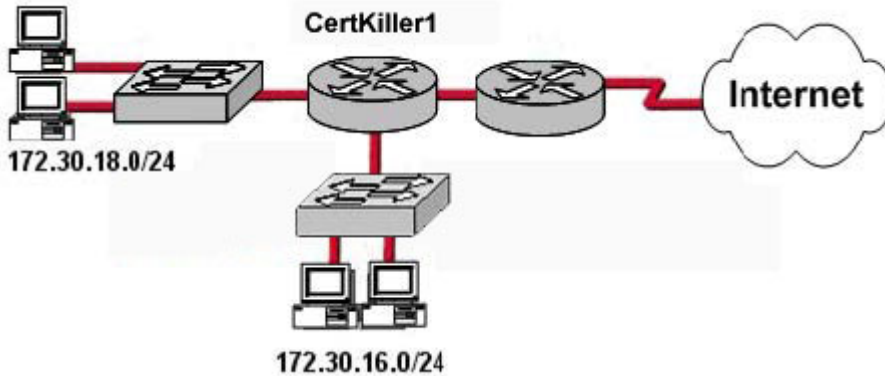
B, D, F. The wildcard mask for a /26 network is 0.0.0.63, not 0.0.0.255.

C. This access list statement is correct, but when it is applied to the FA0/0 interface it needs to be in the incoming direction.

E. This access list needs to be applied to interface FA0/0, not FA0/1. Alternatively, it could have been applied to interface FA0/1, but in the outbound direction, not the inbound direction.

QUESTION 147

The Certkiller network is shown below:



The network administrator would like to permit only hosts on the 172.30.16.0/24 network to access the Internet. Which wild card mask and address combination will only match addresses on this network?

- A. 172.30.0.0 0.0.0.0
- B. 172.30.16.0 0.0.0.255
- C. 172.30.0.0 0.0.15.255
- D. 172.30.16.0 0.0.31.255
- E. 172.30.16.0 0.0.255.255

Answer: B

Explanation:

According to question, only the hosts from 172.30.16.0/24 network allow to access the Internet, for that we should use the wildcard masking. 172.168.16.0 0.0.0.255 where 0 means exact and 255 means 1-255 range.

For any particular host: 192.168.0.1 0.0.0.0

For Range: 192.168.0.1 0.0.0.3 means 1-4 total 4 hosts.

QUESTION 148

What are two reasons that a network administrator would use access lists? (Choose two.)

- A. To filter traffic as it passes through a router
- B. To filter traffic that originates from the router
- C. To replace passwords as a line of defense against security incursions
- D. To control vty access into a router
- E. To control broadcast traffic through a router

Answer: A, D

Explanation:

Access lists are used to process data received by a router can be divided into two broad categories:

1. traffic that passes through the router via the forwarding path (choice A)

2. traffic destined for the router via the receive path for route processor handling, such as ssh/telnet vty access (Choice D)

In normal operations, the vast majority of traffic simply flows through a router en route to its ultimate destination.

Incorrect Answers:

B: Traffic originated by the router will bypass the access list.

C: Access lists can be used to permit or deny access, but it can not be used to replace the need for passwords for authorizing users into the system.

E: Routers do not forward broadcast traffic by default, and this is true regardless if access lists are configured or are not.

QUESTION 149

The Certkiller Corporation consists of the head office in New York with its regional offices in: Chicago, Detroit, Philadelphia, Toronto, and Atlanta. These offices need to be connected in a WAN, and Certkiller wishes to do this via a hub and spoke arrangement that will utilize packet-switched technology.

Which one of the WAN technologies below would be the best choice for Certkiller ?

- A. ISDN
- B. Wireless
- C. Frame Relay
- D. T1 leased line
- E. ATM
- F. VPN

Answer: C

Explanation:

To provide efficient IP multicast support in Frame Relay networks, the underlying Frame Relay network architecture should be designed in a "hub and spoke" topology (hierarchical topology). The hub and spoke topology is also named a "star" topology, because the central hub acts as the center of a star and the connections to the remote sites act as light radiating from the star. In the hub and spoke topology, each remote router may also act as a hub and each connection to another remote site may act as a spoke (in a hierarchical fashion). In a multiple hub topology, the load associated with sending broadcast and multicast data can be distributed across multiple central hub sites rather than concentrated at a single central site. Thus, even though data may require extra hops to get to a particular location, data delivery is more efficient in a hub and spoke network than in other network topologies. This design also provides a scalable, hierarchical network that greatly reduces the resource requirements of the central router, allowing the Frame Relay network to utilize the advantages of IP multicast applications.

Incorrect Answers:

A, B, D: These networks are typically not Hub and spoke, and do not operate via packet switching.

E. ATM is a somewhat viable choice, as they work in a similar fashion to frame relay. However, ATM would be considering a cell switching technology, not a packet switching

technology.

F. VPN's work through the use of encryption, tunnels, or MPLS.

QUESTION 150

You are a systems administrator of an HR company in Dallas. You want to connect your company's head office with a branch office in Detroit. To do this, you want to use two data link layer encapsulations: one exclusively for data and the other exclusively for signaling. Which one of the following WAN services would best suit your needs?

- A. ISDN
- B. ATM
- C. FDDI
- D. ATX
- E. Frame Relay

Answer: A

Explanation:

ISDN Q.931 messages are used for signaling via the ISDN D channel.

ISDN B channels are used to transport data.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 327

QUESTION 151

A brand new network application is required for the Acme Company, and they are considering the use of a connectionless service. What are the characteristics of a connectionless service? (Select two answer choices)

- A. It uses a Reliable transport mechanism.
- B. It uses a Non-reliable transport mechanism
- C. It is less bandwidth-intensive than connection oriented services
- D. it uses handshaking

Answer: B, C

Explanation:

The Transport layer is a good example of how both a connectionless and connection oriented service works.

UDP is a connectionless service that is considered unreliable, but it uses less bandwidth than a connection oriented service.

TCP is a connection oriented service and is considered reliable because it uses handshaking to create the service and acknowledgments.

Incorrect Answers:

A, D: These are the characteristics of a connection oriented service, such as TCP.

QUESTION 152

You are a network administrator of a small company that's experiencing explosive growth. Within the next quarter the company is going to open up seven more regional offices with the potential of more in the future. These regional offices send and receive mission critical traffic, and will need to be connected to the head office around the clock. However, your head office doesn't have any additional free ports available on the router. Which of the following technologies would be the best choice for this new WAN?

- A. Frame Relay
- B. Broadband cable
- C. ISDN-BRI
- D. ADSL
- E. Dedicated PPP/HDLC links
- F. ISDN

Answer: A

Explanation:

Frame Relay is a dedicated service that would be acceptable for a mission critical WAN application, and multiple locations can connect to a single router port. The use of frame relay PVCs can connect all the locations together, while using only one physical port.

Incorrect Answers:

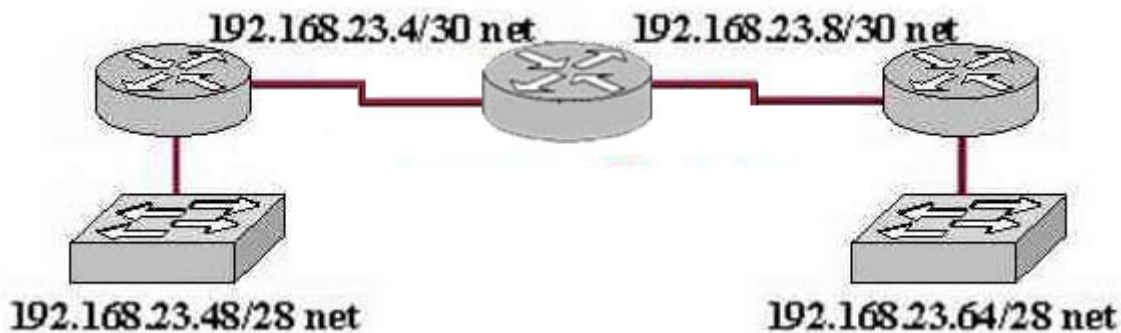
B, D. While DSL and Cable Modem are acceptable for home use, they have not yet achieved the availability and reliability associated with dedicated WAN technologies such as ATM, Frame Relay, and Point to Point links.

C, F. ISDN is usage based, and would it would be cost prohibitive to keep the ISDN links up at all times.

E. Dedicated leased lines would require a separate router port for each link.

QUESTION 153

The Certkiller WAN is displayed in the diagram below:



Which dynamic routing protocol should be recommended for the Certkiller network shown in the graphic above? (Choose three)

- A. OSPF
- B. RIP version 1
- C. RIP version 2
- D. IGRP
- E. EIGRP

Answer: A, C, E

Explanation:

In this network, the 192.168.23.0/24 network is subnetted into two other networks. Because this class C network is being subnetted, a routing protocol that supports variable length subnet mask information is required. OSPF, EIGRP, and RIP version 2 all support VLSM information to be shared across the network.

Incorrect Answers:

B, D. RIP version 1 and IGRP do not support VLSM, which will be required in order for this network to have the two LANs both be reachable.

QUESTION 154

The Certkiller network is implementing dialup services for their remote employees. Certkiller uses several different Layer 3 protocols on the network. Authentication of the users connecting to the network is required for security. Additionally, some employees will be dialing long distance and will need callback support. Which protocol is the best choice for these remote access services?

- A. 802.1
- B. Frame relay
- C. HDLC
- D. PPP
- E. SLIP
- F. PAP

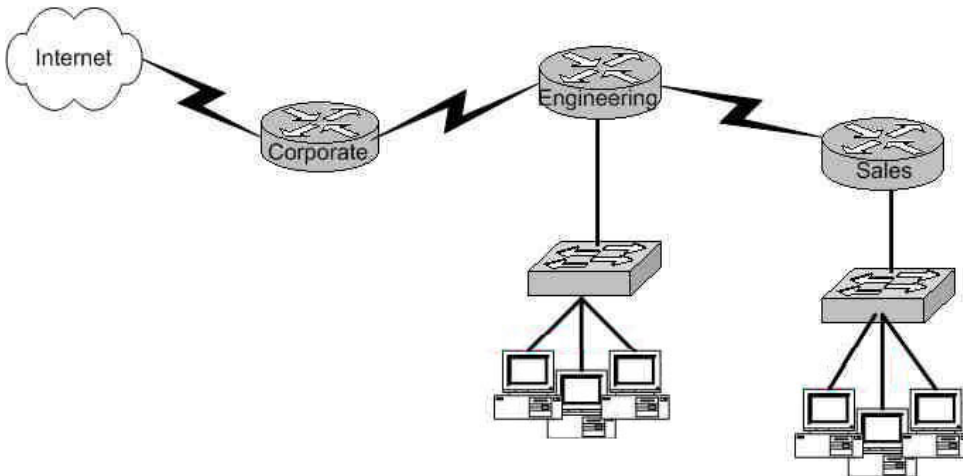
Answer: D

Explanation:

PPP is the Point to Point Protocol, and is used in the majority of dial-up connections. PPP includes support for numerous features, including caller ID check, PPP callback, and security support. For security, either CHAP or PAP can be used, although CHAP is normally used as it is more secure. PPP is a layer 2 protocol that can support any layer 3 protocols.

QUESTION 155

The Certkiller network is displayed in the following diagram:



A network administrator would like to implement NAT in the network shown in the graphic to allow inside hosts to use a private addressing scheme. Where should NAT be configured?

- A. Corporate router
- B. Engineering router
- C. Sales router
- D. All routes
- E. All routes and switches

Answer: A

Explanation:

Network Address Translation (NAT) can be used to hide the private IP addressing scheme of the entire network from the Internet. To do this, NAT needs to only be configured on the router that resides between the Internet and the rest of the private internal network. In this case, it needs to only be implemented on the Corporate router.

QUESTION 156

Certkiller has 25 computers and decides to connect the network to the Internet. Certkiller would like for all of the computers to have access to the Internet at the same time, but Certkiller only has four usable publicly routable IP addresses. What should be configured on the router so that all computers can connect to the Internet simultaneously?

- A. Static NAT
- B. Global NAT
- C. Dynamic NAT
- D. Static NAT with ACLs
- E. Dynamic NAT with overload

Answer: E

Explanation:

NAT overload, also called many to one NAT or Port Address Translation (PAT) allows for many IP hosts to share a single IP address when connecting to the outside. In this case, the use of dynamic NAT with overloading will allow for the 25 hosts to use an IP address from the NAT pool, which will contain the 4 public IP addresses.

QUESTION 157

A Cisco router has been configured with the following command:
IP nat pool nat-test 192.168.6.10 192.168.6.20 netmask 255.255.255.0
This is an example of what type of NAT?

- A. Static NAT
- B. Dynamic NAT
- C. Dynamic NAT with overload
- D. Port Address Translation
- E. None of the above

Answer: B

Explanation:

The configuration statement in this example is used to define a pool of IP addresses to be used for dynamic NAT translations.

Incorrect Answers:

A. Static NAT is used for 1 to 1 translation entries, using the "static" configuration keyword. In this example a range of addresses are being defined for the use in a pool.
C, D. With NAT overload, also known as Port Address Translation (PAT), the keyword "overload" is added at the end of the configuration statement.

QUESTION 158

You are a technician at Certkiller . Your newly appointed Certkiller trainee is setting up a new frame relay connection to a remote branch and wants to know what the valid options for frame relay LMI types are.
What would your reply be? (Choose all that apply.)

- A. EIA/TIA
- B. Q.932
- C. Q.933 A
- D. IEEE
- E. IETF
- F. Cisco
- G. ANSI

Answer: C, F, G

Explanation:

The following describe the various frame relay LMI options:

Name Document IOS LMI-Type

* Cisco Proprietary cisco

* ANSI T1.617 Annex D ansi

* ITU Q.933. Annex A q.933a

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 382

QUESTION 159

Certkiller has five regional offices that are located in different cities. The IT staff is evaluating WAN technologies to interconnect the regional offices to corporate headquarters. Each of the regional offices should be connected to the corporate headquarters in a hub and spoke arrangement using a packet-switched technology. Which of the following WAN technologies will fulfill these requirements?

- A. Frame Relay
- B. ISDN
- C. T1 leased lines
- D. Wireless

Answer: A

Explanation:

There are three packet switching technologies which can be used:

1. Frame Relay
2. X.25
3. ATM

So, only choice A is right.

QUESTION 160

Which of the following describe private IP addresses? (Choose two)

- A. Addresses chosen by Certkiller .com to communicate with the Internet.
- B. Addresses that cannot be routed through the public Internet.
- C. Addresses that can be routed through the public Internet.
- D. A scheme to conserve public addresses.
- E. Addresses licensed to enterprise or ISPs by an Internet registry organization.

Answer: B, D

Explanation:

Private IP address space has been allocated via RFC 1918. This means the addresses are available for any use by anyone and therefore the same private IP addresses can be reused. However they are defined as not routable on the public Internet. They are used extensively in private networks due to the shortage of publicly registered IP address

space and therefore network address translation is required to connect those networks to the Internet.

QUESTION 161

Which PPP subprotocol negotiates authentication options?

- A. NCP
- B. ISDN
- C. SLIP
- D. LCP
- E. DLCI

Answer: D

Explanation:

LCP: A method of establishing, configuring, maintaining, and terminating the point-to-point connection.

Link-establishment phase LCP packets are sent by each PPP device to configure and test the link. These packets contain a field called the Configuration Option that allows each device to see the size of the data, compression, and authentication. If no Configuration Option field is present, then the default configurations are used.

QUESTION 162

A network administrator is designing a Cisco network for a large company. The network must be able to use minimal bandwidth for routing updates, converge quickly, and support VLSM, CIDR, IP and IPX. Which routing protocol will best fit the requirements of this network?

- A. RIP v1
- B. RIP v2
- C. IGRP
- D. OSPF
- E. EIGRP

Answer: E

Explanation:

Enhanced Interior Gateway Routing Protocol (EIGRP) is a Cisco-proprietary routing protocol based on IGRP. Unlike IGRP, which is a classful routing protocol, EIGRP supports CIDR, allowing network designers to maximize address space by using CIDR and VLSM. Compared to IGRP, EIGRP boasts faster convergence times, improved scalability, and superior handling of routing loops as well as EIGRP supports IP, IPX protocols also.

QUESTION 163

A network administrator has been asked to set up a fully-meshed Frame Relay

network to connect six remote research sites. How many PVCs are required in this network?

- A. 15
- B. 6
- C. 41
- D. 36
- E. 18

Answer: A

Explanation:

The formula for calculating the number of links to achieve a full mesh is $N(N-1)/2$, where N is the number of locations. In this case there are 6 locations, so we will need $6(5)/2 = 15$ links for the full mesh.

QUESTION 164

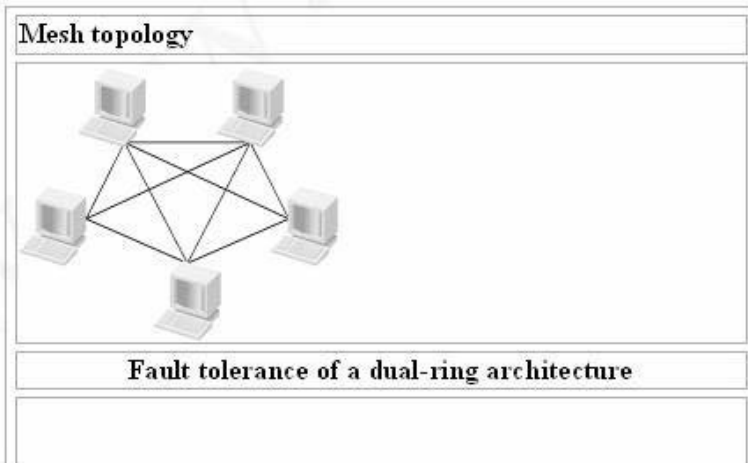
A medical imaging company must redesign its network to use LAN and WAN topologies that provide the highest degree of redundancy. Which topologies should the company choose for the most redundancy? (Choose two)

- A. Partial mesh
- B. Extended star
- C. Dual ring
- D. Mesh
- E. Hub and spoke
- F. Star

Answer: C, D

Explanation:

There are four basic topologies used to interconnect devices: bus, ring, star, and mesh. For maximum redundancy, a full mesh or a dual ring design should be used as shown below:



Due to the high cost of fully meshed designs and the fact that they do not scale well, they are not commonly used except for very small networks.

QUESTION 165

A mid-sized company with five branch offices across Canada wants to create a WAN that will provide the most cost effective fully meshed environment with at least 512 kbps throughput. What WAN service would meet this need?

- A. ATM
- B. ISDN BRI
- C. Frame Relay
- D. PPP
- E. leased lines

Answer: C

Explanation:

Since frame relay uses the concept of virtual circuits, PVC's can be created as a low cost way to provide a fully meshed environment.

Incorrect Answers:

A: Although ATM could also be used to connect to each location via the use of PVC's similar to frame relay, ATM costs are higher than frame relay and this question asked for the most cost effective method.

B: ISDN BRI only supports bandwidth speeds of up to 128K.

D, E: PPP or leased lines would be cost prohibitive, and requires a dedicated T1 interface for each location. PPP/leased lines do not use virtual circuits so a dedicated connection would need to be made between all sites.

QUESTION 166

Which one of the following parameters is the very first thing that needs to be configured as part of the IGRP routing process?

- A. The wild card mask
- B. The IP address
- C. The IP address mask
- D. The metric weights
- E. The Autonomous System number

Answer: E

Explanation:

You configure IGRP just like RIP, except that the router `igrp` command has an additional parameter - the autonomous system (AS) number. The term autonomous system refers to a network that is within the control of a single company or organization. The term AS number refers to a number assigned to a single company or organization when it registers its connection to the Internet. However, for IGRP, you do not need a registered AS

number. All that is needed for IGRP to work is for all the routers to use the same AS number.

Example configuration:

```
Router EIGRP 1
```

```
Network 10.0.0.0
```

In this example, 1 is the AS number chose for EIGRP process 1.

QUESTION 167

Which of the following answer choices is an additional parameter which must be supplied before the IGRP routing process can initialize?

- A. Connected subnet numbers
- B. Register administrative subnet masks
- C. IP address mask
- D. Autonomous system number
- E. Metric weights

Answer: D

Explanation:

You configure IGRP just like RIP, except that the router `igrp` command has an additional parameter - the autonomous system (AS) number. The term autonomous system refers to a network that is within the control of a single company or organization. The term AS number refers to a number assigned to a single company or organization when it registers its connection to the Internet. However, for IGRP, you do not need a registered AS number. All that is needed for IGRP to work is for all the routers to use the same AS number.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 165

QUESTION 168

What parameters must you specify when you enable EIGRP routing?

- A. The broadcast address, and AS number
- B. The network number and AS number
- C. EIGRP routing, network number and passive interface
- D. EIGRP routing, network number, and AS

Answer: D

Explanation:

To enable EIGRP on your router, you must specify EIGRP routing, the network number, and the AS system number.

Example:

```
Router EIGRP 33
```

Network 10.0.0.0

In the case above the AS process number is 33.

QUESTION 169

Which of the following technologies can be used in distance vector routing protocols to prevent routing loops? (Select all valid answer choices)

- A. Spanning Tree Protocol
- B. Shortest path first tree
- C. Link-state advertisements (LSA)
- D. Hold-down timers
- E. Split horizon
- F. VRRP

Answer: D, E

Explanation:

Distance vector routing protocols use the rule of split horizons and hold down timers to prevent routing loops after a topology change.

* Splithorizon - the routing protocol advertises routes out an interface only if they were not learned from updates entering that interface.

* Hold-down timer - After finding out that a router to a subnet has failed, a router waits a certain period of time before believing any other routing information about that subnet.

Incorrect Answers:

A. STP is used in bridged LANs to prevent bridging loops. It is a means for preventing loops at layer two, not layer 3.

B, C. These are two of the mechanisms of Link State Protocols, not distance vector protocols.

F. VRRP is the Virtual Router Redundancy Protocol, which is a standards based method similar to Cisco's proprietary HSRP. Neither of these two methods deal with distance vector routing protocols.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 154

QUESTION 170

What is the reason for configuring a passive interface on a router? (Select only one answer)

- A. Allows interfaces to share common IP addresses.
- B. Allows an interface to remain up without the aid of keepalives.
- C. Allows a router to send routing and not receive updates via that interface.
- D. Allows a routing protocol to forward updates that is missing its IP address.
- E. Allows a router to receive routing updates on an interface but not send updates via that interface.

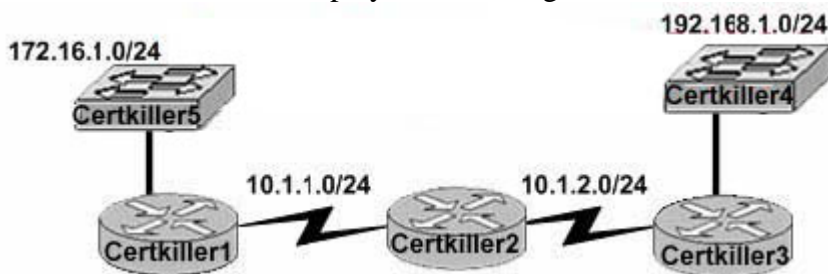
Answer: E

Explanation:

The passive-interface command is used to control the advertisement of routing information. The command enables the suppression of routing updates over some interfaces while allowing updates to be exchanged normally over other interfaces. For any interface specified as passive, no routing information will be sent. Routing information received on that interface will be accepted and processed by the router. This is often useful for DDR links such as ISDN.

QUESTION 171

The Certkiller WAN is displayed in the diagram below:



You have just added the router Certkiller 1 to your network and wish it to have full connectivity with routers Certkiller 2 and Certkiller 3. Which of the following configurations would suit Certkiller 1 most appropriately?

- A. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0
Certkiller 1(config-router)# network 172.16.0.0
Certkiller 1(config-router)# network 192.168.1.0
- B. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0
Certkiller 1(config-router)# network 192.168.1.0
- C. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0
Certkiller 1(config-router)# network 172.16.0.0
- D. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0

Answer: C

Explanation:

When configuring RIP you configure only the directly connected networks that are to be advertised via the RIP routing process are to be configured.

Incorrect Answers:

- A. This choice implies that when configuring rip on a router every possible network in the entire system should be configured. This is not the case.
- B. Certkiller 1 requires the 172.16.0.0 network to be configured, not the 192.168.1.0

network.

D. If the 172.16.0.0 network is omitted, then the other routers in the network will not be able to reach the LAN users of Certkiller 1 via RIP.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) page 167

QUESTION 172

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



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

- A. Certkiller 1(config)# ip route 172.16.4.2 0.0.0.0 0.0.0.0
- B. Certkiller 1(config)# ip route 0.0.0.0 0.0.0.0 S1
- C. Certkiller 1(config)# ip route 172.16.4.1 0.0.0.0 0.0.0.0
- D. Certkiller 1(config)# ip route S0 0.0.0.0 0.0.0.0
- E. Certkiller 1(config)# ip route 0.0.0.0 0.0.0.0 172.16.4.2

Answer: E

Explanation:

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

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

Incorrect Answers:

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

QUESTION 173

You are configuring the serial interface of your Cisco router; which of the following are valid encapsulation types you can use? (Select all that apply)

- A. Token Ring
- B. Ethernet
- C. HDLC
- D. PPP
- E. Frame Relay
- F. CHAP

Answer: C, D, E

Explanation:

HDLC, Frame Relay, and PPP are the most common encapsulation types set for serial interfaces in a Cisco router. HDLC is often used in point to point circuits with Cisco routers on each end. HDLC is Cisco proprietary and offers an alternative to PPP.

Incorrect Answers:

A, B. Token Ring and Ethernet aren't encapsulation types used on serial interfaces; they are types of LAN networks.

F. CHAP is the Challenge Authentication Protocol. It is used for authentication on PPP links.

QUESTION 174

Which of the following OSPF commands, when used together, will put the network 192.168.10.0/24 into OSPF area 0? (Select all valid responses)

- A. Router(config-router)# network 192.168.10.0 0.0.0.255 0
- B. Router(config-router)# network 192.168.10.0 0.0.0.255 area 0
- C. Router(config-router)# network 192.168.10.0 255.255.255.0 area 0
- D. Router(config)# router ospf 0
- E. Router(config)# router ospf 1

Answer: B, E

Explanation:

B. The network command specifies the IP address (192.168.10.0) followed by the wildcard mask (not the subnet mask), and the area that is to be associated with the OSPF address range (in this case, area 0). The wildcard mask indicates in binary how much of the IP address must be matched with 0s indicating that the bits must match and 1 indicating that they may vary. Thus 0.0.0.255 or 00000000.00000000.00000000.11111111 indicates that any bit in the last octet can vary while all bits in the first 3 octets must match the network address (in other words, 192.168.10.xx)

E. The router ospf command enables OSPF routing and enters router configuration mode. This command takes a <process-id> argument which identifies the OSPF process.

Incorrect Answers:

- A. This command is correct, except for the fact that the keyword "area" is missing and needs to be inserted.
- C. For OSPF, the inverse mask must be used, not the regular subnet mask.
- D. OSPF can not use process ID 0, and the goal of this question is to put a specific network in area 0, not the entire routing process.

QUESTION 175

Which of the following routing protocols are less likely prone routing loops and network reachability problems when used in discontinuous networks? (Select all valid responses)

- A. IGRP
- B. CDP
- C. OSPF
- D. RIP v1
- E. RIP v2
- F. EIGRP

Answer: C, E, F

Explanation: Only OSPF, RIP version 2, and EIGRP carry VLSM information. In a discontinuous network, subnet masks of different lengths can be used, but this information will need to be propagated via the routing protocol if all networks are to be reached.

Incorrect Answers:

- A, D. With RIP version one and IGRP, discontinuous networks can be problematic, as VLSM is not supported.
- B. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches, and it is not a routing protocol.

QUESTION 176

Which one of the following statements best explains the split horizon rule?

- A. Only routers can split boundaries (horizons) between networks in separate AS numbers.
- B. Each AS must keep routing tables converged to prevent dead routes from being advertised across boundaries.
- C. Once a route is received on an interface, advertise that route as unreachable back out the same interface.
- D. Information about a route should never be sent back in the direction from which the original update came.

Answer: D

Explanation:

The split horizon rule states:

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

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

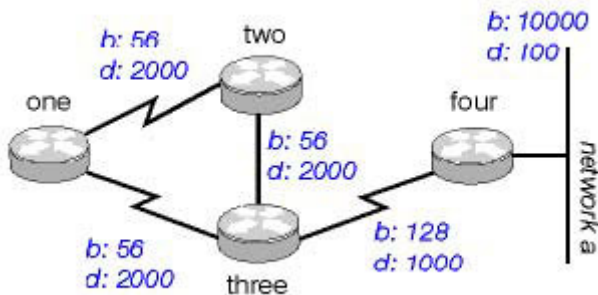


Figure 4a

Incorrect Answers:

A: There is no such requirement

B: Distance vector protocols updates routing table at regular intervals instead of Topology changes

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

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

QUESTION 177

In EIGRP, what kind of route information is stored in the RAM of the router and maintained by way of hello packets and update packets? (Select two answer choices)

- A. Neighbor Table
- B. SRF Table
- C. RTP Table
- D. Topology Table
- E. Query Table
- F. Dual Table

Answer: A, D

Explanation:

In EIGRP the only two tables of significance are the neighbor table and the topology table.

Incorrect Answers:

B, C, E, F. These are not tables used by EIGRP.

Reference: Sybex CCNA Study Guide edition 4, Page 271

QUESTION 178

What is the maximum number of hops OSPF allows before it deems a network

unreachable?

- A. 15
- B. 16
- C. 99
- D. 255
- E. Unlimited

Answer: E

Explanation:

OSPF is a link state protocol. Link state protocols do not use hops to mark networks as unreachable. Instead OSPF implements a steady state operation to its adjacent neighbors by sending and receiving small Hello packets periodically. When an OSPF router does not receive a Hello packet for a specified time period, it assumes that the neighbor is down. The router then runs the SPF algorithm to calculate new routes. Hops counts are not used.

QUESTION 179

On the topic of the OSPF hello protocol; which of the statements below are true?
(Select two answer choices)

- A. The OSPF Hello protocol provides dynamic neighbor discovery.
- B. The OSPF Hello protocol detects unreachable neighbors in 90 second intervals.
- C. The OSPF Hello protocol maintains neighbor relationships.
- D. The OSPF Hello protocol negotiates the correct parameters between neighboring interfaces.
- E. The OSPF Hello protocol uses timers to elect the router with the fastest links at the designated router.
- F. The OSPF Hello protocol broadcast hello packets throughout the internetwork to discover all routers that are running OSPF.

Answer: A, C

Explanation:

OSPF contains a protocol (the Hello protocol) that is used to establish and maintain relationships between neighboring nodes. These relationships are called adjacencies. Adjacencies are the basis for the exchange of routing data in OSPF.

It is through the use of this protocol, and packet type, that an OSPF node discovers the other OSPF nodes in its area. Its name is intentionally significant; the Hello protocol establishes communications between potential neighboring routers. The Hello protocol uses a special subpacket structure that is appended to the standard 24-octet OSPF header. Together, these structures form a hello packet.

All routers in an OSPF network must adhere to certain conventions that must be uniform throughout the network. These conventions include the following:

1. The network mask

2. The interval at which hello packets will be broadcast (the hello interval)
3. The amount of time that must elapse before a non responding router will be declared dead (that is, the router dead interval) by the other routers in the network
4. All routers in an OSPF network must agree to use the same value for each of these parameters; otherwise, the network might not operate properly. These parameters are exchanged using hello packets. Together, they comprise the basis for neighborly communications. They ensure that neighbor relationships (known as adjacencies) are not formed between routers in different subnets and that all members of the network agree on how frequently to stay in contact with each other.

The hello packet also includes a listing of other routers (using their unique router IDs) that the source router has recently been in contact with. This field, the Neighbor field, facilitates the neighbor discovery process. The hello packet also contains several other fields such as Designated Router and Backup Designated Router. These fields are useful in maintaining adjacencies and support the operation of the OSPF network in both periods of stability and convergence.

QUESTION 180

A routing table contains static, RIP, and IGRP routes destined to the same network with each route set to its default administrative distance. Which route will be the preferred route?

- A. The RIP route
- B. The static route
- C. The IGRP route
- D. All three will load balance.

Answer: B

Explanation:

To decide which route to use, IOS uses a concept called Administrative Distance. The administrative distance is a number that denotes how believable an entire routing protocol is on a single router. The lower the number, the better, or more believable the routing protocol.

Route Type Administrative Distance

- * Static 1
- * IGRP 100
- * RIP 120

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 177

QUESTION 181

You are an administrator and you've just configured OSPF on a router with both physical and logical interfaces. Which of the following factors determine the router ID?

- A. The lowest IP address of any interface.
- B. The highest IP address of any interface.
- C. The highest IP address of any logical interface.
- D. The middle IP address of any logical interface.
- E. The lowest IP address of any physical interface.
- F. The highest IP address of any physical interface.
- G. The lowest IP address of any logical interface.

Answer: C

Explanation:

When the OSPF process starts, the Cisco IOS uses the highest local active IP address as its OSPF router ID. If there is no active interface, the OSPF process will not start. If the active interface goes down, the OSPF process has no router ID and therefore ceases to function until the interface comes up again.

To ensure OSPF stability there should be an active interface for the OSPF process at all times. A loopback interface, which is a logical interface, can be configured for this purpose. When a loopback interface is configured, OSPF uses this address as the router ID, regardless of the value. On a router that has more than one loopback interface, OSPF takes the highest loopback IP address as its router ID.

To create and assign an IP address to a loopback interface use the following commands:

```
Router(config)#interface loopback number (no can be range from 0 -255)
```

```
Router(config-if)#ip address ip-address subnet-mask
```

example:

```
Router(config)#interface loopback 0
```

```
Router(config-if)#ip address 192.168.31.33 255.255.255.255
```

```
Router(config-if)#exit
```

It is considered good practice to use loopback interfaces for all routers running OSPF.

This loopback interface should be configured with an address using a 32-bit subnet mask of 255.255.255.255. A 32-bit subnet mask is called a host mask because the subnet mask specifies a network of one host. When OSPF is requested to advertise a loopback network, OSPF always advertises the loopback as a host route with a 32-bit mask.

Summary

lookback address(logical address) is use when active interfaces (physical addresses) is down in order to make OSPF stable or reliable

Source: Cisco Network Academy Semester 3 version 3

Topic: Single Area OSPF Configuration

Sub Topic: Configuring OSPF loopback address and router priority

QUESTION 182

Under which circumstance, i.e. network type, would an OSPF router establish a neighbor adjacency, even though the DR/BDR election process was not performed?

- A. Point-to-point
- B. Broadcast multicast
- C. Nonbroadcast multicast

- D. Backbone area 0
- E. Virtual Link

Answer: A

Explanation: If there's a point to point connection, there's no need for a designated router or a backup designated router election. By definition, only two routers exist on a point to point connection.

Incorrect Answers:

- B, C. In these network types, the potential for more than two routers on the segment exist, so the Designated Router and Backup Designated Routers are elected.
- D. This is not a network type. Area 0 is the backbone of any OSPF network.
- E. Virtual Links are used in OSPF to link an area to area 0. Every area must be directly connected to area 0 at some point, and virtual links are used for areas that do not meet this requirement.

QUESTION 183

On the assumption that every OSPF router in a particular area is configured with the same priority value; which secondary value would be used as a router ID when there is no loopback interface set?

- A. The IP address of the first Fast Ethernet interface.
- B. The IP address of the console management interface.
- C. The highest IP address among its active interfaces.
- D. The lowest IP address among its active interfaces.
- E. There will be no router ID until a loopback interface is configured.

Answer: C

Explanation: Ordinarily the loopback interface would be selected as the router ID. In the event that no loopback interface is configured, the router ID will be the first active interface that comes up on the router. If that particular interface has more than one IP address, then the highest address will be selected as the Router ID.

Incorrect Answers:

- B. Putting an IP address on the management console is a concept that is configured on a Catalyst switch, not a router.

QUESTION 184

The statements below compare and contrast link state and distance vector routing protocols. Which of these are true? (Choose two)

- A. Distance vector protocols send the entire routing table to directly connected neighbors.
- B. Distance vector protocols are responsible for sending updates to all networks listed in the routing table.
- C. Link state protocols are responsible for sending the entire routing table to the whole

network.

D. Link state protocols send updates regarding their own links status to all other routers on the network.

Answer: A D

Explanation:

Distance Vector Protocols:

Distance Vector Protocols advertise routing information by sending messages, called routing updates, out the interfaces on a router. These updates contain a series of entries, with each entry representing a subnet and a metric.

Link-State Protocols:

Send partial updates when link status changes and floods full routing table updates every 30 minutes. The flooding, however, does not happen all at once, so the overhead is minimal.

Incorrect Answers:

B. Distance Vector protocols only send information to adjacent neighbors.

C. Only partial routing updates and sent to neighbors on a regular basis. The entire table is not sent to all neighbors. This would obviously create far too much overhead traffic.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 413 + 419

QUESTION 185

What are the characteristic of link state routing protocols? (Choose all that apply.)

- A. The exchange of advertisement is triggered by a change in the network.
- B. All routers exchange routing tables with each other in a multipoint network.
- C. Packets are routed based upon the shortest path to the destination.
- D. Paths are chosen depending on the cost efficiency factor.
- E. Every router in an OSPF area is capable of representing the entire network topology.
- F. Only the designated router in an OSPF area can represent the entire network topology.

Answer: A C E

Explanation:

Open Shortest Path First

* Each router discovers its neighbors on each interface. The list of neighbors is kept in a neighbor table.

* Each router uses a reliable protocol to exchange topology information with its neighbors.

* Each router places the learned topology information into its topology database.

* Each router runs the SPF algorithm against its own topology database.

* Each router runs the SPF algorithm against its own topology database to calculate the best routes to each subnet in the database.

* Each router places the best route to each subnet into the IP routing table.

The following list points out some of the key features of OSPF:

- * Converges very quickly - from the point of recognizing a failure, it often can converge in less than 10 seconds.
- * Supports VLSM.
- * Uses short Hello messages on a short regular interval, with the absence of hello messages indicating that a neighbor is no longer reachable.
- * Sends partial updates when link status changes, and floods full updates every 30 minutes. The flooding, however, does not happen all at once, so the overhead is minimal.
- * Uses cost for the metric.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 417

QUESTION 186

On the topic of OSPF routing; which of the following are the traits of an OSPF area? (Select all that apply)

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

Answer: C, E

Explanation:

OSPF uses areas in a hierarchical fashion, and the backbone area is always area 0. All other areas have at least one connection to area 0.

Incorrect Answers:

- A. Loopback interfaces are often used in OSPF networks, so that the router ID can be configured. However, this is not a requirement.
 - B. The area-id can be an integer between 0 and 4294967295.
 - F. Single area OSPF networks do not have to be configured with the backbone area 0. Although area 1 can indeed be used, it is not required that area 1 is used. Single area OSPF networks can be any integer from 0-4294967295.
-

QUESTION 187

If the bandwidth of an OSPF interface is configured with the "bandwidth 64" command, what would be the calculated cost of the link?

- A. 1
- B. 64
- C. 1562
- D. 64000
- E. 1500

Answer: C

Explanation: The question states that OSPF interface has been configured with the bandwidth 64 command. Cisco IOS always interprets the values for the bandwidth command as being in kbps, so the bandwidth is configured as 64 kbps. The metric for any OSPF defaults to 100,000,000/bandwidth. So, in this example:
 $100,000,000 / 64000 = 1562.5$

QUESTION 188

Which two are NOT characteristics of the OSPF routing protocol? (Select all that apply)

- A. It confines network instability to a single area of network.
- B. It increases the routing overhead of the network
- C. It supports VLSM
- D. It routes between Autonomous Systems.
- E. It allows extensive control of routing updates

Answer: B, D

Explanation:

Through the use of areas, routing information and instability's are reduced to specific areas. This will reduce the routing overhead on a network, not increase it. OSPF is not used to provide routing information between different systems. BGP is predominately used for this purpose.

Incorrect Answers:

A, C, E. These are all true statements that describe the features and functionality of OSPF.

QUESTION 189

Which of the following are true statements regarding the characteristics of OSPF areas? Select all that apply.

- A. All OSPF networks require the use of multiple areas
- B. Multiple OSPF areas must connect to area 0
- C. Single area OSPF networks must be configured in area 1
- D. Areas can be assigned any number from 0 to 63535
- E. Area 0 is called the backbone area
- F. Each OSPF area need to be configured with a loopback interface

Answer: B, E

Explanation:

OSPF divides its routing domain into areas. Area 0, the backbone, is required. This divides interior routing into two levels. If traffic must travel between two areas, the

packets are first routed to the backbone. This may cause non-optimal routes, since interarea routing is not done until the packet reaches the backbone. Once there, it is routed to the destination area, which is then responsible for final delivery. This layering permits addresses to be consolidated by area, reducing the size of the link state databases. All areas must be connected to area 0, either directly or through the use of virtual links. Incorrect Answers:

- A. OSPF network can only consist of a single area.
- C. Single area networks can use any area number. If more than one area is configured in the network, then at least one of the areas must be area 0.
- D. The area-id can be an integer between 0 and 4294967295.
- F. While loopback interfaces are commonly used in OSPF networks, it is not a requirement.

QUESTION 190

On what kinds of networks does OSPF elect a backup designated router?

- A. Point-to-point
- B. Point to multipoint
- C. Broadcast
- D. Non-broadcast multi-access

Answer: C, D

Explanation:

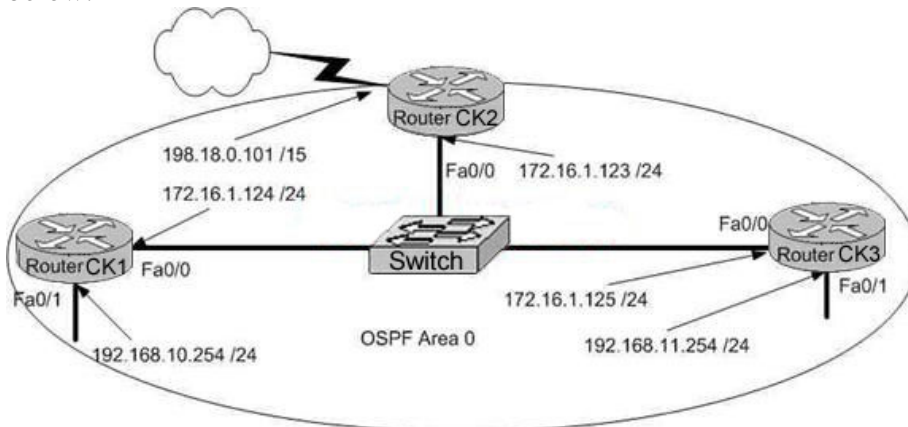
The DR and BDR election process is performed on broadcast and non-broadcast multi-access networks.

Incorrect Answers:

A, B: There is no DR or BDR on point to point and point to multipoint links. On a point to point link, only two routers exist so there is no need for a DR or BDR.

QUESTION 191

Three Certkiller routers are configured for OSPF area 0 as shown in the diagram below:



You wish to ensure that router CK2 will be preferred as the designated router (DR)

for the 172.16.1.0 /24 LAN segment.

What configuration tasks could be used to establish this preference? (Choose all that apply)

- A. Configure the priority value of the Fa0/0 interface of Router CK2 to a higher value than any other interface on the Ethernet network.
- B. Change the router id for Router CK2 by assigning the IP address 172.16.1.130/24 to the Fa0/0 interface of Router CK2 .
- C. Configure a loopback interface on Router CK2 with an IP address higher than any IP address on the other routers.
- D. Change the priority value of the Fa0/0 interface of Router CK2 to zero.
- E. Change the priority values of the Fa0/0 interfaces of Router CK1 and Router CK3 to zero.
- F. No further configuration is necessary.
- G. All of the above will make CK2 the DR

Answer: A, C, E

Explanation:

In order to ensure that a router will become the OSPF DR for any given segment, there are a number of options. One way is to manually configure the interface priority as described in option A above using the "ip ospf priority" interface configuration command. The second method is described in option C. OSPF routers will always use the loopback interface IP address as the router ID, when configured, and the router with the highest IP address will be chosen as the DR when the priorities are the same. The final method is to change the priority of the other routers in the segment to zero. When the OSPF priority is set to 0, the router is ineligible to become the DR or the BDR. Important Note: The OSPF DR/BDR election process is not pre-emptive, so any changes to the network regarding the DR/BDR election process will only occur when the routers are restarted.

Incorrect Answers:

- B. This method will not work as the router ID is taken by using the highest IP address of all interfaces in the router, or from the loopback interface if it is configured. Although choosing this option will give router CK2 the highest IP address on the LAN segment, the router ID will be taken from the highest IP address in the router, which as shown will be 192.168.0.101.
- D. This will make CK2 ineligible to become either the DR or the BDR.

QUESTION 192

The Certkiller router has been configured for EIGRP. Information relating to the configuration is displayed in the output shown below:

Routing Protocol is "eigrp 478"

--- output omitted ---

Redistributing: eigrp 478

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

172.26.168.128/26

172.26.169.0/26

Routing Information Sources:

Gateway	Distance	Last Update
172.26.168.129	90	01:01:59

Distance: internal 90 external 170

The EIGRP configuration in the Certkiller router used a single network statement. From the output shown in the graphic, which network statement was used to advertise these networks in EIGRP?

- A. network 172.26.168.128 0.0.0.127
- B. network 172.26.168.128 area 478
- C. network 172.26.0.0
- D. network 172.26.168.0 area 478

Answer: C

Explanation:

The correct configuration statements used in the above were:

Router eigrp 478

Network 172.26.0.0

Incorrect Answers:

- A. A wildcard mask is not required at the end of the network statement in order to configure EIGRP. It is only required for an OSPF configuration.
- B, D: In EIGRP, the concept of an area does not exist. This is only used by OSPF.

QUESTION 193

Which commands are required to properly configure a router to run OSPF and to add network 192.168.16.0/24 to OSPF area 0? (Select two)

- A. Certkiller Router(config)# router ospf 0
- B. Certkiller Router(config)# router ospf 1
- C. Certkiller Router(config)# router ospf area 0
- D. Certkiller Router(config)# network 192.168.16.0 0.0.0.255 0
- E. Certkiller Router(config)# network 192.168.16.0 0.0.0.255 area 0
- F. Certkiller Router(config)# network 192.168.16.0 255.255.255.0 area 0

Answer: B, E

Explanation:

The valid OSPF process ID can be a value from 1-65535 (0 is not valid).

The following is the correct syntax:

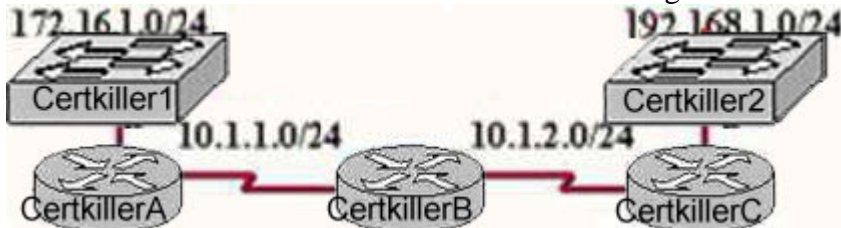
```
CK1 (router)# router ospf 1
```

```
CK1 (router)# network 192.168.16.0 0.0.0.255
```

This will configure OSPF with process ID 1, and adds the 192.168.16/24 network to be advertised as belonging to area 0.

QUESTION 194

Certkiller routers are connected as shown in the diagram below:



Routers Certkiller B and Certkiller C are configured for RIPv2 and have complete connectivity. Router Certkiller A is added to the network. What is the most appropriate Certkiller A configuration for full connectivity?

- A. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
Certkiller A(config)# network 172.16.0.0
Certkiller A(config)# network 192.168.1.0
- B. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
- C. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
Certkiller A(config)# network 172.16.0.0
- D. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
Certkiller A(config)# network 192.168.1.0

Answer: C

Explanation:

When configuring RIP you configure only the directly connected networks that are to be advertised via the RIP routing process are to be configured.

Incorrect Answers:

- A. This choice implies that when configuring rip on a router every possible network in the entire system should be configured. This is not the case.
- B. Certkiller 1 requires the 172.16.0.0 network to be configured, not the 192.168.1.0 network.
- D. If the 172.16.0.0 network is omitted, then the other routers in the network will not be able to reach the LAN users of Certkiller A via RIP.

QUESTION 195

The following configuration command was issued on router CK1 :

ip route 172.16.3.0 255.255.255.0 192.168.2.1

Which of the following statements are true regarding this command? (Select two)

- A. The command is used to establish a static route.
- B. The default administrative distance is used.
- C. The command is used to configure the default route.
- D. The subnet mask for the source address is 255.255.255.0
- E. The command is used to establish a stub network

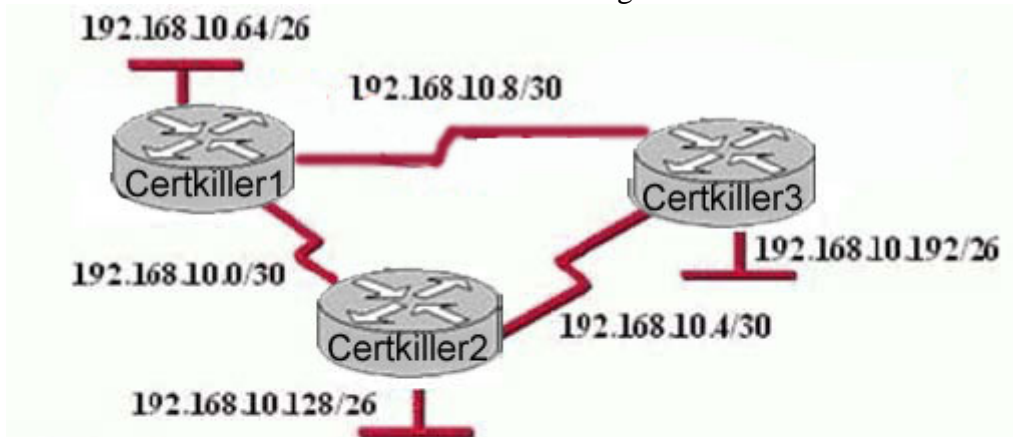
Answer: A, B

Explanation:

The IP route command is used to establish a static route. The default administrative distance is used because the other distance is not set at the end of the command. Unless otherwise specified by placing a cost at the end of this command, the default administrative distance will be 1.

QUESTION 196

The Certkiller network is shown in the following exhibit:



Certkiller3 #show ip route

Gateway of last resort is not set

192.168.10.0/24 is variably subnetted, 6 subnets, 2 masks

- D 192.168.10.64/26 [90/2195456] via 192.168.10.9, 00:03:31, Serial0/0
- D 192.168.10.0/30 [90/2681856] via 192.168.10.9, 00:03:31, Serial0/0
- C 192.168.10.4/30 is directly connected, Serial 0/1
- C 192.168.10.8/30 is directly connected, Serial 0/0
- C 192.168.10.192/26 is directly connected, FastEthernet0/0
- D 192.168.10.128/26 [90/2195456] via 192.168.10.5, 00:03:31, Serial 0/1

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

- A. The path of the packets will be Certkiller 3 to Certkiller 2 to Certkiller 1
- B. The path of the packets will be Certkiller 3 to Certkiller 1 to Certkiller 2

- C. The path of the packets will be both Certkiller 3 to Certkiller 2 to Certkiller 1 AND Certkiller 3 to Certkiller 1
- D. The path of the packets will be Certkiller 3 to Certkiller 1

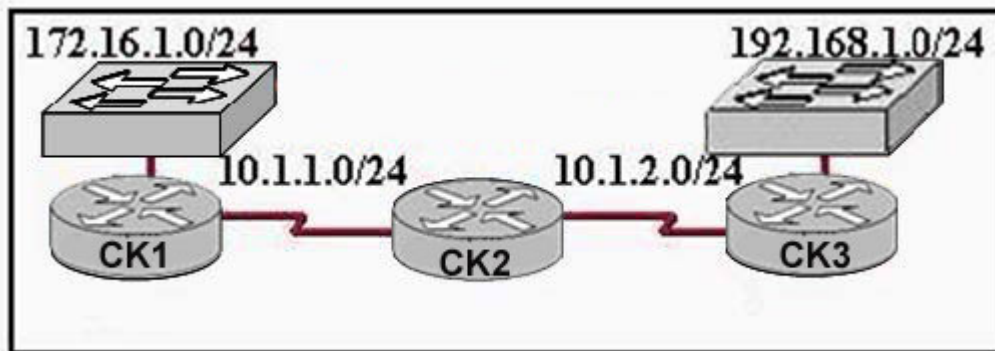
Answer: D

Explanation:

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

QUESTION 197

The Certkiller network is shown below:



CK2 and CK3 are configured for RIPv1 and have complete connectivity. CK1 is added to the network. What is the most appropriate CK1 configuration for full connectivity?

- A. CK1 (config)# router rip
CK1 (config-router)# network 10.0.0.0
CK1 (config-router)# network 172.16.0.0
CK1 (config-router)# network 192.168.1.0
- B. CK1 (config)# router rip
CK1 (config-router)# network 10.0.0.0
- C. CK1 (config)# router rip
CK1 (config-router)# network 10.0.0.0
CK1 (config-router)# network 172.16.0.0
- D. CK1 (config)# router rip
CK1 (config-router)# network 10.0.0.0
CK1 (config-router)# network 192.168.1.0

Answer: C

Explanation:

Steps to Configure RIP include:

1. Enable the RIP
(Config)#router rip

2. publish the connected networks to the RIP routing process:

(config-router)# network 10.0.0.0

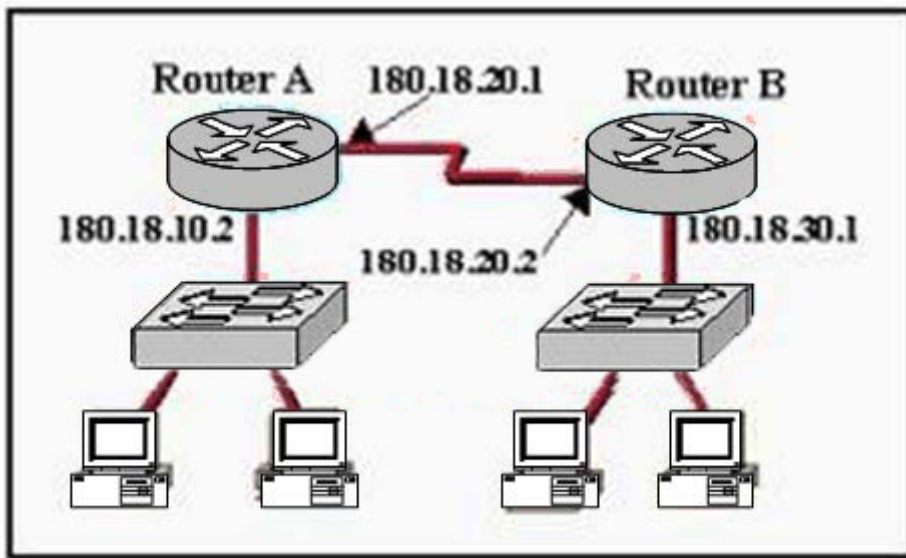
(config-router)# network 172.16.0.0

Which publishes the 10 and 172.16 networks on RIP.

It is only necessary to add the directly connected links to the routing process, not all networks used within the entire network domain.

QUESTION 198

The Certkiller network is shown below:



Based on this information, which of the following will configure a static route on Router A to network 180.18.30.0/24 with an administrative distance of 90?

- A. Router(config)# ip route 90 180.18.20.1 255.255.255.0 182.18.20.2
- B. Router(config)# ip route 180.18.20.1 255.255.255.0 182.18.30.0 90
- C. Router(config)# ip route 180.18.30.1 255.255.255.0 182.18.20.1 90
- D. Router(config)# ip route 90 180.18.30.0 255.255.255.0 182.18.20.2
- E. Router(config)# ip route 180.18.30.0 255.255.255.0 182.18.20.2 90

Answer: E

Explanation:

Static route entries consist of the destination IP network address, the IP address of the next hop router, and the metric (hop count) for the route. A static route that points to the next hop IP address has an Administrative distance of 1. If the static route points to an outgoing interface, the static route has the Administrative distance of 0.

One common reason to change the administrative distance of a route is when you use Static Routes to backup and existing IGP route. This is normally used to bring up a backup link when the primary fails. In this example, choice E specifies that to reach the

180.18.30.0/24 network, forward this traffic to the router with the next hop IP address of 182.18.20.2 (Router B) using an administrative distance of 90.

QUESTION 199

A router learns about a remote network from EIGRP, OSPF, and a static route. Assuming all routing protocols are using their default administrative distance, which route will the router use to forward data to the remote network?

- A. The router will use the static route.
- B. The router will use the OSPF route.
- C. The route will use the EIGRP route.
- D. The router will load balance and use all three routes.

Answer: A

Explanation:

When a router learns about the same network via multiple sources, the router will choose the source with the lowest administrative distance (AD). By default, the AD for these routing protocols are:

Connected Interface has 0 AD

Static Route : 1

EIGRP : 90

OSPF : 110

So, the static route will be chosen since it has the lowest AD.

QUESTION 200

A Certkiller router learns two routes to a remote network, one route via OSPF and one route via RIPv2. The network administrator wants the router to install the route learned via RIPv2 into its routing table. What should the network administrator configure to ensure that the router will use the route learned via RIPv2?

- A. Nothing. The router will automatically use routes learned via RIP over routes learned via OSPF.
- B. The network administrator should configure the routers along the OSPF path with lower priority numbers.
- C. The network administrator should configure the router interface on the OSPF path to be a passive interface.
- D. The network administrator should configure an administrative distance for RIP that is lower than the administrative distance of OSPF.
- E. If two paths exist to a remote network, the only way to force the router to prefer one path over the other is to configure the preferred path as a static route.

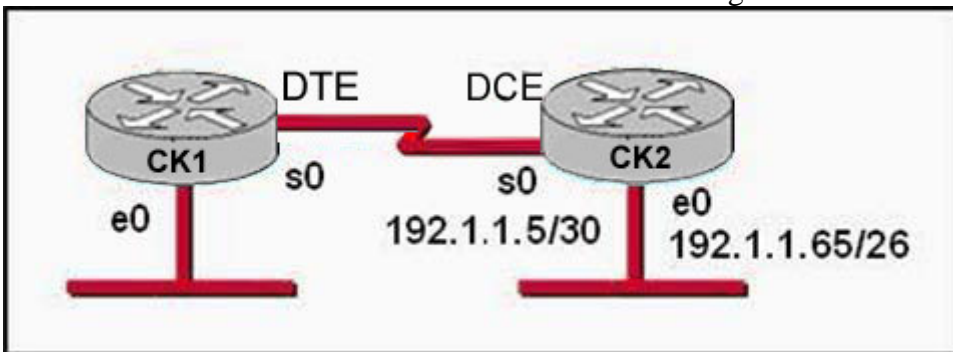
Answer: D

Explanation:

When multiple routing protocols are configured for the same networks, the router will use the path with the lowest Administrative Distance (AD). By default, OSPF has an AD of 110 and RIP has an AD of 120. In order to ensure that the router prefers the route learned via RIP over OSPF, the AD of the RIP route must be reduced to a value less than 120.

QUESTION 201

Two Certkiller routers are connected as shown in the diagram below:



Which series of commands will configure router CK1 for LAN-to-LAN communication with router CK2 ? The enterprise network address is 192.1.1.0/24 and the routing protocol in use is RIP. (Choose three)

- A. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.129 255.255.255.192
CK1 (config-if)# no shutdown
- B. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.97 255.255.255.192
CK1 (config-if)# no shutdown
- C. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.4 255.255.255.252
CK1 (config-if)# clock rate 56000
- D. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.6 255.255.255.252
CK1 (config-if)# no shutdown
- E. CK1 (config)# router rip
CK1 (config-router)# network 192.1.1.4
CK1 (config-router)# network 192.1.1.128
- F. CK1 (config)# router rip
CK1 (config-router)# version 2
CK1 (config-router)# network 192.1.1.0

Answer: A, D, F

Explanation:

To establish connectivity on router CK1 the first step is to configure the interfaces with the correct IP address and enable them with the "no shutdown" command as shown in answer choices A and D. The final step is to enable the RIP routing process. Since this

network uses VLSM, RIP version 2 will be required to establish connectivity. RIP version 1 is the default RIP version, but it does not support VLSM.

Incorrect Answers:

B: The IP address in use here will conflict with the LAN network configured on CK2 .

C: the 192.168.1.4/30 address is a network address, not a host address.

E: In this example we are required to use RIP version 2, not 1. In addition, the IP networks shown are not required. Since RIP assumes classful routing, we only need the single 192.168.1.0 network to be added to the routing process.

QUESTION 202

What command will disable CDP on a router interface?

- A. Certkiller 1(config-if)# no cdp enable
- B. Certkiller 1(config-if)# no cdp
- C. Certkiller 1(config-if)# no cdp run
- D. Certkiller 1(config-if)# no cdp active

Answer: A

Explanation:

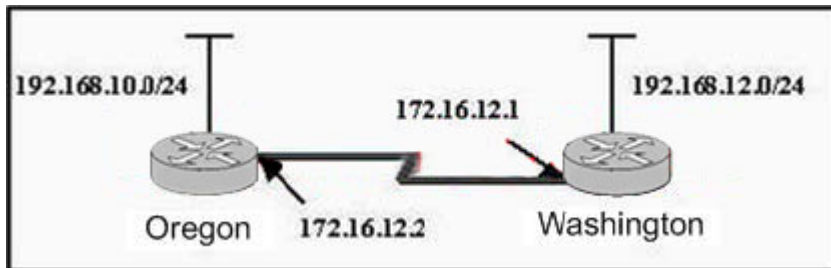
CDP is a proprietary protocol designed by Cisco to help administrators collect information about both locally attached and remote devices. By using CDP, you can gather hardware and protocol information about neighbor devices which is useful info for troubleshooting and documenting the network.

To disable the CDP on particular interface use the "no cdp enable" command. To disable CDP on the entire router use the "no cdp run" in global configuration mode.

QUESTION 203

The network administrator of the Oregon router adds the following command to the router configuration: ip route 192.168.12.0 255.255.255.0 172.16.12.1. What are the results of adding this command? (Choose two.)

Exhibit:



- A. Traffic for network 192.168.12.0 is forwarded to 172.16.12.1.
- B. This route is automatically propagated throughout the entire network.
- C. Traffic for all networks is forwarded to 172.16.12.1.
- D. Traffic for network 172.16.12.0 is forwarded to the 192.168.12.0 network.

- E. The command invokes a dynamic routing protocol for 192.168.12.0.
- F. The command establishes a static route.

Answer: A, F

Explanation:

In order to configure a static route the router has to be in global configuration mode.

`ip route network prefix mask {address | interface} [distance]`

network - the destination network

mask - is the subnet mask for that network

address - IP address of the next hop router

interface - or the interface the traffic is to leave by

distance - (optional) the administrative distance of the route

There are other parameters but these have been removed as they are not relevant to the CCNA exam.

Example:

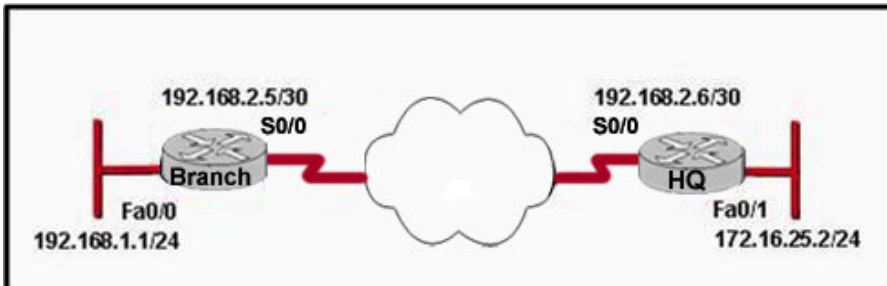
```
ip route 10.0.0.0 255.0.0.0 131.108.3.4 110
```

10.0.0.0 is the destination network. 255.0.0.0 is the subnet mask for that network and 131.108.3.4 is the next hop for the router to use. The 110 is the administrative distance which we will look at later on.

QUESTION 204

A network associate has configured the internetwork that is shown in the exhibit, but has failed to configure routing properly. Which configuration will allow the hosts on the Branch LAN to access resources on the HQ LAN with the least impact on router processing and WAN bandwidth?

Exhibit:



- A. HQ(config)# router rip
HQ(config-router)# network 192.168.2.0
HQ(config-router)# network 172.16.0.0
Branch(config)# router rip
Branch (config-router)# network 192.168.1.0
Branch (config-router)# network 192.168.2.0
- B. HQ(config)# router eigrp 56
HQ(config-router)# network 192.168.2.4
HQ(config-router)# network 172.16.25.0
Branch(config)# router eigrp 56
Branch (config-router)# network 192.168.1.0

```
Branch (config-router)# network 192.168.2.4
C. HQ(config)# ip route 192.168.1.0 255.255.255.0 192.168.2.5
Branch(config)# ip route 172.16.25.0 255.255.255.0 192.168.2.6
D. HQ(config)# router ospf 1
HQ(config-router)# network 192.168.2.4 0.0.0.3 area 0
HQ(config-router)# network 172.16.25.0 0.0.0.255 area 0
Branch(config)# router ospf 1
Branch (config-router)# network 192.168.1.0 0.0.0.255 area 0
Branch (config-router)# network 192.168.2.4 0.0.0.3 area 0
```

Answer: C

Explanation:

As far as the CCNA exam goes, there are three types of routing: static, dynamic, and default.

- * Static routes - are fixed routes that are manually entered by the administrator into the router's configuration.

- * Dynamic routing - is the process by which a network adapts automatically to the changes in topology or traffic as those changes occur.

- * Default routes - are very much like static route. The administrator enters the default route, and it becomes the default path the router uses to forward packets for which it knows no other route to use. Without a default route, packets with unknown destinations are dropped.

A static route is configured on the router with a command like this:

```
ip route [destination_network] [mask] [next_hop_address or exit interface]
[administrative-distance] [permanent]
```

Example: RouterA(config)#ip route 192.168.1.0 255.255.255.0 192.168.1.1 3

Using the previous command example the key elements of the static router configuration command are:

- * ip route: This is the command used to designate a static route.

- * destination address: in this example, 209.220.93.243 is the IP address of the destination network.

- * subnet mask: 192.169.1.0 is a Class C IP address and is using the default subnet mask for Class C addresses, 255.255.255.0

- * next hop: Following the subnet mask is the address of the next hop router, 192.168.1.1

- * administrative distance: This is a number between 0 and 255 that indicates how well the route can be trusted. The higher the number, the lower the trust.

- * permanent: if the interface is shut down or the router cannot communicate to the next hop router, the route is automatically discarded from the routing table. Choosing the permanent option keeps the entry in the routing table no matter what happens.

Static routing has the following benefits:

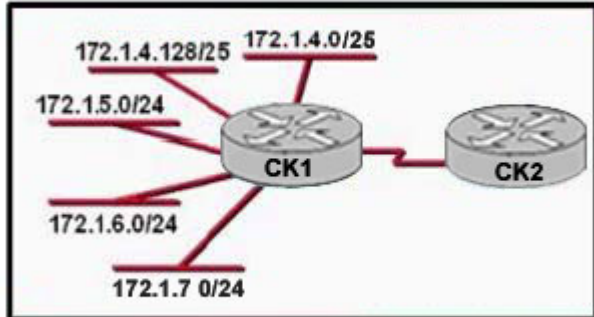
- * No overhead on the router CPU

- * No bandwidth usage between routers

- * Security (because the administrator only allows routing to certain networks)

QUESTION 205

In the Certkiller network shown below, what is the most efficient summarization that CK1 can use to advertise its networks to CK2 ?



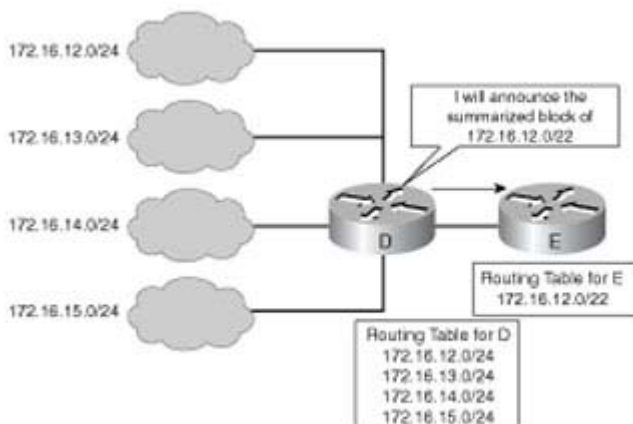
- A. 172.1.4.0/24 172.1.5.0/24 172.1.6.0/24 172.1.7.0/24
- B. 172.1.0.0/22
- C. 172.1.4.0/25 172.1.4.128/25 172.1.5.0/24 172.1.6.0/24 172.1.7.0/24
- D. 172.1.0.0/21
- E. 172.1.4.0/22

Answer: E

Explanation:

Route Summarization Overview:

In large internetworks, hundreds, or even thousands, of network addresses can exist. It is often problematic for routers to maintain this volume of routes in their routing tables. Route summarization (also called route aggregation or supernetting) can reduce the number of routes that a router must maintain, because it is a method of representing a series of network numbers in a single summary address.



For example, in the figure above, router D can either send four routing update entries or

summarize the four addresses into a single network number. If router D summarizes the information into a single network number entry, the following things happen:

1. Bandwidth is saved on the link between routers D and E.
2. Router E needs to maintain only one route and therefore saves memory.
3. Router E also saves CPU resources, because it evaluates packets against fewer entries in its routing table.

A summary route is announced by the summarizing router as long as at least one specific route in its routing table matches the summary route.

QUESTION 206

A network associate has configured OSPF with the following command:

```
City(config-router)# network 192.168.12.64 0.0.0.63 area 0.
```

After completing the configuration, the associate discovers that not all the interfaces are participating in OSPF. Which three of the interfaces shown below will participate in OSPF according to this configuration statement? (Choose three)

```
City#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.12.48	YES	manual	up	up
FastEthernet0/1	192.168.12.65	YES	manual	up	up
Serial0/0	192.168.12.121	YES	manual	up	up
Serial0/1	unassigned	YES	unset	up	up
Serial0/1.102	192.168.12.125	YES	manual	up	up
Serial0/1.103	192.168.12.129	YES	manual	up	up
Serial0/1.104	192.168.12.133	YES	manual	up	up

```
City#
```

- A. Serial0/1.102
- B. Serial0/1.104
- C. Serial0/1.103
- D. FastEthernet0 /1
- E. Serial0/0
- F. FastEthernet0 /0

Answer: A, D, E

Explanation:

OSPF uses the concept of wildcard masks much like access list filters. OSPF network matches are done using the network number and wildcard bits. The network number is the network portion of the IP address, with the host bits all set to zero. The wildcard bits determine which portion of the address the access list will act on. Only bits set to zero are acted upon (bits set to one are ignored.) This is the exact opposite of a netmask.

Remember that this number is in bits, and you will always have all zeros to the left of the first one, and all ones to the right of the last zero. The table below shows some examples of netmasks and wildcard bits.

Type of network	Netmask	Wildcard Bits
Class A	255.0.0.0	0.255.255.255
Class B	255.255.0.0	0.0.255.255
Class C	255.255.255.0	0.0.0.255
Class C 2-bit subnet	255.255.255.192	0.0.0.63
Class B 4-bit subnet	255.255.240.0	0.0.31.255

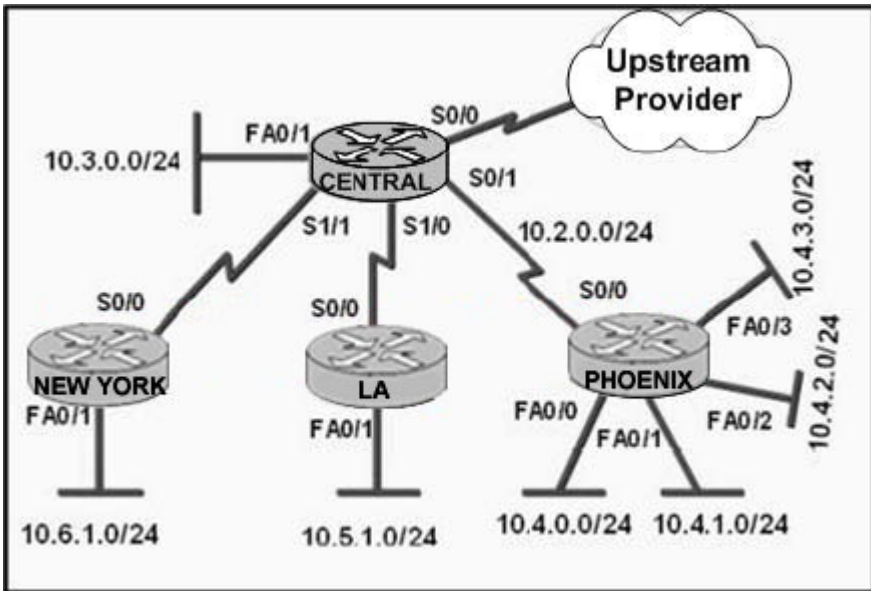
In this example, the 192.168.12.64 0.0.0.63 will comprise of all interfaces with an IP address in the 192.168.12.64-127 range.

QUESTION 207

Exhibit:

Please study the exhibit carefully. The Lakeside Company has the internetwork in the exhibit. The administrator would like to reduce the size of the routing table on the Central router. Which partial routing table entry in the Central router represents a route summary that represents the LANs in Phoenix but no additional subnets?

Exhibit:



- A. 10.0.0.0/28 is subnetted, 1 subnets
- D 10.2.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
- B. 10.0.0.0/30 is subnetted, 1 subnets
- D 10.4.4.4 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
- C. 10.0.0.0/30 is subnetted, 1 subnets
- D 10.2.2.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
- D. 10.0.0.0/28 is subnetted, 1 subnets

- D 10.4.4.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
 E. 10.0.0.0/22 is subnetted, 1 subnets
 D 10.4.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
 F. 10.0.0.0/22 is subnetted, 1 subnets
 D 10.0.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

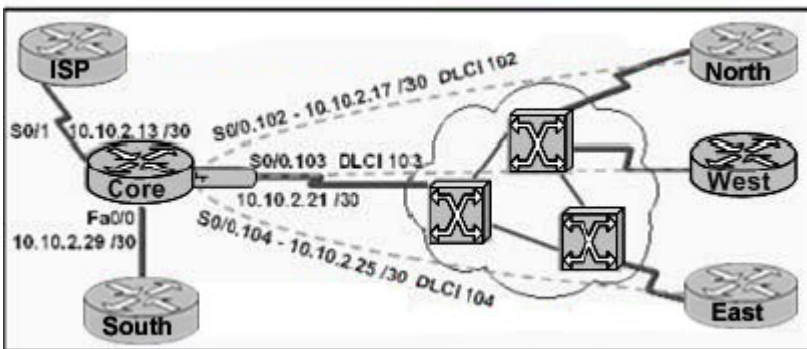
Answer: E

Explanation:

The 10.4.0.0, 10.4.1.0, 10.4.2.0, and 10.4.3.0 can be correctly summarized by the single 10.4.0.0/22 network route as shown by option E.

QUESTION 208

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



- A. Core(config-router)# default-information originate
 Core(config-router)# network 10.0.0.0.255.255.255 area 0
 Core(config-router)# exit
 Core(config)# ip route 0.0.0.0.0.0.0 10.10.2.14
- B. Core(config-router)# default-information originate
 Core(config-router)# network 10.10.2.32 0.0.0.31 area 0
 Core(config-router)# exit
 Core(config)# ip route 0.0.0.0.0.0 10.10.2.14
- C. Core(config-router)# default-information originate
 Core(config-router)# network 10.10.2.13 0.0.0.242 area 0
 Core(config-router)# exit
 Core(config)# ip route 0.0.0.0.0.0.0 10.10.2.14
- D. Core(config-router)# default-information originate
 Core(config-router)# network 10.10.2.16 0.0.0.15 area 0
 Core(config-router)# exit
 Core(config)# ip route 0.0.0.0.0.0.0 10.10.2.14

Answer: D

Explanation:

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

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

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

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

In the example shown here, only choice D is correct as the wildcard mask correctly specifies the 10.10.2.16 0.0.0.15 networks, which include all IP addresses in the 10.10.2.16-10.10.2.31 range.

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

QUESTION 209

The Ethernet 0 interface of a Certkiller router was configured with address 10.64.0.1 255.224.0.0 while the Ethernet 1 interface was configured with address 10.96.0.1/11. Which commands could be used to configure RIP version 1 on this router to advertise both networks to neighboring routers? (Choose two.)

- A. Router(config)# router rip
Router(config-router)# network 10.0.0.0 255.224.0.0
- B. Router(config)# router rip
Router(config-router)# network 10.0.0.0
- C. Router(config)# router rip
Router(config-router)# network 10.64.0.0
Router(config-router)# network 10.96.0.0
- D. Router(config)# router rip
Router(config-router)# network 10.64.0.1 255.224.0.0
Router(config-router)# network 10.96.0.1 255.224.0.0

Answer: B, C

Explanation:

Both options B and C correctly include both of the networks in the routing process, making them correct. With RIP, the subnet mask is not specified as the networks involved are assumed to be classful.

Incorrect Answers:

A, D: Both of these options incorrectly show a subnet mask used in the network commands under the routing process. This is not an option with RIP.

QUESTION 210

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

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

Answer: C

Explanation

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

QUESTION 211

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

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

Answer: B

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

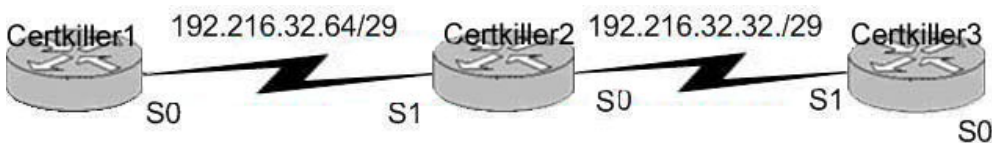
In versions prior to Cisco IOS Software Release 8.3, the service subnet-zero command was used.

It should be noted that even though it was discouraged, the entire address space including subnet zero and the all-ones subnet have always been usable. The use of the all-ones subnet was explicitly allowed and the use of subnet zero is explicitly allowed since Cisco IOS Software Release 12.0. Even prior to Cisco IOS Software Release 12.0, subnet zero could be used by entering the ip subnet-zero global configuration command.

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

QUESTION 212

Three Certkiller routers are connected as shown below:



Taking the information shown above, which command line below would correctly configure serial port0 on the Certkiller 2 router with the LAST usable host addresses on the 192.216.32.32 subnet?

- A. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248
- B. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.240
- C. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248
- D. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248 no shut
- E. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248 no shut
- F. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.248

Answer: F

Explanation:

F is the correct answer, as the last usable IP address on this subnet is 192.216.32.38. The

subnet mask for a /29 is 255.255.255.248

Mask/29 11111111.11111111.11111111.11111000 255.255.255.248

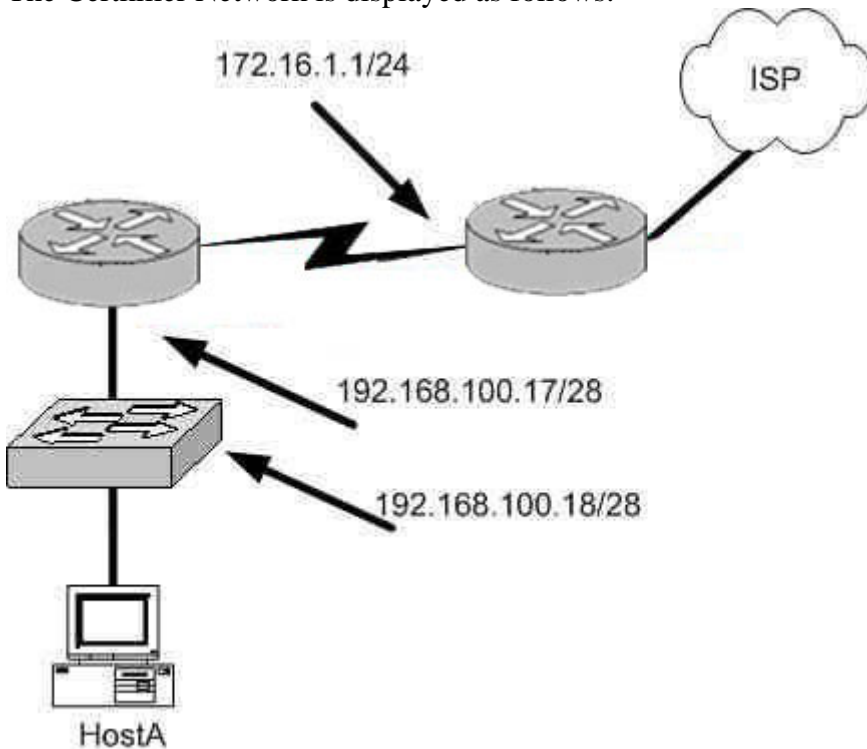
Subnet 11000000.11011000.00100000.00100000 192.216.32.32

Broadcast 11000000.11011000.00100000.00100111 192.216.32.39

Address range = 192.216.32.33 - 192.216.32.38

QUESTION 213

The Certkiller Network is displayed as follows:



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

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

Answer: C

Explanation:

The network mask for a /28 is 255.255.255.240. The default gateway is always the IP address of the router on the local subnet, and the valid IP range for this network is 192.168.100.17 - 192.168.100.30. Choice C is the only one that meets all of these.

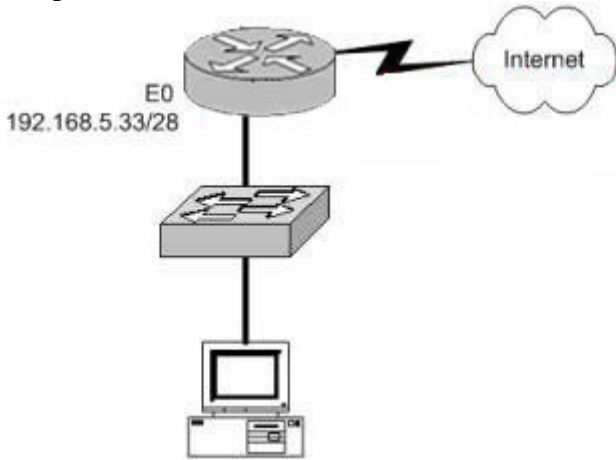
Incorrect Answers:

- A. The IP address 192.168.100.31 is the broadcast address. It cannot be used for the host.
- B. The default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.

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

QUESTION 214

A simple Certkiller network is shown below:



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

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

Answer: C

Explanation:

The network uses a 28bit subnet (255.255.255.240). This means that 4 bits are used for the networks and 4 bits for the hosts. This allows for 14 networks and 14 hosts ($2^n - 2$). The last bit used to make 240 is the 4th bit (16) therefore the first network will be 192.168.5.16. The network will have 16 addresses (but remember that the first address is the network address and the last address is the broadcast address). In other words, the networks will be in increments of 16 beginning at 192.168.5.16/28. The router interface E0 has the IP address 192.168.5.33. Therefore it is on the 2nd network (192.168.5.32/28). The host must also be on this network. Valid IP addresses for hosts on this network are: 192.168.5.33-192.168.5.46.

Incorrect Answers:

- A. 192.168.5.55 is on network 192.168.5.48. It is not on the same network as the router interface.
- B. This is the broadcast address.

D. This is the network address.

E. This is not a valid address for a 28 bit subnet mask. The first network address should be 192.168.5.16.

QUESTION 215

In any NAT (network address translation) configuration, what is the Inside Global IP address?

- A. The summarized address for all internal subnetted addresses.
- B. A private IP address assigned to a host on the inside network.
- C. A registered address that represents an inside host to an outside network.
- D. A unique IP address used on an internal network
- E. Non of the above

Answer: C

Explanation:

With NAT, Cisco defines 4 different types of addresses as follows:

* Inside local address - The IP address assigned to a host on the inside network. This is the address configured as a

parameter of the computer's OS or received via dynamic address allocation protocols such as DHCP. The address is

likely not a legitimate IP address assigned by the Network Information Center (NIC) or service provider.

* Inside global address - A legitimate IP address assigned by the NIC or service provider that represents one or more

inside local IP addresses to the outside world.

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

* Outside global address - The IP address assigned to a host on the outside network by the host's owner. The address is allocated from a globally routable address or network space.

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

* Local address- A local address is any address that appears on the "inside" portion of the network.

* Global address- A global address is any address that appears on the "outside" portion of the network.

QUESTION 216

The following configuration command was entered into a router:

```
ip route 172.16.3.0 255.255.255.0 192.168.2.4
```

Which of the following statements are true regarding this configuration change?

(Select two)

- A. The default administrative distance is used.
- B. The command is used to establish a static route.
- C. The command is used to configure the router interfaces.
- D. The command is used to establish a stub network.
- E. The subnet mask for the source address is 255.255.255.0

Answer: A, B

Explanation:

This command specifies a static route, and tells the router that it should forward all traffic destined for the 172.16.3.0/24 subnet to the next hop router located at 192.168.2.4. The default Administrative Distance for a static route is one, and since there is no AD value specified at the end of this configuration change, the default is used.

Incorrect Answers:

- C. This command is done in global configuration mode, not in interface mode.
- D. Stub networks are used in OSPF topologies. The example in this question is simply applying a single static route.
- E. There is not source network or subnet specified in a static route. All traffic destined to the target of 172.16.3.0/24 is to be forwarded, regardless of the source.

QUESTION 217

Which of the commands below can you use to configure a default route? (Select two answer choices)

- A. CK1 (config)# ip route 0.0.0.0 0.0.0.0 E0
- B. CK1 (config)# ip route 0.0.0.0 255.255.255.255 S0
- C. CK1 (config-interface)# ip route 255.255.255.255 0.0.0.0 192.168.1.21
- D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 192.168.1.21
- E. CK1 (config)# ip route 0.0.0.0 192.168.1.21 255.255.255.255
- F. CK1 # ip default-network 0.0.0.0 192.168.1.21 255.255.255.255

Answer: A, D

Explanation:

There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, like the example in

A. The other way is to specify the IP address of the next hop router, such as the example in D. The ip route 0.0.0.0 0.0.0.0 command uses the fact that network 0.0.0.0 is used by Cisco IOS software to represent the default network.

Reference: CCNA ICND Exam Certification Guide By Wendell Odem Pg.524

Incorrect Answers:

- B. All zero's must used for the subnet mask of a default route, not all 1's.
- C. The default route is made in global configuration mode.
- D, E. A subnet mask is not needed after the next hop router is specified.

QUESTION 218

Which of the following commands would you use, to configure a default route to any destination NOT found in the routing table?

- A. Router(config)# ip default-route 0.0.0.0 255.255.255.255 s0
- B. Router(config)# ip route 0.0.0.0 255.255.255.255 s0
- C. Router(config)# ip default-route 0.0.0.0 0.0.0.0 s0
- D. Router(config)# ip route 0.0.0.0 0.0.0.0 s0
- E. Router(config)# ip route any any e0

Answer: D

Explanation:

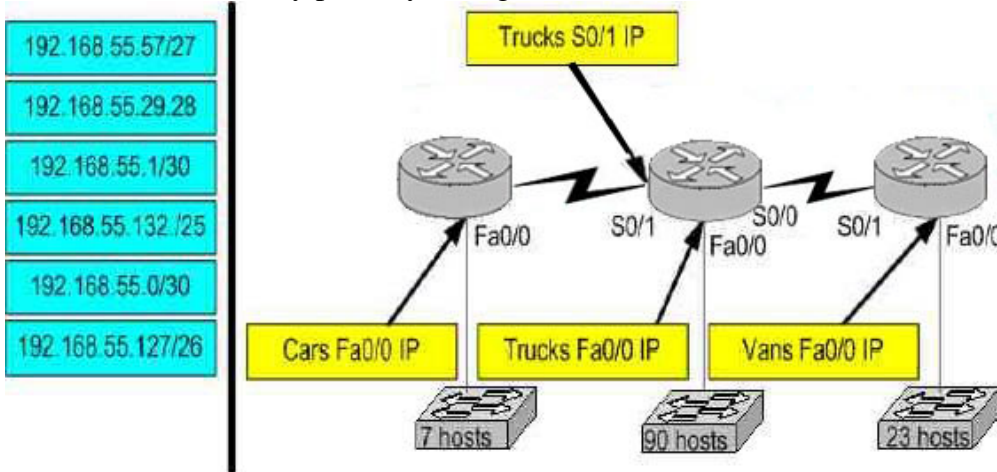
Choice D is the correct syntax for configuring a gateway of last resort. Note that an alternative way is to specify the IP address of the next hop router, for example, "ip route 0.0.0.0 0.0.0.0 10.1.1.1."

QUESTION 219

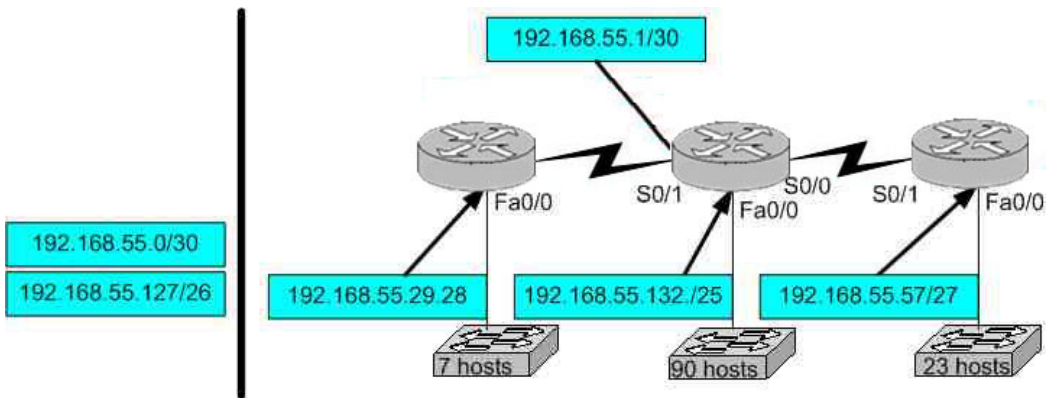
DRAG DROP

You are on the Certkiller network design team and have the task of networking three Certkiller locations together. Your team will be using the address range 192.168.55.0. RIP v2 will be used as the routing protocol, and "ip subnet-zero" will be configured. Your goal is to fulfill the address needs of the network while conserving unused addresses for potential future growth.

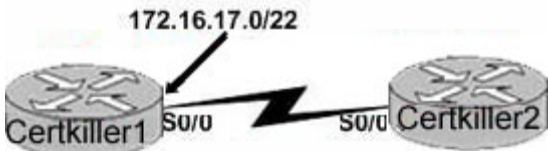
With these goals in mind, drag the host addresses on the left side to the correct router interface on the right side. Not all the addresses are going to be used, and one of the routers is already partially configured.



Answer:

**QUESTION 220**

The Certkiller network is shown in the following exhibit:



What command would you use to configure the correct IP address and subnet mask on Certkiller 2's serial interface?

- A. Certkiller 2(config-if)# ip address 172.16.17.1 255.255.255.0
- B. Certkiller 2(config-if)# ip address 172.16.18.2 255.255.252.0
- C. Certkiller 2(config-if)# ip address 172.16.17.2 255.255.255.252
- D. Certkiller 2(config-if)# ip address 172.16.16.0 255.255.255.0

Answer: B

Explanation:

The address 172.16.17.0/22 is in the 172.16.16.0/22 network. This means that the IP addresses in all four answers are valid. However, the /22 subnet mask equals 255.255.252.0 in decimal. Therefore, answer B is correct.

Incorrect Answers:

A, C, D. The subnet mask used in the diagram shows a /22, which equates to 255.255.252.0. The subnet masks in choices A, C, and D are incorrect.

QUESTION 221

You have been asked to configure a default route. Which of the IOS commands mentioned below will accomplish this task? (Select two answer choices)

- A. LTD(config)# ip route 0.0.0.0 0.0.0.0 192.168.15.36
- B. LTD(config)# ip route 0.0.0.0 192.168.15.36 255.255.255.255
- C. LTD# ip default-network 0.0.0.0 192.168.15.36 255.255.255.255
- D. LTD(config)# ip route 0.0.0.0 0.0.0.0 E0
- E. LTD(config)# ip route 0.0.0.0 255.255.255.255 S0

F. LTD(config-router)# ip route 255.255.255.255 0.0.0.0 192.168.15.36

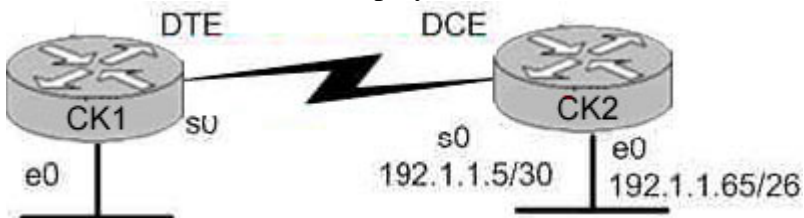
Answer: A, D

Explanation:

The default route is the IP address of the next hop when no other routes are known. To configure the default route you type in 'ip route' and then two address sets of 0 followed by the address (as is the case in A) or the interface (as is the case in D).

QUESTION 222

The Certkiller network is displayed below:



In this network, you must configure router CK1 to provide connectivity to router CK2 . The entire network must utilize the 192.1.1.0/24 network. If RIP is being used as the routing protocol, which 3 sets of commands will need to be completed on CK1 ? (Choose 3).

- A. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.129 255.255.255.192
CK1 (config-if)# no shutdown
- B. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.97 255.255.255.192
CK1 (config-if)# no shutdown
- C. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.4 255.255.255.252
CK1 (config-if)# clock rate 56000
- D. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.6 255.255.255.252
CK1 (config-if)# no shutdown
- E. CK1 (config)# router rip
CK1 (config-router)# network 192.1.1.4
CK1 (config-router)# network 192.1.1.128
- F. CK1 (config)# router rip
CK1 (config-router)# version 2
CK1 (config-router)# network 192.1.1.0

Answer: A, D, F

Explanation:

Subnetting a Class C Address

We start by using the first subnet mask available with a Class C address, which borrows 2 bits for subnetting.

For this example, I'll be using 255.255.255.192. To review the binary translation of 192:
192 = 11000000

Here, the 1s represent the subnet bits, and the 0s represent the host bits available in each subnet. 192 provides 2 bits for subnetting and 6 bits for defining the hosts in each subnet. What are the subnets? Since the subnet bits can't be both off or on at the same time, the only two valid subnets are these:

01000000 = 64 (all host bits off) revealing host addresses from .65-----.127

10000000 = 128 (all host bits off) revealing host addresses from .129-----.190

The valid hosts would be defined as the numbers between the subnets, minus the all-host-bits-off and all-host-bits-on numbers.

In Choice A, a valid host is configured on E0 interface of the router 192.1.1.129/26 so it is correct. Choice D is correct because each WAN link uses the /30 or 255.255.255.252 mask revealing 2 valid host addresses. Serial 0 is configured with the address 192.1.1.6/30, which comes from the subnet 192.1.1.4/30. Valid hosts in this subnet are 192.1.1.5/30 and 192.1.1.6/30

Choice F is correct because we RIP version 2 will be required in this case as VLSM information needs to be carried throughout the network, and VLSM is not supported on RIP version 1.

QUESTION 223

SIMULATION

The Certkiller Corporation (an online training facility) has three production facilities which have their own routers: QA, Study Guide, and Examiner. QA and Study Guide already have network connectivity between them. Configure Examiner's router's IP to the e0 and s1 interfaces so e0 resolves the first usable subnet and S1 receives the second usable subnet. (From the network 192.168.81.0/27) Both interfaces should get the first available IP of the subnet. Configure the Examiner router's IP addresses on the E0 and S1 interfaces so that the E0 resolves the first usable subnet while S1 receives the second usable subnet from the network 192.168.81.0/27. Both interfaces should receive the first available IP of the subnet. The zero subnet should not be used. The routers have been configured with the following specifications:

1. The routers are named QA, StudyGuide, and Examiner
2. RIP is the routing protocol
3. Clocking is provided on the serial 0 interfaces.
4. The secret password on the Examiner router is " Certkiller "
5. The IP addresses are listed in the chart below.
6. The zero subnet shouldn't be used

Name: QA

E0 : 192.168.83.1

S0 : 192.168.85.1

Name: StudyGuide

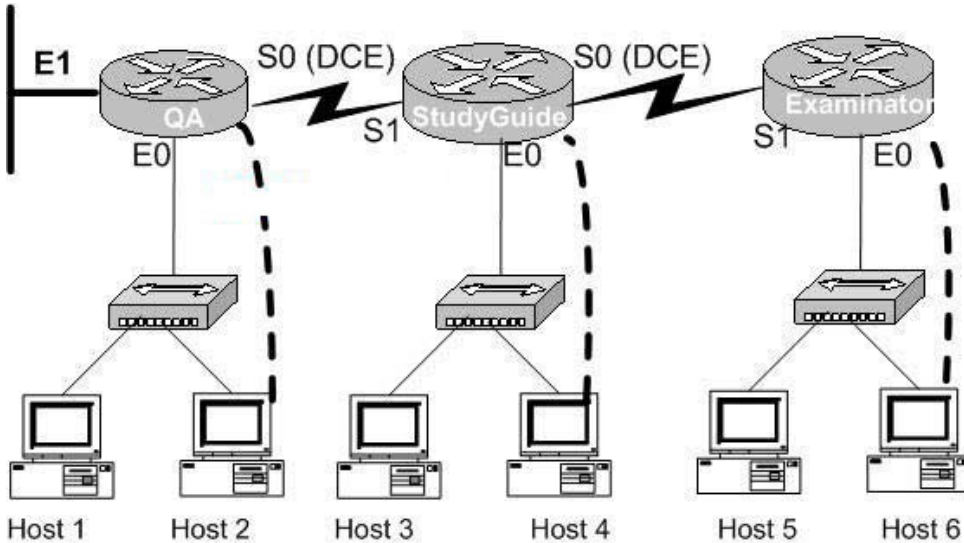
E0 : 192.168.88.1

S0 : 192.168.81.89

S1 : 192.168.85.2

Name: Examiner

E0 : to be determined
S1 : to be determined
Secret Password: Certkiller



Task: To configure the router click on the host icon that is connected to the router by a serial cable.

Answer:

Explanation:

```
Examinator#config t
Enter configuration commands, one per line. End with END.
Examinator(config)#int e 0
Examinator(config-if)#ip add 192.168.81.33 255.255.255.224
Examinator(config-if)#no shut
Examinator(config-if)#exit
Examinator(config)#int s 1
Examinator(config-if)#ip add 192.168.81.65 255.255.255.224
Examinator(config-if)#no shut
Examinator(config-if)#CTRL+Z
Examinator#copy ru st
..
..
[OK]
Examinator#
```

QUESTION 224

You work as a technician at Certkiller . You are configuring a Cisco router. You want to configure the IP address on an interface. Which command should you use?

- A. router(config-if)#ip address 142.8.2.1 subnet mask 255.255.252.0
- B. router(config-if)#142.8.2.1 0.0.3.255

- C. router(config-if)#ip address 142.8.2.1 255.255.252.0
- D. router(config-if)#142.8.2.1 subnet mask 255.255.252.0
- E. router(config-if)#ip address 142.8.2.1 0.0.3.255
- F. router(config-if)#ip address 142.8.2.1 subnet mask /22

Answer: C

Explanation:

ip address address subnet-mask - Interface configuration mode command that sets the IP address for interfaces. Only choice C uses the correct syntax.

QUESTION 225

The Certkiller connection between the BMW and ATL routers are displayed below:



Based on the information above, which of the following commands can be used to configure the address on the ATL serial 0/0 interface?

- A. ATL(config-if)# ip address 172.16.17.1 255.255.255.0
- B. ATL(config-if)# ip address 172.16.18.255 255.255.252.0
- C. ATL(config-if)# ip address 172.16.17.2 255.255.255.252
- D. ATL(config-if)# ip address 172.16.16.0 255.255.255.0
- E. None of the above

Answer: B

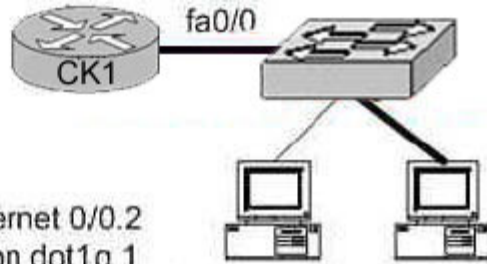
Explanation:

CIDR Notation /22 implies that the subnet mask be 255.255.252.0. The IP address 172.16.18.255 falls within the same network range as the 172.16.17.0/22 network.

QUESTION 226

A portion of the Certkiller network is displayed below:

640-801



```
CK1(config)# interface FastEthernet 0/0.2
CK1(config-subif)# encapsulation dot1q 1
CK1(config-subif)# ip address 192.1.1.129 255.255.255.240
CK1(config)# interface FastEthernet 0/0.3
CK1(config-subif)# encapsulation dot1q 2
CK1(config-subif)# ip address 192.1.1.65 255.255.255.192
```

Host A in the graphic is connected to a switch port assigned to VLAN 1. Which two settings on host A are required to allow connectivity with Host B on VLAN 2? (Choose two)

- A. IP address: 192.1.1.66 255.255.255.240
- B. IP address: 192.1.1.130 255.255.255.192
- C. IP address: 192.1.1.142 255.255.255.240
- D. Default gateway: 192.1.1.129
- E. Default gateway: 192.1.1.65
- F. Default gateway: 192.1.1.1

Answer: C, D

Explanation:

Sub-interface Fast Ethernet 0/0.2 was created for VLAN 1 through the use of the "encapsulation dot1q 1" command. Therefore, since host A resides in VLAN 1 it must be configured with an IP address in the 192.1.1.128/28 subnet and it must be configured with the IP address of the default gateway, which is the IP address assigned to the corresponding sub-interface of the router.

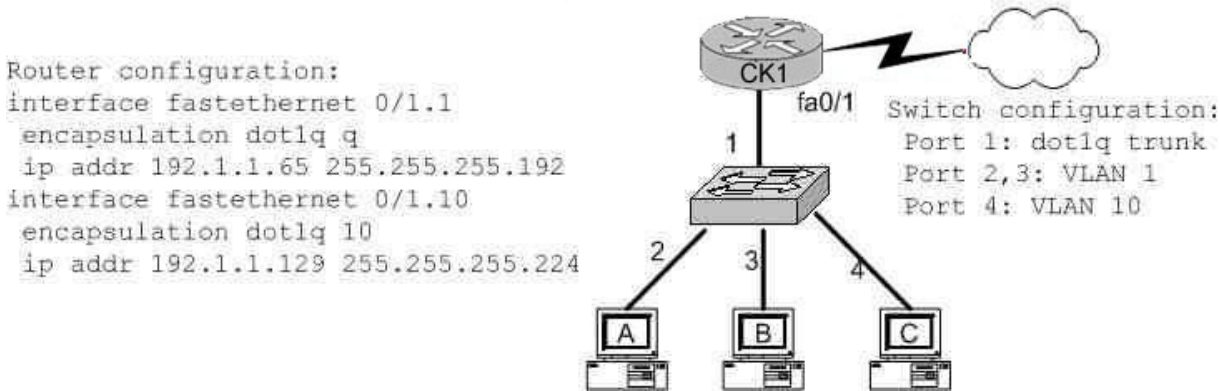
Incorrect Answers:

- A. This IP address is not in the same subnet as the Fast Ethernet 0/0.2 sub-interface.
- B. The subnet mask is incorrect in this choice.
- E, F. The default gateway needs to be set as the IP address for the sub-interface created in the router for VLAN 1.

QUESTION 227

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

640-801



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

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

Answer: C, D, F

Explanation:

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

Incorrect Answers:

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

QUESTION 228

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

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

Answer: B, D, E

Explanation:

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

Incorrect Answers:

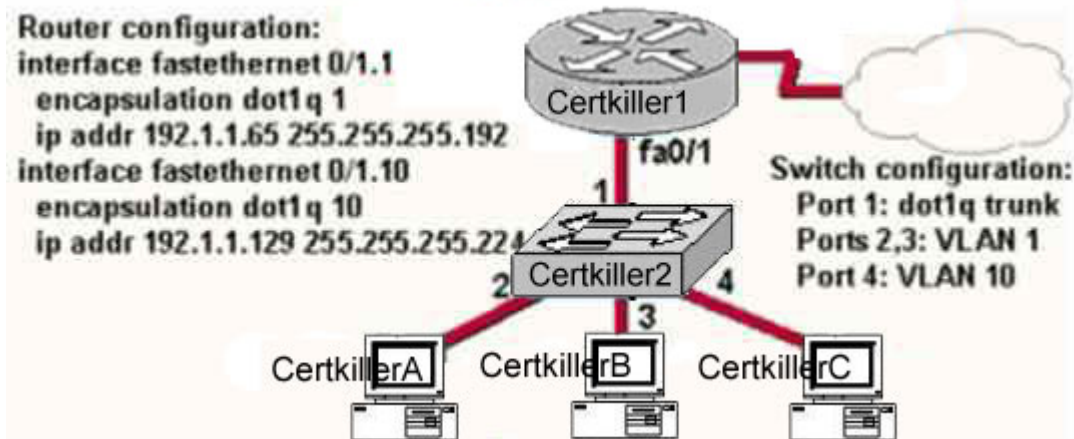
A. This is the network address for the 113.10.4.0/23 subnet.

C. This is the broadcast address for the 175.33.2.0/23 subnet.

F. This is the network address for the 17.35.36.0/23 subnet.

QUESTION 229

The Certkiller network topology is depicted below:



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

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

Answer: A, C, F

Explanation:

The answers A and C are right, because the ip address 192.1.1.85 and 192.1.1.125 are in the same subnet 192.1.1.64 as the ip address of the subinterface 0/1.1.

Incorrect Answers:

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

QUESTION 230

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

- A. Certkiller A(config-if)# ip address 192.168.32.142 255.255.255.240
- B. Certkiller A(config-if)# ip address 192.168.32.143 255.255.255.240
- C. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
- D. Certkiller A(config-if)# ip address 192.168.32.145 255.255.255.240
- E. Certkiller A(config-if)# ip address 192.168.32.144 255.255.255.240
- F. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240

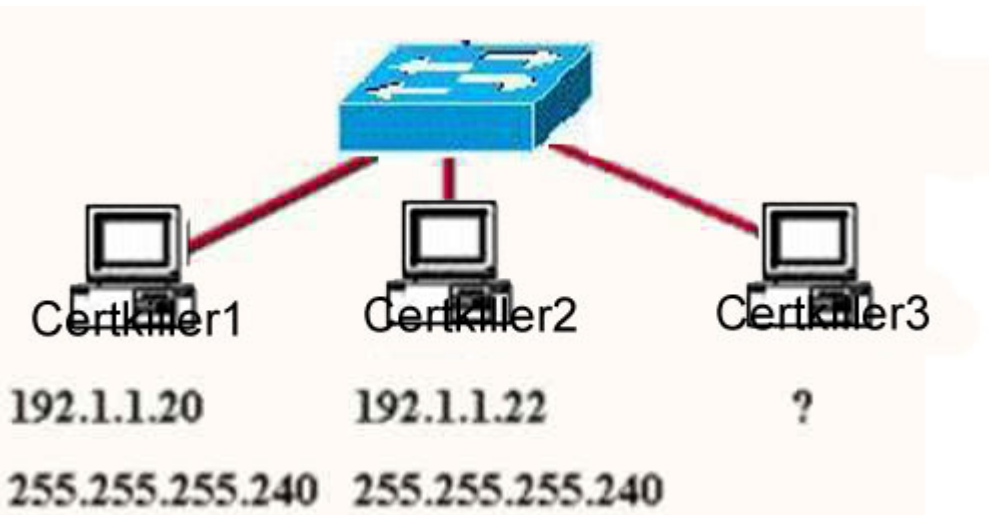
Answer: A

Explanation:

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

QUESTION 231

The Certkiller LAN is shown below:



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

- A. 192.1.1.14
- B. 192.1.1.18
- C. 192.1.1.20
- D. 192.1.1.30
- E. 192.1.1.31
- F. 192.1.1.36

Answer: B, D

Explanation:

Subnet Mask of 255.255.255.240 means 4-bits of subnetting. When we do 4-bits of subnetting, we have a total of 16 subnets having 16 hosts each. Subnets will be 192.1.1.0 ----- 191.1.1.15 (0-15)

192.1.1.16 ---- 191.1.1.31 (16-31)

192.1.1.32 ---- 191.1.1.47 (32-47)

|||

|||

|||

192.1.1.240---- 192.1.1.255 (240-255)

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

QUESTION 232

DRAG DROP

As a Certkiller .com network administrator you are required to construct the command sequence to configure an IP address on an Ethernet interface. (Not all options will be used.)

enter privileged EXEC mode	place here
enter global configuration mode	place here
enter interface configuration mode	place here
configure the interface IP address	place here
enable the interface	place here

Select from these

Certkiller3# configure Certkiller	Certkiller3(config)#interface fa0/0
Certkiller3(config-if)#ip address 192.168.3.3/24	Certkiller3(config-if)#no shutdown
Certkiller3(config-if)#ip address 10.8.26.0 255.255.248.0	Certkiller3(config-if)#enable interface
Certkiller3(config)#ip address 172.16.10.1 255.255.255.0	Certkiller3#enable
Certkiller3#interface fa0/0	Certkiller3>enable

Answer:

640-801

As a Certkiller.com network administrator you are required to construct the command sequence to configure an IP address on an Ethernet interface. (Not all options will be used)

enter privileged EXEC mode	Certkiller3>enable
enter global configuration mode	Certkiller3(configureterminal)
enter interface configuration mode	Certkiller3(config)#interface fa0/0
configure the interface IP address	Certkiller3(config-if)#ip address 10.8.26.0.255.255.248.0
enable the interface	Certkiller3(config-if)#enable interface

Select from these

Certkiller3(config-if)#ip address 192.168.3.3/24	Certkiller3(config-if)#no shutdown
Certkiller3(config-if)#ip address 172.16.10.1.255.255.255.0	Certkiller3#enable
Certkiller3#interface fa0/0	

QUESTION 233

You need to set the default gateway of one of your Certkiller switches. Which command will set the default gateway to 192.168.12.1 on a Cisco switch?

- A. Switch(config)# ip default-network 192.168.12.1
- B. Switch(config)#ip route-default 192.168.12.1
- C. Switch(config)# ip default-gateway 192.168.12.1
- D. Switch(config)# ip route 192.168.12.1 0.0.0.0

Answer: C

Explanation:

IP default-gateway address is a global command that sets the default gateway so that the management interface can be reached from a remote network. This is the correct command used on Cisco switches.

Reference: Cisco CCNA ICND p.14

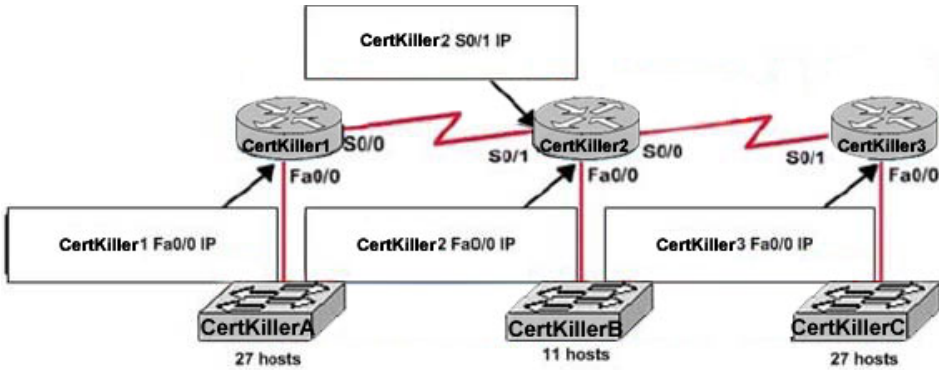
QUESTION 234

DRAG DROP

You work as a network engineer at Certkiller .com. Certkiller .com is redesigning the network that connects its three locations. You are give the 192.168.9.1 addressing to be used for the entire network. After the subnetting the address, you are ready to assign the addresses. You place to configure ip subnet-zero and use RIP v2 as the routing protocol. Now you must address the network and at the same time conserve unused addresses for future growth. You are required to place the host addresses to

640-801

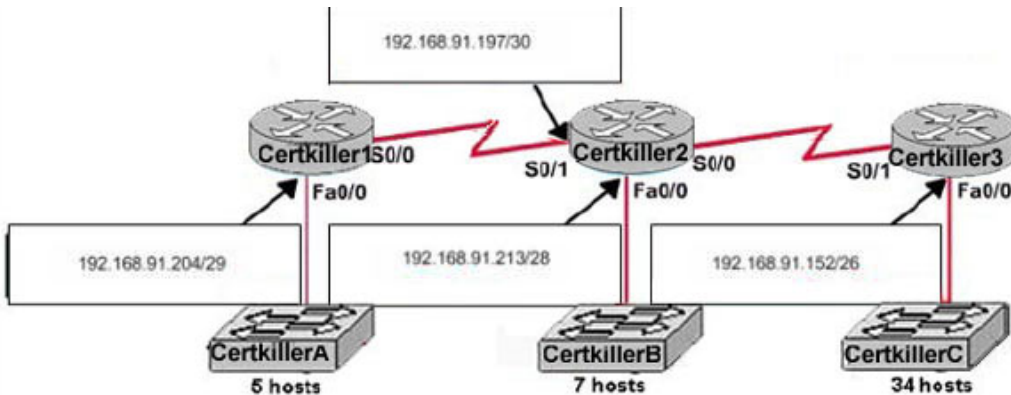
the correct interface. On of the routers is partially configured. You can view the configuration by placing the mouse over the router. Not all host addresses will be used.



Select from these

- 192.168.151.255/25
- 192.168.151.122/30
- 192.168.151.77/30
- 192.168.151.76/28
- 192.168.151.83/28
- 192.168.151.18/26

Answer:



Explanation:

Reason for not selecting the other choices in DRAG DROP

192.168.91.196/30 = Network ID cannot be assigned to an interface

192.168.91.255/27 = Not a valid IP address as SNM = 255.255.255.224 (last octet >224)

QUESTION 235

A network administrator needs to configure a serial link between the main office and a remote location. The router at the remote office is a non-Cisco router. How should the network administrator configure the serial interface of the main

office router to make the connection?

- A. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# no shut
- B. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# encapsulation ppp
Main(config-if)# no shut
- C. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# encapsulation frame-relay
Main(config-if)# authentication chap
Main(config-if)# no shut
- D. Main(config)# interface serial 0/0
Main(config-if)# ip address 172.16.1.1 255.255.255.255
Main(config-f)# encapsulation ietf

Answer: B

Explanation:

The default encapsulation on a serial interface is the Cisco proprietary HDLC. When connecting to routers from another vendor, we will need to use the standards based PPP, which is correctly defined in choice B.

Incorrect Answers:

- A: This is not a correct answer because no encapsulation is defined, so the default HDLC will be used, which is a Cisco proprietary protocol.
- C: CHAP authentication is only used by PPP, not HDLC.
- D: IETF itself is not an encapsulation option on an interface; it is used in frame relay networks, where the encapsulation can be frame relay IETF, but not simply IETF alone.

QUESTION 236

The administrator of the Certkiller network needs to ensure that a web server in their network is accessible from the Internet. Since the network uses private addressing, this requires an IP-to-registered-address mapping. The following command is entered on the router:

```
Certkiller 1(config)# ip nat inside source static 192.168.2.1 198.18.1.254
```

After unsuccessful results from a ping to the Internet, the administrator issues the show ip nat translations command and the output is blank. What could be the problem with the NAT configuration for this mapping?

- A. The keyword overload is missing from the command.
- B. The administrator needs to define a NAT pool first.
- C. An access list must be defined to create static NAT translations.
- D. The interfaces need to be configured for NAT.

Answer: D

Explanation:

After configuring the static NAT administrator should configure the NAT on interface in order to define which interfaces are on the outside and which are on the inside:

Example:

```
interface s0
```

```
ip nat outside àBecause s0 interface is connected to ISP
```

```
interface e0
```

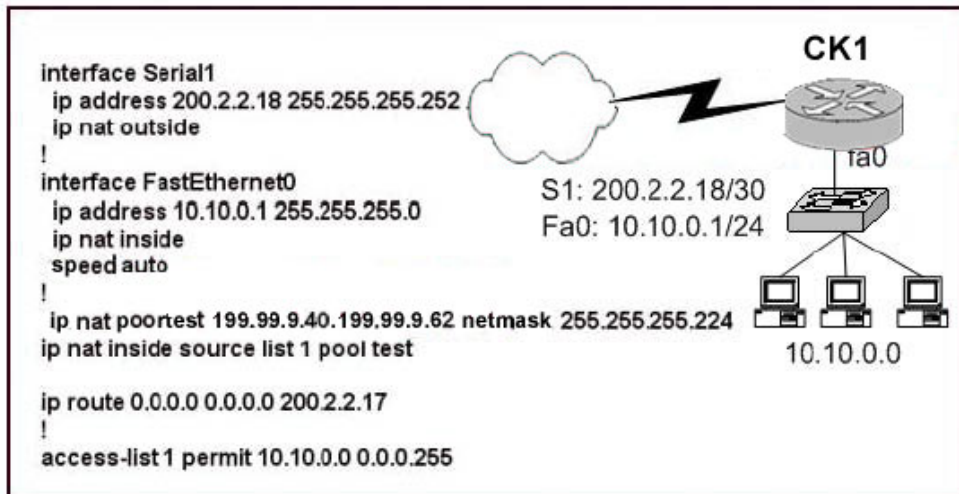
```
ip nat inside à Because e0 interface is connected to Local LAN.
```

Incorrect Answers:

A, B, C: These are all tasks that need to be configured when performing many to one NAT, also known as Port Address Translation (PAT). In this example, we are specifying a static 1-1 NAT entry.

QUESTION 237

Exhibit:



Refer to the topology and router configuration shown in the graphic above. A host on the LAN is accessing an FTP server across the Internet. Which of the following addresses could appear as a source address for the packets forwarded by the router to the destination server?

- A. 10.10.0.1
- B. 10.10.0.2
- C. 199.99.9.3
- D. 199.99.9.57
- E. 200.2.2.17
- F. 200.2.2.18

Answer: D

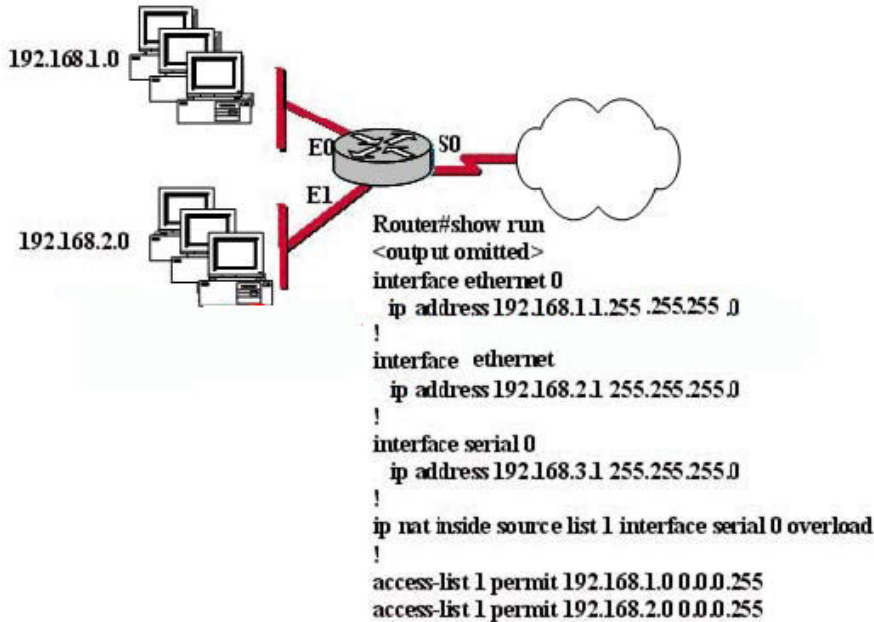
Explanation:

Using NAT we can translate the Source or Destination Address. In our example all

source address from the 10.10.0.0 0.0.0.255 network will be translated to an IP address from the 199.99.9.40-62 pool.

QUESTION 238

Exhibit:



The network administrator has configured NAT as shown in the exhibit. Clients still cannot access the Internet. What should the network administrator do to resolve this problem?

- A. Configure an IP NAT address pool.
- B. Properly configure the ACL.
- C. Apply the ip nat command to the S0 interface.
- D. Configure the ip nat inside and ip nat outside commands on the interfaces.

Answer: D

Explanation:

The "ip nat inside" and "ip nat outside" commands must be used from interface configuration mode to tell the router which interface is performing which role in the NAT process. The following commands show how to configure our example router:

```
Border(config)#interface ethernet0Border(config-if)#ip nat
insideBorder(config-if)#exitBorder(config)#interface serial0Border(config-if)#ip nat
outsideBorder(config-if)#exitBorder(config)#
```

QUESTION 239

What is the purpose of the command shown below?

```
ip route 0.0.0.0 0.0.0.0 serial0/0
```


- A. It configures a router to send all packets out interface serial 0/0.
- B. It configures a router to block routing updates from being sent out interface serial 0/0.
- C. It configures a router as a firewall, blocking all unauthorized packets from exiting serial 0/0.
- D. It configures a router to send all packets for unknown destination networks out interface serial 0/0.
- E. It configures a router to drop all packets for which the destination network is unknown.

Answer: D

Explanation:

A default static route serves as a gateway of last resort. If there are no matches for a destination in the routing table, the default route will be used. Default routes use all zeroes for both the destination and mask, and again a next-hop IP address or local exit interface can be used.

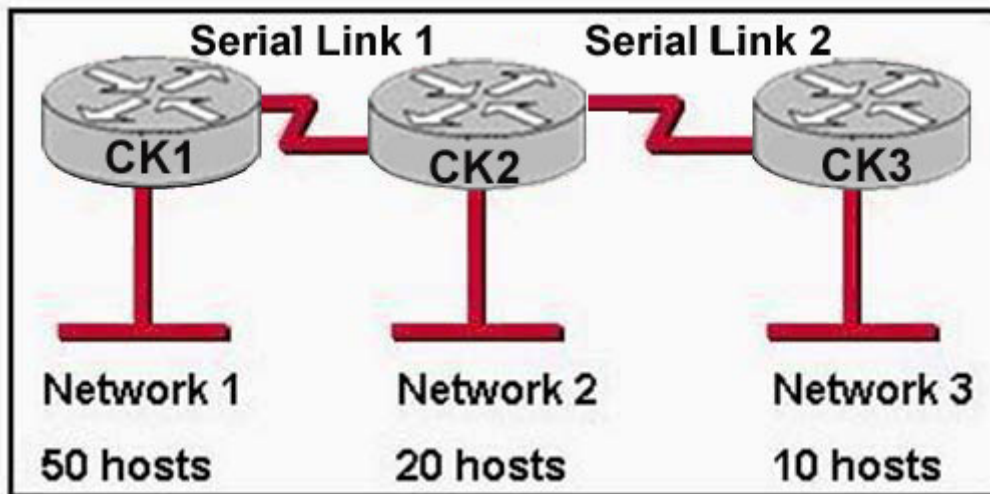
CK1 (config)#ip route 0.0.0.0 0.0.0.0 200.1.1.2 (next-hop IP address)

OR

CK1 (config)#ip route 0.0.0.0 0.0.0.0 serial0 (local exit interface)

QUESTION 240

A Certkiller network is shown in the exhibit below:



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

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

192.168.10.96/29 Serial link 1: 192.168.10.112/30 Serial link 2: 192.168.10.116/30

Answer: C

Explanation:

Network 1

Required Number of hosts :50

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

Network 2

Required Number of Hosts: 20

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

Network 3

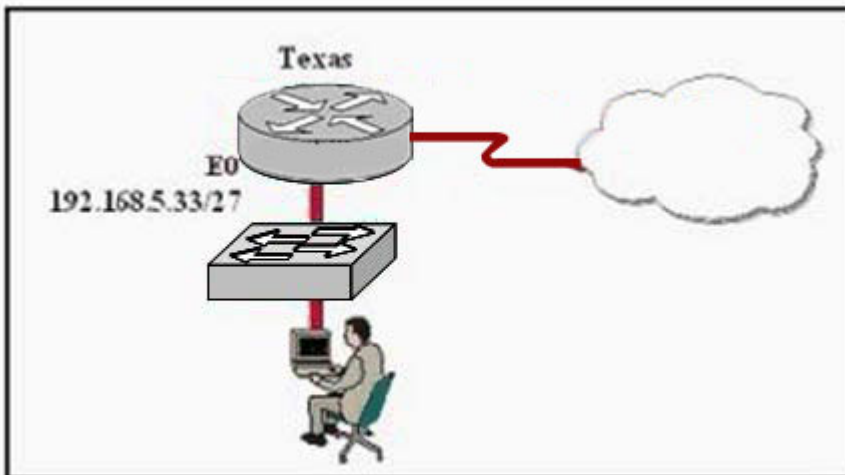
Required Number of Hosts: 10

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

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

QUESTION 241

A diagram depicting a Certkiller user is shown below:



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

- A. 192.168.5.5
- B. 192.168.5.32
- C. 192.168.5.40
- D. 192.168.5.63
- E. 192.168.5.75

Answer: C

Explanation:

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

27 bits used for network and 5 bits for host.

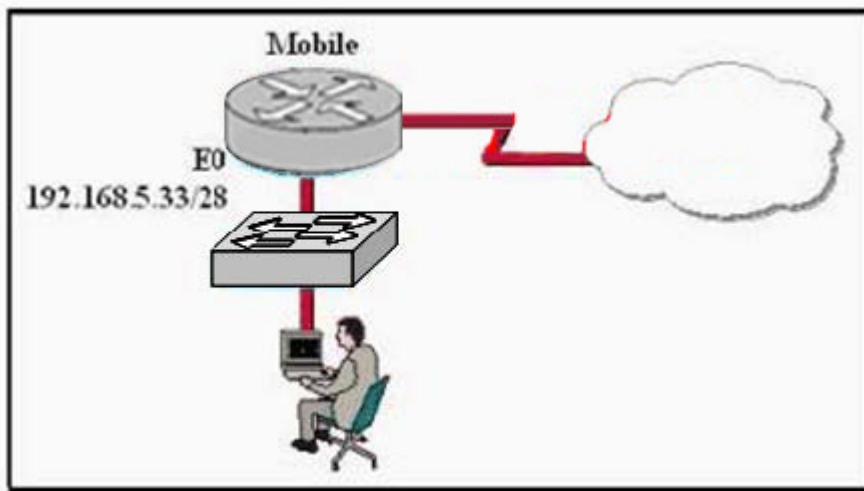
So Network Address=256-224=32

First Subnet 32-64

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

QUESTION 242

A diagram depicting a Certkiller user is shown below:



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

- A. 192.168.5.14
- B. 192.168.5.32
- C. 192.168.5.40
- D. 192.168.5.47
- E. 192.168.5.55
- F. None of the above

Answer: C

Explanation:

Host address should be in same subnet of the connected router's interface. In this example the router's ethernet address is in the 192.168.5.33/28 subnet.

27 bits used for network and 5 bits for host.

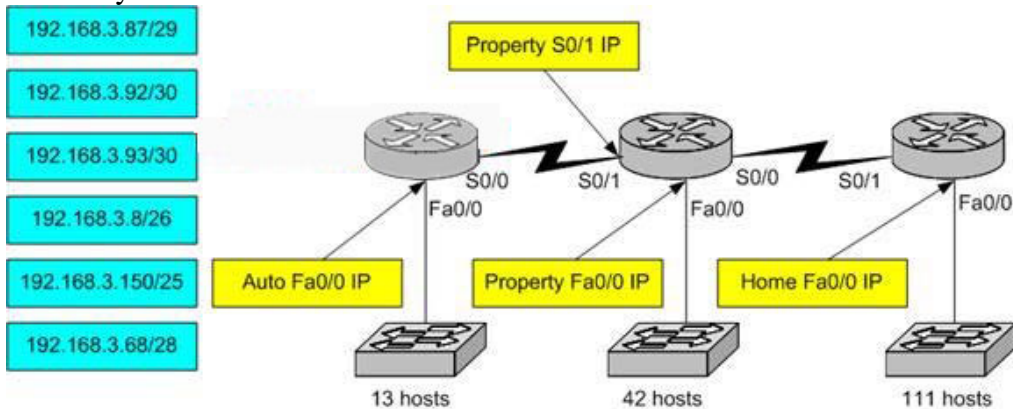
So Network Address=256-240=16

First Subnet 32-48

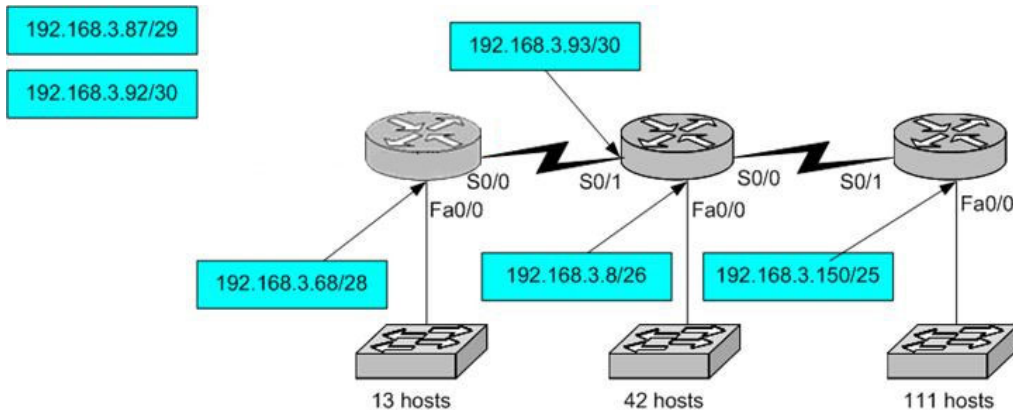
So, host addresses should be in the 32-48 range but 32, 47, and 48 can't be used in a host address since they are the network and broadcast address for a subnet.

QUESTION 243**DRAG DROP**

Certkiller is redesigning the network that connects its three locations. The administrator gave the networking team 192.168.3.0 to use for addressing the entire network. After subnetting the address, the team is ready to assign the addresses. The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth. With those goals in mind, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Not all of the host address addresses on the left are necessary.



Answer:



Explanation:

The Switch connected to Auto Fa0/0 Port requires a minimum of 13 IP addresses: When you use the 4 bits for Host and 28 Bits for network, you will get 14 usable IP addresses among them with one for further growth. So you should put 192.168.3.68/28 in Auto Fa0/0 IP.

For the WAN connection between routers, Property S0/1 IP if you use the /30 bits for Network address you will get 2 usable host address. So you should put 192.168.3.93/30 in Property of S0/1 IP.

For Property of Fa0/0 IP you require minimum 42 usable hosts address, When you use

the 6 bits of host address you will get the 62 usable address can also use for further growth. So you should put 192.168.3.8/26.

For Home Fa0/0 IP you require 111 usable hosts address, when you use the 7 bits for host you will get 128 usable addresses among them recently you can use 111 address for hosts and remaining address for further growth.

QUESTION 244

DRAG DROP

Construct the command sequence to configure an IP address on an Ethernet interface. Note: Not all options are used.

Lab# ip configure terminal	Enter privileged EXEC mode
Lab(config-if)# ip address 192.168.3/24	Enter global configuration mode
Lab(config-if)# ip address 10.8.26.0 255.255.248.0	Enter interface configuration mode
Lab(config)# ip address 172.16.10.1 255.255.255.0	Configure the interface IP address
Lab# interface fa0/0	Enable the interface
Lab(config)# interface fa0/0	
Lab(config-if)# no shutdown	
Lab(config-if)# enable interface	
Lab# enable	
Lab> enable	

Answer:

Lab# ip configure terminal	Enter privileged EXEC mode
Lab(config-if)# ip address 192.168.3/24	Enter global configuration mode
Lab(config-if)# ip address 10.8.26.0 255.255.248.0	Enter interface configuration mode
Lab(config)# ip address 172.16.10.1 255.255.255.0	Configure the interface IP address
Lab# interface fa0/0	Enable the interface
Lab(config)# interface fa0/0	
Lab(config-if)# no shutdown	
Lab(config-if)# enable interface	
Lab# enable	
Lab> enable	

Explanation:

```
Lab> enable
```

```
Lab# ip configure terminal
```

```
Lab# interface fa0/0
```

```
Lab(config-if)# ip address 10.8.26.0 255.255.248.0
```

```
Lab(config-if)# no shutdown
```

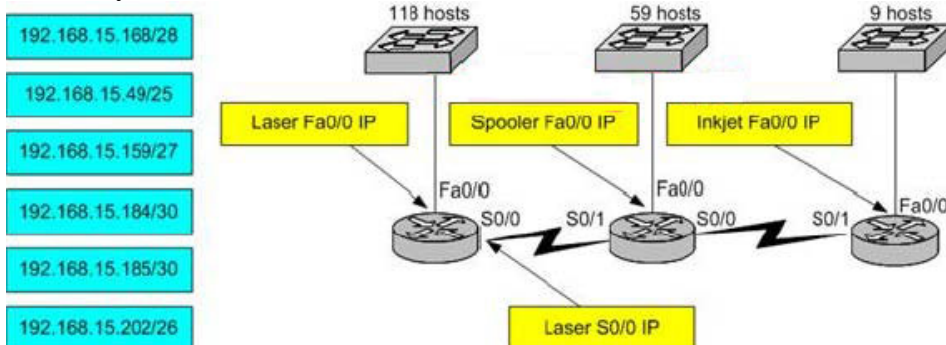
The correct configuration tasks are:

1. Enter Privileged EXEC mode: lab>enable : First you will get the user mode where you can run only certain commands. After user mode you can enter into privileged EXEC mode by typing enable command then you will get the LAB# prompt.
2. Enter Global Configuration Mode : Lab#configure terminal : Enters into the global Configuration mode where you can configure the router.
3. Enter Interface Configuration Mode: Lab(Config)# interface fa0/0 : Enters into interface configuration mode, where you can enter interface configuration commands
4. Configure the interface ip address : Lab(config-if)# ip address 10.8.26.0 255.255.248.0 : When you entered into the interface configuration mode, you can assign the IP address for interface.
5. Enable the interface: Lab(config-if)#no shutdown : It enable the interface if you want to disable the interface use the shutdown command in interface configuration mode.

QUESTION 245

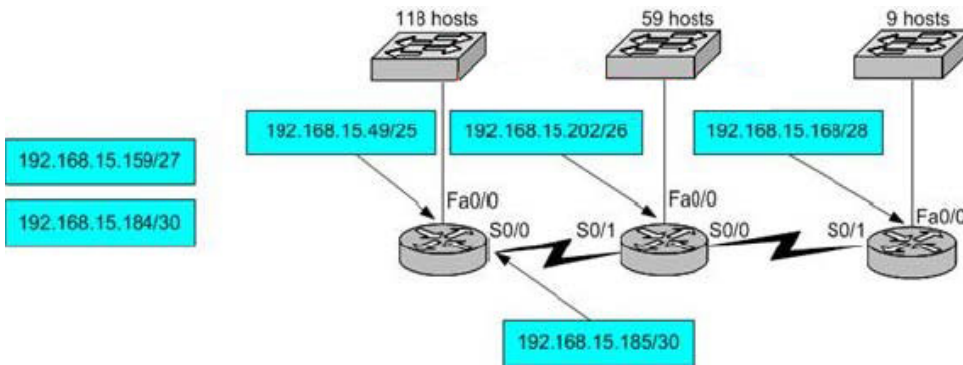
DRAG DROP

Certkiller is redesigning the network that connects its three locations. The administrator gave the network team 192.168.15.0 to use for addressing the entire network. After subnetting the address, the team is ready to assign the addresses. The administrator plans to configure ip subnet-zero and use RIP v2 as the routing protocol. As a member of the networking team, you must address the network and at the same time conserve unused addresses for future growth. With those goals in mind, drag the host addresses on the left to the correct router interface. One of the routers is partially configured. Not all of the host addresses on the left are necessary.



Answer:

640-801



Explanation:

In the first switch 118 hosts are connected. When you use the 7 bits for the host you will get 128 usable hosts so the suitable subnet is 192.168.15.49/25.

The Connection between first Router and Second Router is the WAN, when you use the 30 bits for network you will get 2 usable hosts address so suitable subnet is 192.168.15.185/30.

In the second switch 59 hosts connected. If you use 6 bits for the host portion you will get 62 usable hosts, making the correct subnet 192.168.15.202/26.

In the last switch 9 hosts are connected. If you use 4 bits for hosts you will get 14 usable addresses, now you can use for the 9 hosts and the remaining for further growth. This makes the correct subnet for this network 192.168.15.169/28.

QUESTION 246

DRAG DROP

Match the commands with their corresponding function.

Note: Not all commands are used.

Commands, select from these

telnet	ping 10.0.01
arp -a	tracert
ipconfig /all	ping 127.0.0.1

Functions

Displays PC network configuration
Displays the list of routers on a path to a network destination
Tests VTY configuration
Tests TCP/IP protocol stack
Displays IP to MAC address mappings on a Windows PC

Commands, place here

Place here
Place here
Place here
Place here
Place here

Answer:

Explanation;

Displays PC Network Configuration à ipconfig/all

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

Tests VTY configuration à telnet

Tests TCP/IP stack à ping 127.0.0.1

Displays IP to MAC address mappings on a Windows PC à arp -a

In Windows ipconfig/all commands displays all the network configuration information and tracert command shows the internal and external path of the destination.

You can test whether telnet is enabled on router or not using telnet command.

You can check whether TCP/IP protocol is working or not in your PC by pinging to the 127.0.0.1 IP Address. This is the loopback address of any PC. Finally, the MAC address table of your windows pc can be displayed using the arp -a command.

QUESTION 247

A Class C network address has been subnetted with a /27 mask. Which of the following addresses is a broadcast address for one of the resulting subnets?

- A. 201.57.78.64
- B. 201.57.78.87
- C. 201.57.78.33
- D. 201.57.78.254

- E. 201.57.78.159
- F. 201.57.78.97

Answer: E

Explanation:

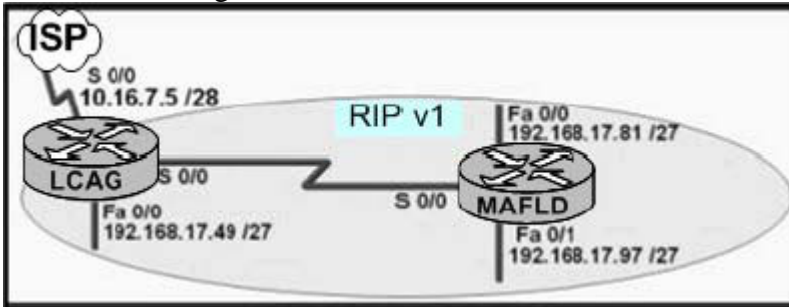
A subnet mask of /27 (255.255.255.224) will have 3 bits used for the network portion and 5 bits for the host portion. This will create $2^3 = 8$ networks with $2^5 = 32$ hosts per network. From this we know that the number of subnets will be a multiple of 32, making the subnets:

- 201.57.78.32
- 201.57.78.64
- 201.57.78.96
- 201.57.78.128
- 201.57.78.160
- 201.57.78.192
- 201.57.78.224
- 201.57.78.256

Since the broadcast address is always the last IP address in the subnet we need to only subtract 1 from each of the IP addresses above to find the broadcast. From the list above we see that 201.57.78.159 is the only available option, as this is the broadcast address for the network previous to the 201.57.78.160 network.

QUESTION 248

Which IP address would be appropriate for the S0/0 interface of the LCAG router shown in the diagram below?



- A. 172.16.0.25 /27
- B. 192.168.17.125 /27
- C. 10.16.7.13 /27
- D. 192.168.17.17 /27
- E. 10.16.7.129 /27
- F. 172.18.7.49 /27

Answer: D

Explanation:

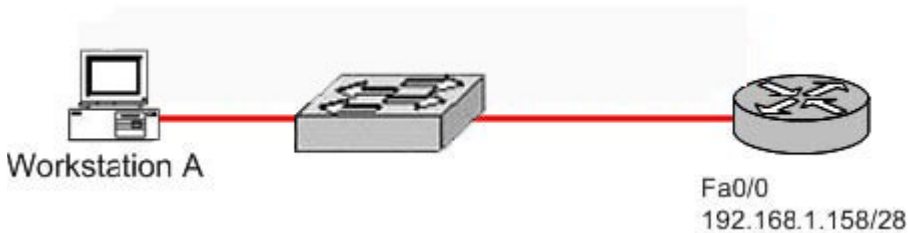
Since RIPv1 is being used, we need to ensure that the subnet mask is /27 like the other

internal networks as RIPv1 does not support VLSM. We will also need to use something in the 192.168.17.X network since all the other networks are 192.168.17.X. This leaves only choices B and D viable at this point.

Since we can see from this that the 192.168.17.125 IP address lies within the 192.168.17.96/27 network, we can not use this network as it is already being used by the network attached to Fa 0/1 of the MAFLD router. This leaves choice D as the only correct option. This can be verified by the fact that the 192.168.17.0-31 IP addresses are not being used anywhere else within the enterprise.

QUESTION 249

Exhibit:



Please study the exhibit carefully. What IP address should be assigned to Workstation A?

Exhibit:

- A. 192.168.1.159/28
- B. 192.168.1.160/28
- C. 192.168.1.145/28
- D. 192.168.1.144/28
- E. 192.168.1.143/28

Answer: C

Explanation:

The available subnets and IP ranges that are available using a /28 (255.255.255.240) subnet mask is shown below:

/28 IP Bit Mask			
Dotted Decimal Mask: 255.255.255.240			
Hexadecimal Mask: FF.FF.FF.F0			
Effective Hosts: 224			
Effective Subnets: 16			
Network Number	Broadcast	Usable IP Range	Usable IPs /subnet
0	15	1 - 14	14
16	31	17 - 30	14
32	47	33-46	14
48	63	49-62	14
64	79	65-78	14
80	95	81-94	14
96	111	97-110	14
112	127	113-126	14
128	143	129-142	14
144	159	145-158	14
160	175	161-174	14
176	191	177-190	14
192	207	193-206	14
208	223	209-222	14
224	239	225-238	14
240	255	241-254	14

Based on this information, we need to choose an IP address within the 145-158 range, since the IP address of the Fa0/0 on the router is 192.168.1.158, leaving only answer choice C as feasible.

Reference: <http://www.more.net/technical/netserv/tcpip/subnet.html#28>

QUESTION 250

Which protocol automates all of the following TCP/IP functions: IP configuration, IP addresses, subnet masks, default gateways, and DNS server information for the hosts on a network?

- A. SMTP
- B. SNMP
- C. DHCP

- D. DARP
- E. CDP

Answer: C

Explanation:

DHCP uses the concept of the client making a request and the server supplying the IP address to the client, plus other information such as the default gateway, subnet mask, DNS IP address, and other information.

Incorrect Answers:

- A. SMTP is the Simple Mail Transfer Protocol, which is used by email servers
- B. SNMP is the Simple Network Management Protocol, which is used for remotely managing network devices.
- D. DARP does not exist.
- E. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches.

QUESTION 251

You are working as an administrator at Certkiller , and you need to set the bandwidth of your routers serial port to 56K. Which of the following commands would you use?

- A. Bandwidth 56000
- B. Bandwidth 56000000
- C. Bandwidth 56
- D. Bandwidth 56kbps

Answer: C

Explanation:

Cisco IOS translates the bandwidth command to kbps, so after issuing the "bandwidth 56" interface command the router will display the bandwidth as 56 kbps.

QUESTION 252

Which of the following commands can you issue if you want to configure a default route to any destination network not found on router CK1 's routing table?

- A. CK1 (config)# ip default-route 0.0.0.0 255.255.255.255 s0
- B. CK1 (config)# ip route 0.0.0.0 255.255.255.255 s0
- C. CK1 (config)# ip default-route 0.0.0.0 s0
- D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 s0
- E. CK1 (config)# ip route any any e0

Answer: D

Explanation:

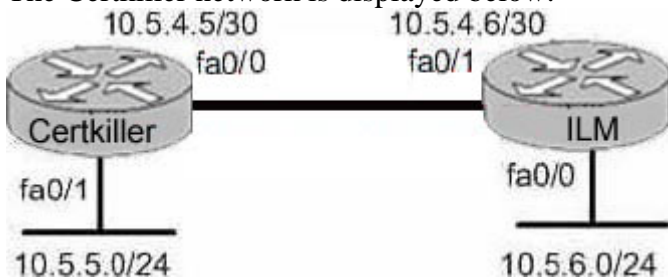
There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, the other way is to specify the IP address of the next hop router. The ip route 0.0.0.0 0.0.0.0 command uses the fact that network 0.0.0.0 is used by Cisco IOS software to represent the default network.

Incorrect Answers:

- A, B. All zero's must used for the subnet mask of a default route, not all 1's.
- C. The default-route command does not exist.
- E. The "any" keyword is used in access lists, not for configuring static routes.

QUESTION 253

The Certkiller network is displayed below:



You are a network administrator and you've just finished configuring the static route 10.5.6.0 /24 on router Certkiller . Which command should you use if you want Certkiller to consider this route the most reliable?

- A. Certkiller (config)# ip route 10.5.6.0 0.0.0.255 fa0/0
- B. Certkiller (config)# ip route 10.5.6.0 0.0.0.255 10.5.4.6
- C. Certkiller (config)# ip route 10.5.6.0 255.255.255.0 fa0/0
- D. Certkiller (config)# ip route 10.5.6.0 255.255.255.0 10.5.4.6
- E. Certkiller (config)# ip route 10.5.4.6 0.0.0.255 10.5.6.0
- F. Certkiller (config)# ip route 10.5.4.6 255.255.255.0 10.5.6.0

Answer: C, D

Explanation:

There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, like the example in C. The other way is to specify the IP address of the next hop router, such as the example in D.

Additional Info:

The following is the command you use to add a static route to a routing table:

```
Ip route [destination_network] [mask] [next-hop_address or exitinterface]
[administrative_distance][permanent]
```

This list describes each command in the string:

ip route The command used to create the static route.

destination network The network you're placing in the routing table.

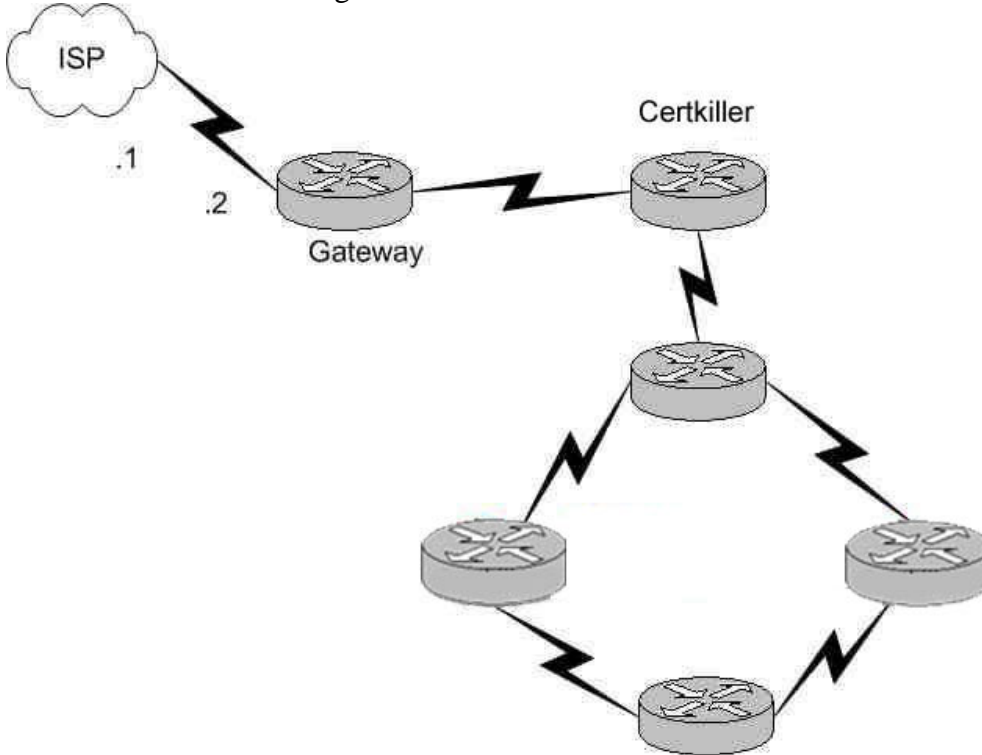
mask The subnet mask being used on the network.

next-hop address The address of the next-hop router that will receive the packet and forward it to the remote network. This is a router interface that's on a directory connected network.

administrative_distance By default, static routes have an administrative distance of 1. You can change the default value by adding an administrative weight at the end of the command.

QUESTION 254

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



The ISP assigned you the class CIP address 207.134.6.0/30 for this Internet connection. A default route to the Internet should be set up. Which of the following are acceptable ways to configure this on the Gateway router? (Select all that apply)

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

Answer: A, E

Explanation:

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

Incorrect Answers:

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

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

QUESTION 255

Which of the following commands would you execute if you wanted to enable others to establish a Telnet session on a Cisco router?

- A. Certkiller 1(config)# line console 0
Certkiller 1(config-if)# enable password Certkiller
- B. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)#enable password Certkiller
- C. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)#enable secret Certkiller
Certkiller 1(config-line)# login
- D. Certkiller 1(config)# line console 0
Certkiller 1(config-line)#enable secret Certkiller
Certkiller 1(config-line)#login
- E. Certkiller 1(config)#line console 0
Certkiller 1(config-line)# password Certkiller
Certkiller 1(config-line)#login
- F. Certkiller 1(config)#line vty 0
Certkiller 1(config-line)#password Certkiller
Certkiller 1(config-line)#login

Answer: F

Explanation:

Telnet sessions use virtual terminal sessions, which are configured under the "line vty" portion of the configuration. There are 5 total vty sessions that can be configured, numbered 0-4. In order to be prompted for a password, one must be configured. Choice F gives the 3 commands needed to allow a single telnet session.

Incorrect Answers:

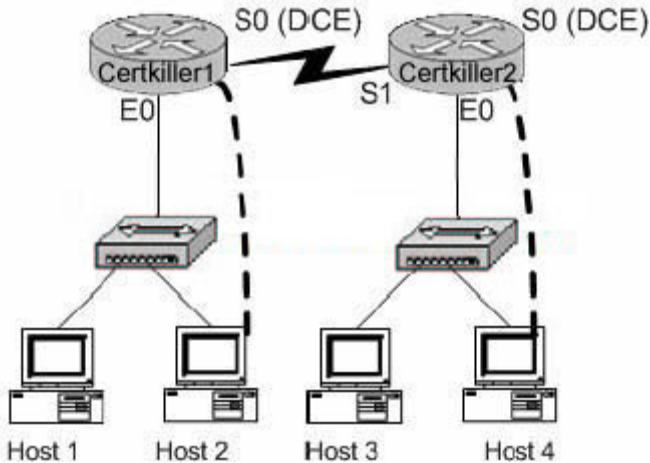
A, B, C, D. The telnet password needs to be configured in addition to the enable password. Without the initial password configured, users that try to telnet to the router will receive a "password required, but none set" message.

D, E. Telnet uses VTY ports, not the console port.

QUESTION 256

SIMULATION

The Certkiller network is displayed below:



You need to perform the following functions on router Certkiller 2:

1. Login using the current enable password: Certkiller
2. Configure the console password to be: test
3. Configure all telnet line passwords to be: Bill

To configure the router click on a host icon that is connected to a router by a serial cable.

Answer:

Explanation:

Click on Host 4:

Router Con0 is now available

Press RETURN to get started ! We press enter

Router Certkiller 2:

Certkiller 2> enable !We enter enable mode

Password: Certkiller !We enter " Certkiller "

Certkiller 2 # config terminal !We enter the terminal

Enter configuration commands, one per line. End with CTRL/Z

Certkiller 2 (config) # line console 0 !Configure the terminal connection

Certkiller 2 (config-line)# login

Certkiller 2 (config-line)# password test !Specify the terminal connection password

Certkiller 2 (config-line)# exit

Certkiller 2 (config) # line vty 0 4 !Configure the telnet connections. Numbered 0,1,2,3,4.

Certkiller 2 (config-line)# login

Certkiller 2 (config-line)# password Bill !specify the password

Certkiller 2 (config-line)# exit !Exit from configuration mode.

Certkiller 2 (config) # exit

Certkiller 2 # copy running-configstartup-config !Saves the running config to NVRAM.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 177

QUESTION 257

DRAG DROP

640-801

Your goal is to restrict all access to your router except for Telnet. To make this happen, move the commands on the left side to corresponding functions on the right side using the diagram below for reference. Note that not every option will be used.

line telnet 0	Enter the mode to configure Telnet access.	Place here
line vty 0	Enable Telnet login.	Place here
line vty 0 4	Set the password to Certkiller	Place here
login	Return to global configuration mode	Place here
line login	Encrypt passwords in show run/start output.	Place here
exit		
service password-encryption		
password Certkiller		
set password Certkiller		

Answer:

line telnet 0	Enter the mode to configure Telnet access.	line vty 0 4
line vty 0	Enable Telnet login.	login
line vty 0 4	Set the password to Certkiller	password Certkiller
line login	Return to global configuration mode	exit
set password Certkiller	Encrypt passwords in show run/start output.	service password-encryption

QUESTION 258

You wish to increase the security of all of the routers within your network. What can be done to secure the virtual terminal interfaces on a router? (Choose two)

- A. Administratively shut down the interface.
- B. Physically secure the interface.
- C. Create an access list and apply it to the virtual terminal interfaces with the access-group command.
- D. Configure a virtual terminal password and login process.
- E. Enter an access list and apply it to the virtual terminal interfaces using the access-class command.

Answer: D, E

Explanation:

There are a total of 5 logical Virtual terminal interfaces in a Cisco router (lines 0-4) and they are used for remote access into the device via telnet. Configuring these interfaces correctly with a login and password information can be used for security, as each user will be prompted for a password in order to obtain access. A second method is to use the "access-class" command. Combined with an access list, this command can be used to specify the hosts or networks that will be allow access to the device.

Incorrect Answers:

- A. Virtual terminal interfaces are logical interfaces that can not be manually shut down.
- B. Virtual terminal lines are logical interfaces that reside within a router, so there is nothing that can be physically secured.
- C. This command is used with access-lists for LAN and WAN interfaces, but is not used for the VTY lines.

QUESTION 259

You wish to limit telnet access into your Cisco router to only a single host. In order to accomplish this, access list 1 has been written to allow host 172.16.1.224 access to the router vty lines. What command would assign this access- list to the Virtual Terminal Lines?

- A. router(config-line)# ip access-group 1 in
- B. router(config-line)# access-class 1 in
- C. router(config-line)# ip access-list 1 in
- D. router(config-line)# access-line 1 in

Answer: B

Explanation:

To restrict incoming and outgoing connections between a particular vty (into a Cisco device) and the addresses in an access list, use the access-class command in line configuration mode.

Example:

The following example defines an access list that permits only the host 172.16.1.224 to connect to the virtual terminal ports on the router, as described in this question:

```
access-list 1 permit 172.16.1.224 0.0.0.0
line 1 5
access-class 1 in
```

QUESTION 260

DRAG DROP

You need to allow only ONE Telnet connection to a router.

Match the commands on the left that will accomplish this task with their function on the right. (Note that not all answer choices will be used).

640-801

line telnet 0	Enter the mode to configure Telnet access.	Place here
line vty 0	Enable Telnet login.	Place here
line vty 0 4	Set the password to Certkiller	Place here
login	Return to global configuration mode	Place here
line login	Encrypt passwords in show run/start output.	Place here
exit		
service password-encryption		
password Certkiller		
set password Certkiller		

Answer:

line telnet 0	Enter the mode to configure Telnet access.	line vty 0 4
line vty 0	Enable Telnet login.	login
line vty 0 4	Set the password to Certkiller	password Certkiller
line login	Return to global configuration mode	exit
set password Certkiller	Encrypt passwords in show run/start output.	service password-encryption

QUESTION 261

Which router console commands are used to manage telnet sessions to other routers? Select three.

- A. Certkiller D# disconnect 3
- B. Certkiller D# exit session 2
- C. Certkiller D# kill connection 1
- D. Certkiller D# show sessions
- E. Certkiller D# show connection all
- F. Certkiller D# resume 4

Answer: A, D, F

Explanation:

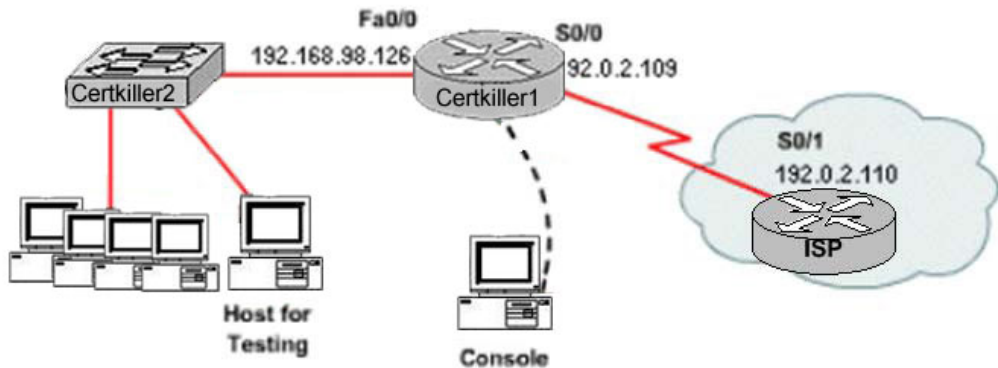
Function	Command Options
Telnet to another device	Use telnet exec command. Just type the host or IP address from exec mode.
Suspend a Telnet session	Press the key sequence Ctrl-Shift-6, then x
Discover currently suspended Telnet session	Use the where exec command Use the show sessions exec command
Resume a suspended Telnet session	Use the resume command, with no parameter, to reconnect to the most recently suspended Telnet. Use the resume x command, where x is the number of the suspended Telnet session based on the output of show sessions. Just press Enter in exec mode to resume to the most recently suspended Telnet session.
Terminate a suspended telnet	Resume connection, and log out using the quit command. Use the disconnect command on the router you Telnetted from.

Reference: Cisco Press CCNA Study Guide, p.392

QUESTION 262

SIMULATION

Network topology exhibit:



You work as a network administrator at Certkiller .com. You are configuring a router to provide Internet access. The ISP has provided Certkiller .com with six public IP addresses of 198.18.158.97, 198.18.158.97, 198.18.158.98, 198.18.158.99, 198.18.158.100, 198.18.158.101, and 198.18.158.102. Certkiller .com has 62 hosts that need access to the Internet simultaneously. The hosts in the Certkiller .com LAN have been assigned private space addresses in the range of 192.168.98.65 - 192.168.98.126.

The following have already been configured on the router:

1. The basic router configuration

2. The appropriate interfaces have been configured for NAT inside an NAT outside.
3. The appropriate static routes have also been configured (since the company will be a stub network, no routing protocol will be required)
4. All passwords have been temporarily set to " Certkiller "

The task is to complete the NAT configuration using all IP addresses assigned by the ISP to provide Internet access to the hosts in the Certkiller 1 LAN. Functionality can be tested by clicking on the host provided for testing.

Configuration information:

Router name: Certkiller 1

inside global addresses: 198.18.158.97 198.18.158.102/29

inside local addresses: 192.168.98.65 - 192.168.98.126/26

Number of inside hosts: 62

password: Certkiller

Simulation.

Answer:

Explanation:

```
Certkiller 1(config)#ip nat inside source list 1 pool nat-pool overload
```

```
Certkiller 1(config)#access-list 1 permit 192.168.98.64 0.0.0.63
```

```
Certkiller 1(config)#ip nat pool nat-pool 198.18.158.97 198.18.158.102 netmask 255.255.255.248
```

```
Certkiller 1(config)#int e0
```

```
Certkiller 1(config-if)#ip nat inside
```

```
Certkiller 1(config-if)#exit
```

```
Certkiller 1(config)#int s0
```

```
Certkiller 1(config-if)#ip nat outside
```

```
Certkiller 1(config-if)#end
```

```
Certkiller 1#copy run start
```

Previously the ip nat pool nat-pool was configured with /26 which is 255.255.255.192 which is incorrect because we are configuring inside global and it's /29 which is 255.255.255.248.

Note:

Variation #1:

Router name: Certkiller 1

inside global addresses: 198.18.32.217 192.18.32.222/29

inside local addresses: 192.168.57.33 - 192.168.57.62/27

Number of inside hosts: 30

```
Certkiller 1>enable
```

```
Certkiller 1# configure terminal
```

```
Certkiller 1(config)# ip nat pool Certkiller 198.18.32.217 198.18.32.222 netmask 255.255.255.248
```

```
Certkiller 1(config)# ip nat inside source list 1 pool
```

```
Certkiller overload
```

```
Certkiller 1(config)# ip access-list 1 permit
```

```
192.168.57.33 0.0.0.31
```

Variation #2:

Router name: Certkiller 1

inside global addresses: 198.18.169.121 198.18.169.126/29

inside local addresses: 192.168.2.33 - 192.168.2.62/27

Number of inside hosts: 30

Certkiller 1>enable

Certkiller 1# configure terminal

Certkiller 1(config)# ip nat pool Certkiller 198.18.169.121

198.18.169.126 netmask 255.255.255.248

Certkiller 1(config)# ip nat inside source list 1 pool

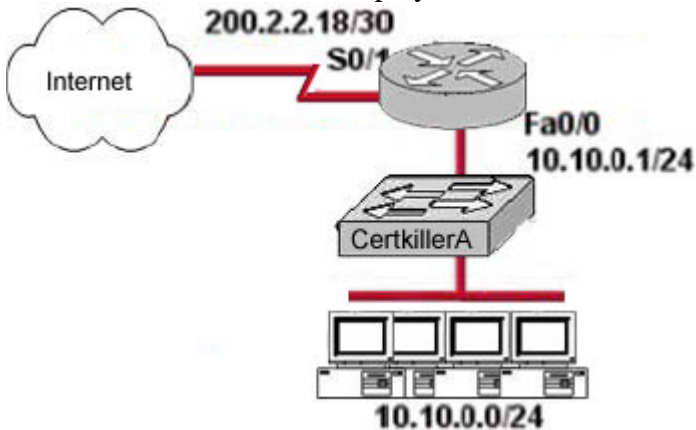
Certkiller overload

Certkiller 1(config)# ip access-list 1 permit

192.168.2.33 0.0.0.31

QUESTION 263

The Certkiller network is displayed below:



Certkiller .com wants to use NAT in network displayed in the exhibit.

Which commands will apply the NAT configuration to the proper interfaces? Select two.

- A. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat inside
- B. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat outside
- C. Certkiller 1(config)# interface fastethernet0/0
Certkiller 1(config-if)# ip nat inside
- D. Certkiller 1(config)# interface fastethernet0/0
Certkiller 1(config-if)# ip nat outside
- E. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat outside source pool 200.2.2.18 255.255.255.252
- F. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat inside source 10.10.0.0 255.255.255.0

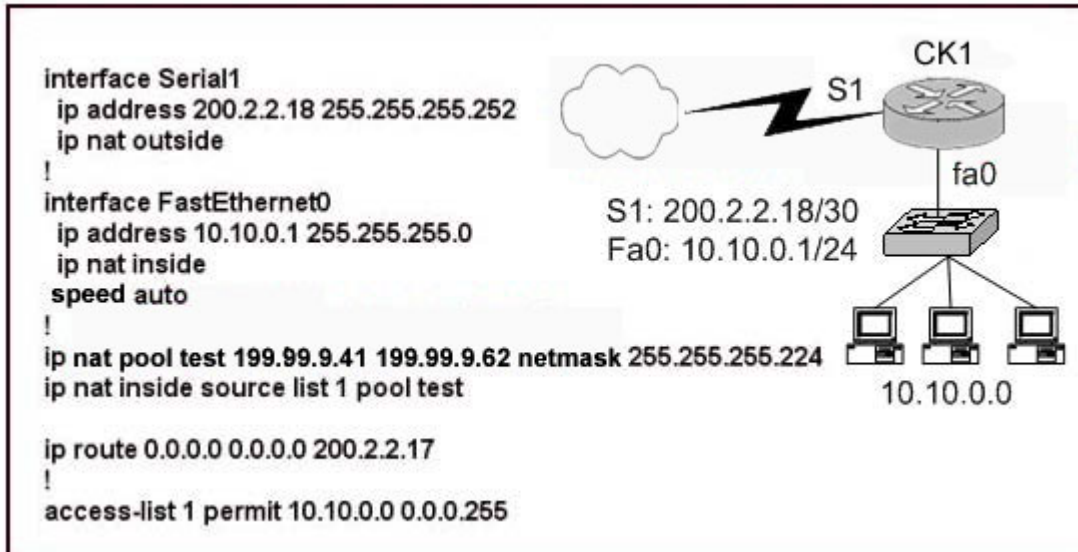
Answer: B, C

Explanation:

After creating the static NAT entries, the router needs to know which interfaces are "inside" and which are "outside." The ip nat inside and ip nat outside interface subcommands identify each interface appropriately.

Reference: Cisco CCNA ICND, p.271

QUESTION 264



Refer to the topology and partial configuration output shown in the graphic. The ip subnet-zero configuration command is also in effect. After the router performs network address translation, which address is a valid "inside global address"?

- A. 10.10.0.1
- B. 10.10.0.17
- C. 200.2.2.17
- D. 200.2.2.18
- E. 199.99.9.33
- F. 199.99.9.47

Answer: F

Explanation:

Regarding NAT operation, Cisco defines these terms as follows:

1. Inside local address - The IP address assigned to a host on the inside network. This is the address configured as a parameter of the computer's OS or received via dynamic address allocation protocols such as DHCP. The address is likely not a legitimate IP address assigned by the Network Information Center (NIC) or service provider.
2. Inside global address - A legitimate IP address assigned by the NIC or service provider that represents one or more inside local IP addresses to the outside world. In this case, the NAT pool is used to distribute the Inside Global IP addresses.
3. Outside local address - The IP address of an outside host as it appears to the inside network. Not necessarily a legitimate address, it is allocated from an address space

routable on the inside.

4. Outside global address - The IP address assigned to a host on the outside network by the host's owner. The address is allocated from a globally routable address or network space.

Reference:

http://www.cisco.com/en/US/tech/CK648/CK361/technologies_tech_note09186a0080094837.shtml

QUESTION 265

Which of the following options lists the steps in PPP session establishment in the correct order?

- A. network layer protocol phase, optional authentication phase, link establishment phase
- B. link establishment phase, network layer protocol phase, optional authentication phase
- C. optional authentication phase, network layer protocol phase, link establishment phase
- D. link establishment phase, optional authentication phase, network layer protocol phase
- E. network layer protocol phase, link establishment phase, optional authentication phase
- F. optional authentication phase, link establishment phase, network layer protocol phase

Answer: D

Explanation:

According to the related RFC on CHAP: In order to establish communications over a point-to-point link, each end of the PPP link must first send LCP packets to configure the data link during Link Establishment phase. After the link has been established, PPP provides for an optional Authentication phase before proceeding to the Network-Layer Protocol phase.

Reference: <http://www.ietf.org/rfc/rfc1994.txt>

QUESTION 266

Which of the following steps are necessary in order to add a new VLAN to a switched network? (Select all that apply.)

- A. Create the VLAN.
- B. Name the VLAN.
- C. Configure an IP address for the VLAN.
- D. Add the desired ports to the new VLAN.
- E. Add the VLAN to the VTP domain.

Answer: A B D

Explanation:

The following are the basic requirements for creating VLANs:

- * Creating the VLAN numbers and names
- * Configuring each port's assigned VLAN

Incorrect Answers:

- C. This is an optional feature, but not a necessary step for creating a VLAN.

E. Adding any VLAN to a Virtual Trunking Protocol (VTP) domain may be desired in a complex multi-switch and multi-VLAN network. However, it is not a necessary step for creating stand-alone VLANs on a single switch.

QUESTION 267

You are bringing up a new Cisco Catalyst switch, and wish to connect it via a trunk to another switch from a different vendor, which uses the IEEE standard for the trunking method. When setting the encapsulation type on the trunk, what should you configure on the Cisco switch?

- A. Switch(config)# switchport trunk encapsulation isl
- B. Switch(config)# switchport trunk encapsulation ietf
- C. Switch(config-if)# switchport trunk encapsulation isl
- D. Switch(config-if)# switchport trunk encapsulation ietf
- E. Switch(config-if)# switchport trunk encapsulation dot1q

Answer: E

Explanation:

The only real choices for setting up switching trunks are ISL and 802.1Q. ISL is Cisco proprietary, while 802.1Q uses the IEEE defined standard for trunking between switches. To configure the 802.1Q standard, the keyword "dot1q" is used in Cisco switches.

Incorrect Answers:

- A, B, D. These are not valid options in a Cisco switch.
 - C. ISL is a Cisco proprietary method for setting up trunks, and will only work between Cisco switches.
-

QUESTION 268

A new switch is being installed and you have been assigned the task of connecting it to an existing switch. In doing this, you want to set up the VLAN Trunking Protocol so that VLAN information can be passed between the switches. Which of the following must you do to accomplish this? (Choose all that apply).

- A. You must set each end of the trunk line to IEEE 802.1e encapsulation.
- B. You must set the same VTP management domain name on both switches.
- C. You must set all ports on the two switches as access ports.
- D. You must configure one of the switches as a VTP server.
- E. You must use a rollover cable to connect the two switches.

Answer: B, D

Explanation:

The following describes what is needed in order to correctly set up VTP:

VTP operates in one of three modes:

- Server mode
- Client mode
- Transparent mode

For VTP to exchange information, some switches act as servers, and some act as clients. VTP servers can create, modify, and delete VLANs and other configuration parameters for the entire VTP domain; this information, in turn, is propagated to the VTP clients and servers in that same domain. VTP servers save VLAN configurations in the Catalyst NVRAM, whereas in clients, the VLAN configuration is not stored at all. A VTP client cannot create, change, or delete VLANs, nor can it save VLAN configurations in nonvolatile memory.

Incorrect Answers:

- A. The encapsulation can be either ISL or 802.1Q, and need to match at each end of the trunk.
- C. Ports must only be assigned to VLANs. Once that is done and the trunk is up and running, the VLAN information will be passed between the switches.
- E. A regular CAT5 cable is used to connect the switches, assuming 10/100 Ethernet is used.

QUESTION 269

A new switch is installed into an existing LAN and a new VTP trunk is set up with an existing switch. Which VLANs will be allowed on this new trunk?

- A. All defined VLANs are allowed on the trunk by default.
- B. Each VLAN, or VLAN range, that is specified with the switchport mode command.
- C. Each VLAN, or VLAN range, that is specified with the vtp domain command.
- D. Each VLAN, or VLAN range, that is specified with the vlan database command.

Answer: A

Explanation:

The question does not state that there are multiple VTP Domains meaning that all defined VLANs are allowed on the trunk until a vtp domain command is issued.

QUESTION 270

Which of the following are true statements regarding the use of VLANs to segment a network? (Select three.)

- A. They increase the size of collision domains
- B. They allow logical grouping of users by function.
- C. They can enhance network security.
- D. They increase the size of the broadcast domain while decreasing the number of collision domains.
- E. They increase the number of broadcast domains while decreasing the size of the broadcast domains.
- F. They simplify switch administration.

Answer: B, C, E

Explanation:

VLANs are used to segment a LAN into multiple, smaller LANs. This can be used to enhance security as local traffic from one VLAN will not be passed to users in other VLANs.

Incorrect Answers:

- A. VLANs are used to decrease the size of a collision domain, not increase it.
- D. The opposite is true.
- F. The default operation of a switch is to allow all traffic and to enable all ports in VLAN 1. The use of VLANs will increase the complexity of the switch environment, making for more difficult administration.

QUESTION 271

What is a characteristic of ISL and 802.1q frame tagging in a switched LAN environment?

- A. They are used to find the best path through a network.
- B. They allow the exchange of filtering tables.
- C. They specify different implementations of the Spanning-Tree Protocol.
- D. They allow the exchange of routing tables
- E. They provide inter-switch VLAN communication.

Answer: E

Explanation: A trunk link is the other type of Layer 2 port supported on Cisco switches. When a trunk port is configured, it begins marking frames as they exit the port to indicate which VLAN each frame is associated with. The trunk port can also read the markings, called tags, as they enter the trunk port. This enables the switch to send a frame only to the ports for the given VLAN associated with the incoming frame.

The main purpose of trunking is to carry traffic between switches and maintain the VLAN information. Unlike an access link, the trunk link does not belong to a single VLAN but instead can carry traffic from several VLANs over a point-to-point link between two devices that understand the protocol.

Two forms of trunking are used for Cisco switches on Ethernet networks:

An IEEE industry standard called IEEE 802.1Q. This is a frame-tagging mechanism that adds a VLAN identifier to the frame by inserting a tag at Layer 2.

Another form of trunking on Cisco switches is called Inter-Switch Link (ISL), which is a Cisco proprietary trunking mechanism. ISL uses a frame encapsulation method that adds a header to identify the VLAN.

Incorrect Answers:

- A, D. These are the functions of routers, not switches.
- B. Filtering tables can be used on certain Catalyst switches via the use of VLAN access

control lists, but this information is never shared between switches.

C. A separate STP instance is created for each VLAN, but the STP implementation remains the same.

QUESTION 272

A new VLAN needs to be created for an existing network. Which of the following are the minimum tasks that must be accomplished in order to create the new VLAN? (Select three answer choices)

- A. The VLAN must be created
- B. The VLAN must be named
- C. An IP address and subnet mask must be configured for the new VLAN
- D. The desired ports must be added to the new VLAN
- E. The VLAN must be added to the existing VTP Domain

Answer: A, B, D

Explanation:

The best answers are A, B, D. In order to create a simple VLAN, you must create the VLAN, name it, and then assign ports to it. These are the minimum requirements for a functioning VLAN.

Incorrect Answers:

C. Although an IP address is often configured, it is not required in order to create a functioning VLAN.

E. By default, the VLAN will already be added to the VTP domain. Even if the new VLAN was not part of the VTP domain, it would still work as a new VLAN on the switch.

QUESTION 273

What are some of the characteristics of a typical VLAN arrangement? (Select all that apply)

- A. VLANs logically divide a switch into multiple, independent switches at Layer 2.
- B. Trunk links can carry traffic for multiple VLANs.
- C. VLAN implementation significantly increases traffic due to added trunking information.
- D. A VLAN can span multiple switches.
- E. VLANs typically increase the number of switches needed
- F. VLANs typically decrease the number of switches needed

Answer: A, B, D

Explanation:

VLANs give you the power of making virtual LAN networks to subdivide collision domains into smaller units of functionality, without being limited by physical location.

A is correct because that is the exact function of a VLAN. B is correct because trunk

links are used to carry traffic for multiple VLANs. D is correct because a VLAN can and often does span across multiple switches. VTP makes this possible.

Incorrect Answers:

C. Although trunking information does indeed add some level of overhead, the overall traffic overhead is greatly reduced through the use of VLANs.

E, F. The number of total switches needed in a network is the result of the number of devices on the entire LAN that need to be connected. Whether VLANs are used or not will have little, if any, impact on the total number of switches needed in a LAN.

QUESTION 274

Which one of the following protocols allows the information about the configuration of a new VLAN to be distributed across entire switched network?

- A. STP
- B. VTP
- C. EIGRP
- D. SNMP
- E. CDP
- F. None of the above

Answer: B

Explanation:

Sybex CCNA Study Guide 4th Edition states on page 359:

"The basic goals of VLAN Trunking Protocol (VTP) are to manage all configured VLANs across a switched internetwork and to maintain consistency throughout that network. VTP allows an administrator to add, delete, and rename VLANs-information that is then propagated to all other switches in the VTP domain."

Incorrect Answers:

- A. STP is the Spanning Tree Protocol, used to prevent bridging loops in a LAN.
- C. EIGRP is a routing protocol used to exchange routing information, not VLAN information.
- D. SNMP is the Simple Network Management Protocol, used to provide information to remote network management stations.
- E. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches.

QUESTION 275

Which encapsulation types are configurable on a Cisco switch for a trunk? (Select two answer choices)

- A. VTP
- B. ISL
- C. CDP
- D. 802.1Q
- E. 802.1p

- F. LLC
- G. IETF

Answer: B, D

Explanation:

Trunks are used to carry traffic belonging to multiple VLANs between devices over the same link. A device can determine which VLAN the traffic belongs to by its VLAN identifier. The VLAN identifier is a tag that is encapsulated with the data. ISL and 802.1q are two types of encapsulations used to carry data from multiple VLANs over trunk links. ISL is a Cisco proprietary protocol for interconnecting multiple switches and maintaining VLAN information as traffic goes between switches. ISL provides VLAN trunking capabilities while maintaining full wire speed performance on Ethernet links in full-duplex or half-duplex mode. ISL operates in a point-to-point environment and will support up to 1000 VLANs. In ISL, the original frame is encapsulated and an additional header is added before the frame is carried over a trunk link. At the receiving end, the header is removed and the frame is forwarded to the assigned VLAN. ISL uses Per VLAN Spanning Tree (PVST) which runs one instance of Spanning Tree Protocol (STP) per VLAN. PVST allows for optimal root switch placement for each VLAN and supports load balancing of VLANs over multiple trunk links.

802.1Q is the IEEE standard for tagging frames on a trunk and supports up to 4096 VLANs. In 802.1Q, the trunking device inserts a four-byte tag into the original frame and re-computes the Frame Check Sequence (FCS) before sending the frame over the trunk link. At the receiving end, the tag is removed and the frame is forwarded to the assigned VLAN. 802.1Q does not tag frames on the native VLAN. It tags all other frames transmitted and received on the trunk. While configuring a 802.1 trunk, you must make sure that the same native VLAN is configured on both sides of the trunk. IEEE 802.1Q defines a single instance of spanning tree running on the native VLAN for all the VLANs in the network which is called Mono Spanning Tree (MST). This lacks the flexibility and load balancing capability of PVST available with ISL. However, PVST+ offers the capability to retain multiple Spanning Tree topologies with 802.1Q trunking.

QUESTION 276

You need to create a new VLAN on your Catalyst switch. This VLAN is to be named Certkiller . Which of the following need to be completed for the creation of this new VLAN? (Select all that apply)

- A. The Certkiller VLAN must be created.
- B. The desired ports must be added to the new Certkiller VLAN.
- C. The Certkiller VLAN must be added to all of the domains.
- D. The Certkiller VLAN must be named.
- E. An IP address must be configured for the Certkiller VLAN.
- F. None of the above. VLAN creations are automatic.

Answer: A, B, D

Explanation:

Creating a VLAN is done in 3 steps:

1. Create the VLAN
2. Name the VLAN
3. Assign ports to the VLAN

From there, other features and functionality can be configured, but these are the only steps that are required for the addition of a VLAN.

Incorrect Answers:

C. The VLAN needs only to be added to a single switch, where it can act as a stand-alone VLAN, or it can be transferred to other switches in the network through the use of the VTP protocol.

E. VLANs operate at layer 2, and although many are configured with a layer 3 IP address, it is not absolutely necessary to do this.

QUESTION 277

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

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

Answer: B, C, D

Explanation:

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

The table below is a summary of the configuration modes.

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

QUESTION 278

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

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

Answer: B, D

Explanation:

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

Incorrect Answers:

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

- C. LLC is the Logical Link Control, which is a sub-layer of the data link layer.
- E. CDP is the Cisco Discovery Protocol, which is used by Cisco devices to discover information on neighboring Cisco devices.
- F. PAP is the Password Authentication Protocol, which is used as an authentication mechanism on PPP links.

QUESTION 279

Which VTP mode should a Cisco switch be set to if this switch is to add or delete VLANs to a management domain?

- A. Transparent
- B. Server
- C. Auto
- D. Client
- E. User

Answer: B

Explanation:

VTP Modes:

If you intend to make a switch part of a VTP management domain, each switch must be configured in one of three possible VTP modes. The VTP mode assigned to a switch will determine how the switch interacts with other VTP switches in the management domain. The three VTP modes that can be assigned to a Cisco switch include server mode, client mode, and transparent mode. Each of these roles is outlined below:

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

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

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

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

cases where you need a switch to act in a relatively standalone manner, or do not want it to propagate information about its configured VLANs, use Transparent Mode.

Incorrect Answers:

A. A switch in VTP Transparent Mode will pass VTP updates received by switches in Server Mode to other switches in the VTP management domain, but will not actually process the contents of these messages.

C, E. These are not valid VTP modes.

D. Client mode merely accepts changes made by the switch that is connected and in SERVER mode.

QUESTION 280

What must an administrator do in order to successfully configure a VLAN trunk between two switches? (Select two answer choices)

- A. Set each end of the trunk line to IEEE 802.1Q encapsulation.
- B. Set the same VTP management domain name on both switches.
- C. Set all ports on the two switched as access ports.
- D. Configure one of the two switches as a VTP server.
- E. Connect the two switches using a rollover cable.
- F. Use a router to forward VTP traffic between the VLANs.

Answer: B, D

Explanation:

All servers that need to share VLAN information must use the same domain name, and a switch can only be in one domain at a time. This means that a switch can only share VTP domain information with other switches if they're configured into the same VTP domain. You can use a VTP domain if you have more than one switch connected in a network, but if you've got all your switches in only one VLAN, you don't need to use VTP. VTP information is sent between switches via a trunk port.

Switches advertise VTP management domain information, as well as a configuration revision number and all known VLANs with any specific parameters. There's also something called VTP transparent mode, in it, you can configure switches to forward VTP information through trunk ports, but not to accept information updates or update their VTP databases. At least one of the switches will need to be configured as the VTP server in order to pass the VLAN info.

Incorrect Answers:

A. Although this is a valid option, it is not a requirement since using ISL as the encapsulation type is also a valid option.

E. A rollover cable is not used between switches for any of the port types.

F. Routers will be required for sending traffic from one VLAN to the other, but not to forward the actual VTP traffic.

QUESTION 281

Which of the following can be an expected outcome of a VLAN? (Select all that apply)

- A. VLANs logically divide a switch into multiple, independent switches at Layer 2.
- B. Trunk links can carry traffic for multiple VLANs.
- C. VLAN implementation significantly increases traffic due to added trunking information.
- D. VLANs can span multiple switches.
- E. VLANs typically decrease the number of switches needed

Answer: A, B, D

Explanation:

VLANs give you the power of making virtual LAN networks to subdivide collision domains into smaller units of functionality, without being limited by physical location. A is correct because that is the exact function of a VLAN. B is correct because trunk links are used to carry traffic for multiple VLANs. D is correct because a VLAN can and often does span across multiple switches. VTP makes this possible.

Incorrect Answers:

- C. Although trunking information does indeed add some level of overhead, the overall traffic overhead is greatly reduced through the use of VLANs.
- E, F. The number of total switches needed in a network is the result of the number of devices on the entire LAN that need to be connected. Whether VLANs are used or not will have little, if any, impact on the total number of switches needed in a LAN.

QUESTION 282

How could a corporation benefit from using VLANs on their network? (Select three answer choices.)

- A. VLANs allow access to network services based on department, not physical location.
- B. VLANs utilize packet filtering to enhance network security.
- C. VLANs provide a low-latency, high bandwidth internetworking alternative.
- D. VLANs provide a method of communication between IP addresses in large networks.
- E. VLANs establish segmented broadcast domains in switched networks.
- F. VLANs can greatly simplify adding, moving, or changing hosts on the network.

Answer: A, E, F

Explanation:

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

Incorrect Answers:

- B, D. These would be router functions at layer 3. Switches and VLANs operate at layer 2 of the OSI model.

C. The use of VLANs may actually increase the latency in some cases, as traffic from one VLAN to the other will need to be routed.

QUESTION 283

Which commands, when used together, would create an 802.1Q link? (Select two answer choices)

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

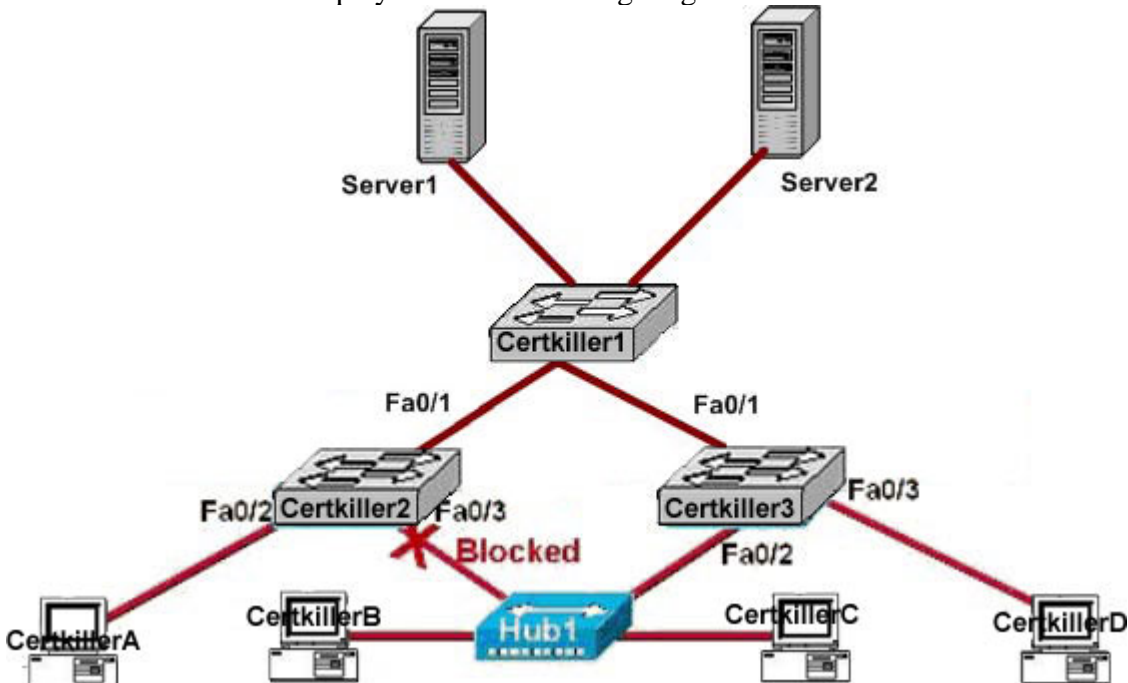
Answer: C, D

Explanation:

Creating this trunk link is a two step process. First you have to set the switchport mode to trunk, and then you configure the encapsulation. The giveaway on this question is the fact that to create a trunk on an interface, you have to be in interface configuration mode. So switchport mode trunk sets the trunk, and switchport trunk encapsulation dot1q sets the encapsulation.

QUESTION 284

The Certkiller LAN is displayed in the following diagram:



Assuming all hosts and servers are in the same VLAN, which statement is correct about the exhibit?

- A. Switch Certkiller 2 is the root bridge.
- B. Spanning Tree Protocol is not running.
- C. Host Certkiller D and Server1 are in the same network.
- D. No collisions can occur in traffic between Host Certkiller B and host Certkiller C.

Answer: C

Explanation:

Since there are no routers in the network diagram, and it was stated that all hosts and servers are in the same VLAN, it can be assumed that these two devices are in the same IP network.

Incorrect Answers:

- A. Certkiller 2 can not be the root bridge, since it contains a blocking port. On the root bridge, all ports are non-blocking.
- B. STP has to be enabled, otherwise one of the ports would not be in blocking mode.
- D. Since these devices are separated only by a layer 1 hub device, they will both be in the same collision domain.

QUESTION 285

Which of the following are benefits of VLANs? (Choose three)

- A. They increase the size of collision domains.
- B. They allow logical grouping of users by function.
- C. They can enhance network security,
- D. The increase the size of broadcast domains while decreasing the number of the broadcast domains.
- E. The increase the number of broadcast domains while decreasing the size of the broadcast domains.
- F. They simplify switch administration.

Answer: B, C, E

Explanation:

There are many motivations for using VLANs, including these:

1. To group users by department, or by groups that work together, instead of by physical location. (B)
2. To reduce overhead by limiting the size of each broadcast domain (E)
3. To enforce better security by keeping sensitive devices on a separate VLAN (C)
4. To separate specialized traffic from mainstream traffic - for example, putting IP telephones on a separate VLAN from user PCs.

QUESTION 286

When a new trunk link is configured on an IOS based switch, which VLANs are allowed over the link?

- A. By default, all defined VLANs are allowed on the trunk.
- B. Each single VLAN, or VLAN range, must be specified with the switchport mode command.
- C. Each single VLAN, or VLAN range, must be specified with the vtp domain command.
- D. Each single VLAN, or VLAN range, must be specified with the vlan database command.

Answer: A

Explanation:

By default, all VLANs are allowed over a trunk at all times. This is true for every Cisco IOS switch that is capable of VLAN trunking.

QUESTION 287

An administrator is configuring a Catalyst switch with VLAN information that must be automatically distributed to other Catalyst switches in the network. What conditions must be met in order for the VLANs configured on this switch to be automatically configured on the other switches? (Choose three)

- A. The switch that will share its VLAN configuration must be in VTP server mode.
- B. The switches must be in the same VTP domain.
- C. The switch that will share the VLAN information must be configured as the root bridge.
- D. The switches must be connected over VLAN trunks.
- E. The switches must be configured to use the same STP version.
- F. The switches must have VTP pruning activated.

Answer: A, B, D

Explanation:

Choice A is correct because for a VTP server, you can create, delete, or modify a VLAN in the local VLAN database. After you make this change, the VLAN database changes are propagated out to all other switches in server or client mode in the VTP domain. A server will also accept changes to the VLAN database from other switches in the domain.

Choice B is correct because VTP messages are exchanged between switches within a common VTP domain.

Choice D is correct because VTP sends messages between trunked switches to maintain VLANs on these switches in order to properly trunk.

QUESTION 288

```
Certkiller1# show vtp status
VTP Version                :2
Configuration Revision     :0
Maximum VLANs supported locally :64
Number of existing VLANs   :5
VTP Operating Mode:       :Transparent
VTP Domain Name           :Certkiller1
VTP Printing Mode         :Disabled
VTP V2 Mode               :Disabled
VTP Traps Generation      :Disabled
```

Refer to graphic and examine the output from the Certkiller 1 switch. What VTP functions will this switch perform?

- A. Create, change, and delete VLANs for the VTP domain
- B. Learn and save VTP configuration information in the running configuration only
- C. Forward VTP configuration information
- D. Backup the VTP database for the closest VTP server
- E. Prevent VTP information from reaching workgroup switches

Answer: C

Explanation:

In this example, Certkiller 1 is configured to operate in transparent mode. The various VTP modes are defined as follows:

Server-In VTP server mode, you can create, modify, and delete VLANs and specify other configuration parameters (such as VTP version and VTP pruning) for the entire VTP domain. VTP servers advertise their VLAN configuration to other network devices in the same VTP domain and synchronize their VLAN configuration with other network devices based on advertisements received over trunk links. VTP server is the default mode.

Client-VTP clients behave the same way as VTP servers, but you cannot create, change, or delete VLANs on a VTP client.

Transparent-VTP transparent network devices do not participate in VTP. A VTP transparent network device does not advertise its VLAN configuration and does not synchronize its VLAN configuration based on received advertisements. However, in VTP version 2, transparent network devices do forward VTP advertisements that they receive out their trunking LAN ports.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps708/products_configuration_guide_chapter09186a0080160

QUESTION 289

A group of hosts are physically connected to the same switch. The hosts are used by

employees of different departments and therefore do not need to directly exchange data on a regular basis.

Which technology can a network administrator deploy to reduce unnecessary broadcast traffic between these hosts?

- A. Micro segmentation
- B. Transparent switching
- C. peer-to-peer networking
- D. port security
- E. store-and-forward switching
- F. virtual local area networks

Answer: F

Explanation: A VLAN is a logical grouping of network users and resources connected to administratively defined ports on a switch. When you create VLANs, you are given the ability to create smaller broadcast domains within a layer 2 switched internetwork by assigning different ports on the switch to different subnetworks. A VLAN is treated like its own subnet or broadcast domain, which means that frames broadcasted onto the network are only switched between the ports logically grouped within the same VLAN.

QUESTION 290

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

- A. The switch will ignore VTP summary advertisements
- B. The switch will forward VTP summary advertisements
- C. The switch will process VTP summary advertisements
- D. The switch will originate VTP summary advertisements
- E. The switch will create, modify and delete VLANs for the entire VTP domain

Answer: B, C

Explanation :

Server mode-VTP servers have full control over VLAN creation and modification for their domains. All VTP information is advertised to other switches in the domain, while all received

VTP information is synchronized with the other switches. By default, a switch is in VTP server mode. Note that each VTP domain must have at least one server so that VLANs can be created, modified, or deleted, and VLAN information can be propagated.

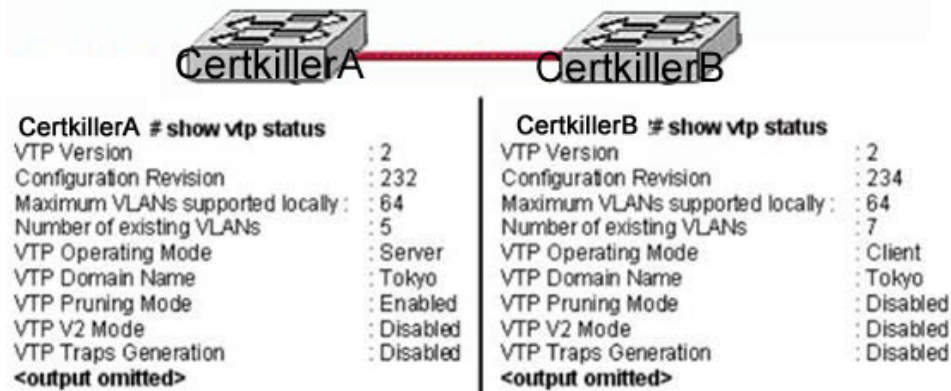
Client mode-VTP clients do not allow the administrator to create, change, or delete any VLANs. Instead, they listen to VTP advertisements from other switches and modify their VLAN configurations accordingly. In effect, this is a passive listening mode. Received VTP information is forwarded out trunk links to neighboring switches in the domain, so the switch also acts as a VTP relay.

Transparent mode-VTP transparent switches do not participate in VTP. While in transparent

mode, a switch does not advertise its own VLAN configuration, and a switch does not synchronize its VLAN database with received advertisements. In VTP version 1, a transparent-mode switch does not even relay VTP information it receives to other switches, unless its VTP domain names and VTP version numbers match those of the other switches. In VTP version 2, transparent switches do forward received VTP advertisements out of their trunk ports, acting as VTP relays. This occurs regardless of the VTP domain name setting.

QUESTION 291

Exhibit:



Study the Exhibit carefully. Switch Certkiller A sends a VTP advertisement and Switch Certkiller B receives it.

Which statement accurately describes how Switch Certkiller B will respond?

- A. Switch Certkiller B will add 2 VLANs to its VLAN database and change the configuration revision number to 232
- B. Switch Certkiller B will remove 2 VLANs from its VLAN database and change the configuration revision number to 232
- C. Switch Certkiller B will enable VTP pruning, add two VLANs, and increment the configuration revision number to 233
- D. Switch Certkiller B will ignore the VTP advertisement

Answer: D

Explanation:

Switches advertise VTP management domain information, as well as a configuration revision number and all known VLANs with any specific parameters. There's also something called VTP transparent mode; in it, you can configure switches to forward VTP information through trunk ports, but not to accept information updates or update their VTP databases. If you find yourself having problems with users adding switches to your VTP domain, you can include passwords, but don't forget that every switch must be set up with the same password-this can get ugly.

Switches detect the additional VLANs within a VTP advertisement and then prepare to receive information on their trunk ports with the newly defined VLAN in tow. This information would be VLAN ID, 802.10 SAID fields, or LANE information. Updates are

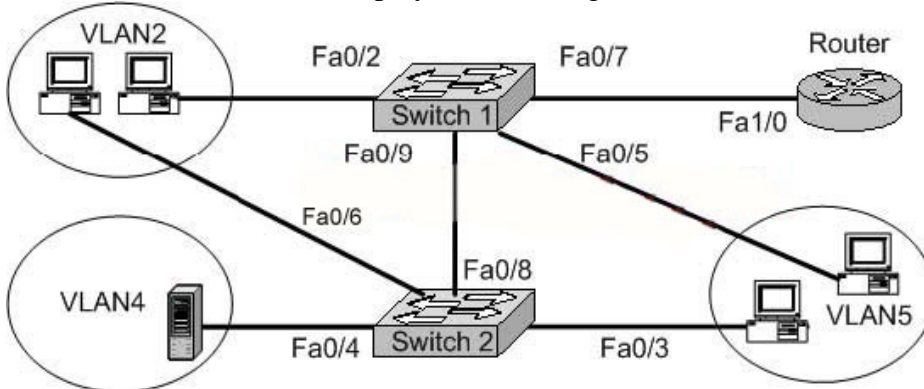
sent out as revision numbers that are the notification plus 1. Any time a switch sees a higher revision number, it knows the information that it's receiving is more current, and it will overwrite the current database with that new information.

The Client synchronizes with the vtp server on every 5 minutes, if revision number is updated then client copy the configuration.

The client has a revision number of 234, but would receive an update number of 232 from the VTP server.

QUESTION 292

The Certkiller network is displayed in the diagram below:



A network associate is trying to understand the operation of the Certkiller network by studying the network in the exhibit. The associate knows that the server in VLAN 4 provides the necessary resources to support the user hosts in the other VLANs. The associate needs to determine which interfaces are access ports. Which interfaces are access ports? (Choose three.)

- A. Switch1 - Fa0/2
- B. Switch1 - Fa0/9
- C. Switch2 - Fa0/3
- D. Switch2 - Fa0/4
- E. Switch2 - Fa0/8
- F. Router - Fa1/0

Answer: A, C, D

Explanation:

Access links: This type of link is only part of one VLAN, and it's referred to as the native VLAN of the port. Any device attached to an access link is unaware of a VLAN membership the device just assumes it's part of a broadcast domain, but it does not understand the physical network.

Trunk links: Trunks can carry multiple VLANs and originally gained their name after the telephone system trunks that carry multiple telephone conversations.

The Host which connected to switch port can be access because no need to carry the other VLAN information. But the Port connected to another switch or connected to Router should be trunked.

QUESTION 293

Which statements describe two of the benefits of VLAN Trunking Protocol?
(Choose two)

- A. VTP allows routing between VLANs.
- B. VTP allows a single switch port to carry information to more than one VLAN.
- C. VTP allows physically redundant links while preventing switching loops.
- D. VTP simplifies switch administration by allowing switches to automatically share VLAN configuration information.
- E. VTP helps to limit configuration errors by keeping VLAN naming consistent across the VTP domain.
- F. VTP enhances security by preventing unauthorized hosts from connecting to the VTP domain.

Answer: D, E

Explanation:

VTP minimizes the possible configuration inconsistencies that arise when changes are made. These inconsistencies can result in security violations, because VLANs can cross connect when duplicate names are used. They also could become internally disconnected when they are mapped from one LAN type to another, for example, Ethernet to ATM LANE ELANs or FDDI 802.10 VLANs. VTP provides a mapping scheme that enables seamless trunking within a network employing mixed-media technologies.

VTP provides the following benefits:

1. VLAN configuration consistency across the network
2. Mapping scheme that allows a VLAN to be trunked over mixed media
3. Accurate tracking and monitoring of VLANs
4. Dynamic reporting of added VLANs across the network
5. Plug-and-play configuration when adding new VLANs

QUESTION 294

A college has a small campus where 25 faculty members are located. The faculty offices and student computers are currently on the same network. The faculty is concerned about students being able to capture packets going across the network and obtain sensitive material. What could a network administrator do to protect faculty network traffic from student connections?

- A. Install anti-virus software on the student computers.
- B. Put the faculty computers in a separate VLAN.
- C. Power down the switches that connect to faculty computers when they are not in use.
- D. Remove the student computers from the network and put them on a peer-to-peer network.
- E. Create an access list that blocks the students from the Internet where the hacking trolls are located.

Answer: B

Explanation:

Main Functions of a VLAN:

1. The VLAN can group several broadcast domains into multiple logical subnets.
2. You can accomplish network additions, moves, and changes by configuring a port into the appropriate VLAN.
 1. You can place a group of users who need high security into a VLAN so that no users outside of the VLAN can communicate with them.
 2. As a logical grouping of users by function, VLANs can be considered independent from their physical or geographic locations.
 3. VLANs can enhance network security.
 4. VLANs increase the number of broadcast domains while decreasing their size.

QUESTION 295

What are three valid reasons to assign ports on VLANs on a switch? (Choose three.)

- A. to make VTP easier to implement
- B. to isolate broadcast traffic
- C. to increase the size of the collision domain
- D. to allow more devices to connect to the network
- E. to logically group hosts according to function
- F. to increase network security

Answer: B, E, F

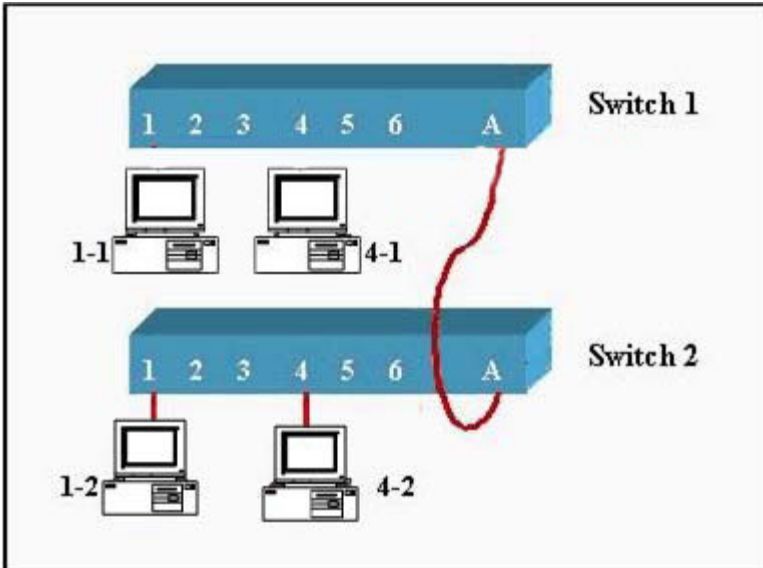
Explanation:

Main Functions of a VLAN (see previous question):

1. The VLAN can group several broadcast domains into multiple logical subnets.
2. You can accomplish network additions, moves, and changes by configuring a port into the appropriate VLAN.
 1. You can place a group of users who need high security into a VLAN so that no users outside of the VLAN can communicate with them.
 2. As a logical grouping of users by function, VLANs can be considered independent from their physical or geographic locations.
 3. VLANs can enhance network security.
 4. VLANs increase the number of broadcast domains while decreasing their size.

QUESTION 296

Two Certkiller switches are connected together as shown below:



Given the network diagram above, assume that ports 1 through 3 are assigned to VLAN1 and ports 4 through 6 are assigned to VLAN2 on each switch. The switches are interconnected over a trunked link. Which of the following conditions would verify proper VLAN and trunk operation? (Choose three.)

- A. Host 1-1 can ping Host 1-2
- B. Host 1-1 can ping Host 4-2
- C. Host 1-1 can not ping Host 1-2
- D. Host 4-1 can not ping Host 1-2
- E. Host 4-1 can ping Host 4-2

Answer: A, D, E

Explanation:

While we configure the VLAN by default member of same VLAN can ping to other member of same VLAN but can't ping to the member of other VLAN.

Answer A, D and E are correct because of the following:

1. Host1 of switch 1 can ping to host1 of switch 2 because on same VLAN
2. Host 4 of switch 1 can't ping to host1 of switch 2 because on different VLAN
3. Host 4 of switch 1 can ping to Host 4 of switch 2 because on same VLAN

QUESTION 297

Which of the following are VLAN frame encapsulation types that may be configured on a Catalyst switch? (Choose two.)

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

Answer: B, D

Explanation:

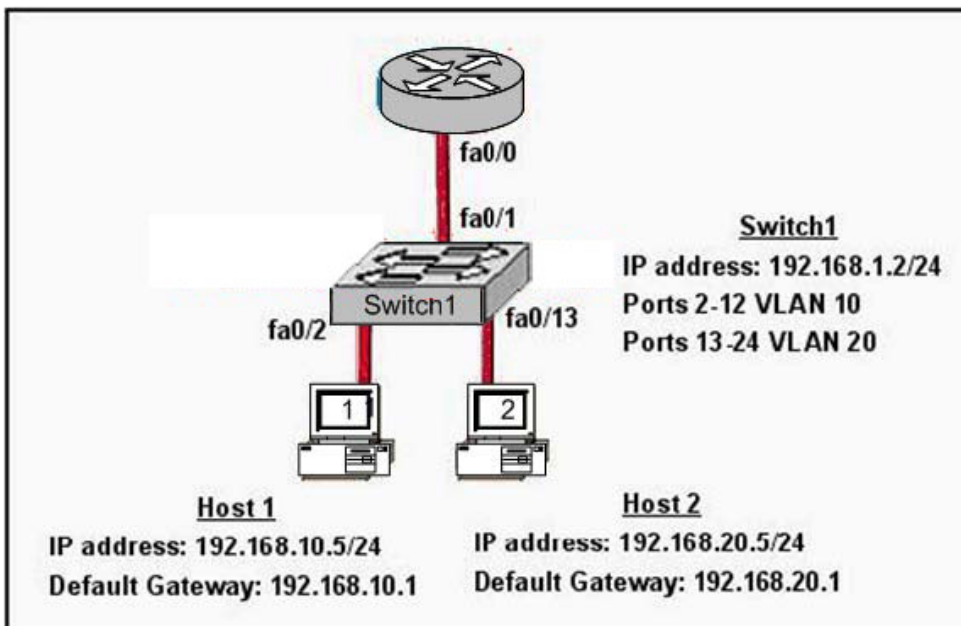
The two VLAN encapsulation types are:

Inter-Switch Link (ISL): This is proprietary to Cisco switches, and it's used for Fast Ethernet and Gigabit Ethernet links only. ISL routing can be used on a switch port, router interfaces, and server interface cards to trunk a server. ISL lets you explicitly tag VLAN information onto an Ethernet frame. This tagging information allows VLANs to be multiplexed over a trunk link through an external encapsulation method, which allows the switch to identify the VLAN membership of a frame over the trunked link.

IEEE 802.1Q: Created by the IEEE as a standard method of frame tagging, this actually inserts a field into the frame to identify the VLAN. If you're trunking between a Cisco switched link and a different brand of switch, you have to use 802.1Q for the trunk to work.

QUESTION 298

A Certkiller network is shown below:



Based on the information shown above, what commands must be configured on the 2950 switch and the router to allow communication between host 1 and host 2? (Choose two)

- A. Router(config)# interface fastethernet 0/0
Router(config-if)# ip address 192.168.1.1 255.255.255.0
Router(config-if)# no shut down
- B. Router(config)# interface fastethernet 0/0
Router(config-if)# no shutdown
Router(config)# interface fastethernet 0/0.1
Router(config-subif)# encapsulation dot1q 10

```
Router(config-subif)# ip address 192.168.10.1 255.255.255.0
Router(config)# interface fastethernet 0/0.2
Router(config-subif)# encapsulation dot1q 20
Router(config-subif)# ip address 192.168.20.1 255.255.255.0
C. Router(config)# router eigrp 100
Router(config-router)# network 192.168.10.0
Router(config-router)# network 192.168.20.0
D. Switch1(config)# vlan database
Switch1(config-vlan)# vtp domain XYZ
Switch1(config-vlan)# vtp server
E. Switch1(config)# interface fastethernet 0/1
Switch1(config-if)# switchport mode trunk
F. Switch1(config)# interface vlan 1
Switch1(config-if)# ip default-gateway 192.168.1.1
```

Answer: B, E

Explanation:

In this exhibit, there are two different VLANs (VLAN 10 and VLAN 20). In this case, the router is required for Inter-VLAN routing. In order to properly configure Inter-VLAN Routing, we need to assign the IP address and the encapsulation type. In the router we need two sub-interfaces created we need to assign the IP as well as defined the encapsulation type for each of these. In the switch, only a trunk port can carry the information of multiple VLANs so fa0/1 is trunked on the switch as shown by answer E.

QUESTION 299

What is the purpose of the command "vtp password Fl0r1da"?

- A. It is used to validate the sources of VTP advertisements sent between switches.
- B. It is used to access the VTP server to make changes to the VTP configuration.
- C. It allows two VTP servers to exist in the same domain, each configured with different passwords.
- D. It is the password required when promoting a switch from VTP client mode to VTP server mode.
- E. It is used to prevent a switch newly added to the network from sending incorrect VLAN information to the other switches in the domain.

Answer: A

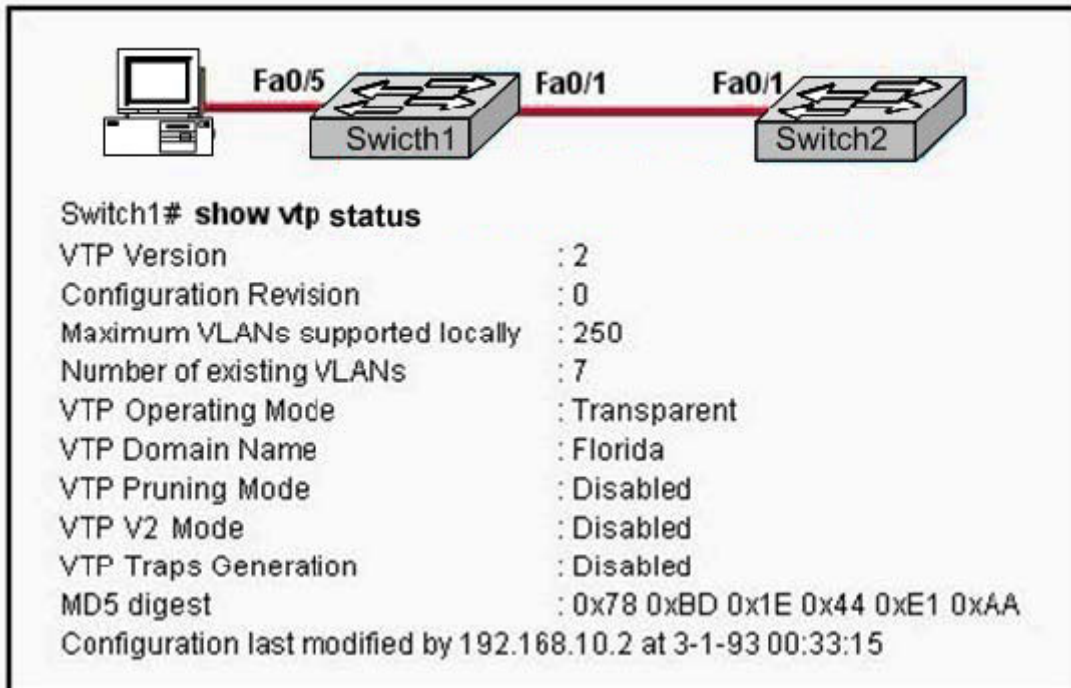
Explanation:

VTP passwords help to authenticate the VTP clients as members of the same VTP domain, while authenticated VTP servers start advertisements to VTP clients. The VTP password and domain should be the same for both the VTP server and the VTP client.

QUESTION 300

Two Certkiller switches are connected together as shown in the diagram below:

Exhibit:



Please study the exhibit carefully. What will be the result of issuing the following commands? Switch1(config)# interface fastethernet 0/5
Switch1(config-if)# switchport mode access
Switch1(config-if)# switchport access vlan 30

- A. The VLAN will be added to the database, but the VLAN information will not be passed on to the Switch2 VLAN database.
- B. The VLAN will be added to the database and VLAN 30 will be passed on as a VLAN to add to the Switch2 VLAN database.
- C. The VLAN will not be added to the database, but the VLAN 30 information will be passed on as a VLAN to the Switch2 VLAN database.
- D. The VLAN will not be added to the database, nor will the VLAN 30 information be passed on as a VLAN to the Switch2 VLAN database.

Answer: A

Explanation:

The three VTP modes are described below:

Server: This is the default for all Catalyst switches. You need at least one server in your VTP domain to propagate VLAN information throughout the domain. The switch must be in server mode to be able to create, add, or delete VLANs in a VTP domain. You must also change VTP information in server mode, and any change you make to a switch in server mode will be advertised to the entire VTP domain.

Client: In client mode, switches receive information from VTP servers; they also send and receive updates, but they can't make any changes. Plus, none of the ports on a client switch can be added to a new VLAN before the VTP server notifies the client switch of

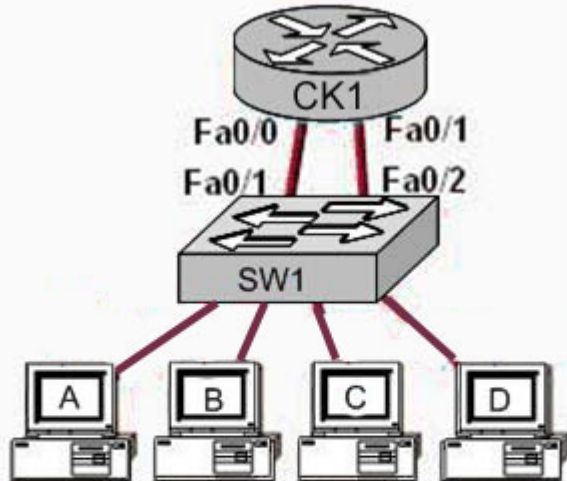
the new VLAN. Here's a hint: if you want a switch to become a server, first make it a client so that it receives all the correct VLAN information, then change it to a server-much easier!

Transparent: Switches in transparent mode don't participate in the VTP domain, but they'll still forward VTP advertisements through any configured trunk links. These switches can't add and delete VLANs because they keep their own database-one they do not share with other switches. Transparent mode is really only considered locally significant.

In our example, the switch is configured for transparent mode. In transparent mode the local VLAN information can be created but that VLAN information will not be advertised to the other switch.

QUESTION 301

Exhibit:



Hosts A, B, SW1 Fa0/1, and CK1 Fa0/0 on VLAN1

Hosts C, D, SW1 Fa0/2, and CK1 Fa0/1 on VLAN2

A network administrator needs to add a new VLAN, named VLAN3, to the network shown above. Unfortunately, there is not another FastEthernet interface on CK1 to connect to the new VLAN3. Which approach is the most cost effective solution for this problem?

- A. Purchase a new FastEthernet module and install it on CK1 .
- B. Replace CK1 with a new router that has at least three FastEthernet interfaces.
- C. Configure a second switch to support VLAN3 with a VLAN trunk between SW1 and the new switch.
- D. Configure a single VLAN trunk between CK1 and SW1 and configure a subinterface on the CK1 interface for each VLAN.
- E. Connect another router to a serial interface of CK1 . Use a FastEthernet interface on the new router for VLAN3.

Answer: D

Explanation:

A Router is a Layer 3 device that plays the vital role for inter-VLAN communication. For inter-VLAN communication either we require multiple interfaces or we can create subinterfaces on the router for each VLAN.

Example router configuration for this scenario:

```
(config)# interface fa0.1
(config-if)#ip address 192.168.1.1 255.255.255.0
(config-if)#no shutdown
(config)#interface fa0.2
(config-if)#ip address 192.168.2.1 255.255.255.0
```

With this configuration, the switch can connect to the router's FastEthernet Interface by trunking, so one port of switch can carry the information of multiple VLANs.

QUESTION 302

Which set of commands should be configured on a 2950 switch so that it can be pinged from a remote host on a different subnet?

- A. Switch(config)# interface vlan 0/1
Switch(config-if)# ip address 192.168.17.253 255.255.255.240
Switch(config-if)# no shutdown
- B. Switch(config)# interface vlan 1
Switch(config-if)# ip address 192.168.17.253 255.255.255.240
Switch(config-if)# no shutdown
Switch(config-if)# exit
Switch(config)# ip default-gateway 192.168.17.1
- C. Switch(config)# interface fastethernet 0/1
Switch(config-if)# ip address 192.168.17.253 255.255.255.240
Switch(config-if)# no shutdown
Switch(config-if)# exit
Switch(config)# ip default-gateway 192.168.17.1
- D. Switch(config)# interface fastethernet 0/1
Switch(config-if)# ip address 192.168.17.253 255.255.255.240
Switch(config-if)# no shutdown
Switch(config-if)# exit
Switch(config)# ip route 0.0.0.0 0.0.0.0 192.168.17.1

Answer: B

Explanation:

Beginning in privileged EXEC mode, follow these steps to manually assign IP information to multiple switched virtual interfaces (SVIs) or ports:

	Command	Purpose
Step 1	<code>configure terminal</code>	Enter global configuration mode.
Step 2	<code>interface vlan vlan-id</code>	Enter interface configuration mode, and enter the VLAN to which the IP information is assigned. The range is 1 to 4094 when the enhanced software image is installed and 1 to 1001 when the standard software image is installed. Do not enter leading zeros.
Step 3	<code>ip address ip- address subnet-mask</code>	Enter the IP address and subnet mask.
Step 4	<code>exit</code>	Return to global configuration mode.
Step 5	<code>ip default- gateway ip- address</code>	Enter the IP address of the next-hop router interface that is directly connected to the switch where a default gateway is being configured. The default gateway receives IP packets with unresolved destination IP addresses from the switch. Once the default gateway is configured, the switch has connectivity to the remote networks with which a host needs to communicate. Note When your switch is configured to route with IP, it does not need to have a default gateway set.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps628/products_configuration_guide_chapter09186a00800d7

QUESTION 303

A network administrator needs to configure a default route. Which of the following IOS commands will accomplish this task? (Choose two)

- A. LTD(config)# ip route 0.0.0.0 0.0.0.0 E0
- B. LTD(config)# ip route 0.0.0.0 255.255.255.255 S0
- C. LTD(config-router)# ip route 255.255.255.255 0.0.0.0 192.168.15.36
- D. LTD(config)# ip route 0.0.0.0 0.0.0.0 192.168.15.36
- E. LTD(config)# ip route 0.0.0.0 192.168.15.36 255.255.255.255
- F. LTD# ip default-network 0.0.0.0 192.168.15.36 255.255.255.255

Answer: A, D

Explanation:

Also known as the gateway of last resort, a default route is a special type of static route with an all-0s network and network mask. The default route is used to direct any packets for which a next hop is not specifically listed in the routing table. By default, if a router

receives a packet to a destination network that is not in its routing table, it drops the packet. When a default route is specified, the router does not drop the packet. Instead, it forwards the packet to the IP address specified in the default route, or sends it out the interface that is specified.

To configure a default route on a Cisco router, enter the following global configuration command:

```
ip route 0.0.0.0 0.0.0.0 [ ip-address-of-the-next-hop-router| outbound-interface]
```

For example:

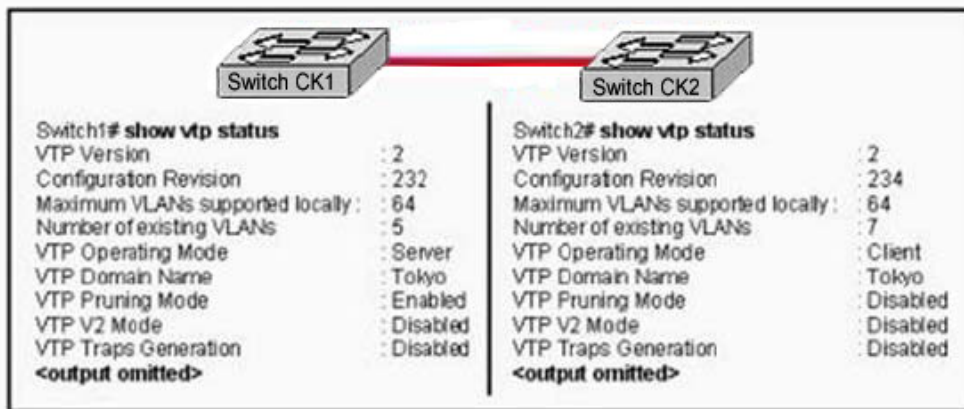
```
CK1 (config)#ip route 0.0.0.0 0.0.0.0 172.16.0.1
```

Or

```
CK1 (config) ip route 0.0.0.0 0.0.0.0 ethernet0
```

QUESTION 304

Two Certkiller switches are connected as shown below:



Refer to the exhibit shown above. Switch CK1 sends a VTP advertisement and Switch CK2 receives it. Which statement accurately describes how Switch CK2 will respond?

- A. Switch CK2 will add 2 VLANs to its VLAN database and change the configuration revision number to 232.
- B. Switch CK2 will remove 2 VLANs from its VLAN database and change the configuration revision number to 232.
- C. Switch CK2 will enable VTP pruning, add two VLANs, and increment the configuration revision number to 233.
- D. Switch CK2 will ignore the VTP advertisement.

Answer: D

Explanation:

The role of the VLAN Trunking Protocol (VTP) is to maintain VLAN configuration consistency across the entire network. VTP is a messaging protocol that uses Layer 2 trunk frames to manage the addition, deletion, and renaming of VLANs on a network-wide basis from a centralized switch that is in the VTP server mode. VTP is responsible for synchronizing VLAN information within a VTP domain. This reduces the need to configure the same VLAN information on each switch.

The 3 VTP Modes are:

1. Server: By default, a Catalyst switch is in the VTP server mode and in the "no management domain" state until the switch receives an advertisement for a domain over a trunk link or a VLAN management domain is configured. A switch that has been put in VTP server mode and had a domain name specified can create, modify, and delete VLANs. VTP servers can also specify other configuration parameters such as VTP version and VTP pruning for the entire VTP domain. VTP information is stored in NVRAM.
2. Client: The VTP client maintains a full list of all VLANs within the VTP domain, but it does not store the information in NVRAM. VTP clients behave the same way as VTP servers, but it is not possible to create, change, or delete VLANs on a VTP client. Any changes made must be received from a VTP server advertisement.
3. Transparent: VTP transparent switches do not participate in VTP. A VTP transparent switch does not advertise its VLAN configuration, and does not synchronize its VLAN configuration based on received advertisements. However, in VTP Version 2, transparent switches do forward VTP advertisements that the switches receive out their trunk ports. VLANs can be configured on a switch in the VTP transparent mode, but the information is local to the switch (VLAN information is not propagated to other switches) and is stored in NVRAM.

In this case, even though switch CK2 is the VTP client and the advertisement came from the VTP server, the revision number of the client is higher than the server. The revision number is used by switches so that they know if the VTP advertisements are valid or outdated. In this case, the advertisement arriving to CK2 will be considered outdated and will be ignored.

QUESTION 305

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

- A. The additions will create more collisions domains.
- B. IP address utilization will be more efficient.
- C. More bandwidth will be required than was needed previously.
- D. An additional broadcast domain will be created.
- E. The possibility that switching loops will occur will increase dramatically.

Answer: D

Explanation:

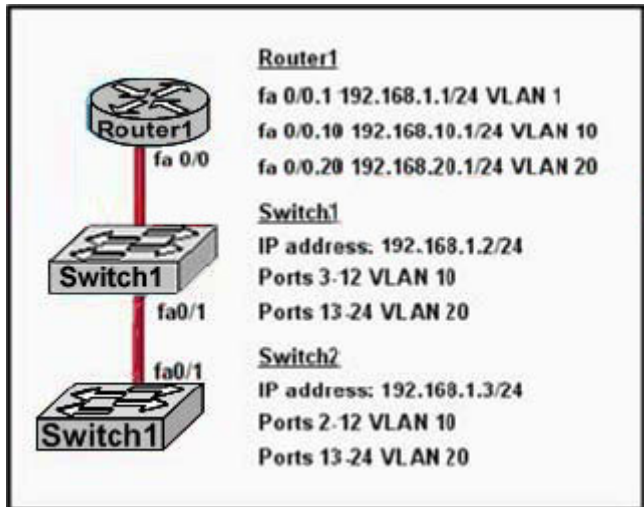
A VLAN is a group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same LAN segment. Networks that use the campus-wide or end-to-end VLANs logically segment a switched network based on the functions of an organization, project teams, or applications rather than on a physical or geographical basis. For example, all workstations and servers used

by a particular workgroup can be connected to the same VLAN, regardless of their physical network connections or interaction with other workgroups. Network reconfiguration can be done through software instead of physically relocating devices. Cisco recommends the use of local or geographic VLANs that segment the network based on IP subnets. Each wiring closet switch is on its own VLAN or subnet and traffic between each switch is routed by the router. The reasons for the Distribution Layer 3 switch and examples of a larger network using both the campus-wide and local VLAN models will be discussed later.

A VLAN can be thought of as a broadcast domain that exists within a defined set of switches. Ports on a switch can be grouped into VLANs in order to limit unicast, multicast, and broadcast traffic flooding. Flooded traffic originating from a particular VLAN is only flooded out ports belonging to that VLAN, including trunk ports, so a switch that connects to another switch will normally introduce an additional broadcast domain.

QUESTION 306

In the exhibit below, how should the FastEthernet0/1 ports on the 2950 model switches that are shown in the exhibit be configured to allow connectivity between all devices?



- A. SwitchX(config)# interface fastethernet 0/1
SwitchX(config-if)# switchport mode trunk
- B. SwitchX(config)# interface fastethernet 0/1
SwitchX(config-if)# switchport mode trunk
SwitchX(config-if)# switchport trunk vlan 1
SwitchX(config-if)# switchport trunk vlan 10
SwitchX(config-if)# switchport trunk vlan 20
- C. The ports only need to be connected by a crossover cable.
- D. SwitchX(config)# interface fastethernet 0/1
SwitchX(config-if)# switchport mode access
SwitchX(config-if)# switchport access vlan 1

Answer: A

Explanation:

Trunk links are required to pass VLAN information between switches. A port on a Cisco switch is either an access port or a trunk port. Access ports belong to a single VLAN and do not provide any identifying marks on the frames that are passed between switches. Access ports also carry traffic that comes from only the VLAN assigned to the port. A trunk port is by default a member of all the VLANs that exist on the switch and carry traffic for all those VLANs between the switches. To distinguish between the traffic flows, a trunk port must mark the frames with special tags as they pass between the switches. Trunking is a function that must be enabled on both sides of a link. If two switches are connected together, for example, both switch ports must be configured for trunking, and they must both be configured with the same tagging mechanism (ISL or 802.1Q).

To enable trunking between the switches, use the following steps:

1. Enable trunking on a port.

Enable the trunk:

COS	<code>set trunk mod/port [auto desirable on nonegotiate off]</code>
IOS	<code>(global) interface type mod/port</code> <code>(interface) switchport mode dynamic [auto desirable]</code> <code>(interface) switchport mode trunk</code> <code>(interface) switchport nonegotiate</code>

The most basic way to configure a trunk link is using the option on. This option enables the trunk and requires that you also specify a tagging mechanism for the trunk. For IOS devices, the command switchport mode trunk is equivalent to the set trunk mod/port on command. When specifying the option on, you must also choose a tagging mechanism. Note: Some IOS switches do not support Dynamic Trunking Protocol. For these switches, the only command that you can use to configure trunking is switchport mode trunk, which essentially turns trunking on.

QUESTION 307

Given the output of the London switch displayed in the graphic below, what VTP functions will this switch perform?

```
London#show vtp status
VTP Version:                2
Configuration Revision:     0
Maximum VLAN supported locally 64
Number of existing VLANs    5
VTP Operating Mode          Client
VTP Domain Name             London
VTP Pruning Mode            Disabled
VTP V2 Mode                 Disabled
VTP Traps Generation        Disabled
```

- A. It will pass on information about the VTP configuration

- B. VTP is disabled on this device
- C. It will learn and save VTP configuration in the running configuration but does not save it to NVRAM
- D. It will create, change and delete VLANs

Answer: C

Explanation:

The 3 VTP Modes are:

1. Server: By default, a Catalyst switch is in the VTP server mode and in the "no management domain" state until the switch receives an advertisement for a domain over a trunk link or a VLAN management domain is configured. A switch that has been put in VTP server mode and had a domain name specified can create, modify, and delete VLANs. VTP servers can also specify other configuration parameters such as VTP version and VTP pruning for the entire VTP domain. VTP information is stored in NVRAM.
2. Client: The VTP client maintains a full list of all VLANs within the VTP domain, but it does not store the information in NVRAM. VTP clients behave the same way as VTP servers, but it is not possible to create, change, or delete VLANs on a VTP client. Any changes made must be received from a VTP server advertisement.
3. Transparent: VTP transparent switches do not participate in VTP. A VTP transparent switch does not advertise its VLAN configuration, and does not synchronize its VLAN configuration based on received advertisements. However, in VTP Version 2, transparent switches do forward VTP advertisements that the switches receive out their trunk ports. VLANs can be configured on a switch in the VTP transparent mode, but the information is local to the switch (VLAN information is not propagated to other switches) and is stored in NVRAM.

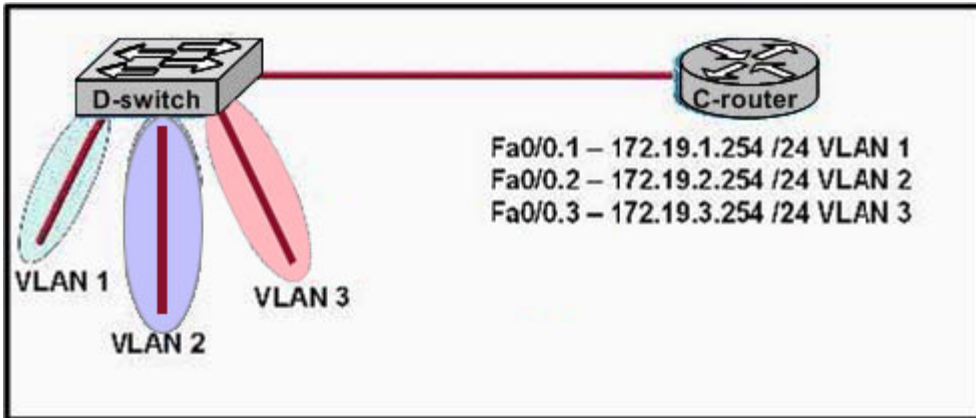
As can be seen by the output above, this switch is running in VTP client mode, making choice C correct.

QUESTION 308

Exhibit:

Please study the exhibit carefully. C-router is to be used as a "router-on-a-stick" to route between the VLANs. All the interfaces have been properly configured and IP routing is operational. The hosts in the VLANs have been configured with the appropriate default gateway. What can be said about this configuration?

Exhibit:



- A. These commands need to be added to the configuration:
C-router(config)# router eigrp 123
C-router(config-router)# network 172.19.0.0
- B. No further routing configuration is required.
- C. These commands need to be added to the configuration:
C-router(config)# router rip
C-router(config-router)# network 172.19.0.0
- D. These commands need to be added to the configuration:
C-router(config)# router ospf 1
C-router(config-router)# network 172.19.0.0 0.0.3.255 area 0

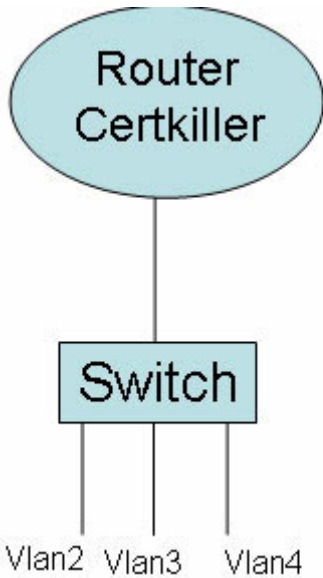
Answer: B

Explanation:

Since all the same router (C-router) is the default gateway for all three VLANs, all traffic destined to a different VLA will be sent to the C-router. The C-router will have knowledge of all three networks since they will appear as directly connected in the routing table. Since the C-router already knows how to get to all three networks, no routing protocols need to be configured.

QUESTION 309

The Certkiller network Topology is displayed in the exhibit below:



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

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

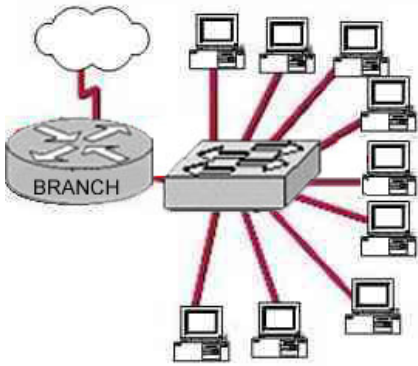
Answer: C, E

Explanation:

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

QUESTION 310

A router has been configured to provide the nine users on the branch office LAN with Internet access, as shown in the diagram below:



```
Branch#show interfaces FastEthernet 0
FastEthernet0 is up, line protocol is up
Hardware address is 000c.ce8d.8860
Internet address is 192.168.10.30/30
MTU 1500 bytes, BW 10000 Kbit,
DLY 1000 usec, reliability 255/255,
txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Half-duplex, 10Mb/s, 100BaseTX/FX
(... output omitted ...)
```

It is found that some of the users on the LAN cannot reach the Internet. Other users are not having any problems. Based on the topology and router output shown, which of the following commands should be issued on the router to correct the problem? (Select one).

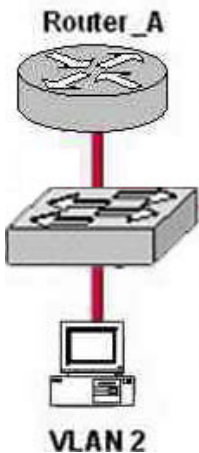
- A. Branch(config-if)# no shutdown
- B. Branch(config-if)# duplex full
- C. Branch(config-if)# no keepalive
- D. Branch(config-if)# ip address 192.168.10.30 255.255.255.240
- E. Branch(config-if)# bandwidth 100
- F. Branch(config-if)# encapsulation 802.3

Answer: D

Explanation:

Based on the output shown above, a /30 network mask has been applied to the Fast Ethernet interface. This will allow for only two hosts to reside on the network. Using the /28 mask as shown in choice D will allow for up to 14 hosts to reside on the LAN, which will be enough to accommodate for the 9 PC's used on the LAN.

QUESTION 311



```
Router_A(config-if)# interface fastethernet 0/0.1
Router_A(config-subif)# encapsulation dot1q 1
Router_A(config-subif)# ip address 192.168.1.1 255.255.255.0
Router_A(config-if)# interface fastethernet 0/1.2
Router_A(config-subif)# encapsulation dot1q 2
Router_A(config-subif)# ip address 192.168.2.1 255.255.255.0
Router_A(config-if)# interface fastethernet 0/0.3
Router_A(config-subif)# encapsulation dot1q 3
Router_A(config-subif)# ip address 192.168.3.1 255.255.255.0
```

A router is configured as shown in the graphic. The switch is connected to the router over a VLAN trunk. The switch has been configured with three VLANs: VLAN1, VLAN2, and VLAN3. In addition, the IP address of the switch is

192.168.1.2. A host is being added to the switch on VLAN 2.
What is the correct default gateway for this computer?

- A. 192.168.1.1
- B. 192.168.1.2
- C. 192.168.2.1
- D. 192.168.2.2
- E. 192.168.3.1
- F. 192.168.3.2

Answer: C

Explanation:

The default gateway for this host should be the IP address of the local router on that VLAN. Based on the router configuration, this IP address is 192.168.2.1. In the router configuration, the number that follows the "encapsulation dot1q" command is the VLAN that is assigned to it. In this case, the PC host belongs to VLAN 2, so the subinterface fast Ethernet 0/0.2 is the one that should be chosen.

Incorrect Answers:

- A. This is the IP address that hosts in VLAN 1 should use as their default gateway.
- B. Even though this is the IP address of the switch itself as stated in the question, it should not be chosen as the default gateway for any of the hosts in any of the VLANs. This IP address would be used only to administer and make changes to the switch.
- D, F. These are incorrect choices.
- E. This is the IP address that hosts in VLAN 3 should use as their default gateway.

QUESTION 312

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

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

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

Answer: D E

Explanation:

A hub simply repeats the electrical signal and makes no attempt to interpret the electrical signal (layer 1) as a LAN frame (Layer 2). So, a hub actually performs OSI layer 1 functions, repeating an electrical signal, whereas a switch performs OSI layer 2 functions, actually interpreting Ethernet header information, particularly addresses, to

make forwarding decisions. Hubs can be used to increase the number of stations that can be supported on a LAN.

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

QUESTION 313

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

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

Answer: A, C, F

Explanation:

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

Incorrect Answers:

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

QUESTION 314

Which type of cable should be used to make a connection between the Fa0/0 port on a router and the Fa0/0 port switch?

- A. Rollover cable
- B. Console cable
- C. Crossover cable
- D. Straight-through cable
- E. Serial cable

Answer: D

Explanation:

Straight-through cables are used to connect host to switch (or hub) and router to switch (or hub).

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

QUESTION 315

What components are required to directly connect two PCs so they are able to participate in a simple peer-to-peer network? Choose three

- A. Straight-through cable
- B. Compatible network interfaces
- C. Networking protocol
- D. Hub
- E. Crossover cable
- F. router

Answer: B, C, E

Explanation:

This cable can be used to directly connect two computers to each other without the use of a hub or switch.

Crossover cables are terminated with CAT 5 RJ-45 (RJ stands for "Registered Jack") modular plugs. RJ-45 plugs are similar to those you'll see on the end of your telephone cable except they have eight versus four contacts on the end of the plug. Also, make sure the ends you select are rated for CAT 5 wiring.

QUESTION 316

What kind of cable should be used to establish a trunked line between two Catalyst 2950 switches?

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

Answer: E

Explanation:

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

QUESTION 317

When a new trunk link is configured on an IOS based switch, which VLANs are allowed over the link?

- A. All defined VLANs are allowed on the trunk by default.
- B. Each VLAN, or VLAN range, that is specified with the switchport mode command.
- C. Each VLAN, or VLAN range, that is specified with the vtp domain command.
- D. Each VLAN, or VLAN range, that is specified with the vlan database command.

Answer: A

Explanation:

By default a trunk link carries all the VLANs that exist on the switch. This is because all VLANs are active on a trunk link; and as long as the VLAN is in the switch's local database, traffic for that VLAN is carried across the trunks. You can elect to selectively remove and add VLANs from a trunk link.

QUESTION 318

Why would a network administrator configure port security on a switch?

- A. To prevent unauthorized Telnet access to a switch port.
- B. To limit the number of Layer 2 broadcasts on a particular switch port.
- C. To prevent unauthorized hosts from accessing the LAN.
- D. To protect the IP and MAC address of the switch and associated ports.
- E. To block unauthorized access to the switch management interfaces over common TCP ports.

Answer: C

Explanation:

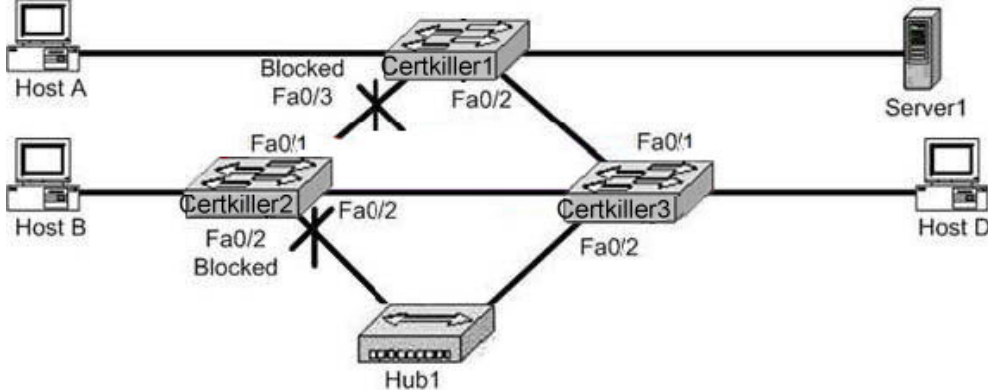
You can use the port security feature to restrict input to an interface by limiting and identifying MAC addresses of the stations allowed to access the port. When you assign secure MAC addresses to a secure port, the port does not forward packets with source addresses outside the group of defined addresses.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

If a port is configured as a secure port and the maximum number of secure MAC addresses is reached, when the MAC address of a station attempting to access the port is different from any of the identified secure MAC addresses, a security violation occurs. Also, if a station with a secure MAC address configured or learned on one secure port attempts to access another secure port, a violation is flagged.

Reference:

QUESTION 319

The Certkiller LAN network for one of the offices is displayed below:



Assuming there is only one VLAN in this network, which switch is acting as the root bridge?

- A. Certkiller 1
- B. Certkiller 2
- C. Certkiller 3
- D. A root bridge is not required in this network.

Answer: C

Explanation:

A root switch has all ports in non-blocking mode. Based on the diagram above, Certkiller 1 and Certkiller 2 contain ports that have been blocked by the STP process, so Certkiller 3 must be the root bridge.

QUESTION 320

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

- A. The additions will create more collision domains.
- B. IP address utilization will be more efficient.
- C. More bandwidth will be required than was needed previously.
- D. An additional broadcast domain will be created.
- E. The possibility that switching loops will occur will increase dramatically.

Answer: D

Explanation:

Additional VLANs means additional broadcast domains. VLANs define broadcast domains in a Layer 2 network. A broadcast domain is the set of all devices that will

receive broadcast frames originating from any device within the set. Broadcast domains are typically bounded by routers because routers do not forward broadcast frames. Layer 2 switches create broadcast domains based on the configuration of the switch. Switches are multiport bridges that allow you to create multiple broadcast domains. Each broadcast domain is like a distinct virtual bridge within a switch.

Incorrect Answers:

- A. Creating new VLANs means that additional broadcast domains will be created, but not necessarily new collision domains. Besides, in a full duplex environment such as the one described here collisions are not possible.
- B. Additional IP addresses will be needed in this network, as each VLAN will require a separate VLAN or a different default IP gateway to be configured.
- C. This is not true, as the creation of new VLANs in no way will effect the amount of bandwidth that is required.
- E. Since a separate Spanning Tree Process is used for each VLAN, this is not true.

QUESTION 321

A network administrator wants to control which user hosts can access the network based on their MAC address. What will prevent workstations with unauthorized MAC addresses from connecting to the network through a switch?

- A. BPDU
- B. Port security
- C. RSTP
- D. STP
- E. VTP
- F. Blocking mode

Answer: B

Explanation:

Understanding How Port Security Works:

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

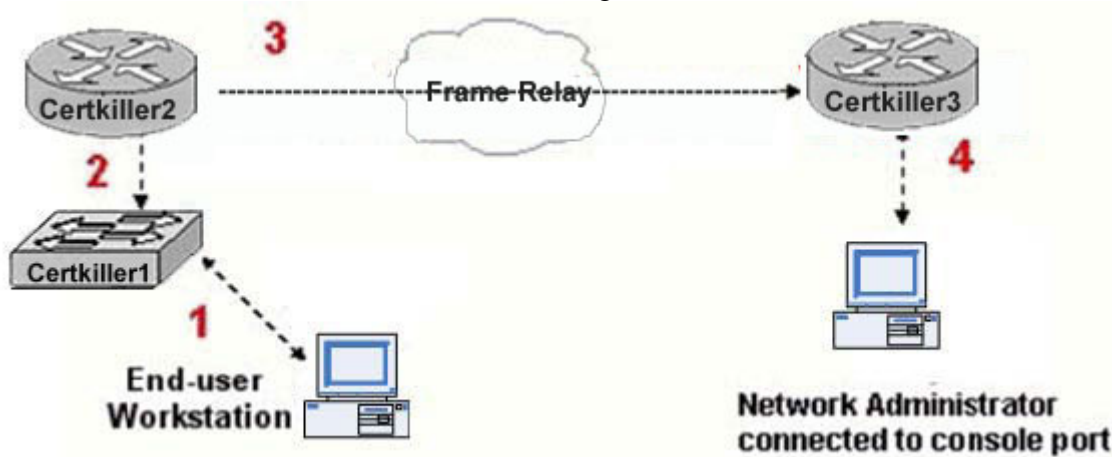
When a secure port receives a packet, the source MAC address of the packet is compared to the list of secure source addresses that were manually configured or autoconfigured (learned) on the port. If a MAC address of a device attached to the port differs from the list of secure addresses, the port either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

Reference:

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

QUESTION 322

The Certkiller network is shown in the following exhibit:



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

- A. 1- Ethernet crossover cable
2-Etherenet straight-through cable
3- fiber optic cable
4- rollover cable
- B. 1- Ethernet rollover cable
2-Etherenet crossover cable
3- serial cable
4- rollover cable
- C. 1- Ethernet rollover cable
2-Etherenet crossover cable
3- serial cable
4- null modem cable
- D. 1- Ethernet straight-through cable
2-Etherenet crossover cable
3- serial cable
4- rollover cable
- E. 1- Ethernet straight-through cable
2-Etherenet crossover cable
3- serial cable
4- Ethernet straight-through cable
- F. 1- Ethernet straight-through cable
2-Etherenet straight-through cable
3- serial cable
4- rollover cable

Answer: F

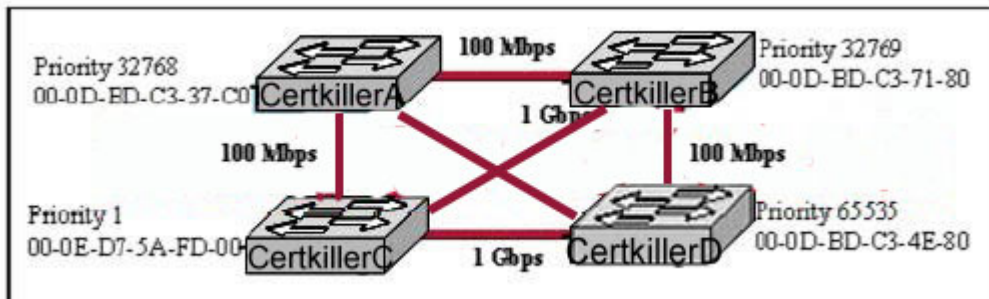
Explanation:

1. Crossover Cable Used to Connect :
 - i. Host to Host (Peer to Peer) Networking
 - ii. Switch to Switch
 - iii. Hub to Hub
 - iv. Computer to Router's Ethernet Port
2. Straight through Cable:
 - i. Host to Switch
 - ii. Host to Hub
 - iii. Switch to Router
3. Serial Cable
 - i. Router's Serial Port to Serial Port
4. Rollover Cable :
 - i. To connect Router's Console port.

In the diagram one host is connect to a switch using a straight through cable. The switch is connected to a router using a straight through cable while router to router connections are made using a serial cable. One PC configures the router connects using a rollover cable, as well as a computer connected to the router's Ethernet port using a crossover cable.

QUESTION 323

Four Certkiller switches are connected as shown in the exhibit below:



Refer to the exhibit above. Based on the information given, which switch will be elected root bridge and why?

- A. Switch A, because it has the lowest MAC address
- B. Switch A, because it is the most centrally located switch
- C. Switch B, because it has the highest MAC address
- D. Switch C, because it is the most centrally located switch
- E. Switch C, because it has the lowest priority
- F. Switch D, because it has the highest priority

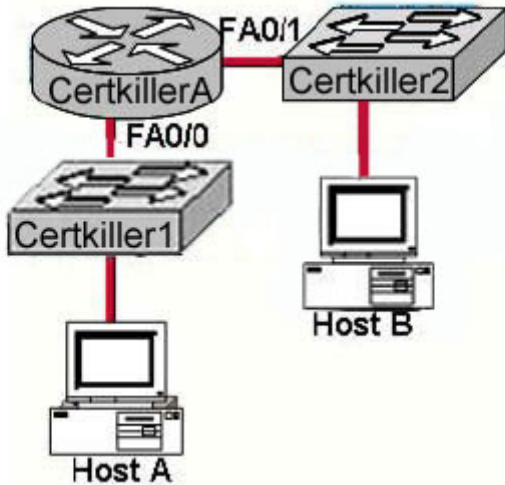
Answer: E

Explanation:

To elect the root bridge in the LAN, first check the priority value. The switch having the lowest priority will win the election process. If Priority Value is the same then it checks the MAC Address; the switch having the lowest MAC Address will become the root bridge. In this case, switch C has the lowest MAC Address so it becomes the root bridge.

QUESTION 324

The Certkiller network is shown below:



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

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

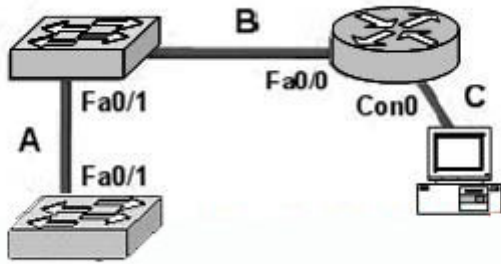
Answer: C, E

Explanation:

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

QUESTION 325

Exhibit:



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

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

Answer: D

Explanation:

Crossover Cables are Used to Connect :

Host to Host (Peer to Peer) Networking

Switch to Switch

Hub to Hub

Computer to Router's Ethernet Port

Straight through Cable:

Host to Switch

Host to Hub

Switch to Router

Serial Cable:

Router's Serial Port to Serial Port

Rollover Cable :

To connect Router/Switch Console port.

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

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

QUESTION 326

The two Certkiller Lab routers shown below are interconnected with back-to-back cables between their serial interfaces. How should the serial interface of the Certkiller 1 router be configured to establish Layer 3 connectivity between the two routers?



```
CertKiller1#show controllers serial 3
CD2430 unit 0, Channel 1, Chip Revision 0D, Microcode 18
Channel mode is synchronous serial
ldb 0x262BF4, buffer size 1524, V.35 DTE cable

Global registers
rplir 0x75, rir 0x0, risr 0x0, rfoc 0x0, rdr 0x17
tpilir 0x73, tir 0x0, tisir 0x0, ttfc 0x0, tdr 0x10
mplir 0x77, mir 0x0, misr 0x0
bercnt 0x0, stk 0x0
Per-channel registers for channel 1
-- output omitted --
```

- A. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# clock rate 64000
Certkiller 1(config-if)# no shutdown
- B. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# ip address 192.168.10.3 255.255.255.0
Certkiller 1(config-if)# clock rate 64000
- C. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# ip address 192.168.10.3 255.255.255.0
Certkiller 1(config-if)# clock rate 64000
Certkiller 1(config-if)# no shutdown
- D. Certkiller 1(config)#interface serial 3
Certkiller 1(config-if)# ip address 192.168.10.3 255.255.255.0
Certkiller 1(config-if)# no shutdown

Answer: D

Explanation:

When examining the interface using the show controllers command, the DTE cable is connected so there is no need to specify the clock rate and bandwidth; just specify the IP address and bring up the interface. Only the DCE side of the serial to serial connection is required to specify the clock rate.

QUESTION 327

You have a server that's directly connected to a Cisco switch by way of its Fa0/1 port, and you don't want any other MAC addresses from any other servers to access this port. How would you accomplish this? (Select two answer choices)

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

Answer: C, E

Explanation:

You can configure a MAC address to be associated only with a particular port, with the restriction that frames destined to that MAC address have to enter through that particular port. So answer choice C is correct.

Another feature you can use is port security. It can preset a limit to the number of sources (including limiting to one) that can forward frames into the said port switch. When a device with a different MAC address than the one configured for port security is connected to the switch, the port will administratively shut itself down. The port will only forward traffic again after an administrator manually enables it.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Pages 583-585.

QUESTION 328

Which switching mode provides the highest level of integrity and error-free transport, rather than maximizing speed?

- A. 802.1q forwarding
- B. VTP transparent mode
- C. Cut-through
- D. Store-and-forward
- E. Fragment-free
- F. Frame-filtering

Answer: D

Explanation:

The Switch receives and stores all bits in the frame before forwarding the frame. This

allows switch to check the FCS before forwarding the frame. The FCS is the frame check sequence, and the information contained in it is used by the switch to prevent frames with errors from being forwarded through the network.

Incorrect Answers:

E. The Switch performs the address table lookup as soon as the destination address field in the header is received. The first bits in the frame can be sent out to out port before the final bits in the incoming frame are received. This does not allow the switch to discard frames that fail the FCS check.

C. Cut through will not perform any error checking. This would be the best choice for ports where speed was most important.

QUESTION 329

A new switch is installed in the Certkiller network. This switch is to be configured so that VLAN information will be automatically distributed to all the other Cisco Catalyst switches in the network.

Which of the conditions below have to be met in order for this to occur? (Choose all that apply).

- A. The switch that will share the VLAN information must be in the VTP Server mode.
- B. The switches must be in the same VTP domain.
- C. The switch that will share the VLAN information must be configured as the root bridge.
- D. The switches must be configured to use the same VTP version.
- E. The switches must be configured to use the same STP version.
- F. The switches must be configured to use the same type of ID tagging.
- G. The switches must be connected over VLAN trunks.

Answer: A, B, F, G

Explanation:

For the VLAN information to pass automatically throughout the network, VTP must be set up correctly. In order for VTP to work, a VTP server is needed, the VLAN's must be in the same VTP domain, and the encapsulation on each end of the trunk must both set to either 802.1Q or ISL.

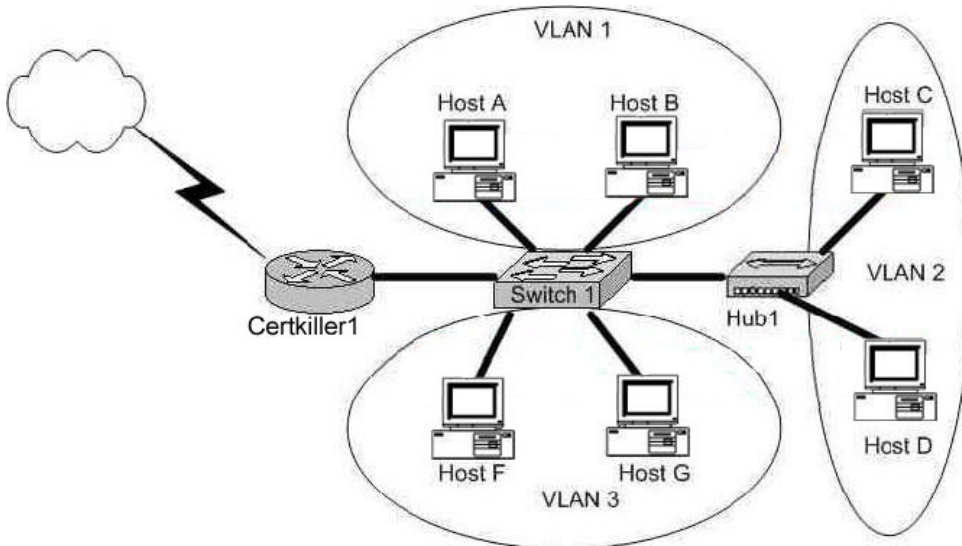
Incorrect Answers:

C. Root bridges and other functions of the Spanning Tree Protocol (STP) have no impact of the VTP configuration.

D, E. There is only one version of VTP and STP.

QUESTION 330

The Certkiller Network consists of a router, switch, and hub as shown below:



In accordance with the above diagram; which of the statements below correctly describe the switch port configuration and the router port configurations? (Select three answer choices)

- A. The Certkiller 1 WAN port is configured as a trunking port.
- B. The Certkiller 1 port connected to Switch1 is configured using subinterfaces.
- C. The Certkiller 1 port connected to Switch1 is configured as 10 Mbps.
- D. The Switch1 port connected to Certkiller 1 is configured as a trunking port.
- E. The Switch1 port connected to Host B is configured as an access port.
- F. The switch1 port connected to Hub1 is configured as full duplex.

Answer: B, D, E

Explanation:

B is correct because the diagram and the function match the description of a subinterface. Subinterfaces are needed because for inter-vlan communication, routing needs to take place. D is correct because all 3 VLAN's are trunked to reach the router. E is correct because access ports are correct in this case.

Incorrect Answers:

- A. This is incorrect because trunks only work between switches, and not between a router and a WAN.
- C, F. Although these may be true, we are not given enough information in this diagram to confirm it.

QUESTION 331

The network security policy requires that only one host be permitted to attach dynamically to each switch interface. If that policy is violated, the interface should shut down. Which two commands must the network administrator configure on the 2950 Catalyst switch to meet this policy? (Choose two)

- A. Certkiller 1(config-if)# switchport port-security maximum 1
- B. Certkiller 1(config)# mac-address-table secure

- C. Certkiller 1(config)# access-list 10 permit ip host
- D. Certkiller 1(config-if)# switchport port-security violation shutdown
- E. Certkiller 1(config-if)# ip access-group 10

Answer: A, D

Explanation

Catalyst switches offer the port security feature to control port access based on MAC addresses. To configure port security on an access layer switch port, begin by enabling it with the following interface configuration command:

```
Switch(config-if)# switchport port-security
```

Next, you must identify a set of allowed MAC addresses so that the port can grant them access. You can explicitly configure addresses or they can be dynamically learned from port traffic. On each interface that uses port security, specify the maximum number of MAC addresses that will be allowed access using the following interface configuration command:

```
Switch(config-if)# switchport port-security maximum max-addr
```

Finally, you must define how each interface using port security should react if a MAC address is in violation by using the following interface configuration command:

```
Switch(config-if)# switchport port-security violation {shutdown | restrict | protect}
```

A violation occurs if more than the maximum number of MAC addresses are learned, or if an unknown (not statically defined) MAC address attempts to transmit on the port. The switch port takes one of the following configured actions when a violation is detected:

shutdown-The port is immediately put into the errdisable state, which effectively shuts it down. It must be re-enabled manually or through errdisable recovery to be used again.

restrict-The port is allowed to stay up, but all packets from violating MAC addresses are dropped. The switch keeps a running count of the number of violating packets and can send an SNMP trap and a syslog message as an alert of the violation.

protect-The port is allowed to stay up, as in the restrict mode. Although packets from violating addresses are dropped, no record of the violation is kept.

QUESTION 332

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

- A. Configure the switch so that it has a lower priority than other switches in the network.
- B. Assign the switch a higher MAC address than the other switches in the network have.
- C. Configure the switch for full-duplex operation and configure the other switches for half-duplex operation.
- D. Connect the switch directly to the MDF router, which will force the switch to assume the role of root bridge.
- E. Establish a direct link from the switch to all other switches in the network.

Answer: A

Explanation:

For all switches in a network to agree on a loop-free topology, a common frame of

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

The election process begins with every switch sending out BPDUs with a Root Bridge ID equal to its own Bridge ID as well as a Sender Bridge ID. The latter is used to identify the source of the BPDU message. Received BPDU messages are analyzed for a lower Root Bridge ID value. If the BPDU message has a Root Bridge ID (priority) of the lower value than the switch's own Root Bridge ID, it replaces its own Root Bridge ID with the Root Bridge ID announced in the BPDU. If two Bridge Priority values are equal, then the lower MAC address takes preference.

QUESTION 333

When you power up a Cisco router; in what memory is the start-up configuration normally stored in?

- A. RAM
- B. ROM
- C. FLASH
- D. NVRAM

Answer: D

Explanation:

The startup configuration is stored in the Non-Volatile RAM.

Incorrect Answers:

A, B: No configuration information is stored in RAM or ROM.

C. The IOS is normally stored in the flash memory, not the saved configuration.

QUESTION 334

You are the administrator of the Certkiller network and you have forgotten the password to one of your routers. After completing the password recovery procedure the router returned to its normal operation. The config-register was set back to the initial default value. What is this value?

- A. 0x2112
- B. 0x2104
- C. 0x2102
- D. 0x2142
- E. 0x2100

Answer: C

Explanation:

The config-register's default factory setting is 0x2102. The following display the possible configuration register values and their meanings:

Configuration Register Values and their Meaning:

The table below contains some common settings which are valid on most platforms.

Note: Before changing the configuration register on your router to one of the values below, verify that it can be used by checking the appropriate hardware installation guide.

Configuration Register Setting	Router Behavior
0x102	Ignores break 9600 console baud
0x1202	1200 baud rate
0x2101	Boots into bootstrap Ignores break Boots into ROM if initial boot fails 9600 console baud rate
0x2102	Ignores break Boots into ROM if initial boot fails 9600 console baud rate default value for most platforms
0x2120	Boots into ROMmon 19200 console speed
0x2122	Ignores break Boots into ROM if initial boot fails 19200 console baud rate
0x2124	NetBoot Ignores break Boots into ROM if initial boot fails 19200 console speed
0x2142	Ignores break Boots into ROM if initial boot fails 9600 console baud rate Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration.)
0x2902	Ignores break Boots into ROM if initial boot fails 4800 console baud rate

0x2922	Ignores break Boots into ROM if initial boot fails 38400 console baud rate
0x3122	Ignores break Boots into ROM if initial boot fails 57600 console baud rate
0x3902	Ignores break Boots into ROM if initial boot fails 2400 console baud rate
0x3922	Ignores break Boots into ROM if initial boot fails 115200 console baud rate

Incorrect Answers:

D. This is the setting that would be used during the password recovery procedure.

Reference:

http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a008022493f.shtml

QUESTION 335

Which of the commands below would you enter if you wanted to see the configuration register of your router?

- A. show boot
- B. show flash
- C. show register
- D. show version
- E. show config

Answer: D

Explanation:

To display the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images, use the show version command in EXEC mode.

Example:

The following is sample output from the show version command:

```
Router1> show version
```

```
Cisco Internetwork Operating System Software
```

```
IOS (tm) 7200 Software (C7200-J-M), Experimental Version 11.3(19970915:164752) [hampton-nitro-baseline 249]
```

```
Copyright (c) 1986-1997 by cisco Systems, Inc.
```

```
Compiled Wed 08-Oct-97 06:39 by hampton
```

```
Image text-base: 0x60008900, data-base: 0x60B98000
```

```
ROM: System Bootstrap, Version 11.1(11855) [beta 2], INTERIM SOFTWARE
```

```
BOOTFLASH: 7200 Software (C7200-BOOT-M), Version 11.1(472), RELEASE
```

```
Router1 uptime is 23 hours, 33 minutes
```

```
cisco 7206 (NPE150) processor with 57344K/8192K bytes of memory.
```

R4700 processor, Implementation 33, Revision 1.0 (512KB Level 2 Cache)

Last reset from power-on

Bridging software.

X.25 software, Version 3.0.0.

SuperLAT software copyright 1990 by Meridian Technology Corp).

TN3270 Emulation software.

8 Ethernet/IEEE 802.3 interface(s)

2 FastEthernet/IEEE 802.3 interface(s)

4 Token Ring/IEEE 802.5 interface(s)

4 Serial network interface(s)

1 FDDI network interface(s)

125K bytes of non-volatile configuration memory.

1024K bytes of packet SRAM memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).

20480K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).

4096K bytes of Flash internal SIMM (Sector size 256K).

Configuration register is 0x2102

QUESTION 336

Which three of the following basic network services are provided by the Cisco IOS?
(Select three answer choices)

- A. Defines the network topology
- B. Access to network resources
- C. Routing and switching functions
- D. Content Filtering
- E. Intrusion Detection

Answer: A, B, C

Explanation

These are all basic network services provided by all IOS versions. These services are included in all IOS versions and feature sets.

Incorrect Answers:

D. Content filtering, such as java applet stripping, URL filtering, virus removal, etc are not normally performed by Cisco router and switch IOS.

E. Intrusion detection and network security services are normally performed by firewalls and servers.

Reference:

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

QUESTION 337

After logging into a router, you type in "enable" and then enter the correct password when prompted. What is the current router prompt symbol at this point?

- A. >

- B. #
- C. ?
- D. *
- E. All of the above
- F. None of the above

Answer: B

Explanation:

When you enter the privileged mode by typing enable the router prompt will change to a # character.

Incorrect Answers:

- A. This is the prompt given after initially logging on.
- C, D. These are not valid router prompts.

QUESTION 338

In the Cisco IOS, what is the definition of a global command?

- A. A command that can be entered in any configuration mode.
- B. A command that supports all protocols.
- C. A command that is implemented in all IOS versions.
- D. A command that is set once and affects the entire router.
- E. A command that is available in every release of IOS.

Answer: D

Explanation:

When you enter global configuration mode and enter a command, it is applied to the running configuration file that is currently running in ram. The configuration of a global command affects the entire router. An example of a global command is one used for the hostname of the router.

Incorrect Answers:

- A. Global configuration commands must be performed while in global configuration mode. For example, when you are in the interface configuration mode, you most likely will need to exit out into global mode to type in the commands.
- B. Global commands do not necessarily support every protocol.
- C. This is not necessarily true, since there are certain global commands that are supported on one feature set that are not on a different feature set of IOS.
- E. Global commands can become outdated, and can be replaced by newer commands in the newer releases of IOS.

QUESTION 339

You just purchased a refurbished router that contains a configuration from a previous deployment. What should you do, before entering a new configuration into the router?

- A. RAM should be erased and the router restarted.
- B. Flash should be erased and the router restarted.
- C. NVRAM should be erased and the router restarted.
- D. The new configuration should be entered and saved.

Answer: C

Explanation:

You should have no interest in running a router in your network that has a configuration file of another company's network.

QUESTION 340

After logging into a router and typing in a few show commands, you press the up arrow key. What will this do?

- A. It will recall the previous command line
- B. It will move the cursor one line up
- C. It will redisplay the current command line
- D. It will capitalize the command line
- E. None of the above

Answer: A

Explanation:

The up arrow key is used to recall the previous command line entry. The commands that were entered previously can be displayed by repeatedly pressing the up arrow key, or by entering the "show history" command.

QUESTION 341

After working on a router, some problems arise and you wish to view the commands that you recently entered. Which IOS command opens the history buffer and displays the most recently entered commands?

- A. Show history
- B. Show buffers
- C. Show typed commands
- D. Show terminal buffer
- E. Show command

Answer: A

Explanation:

The router will buffer previously entered commands. By default, the "show history" command will display the previous ten commands that were entered. To see the contents of the buffer you enter the show history command.

Incorrect Answers:

- B. This command will show the memory buffer information
 - C, D. These are invalid commands.
-

QUESTION 342

You have just purchased a brand new router and wish to have the router prompt you through the initial configuration commands. Which router mode does this describe?

- A. ROM Monitor mode
- B. SETUP mode
- C. Autoflash mode
- D. RXBOOT mode
- E. None of the above

Answer: B

Explanation:

Setup mode is a convenient mode that walks you through the setup procedure by prompting you with specific questions and options one by one.

QUESTION 343

After working all night and successfully configuring a Cisco router for the Certkiller network you save your changes on the startup config, reboot the router, and go out for a cigarette. When you return, none of your changes are active and the router boots to the initial configuration mode! Which of the choices below indicates the source of your problem?

- A. Hardware failure in NVRAM prevents the router from loading the config
- B. Startup-config in flash is corrupt and cannot be analyzed
- C. Router configuration-register set to bypass startup configuration
- D. Startup-config in NVRAM is corrupt and cannot be analyzed
- E. None of the above

Answer: C

Explanation:

The default configuration-register setting of 0x2102 loads the IOS from flash and the configuration from NVRAM.

However, for password recovery, you can set the register to 0x2142 and the startup-config file in NVRAM will be bypassed. The problem described here is that the config register was not changed back to 0x2102 before the router was rebooted, so the active configuration is bypassed. Simply setting the config register back to 0x2102 will fix this problem.

Incorrect Answers:

A, B, D. All of these describe hardware or software errors. In the event that this is the

problem, errors will be generated and the router will fail to boot properly. In these cases, the router will not return to the initial startup configuration.

QUESTION 344

While working in setup mode, a configuration line is typed incorrectly. What should you do to exit setup mode, without executing or saving any of the mistakes you made? (Select two answer choices)

- A. Type exit at the setup dialog.
- B. Type close at the setup dialog.
- C. Press the Ctrl-C key combination.
- D. Press the Ctrl-X key combination.
- E. Issue the copy startup-config command.
- F. Issue the 'write e' command.
- G. Issue the "write mem" command

Answer: C

Explanation:

Here is the partial output from new router while it boots up:

At any point you may enter a question mark '?' for help.

Refer to the 'Getting Started' Guide for additional help.

Use ctrl-c to abort configuration dialog at any prompt.

Incorrect Answers:

- A. The Exit command can not be used during setup mode.
- B. This is an invalid command
- E. This command is used to save the configuration stored on NVRAM to a location.
- F. This will have the effect of erasing the running configuration, and setting the router configuration back to the factory default settings.
- G. This is an old command that is still supported on the latest Cisco IOS. It is short for "write memory" and has the same effect as the "copy running-config startup-config" command.

QUESTION 345

You are a senior network administrator at Certkiller , and while performing the password recovery procedure on your 2500 series Cisco router, you type in the following command:

o/r 0x2142

What is the purpose of this command?

- A. It is used to restart the router.
- B. It is used to bypass the configuration in NVRAM.
- C. It is used to enter ROM Monitor mode.
- D. It is used to view the lost password.
- E. It is used to save the changes to the configuration.

Answer: B

Explanation:

Theo/r 0x2142 command changes the value of config-register to 2142 in a Cisco 2500 series router, so that the Router ignores the NVRAM contents and reverts to the initial setup configuration mode when it boots.

QUESTION 346

Which of the following commands will display the name of the IOS image file being used in a Cisco router?

- A. Router# show IOS
- B. Router# show version
- C. Router# show image
- D. Router# show protocols
- E. Router# show flash

Answer: B, E

The IOS command "Show flash" displays all the image files in it. There could be more than one file. However, "show version" displays the one that is currently in use by the router.

Incorrect Answers:

A, C. These are invalid commands.

D. The command "show protocols" will show the routed protocols in use by the router and by interface conditions and their IP address, if configured.

QUESTION 347

After making changes to the router, you issue the "copy running-config startup-config" command to save changes. After reloading the router, the router comes up in setup mode. You again make changes, save them, and reboot. Again, the router comes up in setup mode.

What is the most likely cause of this?

- A. The NVRAM is corrupted.
- B. The boot system commands were omitted in the configuration.
- C. The configuration register setting is incorrect.
- D. The upgraded configuration incompatible with the hardware platform.
- E. The upgraded IOS incompatible with the hardware.

Answer: C

Explanation:

When you enter the command, "copy running-config startup-config" you save your current settings to NVRAM. The problem described in this question is that it appears the router is set to bypass the NVRAM, making it come up in the initial configuration dialog.

The most likely cause of a router with the configuration register settings set incorrectly is that the router recently went through the password recovery procedure.

QUESTION 348

You need to upgrade the IOS of an existing router on your network. The new IOS image is located on a TFTP server that you have set up within the network. What command should you issue in order to download the new IOS version?

- A. Router# copy tftp flash
- B. Router# copy flash run
- C. Router(config)# restore flash
- D. Router(config)# repair flash
- E. Router#copy flash tftp
- F. Router# copy start flash

Answer: A

Explanation:

The command "copy tftp flash" will copy the new IOS version upgrade from your networks TFTP server (assuming of course you have a TFTP server with the new version of IOS standing by).

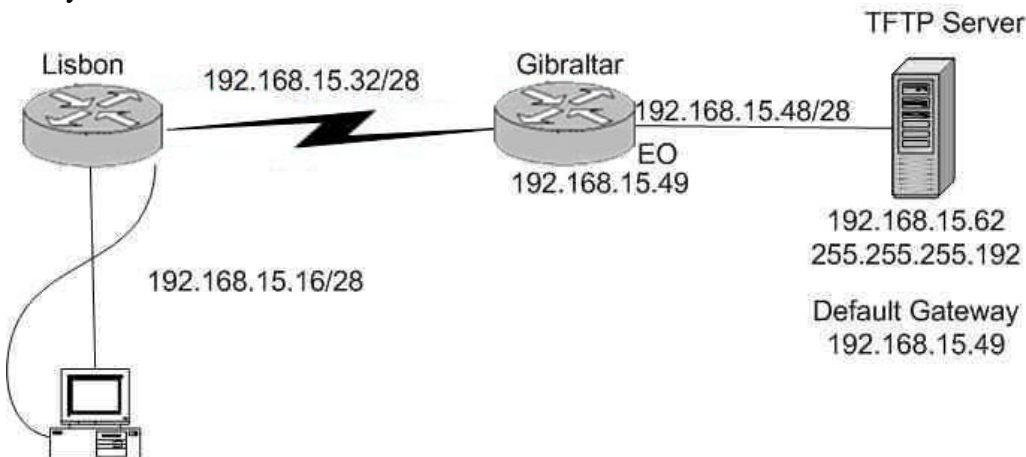
Incorrect Answers:

C, D. The copy tftp flash command should be issued from the enable command prompt. It is not necessary to go into configuration mode.

E. This will have the reverse effect, and will copy the IOS image on your router onto a folder in your TFTP server.

QUESTION 349

Study the exhibit below:



A systems administrator in Lisbon configured a new router to connect with his company's head office in Gibraltar. He attempted to create and save an image file of the new router on the TFTP server in Gibraltar but failed. Based on the information given by above exhibit, what is the underlying problem?

- A. The IP address of the TFTP server not correct.
- B. There is an incorrect subnet mask of the TFTP server.
- C. The default gateway of the TFTP server not properly set.
- D. The subnet mask on the Lisbon router not correct
- E. There is an incorrect IP address configured on E0 of the Gibraltar router

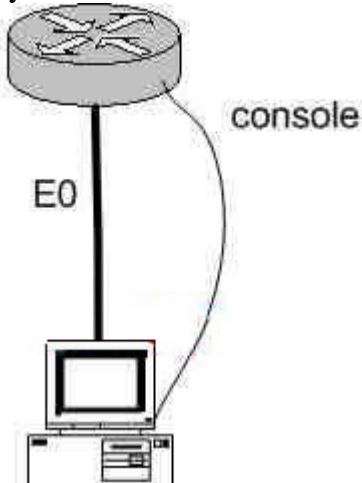
Answer: B

Explanation:

An incorrect subnet mask on the TFTP server is the cause of this problem. If you look at the subnet masks of all the other devices you'll notice that they are /28. If you rewrite the subnet mask of the TFTP server, of 255.255.255.192 you'll notice that it translates to a subnet mask of /26. A subnet mask of 255.255.255.240, which is a /28, applied to the TFTP server will fix this problem.

QUESTION 350

Study the exhibit below:



You just connected your computer directly to the E0 port of a router and you're running a console session. Which of the following steps below are required to successfully implement the "copy flash tftp" command and upload the flash image onto the TFTP server? (Select three answer choices)

- A. TFTP server software must be activated.
- B. TFTP server software must be running on the administrator's workstation.
- C. There must be space in the flash memory of the router to accommodate the file to be copied.
- D. The copy flash tftp command must provide the IP address of the administrator's workstation.
- E. The administrator's workstation must be on the same subnet as the router E0 interface.
- F. The Ethernet connection between the router and the administrator's workstation must be via straight-through cable.

Answer: B, D, E

Explanation:

The sole purpose of the 'copy flash tftp' command is to copy the routers configuration file to the TFTP server to save it. The first logical variable for this operation is that the TFTP software is actually running. So B is correct. D is correct because the IOS won't be able to send off if it doesn't even know where the TFTP server is. Finally, TFTP server must be on the same subnet as the connectivity must be direct and the TFTP and router will need to know how to reach each other.

Incorrect Answers:

- A. The TFTP can't just be activated, it has to be running in the right place.
- C. This is not valid because you aren't downloading into the flash, you're uploading out of the flash, so space isn't a concern.
- F. A cross over cable must be used when connecting from a PC directly into the router's Ethernet interface.

QUESTION 351

After issuing the "show version" command on your Cisco router, you notice that the image is named "C7200-ajs40-mx". What does the C7200 portion of the filename represent?

- A. The memory capacity requirements
- B. The hardware product platform
- C. The distribution channel
- D. The feature capabilities
- E. The run location and compression status

Answer: B

Explanation:

Cisco has a Cisco IOS image naming convention for identifying the platform or board for which the binary software is built, the package feature content of the image, and the area of memory used by the image at run time. The image name follows a three-part format: PPPPP-FFFF-MM

Where PPPPP represents the platform; FFFF represents features; and MM represents run-time memory and compression format. In this case, the C7200 means that it is a Cisco 7200 series router.

QUESTION 352

What kind of information can you deduce from an IOS image file name? (Select three answer choices)

- A. Distribution channel failures
- B. Feature capabilities
- C. Memory capacity needs
- D. Hardware product platform
- E. Programming language requirements

F. Run location and compression status

Answer: B, D, F

Explanation:

Image Naming Conventions:

You can identify the platform, features, and image location by the name of the image. The naming convention is platform-features-type for images that are stored on a UNIX system.

The platform variable indicates which platforms can use this image. Examples of platform variables include rsp (Cisco 7000 series with RSP7000 and Cisco 7500 series), c1600 (Cisco 1600 series), and c1005 (Cisco 1005).

The features variable identifies the feature sets supported by the image.

The type field can contain the following characters:

f-The image runs from Flash memory.

m-The image runs from RAM.

r-The image runs from ROM.

l-The image is relocatable.

z-The image is zip compressed.

x-The image is mzip compressed.

QUESTION 353

After logging into the RtrB router, you issue the "show interface" command as displayed below:

```
RtrB#show interface serial0/0
```

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

```
Hardware is PowerQUICC Serial
```

```
Internet address is 10.0.15.2/21
```

```
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
```

```
Reliability 255/255, txload 1/255, rxload 1/255
```

```
Encapsulation PPP, loopback not set
```

```
Keepalive set (10 sec)
```

```
LCP Open
```

```
Closed: IPXCP
```

```
Listen: CCP
```

```
Open: IPCP, CDPCP
```

```
Last input 00:00:00, output 00:00:00, output hang never
```

```
Last clearing of "show interface" counters 00:52:02
```

```
Input queue: 0/75/0/0 (size/max/drops/flushes): total output  
drops: 0
```

```
Queuing strategy: weighted fair
```

```
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
```

After considering the effects of the command output illustrated in the exhibit above, which of the following protocols are operational on the serial link? (Select two options)

- A. PPP
- B. IP
- C. Compression
- D. IPX
- E. Multilink
- F. ATX

Answer: A, B

Explanation:

The interface displays show that the line protocol is up, so we can safely assume that everything is working from layers one and two. This interface is configured with PPP encapsulation, which is a layer two protocol that appears to be operational on this interface. The interface is also configured with a valid IP address and subnet mask, so IP is also operational on this interface.

Incorrect Answers:

- C. There is nothing in the output displayed that would suggest any type of compression has been enabled on this interface.
- D. There is only an IP address configured on this interface. If IPX was enabled, there would be a layer 3 IPX address configured on it.
- E. Although multilink works with PPP to provide for the bonding of interfaces into a larger, logical interface, there is nothing that suggests that multilink has been enabled. PPP multilink uses bundle interfaces, and the bundle interface would have the IP address assigned to it, not the physical serial interface.
- F. There is nothing to suggest that this protocol has been enabled on this interface.

QUESTION 354

You wish to upgrade the IOS of a router without removing the image currently installed.

What command will display the amount of memory that is being used by the current IOS image and whether there is enough room available to hold both the current and new images?

- A. Router# show version
- B. Router# show flash
- C. Router# show memory
- D. Router# show buffers
- E. Router# show running-config
- F. All of the above

Answer: B

Explanation:

The "show flash" command is used to display the layout and contents of the flash memory file system. It will show name of the file system, as well as the number of bytes used and the number available within the flash memory.

QUESTION 355

The "show version" command was issued on a Certkiller router as shown below:

System Image file is "Flash: C2600-ik8035-m2.122-8.T5.bin"

Cisco 2620(MPC860)processor(revision 0x200) with 16384/2048K bytes of memory

Processor board ID JAD05076EF6

M860 processor:part number 0, mask 49.

Bridging software

X.25 Software, Version 3.0.0

2 FastEthernet/IEEE 802.3 interface(s)

2 Serial(sync/async)network interface(s)

2 Low speed serial(sync/async)network interface(s)

32K bytes of non-volatile configuration memory

16384 bytes of processor board system flash (Read/Write)

Configuration register is 0x2102

The Network administrator at Certkiller .com wants to upgrade the IOS of this router. The new Image requires 64 MB of RAM & 16 MB for Storage of the File.

Given the Output Shown in the Graphic, which of the following is true?

- A. This router meets the requirements for the new image.
- B. This router will require a DRAM upgrade to meet the requirements for the Image.
- C. This router will require a FLASH upgrade to meet the requirements for the Image.
- D. This router will require a NVRAM upgrade to meet the requirements for the Image.

Answer: B

Explanation:

Based on the output above, the router above will not require a Flash memory upgrade, as only 16 MB is required and the Certkiller router does indeed have 16 MB of flash (16384 bytes). However, a DRAM upgrade is required, as 64 MB of RAM is needed but this router has only slightly more than 16 MB as shown by the 16384/2048 value.

QUESTION 356

You are a trainee technician at Certkiller , Inc. Your instructor tells you to backup an IOS image of a Cisco device to a Windows 2003 server on the network.

What should you do first? (Choose three.)

- A. Make sure that the network server can be accessed.
- B. Check that the authentication for access is set.
- C. Assure that the network server has adequate space for the code image.
- D. Verify any file naming and path requirements.
- E. Make sure that the server can load and run the bootstrap code.

Answer: A, C, D

Explanation:

In order to properly back up the Cisco IOS image onto a Windows server, you should ensure that the server is reachable and that you have the proper permissions to save files to the server. In addition to this, the server will need enough space to hold the backup file.

Incorrect Answers:

E. In order to simply back up the IOS file, the server needs to only be able to save it to a hard disk. It does not need to load, read, or boot the image.

QUESTION 357

The relevant system information regarding a Certkiller router is shown in the following display:

```
System image file is "flash: c2600-das35-m2.120-5.T1"
```

```
Cisco2621(MPC860)processor(revision 0x600) with 53248K/12288K bytes of memor
```

```
Processor board ID JAD052B0387(3636592693)  
M860 processor:parct.011m2b2c,0,ask 49.  
Bridging software  
x.25 software version 3.0.0  
2 FastEthernet/IEEE 802.3 interface(s)  
2 Serial(sync/async)network interface(s)  
2 Low speed serial(sync/async)network interface(s)  
16 terminal line(s)
```

```
32K bytes of non-volatile confuration memory  
16384 bytes of processor board system flash (Read/Write)
```

Refer to the partial Command output shown. Which two statements are correct regarding the router hardware? (Choose Two)

- A. Total RAM Size is 32 KB.
- B. Total RAM Size is 16384 KB (16 MB)
- C. Total RAM Size is 65536 KB (64 MB)
- D. FLASH Size is 32 KB.
- E. FLASH Size is 16384 KB (16 MB)
- F. FLASH Size is 65536 KB (64 MB)

Answer: C, E

Explanation:

The RAM is found by adding up the memory, so in this case it is 53248K+12288K = 65536K. The Flash is found at the very bottom of the output, which is shown as 16384K
How Do I Know What Platform I Have?

Type the show version command at the enable command prompt of the router to see the platform, RAM, flash memory, and current version of code you are running.

This example shows a Cisco 2600 router with 48 MB of RAM (43617 K + 5534 K), 16 MB of flash memory (16384 K), and a code image called flash:c2600-jk8s-mz.122-6.bin.


```
wilson#show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-JK8S-M), Version 12.2(6), RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Compiled Wed 07-Nov-01 21:07 by pwade
Image text-base: 0x8000B088, data-base: 0x814FF2C4

ROM: System Bootstrap, Version 11.3(2)XA3, PLATFORM SPECIFIC RELEASE SOFTWARE (fc1)

wilson uptime is 1 week, 2 days, 7 hours, 41 minutes
System returned to ROM by power-on
System image file is "flash:c2600-jk8s-mz.122-6.bin"

cisco 2611 (MPC860) processor (revision 0x202) with 43617K/5534K bytes of memory.
Processor board ID JAB03050692 (209339592)
M860 processor: part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TMS270 Emulation software.
2 Ethernet/IEEE 802.3 interface(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102

wilson#
```

Reference:

http://www.cisco.com/en/US/products/sw/secursw/ps1018/products_tech_note09186a00800949e4.shtml

QUESTION 358

Which is the correct fallback sequence for loading the Cisco IOS?

- A. ROM, Flash, NVRAM
- B. ROM, TFTP server, Flash
- C. Flash, TFTP server, ROM
- D. Flash, NVRAM, RAM

Answer: C

Explanation:

By default, a Cisco IOS router will normally boot up from flash where the IOS is stored. If the IOS is not found or has become corrupted, the router will then send an all hosts broadcast (255.255.255.255) to find a TFTP server to download the IOS from. Should that fail, the router will boot up in ROM Monitor mode as a last resort.

QUESTION 359

The Certkiller .com administrator has made changes to the router configuration but cannot remember if those changes were saved.

Which of the following commands allows the administrator to see the configuration that will load when the router is restarted?

- A. Certkiller C# show memory
- B. Certkiller C# show startup-config
- C. Certkiller C# show running-config
- D. Certkiller C# show restart

Answer: B

Explanation:

Show startup-config command displays the contents of the NVRAM. When we reload a router, it loads the configuration from NVRAM. So, the administrator can check from the show startup-config command whether he has saved the temporary configurations from Running-config (RAM) to Startup-config (NVRAM).

QUESTION 360

Exhibit: The following are true with one of the Certkiller routers:

- 1) The IOS image in flash is missing
- 2) No Network connectivity is available.
- 3) The router fallback IOS image is corrupt.

How will this Cisco 2600 series router respond if the conditions listed in the exhibit exist during the boot process?

- A. The router will enter setup mode.
- B. The router will enter ROM monitor mode.
- C. The router will enter global configuration mode.
- D. The boot will hang until an IOS is available.

Answer: B

Explanation:

Cisco routers can look for IOS in FLASH, TFTP server, and ROM. The default option is to look for IOS only in FLASH, and in case the IOS in flash is corrupt, to look in ROM.

You can add the following commands to the configuration file to make a router to look for IOS image in FLASH, then TFTP server, then in ROM:

```
boot system flash ios_filename  
boot system TFTP ios_filename TFTP_address  
boot system rom
```

These 3 lines in the configuration file will force the router to look for IOS in the FLASH first, then in TFTP server, and then in rom.

QUESTION 361

Which command will reinitialize the router and totally replace the running configuration with the current startup configuration?

- A. Certkiller B#reload
- B. Certkiller B# copy tftp startup-config
- C. Certkiller B# copy startup.-config running-config
- D. Certkiller B# copy running-config flash
- E. Certkiller B# setup

Answer: A

Explanation:

Enter the copy system:running-config nvram:startup-config command to save your configuration changes to your startup configuration so that they will not be lost if there is a system reload or power outage. For example:

Router# copy system:running-config nvram:startup-config Building configuration...It might take a minute or two to save the configuration. After the configuration has been saved, the following output appears:

[OK] Router#On most platforms, this task saves the configuration to NVRAM. On the Class A Flash file system platforms, this task saves the configuration to the location specified by the CONFIG_FILE environment variable. The CONFIG_FILE variable defaults to NVRAM.

QUESTION 362

See the following exhibit below:

system image file is "flash;c2600-ik8033-mz.122-8.Ts.bin

```
cisco 2620 (MPC860 processor (revision 0x200) with 16384/2048k  
byte of  
nemon  
processor boardID JAD05076EF6  
M860 processor:part number 0, mask 49.  
Bridging software  
x.25 software version 3.0.0  
1 Fast Ethernet ( IEEE 802.3 interface (s)  
2 Low speed serial (synch/asynch) network interface (s)  
32k bytes of non-volatile configuration memory.  
16384k bytes of processor board System Flash (Read/Write)  
configuration register is 0x2142
```

A router consistently loses its configuration each time it reboots. Given the output shown in the graphic, what is the cause of this problem?

- A. The processor is overheating.
- B. Configuration register is misconfigured.
- C. There is no problem.
- D. Cisco products are inferior compared to Nortel products. Migrate to Nortel instead.

Answer: B

Explanation:

The value of the register 0x2142 means that the router should omit the startup configuration when it loads. To solve this problem change the value of the register to 0x2102

QUESTION 363

DRAG DROP

As a Certkiller .com instructor you are required to place the following items to the

correct order they are used when Cisco IOS based hardware is booted.

Item	Items, place here in order
TFTP	1st
ROM	2nd
NVRAM	3rd
FLASH	4th

Answer:

As a Certkiller.com instructor you are required to the following items to the correct order they are used when Cisco IOS based hardware is booted.

Item	Items, place here in order
	NVRAM
	FLASH
	TFTP
	ROM

QUESTION 364

A Cisco router has been configured, and the copy running-config startup-config command has been issued. When the router is power cycled, the router prompts with:

"Would you like to enter the initial configuration dialog? [yes/no]"

Why has this occurred?

- A. There is an error in the router DRAM.
- B. Te IOS image is corrupt.
- C. The configuration register is set to 0x2142.
- D. The TFTP server that contains the router configuration file is unreachable.
- E. A boot system configuration command has placed the router into setup mode.

Answer: C

Explanation:

When the configuration setting is set to 0x2142, the router will ignore the contents of the NVRAM information. More specifically, this setting will:

1. Ignores break
 2. Boots into ROM if initial boot fails
 3. 9600 console baud rate
 4. Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration)
-

QUESTION 365

What should be done prior to backing up an IOS image to a TFTP server? (Choose three)

- A. Make sure that the server can be reached across the network.
- B. Check the authentication for TFTP access to the server is set.
- C. Assure that the network server has adequate space for the IOS image.
- D. Verify file naming and path requirements.
- E. Make sure that the server can store binary files.
- F. Adjust the TCP window size to speed up the transfer.

Answer: A, C, D

Explanation:

In order to ensure proper uploading of the IOS to a TFTP server, the first step is to verify is actually reachable by the router. If so, the server will need adequate storage space to hold the IOS file, and the file path and naming conventions you wish to use should be verified.

QUESTION 366

A CCNA candidate is working on a 2600 Cisco router. The person needs to verify that the configuration register is set to boot the router IOS from flash memory and use the commands saved in the startup-configuration file. Which command will display this information, and what is the configuration register value that should be displayed?

- A. show startup-config and 0x2142
- B. show version and 0x2102
- C. show flash and 0x2102
- D. show version and 0x2142
- E. show running-config and 0x2142
- F. show flash and 0x2142

Answer: B

Explanation:

To display the configuration of the system hardware, the software version, the names and

sources of configuration files, and the boot images, use the show version EXEC command.

Example:

```
Router>show version
```

```
Cisco Internetwork Operating System Software
```

```
IOS (tm) C2600 Software (C2600-IS-M), Version 11.3(2)XA,
```

```
PLATFORM SPECIFIC RELE
```

```
TAC:Home:SW:IOS:Specials for info
```

```
Copyright (c) 1986-1998 by cisco Systems, Inc.
```

```
Compiled Tue 10-Mar-98 13:42 by rnapier
```

```
Image text-base: 0x80008084, data-base: 0x807B695C
```

```
ROM: System Bootstrap, Version 11.3(1)XA, PLATFORM SPECIFIC RELEASE
```

```
SOFTWARE (f)
```

```
ROM: C2600 Software (C2600-IS-M), Version 11.3(2)XA,
```

```
PLATFORM SPECIFIC RELEASE
```

```
Router uptime is 1 minute
```

```
System restarted by power-on
```

```
System image file is "flash:c2600-is-mz.113-2.XA", booted
```

```
via flash
```

```
cisco 2610 (MPC860) processor (revision 0x200) with
```

```
27853K/4915K bytes of memor.
```

```
Processor board ID FFFF (48B25A24)
```

```
M860 processor: part number 0, mask 32
```

```
Bridging software.
```

```
X.25 software, Version 3.0.0.
```

```
1 Ethernet/IEEE 802.3 interface(s)
```

```
4 Low-speed serial(sync/async) network interface(s)
```

```
32K bytes of non-volatile configuration memory.
```

```
8192K bytes of processor board System flash (Read/Write)
```

```
Configuration register is 0x2102
```

In the example above, the boot register is set correctly for booting from the IOS flash.

The following table lists the various config register values and their meanings:

640-801

Configuration Register Setting	Router Behavior
0x102	<ul style="list-style-type: none">• Ignores break• 9600 console baud
0x1202	<ul style="list-style-type: none">• 1200 baud rate
0x2101	<ul style="list-style-type: none">• Boots into bootstrap• Ignores break• Boots into ROM if initial boot fails• 9600 console baud rate
0x2102	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 9600 console baud rate default value for most platforms
0x2120	<ul style="list-style-type: none">• Boots into ROMmon• 19200 console speed
0x2122	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 19200 console baud rate
0x2124	<ul style="list-style-type: none">• NetBoot• Ignores break• Boots into ROM if initial boot fails• 19200 console speed
0x2142	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 9600 console baud rate• Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration)
0x2902	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 4800 console baud rate

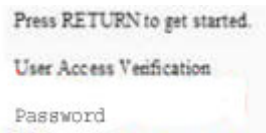
0x2922	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 38400 console baud rate
0x3122	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 57600 console baud rate
0x3902	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 2400 console baud rate
0x3922	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 115200 console baud rate

Reference:

http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a008022493f.shtml

QUESTION 367

What set of router configuration commands causes the message shown in the exhibit?



- A. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# service password-encryption
Certkiller 1(config-line)# login
- B. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable password cisco
Certkiller 1(config-line)# login
- C. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable password cisco
Certkiller 1(config-line)# logging synchronous
- D. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable secret cisco
Certkiller 1(config-line)# login
- E. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# password cisco
Certkiller 1(config-line)# login

Answer: E

Explanation:

Use the line con 0 command to configure the console line. Use the login and password commands to configure the console for login with a password. Here is an example using

the Battle Creek router:

```
Battle>enable
```

```
Password:*****
```

```
CK1 #conf term
```

```
CK1 (config)#line con 0
```

```
CK1 (config-line)#login
```

```
CK1 (config-line)#password oatmeal
```

```
CK1 (config-line)#^Z
```

The "login" command is needed to enforce users to log in to the router using the console connection.

QUESTION 368

Refer to the exhibit below. A Certkiller technician wants to upload a new IOS in the router while keeping the existing IOS. What is the maximum size of an IOS file that could be loaded if the original IOS is also kept in flash?

Exhibit:

```
CK1# show flash
System flash directory
File Length Name/status
1 3802992 c827v-y6-mz.121-1.XB
[3803056 bytes used, 4585552 available, 8388608 total]

8192K bytes or processor board System flash (Read/Write)
```

- A. 4 MB
- B. 5 MB
- C. 8 MB
- D. 3 MB
- E. 7 MB

Answer: A

Explanation:

Based on the output provided, the total amount of flash memory available is 8388608 bytes (8 MB), but the existing IOS is using up 3803056 bytes (3 MB), so in order to fit both IOS files into the flash the new image must be no greater than the amount of available memory, which is 4585552 bytes (4 MB).

QUESTION 369

Refer to the diagram. What is the largest configuration file that can be stored on this router?

Exhibit:

```
DD# show version
Cisco IOS Software, 1841 Software (C1841-IPBASE-M), Version 12.4(1a),
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Fri 27-May-05 12:32 by hqluong

ROM: System Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE (fc1)

N-East uptime is 5 days, 19 minute
System returned to ROM by reload at 15:13:00 UTC Thu Jun 8 2006
System image file is "flash:c1841-ipbase-mz.124-1a.bin"

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0932W21Y
 2 FastEthernet interfaces
 2 Low-speed serial(sync/async) interfaces
DRAM configuration is 64 bits wide with parity disabled.
191K bytes of NVRAM.
31360K bytes of ATA CompactFlash (Read/Write)

Configuration register is 0x2102

DD#
```

- A. 31369K bytes
- B. 16384K bytes
- C. 191K bytes
- D. 114688K bytes
- E. None of the above

Answer: C

Explanation:

Non-Volatile Random Access Memory (NVRAM) is used as the storage location for the router's startup configuration file. After the router loads its IOS image, the settings found in the startup configuration are applied. When changes are made to a router's running configuration, they should always be saved to the startup configuration (stored in NVRAM) or they will be lost when the router shuts down. Remember that the running configuration is stored in RAM, which is erased when the router is powered down. On a Cisco 2500 series router, NVRAM is a relatively tiny 32KB in size. In this example, the file size is only 191K, so the config file must not exceed this.

QUESTION 370

Why might the Certkiller network administrator set the configuration register to 0x2142 on a 2600 series Cisco router?

- A. To boot the IOS from ROM
- B. To reset the console password
- C. To upload a new version of the configuration file
- D. To upload a new version of the IOS
- E. To allow a new memory upgrade to be recognized by the router

Answer: B

Explanation:

About 99 percent of the time someone uses a config-register, it's more than likely because of a lost router password. The two config-registers for recovering passwords are 0x2102 and 0x2142.

The first config-register, 0x2102, is the normal config-register if you boot the router from internal Flash. You can see this config-register by using the show version command. In this output, you'll notice the last line says, "Configuration register is 0x2102." This is normal.

But let's say you forgot the router's password. To recover this password (as long as it's unencrypted), boot the router and bypass the startup-config using config-register 0x2142; you should then be able to see the password in the startup-config. You can use the same method for encrypted passwords, but you'll need to overwrite the original password with a new one. To change the configuration register, enter the following:

```
Router(config)# config-register 0x2142
```

This will instruct the router to bypass the configuration and boot up as if it were a brand new router using factory default settings.

QUESTION 371

The Certkiller A router is configured as shown below:

```
Certkiller A(config)# interface loopback 0
```

```
Certkiller A(config-if)# ip address 192.168.16.24 255.255.255.255
```

As a result of this change, which of the statements below are true? (Select all valid responses)

- A. It creates a virtual, software only, interface.
- B. It provides a way to test the convergence of OSPF routing updates.
- C. The mask of 255.255.255.255 is called a host mask.
- D. It uses a wildcard mask of 255.255.255.255.
- E. It ensures that an interface is always active for OSPF processes.
- F. Loopback interfaces must be numbered 0.

Answer: A, C, E

Explanation:

When the OSPF process starts, the Cisco IOS uses the highest local IP addresses its OSPF router ID. If a loopback interface is configured, that address is used regardless of its value.

A loopback interface is a logical, software interface that is always up.

A 32-bit mask is sometimes called a host mask, because it specifies a single host and not a network or subnetwork.

Incorrect Answers:

B. The addition of a loopback interface will in no way test the convergence speed of any OSPF process.

D. A wildcard mask of value 255.255.255.255 will not check any of the bit values in the

IP address.

F. A loopback interface can be any number from 1-255.

QUESTION 372

You want the text "Unauthorized access prohibited!" to be displayed before the login prompt every time someone tries to initiate a Telnet session to a router, as shown in the example below:

```
Router#telnet 192.168.15.1
Trying 192.168.15.1 ... Open
Unauthorized access prohibited!
User Access Verification
Password:
```

Which command can be used to configure this message?

- A. login banner x Unauthorized access prohibited! X
- B. banner exec y Unauthorized access prohibited! Y
- C. banner motd x Unauthorized access prohibited! X
- D. vtv motd "Unauthorized access prohibited!"

Answer: C

Explanation:

The message text that is displayed when users log into the router is called the "message of the day" banner, and it can be changed with the "banner motd" command as shown in answer choice C.

QUESTION 373

The following was seen on one of the Certkiller routers:

```
Processor board ID IADUSU/bEtb
  FastEthernet/IEEE 802.3 interface
  FastEthernet/IEEE 802.3 interface
X.25 software, Version 2.0.0
  1 FastEthernet/IEEE 802.3 interface(s)
  2 Low-speed serial(synch/asynch) network interface(s)
  32K bytes of non-volatile configuration memory.
  16384K bytes of processor board System flash(Read/Write)

Configuration register is 0x2142
```

You need to troubleshoot a Cisco router at the Toronto office of Certkiller .com. The router loses its configuration each time it is rebooted. You study the output displayed in the exhibit.

What is the cause of the problem?

- A. The configuration register is misconfigured
- B. NVRAM failed POST
- C. There is insufficient flash memory
- D. There is insufficient RAM for the IOSD image
- E. There is insufficient NVRAM

Answer: A

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Explanation:

The configuration register value of 0x2142 is used to bypass the saved NVRAM router configuration and is normally only used for password recovery procedures. The correct configuration register value is typically 0x2102. The following table displays some of the common values and their meanings:

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Configuration Register Setting	Router Behavior
0x102	<ul style="list-style-type: none">• Ignores break• 9600 console baud
0x1202	<ul style="list-style-type: none">• 1200 baud rate
0x2101	<ul style="list-style-type: none">• Boots into bootstrap• Ignores break• Boots into ROM if initial boot fails• 9600 console baud rate
0x2102	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 9600 console baud rate default value for most platforms
0x2120	<ul style="list-style-type: none">• Boots into ROMmon• 19200 console speed
0x2122	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 19200 console baud rate
0x2124	<ul style="list-style-type: none">• NetBoot• Ignores break• Boots into ROM if initial boot fails• 19200 console speed
0x2142	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 9600 console baud rate• Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration)
0x2902	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 4800 console baud rate

0x2922	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 38400 console baud rate
0x3122	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 57600 console baud rate
0x3902	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 2400 console baud rate
0x3922	<ul style="list-style-type: none">• Ignores break• Boots into ROM if initial boot fails• 115200 console baud rate

QUESTION 374

From the Remote27 router, you attempt to telnet to a router named Certkiller 1 as shown below:

```
Reemote27#  
Remote27#telnet Certkiller 1  
Trying Certkiller 1 (10.0.0.1)... Open  
Password required, but none set  
[Connection to Certkiller 1 closed by foreign host]  
Remote27#
```

You are unable to connect to the Certkiller 1 router. Which of the following command sequences will correct this problem?

- A. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# password cisco
- B. Remote27(config)# line console 0
Remote27(config-line)# login
Remote27(config-line)# password cisco
- C. Certkiller 1(config)# line vty 0 4
Certkiller 1(config-line)# login
Certkiller 1(config-line)# password cisco
- D. Remote27(config)# line vty 0 4
Remote27(config-line)# login
Remote27(config-line)# password cisco
- E. Certkiller 1(config)# enable password cisco
- F. Remote27(config)# enable password cisco

Answer: C

Explanation:

The following describes the correct configuration guidelines for setting up telnet access to a router:

Background Information

If you try to telnet to a router that does not have a Telnet password configured, you will get the following error message:

```
Router-1#telnet 10.3.3.1Trying 10.3.3.1 ... OpenPassword required, but none set[Connection to 10.3.3.1 closed by foreign host]Configure
```

In this section, you are presented with the information to configure a Telnet password.

Configurations

This document uses this configuration:

* Router-2

In order to set up the router to allow Telnet access, use the line vty command. This command allows for the configuration of Virtual Terminal (VTY) lines for remote console access. You can configure the router to accept one or more Telnet sessions. It is strongly suggested that you configure password checking with the login and password line configuration commands. The example below configures the router to accept five sessions, with the password "letmein":

```
Router-2
Router-2 (config)#line vty 0 4
Router-2 (config-line)#login
% Login disabled on line 66, until
'password' is set
% Login disabled on line 67, until
'password' is set
% Login disabled on line 68, until
'password' is set
% Login disabled on line 69, until
'password' is set
% Login disabled on line 70, until
'password' is set
Router-2 (config-line)#password letmein
```

Verify

To verify that the router is correctly configured for Telnet, issue the show running-config command.

```
Router-2#show running-configBuilding configuration...hostname Router-2..line vty 0
4password letmeinlogin..!endYou should now be able to telnet to the router.
```

```
Router-1#telnet10.3.3.1Trying10.3.3.1 ... OpenUserAccess
```

```
VerificationPassword:letmeinRouter-2#
```

Reference:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1831/products_configuration_example09186a0080202614

QUESTION 375

After making some network changes you power off and then power on your Cisco router. What sequence of events occurs when a router is powered up?

- A. Perform POST, locate configuration statements, apply configuration statements, locate Cisco IOS software, and load Cisco IOS software.
- B. Locate Cisco IOS software, load Cisco IOS software, locate configuration statements, apply configuration statements, and perform POST.
- C. Test software routines, POST, load configuration files, load Cisco IOS software, test

Cisco IOS software.

D. POST, locate Cisco IOS software, load the Cisco IOS software, locate configuration statements, and apply configuration statements.

E. Load and test IOS, load configuration files, test software routines, POST.

Answer: D

Explanation:

Upon initial start up, Cisco routers perform the following steps in order:

1. The router performs a power-on self-test (POST) to discover and verify the hardware.
2. The router loads and runs bootstrap code from ROM.
3. The router finds the IOS or other software and loads it.
4. The router finds the configuration file and loads it into running config.

QUESTION 376

You are trying to connect directly into an existing Cisco router. You want to telnet to the local Cisco router using TCP/IP but cannot create a session.

What should you do to resolve the problem?

- A. Use a straight-through cable to connect your computer's COM port to the router's console port.
- B. Use a crossover cable to connect your computer's COM port to the router's console port.
- C. Use a straight-through cable to connect your computer's COM port to the router's Ethernet port.
- D. Use a crossover cable to connect your computer's Ethernet port to the router's Ethernet port.
- E. Use a rollover cable to connect your computer's Ethernet port to the router's Ethernet port.
- F. Use a straight-through cable to connect your computer's Ethernet port to the router's Ethernet port.

Answer: D

Explanation:

In order to connect directly to a router via telnet, you must connect to the router via one of the LAN ports. When connecting directly to the Ethernet port with a PC without the use of a switch or hub, a crossover cable must be used.

Incorrect Answers:

A, B, C. In order to telnet directly into the router via a TCP/IP connection, the COM port of the PC can not be used. The COM port is used for direct terminal emulation programs such as HyperTerminal.

E. Rollover cables are used for console connections into the router, not for TCP/IP connections.

F. Straight through cables are used for connections into a switch or hub from the PC. It will not work for direct Ethernet connections into the router.

QUESTION 377

A Certkiller router was configured as shown below:

```
Certkiller C (config)#enable password Certkiller1
Certkiller C (config)#enable secret Certkiller2
Certkiller C (config)# line vty 0 4
Certkiller C (config)#enable password Certkiller3
Certkiller C (config-line) # Exit
Certkiller C (config)#enable secret Certkiller2
```

A Certkiller .com technician is connected to the router console port. After configuring the commands displayed in the exhibit, the technician log out and then logs back in at the console. Which password does the technician need to enter at the router prompt get back into the privileged EXEC mode?

- A. Certkiller 1
- B. Certkiller 2
- C. Certkiller 3
- D. A password would not be required.

Answer: B

Explanation:

Certkiller 2 is the answer because the enable secret password is used to log back to the router. The enable password is used. The enable secret password always overwrites the enable password.

Answer C is incorrect because its for the vty, so it will be required for the initial telnet login.

QUESTION 378

DRAG DROP

Your Certkiller .com boss asks you tot match the descriptions to the corresponding router modes.

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Router mode

Place description here

User EXEC mode	Place here
privileged EXEC mode	Place here
Global configuration mode	Place here
specific configuration mode	Place here
Setup mode	Place here

Descriptions, select from these

- Interactive configuration dialog
- Provides access to all other router commands
- Commands that affect interfaces/processes only
- Commands that affect the entire system
- Limited to basic monitoring commands

Answer:

Your Certkiller.com boss asks you to match the descriptions to the corresponding router modes.

Router mode

Place description here

User EXEC mode	Limited to basic monitoring commands
privileged EXEC mode	Provides access to all other router commands
Global configuration mode	Commands that affect the entire system
specific configuration mode	Commands that affect interfaces/processes only
Setup mode	Interactive configuration dialog

QUESTION 379

You are the network administrator at Certkiller . You need to perform password recovery on Router CK1 . What must you modify in the password recovery process?

(Choose two.)

- A. Configuration register
- B. NVRAM
- C. Boot flash
- D. CMOS
- E. Flash

Answer: A, B

Explanation:

Recovering a Lost Password

This section describes how to recover a lost enable password and how to enter a new enable secret password.

Password recovery consists of the following major processes:

Determining the Configuration Register Value

1. With this process, you determine the configuration of the router, so that you may restore the configuration after the password is recovered.

Resetting the Router

1. With this process, you reconfigure the router to its initial startup configuration. You then display the enable password, if one is used.

Resetting the Password

1. If you are using an enable secret password, you enter a new password with this process. You then restore the router to its prior configuration.

Resetting the Configuration Register Value

1. If you are using an enable password, you use this process to restore the router to its prior configuration.

QUESTION 380

Exhibit

```
CertkillerC # show interfaces serial 0/0
Serial0/0 is administrative down line protocol is down
Hardware is HD64540
Internet address is 192.168.100.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC loopback not set
```

The result of the show interfaces serial 0/0 command is displayed in the exhibit.

What command should be executed to make this interface operational?

- A. Certkiller C(config-if)#enable
- B. Certkiller C(config-if)# no keepalive
- C. Certkiller C(config-if)# encapsulation ppp
- D. Certkiller C(config-if)# no shutdown
- E. Certkiller C(config-if)# clockrate 56000
- F. Certkiller C(config-if)# line protocol up

Answer: D

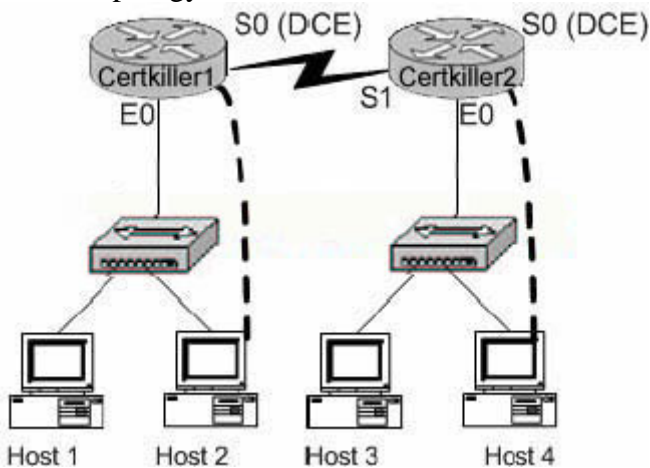
Explanation:

no shutdown	Enable the interface and the configuration changes you have just made on the interface.	
Serial0 is administratively down, line protocol is up.	<p>The possible causes for this state are</p> <ul style="list-style-type: none"> The serial interface has been disabled with the shutdown interface configuration command. Different interfaces on the router are using the same IP address. 	<p>The following are some steps you can take to isolate the problem:</p> <ul style="list-style-type: none"> Use the show configuration privileged EXEC command to display the serial port configuration. If "shutdown" is displayed after "interface Serial0," use the no shutdown interface configuration command to enable the interface. Use the show interface privileged EXEC command to display the IP addresses for all router interfaces. Use the ip address interface configuration command to assign unique IP addresses to the router interfaces.

QUESTION 381

SIMULATION

Network topology exhibit:



You work as a network engineer at Certkiller .com. Assign the IP address of 192.168.174.27 and the default subnet mask to the E0 interface of the Certkiller 1 router. The router have been configured with the following specifications.

1. The routers are named Certkiller 1 and Certkiller 2
2. The password on each router is " Certkiller "

To configure the router click on a host icon that is connected to a router by a serial cable.

Answer:

Explanation:


```
Certkiller 1>
Certkiller 1>ena
Certkiller 1#config t
Enter configuration commands, one per line. End with CNTL/Z.
Certkiller 1(config)#interface ethernet 0
Certkiller 1(config-if)#ip address 192.168.174.27 255.255.255.0
Certkiller 1(config-if)#no shutdown
%LINK-3-UPDOWN: Interface Ethernet0, changed state to up
Certkiller 1(config-if)#^Z
%SYS-5-CONFIG_I: Configured from console by console
Certkiller 1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
The question is asking you to configure the ip address 192.168.174.27
255.255.2 for the ethernet 0
you do this by logging into the router using the following commands:
Enable
config terminal
specify interface which is ethernet 0
specify ip address
issue no shutdown to bring up the interface up
then exit or ctrl+z
finally save the configuration by using the command copy running-config
startup-config
```

QUESTION 382

How can a Certkiller administrator determine if a router has been configured when it is first powered up?

- A. A configured router prompts for a password
- B. A configured router goes to the privileged mode prompt
- C. An un configured router goes into the setup dialog
- D. An un configured router goes to the enable mode prompt

Answer: C

Explanation:

If a non-configured router is started, then it goes into setup mode and ask for the minimum configuration parameters (hostname, IP address to interfaces, enable password, etc). If the router is already configured it boots by implementing the saved startup-config.

QUESTION 383

Exhibit:

[640-801](#)

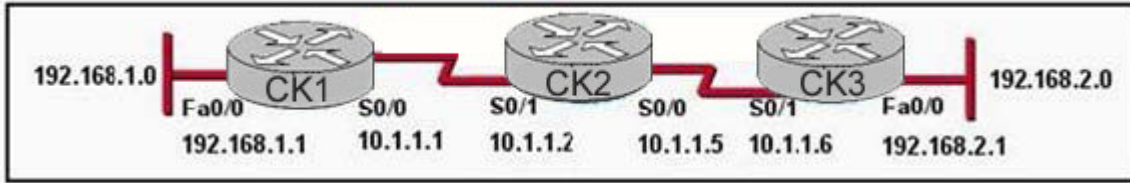


Exhibit:

Please study the exhibit carefully. The network administrator has correctly configured the interfaces on CK1 and adds the following commands to configure the routing protocol on CK1 : router rip version 2 network 192.168.1.0 network 10.0.0.0
Assuming CK2 and CK3 are also using RIP as the routing protocol and are otherwise configured correctly, what will be displayed by the show ip route command issued on router CK1 ?

Exhibit A.

```
CK1# show ip route
<output omitted>
Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 2 subnets
C    10.1.1.0 is directly connected, Serial0/0
C   192.168.1.0/24 is directly connected, FastEthernet0/0
```

Exhibit B.

```
CK1# show ip route
<output omitted>
Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 2 subnets
C    10.1.1.0 is directly connected, Serial0/0
R    10.1.1.4 [120/1] via 10.1.1.2, 1d00h, Serial0/0
C   192.168.1.0/24 is directly connected, FastEthernet0/0
R   192.168.2.0/24 [120/2] via 10.1.1.2, 1d00h, Serial0/0
```

Exhibit C.

```
CK1# show ip route
<output omitted>
Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 2 subnets
C    10.1.1.0 is directly connected, Serial0/0
C   192.168.1.0/24 is directly connected, FastEthernet0/0
R   192.168.2.0/24 [120/4] via 10.1.1.2, 1d00h, Serial0/0
```

Exhibit D.

```
CK1# show ip route
<output omitted>
Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 2 subnets
C   10.1.1.0 is directly connected, Serial0/0
R   10.1.1.4 [120/2] via 10.1.1.2, 1d00h, Serial0/0
C   192.168.1.0/24 is directly connected, FastEthernet0/0
```

Exhibit E.

```
CK1# show ip route
<output omitted>
Gateway of last resort is not set
 10.0.0.0/30 is subnetted, 2 subnets
C   10.1.1.0 is directly connected, Serial0/0
R   10.1.1.4 [120/1] via 10.1.1.2, 1d00h, Serial0/0
C   192.168.1.0/24 is directly connected, FastEthernet0/0
R   192.168.2.0/24 [120/2] via 10.1.1.2, 1d00h, Serial0/0
```

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

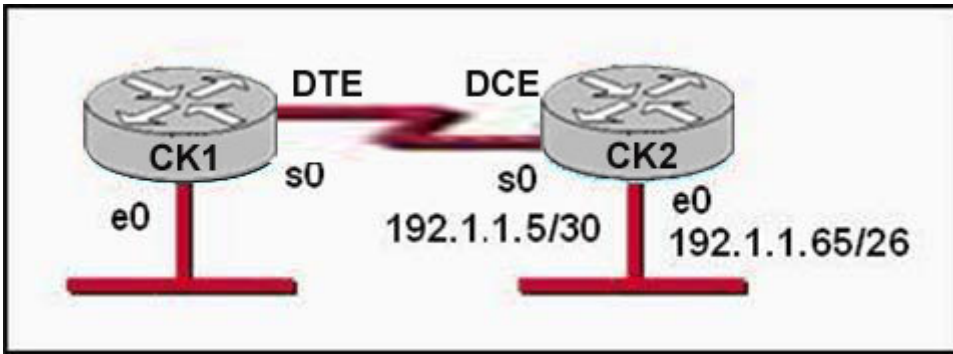
Answer: B

Explanation:

In RIP Version 2 the 192.168.1.0 and 10.0.0.0 networks are published in the CK1 router. RIP version 2 is correctly configured in all the other routers. The 192.168.1.0 and 10.1.1.0 networks are directly connected to Router CK1 . The routing table showing the path to get the remote network 10.1.1.4 needs to cross the one hop and 192.168.2.0 needs to cross the 2 hop through 10.1.1.2 of CK2 . Remember that 192.168.2.0/24 is the remote network, [120/2] is called [administrative distant/number of hops] via neighbor router's ip to get remote network.

QUESTION 384

Two Certkiller routers are connected as shown below:



Which series of commands will configure router CK1 for LAN-to-LAN communication with router CK2 ? The network address is 192.1.1.0/24 and the routing protocol in use is RIP. (Choose three.)

- A. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.129 255.255.255.192
CK1 (config-if)# no shutdown
- B. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.97 255.255.255.192
CK1 (config-if)# no shutdown
- C. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.4 255.255.255.252
CK1 (config-if)# clock rate 56000
- D. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.6 255.255.255.252
CK1 (config-if)# no shutdown
- E. CK1 (config)# router rip
CK1 (config-router)# network 192.1.1.4
CK1 (config-router)# network 192.1.1.128
- F. CK1 (config)# router rip
CK1 (config-router)# version 2
CK1 (config-router)# network 192.1.1.0

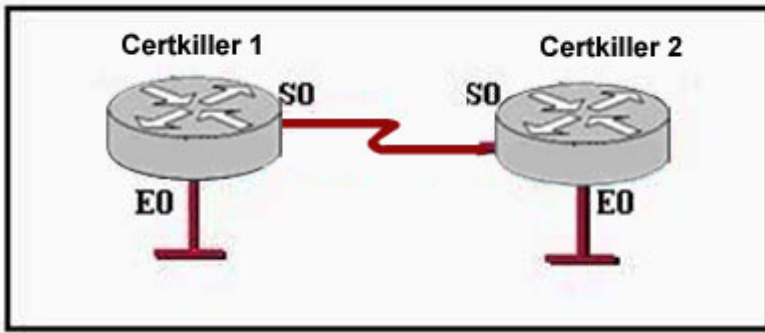
Answer: A, D, F

Explanation:

Answer A is correct because first Subnet is 65 and address from first subnet is used in CK2 . The first IP address of the second subnet is assigned in ethernet of CK1 . The WAN connection between CK1 and CK2 required two usable IP address so 30 bits is used for the network. RIP version 1 does not support variable length subnet masking so RIP version 2 needs to be used.

QUESTION 385

Two Certkiller routers are connected as shown below:



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

- A. The MAC address of the S0 interface on Certkiller 1
- B. The MAC address of the E0 interface on Certkiller 1
- C. The MAC address of the S0 interface on Certkiller 2
- D. The MAC address of the E0 interface on Certkiller 2

Answer: B

Explanation:

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

QUESTION 386

Because of a security advisory, Cisco releases an IOS version with a security patch. An administrator needs to rapidly deploy this temporary version of the IOS to routers in the internetwork. The administrator prepares a server with this image for distribution to the routers. Which three commands are needed to configure a router to run this image as soon as possible? (Choose three)

- A. router# reload
- B. router(config)# service config
- C. router# copy tftp startup-config
- D. router(config)# boot system tftp
- E. router(config-line)# logging synchronous
- F. router# copy running-config startup-config

Answer: A, D, F

Explanation:

Cisco routers can boot Cisco IOS software from these locations:

1. Flash memory
2. TFTP server
3. ROM (not full Cisco IOS)

Boot System Commands:

Router(config)# boot system flash IOS filename - boot from FLASH memory

Router(config)# boot system tftp IOS filename tftp server ip address - boot from a TFTP server

Router(config)# boot system rom - boot from system ROM

After the configuration is updated, the config needs to be saved using the "copy running-config startup-config" command and then reloaded.

QUESTION 387

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

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

Answer: A, D

Explanation:

In order to telnet to any Cisco device, the device must be reachable from the remote location. For a Cisco switch to be reachable from remote locations, it must have an IP address, subnet mask, and default gateway assigned.

Communication with the switch management interfaces is through the switch IP address.

The IP address is associated with the management VLAN, which by default is VLAN 1

QUESTION 388

What determines the IOS that the router will load?

- A. The load register and the startup system command
- B. The configuration register and the setup command
- C. The start up register and startup system command
- D. The configuration register and boot system commands
- E. The boot register and the startup system command

Answer: D

Explanation:

Cisco routers can boot Cisco IOS software from these locations:

1. Flash memory
2. TFTP server
3. ROM (not full Cisco IOS)

Boot System Commands:

Router(config)# boot system flash IOS filename - boot from FLASH memory

Router(config)# boot system tftp IOS filename tftp server ip address - boot from a TFTP server

Router(config)# boot system rom - boot from system ROM

The order in which the router looks for system bootstrap information depends on the boot field

Setting is in the configuration register. The config register number is in NVRAM

Default is usually 0x2102 or 0x102 for router with built-in flash

Router command "show version" will tell you what the Hex number is

Router(config)#config-register 0x101 (to boot from ROM)

Router(config)#config-register 0x102 (or 0x2102 to boot from NVRAM)

QUESTION 389

What is the purpose of using the copy flash tftp command on a router?

- A. To copy an IOS image to the router
- B. To create a backup copy of the IOS
- C. To move the IOS image from a server to the router
- D. To backup the router configuration to a server

Answer: B

Explanation:

When upgrading the IOS on a router, if there is enough space to copy the system image file, then the original one can be retained and the new file can be copied in the additional memory space. If there is not enough space available, as in this case, then the existing file from the Flash is erased while downloading a new one. It is a good practice to backup the existing system image to the TFTP server using the "copy flash tftp" command.

Reference: <http://www.cisco.com/warp/public/63/copyimage.html>

QUESTION 390

What will cause a Certkiller router to enter setup mode? (Choose two)

- A. The configuration file is missing in NVRAM.
- B. The configuration register is set to 0x2100.
- C. Boot system commands are misconfigured in the running-configuration.
- D. The setup command was issued from the privileged mode prompt.
- E. The IOS is missing.
- F. The IOS is corrupt.

Answer: A, D

Explanation:

When router boots up, it checks the valid configuration into NVRAM and tries to load the configuration. If there is not configuration router automatically goes into setup dialog. From setup dialog, you able to configuration the basic configuration. As well you can run the setup command manually from privileged mode using the setup command.

QUESTION 391

Which of the following commands displays the configurable parameters and statistics of all interfaces on a router?

- A. show interfaces
- B. show processes
- C. show running-config
- D. show versions
- E. show startup-config

Answer: A

Explanation:

Use the show interfaces EXEC command to display statistics for all interfaces configured on the router or access server. The resulting output varies, depending on the network for which an interface has been configured.

The following is an example from the show interfaces command. Because your display will depend on the type and number of interface cards in your router or access server, only a portion of the display is shown.

```
CK1 #showinterfaces
Ethernet0isup,lineprotocolisup
HardwareisMCIEthernet,addressis0000.0c00.750c(bia0000.0c00.750c)
Internetaddressis131.108.28.8,subnetmaskis255.255.255.0
MTU1500bytes,BW10000Kbit,DLY100000usec,rely255/255,load1/255
EncapsulationARPA,loopbacknotset,keepaliveset(10sec)
ARPTtype:ARPA,ARPTtimeout4:00:00
Lastinput0:00:00,output0:00:00,outputhangnever
Lastclearingof"showinterface"counters0:00:00
Outputqueue0/40,0drops;inputqueue0/75,0drops
Fiveminuteinputrate0bits/sec,0packets/sec
Fiveminuteoutputrate2000bits/sec,4packets/sec
1127576packetsinput,447251251bytes,0nobuf
Received354125broadcasts,0runt,0giants,57186*throttles
0inputerrors,0CRC,0frame,0overrun,0ignored,0abort
5332142packetsoutput,496316039bytes,0underruns
0outputerrors,432collisions,0interfaceresets,0restarts
```

Reference:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/12cgcr/inter_r/irshowin.htm

QUESTION 392

Refer to the graphic. A network associate is planning to copy a new IOS image into the Paden router. This new image requires 8 MB of flash memory and 32 MB of RAM. How will the IOS proceed with the copy process?

CertKiller1#show flash

```
System flash directory:
File Length Name/status
 1 8760520 c4500-js-mz.122-7b.bin
[8760584 bytes used, 16405240 available, 25165824 total]
24576K bytes of processor board System flash (Read/Write)
```

- A. The new IOS will be copied into flash memory and the current image will remain.
- B. IOS will issue an error message because flash memory is not large enough to hold the new image.
- C. During the copy process, the current IOS image will be erased.
- D. The current IOS image must be manually erased before IOS will allow the new image to be copied.

Answer: A

Explanation:

According to the output shown above, the existing IOS is 8760520 bytes (8M) and the total size of the flash on this device is 24567K (24M). The new IOS only requires an additional 8 MB, so it will be copied on to the flash directly and both images will reside on the flash. The existing IOS is only overwritten if there is insufficient space to hold both.

QUESTION 393

What is the default configuration register setting on most Cisco routers?

- A. 0x2104
- B. 0x2012
- C. 0x2210
- D. 0x2102
- E. 0x2142

Answer: D

Explanation:

About 99 percent of the time someone uses a config-register, it's more than likely because of a lost router password. Normally, the two config-registers for recovering passwords are 0x2102 and 0x2142.

The first config-register, 0x2102, is the normal config-register if you boot the router from

internal Flash. You can see this config-register by using the show version command. In this output, you'll notice the last line says, "Configuration register is 0x2102." This is normal.

QUESTION 394

During the boot sequence, a Certkiller 2600 series router needs to locate and load an operating system. What is the default order the router uses to find an operating system?

- A. ROM, TFTP server, Flash
- B. Flash, TFTP server, ROM
- C. Flash, NVRAM, TFTP server
- D. Flash, ROM, TFTP server
- E. Flash, TFTP server, RAM

Answer: B

Explanation:

Booting up the Router:

Cisco routers can boot Cisco IOS software from these locations:

1. Flash memory
2. TFTP server
3. ROM (not full Cisco IOS)

Multiple source options provide flexibility and fallback alternatives.

Reference: <http://www.svrops.com/svrops/documents/ciscoboot.htm>

QUESTION 395

The following commands are entered on the router:

```
Certkiller 1(config)# enable secret fortress
Certkiller 1(config)# line con 0
Certkiller 1(config-line)# login
Certkiller 1(config-line)# password n0way!n
Certkiller 1(config-line)# exit
Certkiller 1(config)# service password-encryption
What is the purpose of the last command entered?
```

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

Answer: B

Explanation:

Certain types of passwords, such as Line passwords, by default appear in clear text in the

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

QUESTION 396

Refer to the graphic shown below. What is the purpose of the two numbers shown following the exec-timeout command?

```
CertKiller1 #show running-config
<<output omitted>>
line console 0
  exec-timeout 1 55
  Password7094F60C0BAC1
  login
  transport input
<<output omitted>>
```

- A. If connected to the router by Telnet, input must be detected within one hour and 55 seconds or the connection will be closed.
- B. If no router activity has been detected in one hour and 55 minutes, the console will be locked out.
- C. If no commands have been typed in 55 seconds, the console connection will be closed.
- D. If connected to the router by Telnet, input must be detected within one minute and 55 seconds or the connection will be closed.
- E. If no commands have been typed in one minute and 55 seconds, the console connection will be closed.

Answer: E

Explanation:

To set the interval that the EXEC command interpreter waits until user input is detected, use the exec-timeout line configuration command.

Syntax Description

<i>minutes</i>	Integer that specifies the number of minutes.
<i>seconds</i>	(Optional) Additional time intervals in seconds.

Default

10 minutes

If no input is detected during the interval, the EXEC facility resumes the current connection. If no connections exist, the EXEC facility returns the terminal to the idle state and disconnects the incoming session.

To specify no timeout, enter the exec-timeout 0 0 command.

Examples:

The following example sets a time interval of 2 minutes, 30 seconds:

```
line console
exec-timeout 2 30
```

The following example sets a time interval of 10 seconds:

line console

exec-timeout 0 10

Reference:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1826/products_command_reference_chapter09186a00800d

QUESTION 397

According to the information provided in the exhibit, from where was the currently running version of IOS loaded into this Certkiller router?

```
CertKiller1 (boot)#show startup-config
Using 877 out of 32762 bytes
!
!
version 11.0
!
hostname CertKiller1
!
boot system flash
--- output omitted ---

CertKiller1 (boot)#show version
Cisco bytes of processor board System flash (Read/Write)
IOS (tm) bytes of processor board System fl of processor board System flash (Read/Write) (fc1)
--- output omitted ---

ROM: System Bootstrap, Version 11.0(10c), SOFTWARE

CertKiller1 uptime is 2 minutes
System restarted by reload
Running default software

Configuration register is 0x2101

CertKiller1 (boot)#show flash
System flash directory:
File Length Name/status
  1 14051696 /c2500-ls-4.122-11.T11.bin
[14051740 bytes used, 2725456 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

- A. ROM
- B. NVRAM
- C. TFTP server
- D. Flash
- E. None of the above

Answer: A

Explanation:

Based on the output above, the configuration register is set to 0x2101. This tells the router to boot from ROM.

Some config-register valid settings are:

1. 0x2100 - ROM Monitor
2. 0x2101 - ROM Boot
3. 0x2102 - Boot From NVRam (default)

For a complete list of config-register settings and their meaning, see the reference link below.

Reference:

http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a008022493f.shtml

QUESTION 398

Refer to the graphic. Although the console password was set to " Certkiller ", it displays in the router configuration as shown. What command caused the password to be stored like this?

```
CertKiller1 #show running-config
<<output omitted>>
line console 0
exec-timeout 1 55
password 7 094F60C0B1C1E
login
transport input
<<output omitted>>
```

- A. Certkiller 1(config)# encrypt password
- B. Certkiller 1(config)# password-encryption md 7
- C. Certkiller 1(config-line)# exec-timeout 1 55
- D. Certkiller 1(config)# service password-encryption

Answer: D

Explanation:

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

QUESTION 399

DRAG DROP

As a network technician at Certkiller .com you are required to construct the command sequence to configure an IP address on a serial interface.

Note: you are configuring a hub named Certkiller 1. You do not use all options.

640-801

Commands, select from these

CertKiller1#interface s0/0	CertKiller1(config)#interface s0/0
CertKiller(config-if)#no shutdown	CertKiller1(config)#ip address 172.16.20.21 255.255.255.0
CertKiller1(config-if)#ip address 10.8.5.255 255.255.255.0	CertKiller1(config-if)#enable interface
CertKiller1(config-if)#ip address 1192.18.2.63 255.255.255.224	CertKiller(config-if)#description T1 to WAN
CertKiller(config-if)#banner motd ! T1 to WAN !	CertKiller1#configure terminal

Definitions

Enter global configuration mode
Enter interface configuration mode
Configure the interface IP address
Enable the interface
Label the interface

Commands, place here

<i>Place here</i>
<i>Place here</i>
<i>Place here</i>
<i>Place here</i>
<i>Place here</i>

Answer:

Commands, select from these

CertKiller1#interface s0/0

CertKiller1(config)#ip address 172.16.20.21
255.255.255.0

CertKiller1 (config-if)#enable

CertKiller1(config-if)#ip address 1192.18.2.63
255.255.255.224

CertKiller(config-if)#banner motd ! T1 to WAN !

Definitions

Enter global configuration mode

Enter interface configuration mode

Configure the interface IP address

Enable the interface

Label the interface

Commands, place here

CertKiller1#configure terminal

CertKiller1(config)#interface s0/0

CertKiller1(config-if)#ip address 10.8.5.255
255.255.255.0

CertKiller(config-if)#no shutdown

CertKiller(config-if)#description T1 to WAN

Explanation:

1. Global configuration mode is the mode that allows you to configure the router and it takes effect immediately. You can enter into the global configuration mode using configure terminal command.
2. Interface configuration mode allows you to configure the interface on a particular interface such as setting the IP address, setting bandwidth, clock rate, encapsulation type, duplex, speed, etc. Use the "interface interface-name" command to enter into the interface configuration mode.
3. After entering into the interface configuration mode you can assign the IP Address into the interface using the ip address IPAddress subnet mask.
4. You have the option to shutdown the interface or bring up the interface, using the "shutdown" command will logically disable the interface and using the "no shutdown" command can bring up the interface up.
5. You can add the description of the interface using the "description" command.

QUESTION 400

DRAG DROP

As a network administrator you are required to configure a Cisco router named Certkiller 1. You must match the commands with the appropriate use.

You do not use all commands.

Command, select from these

CertKiller1#copy running-config startup config	CertKiller1#copy flash running-config
CertKiller1#copy tftp running-config	CertKiller1#copy flash tftp
CertKiller1#copy running-config tftp	CertKiller1#copy tftp flash

Definitions

Merge a backup configuration with the configuration in RAM
Make the configuration in RAM the configuration the router will use at startup
Replace the IOS image
Make a backup copy of the configuration in RAM
Backup the current IOS image

Options place here

<i>Place here</i>
<i>Place here</i>
<i>Place here</i>
<i>Place here</i>
<i>Place here</i>

Answer:

Command, select from these

CertKiller1#copy flash running-config

Definitions

Merge a backup configuration with the configuration in RAM

Make the configuration in RAM the configuration the router will use at startup

Replace the IOS image

Make a backup copy of the configuration in RAM

Backup the current IOS image

Options place here

CertKiller1#copy tftp running-config

CertKiller1#copy running-config startup config

CertKiller1#copy tftp flash

CertKiller1#copy running-config tftp

CertKiller1#copy flash tftp

Explanation:

1. copy tftp running-config: This copies the running configuration into the RAM from tftp server.
2. copy running-config startup-config: This copies the running configuration into the startup configuration. When the router boots up it checks for the valid configuration on NVRAM, which is called the startup-configuration.
3. copy tftp flash: Which copies the IOS from tftp server to flash memory.
4. copy running-config tftp: This copies the running configuration on to the tftp server.
5. copy flash tftp: This copies the IOS image from flash into the tftp server.

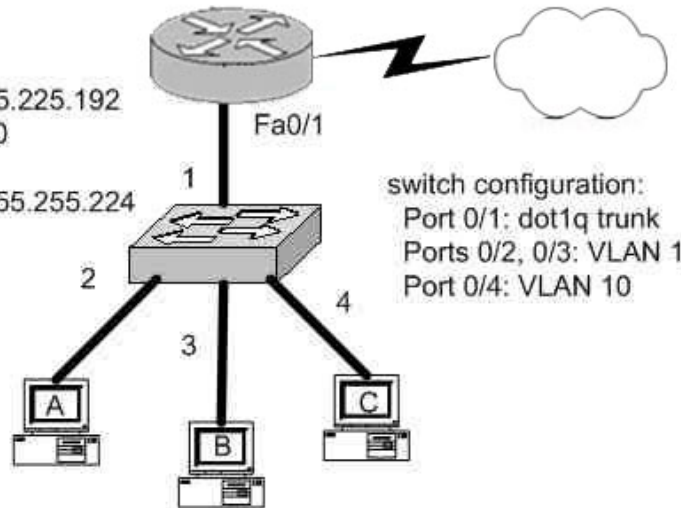
QUESTION 401

A Certkiller Switch is connected as shown below:

640-801

Router configuration:

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



switch configuration:
Port 0/1: dot1q trunk
Ports 0/2, 0/3: VLAN 1
Port 0/4: VLAN 10

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

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

Answer: A, C, F

Explanation:

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

Incorrect Answers:

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

QUESTION 402

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

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

E. Switch(config-if)# switchport access vlan 303

Answer: C, D

Explanation:

In order to pass all VLAN traffic from one switch to another, a trunk is needed. In order to configure a trunk on a 2900 series switch, only these two commands are required.

Incorrect Answers:

A. This is an invalid command.

B. This command does not need to be entered, as the trunk encapsulation for the Catalyst 2900 by default is dot1q

E. This will only accomplish setting up a single VLAN, numbered 303.

QUESTION 403

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

A. CertK Switch(config)# ip route-default 192.168.1.115

B. CertK Switch(config)# ip default-gateway 192.168.1.115

C. CertK Switch(config)# ip route 192.168.1.115 0.0.0.0

D. CertK Switch(config)# ip default-network 192.168.1.115

Answer: B

Explanation:

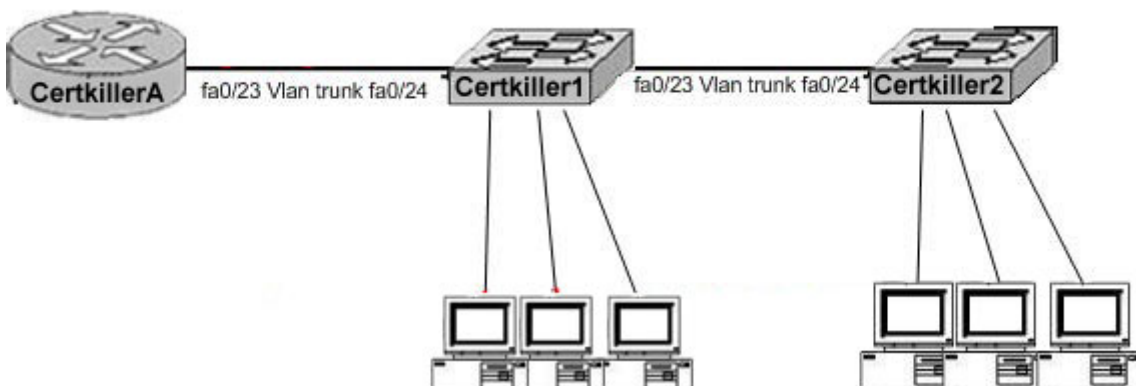
Use the "ip default-gateway" command to enter the IP address of the next-hop router interface that is directly connected to the switch where a default gateway is being configured. The default gateway receives IP packets with unresolved destination IP addresses from the switch.

Once the default gateway is configured, the switch has connectivity to the remote networks with which a host needs to communicate.

QUESTION 404

SIMULATION

The Certkiller network is displayed in the following diagram:



You work as a network technician at Certkiller .com. A new switch named Certkiller 2 is being added to Certkiller .com LAN. You will work to complete this process by first configuring the Certkiller 2 switch with IP address and default gateway. For the switch host address you should use the first available IP address on the management subnet. In addition, the switch needs to be configured to be in the same VTP domain as the Certkiller 1 switch, and also needs to be configured as a VTP client. Assume that the IP configuration and VTP configuration are completed and working.

You must accomplish the following-

1. Determine and configure the IP host address of the new switch
2. Determine and configure the default gateway of the switch
3. Determine and configure the correct VTP domain name for the new switch
4. Configure the new switch as a VTP Client

Answer:

Step 1: Determine & Configure the IP host address for the New switch

```
Certkiller 2 (config-line)# interface vlan 1
```

```
Certkiller 2 (config-line)# ip address A.D.C.D 255.255.255.0
```

```
Certkiller 2 (config-line)# no shutdown
```

Step 2: Configure the default gateway

```
Certkiller 2 (config)# ip default-gateway A.B.C.D
```

Step 3 & 4: Configure the Certkiller 2 switch as VTP Client and configure the correct VTP domain

```
Certkiller 2 (config)# vtp mode client
```

```
Certkiller 2 (config-line)# vtp domain Certkiller
```

```
Certkiller 2 (config-line)# vtp password Certkiller
```

```
Certkiller 2 (config-line)# vtp pruning
```

Explanation:

Even though we don't have enough information to deduce the IP address but at least we know the step by step procedure to configure the switch Certkiller 2.

QUESTION 405

What is the purpose of assigning an IP address to a switch?

- A. To provide local hosts with a default gateway address
- B. To allow remote management of the switch.
- C. To allow the switch to respond to ARP requests between two hosts
- D. To ensure that hosts on the same LAN can communicate with each other.

Answer: B

Explanation:

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

QUESTION 406

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

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

Answer: B, C, D

Explanation:

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

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

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

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

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

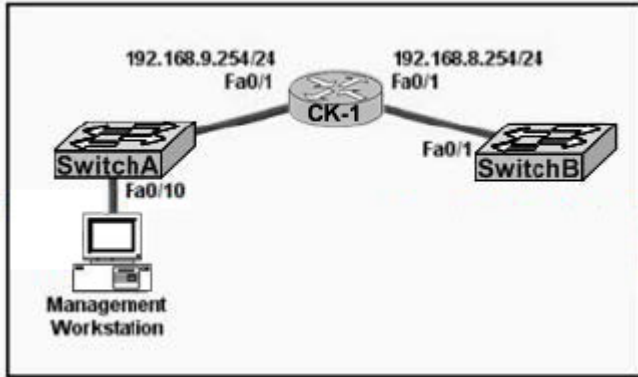
nonegotiate-The port is placed in permanent trunking mode, but no DTP frames are generated for negotiation. The far end switch port must be manually configured for trunking mode.

QUESTION 407

Exhibit:

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

Exhibit:



- A. SwitchB(config)# interface FastEthernet 0/1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- B. SwitchB(config)# ip default-network 192.168.8.254
SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- C. SwitchB(config)# ip route 192.168.8.254 255.255.255.0
SwitchB(config)# interface FastEthernet 0/1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- D. SwitchB(config)# ip default-gateway 192.168.8.254
SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown
- E. SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# ip default-gateway 192.168.8.254 255.255.255.0
SwitchB(config-if)# no shutdown

Answer: D

Explanation:

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

Incorrect Answers:

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

QUESTION 408

A Catalyst 2950 needs to be reconfigured. What steps will ensure that the old

configuration is erased? (Choose three)

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

Answer: B, D, E

Explanation:

For switches such as the 2950, the process is much the same as a router, but you should delete the VLAN.DAT file before reloading the router. This file contains VLAN information and is kept in flash, so it will still be present after a reload.

```
switch1#write erase
```

```
Erasing the nvram filesystem will remove all files! Continue? [confirm]
```

```
[OK]
```

```
Erase of nvram: complete
```

```
switch1#delete vlan.dat
```

```
Delete filename [vlan.dat]?
```

```
Delete flash:vlan.dat? [confirm]
```

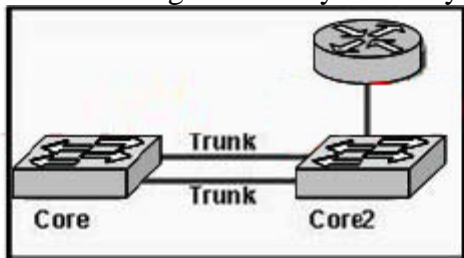
```
switch1#reload
```

Make sure to hit for the two questions regarding the deletion - if you answer "y" instead, the switch thinks you're trying to erase a file named "y"!

After the reload is complete, you'll be prompted to enter setup mode. As you did with the router, enter "N" and begin to configure the router from user exec mode.

QUESTION 409

The Certkiller switches shown in the diagram, Core and Core2, are both Catalyst 2950s. The addressing scheme for each company site is as follows: Router Ethernet port - 1st usable address Core - 2nd usable address Core2 - 3rd usable address For this network, which of the following commands must be configured on Core2 to allow it to be managed remotely from any subnet on the network? (Choose three)



- A. Core2(config)# ip default-gateway 192.168.1.9
- B. Core2(config)# interface f0/0
- Core2(config-if)# ip address 192.168.1.10 255.255.255.248
- C. Core2(config)# line con 0

Core2(config-line)# password cisco
D. Core2(config)# interface vlan 1
Core2(config-if)# ip address 192.168.1.11 255.255.255.248
E. Core2(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.8
F. Core2(config)# line vty 0 4
Core2(config-line)# password cisco

Answer: A, D, F

Explanation:

IP default-gateway address is a global command that sets the default gateway so that the management interface can be reached from a remote network. This is the correct command used on Cisco switches. In order to be reachable, the IP address of VLAN 1 must also be specified and must be in the same subnet as the default gateway IP address. Finally, in order to remotely connect via telnet to any Cisco device the password must be set or you will get a "password required, but none set" error message when you try to telnet to it.

QUESTION 410

You are securing a network for Certkiller and want to apply an ACL (access control list) to an interface of a router. Which one of the following commands would you use?

- A. permit access-list 101 out
- B. ip access-group 101 out
- C. apply access-list 101 out
- D. access-class 101 out
- E. ip access-list e0 out

Answer: B

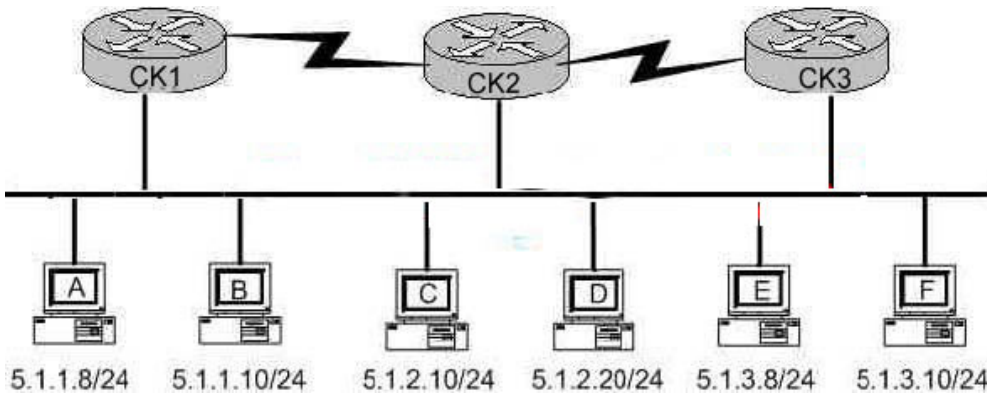
Explanation:

To enable an ACL on an interface and define the direction of packets to which the ACL is applied, the ip access-group command is used. In this example, the access list is applied to packets going out of the interface. Packets coming in on the interface are not checked against access list 101.

QUESTION 411

The Certkiller LAN is depicted below:

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You're the systems administrator at Testing, and you create the following access control lists.

```
access-list 101 deny tcp 5.1.1.10 0.0.0.0 5.1.3.0 0.0.0.255 eq telnet  
access-list 101 permit any any
```

You then enter the command "ip access-group 101 in" to apply access control list 101 to router CK1 s e0 interface.

Which of the following Telnet sessions will be blocked as a result of your access lists? (Select all that apply)

- A. Telnet sessions from host A to host 5.1.1.10
- B. Telnet sessions from host A to host 5.1.3.10
- C. Telnet sessions from host B to host 5.1.2.10
- D. Telnet sessions from host B to host 5.1.3.8
- E. Telnet sessions from host C to host 5.1.3.10
- F. Telnet sessions from host F to host 5.1.1.10

Answer: D, F

Explanation:

All the telnet sessions from host B to network 5.1.3.0/24 will be denied. In addition, all telnet traffic to host B from the 5.1.3.0/24 network will not work, because the return telnet traffic will be denied.

QUESTION 412

Which of the following statements regarding the use of multiple access lists are valid when configuring a single interface on a Cisco router?

- A. Application of up to three access lists per protocol to a single interface.
- B. No more than two access lists per interface.
- C. One access list may be configured per direction for each Layer 3 protocol configured on an interface.
- D. The maximum number allowed varies due to RAM availability in the router.
- E. An infinite number of access lists that can be applied to an interface, from most specific to most general.
- F. Cisco IOS allows only one access list to an interface.

Answer: C

Explanation:

For each interface, one access list for each protocol (IP, IPX, etc) can be applied in the inbound direction, and one for the outbound direction.

Incorrect Answers:

B. It is true that no more than two access lists can be applied per interface (inbound and outbound). However, this applies per layer 3 protocol, so it is possible to configure more than 2 access lists per interface.

QUESTION 413

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

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

Answer: B, E, F

Explanation:

Since all traffic that is not using the three ports specified is permitted, the correct answers are B, E and F. (DNS port 53, HTTP port 80, POP3 port 110).

Incorrect Answers:

- A. SMTP uses port 25, which is prohibited.
- C. FTP uses port 21, which is prohibited.
- D. Telnet uses port 23, which is prohibited.

QUESTION 414

The following access list below was applied outbound on the E0 interface connected to the 192.169.1.8/29 LAN:

```
access-list 135 deny tcp 192.169.1.8 0.0.0.7 eq 20 any
access-list 135 deny tcp 192.169.1.8 0.0.0.7 eq 21 any
```

How will the above access lists affect traffic?

- A. FTP traffic from 192.169.1.22 will be denied.
- B. No traffic, except for FTP traffic will be allowed to exit E0.
- C. FTP traffic from 192.169.1.9 to any host will be denied.
- D. All traffic exiting E0 will be denied.
- E. All FTP traffic to network 192.169.1.9/29 will be denied.

Answer: D

Explanation:

When an access list is created, an implicit deny all entry is created at the end. Therefore, each access list created needs to have at least one permit statement, otherwise it will have the effect of prohibiting all traffic. If the intent in this example was to block only certain hosts from being able to FTP, then the following line should have been included at the end of the access list:

```
Router(config)#access-list 135 permit ip any any
```

QUESTION 415

Study the information and the relevant configuration file below for the Certkiller Branch router.

Hostname: Branch

PH# 123-6000, 123-6001

SPID1: 32055512360001

SPID2: 32055512360002

isdn switch-type basic-ni1

username Remote password cisco

interface bri0

ip address 10.1.1.1 255.255.255.0

encapsulation ppp

ppp authentication chap

isdn spid1 32055512360001

isdn spid2 32055512360002

dialer map ip 10.1.1.2 name Remote 1238001

dialer-list 1 protocol ip permit

What additional command must be executed on the Branch router before interesting traffic will initiate an ISDN call?

- A. (config-if)# dialer-group 1
- B. (config-if)# dialer-list 1
- C. (config-if)# dialer map 1
- D. (config-if)# dialer-route 1

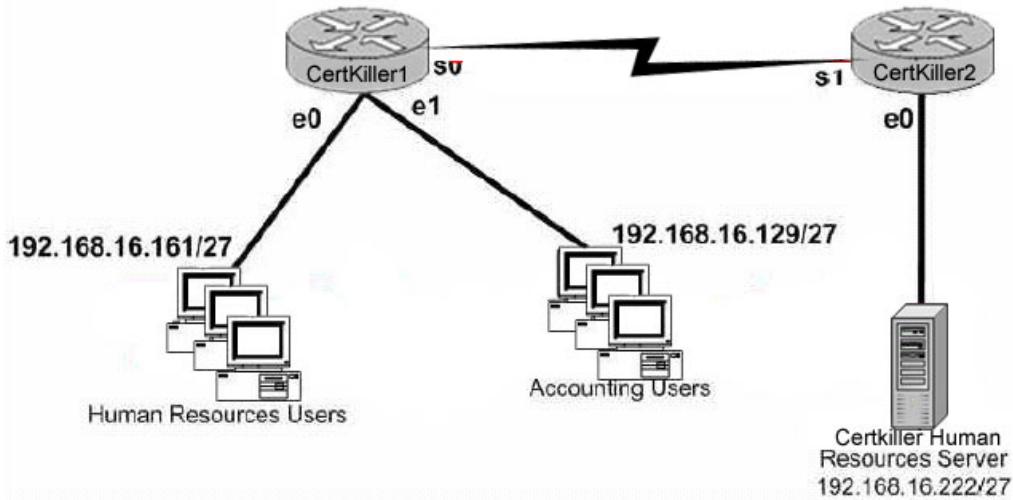
Answer: A

Explanation:

The "dialer-group #" command tells the access-list (used with the dialer-list # command), which interface to activate when it finds interesting traffic. The numbers at end of each command must match.

QUESTION 416

Study the following network diagram displaying the Certkiller network:



With the goal of preventing the accounting department from gaining access to the HR server, the following access list is created:

```
access-list 19 deny 192.168.16.128 0.0.0.31
```

```
access-list 19 permit any
```

All other traffic is to be permitted through the network. On which interface and in what direction should the access list be applied?

- A. Certkiller 1 S0, out.
- B. Certkiller 1 E1, in.
- C. Certkiller 1 E1, out.
- D. Certkiller 2 S1, in.
- E. Certkiller 2 E0, out.
- F. Certkiller 2 E0, in.

Answer: E

Explanation:

Since this is a standard access list it should be placed near the destination. Standard access lists only match against the source IP address, so placing this access list anywhere else will prevent traffic from the Accounting department to other areas of the network.

QUESTION 417

Which of the following commands would successfully implement an access list on a routers virtual terminal line? (Select only one answer choice)

- A. RouterCK(config-line)# access-class 10 in
- B. RouterCK(config-if)# ip access-class 23 out
- C. RouterCK(config-line)# access-list 150 in
- D. RouterCK(config-if)# ip access-list 128 out
- E. RouterCK(config-line)# access-group 15 out
- F. RouterCK(config-if)# ip access-group 110 in

Answer: A

Explanation:

To configure VTY you must be in the config-line mode. Virtual terminal sessions use VTY lines 0-4, and VTY access lists use the access-class command.

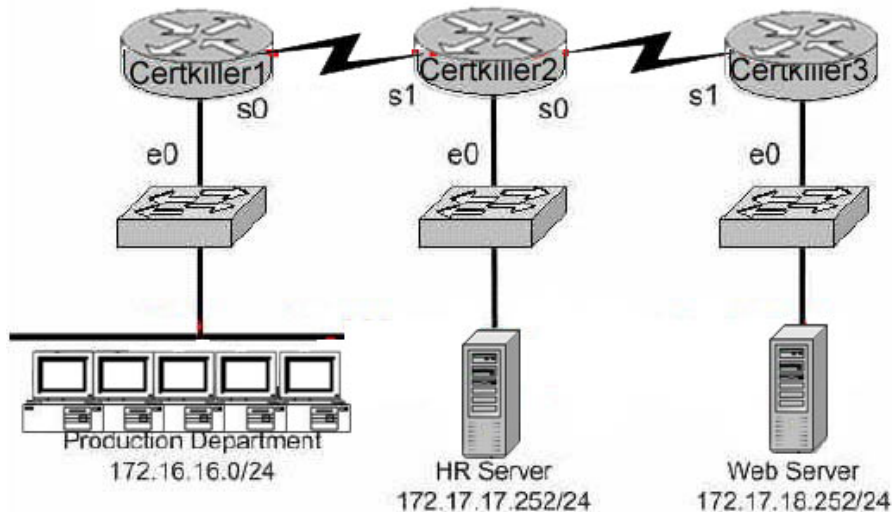
Incorrect Answers:

B. This is placed in the wrong configuration mode

C, D, E, F. The correct syntax for VTY lines is the access-class command, not the access-group or access-list commands.

QUESTION 418

The Certkiller network is displayed below:



You want to apply an access list to the e0 interface on the Certkiller 1 router, with the goal of halting HTTPS traffic from the Production Department from reaching the HR server via the Certkiller 2 router. Which of the following access lists would you use?

A. Permit ip any any

Deny tcp 172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 443

B. Permit ip any any

Deny tcp 172.17.17.252 0.0.0.0 172.16.16.0 0.0.0.255 eq 443

C. Deny tcp 172.17.17.252 0.0.0.0 172.16.16.0 0.0.0.255 eq 443

Permit ip any any

D. Deny tcp 172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 443

Permit ip any any

Answer: D

Explanation:

This access problem is very simple; it tells you where to put the access list, all you have to do is to select the right one. You have to deny all HTTP traffic (TCP port 80) from crossing router 1's e0 while, allowing everything else. This is accomplished by Deny tcp

172.16.16.0 0.0.0.255 172.17.17.252 0.0.0.0 eq 443, Permit ip any any.

Incorrect Answers:

Either the order of the statements are reversed. Since all traffic checked against an access list is performed in order from the top down, all traffic will match the first statement and be permitted or the source addresses are incorrect.

QUESTION 419

What are some general guidelines regarding the placement of access control lists?
(Select two answer choices)

- A. You should place standard ACLS as close as possible to the source of traffic to be denied.
- B. You should place extended ACLS as close as possible to the source of traffic to be denied.
- C. You should place standard ACLS as close as possible to the destination of traffic to be denied.
- D. You should place extended ACLS should be places as close as possible to the destination of traffic to be denied.

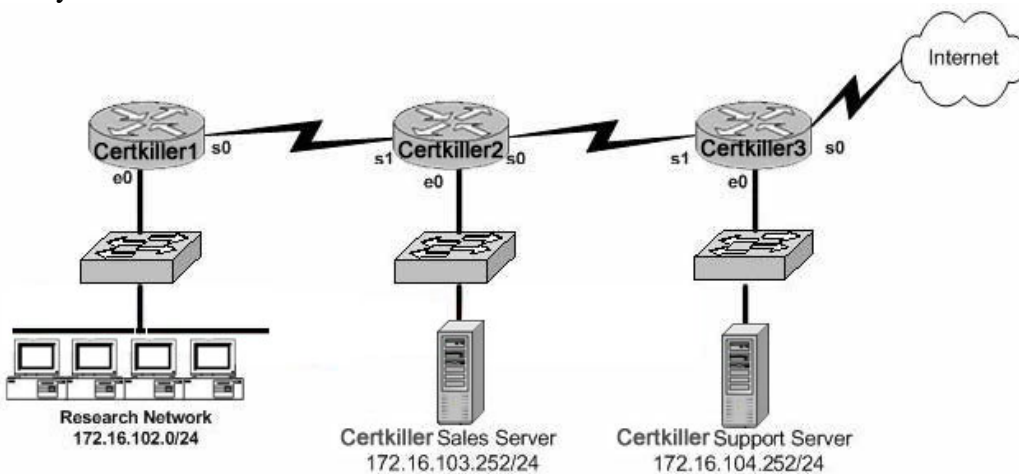
Answer: B, C

Explanation:

The question you have to ask yourself is: Do you want the access list before the routing decision, or after the routing decision? If an access list is extended, then it would restrict a lot of traffic, so it would be better to have such a list at the source so it could filter out the traffic before the router has to go through the trouble of sending it off. If an access list is standard, then it would be more efficiently placed closer to the destination.

QUESTION 420

Study the exhibit below:



You are a network security consultant and you've been contracted to prevent users on the Research Network and general Internet surfers from accessing the Certkiller Support server. However, you must allow access to all the other Certkiller users. So you create an access control list called `research_network` which contains the

following lines:

```
deny 172.16.102.0 0.0.0.255 172.16.104.255 0.0.0.0
permit 172.16.0.0 0.0.255.255 172.16.104.252 0.0.0.0
```

Which of the following command sequences can satisfy your goals?

- A. Certkiller 1(config)#interface e0
Certkiller 1(config-if)# ip access-group research_network in
- B. Certkiller 2(config)# interface s1
Certkiller 2(config-if)#ip access-group research_network in
- C. Certkiller 3(config)#interface s1
Certkiller 3(config-if)#ip access-group research_network in
- D. Certkiller 1(config)# interface s0
Certkiller 1(config-if)# ip access-group research_network out
- E. Certkiller 2(config)# interface s0
Certkiller 2(config-if)# ip access-group research_network out
- F. Certkiller 3(config)# interface e0
Certkiller 3(config-if)# ip access-group research_network out

Answer: F

Explanation:

To enable the ACL on an interface and define the direction of packets to which the ACL is applied, the ip access-group command is used.

When referring to a router, these terms have the following meanings.

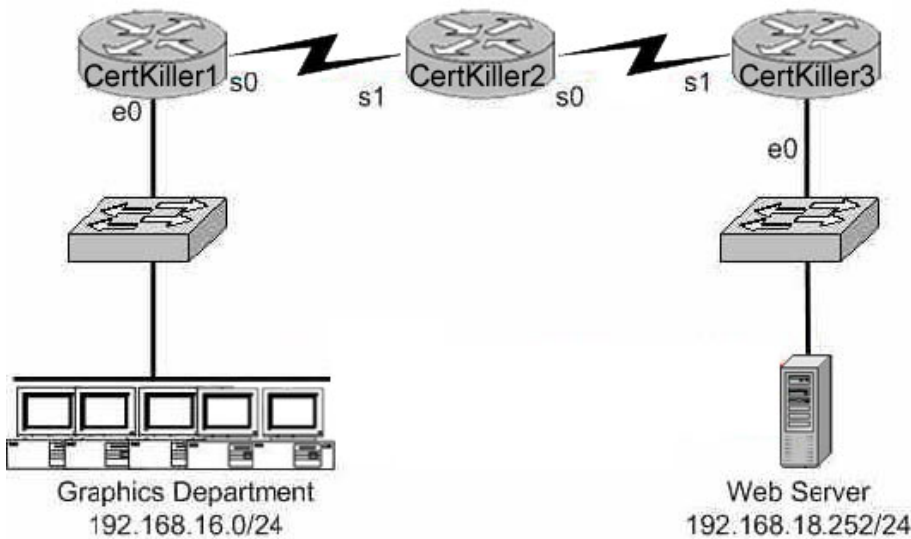
1. Out - Traffic that has already been through the router and is leaving the interface; the source would be where it's been (on the other side of the router) and the destination is where it's going.
2. In - Traffic that is arriving on the interface and which will go through the router; the source would be where it's been and the destination is where it's going (on the other side of the router).

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 433

QUESTION 421

A portion of the Certkiller network is shown below:



In order to prevent the Web Server from receiving telnet traffic from the Graphics Dept. users, an access is created denying this traffic. On which router, which interface and in which direction should you place the access list for maximum efficiency? (Select all that apply)

- A. Certkiller 1 Router
- B. Certkiller 3 Router
- C. serial 0
- D. Ethernet 0
- E. in
- F. out

Answer: A, D, E

Explanation:

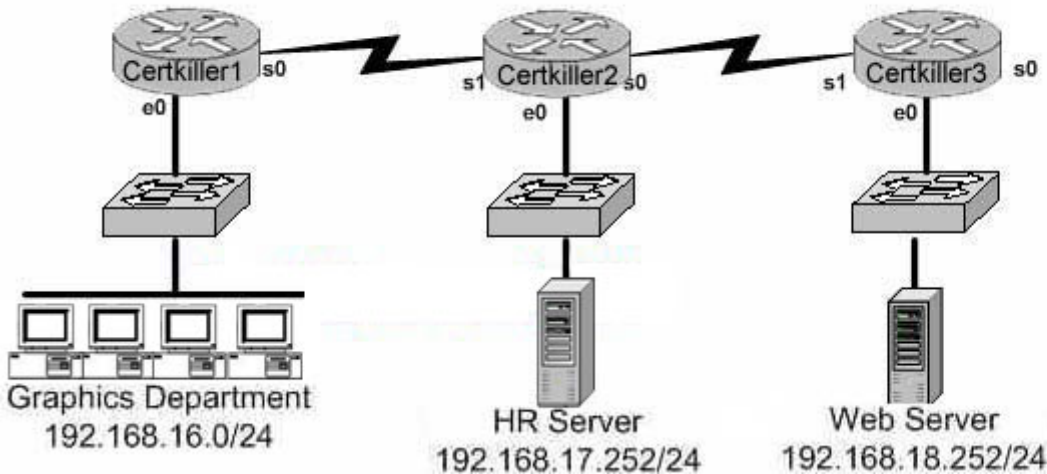
For maximum efficiency, the access list should be placed closest to the source of the traffic that you want to deny. The access list should be an inbound access list, on the e0 interface, on router Certkiller 1.

Incorrect Answers:

B, C, F. Placing the access list anywhere else would mean that the traffic would be permitted through the network, at least partially, before being dropped. This would result in inefficiency.

QUESTION 422

The Certkiller network consists of Cisco routers and switches as shown below:



Your goal is to prevent Telnet traffic originating from the Graphics Department to reach the Web server attached to Certkiller 3. However, you want to allow Telnet traffic to other destinations. To accomplish this, you configure the following access control list:

```
access-list 101 deny tcp any any eq 23  
permit ip any any
```

On which router, in what direction, and which interface, should the access list be placed to most efficiently implement the above list? (Select three options)

- A. Certkiller 1
- B. Certkiller 2
- C. serial 0
- D. ethernet 0
- E. in
- F. out

Answer: A, D, E

Explanation:

If the ACL is placed on Certkiller 2 anywhere else than serial 1 this will prevent the HR server from communicating with the Web server.

QUESTION 423

SIMULATION

You are the administrator of the Certkiller network which is composed of three routers connected together via a WAN as shown in the diagram. Your assignment is to configure and apply an access control list that will block telnet access to the Certkiller 1 router without inhibiting all other traffic. The access list won't need more than 3 statements and it should be applied to the Certkiller 3 router. The three routers are already connected and configured as follows:

* The routers are named: Certkiller 1, Certkiller 2, and Certkiller 3 respectively.

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- * All three of them are using RIP as the routing protocol.
- * The serial 0 interfaces are providing clocking.
- * The default subnet mask is used on every interface.
- * The IP addresses and passwords are listed below.

Certkiller 1

E0 192.168.1.1

S0 192.168.118.1

Secret password: Certkiller

Certkiller 2

E0 192.168.121.1

S0 192.168.5.1

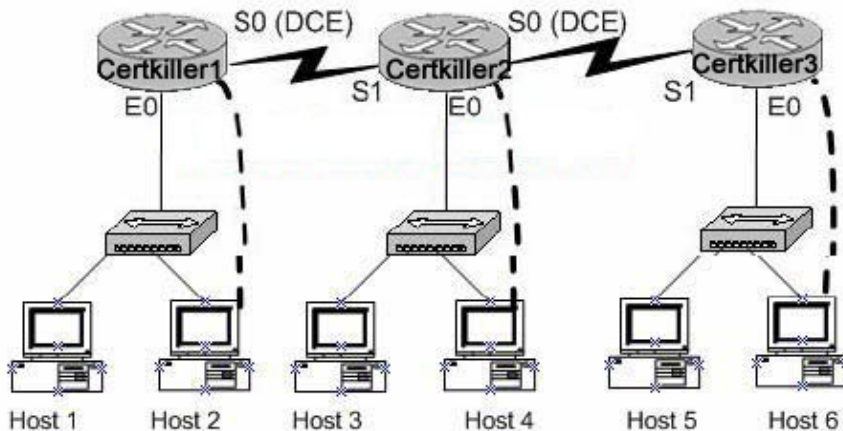
S1 192.168.118.2

Secret password: Certkiller

Certkiller 3

E0 192.168.134.1

S1 192.168.5.2



To configure the router click on the host icon that is connected to a router by a serial console cable.

Answer:

Explanation:

```
Certkiller 3>enable
```

```
:password
```

```
Certkiller 3#show access-lists (** redundant **)
```

```
Certkiller 3#config t
```

.Enter configuration commands, one per line. End with END

```
Certkiller 3(config)#access-list 101 deny tcp any 192.168.1.1 0.0.0.0 eq 23
```

```
Certkiller 3(config)#access-list 101 deny tcp any 192.168.118.0 0.0.0.0 eq 23
```

```
Certkiller 3(config)#access-list 101 permit ip any any
```

```
Certkiller 3(config)#interface Ethernet 0
```

```
Certkiller 3(config-if)#ip access-group 101 in
```

```
Certkiller 3(config-if)#exit
```

```
Certkiller 3(config)#interface serial 0
```

```
Certkiller 3(config-if)#ip access-group 101 in  
Certkiller 3(config-if)#<CTRL-Z
```

```
..  
Certkiller 3#copy running-config startup-config
```

You should deny access to telnet to the Certkiller 1 router and the access list should be applied in Certkiller 3 router (if the wording is correct). The destination addresses of Certkiller 1, namely 192.181.1.1 0.0.0.0 and 192.168.118.0, should be used.

QUESTION 424

Observe the following access list configuration:

```
access-list 10 permit 172.29.16.0 0.0.0.255  
access-list 10 permit 172.29.17.0 0.0.0.255  
access-list 10 permit 172.29.18.0 0.0.0.255  
access-list 10 permit 172.29.19.0 0.0.0.255
```

An access list was written with the four statements shown in the graphic. Which single access list statement will combine all four of these statements into a single statements that will have exactly the same effect?

- A. access-list 10 permit 172.29.16.0 0.0.0.255
- B. access-list 10 permit 172.29.16.0 0.0.1.255
- C. access-list 10 permit 172.29.16.0 0.0.3.255
- D. access-list 10 permit 172.29.16.0 0.0.15.255
- E. access-list 10 permit 172.29.0.0 0.0.255.255

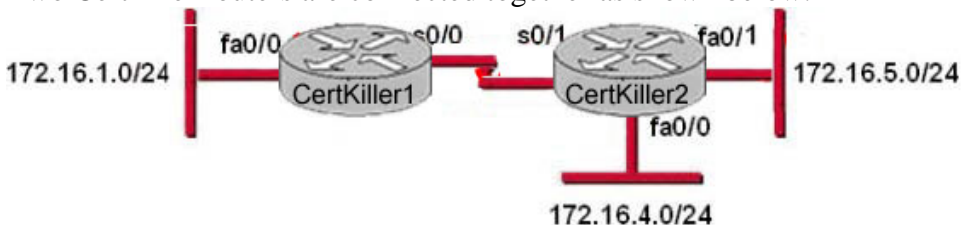
Answer: C

Explanation:

172.29.16.0 is an aggregate address for those 4 networks. If you would write all these addresses in binary form and will mark the equal part, than you will see that it is 172.29.16.0.

QUESTION 425

Two Certkiller routers are connected together as shown below:



```
access-list 10 permit host 172.16.1.5  
access-list 10 deny 172.16.1.0 0.0.0.255  
access-list 10 permit any
```

The access list shown should deny all hosts located on network 172.16.1.0, except host 172.16.1.5, from accessing the 172.16.4.0 network. All other networks should be

accessible. Which command sequence will correctly apply this access list?

- A. Certkiller 1(config)#interface fa0/0
Certkiller 1(config-if)#ip access-group 10 in
- B. Certkiller 1(config)#interface s0/0
Certkiller 1(config-if)#ip access-group 10 out
- C. Certkiller 2(config)#interface fa0/1
Certkiller 2(config-if)#ip access-group 10 out
- D. Certkiller 2(config)#interface fa0/0
Certkiller 2(config-if)#ip access-group 10 out
- E. Certkiller 2(config)#interface s0/1
Certkiller 2(config-if)#ip access-group 10 out

Answer: D

Explanation:

In order to only deny access to the 172.16.4.0 network while permitting all other access as specified in this question, we need to apply this access list to router Certkiller 2, and it must be placed in the outbound direction of interface fa0/0. Applying this access list to any other interface or any other router would result in making other network unreachable from the 172.16.1.0 network, except of course for 172.16.1.5.

QUESTION 426

A network administrator wants to add a line to an access list that will block only Telnet access by the hosts on subnet 192.168.1.128/28 to the server at 192.168.1.5. What command should be issued to accomplish this task?

- A. access-list 101 deny tcp 192.168.1.128 0.0.0.15 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any
- B. access-list 1 deny tcp 192.168.1.128 0.0.0.15 host 192.168.1.5 eq 23
access-list 1 permit ip any any
- C. access-list 1 deny tcp 192.168.1.128 0.0.0.255 192.168.1.5 0.0.0.0 eq 21
access-list 1 permit ip any any
- D. access-list 101 deny tcp 192.168.1.128 0.0.0.240 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any
- E. access-list 101 deny ip 192.168.1.128 0.0.0.240 192.158.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any
- F. access-list 101 deny ip 192.168.1.128 0.0.0.15 192.168.1.5 0.0.0.0 eq 23
access-list 101 permit ip any any

Answer: A

Explanation:

Only choice specifies the correct TCT port and wildcard mask, and uses a valid access list number.

Incorrect Answers:

B, C. Access list 1 is used for these choices, which is a standard access list. In this example, an extended access list is required. Choice C also specifies port 21, which is used by FTP not Telnet.

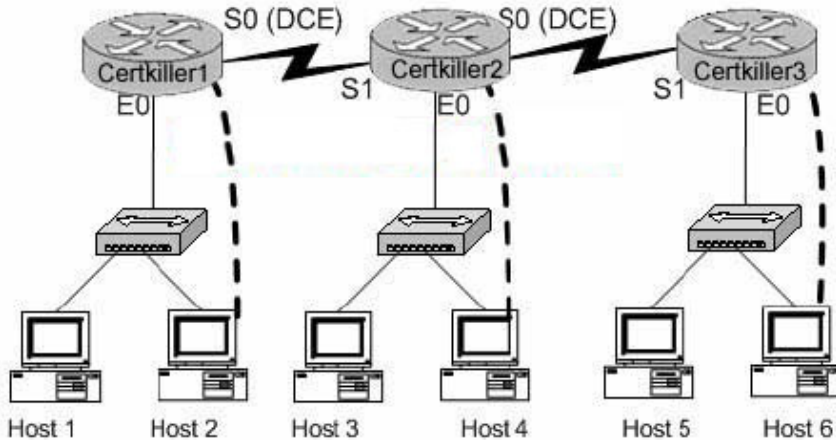
D, E: These choices use an incorrect wildcard mask of 0.0.0.240. It should be 0.0.0.15 for a /28 subnet.

F. IP is specified as the protocol, when it should be TCP.

QUESTION 427

SIMULATION

The Certkiller WAN is displayed below:



You work as a network engineer at Certkiller .com. Three Certkiller stores have established network connectivity. The routers are named Certkiller 1, Certkiller 2, and Certkiller 3. The manager at the Certkiller site, Certkiller, has decided to deny the ability of anyone from any other network to connect to the Certkiller 3 router with the ping command. Implement an access list on the Certkiller 3 router to deny this detection but allow all other types of traffic to pass. The access list should contain no more than three statements. The routers have been configured with the following specifications:

- * The routers are named Certkiller 1, Certkiller 2, and Certkiller 3.
- * RIP is the routing protocol.
- * Clocking signal is provided on the serial 0 interfaces.
- * The password on each router is " Certkiller ".
- * The subnet mask on all interfaces is the default mask.
- * The IP addresses are listed in the chart below.

Certkiller 1
E0 192.168.49.1
S0 192.168.51.1.

Certkiller 2
E0 192.168.53.1
S0 192.168.55.1
S1 192.168.51.2

Certkiller 3
E0 192.168.57.1
S1 192.168.55.2

To configure the router click on the host icon that is connected to a router by a serial console cable.

Answer:

Explanation:

Click on Host 6 to connect to and configure Certkiller 3.

configure terminal

```
access-list 101 deny icmp any 192.168.57.1 0.0.0.0
```

```
access-list 101 deny icmp any 192.168.55.2 0.0.0.0
```

```
access-list 101 permit ip any any
```

```
Interface s1
```

```
Ip access-group 101 in
```

```
interface ethernet0
```

```
ip access-group 101 out
```

```
ctrl z
```

```
copy running-config startup-config
```

QUESTION 428

You are the network administrator at Certkiller . You apply the following access list on the E0 outbound interface connected to the 192.168.1.8/29 LAN:

```
access-list 21 deny tcp 192.168.1.8 0.0.0.7 eq 20 any
```

```
access-list 21 deny tcp 192.168.1.8 0.0.0.7 eq 21 any
```

What will the effect of this access list be?

- A. All traffic will be allowed to out of E0 except FTP traffic.
- B. FTP traffic from 192.168.1.22 to any host will be blocked.
- C. FTP traffic from 192.168.1.9 to any host will be blocked.
- D. All traffic will be prevented from leaving E0.
- E. All FTP traffic to network 192.168.1.9/29 from any host will be blocked.

Answer: D

Explanation:

By default access lists contain an implicit deny statement at the end. In this example there is no permit statement, so it will deny all traffic exiting E0 Interface. Any useful access list must contain at least one permit statement, or everything will be denied.

QUESTION 429

A network administrator has configured access list 172 to prevent Telnet and ICMP traffic from reaching a server with the address if 192.168.13.26. Which command can the administrator issue to verify that the access list is working properly?

(Choose three)

- A. Router# ping 192.168.13.26
- B. Router# debug access-list 172

- C. Router# show open ports 192.168.13.26
- D. Router# show access-list
- E. Router# show ip interface

Answer: A, D, E

Explanation:

To display the contents of current access lists, use the show access-lists command in privileged EXEC mode.

show access-lists [access-list-number | access-list-name]

Syntax Description:

<i>access-list-number</i>	(Optional) Number of the access list to display. The system displays all access lists by default.
<i>access-list-name</i>	(Optional) Name of the IP access list to display.

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

```
Router# show ip interface Ethernet0 is up, line protocol is up Internet address is 192.195.78.24, subnet mask is 255.255.255.240 Broadcast address is 255.255.255.255 Address determined by non-volatile memory MTU is 1500 bytes Helper address is not set Secondary address 131.192.115.2, subnet mask 255.255.255.0 Directed broadcast forwarding is enabled Multicast groups joined: 224.0.0.1 224.0.0.2 Outgoing access list is not set Inbound access list is not set---output omitted---
```

Ping command is used to verify connectivity.

So choices A, D and E will be used to verify that the access-list is working correctly.

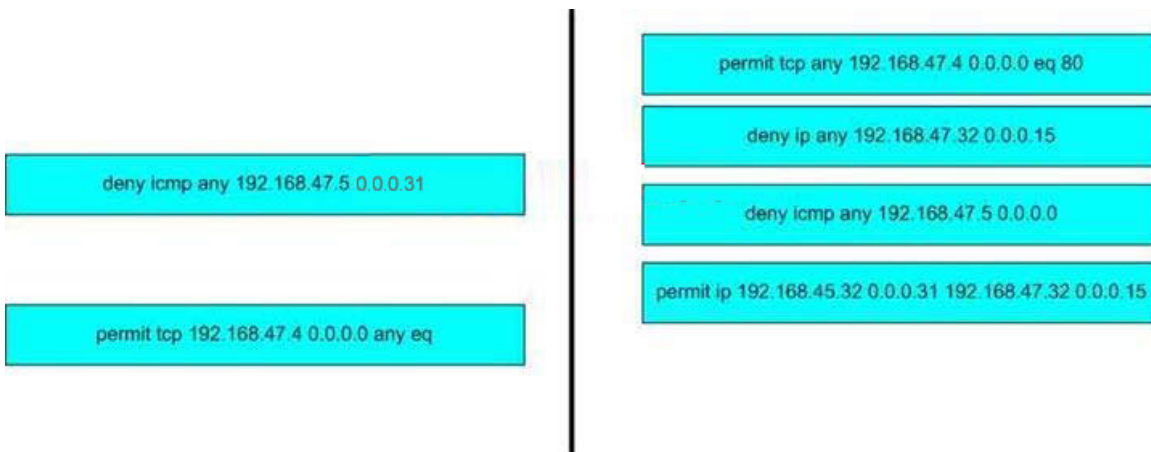
QUESTION 430

DRAG DROP

On the left are access list conditions and on the right design goals. Match up the corresponding pairs. (Please note: Not all options are used)

deny icmp any 192.168.47.5 0.0.0.0	Allow all web access to server 192.168.47.4
permit ip 192.168.45.32 0.0.0.31 192.168.47.32 0.0.0.15	Block all IP access to subnet 192.168.47.32/28
deny icmp any 192.168.47.5 0.0.0.31	Block all ping messages only to server 192.168.47.5/27
permit tcp any 192.168.47.4 0.0.0.0 eq 80	Allow access from subnet 192.168.45.32/27 to subnet 192.168.47.32/28
permit tcp 192.168.47.4 0.0.0.0 any eq	
deny ip any 192.168.47.32 0.0.0.15	

Answer:



QUESTION 431

Which of the following are characteristics of named access lists? (Choose three)

- A. Individual statements in a named access list may be deleted.
- B. They require a numbered range from 1000 to 1099.
- C. When created, they must be specified as standard or extended.
- D. They are created with the ip access-list command.
- E. The entire access list must be deleted before editing.
- F. They are applied with the ip name-group command.

Answer: A, C, D

Explanation:

You can identify IP access lists with an alphanumeric string (a name) rather than a number. Named access lists allow you to configure more IP access lists in a router than if you were to use numbered access lists. If you identify your access list with a name rather than a number, the mode and command syntax are slightly different. Currently, only packet and route filters can use a named list.

Consider the following guidelines before configuring named access lists:

Access lists specified by name are not compatible with Cisco IOS Releases prior to 11.2. Not all access lists that accept a number will accept a name. Access lists for packet filters and route filters on interfaces can use a name.

A standard access list and an extended access list cannot have the same name.

To configure a named access list (standard and extended):

Router(config)# ip access-list standard <i>name</i>	Defines a standard IP access list using a name and enters standard named access list configuration mode.
--	--

Router(config)# ip access-list extended <i>name</i>	Defines an extended IP access list using a name and enters extended named access list configuration mode.
--	---

Reference:

http://www.cisco.com/en/US/products/ps6350/products_configuration_guide_chapter09186a0080430e5b.html

QUESTION 432

Which command is required to apply an access list on a virtual terminal line of a router?

- A. Router(config-line)# access-class 10 in
- B. Router(config-if)# ip access-class 23 out
- C. Router(config-line)# access-group 15 out
- D. Router(config-if)# ip access-group 110 in
- E. Router(config-line)# access-list 150 in
- F. Router(config-if)# ip access-list 128 out

Answer: A

Explanation:

To configure a VTY access lists:

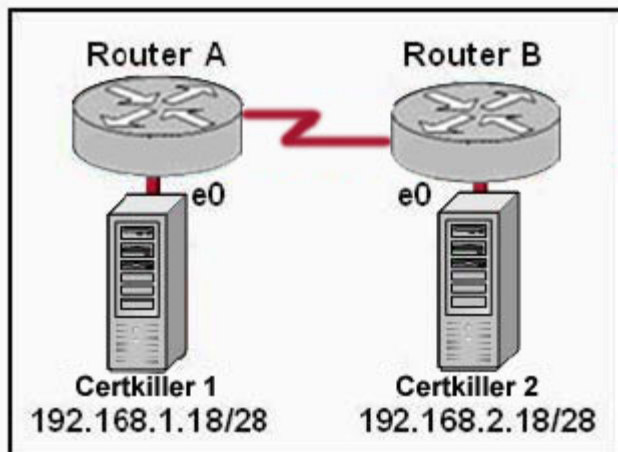
1. Create a standard IP access list that permits only the host or hosts you want to be able to telnet into the routers.
2. Apply the access list to the VTY line with the access-class command.

Here is an example of allowing only host 172.16.10.3 to telnet into a router:

```
routera(config)#access-list 50 permit 172.16.10.3  
routera(config)#line vty 0 4  
routera(config-line)#access-class 50 in
```

QUESTION 433

The following access control list needs to be applied to one of the routers shown in the graphic:



```
access-list 101 permit tcp 192.168.1.16 0.0.0.15 192.168.2.16 0.0.0.15 eq 23
```

What can be concluded about this ACL? (Choose two.)

- A. Telnet traffic from 192.168.1.16 0.0.0.15 to 192.168.2.16 0.0.0.15 is allowed.

- B. SMTP traffic from 192.168.2.16 0.0.0.15 to 192.168.1.16 0.0.0.15 is allowed.
- C. The ACL is configured to allow traffic from one specific host to another.
- D. When the ACL is applied, Certkiller 1 will be able to ping Certkiller 2.
- E. The ACL should be applied inbound to the e0 interface of Router A.
- F. The ACL should be applied outbound to the e0 interface of Router A.

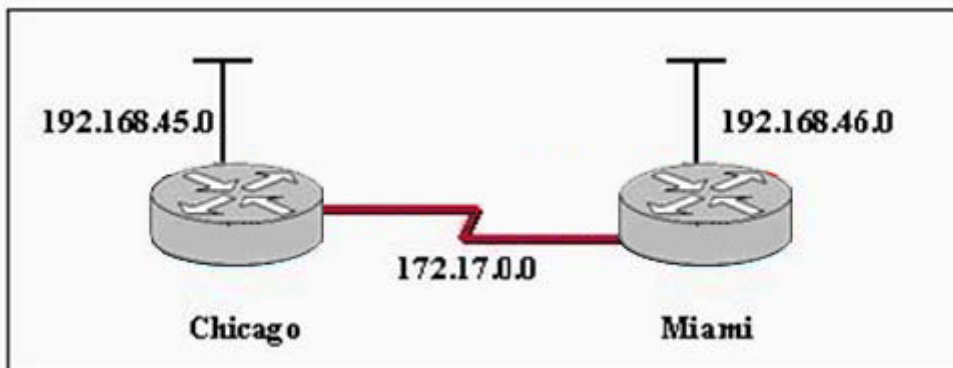
Answer: A, E

Explanation:

The given extended ACL allow the telnet traffic from 192.168.1.16 0.0.0.15 to 192.168.2.16 0.0.0.15. Telnet uses TCP port 23. With access lists, the first network specified is the source of the traffic and the second is the destination, so since this access list says to allow telnet traffic from the JackBill1 network to the Certkiller 2 network, it should be placed on the inbound interface of E0.

QUESTION 434

Two Certkiller routers are connected as shown below:



A network administrator in Miami has been instructed to prevent all traffic originating on the Chicago LAN from entering the Miami router. Which statement would accomplish this filtering?

- A. access-list 101 deny ip 192.168.45.0 0.0.0.255 any
- B. access-list 101 deny ip 192.168.45.0 0.0.0.0 any
- C. access-list 101 deny ip 192.168.46.0 0.0.0.255 192.168.45.0 0.0.0.255
- D. access-list 101 deny ip 192.168.46.0 0.0.0.255 any

Answer: A

Explanation:

Using access-list we can allow or deny the packets from different hosts or networks.

There are two types of access-list standard and extended access list.

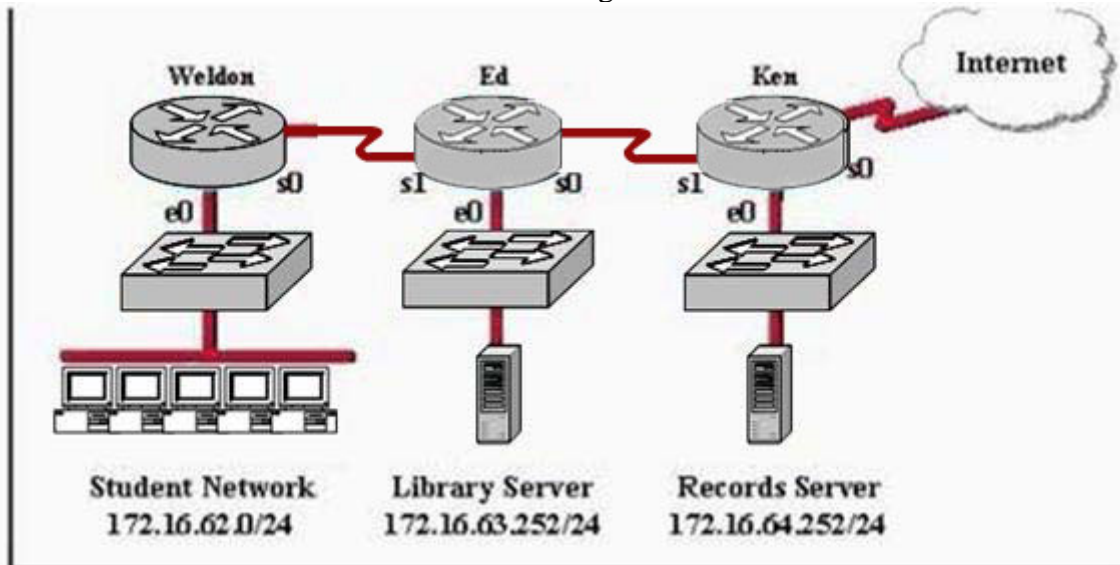
Standard. Standard Access List can allow or deny the request only on the basis of source address. Extended Access list can allow or deny on the basis of source, destination, protocol, port etc.

Syntax of standard Access List:

access-list ACL number permit | deny protocol source address netmask service

QUESTION 435

The Certkiller network is shown in the following exhibit:



Refer to the graphic. A named access list called records_block has been written to prevent student and Internet access to the records server. All other users within the enterprise should have access to this server. The list was applied to the e0 interface of the Ken router in the outbound direction. Which of the following conditions should the access list contain to meet these requirements? (Choose two.)

- A. deny 172.16.64.252 0.0.0.0 172.16.62.0 0.0.0.255
- B. deny 172.16.62.0 0.0.0.255 172.16.64.252 0.0.0.0
- C. deny 172.16.64.252 0.0.0.0 any
- D. permit 172.16.64.252 0.0.0.0 172.16.0.0 0.0.255.255
- E. permit 172.16.0.0 0.0.255.255 172.16.64.252 0.0.0.0
- F. permit any any

Answer: B, E

Explanation:

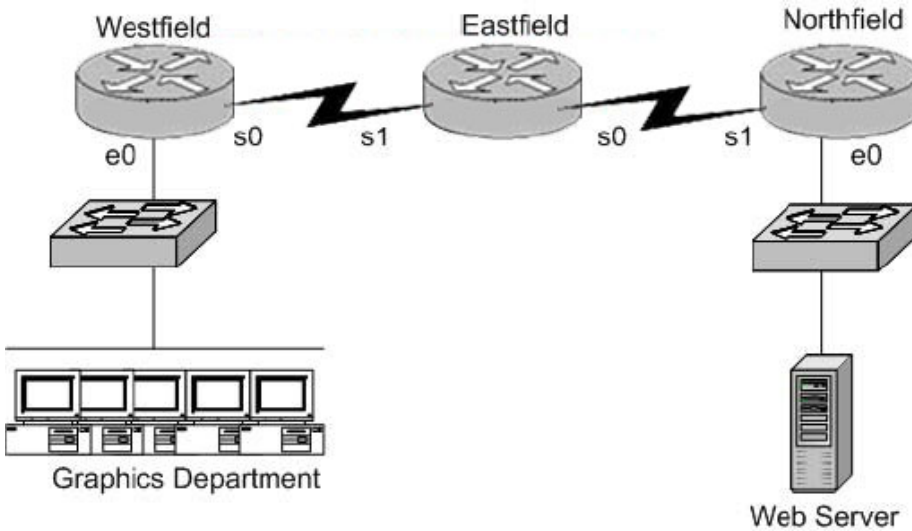
When you create the named access list, you can start your policy from permit or deny. As per the question, traffic from the internet access and student networks need to be blocked, with the student network lies on 172.16.62.0/24 network.

The "deny 172.16.62.0 0.0.0.255 172.16.64.0 0.0.0.255" command will deny access from the student network accessing the Record Server. If you don't permit to any other network then at last explicit deny to all.

The "permit 172.16.0.0 0.0.255.255 172.16.64.252 0.0.0.0" allows all other hosts from the 172.16 network to access the Record Server. The implicit deny all will then block Internet users from accessing the records server.

QUESTION 436

The Certkiller network is displayed in the following exhibit:



An access list has been designed to prevent Telnet traffic from the Graphics Department from reaching the web server attached to the Northfield router. On which router, interface, and in what direction should the access list be placed to most efficiently implement this list? (Choose three.)

- A. Westfield router
- B. Northfield router
- C. s0
- D. e0
- E. in
- F. out

Answer: A, D, E

Explanation:

Extended Access list is used to deny or permit the certain traffic to certain host or network. It is a best practice to implement the extended access list as near to the source of the traffic as possible. So it is better when you apply the access list in e0 interface of Westfield router inbound. This traffic will be inbound on the E0 interface of the Westfield router.

QUESTION 437

What are the general recommendations regarding the placement of access control lists? (Choose two)

- A. Standard ACLs should be placed as close as possible to the source of traffic to be denied.
- B. Extended ACLs should be placed as close as possible to the source of traffic to be denied .
- C. Standard ACLs should be placed as close as possible to the destination of traffic to be

denied .

D. Extended ACLs should be placed as close as possible to the destination of traffic to be denied .

Answer: B, C

Explanation:

Standard Access Lists:

1 Access-list list# {permit/deny} source IP [wildcard mask]

1 interface [router port]

1 ip access-group [list#] in|out (out is the default)

1 If a match is made, the action defined in this access list statement is performed.

1 If no match is made with an entry in the access list, the deny action is performed (implicit deny)

1 Should be put close to the destination address because you can not specify the destination address, only the source information is looked at.

Extended Access List:

1 Access-list list# {permit/deny} protocol source [source mask] destination [destination mask] operator [port]

1 Should be put close to the source

1 Since extended ACLs have destination information, you want to place it as close to the source as possible.

1 Place an extended ACL on the first router interface the packet enters and specify inbound in the access-group command.

QUESTION 438

DRAG DROP

All hosts in the same subnet with 172.16.5.118/26 must be denied Telnet access to hosts outside the LAN. To complete the bracketed command, [access-list list-number deny tcp 172.16.5.address 0.0.0.mask any eq port], drag each appropriate option on the left to its proper placeholder on the right. (Not all options are used.)

0	<i>list-number</i> Place here
1	
23	<i>address</i> Place here
63	
64	<i>mask</i> Place here
80	
128	<i>port</i> Place here
255	

Answer:

<i>list-number</i>
128

<i>address</i>
64

<i>mask</i>
63

<i>port</i>
23

QUESTION 439

Unauthorized users have used Telnet to gain access to Certkiller .com router. The network administrator wants to configure and apply an access list to allow Telnet access to the router, but only from the network administrator's computer. Which group of commands would be the best choice to allow only the IP address 172.16.3.3 to have Telnet access to the router?

- A. access-list 101 permit tcp any host 172.16.3.3 eq telnet
access-list 101 permit ip any any
interface s0/0
ip access-group 101 in
- B. access-list 3 permit host 172.16.3.3
line vty 0 4
ip access-group 3 in
- C. access-list 101 permit tcp any host 172.16.3.3 eq telnet
interface s0/0ip access-group 101 in
- D. access-list 3 permit host 172.16.3.3
line vty 0 4
access-class 3 in

Answer: D

Explanation:

To restrict incoming and outgoing connections between a particular vty (into a Cisco device) and the addresses in an access list, use the access-class command in line configuration mode.

Example:

The following example defines an access list that permits only hosts on network 192.89.55.0 to connect to the virtual terminal ports on the router:

```
access-list 12 permit 192.89.55.0 0.0.0.255
```

line 1 5

access-class 12 in

Reference:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/products_command_reference_chapter09186a008008

QUESTION 440

DRAG DROP

An interface has been configured with the access list that is shown below. On the basis of that access list, drag each information packet on the left to the appropriate category on the right.

```
access-list 107 deny tcp 207.16.12.0 0.0.3.255 any eq http
access-list 107 permit ip any any
```

source IP 207.16.32.14, destination application http

source IP 207.16.15.9, destination port 23

source IP 207.16.14.7, destination port 80

source IP 207.16.13.14, destination application http

source IP 207.16.16.14, destination port 53

Permitted

Place here

Place here

Denied

Place here

Place here

Place here

Answer:

Permitted

source IP 207.16.15.9, destination port 23

source IP 207.16.13.14, destination application http

Denied

source IP 207.16.16.14, destination port 53

source IP 207.16.14.7, destination port 80

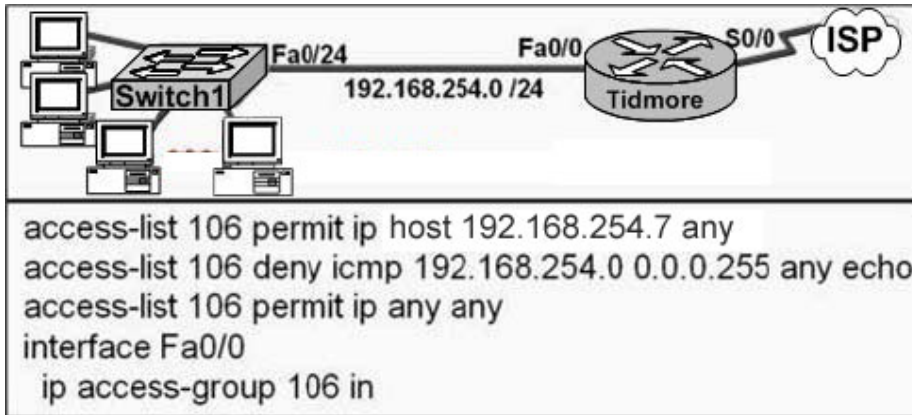
source IP 207.16.13.14, destination application http

QUESTION 441

In the Certkiller network shown below, a network technician enters the following line into the router:

```
Tidmore1(config)# access-list 106 deny tcp 192.168.254.0 0.0.0.255 any eq www.
```

What is the effect of this configuration, given that the router was already configured as shown below?



- A. Web pages from the Internet cannot be accessed by hosts in the 192.168.254.0 LAN.
- B. No hosts in the 192.168.254.0 LAN except 192.168.254.7 can access web pages from the Internet.
- C. The change has no effect on the packets being filtered.
- D. All traffic from the 192.168.254.0 LAN to the Internet is permitted.

Answer: C

Explanation:

Traffic that comes into the router is compared to ACL entries based on the order that the entries occur in the router. New statements are added to the end of the list. The router continues to look until it has a match. If no matches are found when the router reaches the end of the list, the traffic is denied. For this reason, you should have the frequently hit entries at the top of the list. There is an "implied deny" for traffic that is not permitted. A single-entry ACL with only one "deny" entry has the effect of denying all traffic. You must have at least one "permit" statement in an ACL or all traffic is blocked. In this example, since the statement will be added to the end of the access list, and since there is already an entry that permits all IP traffic, the www traffic will be allowed, all traffic will never reach this access list entry.

QUESTION 442

For security reasons, the network administrator needs to prevent pings into the corporate networks from hosts outside the internetwork. Which protocol should be blocked with access control lists?

- A. UDP
- B. ICMP
- C. IP
- D. TCP

Answer: B

Explanation:

ICMP is used for error and control messages within the IP world and is very much

integrated with IP. Ping is a computer network tool used to test whether a particular host is reachable across an IP network. Ping works by sending ICMP "echo request" packets to the target host and listening for ICMP "echo response" replies.

QUESTION 443

DRAG DROP

The hosts in the VLAN with the subnet address of 172.16.4.0/22 need to be prevented from accessing websites on the internet. Drag the appropriate options from the left to complete this command:

access-list 156 deny protocol 172.16.4.0 mask any eq port. (Note that not all options are used)

Exhibit:

23	protocol
80	Place here
ip	mask
tcp	Place here
udp	port
0.0.0.3	Place here
0.0.0.255	
0.0.3.255	

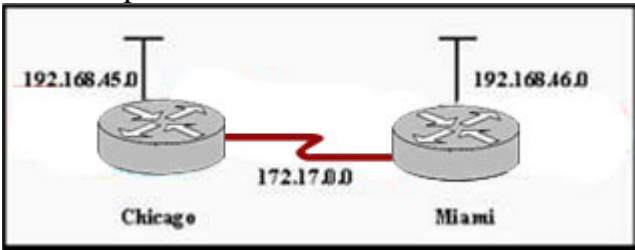
Answer:

protocol
tcp
mask
0.0.3.255
port
80

QUESTION 444

A Certkiller network administrator has been instructed to prevent all traffic originating on the Chicago LAN from entering the Miami router. Which command

would implement the access list on the interface of the Miami router?



- A. access-list 101 out
- B. access-list 101 in
- C. ip access-group 101 in
- D. ip access-group 101 out

Answer: C

Explanation:

To control access to an interface, use the ip access-group command in interface configuration mode.

Access lists are applied on either outbound or inbound interfaces. For standard inbound access lists, after receiving a packet, the Cisco IOS software checks the source address of the packet against the access list. For extended access lists, the router also checks the destination access list. If the access list permits the address, the software continues to process the packet. If the access list rejects the address, the software discards the packet and returns an ICMP host unreachable message.

For standard outbound access lists, after receiving and routing a packet to a controlled interface, the software checks the source address of the packet against the access list. For extended access lists, the router also checks the destination access list. If the access list permits the address, the software sends the packet. If the access list rejects the address, the software discards the packet and returns an ICMP host unreachable message.

In our example, we need to prevent traffic from coming in to the Miami router, so the "in" keyword must be used to specify incoming traffic.

QUESTION 445

Exhibit:

Please study the exhibit carefully. A network associate creates the configuration shown in the exhibit. What will be the results of this configuration?

Exhibit:

```
access-list 100 permit ip 172.16.232.253 0.0.0.0 any
access-list 110 deny tcp 172.16.232.0 0.0.0.255 any eq telnet
access-list 120 deny icmp 172.16.232.0 0.0.0.255 any echo
access-list 130 permit ip any any
```

- A. The configuration creates an access list that allows all the hosts in the 172.16.232.0/24 subnet to use Telnet but not to access web pages.

- B. The configuration creates an access list that allow all traffic from the host 172.16.232.253 except Telnet and ping traffic.
- C. The fourth line of the configuration creates an access list that allows only traffic from the host 172.16.232.253 to anywhere in the network.
- D. The configuration creates four access lists.

Answer: D

Explanation:

With all access list entries, the order of entries is important. Normally, when a packet is evaluated against entries in an access list, the entries are evaluated in sequential order, and when a match occurs, no more entries are evaluated. However, this applies to access lists with the same number, but has multiple lines. When a different number is specified for each line, a different, separate, access list is actually created as is the case here.

QUESTION 446

When configuring Frame Relay using point-to-point subinterfaces, which of the following must not be configured? (Select one)

- A. The local DLCI on each subinterface of the Frame Relay.
- B. The Frame Relay encapsulation on the physical interface.
- C. An IP address on the physical interface.
- D. The subinterface type as point-to-point

Answer: C

Explanation:

Frame Relay does not require IP addresses on physical interfaces. A subnet address is usually assigned to each point-to-point connection. Therefore, only one DLCI can be configured per point-to-point subinterface. On point-to-point subinterfaces, the destination is identified and configured with the frame-relay interface-dlci command beginning in interface configuration mode. When configured on a point-to-point subinterface, the command associates the selected point-to-point subinterface with a DLCI. The command also allows users to select the type of Frame Relay encapsulation to be used on the specific VC. The command can be executed without specifying the Frame Relay encapsulation type to be used. By default, the Cisco Frame Relay encapsulation type will be used.

QUESTION 447

You are in the midst of configuring a router for a Frame Relay network. What could you do to prevent split horizon problems? (Select all that apply)

- A. Configure a separate sub-interface for each PVC. Assign a unique DLCI and subnet to each sub-interface.
- B. Configure each Frame Relay circuit as a point-to-point line to support multicast and broadcast traffic.

- C. Configure one sub-interface to disperse into multiple PVC connections to multiple remote router interfaces.
- D. Configure as many as possible sub-interfaces on the same subnet.
- E. Use the "no ip split-horizons" command on the physical interface.

Answer: A, E

Explanation:

The best solution is to configure subinterfaces for each virtual connection, because the individual virtual circuits can be maintained and split horizon can remain on. Routing update information that is received through one subinterface can be propagated to other subinterfaces, because each sub-interface is treated as a completely separate interface. Configuring Frame Relay subinterfaces ensures that a single physical interface is treated as multiple virtual interfaces. This capability allows you to overcome split horizon rules so packets received on one virtual interface can be forwarded to another virtual interface, even if they are configured on the same physical interface. Another alternative to using sub-interfaces is to simply disable the split horizon mechanism as shown in choice E.

Reference: http://www.cisco.com/warp/public/116/fr_faq.html

QUESTION 448

A new frame-relay network is being implemented and inverse ARP does not appear to be operating correctly. Which alternative command can be used to provide connectivity?

- A. frame-relay arp
- B. frame-relay map
- C. frame-relay interface-dlci
- D. frame-relay lmi-type
- E. frame-relay pvc

Answer: B

Explanation:

When using dynamic address mapping, Inverse ARP requests a next-hop protocol address for each active PVC. Once the requesting router receives an Inverse ARP response, it updates its DLCI-to-Layer 3 address mapping table. Dynamic address mapping is enabled by default for all protocols enabled on a physical interface. If the Frame Relay environment supports LMI autosensing and Inverse ARP, dynamic address mapping takes place automatically. Therefore, no static address mapping is required. If the environment does not support LMI autosensing and Inverse ARP, a Frame Relay map must be manually configured. Use the frame-relay map command to configure static address mapping. Once a static map for a given DLCI is configured, Inverse ARP is disabled on that DLCI.

QUESTION 449

Which of the following Frame-Relay encapsulation commands would you use, if you

had to connect your Cisco router to a non-Cisco router?

- A. CertK Router(config-if)# Encapsulation frame-relay dot1q
- B. CertK Router(config-if)# Encapsulation frame-relay aal5snap
- C. CertK Router(config-if)# Encapsulation frame-relay ietf
- D. CertK Router(config-if)# Encapsulation frame-relay isl
- E. None of the above

Answer: C

Explanation:

In general, the IETF Frame Relay encapsulation should be used when connecting a Cisco router to non-Cisco equipment across a Frame Relay network. The IETF Frame Relay encapsulation allows interoperability between equipment from multiple vendors.

Both Cisco and IETF encapsulations for Frame Relay can be configured on a per-virtual-circuit (VC) basis. This gives greater flexibility when configuring Frame Relay in a multi-vendor environment. A user can specify the Frame Relay encapsulation types to be used on different virtual circuits configured under the same physical interface.

Incorrect Answers:

A, D: 802.1Q and ISL are trunking encapsulation types and have nothing to do with frame relay.

B. AAL 5 SNAP is an ATM encapsulation and is not related to frame relay.

QUESTION 450

The Certkiller Network is using ISDN to provide connectivity between Certkiller 1 and Certkiller 2 as shown below:



Assuming that the ISDN switch doesn't require SPIDs, which of the following commands would you implement to bring up the ISDN connection and provide connectivity between the two routers? (Select three answer choices)

- A. Router(config-if)# encapsulation HDLC
- B. Router(config)# dialer-list 1 protocol ip permit
- C. Router(config)# isdn switch-type type
- D. Router(config)# dialer map ip address name connection number
- E. Router(config-if)#dialer-group 1
- F. Router(config-if)# ip address address subnet mask

Answer: B, E, F

Explanation:

The dialer group number enables dialer-list on this interface. The dialer-list is to be defined in global configuration mode as shown in B. Finally, the interfaces should be configured with the proper IP address and subnet mask.

Incorrect Answers:

- A. ISDN BRI interfaces should be configured with PPP encapsulation.
- C. This is not always required, as the default switch type may be sufficient. In addition, if no SPIDs are required, then there is a good chance that the ISDN switch-type does not need to be explicitly defined.
- D. This command is using the incorrect syntax.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 310+337

QUESTION 451

You are about to configure PPP on the interface of a Cisco router. Which authentication methods could you use? (Select two answer choices)

- A. SSL
- B. SLIP
- C. PAP
- D. LAPB
- E. CHAP
- F. VNP

Answer: C, E

Explanation:

Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP) authenticate the endpoints on either end of a point-to-point serial link. CHAP is the preferred method today because the identifying codes flowing over the link are created using a MD5 one-way hash, which is more secure than the clear-text passwords sent by PAP.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 314

QUESTION 452

Which of the following can LCP successfully negotiate during the establishment of a PPP connection? (Select three answer choices)

- A. Q.931
- B. IPCP
- C. multilink
- D. CHAP
- E. callback

Answer: C, D, E

Explanation:

PPP protocol constitutes of LCP and NCP whose functions are:

1. LCP negotiates control options: authentication, multilink, callback, compression and error detection.
2. IPCP(IP Control protocol) is supported by NCP.

QUESTION 453

DRAG DROP

Your goal is to illustrate the five necessary steps of configuring dial-on-demand routing (DDR) on an ISDN BRI. Place the parameters on the right to the proper slot on the left. (Note: not all the parameters will be used)

Place here	Select from these	
Place 1st parameter here	unicast	<next-hop-address>
Place 2nd parameter here	dial string	dialer
Place 3rd parameter here	map	group
Place 4th parameter here	dialer-list	<protocol>
Place 5th parameter here		

Answer:

Explanation:

Place 1st - dialer

Place 2nd - map

Place 3rd - protocol

Place 4th - next-hop-address

Place 5th - dial string

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 342

QUESTION 454

You have just obtained a modular Cisco router with 2 serial connections and a BRI/U interface. What other physical piece of hardware is required in order to establish an ISDN connection?

- A. Nothing. The router is already suitable.
- B. A BRI WAN interface in the router.
- C. An external NT1 to terminate the local loop.
- D. A TA/NT1 device on the router.

Answer: A

Explanation:

For routers with an integrated BRI/U interface no other device needs to be installed; the line supplied by the telephone company is simply plugged directly into the router's BRI interface. This is true for modern router interfaces. Legacy ISDN connections required the use of additional hardware, such as an NT1 device in order to provide the correct ISDN signaling between the router and the carrier's ISDN network.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 331

QUESTION 455

In a lab, two routers are connected directly together using serial interfaces in a back-to-back configuration. No external DCE devices are being used. What additional command is needed to bring this link up?

- A. serial up
- B. clockrate
- C. clock rate
- D. dce rate
- E. dte rate

Answer: C

Explanation:

The clock rate command (two words), is used to provide clocking on a line where no DCE device is located. Clocking must be provided by one end of this link. Normally in a point to point HDLC or PPP connection the clock rate is supplied by the network provider.

Incorrect Answers:

- A. This is an invalid command
 - B. This command will not work. The clock rate command must use two words.
 - D, E: These are invalid commands.
-

QUESTION 456

An ISDN link can be encapsulated using either PPP or HDLC. What are the advantages of using PPP? (Select two answer choices)

- A. PPP is easier to configure and maintain than HDLC.
- B. PPP is consistently implemented among different equipment vendors.
- C. PPP will run faster and more efficiently than HDLC on circuit-switched ISDN links.
- D. PPP authentication will prevent unauthorized callers from establishing an ISDN circuit.
- E. PPP can be routed across public facilities, while HDLC is not routable in circuit-switched networks.
- F. PPP supports asynchronous communication.

Answer: B, D

Explanation:

PPP has numerous advantages over HDLC. Unlike HDLC which is Cisco proprietary, PPP was designed for multi-protocol interoperability. Secondly, PPP supports authentication, using either PAP or CHAP. Finally, PPP supports error correction and the use of bonded multilink circuits.

Incorrect Answers:

A. The default encapsulation is HDLC. PPP must be explicitly configured and there are many more options available with it, so it is more complicated than HDLC.

C. HDLC is slightly more efficient than PPP.

E. Neither PPP nor HDLC work in public circuit switched environments.

F. Although this is true, it would not be considered an advantage on an ISDN link, as ISDN signaling is not asynchronous.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 308-310

QUESTION 457

A new frame relay connection is being brought up. Which of the following are frame relay LMI type options that can be configured on this new link? (Select all that apply.)

A. EIA/TIA

B. Q.932

C. Q.933A

D. IEEE

E. Cisco

F. Annex D

Answer: C, E, F

Explanation:

There are three options for frame relay LMI types. The default is Cisco, which is proprietary to Cisco routers. The second option is ANSI, which is also known as Annex D. The final option is the ITU standard, which is known as Annex A or Q.933A.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 382

QUESTION 458

You are troubleshooting a frame relay connection and wish to view the LMI traffic stats. Which command should you issue?

A. Show interface lmi

- B. Show frame-relay lmi
- C. Show interface frame-relay
- D. Debug frame-relay interface.

Answer: B

Explanation:

To view Frame-Relay LMI statistics, enter the command "show frame-relay lmi"
This will view various statistics on the link, including the LMI status enquiries that were sent and received on the interface.

QUESTION 459

You have a Certkiller router that is connected to a frame relay WAN link using a serial DTE interface. What determines the interface clock rate?

- A. It is determined by the CSU/DSU.
- B. It is determined by the far end device.
- C. It is specified in the clock rate command.
- D. It is determined by the Layer 1 bit stream timing.

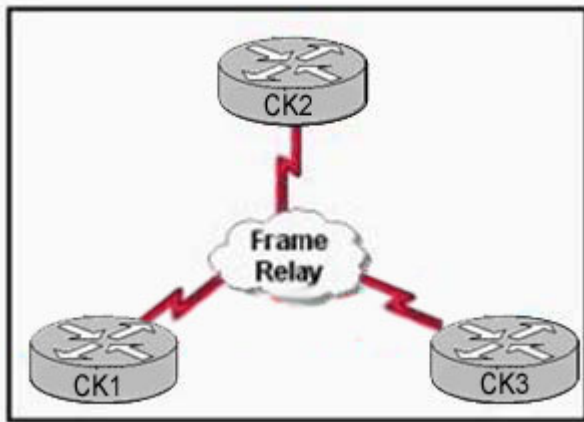
Answer: A

Explanation:

When connecting a router to a frame relay service provider, the clock rate is determined by the provider network. When connecting Cisco routers back to back using frame relay, the clock rate must be determined by the DCE side, not the DTE side. Either way, the clock rate is determined by the far end device. With a router using a DTE serial interface, the clock rate is determined by the attached CSU/DSU.

QUESTION 460

The Certkiller network consists of 3 frame relay sites as shown in the diagram below:



Which encapsulation type is appropriate to use in this design if the routers are all from different vendors?

- A. IETF
- B. Cisco
- C. ANSI
- D. Q953A
- E. IEEE

Answer: A

Explanation:

Cisco routers use the Cisco frame relay encapsulation type for all frame relay interfaces. This is perfectly acceptable in all routers within the network are Cisco routers, but problems can arise for frame relay networks when a router from a different vendor is used. To prevent these problems, the industry standard IETF frame relay encapsulation should be used. To configure this, use the "encapsulation frame-relay ietf" interface command.

QUESTION 461

Which statements are true about EIGRP successor routes? (Choose two)

- A. A successor route is used by EIGRP to forward traffic to a destination.
- B. Successor routes are saved in the topology table to be used if the primary route fails.
- C. Successor routes are flagged as "active" in the routing table.
- D. A successor route may be backed up by a feasible successor route.
- E. Successor routes are stored in the neighbor table following the discovery process.
- F. Successors are not used in EIGRP.

Answer: A, D

Explanation:

The following are some terms relating to EIGRP:

1. Feasible Distance: The lowest calculated metric to each destination
2. Feasibility Condition: A condition that is met if a neighbor's advertised distance to a destination is lower than the router's Feasible Distance to that same destination.
3. Successor: The neighbor that has been selected as the next hop for a given destination based on the Feasibility Condition.

Reference: Jeff Doyle, Routing TCP/IP, Volume I, Chapter 8: Enhanced Interior Gateway Routing Protocol (EIGRP), p.336-337, Cisco Press, (ISBN 1-57870-041-8)

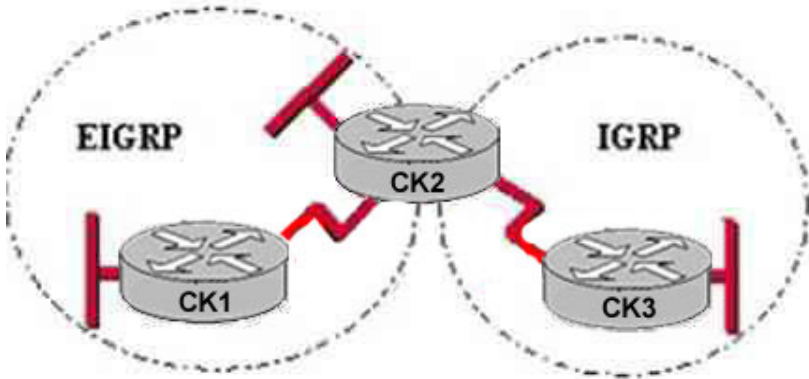
Additional info:

The Feasible Condition is met when the receiving router has a Feasible Distance (FD) to a particular network and it receives an update from a neighbor with a lower advertised or Reported Distance (RD) to that network. The neighbor then becomes a Feasible Successor (FS) for that route because it is one hop closer to the destination network. There may be a number of Feasible Successors in a meshed network environment. The RD for a neighbor to reach a particular network must always be less than the FD for the local router to reach that same network. In this way EIGRP avoids routing loops. This is why routes that have RD larger than the FD are not entered into the Topology table.

Reference: Ravi Malhotra, IP Routing, Chapter 4: Enhanced Interior Gateway Routing Protocol (EIGRP), O'Reilly Press, January 2002 (ISBN 0-596-00275-0)

QUESTION 462

The Certkiller network is planning to utilize both the IGRP and EIGRP routing protocols in their network as shown below:



Router CK3 is using IGRP, while router CK1 is using EIGRP. Certkiller plans to add new routers and run EIGRP on them, but Certkiller does not want to configure redistribution.

Which AS numbering scheme should Certkiller implement?

- A. IGRP AS number 40; EIGRP AS number 41
- B. IGRP AS number 41; EIGRP AS number 40
- C. IGRP AS number 22; EIGRP AS number 22
- D. IGRP AS number 0; EIGRP AS number 0
- E. IGRP AS number 1; EIGRP AS number 255

Answer: C

Explanation:

EIGRP and IGRP will redistribute routes automatically, as long as the autonomous system numbers are the same for each protocol. With automatic redistribution, all networks shown in the network above will be reachable, with no additional configuration changes needed on the CK2 router.

Incorrect Answers:

- A, B, E: The AS numbers should be the same for both EIGRP and IGRP
- D. EIGRP and IGRP both require an AS number greater than 0.

QUESTION 463

A network administrator needs to configure a router for a Frame Relay connection to a non-Cisco router.

Which of the following commands will prepare the WAN interface for this connection?

- A. Router(config-if)# encapsulation frame-relay q933a
- B. Router(config-if)# encapsulation frame-relay ansi

- C. Router(config-if)# encapsulation frame-relay ietf
- D. Router(config-if)# encapsulation frame-relay isl
- E. None of the above

Answer: C

Explanation:

The IETF Frame Relay encapsulation should be used when connecting a Cisco router to non-Cisco equipment across a Frame Relay network. The IETF Frame Relay encapsulation allows interoperability between equipment from multiple vendors.

Both Cisco and IETF encapsulations for Frame Relay can be configured on a per-virtual-circuit (VC) basis. This gives greater flexibility when configuring Frame Relay in a multi-vendor environment. A user can specify the Frame Relay encapsulation types to be used on different virtual circuits configured under the same physical interface.

Incorrect Answers:

- A, B: These are frame relay LMI types and are not used as encapsulation types.
- D. ISL is a trunking encapsulation type and has nothing to do with frame relay.

QUESTION 464

In the context of configuring dial-on-demand routing using ISDN, what is the purpose of the dialer-list command?

- A. to identify valid numbers for incoming calls
- B. to define the type of ISDN switch at the central office
- C. to specify the list of outgoing phone numbers used by the router
- D. to associate a dial configuration with a physical interface
- E. to define interesting traffic that will enable the link

Answer: E

Explanation:

To define a DDR dialer list to control dialing by protocol or by a combination of a protocol and a previously defined access list, use the dialer-list protocol global configuration command. This is used to define the interesting traffic. Dialing occurs when an interesting packet (one that matches access list specifications) needs to be output on an interface. Using the standard access list method, packets can be classified as interesting or uninteresting. In the following example, IGRP TCP/IP routing protocol updates are not classified as interesting and do not initiate calls:

```
access-list 101 deny igmp 0.0.0.0 255.255.255.255 255.255.255.255 0.0.0.0
```

The following example classifies all other IP packets as interesting and permits them to initiate calls:

```
access-list 101 permit ip 0.0.0.0 255.255.255.255 0.0.0.0 255.255.255.255
```

Then the following command places list 101 into dialer access group 1:

```
dialer-list 1 protocol ip list 101
```

QUESTION 465

While troubleshooting a link problem on one of the Certkiller routers, the following output was seen:

```
Certkiller3# show interfaces serial 0/0
Serial0/0 is up, line protocol is down
  Hardware is HD64570
  Internet address is 192.168.100.1/24
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC loopback not set
  Keepalive set (10 set)
```

Based on the information above, what are possible causes for the status of this interface? (Select three)

- A. The interface is shut down.
- B. No keepalive messages are received.
- C. The clockrate is not set.
- D. No loopback address is set.
- E. No cable is attached to the interface.
- F. There is a mismatch in the encapsulation type.

Answer: B, C, F

Explanation:

Table 15-1: Serial Lines: show interfaces serial Status Line Conditions - This table shows the interface status conditions, possible problems associated with the conditions, and solutions to those problems.

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Status Line Condition	Possible Problem	Solution
Serial x is up, line protocol is up		This is the proper status line condition. No action required.
Serial x is down, line protocol is down (DTE mode)	<ul style="list-style-type: none"> • Typically indicates that the router is not sensing a CD signal (that is, CD is not active). • Telephone company problem-Line is down or line is not connected to CSU/DSU • Faulty or incorrect cabling • Hardware failure (CSU/DSU) 	<ol style="list-style-type: none"> 1. Check the <u>LEDs</u> on the CSU/DSU to see if CD is active, or insert a breakout box on the line to check for the CD signal. 2. Verify that you are using the proper cable and interface (see your hardware installation documentation). 3. Insert a breakout box and check all control leads. 4. Contact your leased-line or other carrier service to see if there is a problem. 5. Swap faulty parts. 6. If you suspect faulty router hardware, change the serial line to another port. If the connection comes up, the previously connected interface has a problem.
		<ol style="list-style-type: none"> 1. Put the modem, CSU, or DSU in local loopback mode and use the show interfaces serial command to see if the line protocol comes up. <p>If the line protocol comes up, a telephone company problem or a failed remote router is the likely problem.</p> <ol style="list-style-type: none"> 2. If the problem appears to be on the remote end, repeat Step 1 on the remote modem, CSU, or DSU. 3. Verify all cabling. Make sure that the cable is attached to the correct interface, the correct CSU/DSU, and the correct telephone company network termination point. Use the show controllers EXEC command to

Serial x is up,
line protocol is
down (DTE
mode)

- misconfigured
- Keepalives are not being sent by remote router
- Leased-line or other carrier service problem- Noisy line, or misconfigured or failed switch
- Timing problem on cable (SCTE not set on CSU/DSU) Failed local or remote CSU/DSU
- Failed local or remote CSU/DSU
- Router hardware failure (local or remote)

4. Enable the **debug serial interface EXEC** command.

Caution: Because debugging output is assigned a high priority in the CPU process, it can render the system unusable. For this reason, use debug commands only to troubleshoot specific problems or during troubleshooting sessions with Cisco technical support staff. Moreover, it is best to use **debug** commands during periods of low network traffic and fewer users. Debugging during these periods decreases the likelihood that increased **debug** command processing overhead will affect system use.

5. If the line protocol does not come up in local loopback mode and if the output of the **debug serial interface EXEC** command shows that the keepalive counter is not incrementing, a router hardware problem is likely. Swap router interface hardware.

6. If the line protocol comes up and the keepalive counter increments, the problem is not in the local router. Troubleshoot the serial line as described in the sections "Troubleshooting Clocking Problems" and "CSU and DSU Loopback Tests," later in this chapter.

7. If you suspect faulty router hardware, change the serial line to an unused port. If the connection comes up, the previously connected interface has a problem.

<p>Serial x is up, line protocol is down (DCE mode)</p>	<ul style="list-style-type: none"> • Missing clockrate interface configuration command • DTE device does not support or is not set up for SCTE mode • Failed remote CSU or DSU • Failed or incorrect cable • Router hardware failure 	<ol style="list-style-type: none"> 1. Add the clockrate interface configuration command on the serial interface. <p>Syntax: clock rate <i>bps</i></p> <p>Syntax Description:</p> <ul style="list-style-type: none"> o <i>bps</i>-Desired clock rate in bits per second: 1200, 2400, 4800, 9600, 19200, 38400, 56000, 64000, 72000, 125000, 148000, 250000, 500000, 800000, 1000000, 1300000, 2000000, 4000000, or 8000000. <ol style="list-style-type: none"> 2. Set the DTE device to SCTE mode if possible. If your CSU/DSU does not support SCTE, you may have to disable SCTE on the Cisco router interface. See the section "Inverting the Transmit Clock," later in this chapter. 3. Verify that the correct cable is being used. 4. If the line protocol is still down, there is a possible hardware failure or cabling problem. Insert a breakout box and observe leads. 5. Replace faulty parts as necessary.
<p>Serial x is up, line protocol is</p>	<p>A loop exists in the circuit. The sequence number in the <u>keepalive</u> packet changes to a random number when a</p>	<ol style="list-style-type: none"> 1. Use the show running-config privileged EXEC command to look for any loopback interface configuration command entries. 2. If you find a loopback interface configuration command entry, use the no loopback interface configuration command to remove the loop. 3. If you do not find the loopback interface configuration command, examine the CSU/DSU to see if they are

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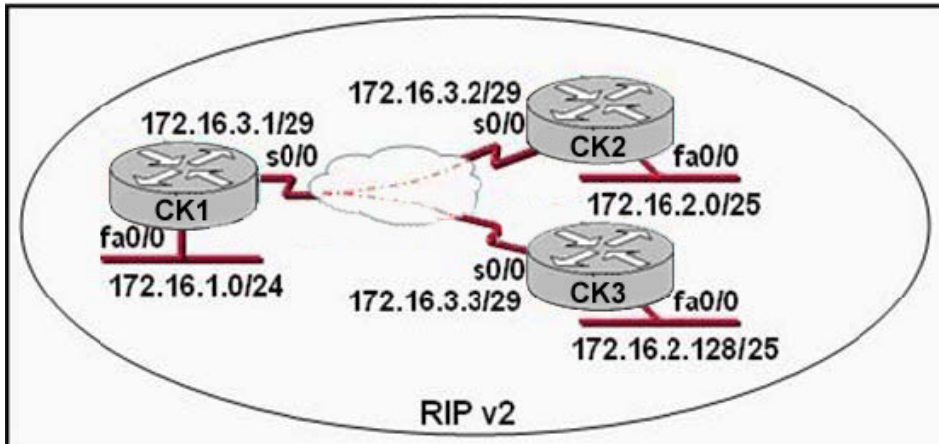
	If the same random number is returned over the link, a loop exists.	mode. If they are, disable manual loopback. 4. Reset the CSU or DSU, and inspect the line status. If the line protocol comes up, no other action is needed. 5. If the CSU or DSU is not configured in manual loopback mode, contact the leased-line or other carrier service for line troubleshooting assistance.
Serial x is up, line protocol is down (disabled)	<ul style="list-style-type: none">• High error rate due to telephone company service problem• CSU or DSU hardware problem• Bad router hardware (interface)	<ol style="list-style-type: none">1. Troubleshoot the line with a serial analyzer and breakout box. Look for toggling CTS and DSR signals.2. Loop CSU/DSU (DTE loop). If the problem continues, it is likely that there is a hardware problem. If the problem does not continue, it is likely that there is a telephone company problem.3. Swap-out bad hardware as required (CSU, DSU, switch, local or remote router).
Serial x is administratively down, line protocol is down	<ul style="list-style-type: none">• Router configuration includes the shutdown interface configuration command• Duplicate IP address	<ol style="list-style-type: none">1. Check the router configuration for the shutdown command.2. Use the no shutdown interface configuration command to remove the shutdown command.3. Verify that there are no identical IP addresses using the show running-config privileged EXEC command or the show interfaces EXEC command4. If there are duplicate addresses, resolve the conflict by changing one of the IP addresses

Reference:

http://www.cisco.com/en/US/tech/CK713/CK628/technologies_tech_note09186a00800a758d.shtml

QUESTION 466

Exhibit:



S0/0 on CK1 is configured as a multipoint interface to communicate with CK2 and CK3 in the hub-and-spoke Frame Relay topology shown in the exhibit. Originally, static routes were configured between these routers to successfully route traffic between the attached networks. What will need to be done in order to use RIP v2 in place of the static routes?

- A. Configure the no ip subnet-zero command on CK1 , CK2 , and CK3 .
- B. Dynamic routing protocols such as RIP v2 cannot be used across Frame Relay networks.
- C. Configure the s0/0 interface on CK1 as two subinterfaces and configure point-to-point links to CK2 and CK3 .
- D. Change the 172.16.2.0/25 and 172.16.2.128/25 subnetworks so that at least two bits are borrowed from the last octet.
- E. Change the network address configurations to eliminate the discontinuous 172.16.2.0/25 and 172.16.2.128/25 subnetworks.

Answer: C

Explanation:

For Dynamic Routing in Hub-and spoke topology, configure the subinterface for each link then define the link as point to point. One reason for the use of subinterfaces is to circumvent the rule of split horizon. Split horizon dictates that a route cannot be advertised out the same interface upon which it was learned in the first place. This can be a problem in hub and spoke frame relay networks, but by using pt-pt subinterfaces this problem will be eliminated.

QUESTION 467

A network administrator needs to configure a router for a Frame Relay connection to a non-Cisco router. Which of the following commands will prepare the WAN interface for this connection?

- A. Router(config-if)# encapsulation frame-relay q933a
- B. Router(config-if)# encapsulation frame-relay ansi
- C. Router(config-if)# encapsulation frame-relay ietf

D. Router(config-if)# encapsulation frame-relay isl

Answer: C

Explanation:

The default encapsulation is Cisco unless you manually type in IETF, and Cisco is the type used when you are connecting two Cisco devices. You'd want to opt for the IETF-type encapsulation if you needed to connect a Cisco device to a non-Cisco device with Frame Relay. Whichever you choose, make sure that the Frame Relay encapsulation is the same on both ends.

QUESTION 468

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

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

Answer: C

Explanation:

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

Incorrect Answers:

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

QUESTION 469

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

At which OSI layer is this problem associated with?

- A. The data link layer
- B. The application layer
- C. The access layer

- D. The session layer
- E. The network layer

Answer: E

Explanation:

TCP/IP includes ICMP, a protocol designed to help manage and control the operation of a TCP/IP network. The ICMP protocol provides a wide variety of information about a network's health and operational status. Control message is the most descriptive part of a name. ICMP helps control and manage IP's work and therefore is considered part of TCP/IP's network layer.

Reference:

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

QUESTION 470

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

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

Answer: A

Explanation:

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

QUESTION 471

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

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

Answer: C

Explanation:

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

QUESTION 472

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

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

Answer: D

Explanation:

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

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

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

QUESTION 473

DRAG DROP

As a Certkiller .com network technician you are required to drag the network problems to the correct OSI layers.

640-801

Physical Layer Problems

Place here
Place here
Place here

Data Link Layer Problems

Place here
Place here
Place here
Place here

Select from these

router serial line down	router serial line up; no CDP neighbors
router serial line protocol down	dialup authentication failure
switch port link light is off	router serial line encapsulation failure
excessive Ethernet collisions	

Answer:

As a Certkiller.com network technician you are required to drag the network problems to the correct OSI layers.

Physical Layer Problems

router serial line down
switch port link light is on
excessive Ethernet collisions

Data Link Layer Problems

router serial line protocol down
router serial line up; no CDP neighbors
dialup authentication failure
router serial line encapsulation failure

QUESTION 474

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

In which OSI layer is the problem most likely occurring?

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

Answer: B

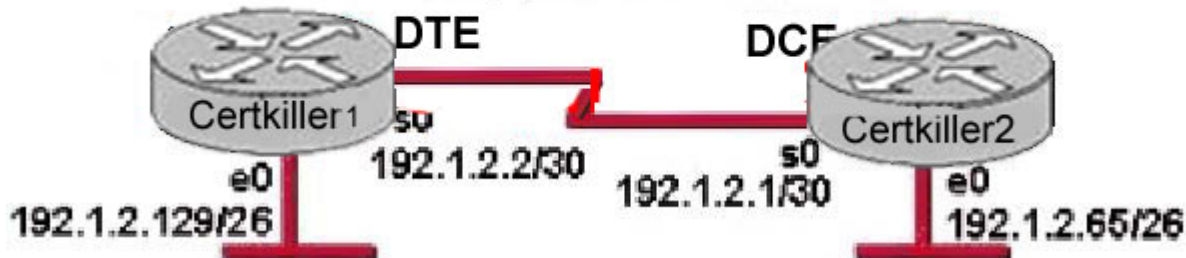
Explanation:

As the question states that serial line is up, it means the problem is not on the Network layer. The administrator cannot see any output by issuing the show cdp neighbors command. It means that CDP is disabled and CDP is a protocol that runs over Layer2 (the data link layer) on all Cisco routers, bridges, access servers, and switches.

QUESTION 475

Two Certkiller routers are connected together as shown in the diagram below:

**PPP configuration:
authentication: chap
chap password: Certkiller**



You work as a network administrator at Certkiller .com. You attempt to telnet from the console port on Router Certkiller 1 to 192.1.2.65. The Telnet connection is unsuccessful.

However, a ping to 192.1.2.65 is successful.
What could cause this problem? (Select two)

- A. PPP authentication configuration problem
- B. IP address/subnet mask configuration error
- C. access control list filtering
- D. defective serial cable
- E. no clock rate on interface s0 on Certkiller 2
- F. missing VTY password

Answer: C, F

Explanation:

Since a ping to 192.1.2.65 is successful we can eliminate IP configuration being incorrect, however a telnet session is not successful could indeed be because the vty password is not set or missing.

To be able to telnet to the router you need the set the telnet with "line vty 0 4" command.

Also, C is correct because an access list that was placed on the router could be configured to deny the telnet traffic, while at the same time permitting ICMP ping traffic.

QUESTION 476

DRAG DROP

Drag the network problems on the left under the correct OSI layer on the right.

640-801

Physical Layer Problems	
router serial line down	
router serial line protocol down	
switch port link light is off	
Data Link Layer Problems	
excessive Ethernet collisions	
router serial line up; no CDP neighbors	
dialup authentication failure	
router serial line encapsulation failure	

Answer:

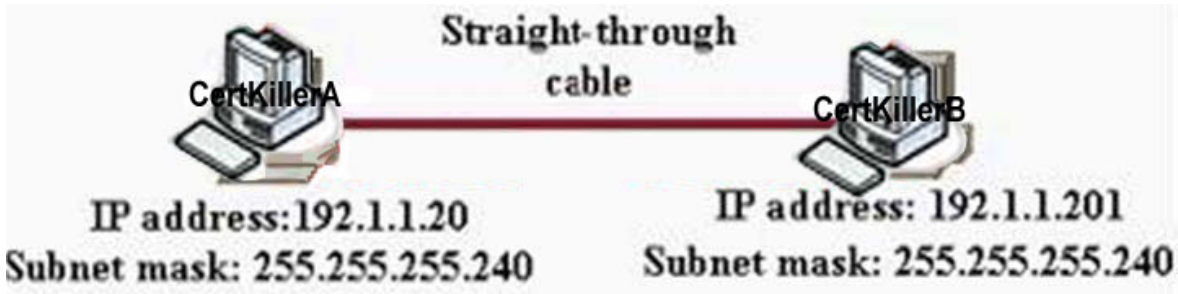
Physical Layer Problems	
router serial line down	
router serial line protocol down	
switch port link light is off	
Data Link Layer Problems	
excessive Ethernet collisions	
router serial line up; no CDP neighbors	
dialup authentication failure	
router serial line encapsulation failure	

Explanation:

Physical Layer problem will get when cable is not connected, link light is off etc. Data Link Layer problem occurs when encapsulation type is different or failure, cdp is layer 2 protocol so it require data link connection, ethernet collisions, authentication failure.

QUESTION 477

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



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

Answer: A, E

Explanation:

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

QUESTION 478

There are 2 switches in the Certkiller LAN, with no routers. Ports 1, 2 & 3 are assigned to VLAN 1 in switch 1 and 2 and ports 4, 5 & 6 are assigned to VLAN 2 in both switches. These two switches are connected together via a trunked link. Which of the conditions below would verify trunk and VLAN operation? (Select all valid answers)

- A. Host 1 on VLAN 1 can ping Host 2 on VLAN 1
- B. Host 1 on VLAN 1 can ping Host 4 on VLAN 2
- C. Host 1 on VLAN 1 can not ping Host 2 on VLAN 1
- D. Host 4 on VLAN 2 can not ping Host 1 on VLAN 1
- E. Host 4 on VLAN 2 can ping Host 2 on VLAN 2

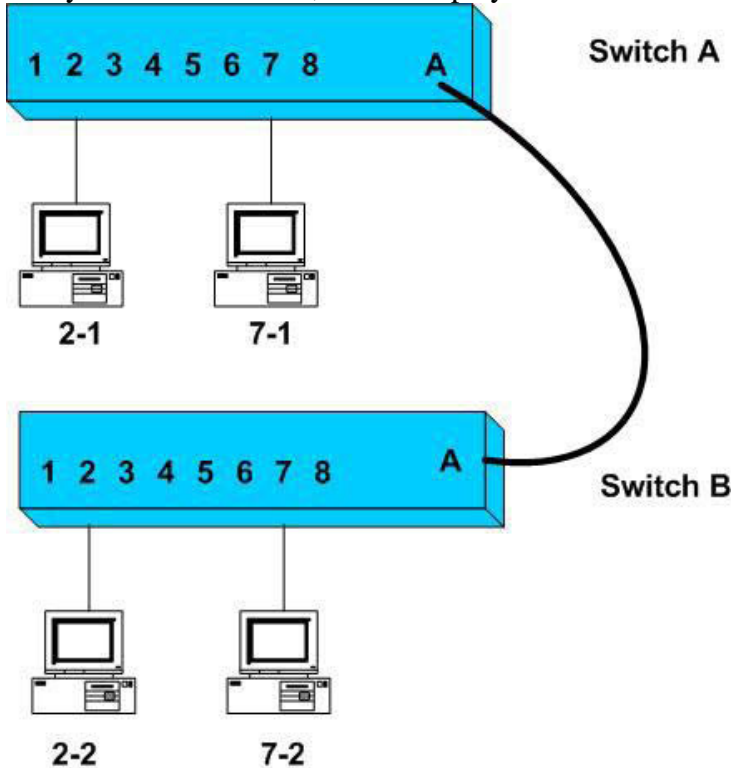
Answer: A, D, E

Explanation:

If there is no router present, only hosts in the same VLAN will be able to ping each other. In order for any host on one VLAN to communicate with a host on another VLAN, the traffic must pass through a router. Host within the same VLAN will be able to ping each other, even though they reside on different switches, as long as the switches have a trunk connection configured between them.

QUESTION 479

Study the exhibit below, which displays 2 Certkiller switches in the LAN:



You are a network analyst on a network which contains two VLAN's as portrayed in the exhibit.

- * Ports 1 through 4 on each switch are assigned to VLAN1
- * Ports 5 through 8 on each switch are assigned to VLAN2.
- * An ISL trunk link connects the two switches.

Based on this information, which of the following will be true? (Select all that apply)

- A. Host 2-1 can ping Host 2-2
- B. Host 2-1 can ping Host 7-2
- C. Host 2-1 can not ping Host 2-2
- D. Host 7-1 can not ping Host 2-2
- E. Host 7-1 can ping Host 7-2

Answer: A, D, E.

Explanation:

Without any routing taking place, hosts in one VLAN will only be able to reach other hosts in the same VLAN.

- A. Host 2-1 and Host 2-2 are both in VLAN1 and a ping should be successful.
- D. Host 7-1 is in VLAN3 while Host 2-2 is in VLAN1. A ping between those hosts should fail.
- E. Host 7-1 and Host 7-2 are both in VLAN1 and a ping should be successful.

Incorrect Answers:

B. Host 2-1 and Host 7-2 are in different VLANs and a ping should fail.

C. Host 2-1 and Host 2-2 are both in VLAN1 and a ping should be successful.

Reference: Steve McQuerry, "Interconnecting Cisco Network Devices" (Cisco Press: 2000) pages 184 - 198 and 124.

QUESTION 480

You are a senior network administrator at Certkiller and your trusty junior administrator tells you that he failed his task of adding VLAN 50 to a Catalyst switch in the network.

You enter in the 'show vtp status' command and get this output:

```
CK2 # show vtp status
```

```
VTP Version :2
```

```
Configuration Revision :7
```

```
Maximum VLANs supported local :68
```

```
Number of existing VLANs :8
```

```
VTP Operating Mode :Client
```

```
VTP Domain Name :corp
```

```
VTP Pruning Mode :Disabled
```

```
VTP V2 Mode :Disabled
```

```
VTP Traps Generation :Disabled
```

```
MD5 digest :0x22 0xF3 0x1A
```

```
Configuration last modified by 172.18.22.15 at 5-28-03 1t:53:20
```

What commands must be issued on this switch to add VLAN 50 to the database?
(Choose two.)

- A. CK2 (config-if)# switchport access vlan 50
- B. CK2 (vlan)# vtp server
- C. CK2 (config)# config-revision 20
- D. CK2 (config)# vlan 50 name Tech
- E. CK2 (vlan)# vlan 50
- F. CK2 (vlan)# switchport trunk vlan 50

Answer: B, E

Explanation:

VTP operates in one of three modes:

- * Server mode

- * Client mode

- * Transparent mode

For VTP to exchange information, some switches act as servers, and some act as clients.

VTP servers can create, modify, and delete VLANs and other configuration parameters for the entire VTP domain; this information, in turn, is propagated to the VTP clients and servers in that same domain. VTP servers save VLAN configurations in the Catalyst NVRAM, whereas in clients, the VLAN configuration is not stored at all. A VTP client cannot create, change or delete VLANs, nor can it save VLAN configurations in

non-volatile memory.

switchport mode {access dynamic {auto desirable} trunk}	Interface subcommand that configured the Interface for trunking.
---	--

QUESTION 481

Study the Exhibit below carefully:

London#show vtp

VTP Version: 2

Configuration Revision: 0

Maximum VLANs supported locally: 64

Number of existing VLANs: 5

VTP Operating Mode: Client

VTP Domain Name: London

VTP Pruning Mode: Disabled

VTP V2 Mode: Disabled

VTP Traps Generation: Disabled

Based on the information given above, what is the VTP function of this particular switch?

- A. Learn and save VTP configuration in the running configuration.
- B. Create and change VLANs.
- C. Forwards information about VTP configuration.
- D. VTP is disabled on this device.
- E. VTP is not saved to NVRAM.

Answer: C

Explanation:

From the output this switch is operating merely as VTP client, so it basically does as the VTP server says, and passes on information about VTP configuration to the next switch in line.

Incorrect Answers:

- A. This is incorrect because the function is redundant.
- B. This incorrect because the switch must be in server or transparent mode to create and change VLANs.
- D. This is incorrect because if VTP would be disabled, it wouldn't appear on the command output.
- E. If this were true, the VTP configuration information would not be displayed after being powered on.

QUESTION 482

Which of the following IOS commands could you use to troubleshoot a router connectivity problem on an IP network? (Select all valid answers)

- A. show ip route
- B. ipconfig

- C. tracert
- D. show interfaces
- E. traceroute
- F. ping
- G. All of the above

Answer: A, D, E, F

Explanation:

- A. The show ip route command displays the IP route table.
- D. The show interfaces EXEC command to display statistics for all interfaces configured on the router or access server.
- E. Traceroute is a valid router command, used to trace the path to a destination, and provide the latency associated with each hop.
- F. The ping command tests connectivity to a remote node.

Incorrect Answers:

- B, C. These are commands used on PC hosts. They are invalid router commands.

QUESTION 483

A new Catalyst switch is connected to an existing switch using a crossover cable. As a result of this, what would the switch port link lights display?

- A. The switch port link lights will be off on both switches indicating the ports are not connected.
- B. The switch port link light will be off on one switch indicating that STP has disabled the port.
- C. The switch port link lights will flash amber indicating an error.
- D. The switch port link lights will be green indicating normal operation.

Answer: D

Explanation:

To connect one Cisco switch to another Cisco switch, the crossover cable is the proper cable to use. So if you were to use one, the lights would be green indicating that all is well. If you were to connect a switch to a router, a server, or a PC host then a straight through cable should be used.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps211/products_quick_start09186a00800ea827.html

QUESTION 484

What command verifies connectivity between two hosts by sending and receiving ICMP echo messages?

- A. ping
- B. tracert

- C. netstat
- D. show cdp neighbors detail
- E. show ip route
- F. traceroute

Answer: A

Explanation:

Packet Internet Groper (PING) uses ICMP echo requests and replies to verify network connectivity. It is most commonly used to verify connectivity to another device and to monitor the operational status of a device.

QUESTION 485

You are working as a network technician at Certkiller University, when you get a call from the Engineering Faculty. They're complaining that they're receiving obsolete information from the Business Faculty's network traffic broadcasts. What can you do to contain the Business Faculty's broadcast while still keeping it connected to the internet and the enterprise services of the University? (Select all valid answer choices)

- A. Use half and full-duplex Ethernet on the Engineering Department LAN
- B. Establish a VTP domain to minimize the obsolete traffic
- C. Change the switch IP address of the switch
- D. Create separate VLANs and subnets for the two departments and route between the two
- E. Provide greater bandwidth to the Engineering Department LAN
- F. Place the business department on a separate subnet and route between networks

Answer: D, F

Explanation:

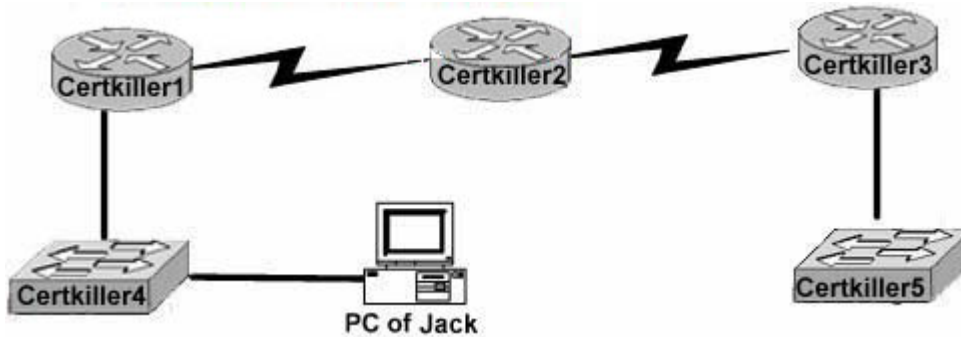
In order to prevent the broadcast and link level multicast traffic separated between the departments, they need to be isolated at layer two. This can be accomplished in two ways. The first is to create separate VLANs and place each department into a different one. The second method would be to separate the two departments into two completely different networks, and route between them.

Incorrect Answers:

- A. Mixing the use of half and full duplex will make no difference to the number of broadcasts sent.
- B. Trunking is only useful in networks that already contain VLANs.
- C. This will make no difference, as all users will still be contained within the same IP subnet.
- E. The amount of bandwidth involved will not have any impact on the amount of broadcasts that are sent and received.

QUESTION 486

The Certkiller network is shown below:



You are unable to log into the Certkiller 5 switch, as you have forgotten its IP address and you are too far away to log into it via the console port. You are unsure what the IP address of Certkiller 5 is and need to get this information. How can you find the IP address of switch Certkiller 5?

- A. Issue the show ip route command on Router Certkiller 1.
- B. Issue the show cdp neighbors detail command on Router Certkiller 2.
- C. Issue the show arp command on Router Certkiller 3.
- D. Issue the show cdp neighbors detail command on Router Certkiller 3.
- E. Issue the show arp command on Router Certkiller 1.
- F. Issue the show ip route command on Router Certkiller 2.

Answer: D

Explanation:

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

QUESTION 487

Study the exhibit below:

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

The London switch and Madrid switch have both been configured for VTP, but they aren't sharing any VTP messages. Based on the above output, what do you suspect is the cause of this problem?

- A. VTP V2 mode is not in operation.
- B. VTP pruning mode is disabled.
- C. The VTP domain name is configured incorrectly.
- D. The VTP operating mode is not configured.
- E. The VTP version is configured incorrectly.

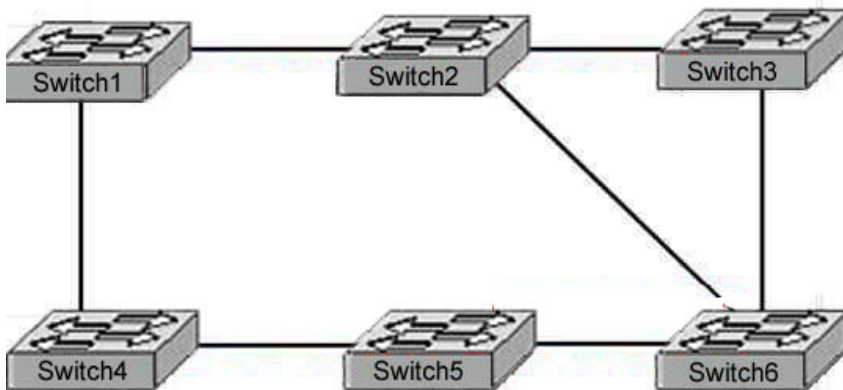
Answer: C

Explanation:

In order for VTP information to be shared between switches, they must be in the same VTP domain. Based on the output above, the switches appear to belong in completely separate domains, as their VTP domains are different, and they are both VTP servers.

QUESTION 488

The Certkiller switched LAN is displayed in the exhibit below:



The switches are connected together as shown above, creating a loop. What is the type of loop that is caused in this setup, and what is the name of the protocol that prevents this from becoming a problem?

- A. routing loops, hold down timers
- B. switching loops, split horizon
- C. routing loops, split horizon
- D. switching loops, VTP
- E. routing loops, STP
- F. switching loops, STP

Answer: F

Explanation:

The Spanning-Tree Protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths. Spanning-Tree Protocol implements the 802.1D IEEE algorithm by exchanging BPDU messages with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This algorithm guarantees that there is one and only one active path between two network

devices.

Incorrect Answers:

- A, C, E. Switches operate at layer two, and only bridging or switching loops can be created.
- B. Split Horizons are used to prevent routing loops in distance vector protocols.
- D. VTP is the VLAN Trunking Protocol, which alone has no mechanism to prevent loops in the network from becoming an issue. The VTP process relies on the STP for loop detection and prevention.

QUESTION 489

After connecting a PC to an available port on a switch, you find that the PC can not access any of the resources on the LAN. No other PC's connected to the switch appear to be having any issues. What is the most likely cause for this problem?

- A. The router lacks a routing table entry for the new host
- B. The host switch port is assigned to the incorrect VLAN
- C. The host MAC address is incorrectly configured
- D. A STP instance for the new host has not been initialized
- E. The switch does not have the MAC address hard coded in the CAM table.

Answer: B

Explanation:

Virtual LANs break up broadcast domains in a layer-two switched internetwork. If a host is in a different VLAN then the network services it needs to use, the packets must go through a router. If routing does not take place, the PC will be unable to communicate with any other devices not in the same VLAN. Answer B is the best answer for this question.

Incorrect Answers:

- A. The PC is unable to communicate with other LAN users. No router needs to even be installed for this to work.
- C, E. The MAC address of the PC does not need to be entered manually into the switch. The switch will dynamically learn of the MAC address of the PC.
- D. The STP algorithm does not need to have any end host information added in order for it to work.

QUESTION 490

You are attempting to troubleshoot some problems within your local network. Which of the following are router IOS commands that can be used to troubleshoot LAN connectivity problems? (Choose all that apply)

- A. ping
- B. tracert
- C. ipconfig
- D. show ip route
- E. winipcfg

- F. show interfaces
- G. All of the above

Answer: A, D, F

Explanation:

All three of these are valid Cisco IOS commands that can be used to verify and troubleshoot connectivity issues on a LAN or WAN.

Incorrect Answers:

- B. "Tracert" is not a valid Cisco IOS command. This command can be used while at the command prompt window of a PC, but the corresponding Cisco command is "tracert."
- C, E: These are commands that can be useful in troubleshooting connectivity problems with an individual PC, but they are not valid commands within a Cisco router.

QUESTION 491

Which router IOS commands can be used to troubleshoot LAN connectivity problems? (Select three)

- A. Ping
- B. Tracert
- C. Ipconfig
- D. Show ip route
- E. Winipcfg
- F. Show interfaces

Answer: A, D, F

Explanation:

While all of the above commands are useful in gathering network information and troubleshooting, only choices A, D, and F are Cisco IOS problems, while the other choices are DOS command prompt commands used by windows based stations.

QUESTION 492

Exhibit

```
Certkiller1#show vtp stat
VTP Version : 2
Configuration Revision : 1
Maximum VLANs supported locally : 250
Number of existing VLANs : 6
VTP Operating Mode : Server
VTP Domain Name : Certkiller
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0xBF 0x92 0x87 0xB0 0xA8 0x8F 0xDA 0x86
Configuration last modified by 0.0.0.0 at 3-1-93 00:03:32
Local updater ID is 0.0.0.0 (no valid interface found)

Certkiller2#show vtp stat
VTP Version : 2
Configuration Revision : 0
Maximum VLANs supported locally : 250
Number of existing VLANs : 5
VTP Operating Mode : Server
VTP Domain Name : Certkiller
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0xF3 0x03 0x4C 0x72 0xC8 0x6B 0x29 0x62
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Local updater ID is 0.0.0.0 (no valid interface found)
```

Study the exhibit shown above. Two switches named Certkiller 1 and Certkiller 2, connect through ports configured as trunks. The trunk ports on both switches have been configured correctly and both interfaces are up. VTP, however, is not passing VLAN information between the two switches. Based on the output of the show vtp status command from both switches, what is the problem?

- A. The domain names do not match.
- B. Only one switch can in VTOP server mode in a domain
- C. The configuration revision numbers must match on the two switches.
- D. The local updater IP address has not been configured.
- E. The VTP timer settings must match.

Answer: A

Explanation:

Note that the domain names do not match. They are CertKiller and Certkiller . For VTP to function properly, the VTP domain names must match exactly.

QUESTION 493

To configure the VLAN trunking protocol to communicate VLAN information between two switches, what two requirements must be met? (Select two)

- A. Each end of the trunk line must be set to IEEE 802.1E encapsulation.
- B. The VTP management domain name of both switches must be set the same.
- C. All ports on both the switches must be set as access port.
- D. One of the two switches must be configured as a VTP server.
- E. A rollover cable is required to connect the two switches together.
- F. A router must be used to forward VTP traffic between VLANs.

Answer: B, D

Explanation:

In order for VTP to function, the VTP domain name of all switches within the domain must match exactly, and at least one of the switches must be configured to be in server mode, so that VTP information can be propagated throughout the LAN.

QUESTION 494

DRAG DROP

As a network technician at Certkiller .com you are required to match the characteristics to the correct category of Ethernet collisions on the right. Not all characteristics are used.

Characteristics, select from these

damaged frame retransmitted

considered abnormal network operation

caused by excessive media latency

occasionally occur in normal network operation

cannot occur on a shared media segment

occurs after the first 64 bytes of a frame are transmitted

frequently occurs in full-duplex operation

jam signal sent to intentionally corrupt frame

Late collision

place here

place here

place here

Local collision

place here

place here

place here

Answer:

Late collision

caused by excessive media latency

considered abnormal network operation

occurs after the first 64 bytes of a frame are transmitted

Local collision

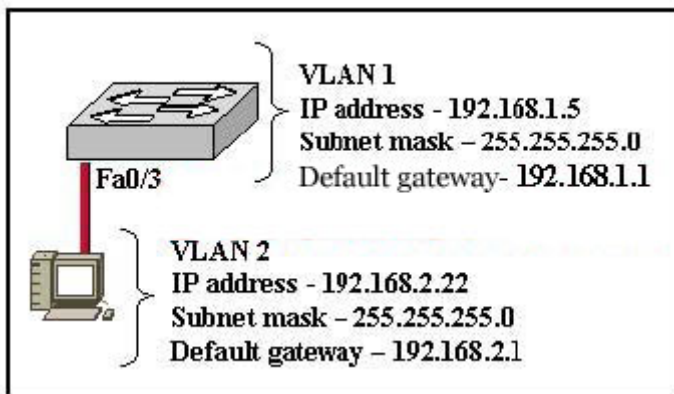
damaged frame retransmitted

occasionally occur in normal network operation

jam signal sent to intentionally corrupt frame

QUESTION 495

Exhibit:



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

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

Answer: B

Explanation:

To connect two different devices, we use straight-through cables. In the scenario, a host is connected to a switch with a cross-over cable, so there will be no communication

between them. Choice B is correct. Cross over cables should be used between two devices in the same layer of the OSI model, such as when connected together two routers, two switches, etc.

QUESTION 496

Exhibit:

```
Labs# show vtp status
VTP Version          : 1
Configuration Revision : 2
Maximum VLANs supported locally : 64
Number of existing VLANs : 9
VTP Operating Mode   : Server
VTP Domain Name      : Labs
VTP Pruning Mode     : Disabled
VTP V2 Mode          : Disabled
VTP Traps Generation : Disabled
MD5 digest*         : 0xF3 0x6D 0x21 0x7C 0x0F 0xA9 0xE9 0x60

Offices# show vtp status
VTP Version          : 1
Configuration Revision : 3
Maximum VLANs supported locally : 64
Number of existing VLANs : 9
VTP Operating Mode   : Server
VTP Domain Name      : Offices
VTP Pruning Mode     : Disabled
VTP V2 Mode          : Disabled
VTP Traps Generation : Disabled
MD5 digest          : 0x07 0x35 0xFA 0xD5 0xF8 0xBA 0xE5 0xD8
```

Study the Exhibit carefully. The network administrator has configured the switches in the school network to use VTP. The switches are not sharing VLAN information. Which sequence of commands should be issued to correct this problem?

- A. Offices(config)# vtp mode client
Labs(config)# vtp mode client
- B. Offices(config)# vtp domain School
Labs(config)# vtp domain School
- C. Offices(config)# vtp pruning
Labs(config)# vtp pruning
- D. Offices(config)# vtp version 2
Labs(config)# vtp version 2

Answer: B

Explanation:

For switched to share vlan information, there VTP domain names must be same. In the Output shown, VTP domain name of LABS router is Labs and VTP domain name of Offices router is Offices. As the domain names are different, they are unable to communicate with each other. In order to correct this problem, we have to change their names to a single common name.

QUESTION 497

Two Certkiller switches are connected together as shown below:

**CK1#show vtp status**

```
VTP Version          : 2
Configuration Revision : 5
Maximum VLANs supported locally : 68
Number of existing VLANs : 8
VTP Operating Mode    : Server
VTP Domain Name      : JAX
VTP Pruning Mode     : Disabled
VTP V2 Mode          : Disabled
VTP Traps Generation : Disabled
MD5 digest           : 0x2D 0x88 0xA9 0x2A 0xC4 0xF8 0x77 0xEF
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
```

CK2#show vtp status

```
VTP Version          : 2
Configuration Revision : 3
Maximum VLANs supported locally : 68
Number of existing VLANs : 8
VTP Operating Mode    : Server
VTP Domain Name      : JAK
VTP Pruning Mode     : Disabled
VTP V2 Mode          : Disabled
VTP Traps Generation : Disabled
MD5 digest           : 0xA8 0x67 0xF9 0xA8 0x92 0xE9 0x30 0x6B
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
```

Switches CK1 and CK2 have been configured with a trunked line that has been verified as working correctly. However, VTP is not propagating VLANs from one switch to the other. Based on the command output shown, what is the problem?

- A. The revision number is not the same on both switches.
- B. Only one switch can be in server mode.
- C. The VTP domain name is not correctly configured.
- D. VLANs have not been configured on the VTP server.
- E. The VTP pruning mode is not correctly configured.

Answer: C

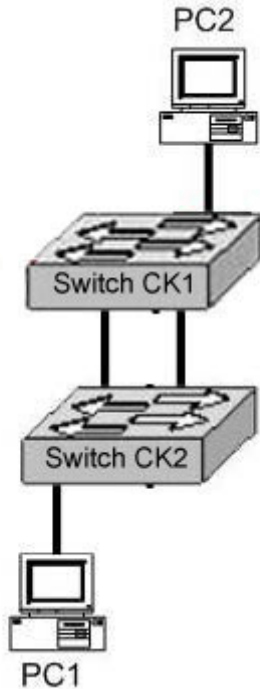
Explanation:

VTP messages are exchanged between switches within a common VTP domain. In the output shown, VTP domain name of switch CK1 is JAX and domain name of switch CK2 is JAK. As the VTP domain names are different so these two switches will not exchange the VTP Information.

Reference: <http://www.ciscopress.com/articles/article.asp?p=29803&seqNum=4&rl=1>

QUESTION 498

A simple Certkiller network is displayed in the diagram below:



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

- A. The portfast feature is not enabled on all switch ports.
- B. The PCs are in two different VLANS.
- C. Spanning Tree Protocol is not running on the switches.
- D. PC2 is down and is not able to respond to the request.
- E. The VTP version running on the two switches do not match.

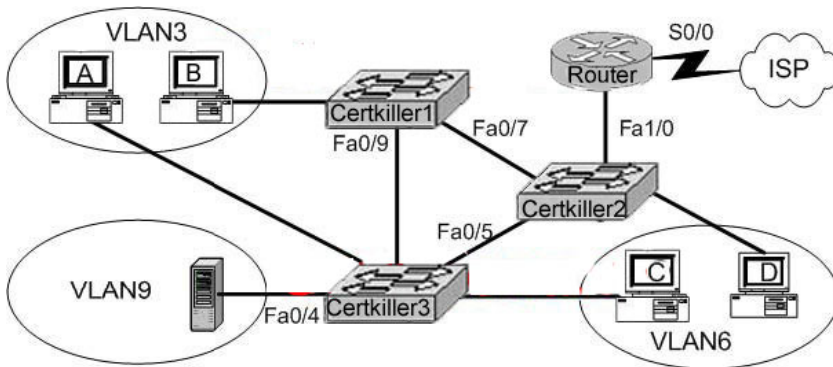
Answer: C

Explanation:

As the switches CK1 and CK2 are connected with each other via two links, spanning tree must be enabled on both switches to avoid switching loops and broadcast storms. An ARP request is a broadcast message. If Spanning tree is not running, broadcast loops will form reducing the performance of the network.

QUESTION 499

The Certkiller network is shown below:



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

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

What could cause the symptoms?

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

Answer: D

Explanation:

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

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

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

Choice C: incorrect, would not prevent access to VLAN9 via other routes (i.e Fa0/7, Fa0/9, Fa0/4)

Choice D: correct

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

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

QUESTION 500

The following was seen on a Certkiller router in Huntsville:

```
Huntsville#show interfaces FastEthernet 0/0
FastEthernet0/0 is up, line protocol is up
  Hardware is AmdFE, address is 000c.ce8d.8720 (bia 000c.ce8d.8720)
  Internet address is 10.1.1.2/24
  MTU 1500 bytes, BW 10000 Kbit, DLY 100 usec, reliability 255/255,
  txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive on (10 sec)
  Full-duplex, bytes PW10000 kbt.DLT 100
  ARP tupe. ARPA, ARP Time out 94100100
    < - output omitted - >
  119413 packets input, 52453050 bytes
  Received 117055 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 watchdog
  0 input packets with dribble condition detected
  67922 packets output, 9993123 bytes, 0 underruns
  0 output errors, 0 collisions, 6 interface resets
    < - output omitted - >
```

Refer to the router output shown in the graphic. What can be assumed about the network attached to this router interface?

- A. The network hosts are attached to a hub.
- B. The interface is being used at near maximum capacity.
- C. There should never be any collisions in this network.
- D. The network has an excessive number of errors.
- E. The network is using an unusual Ethernet encapsulation.

Answer: C

Explanation:

Based on the output shown, this interface is configured to operate in full duplex mode. Full-duplex is a data communications term that refers to the ability to send and receive data at the same time.

Legacy Ethernet is half-duplex, meaning information can move in only one direction at a time. In a totally switched network, nodes only communicate with the switch and never directly with each other. Switched networks also employ either twisted pair or fiber optic cabling, both of which use separate conductors for sending and receiving data. In this type of environment, Ethernet stations can forgo the collision detection process and transmit at will, since they are the only potential devices that can access the medium. This allows end stations to transmit to the switch at the same time that the switch transmits to them, achieving a collision-free environment.

Reference: <http://computer.howstuffworks.com/ethernet15.htm>

QUESTION 501

A network administrator needs to verify that switch interface 0/5 has been assigned to the Sales VLAN.N. Which command will accomplish this task?

- A. Show vlan
- B. Show mac-address-table
- C. Show vtp status
- D. show spanning-tree root
- E. show ip interface brief

Answer: A

Explanation:

The "show vlan" command displays the configured vlan name and ID as well as the ports that belong to each VLAN, etc. By default all ports belongs to VLAN 1

Note: You can also use: show vlan brief, show vlan ID where ID is the VLAN ID.

QUESTION 502

Exhibit:

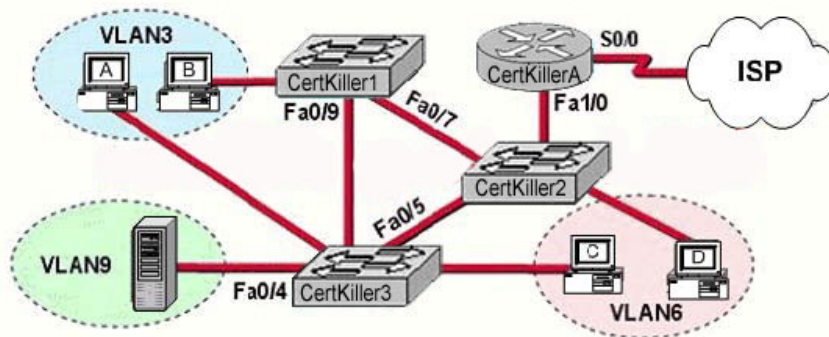


Exhibit:

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

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

Answer: D

Explanation:

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

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

QUESTION 503

Exhibit:

```
Certkiller1# show vlan
```

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/6, Fa0/7 Fa0/8, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24
86 VLAN0086	active	Fa0/9
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default		
1005 trnet-default		

Exhibit:

Please study the exhibit carefully. The switch that generated this output has 24 ports. Why are some of the ports missing from VLAN1?

- A. The missing ports are in VLAN 86.
- B. The missing ports are administratively disabled.
- C. The missing ports are not participating in spanning tree.
- D. The missing ports are configured as trunk ports.
- E. The missing ports have a status problem such as a speed or duplex mismatch.

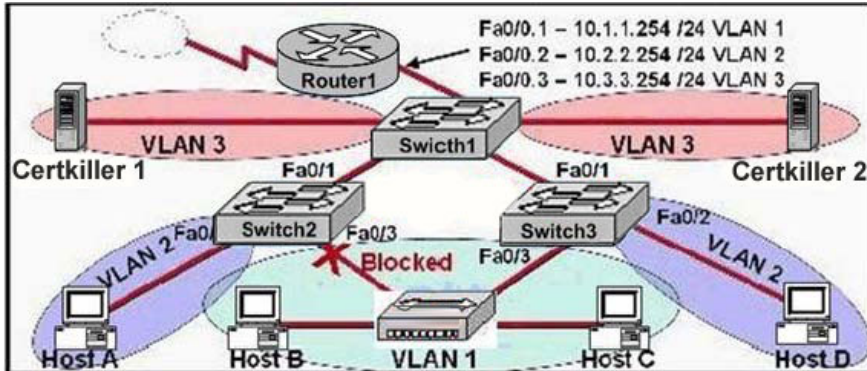
Answer: D

Explanation:

The show vlan command displays the VLAN information and ports in all VLANs. This command displays only the ports in access mode. The missing ports must be configured as trunks.

QUESTION 504

Exhibit:



Which statement is correct about the internetwork shown in the diagram?

- A. Switch 2 is the root bridge.
- B. Spanning Tree is not running.
- C. Host D and Server 1 are in the same network.
- D. No collisions can occur in traffic between Host B and Host C.
- E. If Fa0/0 is down on Router 1, Host A cannot access Certkiller 1.
- F. If Fa0/1 is down on Switch 3, Host C cannot access Certkiller 2.

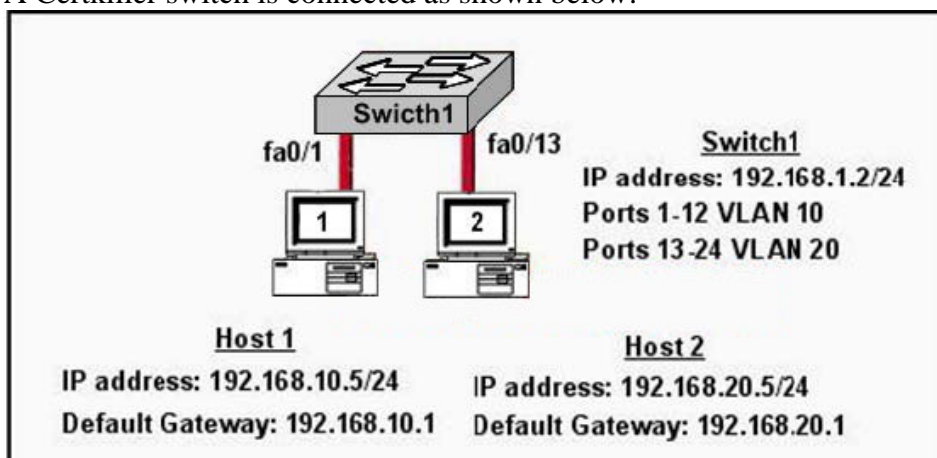
Answer: E

Explanation:

In the Figure three different VLANs are created, with router1 playing a major role for inter-VLAN routing. IF fa0/0 interface will down host A can't access the Certkiller 1 host because any packets for different VLAN should go through the fa0/0 of router1. This is an example of a router on a stick, which means a single point of failure in a switching environment.

QUESTION 505

A Certkiller switch is connected as shown below:



In the network above Host 1 cannot ping Host 2. What needs to be configured to allow host 1 and host 2 to communicate?

- A. The switch needs to be configured with an IP address on the correct subnet.
- B. The default gateway of the hosts should be configured to 192.168.1.2.
- C. Spanning Tree Protocol needs to be configured on the switch.
- D. A router needs to be configured to route between the VLANs.
- E. VTP needs to be configured on the switch to create a trunk between the VLANs.

Answer: D

Explanation:

By default only members of the same VLAN can communicate with each other. For inter-VLAN communication we require a router to route between the different VLANs. Alternatively, if Host1 and Host2 were in the same subnet and the same VLAN, then they would also be able to communicate.

QUESTION 506

Part of the configuration of a Certkiller switch is shown below:

```
ALSwitch1# show running-config
<<output omitted>>
interface FastEthernet0/24
no ip address
<<output omitted>>

ALSwitch1# show interfaces fastethernet0/24 switchport
Name: Fa0/24
Switchport:Enabled
Administrative Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL

Protected: false

Voice VLAN: none (Inactive)
Appliance trust: none
```

Switch port FastEthernet 0/24 on ALSwitch1 will be used to create an IEEE 802.1Q-compliant trunk to another switch. Based on the output shown, what is the reason the trunk does not form, even though the proper cabling has been attached?

- A. VLANs have not been created yet.
- B. An IP address must be configured for the port.

- C. The port is currently configured for access mode.
- D. The correct encapsulation type has not been configured.
- E. The "no shutdown" command has not been entered for the port.

Answer: C

Explanation:

According to the output shown the switchport (layer 2 Switching) is enabled and the port is in access mode. To make a trunk link the port should be configured as a trunk port, not an access port, by using the following command:

(Config-if)#switchport mode trunk

QUESTION 507

Certkiller .com is experiencing network delays. The network administrator discovers that a worker in a location far from the MDF has connected an old 10BASE-T switch with redundant links to the existing network. How could this action be responsible for the impaired network performance?

- A. Connecting a host to the old switch has created a broadcast storm.
- B. The 10BASE-T switch forced the entire network to be reduced to 10 Mbps operation.
- C. The old switch does not support VLANs, which has disabled the VLAN configuration of the entire network.
- D. The old switch does not support full-duplex operation, effectively forcing half-duplex operation throughout the network.
- E. Spanning Tree Protocol has elected the old switch as the root bridge, creating inefficient data paths through the switched network.

Answer: E

Explanation:

Without the Spanning Tree Protocol (STP), frames would loop for an indefinite period of time in networks with physically redundant links. To prevent looping frames, STP blocks some ports from forwarding frames so that only one active path exists between any pair of LAN segments (collision domains). The result of STP is good: Frames do not loop infinitely, which makes the LAN usable. However, the network uses some redundant links in case of a failure, but not for balancing traffic.

To avoid loops, all bridging devices, including switches, use STP. STP causes each interface on a bridging device to settle into a blocking state or a forwarding state. Blocking means that the interface cannot forward or receive data frames. Forwarding means that the interface can send and receive data frames. By having a correct subset of the interfaces blocked, a single currently active logical path will exist between each pair of LANs. STP behaves identically for a transparent bridge and a switch. So, the terms bridge, switch, and bridging device all are used interchangeably when discussing STP.

Root bridge The root bridge is the bridge with the best bridge ID. With STP, the key is for all the switches in the network

to elect a root bridge that becomes the focal point in the network. All other decisions in the network-like which port is to be blocked and which port is to be put in forwarding mode-are made from the

QUESTION 508

Two Certkiller switches are connected as shown below:

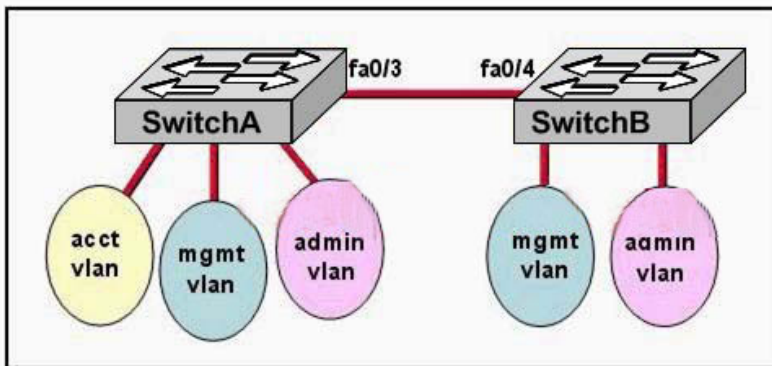


Exhibit:

Please study the exhibit carefully. Configuration of both switches has been completed. During testing, the network administrator notices that users on SwitchA can not connect with users in the same VLAN on SwitchB. What should be done to solve this problem?

- A. Ensure that the IP address of SwitchA is on the same network as the IP address of SwitchB.
- B. Ensure that the same interface number is used to connect both switches.
- C. Ensure that the ports connecting the two switches are configured to trunk.
- D. Ensure that SwitchA and SwitchB are connected with a straight-through cable.

Answer: C

Explanation:

Ports can be in two states on a switch:

Access ports: This type of link is only part of one VLAN, and it's referred to as the native VLAN of the port. Any device attached to an access link is unaware of a VLAN membership the device just assumes it's part of a broadcast domain, but it does not understand the physical network.

Trunk links: Trunks can carry multiple VLANs and originally gained their name after the telephone system trunks that carry multiple telephone conversations.

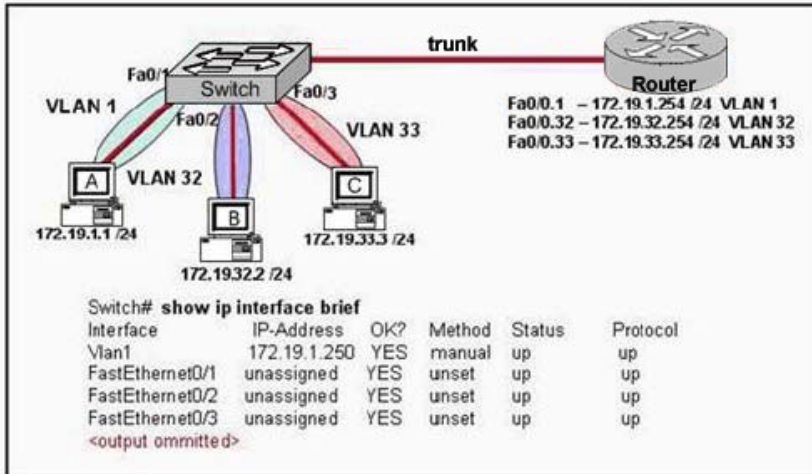
So to carry the VLAN information from one switch to another switch, a trunk link needs

to be configured between the two switches, using the "showtchport mode trunk" command.

Note: By default all ports are in access mode.

QUESTION 509

The Certkiller network is shown below:



The network administrator normally establishes a Telnet session with the switch from host

A. However, host A is unavailable. The administrator's attempt to telnet to the switch from host B fails, but pings to the other two hosts are successful. What is most likely the issue?

- A. Host B and the switch need to be in the same subnet.
- B. The switch interface connected to the router is down.
- C. Host B needs to be assigned an IP address in VLAN 1.
- D. The switch needs an appropriate default gateway assigned.
- E. The switch interfaces need the appropriate IP addresses assigned.

Answer: D

Explanation:

This scenario requires inter-VLAN routing, which requires a layer three device. Based on the information above, a trunk has indeed been set up to route traffic between VLAN's so the only logical explanation why a host in VLAN 32 can not reach a host in VLAN1 (which is where the IP address of the switch is) would be because no default gateway has been specified in the switch.

Incorrect Answers:

A, C: This is not a requirement, as a number of VLAN's can be configured within a switch, while the management IP address can reside in a different VLAN on a different subnet.

B: Based on the output above, the trunk link (fa 0/3) is indeed up and active.

E: Since switches operate at layer 2, each individual VLAN does not need its own IP address.

QUESTION 510

Information from two Certkiller switches in London and Madrid are shown below:

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

A network administrator has configured two switches, named London and Madrid, to use VTP. However, the switches are not sharing VTP messages. Given the command output shown in the graphic, why are these switches not sharing VTP messages?

- A. The VTP version is not correctly configured.
- B. The VTP operating mode is not correctly configured.
- C. The VTP domain name is not correctly configured.
- D. VTP pruning mode is disabled.
- E. VTP V2 mode is disabled.
- F. VTP traps generation is disabled.

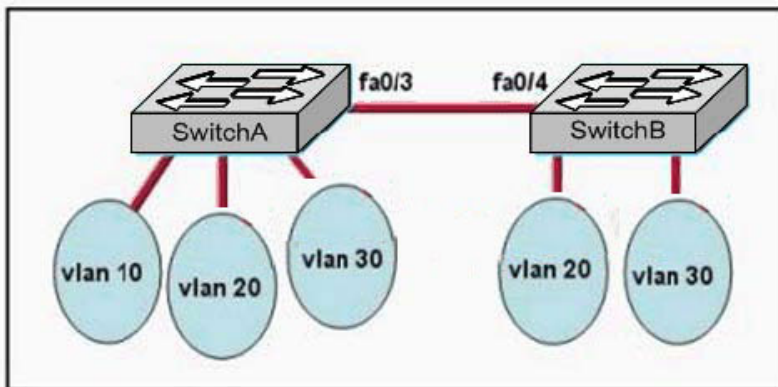
Answer: C

Explanation:

In order to share VTP messages the switches must belong to the same VTP Domain. In this example, the VTP domain name is London in London and Madrid in Madrid. These names need to be the same.

QUESTION 511

Two Certkiller switches are shown below:



The switches have been configured with static VLANs as shown. During testing, the network administrator notices that VLAN 20 on SwitchA has no connectivity with VLAN 30 on SwitchB. What should the network administrator do?

- A. Configure the interconnected ports on SwitchA and SwitchB into access mode.
- B. Connect the two switches with a straight-through cable.
- C. Add a Layer 3 device to connect VLAN 20 and VLAN 30.
- D. Configure the management VLAN with IP address.
- E. Ensure that the VTP passwords match on both switches.

Answer: C

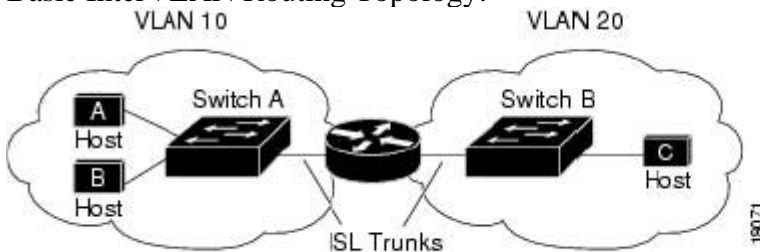
Explanation:

Network devices in different VLANs cannot communicate with one another without a router to route traffic between the VLANs. In most network environments, VLANs are associated with individual networks or subnetworks.

For example, in an IP network, each subnetwork is mapped to an individual VLAN. Configuring VLANs helps control the size of the broadcast domain and keeps local traffic local. However, when an end station in one VLAN needs to communicate with an end station in another VLAN, interVLAN communication is required. This communication is supported by interVLAN routing. You configure one or more routers to route traffic to the appropriate destination VLAN.

The diagram below shows a basic interVLAN routing topology. SwitchA is in VLAN 10 and SwitchB is in VLAN20. The router has an interface in each VLAN.

Basic InterVLAN Routing Topology:



When HostA in VLAN10 needs to communicate with HostB in VLAN10, it sends a packet addressed to that host. SwitchA forwards the packet directly to HostB, without sending it to the router.

When HostA sends a packet to HostC in VLAN20, SwitchA forwards the packet to the router, which receives the traffic on the VLAN10 interface. The router checks the routing table, determines the correct outgoing interface, and forwards the packet out the VLAN20 interface to SwitchB. SwitchB receives the packet and forwards it to HostC.

Reference:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat5000/rel_5_2/layer3/routing.htm#wp13354

QUESTION 512

The Certkiller network is shown below:

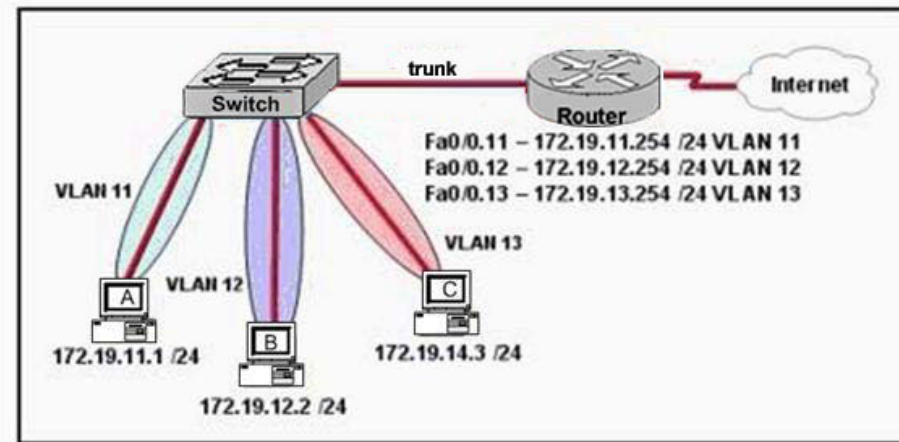


Exhibit:

Please study the exhibit carefully. The network shown in the exhibit has just been installed. Host B can access the internet, but it is unable to ping host C. What is the problem with this configuration?

- A. Host B should be in VLAN 13
- B. The address of host C is incorrect.
- C. The gateway for host B is in a different subnet than the host is on.
- D. The switch port that sends VLAN 13 frames from the switch to the router is shut down.
- E. The switch port connected to the router is incorrectly configured as an access port.

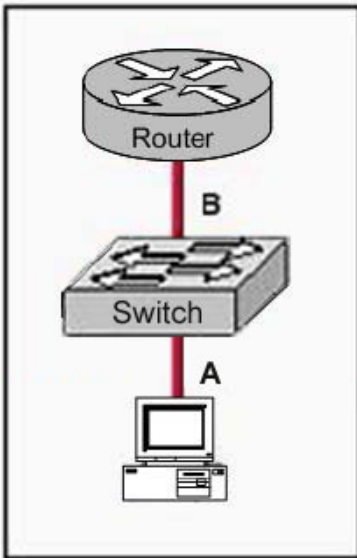
Answer: B

Explanation:

The Fa0/0.13 interface of the router is the subinterface used for VLAN 13. The IP address of this interface is 172.19.13.254, so all devices in VLAN 13 will have their default gateway set to this 172.19.13.254 which means that all devices in VLAN13 need to be in the 172.19.13.0/24 subnet. As can be seen in the output above, Host C is in VLAN 13 but its IP address has been incorrectly configured for the 172.19.14.0/24 subnet.

QUESTION 513

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



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

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

Answer: B, D, F

Explanation:

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

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

Incorrect Answers:

- A: This would mean that there was a layer 2 issue, not layer 1. If the problem was related to the encapsulation, the lights on the switch would indicate layer 1 activity.
- C: A trunk port is not required, and again if this was the problem the link lights on the switch would be on.
- E: This should only be used as a last resort, as this will affect all users on the switch.

QUESTION 514

An elementary school has a computer in every classroom. One entire wing of the school connects to a centrally located hub. The teachers have reported a slowdown in the past few weeks to the network administrator. The network administrator has analyzed the network and documented a steep increase in utilization as the teachers use a new network-based classroom management application. Which solution will improve the performance the most?

- A. Install a router and install another hub in the affected wing.
- B. Reboot the router that connects to the hub.
- C. Replace the hub with a switch.
- D. Ensure all devices in the affected wing have a default gateway.
- E. Install a repeater in the affected wing.

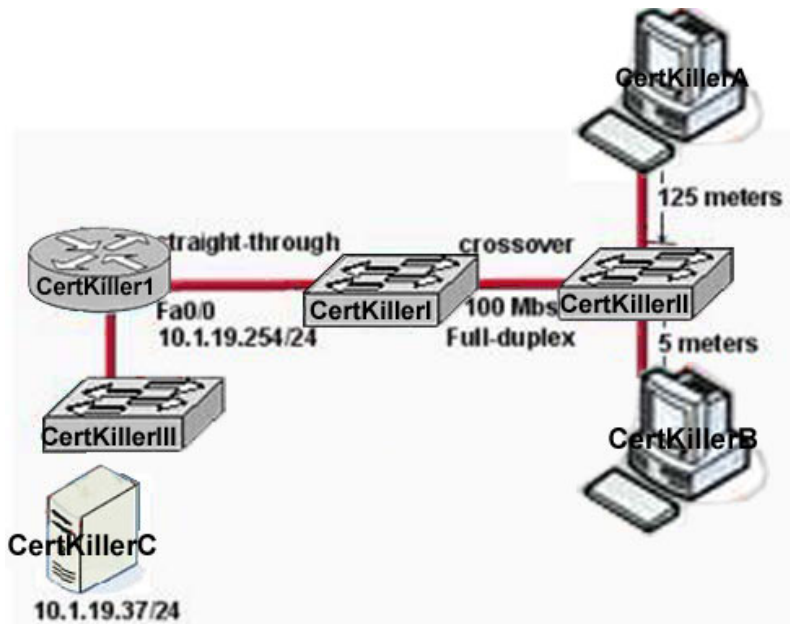
Answer: C

Explanation:

By default, switches break up collision domains. Collision domain is an Ethernet term used to describe the following network scenario. One particular device sends a packet on a network segment, forcing every other device on that segment to pay attention to it. At the same time, a different device tries to transmit, which leads to a collision, after which both devices must retransmit, one at a time. Not good-very inefficient! You'll typically find this situation in a hub environment where each host segment connects to a hub that represents only one collision domain and only one broadcast domain. By contrast, each and every port on a switch represents its own collision domain. In contrast, a hub can't break collision domains or broadcast domains. Similarly hub provides low bandwidth where switch provides more bandwidth to all ports. Suppose there are 10 ports with 100 mbps bandwidth then the hub provides only 10 mbps to each port but switch provides 100mbps to all ports aggregated.

QUESTION 515

The Certkiller internetwork shown in the diagram is experiencing network delays. On the basis of the information provided in the exhibit, what is the problem?



- A. The connection between Switch1 and Switch2 should be half-duplex.
- B. The cable between Router1 and Switch1 should be a crossover.
- C. The cable connecting Host A to Switch2 is too long.
- D. The server is on a different subnet than router interface Fa0/0.
- E. The cable between Switch1 and Switch2 should be straight-through.

Answer: C

Explanation:

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

QUESTION 516

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

- A. After broken links are re-established
- B. When a dual ring topology is in use
- C. When upper-layer protocols require high reliability
- D. During high traffic periods
- E. In an improperly implemented redundant topology

Answer: E

Explanation:

Designing a redundant network is one of the primary methods of keeping your network available at all times. Unfortunately, this can cause loops in a Layer 2 network, which often results in serious problems including a complete network shut down.

The Spanning-Tree Protocol prevents looping traffic in a redundantly switched or bridged network by only allowing traffic through a single path to other parts of the network. Any redundant paths are blocked until they are needed (typically when the primary link goes down).

Although redundancy can prevent a single point of failure from causing the entire switched network to fail, it can also cause problems such as broadcast storms, multiple copies of frames, and MAC address table instability.

Multiple Copies of the Same Frame:

Many protocols cannot correctly handle duplicate transmissions. In particular, protocols that use sequence numbering such as TCP/IP will assume the sequence has reached its maximum value and has begun to recycle the sequence. Other protocols will process the duplicate frame with unpredictable results.

Reference:

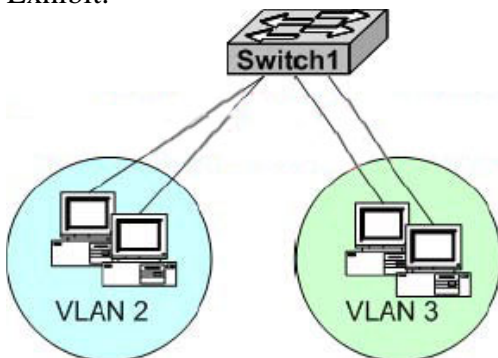
http://www.cisco.com/application/pdf/en/us/guest/netsol/ns24/c643/cdcont_0900aecd800d813a.pdf#

QUESTION 517

Exhibit:

Please study the exhibit carefully. Host 1 and host 2 can communicate with each other. Host 3 and host 4 can communicate with each other. However, the hosts cannot communicate between VLANs. Which device is needed to allow communication between the VLANs?

Exhibit:



- A. An additional switch
- B. A transceiver
- C. A router
- D. A repeater
- E. A hub

Answer: C

Explanation:

Network devices in different VLANs cannot communicate with one another without a router to route traffic between the VLANs. In most network environments, VLANs are associated with individual networks or subnetworks.

Reference:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat5000/rel_5_2/layer3/routing.htm#wp13354

QUESTION 518

Exhibit:

Please study the exhibit carefully. After SwitchB was added to the network, VLAN connectivity problems started to occur. What caused this problem?

Exhibit:

SwitchA# show vtp status		SwitchB# show vtp status	
VTP version	: 2	VTP version	: 2
Configuration Revision	: 1	Configuration Revision	: 7
Maximum VLAN Supported locally	:64	Maximum VLAN Supported locally	: 64
Number of existing VLANs	:6	Number of existing VLANs	: 4
VTP Operating Mode	: Server	VTP Operating Mode	: Server
VTP Domain Name	: cisco	VTP Domain Name	: cisco
VTP Pruning Mode	: disabled	VTP Pruning Mode	: disabled
V2 Mode	: disabled	VTP V2 Mode	: disabled

- A. V2-mode is not enabled.
- B. SwitchA was not rebooted prior to adding SwitchB to the network.
- C. VTP pruning is not activated, so the new paths in the network have not been recalculated.
- D. The revision number of SwitchB was higher than the revision number of SwitchA.
- E. Both switches are in server mode in the same domain.

Answer: D

Explanation:

By default, switches share VLAN information without any authentication. Thus, inaccurate VLAN settings can propagate throughout a VTP domain. Compounding this problem, switches come with VTP in server mode by default, and a server with a higher configuration revision number in its VTP database supersedes one with a lower number. It is entirely possible for a single switch, which has undergone a sufficient number of VTP reconfigurations, to completely overwrite or eliminate all VLAN assignments of an operational network by just connecting it to the network.

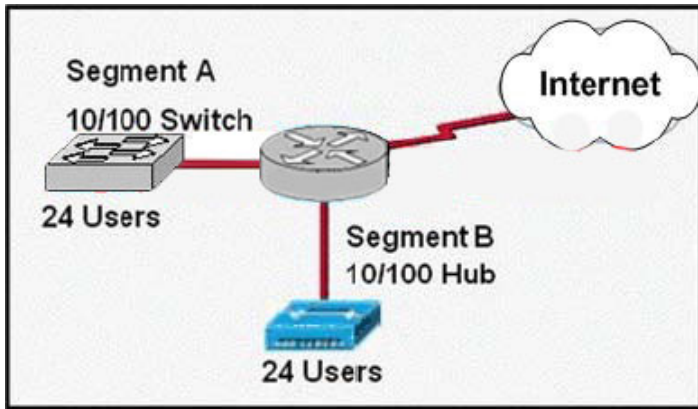
QUESTION 519

Exhibit:

Please study the exhibit carefully. Users on Segment B cannot connect to the Internet as quickly as users on Segment

- A. What is a possible cause of the problem and what can be done to correct it?

Exhibit:



- A. There are too many users on both segments. Another router needs to be added for better traffic control.
- B. The Internet connection has a low bandwidth problem. The bandwidth should be increased.
- C. Segment B is experiencing collision problems. The hub should be replaced with a switch.
- D. Segment B has too many users for a single hub. An additional hub should be added to Segment B.

Answer: C

Explanation:

By default, switches break up collision domains. Collision domain is an Ethernet term used to describe the following network scenario. One particular device sends a packet on a network segment, forcing every other device on that segment to pay attention to it. At the same time, a different device tries to transmit, which leads to a collision, after which both devices must retransmit, one at a time. You'll typically find this situation in a hub environment where each host segment connects to a hub that represents only one collision domain and only one broadcast domain. By contrast, each and every port on a switch represents its own collision domain. In contrast, a hub can't break collision domains or broadcast domains. Similarly hub provides low bandwidth where switch provides more bandwidth to all ports. Suppose there are 10 ports with 100 mbps bandwidth then the hub provides only 10 mbps to each port but switch provides 100mbps to all ports aggregated. One of the best ways to increase network performance is to replace the network hubs with network switches.

QUESTION 520

Which one of the following privileged EXEC mode IOS show commands will display the state of the OSPF DR/BDR (designated router / backup designated router) election process?

- A. CK1 # show ip ospf interface
- B. CK1 # show ip ospf priority
- C. CK1 # show ospf neighbor detail
- D. CK1 # show ospf processes

E. CK1 # show ospf neighbor state

Answer: A

Explanation:

This command will display the router ID of both the DR and the BDR on the network segment that the particular interface is connected to.

Example:

```
Router1#show ip ospf interface ethernet 0Ethernet0 is up, line protocol is upInternet Address 10.10.10.1/24, Area 0Process ID 1, Router ID 192.168.45.1, Network Type BROADCAST, Cost: 10 Transmit Delay is 1 sec, State BDR, Priority 1Designated Router (ID) 172.16.10.1, Interface address 10.10.10.2 Backup Designated router (ID) 192.168.45.1, Interface address 10.10.10.1 Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:06 Index 1/1, flood queue length 0 Next 0x0(0)/0x0(0) Last flood scan length is 2, maximum is 2 Last flood scan time is 0 msec, maximum is 4 msec Neighbor Count is 1, Adjacent neighbor count is 1Adjacent with neighbor 172.16.10.1 (Designated Router) Suppress hello for 0 neighbor(s)
```

QUESTION 521

After logging into a router, you issue the "show ip route" command as shown below:

```
Router CertKiller# Show ip route
```

```
<some output text omitted>
```

```
Gateway of last resort is not set.
```

```
1 172.16.0.0[110/84632] via 192.168.6.3,00:00:13, FastEthernet0/0
R 192.168.3.0 [120/3] via 192.168.2.2,00:00:09, Serial0/0
C 192.168.2.0 is directly connected, Serial0/0
C 192.168.6.0 is directly connected, FastEthernet0/0
```

Based on the information above, what does the expression [120/3] represent in the second line of the routing table?

- A. 120 is the bandwidth allocation and 3 is the routing process number.
- B. 120 is the administrative distance and 3 is the metric for that route.
- C. The number 120 is the value of the update timer and 3 is the number of updates received.
- D. The number 120 is the UDP port for forwarding traffic and 3 is the number of bridges.

Answer: B

Explanation:

To decide which route to use, IOS uses a concept called Administrative Distance. Administrative distance is a number that denotes how believable an entire routing protocol is on a single router. The lower the number, the better, or more believable the routing protocol.

Route Type Administrative Distance

- * Connected 0
- * EIGRP 90
- * IGRP 100
- * OSPF 110
- * RIP 120

For RIP, the metric is the hop count, so in this case the route is 3 hops away.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 177

QUESTION 522

While trying to diagnose a routing problem in the network, you issue RIP debugging as displayed below:

```
RtrA#debug ip rip
```

```
Rip protocol debugging is on
```

```
RtrA#
```

```
1d05h: RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.16.1.1)
```

```
1d05h: RIP: build update entries
```

```
1d05h: network 10.0.0.0 metric 1
```

```
1d05h: network 192.168.1.0 metric 2
```

```
1d05h: RIP: sending v1 update to 255.255.255.255 via Serial0/0 (10.0.8.1)
```

```
1d05h: RIP: build update entries
```

```
1d05h: network 172.16.0.0 metric 1
```

```
RtrA#
```

```
1d05h: RIP: received v1 update from 10.0.15.2 on Serial0/0
```

```
1d05h: 192.168.1.0 in 1 hops
```

```
1d05h: 192.168.0 in 16 hops (inaccessible)
```

Based on the output of the above exhibit, which two of the following statements are true? (Select two answer choices)

- A. A ping to 10.0.15.2 will be successful.
- B. RtrA has three interfaces that will take part in the RIP process.
- C. There are at least two routers participating in the RIP process.
- D. A ping to 192.168.168.2 will be successful.

Answer: A, C

Explanation:

By virtue of RIP receiving an update from 10.0.15.2 on Serial0/0, we know that there has to be another router in the picture, so C is a correct choice. Since the router received an update from the neighbor address, we know that there's a connection. Therefore, a ping can be successful, making answer choice A correct as well.

Incorrect Answers:

- B. This is incorrect because there isn't conclusive evidence to support this.
- D. This is incorrect because from the exhibit above the router is inaccessible, therefore the success of a ping would be unknown.

QUESTION 523

On your OSPF network, routers CK1 and CK2 belong to the same Ethernet network. However, they are unable to establish an adjacency over this link. While troubleshooting this problem, you issue the "show ip ospf interface Ethernet 0" command on each router. The output from these commands is displayed below:

```
CK1 : Ethernet is up, line protocol is up
Internet address 192.168.1.2/24, Area 0
Process ID 1, Router ID 192.168.31.33, Network Type BROADCAST, Cost: 10
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 192.168.31.33, Interface address 192.168.1.2
No backup designated router on this network
Time intervals configured, Hello 5, Dead 20, Wait 20, Retransmit 5
CK2 : Ethernet0 is up, line protocol is up
Internet address 192.168.1.1/24, Area 0
Process ID 2, Router ID 192.168.31.11, Network Type BROADCAST, Cost: 10
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 192.168.31.11, Interface address 192.168.1.1
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
What is the underlying cause of the routers failing to become adjacent?
```

- A. The OSPF area is misconfigured.
- B. The priority on CK2 should be set lower.
- C. The cost on CK2 should be set lower.
- D. The hello and dead timers are misconfigured.
- E. You need to add a backup designated router to the network.
- F. The OSPF process ID numbers do not match.

Answer: D

Explanation:

OSPF routers must have the same hello intervals and the same dead intervals to exchange information. By default, the dead interval is four times the value of the hello interval. This means that a router has four chances to send a hello packet before being declared dead.

On broadcast OSPF networks, the default hello interval is 10 seconds and the default dead interval is 40 seconds. On nonbroadcast networks, the default hello interval is 30 seconds and the default dead interval is 120 seconds. These default values result in efficient OSPF operation and seldom need to be modified. As shown in the output, the hello timer on router CK1 was changed to 5 seconds, with the dead timer being set to 20 seconds.

Incorrect Answers:

- A. Both routers are configured to be in area 0.
- B. In this example the adjacency should come up regardless of which one was the

- DR/BRD. Therefore, setting the priority on one router will not solve this problem.
- C. This will not solve the adjacency issue.
 - E. Only the DR is absolutely required on the Ethernet subnet, not the BDR.
 - F. Unlike other protocols, the routing process ID's do not necessarily need to match in OSPF for routing to work.
-

QUESTION 524

A new router, named CK1 , is being installed. You wish to add this router to your existing OSPF network. In doing so, you configure the following:

```
CK1 (config)# router ospf 1
CK1 (config-router)# network 10.10.10.0 255.255.255.0 area 0
```

After making this change, you notice that the networks attached to CK1 are not being learned by the other OSPF routers. What could be the cause of this?

- A. The AS is not correctly configured
- B. The network subnet mask is incorrectly configured
- C. The network wildcard mask is configured incorrectly
- D. The network number is not correctly configured
- E. The process id is configured incorrectly
- F. None of the above

Answer: C

Explanation:

The network command specifies the IP address (10.10.10.0) followed by the wildcard mask (not the subnet mask) and the area that is to be associated with the OSPF address range (in this case, area 0). The wildcard mask indicates in binary how much of the IP address must be matched with 0s indicating that the bits must match and 1 indicating that they may vary. Thus 0.0.0.255 or 00000000.00000000.00000000.11111111 indicates that any bit in the last octet can vary while all bits in the first 3 octets must match the network address (in other words, 10.10.10.xx)

QUESTION 525

Which one of the following EIGRP commands can check the IP addresses of the adjacent neighbors, as well as verifying the EIGRP retransmit intervals and queue counts?

- A. CK1 #show ip eigrp adjacency
- B. CK1 #show ip eigrp topology
- C. CK1 #show ip eigrp interfaces
- D. CK1 #show ip eigrp neighbors
- E. None of the above

Answer: D

Explanation:

The topology database contains information from all of the LSA packets that have been received for an area. The topology database is updated by the LSAs. Each router within the area has exactly the same topology database. All routers must have the same vision of the networks; otherwise, confusion, routing loops, and loss of connectivity will result.

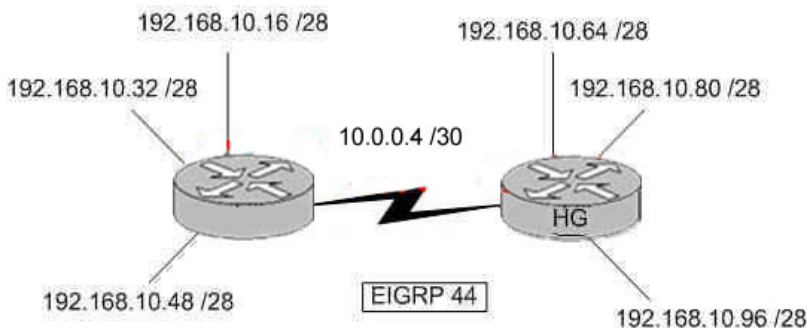
Note: The topology database is the router's view of the network within the area. It includes every OSPF router within the area and all the connected networks. This database is indeed a routing table, but a routing table for which no path decisions have been made; it is at present a topology database.

Reference

: "CCNP BSCI Exam Certification Guide Third Edition" by Clare Gough, CCIE No. 2893, Page 197.

QUESTION 526

The Certkiller network consists of two routers as shown below:



Both routers Certkiller and HG are configured for EIGRP. Unfortunately, users on the Certkiller networks are unable to reach users on the HG networks. Which command could you enter on Certkiller to correct this problem?

- A. Certkiller (config-router)# version 2
- B. Certkiller (config-router)# no auto-summary
- C. Certkiller (config-router)# redistribute eigrp 44
- D. Certkiller (config-router)# EIGRP log-neighbor-changes
- E. Certkiller (config-router)# default-information originate

Answer: B

Explanation:

By default, EIGRP will auto-summarize IP information at the network boundaries. In this example, the 192.168.10.0 network is subnetted into 6 separate networks. Therefore, each router will only advertise the 192.168.10.0/24 network to each other by default. To disable this function and transmit sub-prefix routing information across classful network boundaries, auto summarization must be disabled.

Incorrect Answers:

- A. There is only one version of EIGRP.
- C. Based on the diagram, each router is already configured for EIGRP 44.
- D. This will have no impact on the routes.
- E. This will generate a default route, which will be advertised to the other router.

However, a default route is not needed, as the individual subnets need to be advertised, not a default route.

QUESTION 527

While troubleshooting a routing problem in your network, you utilize RIP debugging as shown below:

```
RtrA#debug ip rip
RIP protocol debugging is on
RtrA#
1d05h: RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.16.1.1)
1d05h: RIP: build update entries
1d05h: network 10.0.0.0 metric 1
1d05h: network 192.168.1.0 metric 2
1d05h: RIP: sending v1 update to 255.255.255.255 via Serial0/0 (10.0.8.1)
1d05h: RIP: build update entries
1d05h: network 172.16.0.0 metric 1
RtrA#
1d05h: RIP: received v1 update from 10.0.15.2 on Serial0/0
1d05h: 192.168.1.0 in 1 hops
1d05h: 192.168.168.0 in 16 hops (inaccessible)
```

Based on the information provided, which of the following are true? (Select two answer choices)

- A. This router was configured with the commands:
RtrA(config)#router rip
RtrA(config-router)# network 172.16.0.0
RtrA(config-router)# network 10.0.0.0
- B. This router was configured with the commands:
RtrA(config)# router rip
RtrA(config-router)# network 192.168.1.0
RtrA(config-router)# network 10.0.0.0
RtrA(config-router)# network 192.168.168.0
- C. This router was configured with the commands:
RtrA(config)# router rip
RtrA(config-router)# version 2
RtrA(config-router)# network 172.16.0.0
RtrA(config-router)# network 10.0.0.0
- D. Split horizon was disabled on this router.
- E. Network 192.168.168.0 will be displayed in the routing table.
- F. Network 10.0.0.0 will be displayed in the routing table.

Answer: A, F

Explanation:

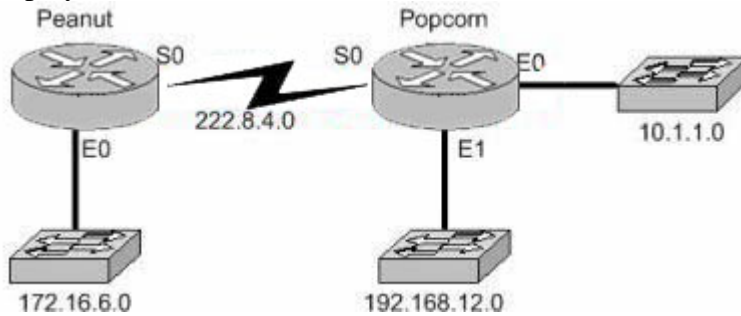
Based on the information provided, this RIP network is routing the 192.168.1.0, 172.16.0.0, and 10.0.0.0 networks. However, the 10.0.0.0 and 172.16.0.0 networks show that they are being advertised to the other router with a metric of 1, meaning that it is directly connected. Therefore, choice A is correct. Also, the 192.168.1.0 network was received on the serial 0/0 interface with a valid metric of 1 so this route will indeed be installed into the routing table.

Incorrect Answers:

- B. The 192.168.0.0 networks are being received from other routers, so this particular one will not have this locally configured.
- C. The output shows that RIP version 1 is being used, not RIP version 2.
- D. There is no information to support this.
- E. This network shows a metric of 16, which is the maximum number of hops for RIP so it is deemed inaccessible.

QUESTION 528

The Certkiller network consists of two routers, Peanut and Popcorn, as shown in the display below:



While troubleshooting a routing problem, you issue the "show ip protocols" command:

```
Popcorn# show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 13 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is
Incoming update filter list for all interfaces is
Redistribution: rip
Default version control: send version 1, receive any
version
Interface Send Recv Triggered RIP Key-chain
Ethernet0 1 12
Ethernet1 1 12
Serial 1 12
Routing for Networks:
222.8.4.0
10.1.1.0
Routing Information Sources:
Gateway Distance Last Update
222.8.4.1 120 00:00:04
```

The Peanut router is able to successfully ping the Serial 0 and Ethernet 0 interface of the Popcorn router, but a ping issued to the Ethernet 1 interface fails. Based on the above output, what are the potential causes of this problem? (Select two answer choices)

- A. The Popcorn router is not forwarding RIP updates.

- B. The Popcorn router did not include network 192.168.12.0 in its routing configuration.
- C. The Ethernet1 interface of the Popcorn router is shutdown.
- D. The clockrate is not present in the configuration of one of the routers.
- E. The Serial interface of the Popcorn router is not operating.

Answer: B, C

Explanation:

If the Popcorn router did not include the 192.168.12.0 network in the RIP configuration, then this network would not be advertised to the Peanut router, which would make it unreachable. Similarly, if the interface were administratively shut down, the Peanut router would not have a route to this network.

Incorrect Answers:

A, D, E. If any of these were true, then all of the Ethernet networks connected to the Popcorn router would be unreachable to the Peanut router, and not just Ethernet 1.

QUESTION 529

While troubleshooting network connectivity problems, the following two show commands were issued as shown below:

```
Cert_killer#show ip protocol
```

```
Routing Protocol is "rip"
```

```
Sending updates every 30 seconds, next due in 4 seconds
```

```
Invalid after 180 seconds, hold down 180, flushed after 240
```

```
Outgoing update filter list for all interfaces is not set
```

```
Incoming update filter list for all interfaces is not set
```

```
Redistribution rip
```

```
Default version control: send version 1, receive any version
```

```
Interface Send Recv Triggered RIP Key-chain
```

```
Serial0/0 1 1 2
```

```
Serial0/1 1 1 2
```

```
Automatic network summarization is in effect
```

```
Maximum path: 4
```

```
Routing for Networks:
```

```
10.0.0.0
```

```
Routing Information Sources:
```

```
Gateway Distance Last Update
```

```
10.168.11.14 120 00:00:22
```

```
Distance: (default is 120)
```

```
Certkiller #show ip interfaces brief
```

```
Interface IP-Address OK? Method Status
```

```
FastEthernet0/0 192.168.18.1 YES manual up
```

```
Serial0/0 10.168.11.15 YES manual up
```

```
FastEthernet0/1 unassigned YES NVRAM administratively down
```

```
Serial0/1 192.168.11.21 YES manual up
```

Based on the output of the above exhibit, which two of the following statements are correct? (Select two answer choices)

- A. Router Certkiller will get routing updates on the Serial0/1 interface.
- B. Router Certkiller will issue routing updates out the Serial0/0 interface.
- C. Router Certkiller makes use of a link-state routing protocol.
- D. Router Certkiller will get routing updates on the Serial0/0 interface.
- E. Router Certkiller will issue routing updates out the FastEthernet0/0 interface.

Answer: B, D

Explanation:

Based on the information given, routing updates are being sent and received only from the directly connected neighbor with IP address 10.168.11.14. The locally connected interface in this case is Serial 0/0, as shown by the fact that this interface is using IP address 10.168.11.15, so it is on the same network.

Incorrect Answers:

- A, E. Only interface Serial 0/0 appears to be passing routing information.
- C. The only protocol that is being used here is RIP, which is a distance vector protocol.

QUESTION 530

Regarding the extended ping command; which of the statements below are true?
(Select all valid answer choices)

- A. The extended ping command is supported from user EXEC mode.
- B. The extended ping command is available from privileged EXEC mode.
- C. With the extended ping command you can specify the TCP and UDP port to be pinged.
- D. With the extended ping command you can specify the timeout value.
- E. With the extended ping command you can specify the datagram size.

Answer: B, D, E

Explanation:

The extended ping command works only at the privileged EXEC command line. Some of the extended ping command values include the datagram size and timeout value as shown:

Datagram size [100]: Size of the ping packet (in bytes). Default: 100 bytes.

Timeout in seconds [2]: Timeout interval. Default: 2 (seconds). The ping is declared successful only if the ECHO REPLY packet is received before this time interval.

Incorrect Answers:

- A. Regular pings are available in both user and privileged mode, but not extended pings.
- C. Ports can not be specified.

QUESTION 531

After executing the "show host" command, which of the information below would you see? (Select two answer choices.)

- A. The IP addresses of workstations allowed gain access to the router via an access list
- B. Permanent name-to-address mappings created using the ip host command.
- C. Temporary and permanent DNS entries.
- D. The names of the routers created using the hostname command.
- E. The length of time of users logged into the router, as well as the duration

Answer: B, D

Explanation:

The "show host" command lists all host names and corresponding IP addresses, as configured in the router.

Incorrect Answers:

A, C. These are invalid.

E. This is the result of the "show users" command, not the "show ip hosts" command.

QUESTION 532

When you use the ping command to send ICMP messages across a network, what's the most common request/reply pair you'll see? (Select one answer choice)

- A. Echo request and Echo reply
- B. ICMP hold and ICMP send
- C. ICMP request and ICMP reply
- D. Echo off and Echo on
- E. None of the above

Answer: A

Explanation:

The ICMP protocol uses Echo request and Echo reply with the Ping command. The PING utility is the most commonly used message to verify connectivity to a remote device within the network.

QUESTION 533

Three networks lie behind serial 0/0 interface of the Certkiller router: 172.16.10.0, 172.16.20.0, and 172.16.30.0. Unfortunately, users are unable to reach the 172.16.20.0 network. To troubleshoot the problem, you issue the "debug ip rip" and "show ip route" commands as shown below:

<some output text is omitted>

```
Certkiller 1# debug ip rip
```

```
ld00h: RIP:received v1 update from 172.16.100.2 on Serial0/0
```

```
ld00h: 172.16.10.0 in 1 hops
```

```
ld00h: 172.16.20.0 in 1 hops
```

```
ld00h: 172.16.30.0 in 1 hops
```

```
Certkiller 1# show ip route
```

```
Gateway of last resort is not set
```

172.16.0.0/24 is subnetted, 8 subnets
C 172.16.150.0 is directly connected, FastEthernet0/0
C 172.16.220.0 is directly connected, Loopback2
C 172.16.210.0 is directly connected, Loopback1
C 172.16.200.0 is directly connected, Loopback0
R 172.16.30.0 [120/1] via 172.16.100.2, 00:00:07, Serial0/0
S 172.16.20.0 [1/0] via 172.16.150.15
R 172.16.10.0 [120/1] via 172.16.100.2, 00:00:07, Serial0/0
C 172.16.100.0 is directly connected, Serial0/0
What could be the underlying cause of the problem?

- A. The 172.16.20.0 network is not located in Certkiller 1's routing table.
- B. There is no gateway of last resort on Certkiller 1.
- C. The static route for 172.16.20.0 is incorrect.
- D. The Certkiller 1 router is not receiving 172.16.20.0 updates.
- E. None of the above

Answer: C

Explanation:

The static route of 172.16.20.0 is incorrect. The "show ip route" shows that the network is connected via 172.16.150.15 instead of 172.16.100.2.

Incorrect Answers:

- A. The network is displayed in the table. The problem is that the route shows up as an incorrect static route, instead of a RIP route.
- B. Although the default route is not set, this does not explain why the 172.16.20.0 route is inaccessible.
- D. The RIP debugging shows that the route is indeed being learned via RIP. The problem is that a static route was configured, and the static route has a lower administrative distance than the RIP route. Therefore, the incorrect static route is installed into the routing table, rather than the correct RIP route.

QUESTION 534

You are a network administrator at Certkiller, Inc. and you're getting complaints that users on the Certkiller 2 Ethernet network can't access the Certkiller 1 site. To troubleshoot this, you begin by looking at the Certkiller 1 and Certkiller 2 router configurations as shown below:

```
Certkiller1# Show running-config
```

```
<some output text omitted>
```

```
interface serial10/0
 ip address 10.0.1.1 255.255.255.0
 encapsulation frame-relay
!
router igrp 1
 network 10.0.0.0
```

```
Certkiller2# show running-config
```

```
<some output text omitted>
```

```
interface fastethernet0/0
 ip address 10.10.2.1 255.255.255.0

interface serial10/0
 ip address 10.10.1.2 255.255.255.0
 encapsulation frame-relay
!
router igrp 2
 network 10.0.0.0
```

Based on the above output, what is the underlying cause of this problem?

- A. Link state routing protocol is missing.
- B. Incorrectly configured IP addresses
- C. IGRP is incorrectly configured.
- D. Frame relay is not configured.
- E. None of the above

Answer: C

Explanation:

To configure the Interior Gateway Routing Protocol (IGRP) routing process, use the router igrp global configuration command as shown below:

```
router igrp autonomous-system
 autonomous-system
```

- Autonomous system number that identifies the routes to the other IGRP routers. It is also used to tag the routing information. The autonomous system must match for all IGRP routers in the network. The problem in this case is that Certkiller 1 is using IGRP 1, while Certkiller 2 is using IGRP 2.

QUESTION 535

You are a network technician at Certkiller , Inc. You are currently troubleshooting a routing issue on the Certkiller 1 router. You issue the show ip route command. The output from the command is displayed in the following exhibit:

```
Certkiller 1#show ip route
```

Codes: C - connected, S - static, I - IGRP, R- RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inner area

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - Candidate default

U - per-user static route

Gateway of last resort is not set

R 192.168.8.0/24 [120/1] via 192.168.2.2, 00:00:10, Serial0

C 192.168.9.0/24 is directly connected, Serial1

R 192.168.10.0/24 [120/7] via 192.168.9.1, 00:00:02, Serial1

R 192.168.11.0/24 [120/7] via 192.168.9.1, 00:00:03, Serial1

C 192.168.1.0/24 is directly connected, Ethernet0

C 192.168.2.0/24 is directly connected, Serial0

R 192.168.3.0/24 [120/1] via 192.168.2.2, 00:00:10, Serial0

R 192.168.4.0/24 [120/15] via 192.168.2.2, 00:00:10, Serial0

R 192.168.5.0/24 [120/15] via 192.168.2.2, 00:00:10, Serial0

R 192.168.6.0/24 [120/15] via 192.168.2.2, 00:00:10, Serial0

R 192.168.7.0/24 [120/1] via 192.168.2.2, 00:00:10, Serial0

Which one of the following routes WILL NOT be entered into its neighboring routers routing table?

A. R 192.168.11.0/24 [120/7] via 192.168.9.1, 00:00:03, Serial1

B. C 192.168.1.0/24 is directly connected, Ethernet0

C. R 192.168.8.0/24 [120/1] via 192.168.2.2, 00:00:10, Serial0

D. R 192.168.5.0/24 [120/15] via 192.168.2.2, 00:00:10, Serial0

E. None of the above

Answer: D

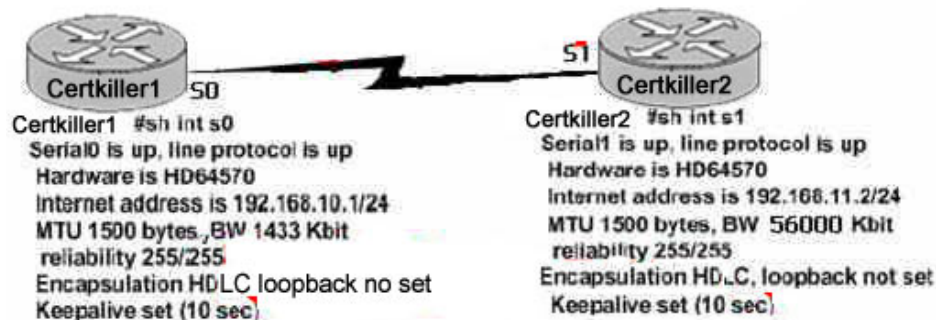
Explanation:

RIP has the maximum hop count of 15. This route already has a hop count of 15 and adding one would make it unreachable (see below). This route will be discarded.

R 202.30.5.0/24 [120/15] via 202.30.2.2, 00:00:10, Serial0

QUESTION 536

The Certkiller network consists of two routers connected via a point to point serial connection as shown below:



Users on Certkiller 1 are unable to connect to the Certkiller 2 network. Based on the configurations shown above, what could be the cause of this?

- A. The Maximum Transmission Unit size is too large.
- B. No loopback is set.
- C. The subnet mask is incorrect
- D. The encapsulation does not match at each end.
- E. There is an incorrect IP address.
- F. There is an incompatible bandwidth statement between routers.

Answer: E

Explanation:

The IP addresses are both on different subnets but are connected on Serial link. For the connection to work, the two interfaces must belong to the same IP subnet.

Incorrect Answers:

- A. The MTU is set at 1500 on each end, which is acceptable.
- B. Loopbacks are not required for this serial connection to function.
- C. The masks match, but the IP addresses do not.
- D. Based on the diagram above, both serial interfaces are set to HDLC encapsulation, which is the default encapsulation for serial interfaces.
- F. Although this is true, the bandwidth statements do not need to be set the same in order for this connection to work. The bandwidth statement is used by certain routing protocols, such as OSPF and EIGRP, but they have no impact on the actual function of the serial line.

QUESTION 537

The following routes exist in the Certkiller router:

- A. R 12.18.8.0/24 [120/1] via 12.18.2., 00:00:10, Serial0
- B. R 12.18.11.0/24 [120/7] via 12.18.9.1, 00:00:03, Serial1
- C. C 12.18.1.0/24 is directly connected, Ethernet0
- D. R 12.18.5.0/24 [120/15] via 12.18.2.2, 00:00:10, Serial0

Based on the above information, which route will not be entered into the routing table of a neighboring router?

Answer: D

Explanation:

The number values inside of the brackets indicate the administrative distance and metric of the route. In this case the [120/15] means that the route has an AD of 120, which is the default for RIP, and a metric of 15. Since hop counts are used as the metric for RIP, it means that this route was learned by RIP and it is 15 hops away. When this route is advertised to a neighbor an additional hop is added, meaning that it will be advertised with a metric of 16. Since a RIP route with a metric of 16 is considered unreachable, it will not be added to the routing table of the neighbor router.

QUESTION 538

The routing table of the Corp router is displayed below:

```
Corp#show ip route
***
Gateway of last resort is not set:

C 192.168.15.0/24 is directly connected, Serial0/1
C 192.168.14.0/24 is directly connected, FastEthernet0/0
C 192.168.15.0/24 is directly connected, Serial0/0.102
C 192.168.20.0/24 is directly connected, Serial0/0.117
R 192.168.16.0/24 [120/1] via 192.168.15.2, 00:00:05, Serial0/0.102
R 192.168.17.0/24 [120/1] via 192.168.15.2, 00:00:05, Serial0/0.102
R 192.168.30.0/24 [120/2] via 192.168.20.2, 00:00:25, Serial0/0.117
R 192.168.19.0/24 [120/1] via 192.168.20.2, 00:00:25, Serial0/0.117
R 192.168.21.0/24 [120/3] via 192.168.20.2, 00:00:25, Serial0/0.117
R 192.168.214.0/24 [120/1] via 192.168.14.2, 00:00:22, FastEthernet0/0
```

The Corp router receives an IP packet with a source IP address of 192.168.214.20 and a destination address of 192.168.22.3. Based on the information above, what will the router do with this packet?

- A. It will encapsulate the packet as Frame Relay and forward it out interface Serial 0/0.117.
- B. It will discard the packet and send an ICMP Destination Unreachable message out interface FastEthernet 0/0.
- C. It will forward the packet out interface Serial 0/1 and send an ICMP Echo Reply message out interface serial 0/0.102.
- D. It will change the IP packet to an ARP frame and forward it out FastEthernet 0/0.
- E. It will forward the packet out the default route.
- F. None of the above.

Answer: B

Explanation:

The destination IP address of 192.168.22.3 is not in the routing table of the Corp router. Since there is no default route set, as shown by the "gateway of last resort is not set" statement, the packet will be dropped by the router and an ICMP Destination Unreachable message will be sent back to the source, which is Fast Ethernet 0/0 in this case.

QUESTION 539

You try to add a new router into the established Certkiller OSPF network. The networks attached to the new router do not appear in the routing tables of the other OSPF routers.

The new router was configured for OSPF in the following way:

```
Router(config)# router ospf 99
Router(config-if)# network 10.0.0.0 255.0.0.0 area 0
```

Based on this information, what is the most likely problem?

- A. The process id is configured improperly.
- B. The OSPF area is configured improperly.
- C. The network wildcard mask is configured improperly.
- D. The network number is configured improperly.
- E. The AS is configured improperly.
- F. The network subnet mask is configured improperly.
- G. All of the above are likely problems.

Answer: C

Explanation:

When configuring OSPF, the mask used for the network statement is a wildcard mask similar to an access list. In this specific example, the correct syntax would have been "network 10.0.0.0 0.0.0.255 area 0."

Incorrect Answers:

- A. Here the process ID is 99, which is valid.
- B. Area 0 is the backbone area, so configuring the network to be in area 0 should be acceptable.
- D. This is not the problem, assuming that all 10.X.X.X networks are to be configured for OSPF.
- E. The AS number, as called the process ID in OSPF is 99.
- F. OSPF uses wildcard masks, not the usual subnet masks

QUESTION 540

Which command will display all the EIGRP feasible successor routes known to a router?

- A. Router# show ip eigrp routes *
- B. Router# show ip eigrp summary
- C. Router# show ip eigrp topology
- D. Router# show ip eigrp adjacencies
- E. Router# show ip eigrp neighbors detail

Answer: C

Explanation:

The "show ip eigrp topology" command is used to display the entries in the EIGRP topology table. The topology table contains the feasible successors for each route, along with the feasible distance, each feasible successor's advertised distance to the route, and the locally calculated distance and cost to the destination.

QUESTION 541

Which IOS commands can a network technician use to verify all RIP, IGRP, EIGRP, and OSPF routing protocol configurations? Select two.

- A. debug ip routing
- B. show running-config
- C. show ip route protocols
- D. show ip protocols
- E. show protocols all

Answer: B, D

Explanation:

To display the parameters and current state of the active routing protocol process, use the "show ip protocols" command in EXEC mode. The information displayed by the show ip protocols command is useful in debugging routing operations. Information in the Routing Information Sources field of the "show ip protocols" output can help you identify a router suspected of delivering bad routing information.

Alternatively, you could view the entire configuration by issuing the "show running-configuration" command. This will provide the entire configuration, including the routing protocol portions.

Incorrect Answers:

- A. This will not display the way the protocols are configured in the router.
- C. Although the different protocols can be specified using this command, this syntax is invalid. For example, you can view the routing table for all IGRP routes using the "show ip route igrp" but you can not issue the "show ip route protocols" command.
- E. This is an invalid command.

QUESTION 542

While troubleshooting a Certkiller router, the following command was issued:

Certkiller3# show ip route

....output omitted....

Gateway of last resort is 140.8.100.5 to network 0.0.0.0

R 140.8.7.0/24 [120/3] via 150.8.12.9:00:00:20 serial 0/1

O 140.8.5.5/24 [110/782] via 140.8.100.5, 00:38:34 serial 0/0

R 140.8.78.8/29 [120/2] via 150.8.12.9 : 00:00:22 serial 0/1

C 140.8.100.0/28 is directly connected, serial 0/0

140.8.7.0/24 [120/3] via 150.8.12.9:00:00:20 2 masks

140.8.7.0/24 [120/3] via 150.8.12.9:00:00:20 1

R 140.8.100.0/28 is directly connected, serial 0/0/0/1

O 0.0.0.0/0 [110/2738] via 140.8.100.5,00:38:34, serial 0/0

In the route highlighted in the graphic, what does the number 782 represent?

- A. Administrative distance
- B. Delay to the destination
- C. Cost of the route
- D. Hop count

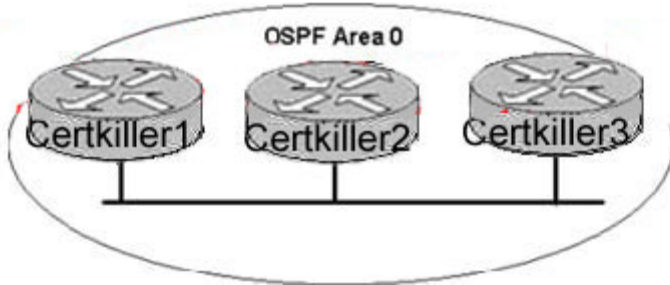
Answer: C

Explanation:

The exhibit shows OSPF is been used as the routing protocol and OSPF uses Cost. The cost (also called metric) of an interface in OSPF is an indication of the overhead required to send packets across a certain interface. The cost of an interface is inversely proportional to the bandwidth of that interface. A higher bandwidth indicates a lower cost.

QUESTION 543

The Certkiller OSPF Backbone network is displayed below:



Certkiller 1 is unable to establish an OSPF neighbor relationship with Certkiller 3. What are possible reasons for this problem? (Choose Two).

- A. All of the routers need to be configured for backbone Area1.
- B. Certkiller 1 and Certkiller 2 are the DR and BDR, so OSPF will not establish neighbor adjacency with Certkiller 3
- C. A static route has been configured from Certkiller 1 to Certkiller 3 and prevents the neighbor adjacency from being established.
- D. The hello and dead interval timers are not set to the same values on Certkiller 1 and Certkiller 3.
- E. EIGRP is also configured on these routers with a lower administrative distance.
- F. Certkiller 1 and Certkiller 3 are configured in different areas.

Answer: D, F

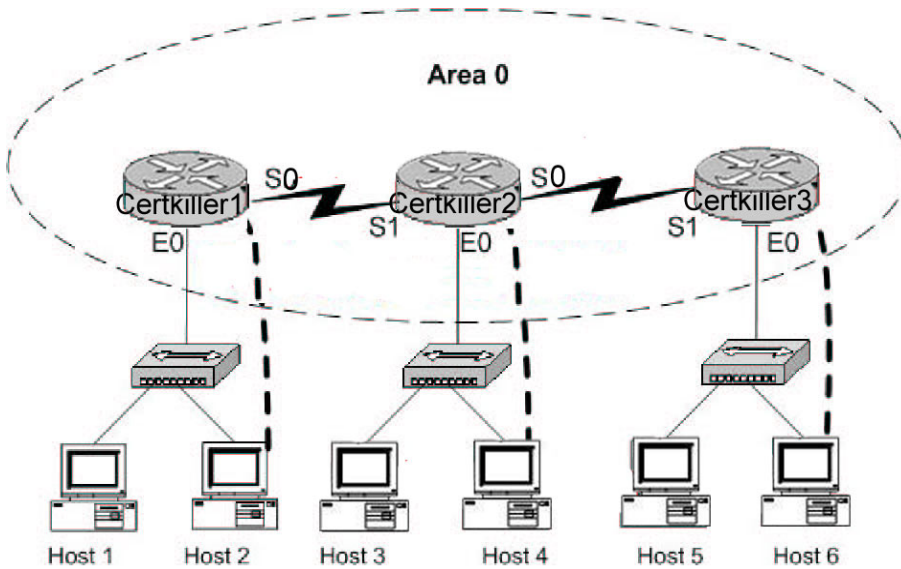
Explanation:

In order for two OSPF routers to establish a neighbor adjacency, they must agree on a number of things, including the hello intervals, dead intervals, and the area ID's. Although a router can be configured for multiple OSPF areas, a neighbor relationship will only be built on interfaces that share the same area.

QUESTION 544

SIMULATION

Network topology exhibit



Certkiller .com has decided to network three locations to improve efficiency in inventory control. The routers have been named Certkiller 1, Certkiller 2, Certkiller 3. The necessary networking has been completed at each location, and the routers have been configured with single area OSPF as the routing protocol. The Certkiller 1 router was recently installed but connectivity is not complete because in incomplete routing tables. Identify and correct any problem you see in the configuration.

Note: The OSPF process must be configured to allow interfaces in specific subnets to participate in the routing process.

The IP address and passwords are listed in the chart.

LAB A

Name : Certkiller 1
 E0 : 192.168.15.0 /24
 S0 : 192.168.161.5 /30
 Secret Password : Certkiller

LAB B

Name : Certkiller 2
 E0 : 192.168.26.1 /24
 S0 : 192.168.161.10 /30
 S1 : 192.168.161.6 /30
 Secret Password : Certkiller

LAB C

Name : Certkiller 3
 E0 : 192.168.32.1 /24
 S1 : 192.168.161.9 /30
 Secret Password : Certkiller

Answer:

To configure:

en

Certkiller

conf t


```
int eo
ip address 192.168.15.0 255.255.255.0
no shut
exit
int s0
ip address 192.168.161.5 255.255.255.252
no shut
exit
router ospf 1
network 192.168.15.0 0.0.0.255 area 0
network 192.168.161.4 0.0.0.3 area 0
exit
```

Copy run start

Note. Variation #1

LAB A

Name : Certkiller 1

E0 : 192.168.1.1 /24

S0 : 192.168.197.5 /30

Secret Password : Certkiller

LAB B

Name : Certkiller 2

E0 : 192.168.27.1 /24

S0 : 192.168.197.10 /30

S1 : 192.168.197.6 /30

Secret Password : Certkiller

LAB C

Name : Certkiller 3

E0 : 192.168.39.1 /24

S1 : 192.168.197.9 /30

Secret Password : Certkiller

Note. Variation #2

LAB A

Name : Certkiller 1

E0 : 192.168.12.1 /24

S0 : 192.168.172.5 /30

Secret Password : Certkiller

LAB B

Name : Certkiller 2

E0 : 192.168.17.1 /24

S0 : 192.168.172.10 /30

S1 : 192.168.172.6 /30

Secret Password : Certkiller

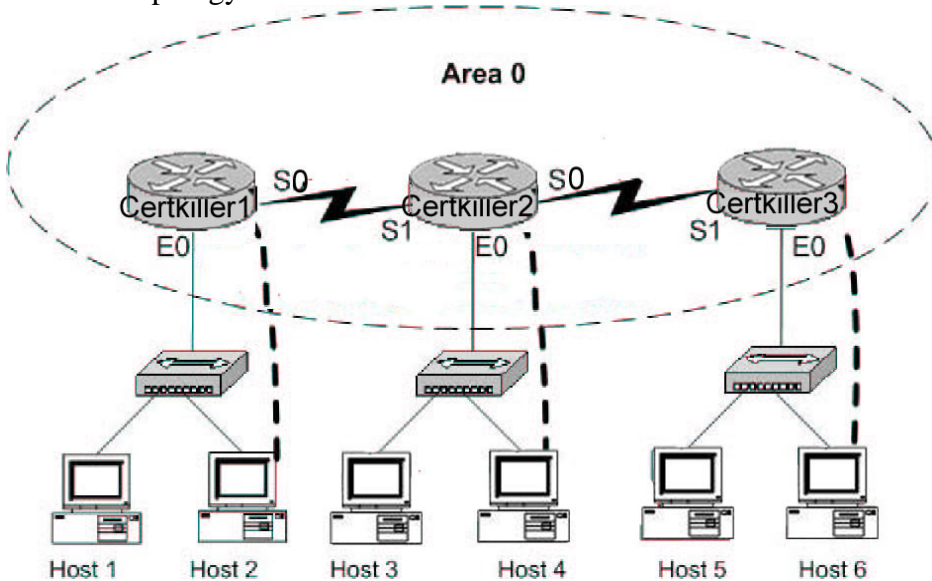
LAB C

Name : Certkiller 3

E0 : 192.168.36.1 /24

S1 : 192.168.172.9 /30
Secret Password : Certkiller

QUESTION 545
SIMULATION
Network topology exhibit



Certkiller .com has decided to network three locations to improve efficiency in inventory control. The routers have been named Certkiller 1, Certkiller 2, Certkiller 3. The necessary networking has been completed router was recently installed but connectivity is not complete because in incomplete routing tables. Identify and correct any problem you see in the configuration.

Note: The OSPF process must be configured to allow interfaces in specific subnets to participate in the routing process.

The IP address and passwords are listed in the chart.

LAB A

Name : Certkiller 1
E0 : 192.168.4.1 /24
S0 : 192.168.163.5 /30
Secret Password : Certkiller

LAB B

Name : Certkiller 2
E0 : 192.168.24.1 /24
S0 : 192.168.163.10 /30
S1 : 192.168.163.6 /30
Secret Password : Certkiller

LAB C

Name : Certkiller 3
E0 : 192.168.40.1 /24
S1 : 192.168.163.9 /30
Secret Password : Certkiller

Answer:

Explanation:

Certkiller 1

```
router ospf 1
```

```
network 192.168.4.0 000 255 area 0
```

```
network 192.168.63.4 0.0.0.3 area 0
```

Certkiller 2

```
Router ospf 2
```

```
network 192.168.163.8 0.0.0.3 area 0
```

```
network 192.168.163.4.0.0.0.3 area 0
```

Certkiller 3

```
router ospf 3
```

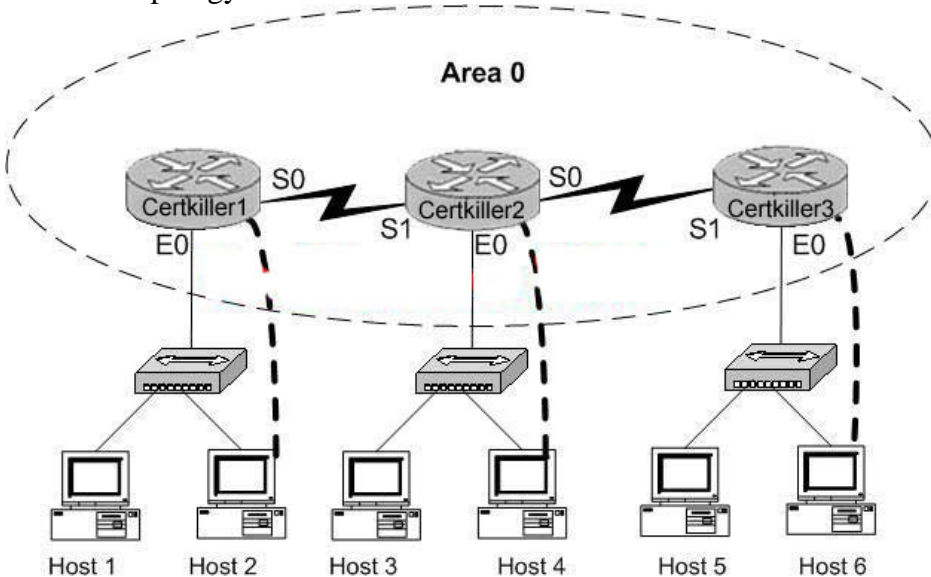
```
network 192.168.40.0 0 0 0 255 area 0
```

```
network 192.168.163.8 0.0.0.3 area 0
```

QUESTION 546

SIMULATION

Network topology exhibit



Certkiller .com has decided to network three locations to improve efficiency in inventory control. The routers have been named Certkiller 1, Certkiller 2, Certkiller 3.

The necessary networking has been completed router was recently installed but connectivity is not complete because in incomplete routing tables. Identify and correct any problem you see in the configuration.

Note: The OSPF process must be configured to allow interfaces in specific subnets to participate in the routing process.

The IP address and passwords are listed in the chart.

LAB A

Name : Certkiller 1

E0 : 192.168.0.1 /24

S0 : 192.168.135.5 /30

Secret Password : Certkiller

LAB B

Name : Certkiller 2

E0 : 192.168.24.1 /24

S0 : 192.168.135.10 /30

S1 : 192.168.135.6 /30

Secret Password : Certkiller

LAB C

Name : Certkiller 3

E0 : 192.168.43.1 /24

S1 : 192.168.135.9 /30

Secret Password : Certkiller

Answer:

Full configuration for 3 routers working with OSPF.

Certkiller 1:

```
conf t
int e0
ip addr 192.168.0.1 255.255.255.0
no shut
int s0
ip addr 192.168.135.5 255.255.255.252
no shut
ex
router ospf 1
network 192.168.0.0 0.0.0.255 area 1
network 192.168.135.0 0.0.0.255 area 1
end
```

Certkiller 2:

```
conf t
int e0
ip addr 192.168.24.1 255.255.255.0
no shut
int s0
ip addr 192.168.135.10 255.255.255.252
no shut
int s1
ip addr 192.168.135.6 255.255.255.252
no shut
ex
router ospf 1
network 192.168.24.0 0.0.0.255 area 1
network 192.168.135.0 0.0.0.255 area 1
end
```

Certkiller 3:

```
conf t
```

```
int e0
ip addr 192.168.43.1 255.255.255.0
no shut
int s1
ip addr 192.168.135.9 255.255.255.252
no shut
ex
router ospf 1
network 192.168.43.0 0.0.0.255 area 1
network 192.168.135.0 0.0.0.255 area 1
end
```

QUESTION 547

Certkiller .com has a large corporate network that uses multiple routing protocols. Hosts in a portion of the network that uses EIGRP have become unreachable. Which router command will allow you, the network technician, to view the status of these routes?

- A. Certkiller # show eigrp entries
- B. Certkiller # show protocols
- C. Certkiller # debug eigrp routes
- D. Certkiller # show ip route eigrp
- E. Certkiller # show route eigrp

Answer: D

Explanation:

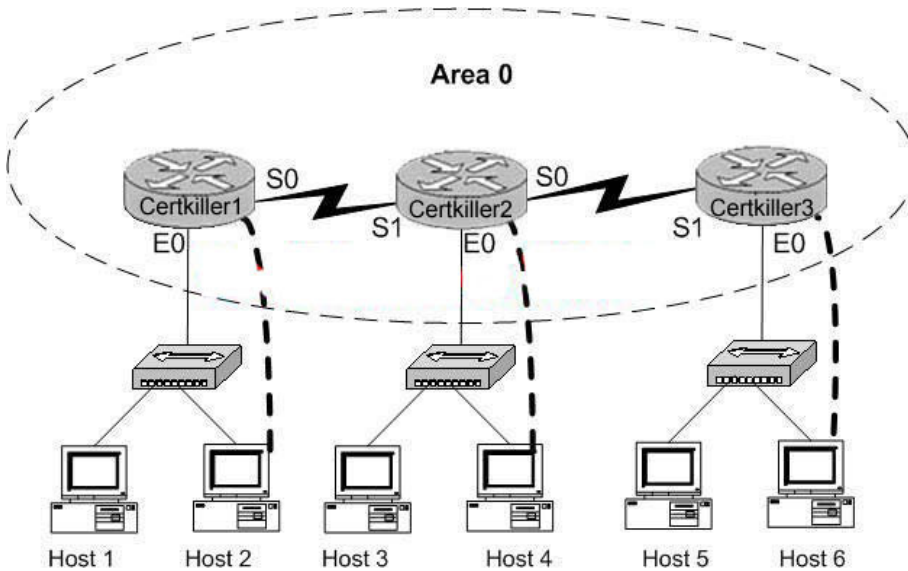
The show ip route and show ip route eigrp commands both list the EIGRP-learned routes with a D beside them. D signifies EIGRP. The letter E was already being used for Exterior Gateway Protocol (EGP) when Cisco created EIGRP, so it choose the next-closest letter to denote EIGRP-learned routes. You can see information about EIGRP neighbors with the show ip eigrp neighbors command, and the number of active neighbors (called peers in the command output) with the show ip eigrp interfaces command.

Reference: Cisco CCNA ICND 640-811 p.211

QUESTION 548

SIMULATION

Exhibit, Network Topology:



Certkiller .com has decided to network three locations to improve efficiency. The routers are named Certkiller 1, Certkiller 2, and Certkiller 3. The necessary networking has been completed at each location, and the routers have been configured with a single area OSPF as the routing protocol. The Certkiller 1 router was recently installed but connectivity is not complete because of incomplete routing tables. Identify and correct any problems you see in the configuration.

Be aware: The OSPF process must be configured to allow interfaces in specific subnets to participate in the routing process.

Certkiller 1

E0: 192.168.2.1/24

S0: 192.168.103.5/30

Secret Password: Certkiller

Certkiller 2

E0: 192.168.27.1/24

S0: 192.168.103.10/30

S1: 192.168.103.6/30

Secret Password: Certkiller

Certkiller 3

E0: 192.168.31.1/24

S0: 192.168.103.9/30

Secret Password: Certkiller

Answer:

Certkiller 1

Router ospf 1

Network 192.168.2.0 0.0.0.255

Network 192.168.103.4 0.0.0.3

Copy run start

Note, variation:

Certkiller 1

E0: 192.168.2.1/24

S0: 192.168.186.5/30
Secret Password: Certkiller
Certkiller 2
E0: 192.168.27.1/24
S0: 192.168.186.10/30
S1: 192.168.186.6/30
Secret Password: Certkiller
Certkiller 1
E0: 192.168.34.1/24
S0: 192.168.186.9/30
Secret Password: Certkiller

QUESTION 549

The Certkiller WAN is displayed below:

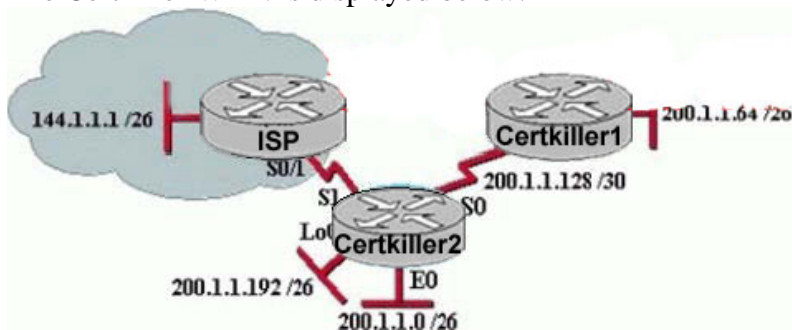


Exhibit #2

Gateway on last reds is 0.0.0.0 to network 0.0.0.0

```
200.1.1.0/24 is variably admetted. 5 subnets. 3 masks
C    200.1.1.192/26 is directly connected, Loopback0
C    200.1.1.128/30 is directly connected, Serial0
D    200.1.1.64/26 [90/2195456] via 200.1.1.130, 00:02:15, Serial0
D    200.1.1.0/24 is a summary, 00:00:41, Null0
C    200.1.1.0/25 is directly connected, Ethernet0
    200.1.2.0/30 is subnetted, 1 subnets
C    200.1.2.4 is directly connected, Serial1
S*  0.0.0.0/0 is directly connected, Serial1
```

What can be determined from the router output displayed in the exhibit?

- A. 200.1.1.64 is a default route.
- B. The output shows that there are three default routes.
- C. The output came from router Certkiller 2.
- D. The output came from a router that has four physical interfaces.
- E. EIGRP is in use in this network.

Answer: E

Explanation:

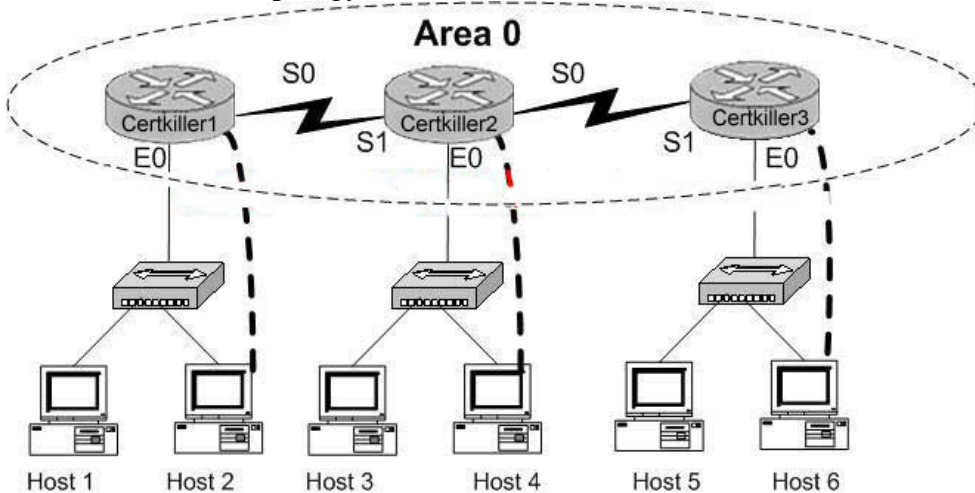
In the routing table the "D" letter marks the route learned from EIGRP routing protocol. Based on the routing table above, there are 4 directly connected IP interfaces, 2 EIGRP

learned routes (which means that EIGRP is in use on this network) and a static default route was also configured.

QUESTION 550

SIMULATION

Exhibit, Network Topology



Certkiller.com has decided to network three locations to improve efficiency. The routers are named Certkiller 1, Certkiller 2, and Certkiller 3. The necessary networking has been completed at each location, and the routers have been configured with a single area OSPF as the routing protocol. The Certkiller 3 router was recently installed but connectivity is not complete because of incomplete routing tables. Identify and correct any problems you see in the configuration.

Be aware: The OSPF process must be configured to allow interfaces in specific subnets to participate in the routing process.

Certkiller 1

E0: 192.168.2.1/24

S0: 192.168.144.5/30

Secret Password: Certkiller

Certkiller 2

E0: 192.168.19.1/24

S0: 192.168.144.10/30

S1: 192.168.144.6/30

Secret Password: Certkiller

Certkiller 3

E0: 192.168.144.1/24

S0: 192.168.144.9/30

Secret Password: Certkiller

Simulation:

Answer:

Certkiller 3

Conf t

Router ospf 1

Network 192.168.144.0 0.0.0.255
Network 192.168.144.8 0.0.0.3
Exit
Copy run start

QUESTION 551

The interface information for two Certkiller routers is displayed below:

```
CK1:  Ethernet0 is up, line protocol is up
      Internet address 192.168.1.2/24, Area 0
      Process ID 1, Router ID 192.168.31.33, Network Type BROADCAST, Cost: 10
      Transmit Delay is 1 sec, State DR, Priority 1
      DesignatedRouter (ID) 192.168.31.33 . Interface address 192.168.1.2
      No backup designated interface address Network
      Timer intervals configured, Hello 5, Dead 20, Wait 20, Retransmit 5

CK2:  Ethernet0 is up, line protocol is up
      Internet address 192.168.1.1/24, Area 0
      Process ID 2, Router ID 192.168.31.11, Network Type BROADCAST, Cost: 10
      Transmit Delay is 1 sec, State DR, Priority 1
      DesignatedRouter (ID) 192.168.31.33 . Interface address 192.168.1.1
      No backup designated interface address Network
      Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
```

A network administrator is troubleshooting the OSPF configuration of routers CK1 and CK2 . The routers cannot establish an adjacency relationship on their common Ethernet link. The graphic shows the output of the show ip ospf interface e0 command for routers CK1 and CK2 . Based on the information in the graphic, what is the cause of this problem?

- A. The OSPF area is not configured properly.
- B. The priority on CK1 should be set higher.
- C. The cost on CK1 should be set higher.
- D. The hello and dead timers are not configured properly.
- E. A backup designated router needs to be added to the network.
- F. The OSPF process ID numbers must match.

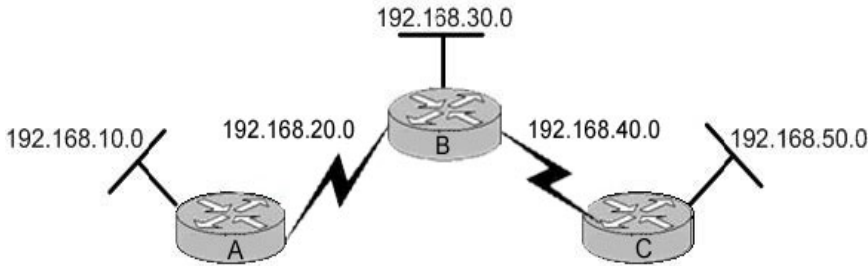
Answer: D

Explanation:

As can be seen above, the hello interval for CK1 has been set to 5 seconds, while it is set to 10 for CK2 . Also, the dead interval on CK1 is set at 20 seconds while on router CK2 it is set to 40 seconds. In order for two routers to establish an OSPF neighbor adjacency, the hello and dead timers must match.

QUESTION 552

The following was issues on router Certkiller A:



```
<some output text omitted>
P 192.168.40.0/24, 1 successors, FD is 21026560
  via 192.168.20.2 (21026560/20514560), Serial 0/1
P 192.168.50.0/24, 1 successors, FD is 20514560
  via 192.168.20.2 (20514560/28160), Serial0/1
P 192.168.10.0/24, 1 successors, FD is 28160
  via Connected, FastEthernet0/0
P 192.168.30.0/24, 1 successors, FD is 21024000
  via 192.168.20.2 (21024000/20512000), Serial0/1
P 192.168.20.0/24, 1 successors, FD is 20512000
  via Connected, Serial 0/1
```

```
Certkiller A #show ip ospf neighbor
Neighbor ID PRI State Dead Time Address Interface
192.168.1.2 1 Full/- 00:00:37 192.168.1.2 Serial1
```

Which type of OSPF network will provide the output shown in the graphic?

- A. FDDI
- B. Nonbroadcast multiaccess
- C. Broadcast multi-access
- D. Point-to-point
- E. None of the above

Answer: D

Explanation:

The following offers an example of an OSPF pt-pt connection:

```
Certkiller A# show ip ospf neighbor
Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 1 FULL/- 00:00:37 2.2.2.2 Serial0
Certkiller A# show ip ospf interface serial 0
Serial0 is up, line protocol is up
Internet Address 0.0.0.0/24, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type POINT_TO_POINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:08
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
```

Neighbor Count is 1, Adjacent neighbor count is 1

Adjacent with neighbor 2.2.2.2

Suppress hello for 0 neighbor(s)

Reference:

[Http://www.cisco.com/en/US/tech/ CK3 65/technologies_configuration_example09186a0080094057.shtml](http://www.cisco.com/en/US/tech/CK365/technologies_configuration_example09186a0080094057.shtml)

QUESTION 553

Which command displays EIGRP-related router activities as they occur?

- A. Certkiller # show ip route *
- B. Certkiller # debug eigrp route
- C. Certkiller # debug ip eigrp
- D. Certkiller # debug ip protocols eigrp
- E. Certkiller # show ip route eigrp

Answer: C

Explanation:

The debug ip eigrp command helps you analyze the packets that are sent and received on an interface. Because the debug ip eigrp command generates a substantial amount of output, only use it when traffic on the network is light.

Examples:

The following is sample output from the debug ip eigrp command:

Certkiller # debug ip eigrp

IP-EIGRP: Processing incoming UPDATE packet

IP-EIGRP: Ext 192.168.3.0 255.255.255.0 M 386560 - 256000 130560 SM 360960 - 256000 104960

IP-EIGRP: Ext 192.168.0.0 255.255.255.0 M 386560 - 256000 130560 SM 360960 - 256000 104960

IP-EIGRP: Ext 192.168.3.0 255.255.255.0 M 386560 - 256000 130560 SM 360960 - 256000 104960

IP-EIGRP: 172.69.43.0 255.255.255.0, - do advertise out Ethernet0/1

IP-EIGRP: Ext 172.69.43.0 255.255.255.0 metric 371200 - 256000 115200

IP-EIGRP: 192.135.246.0 255.255.255.0, - do advertise out Ethernet0/1

IP-EIGRP: Ext 192.135.246.0 255.255.255.0 metric 46310656 - 45714176 596480

IP-EIGRP: 172.69.40.0 255.255.255.0, - do advertise out Ethernet0/1

IP-EIGRP: Ext 172.69.40.0 255.255.255.0 metric 2272256 - 1657856 614400

IP-EIGRP: 192.135.245.0 255.255.255.0, - do advertise out Ethernet0/1

IP-EIGRP: Ext 192.135.245.0 255.255.255.0 metric 40622080 - 40000000 622080

IP-EIGRP: 192.135.244.0 255.255.255.0, - do advertise out Ethernet0/1

QUESTION 554

Refer to the graphic below:

Which of the following commands would create the output shown at the bottom of the graphic?

- A. Router# show ip eigrp topology
- B. Router# show ip route
- C. Router# show ip eigrp neighbors
- D. Router# show ip ospf route
- E. Router# show ip ospf database

Answer: A

Explanation:

show ip eigrp topology

To display entries in the Enhanced IGRP (EIGRP) topology table, use the show ip eigrp topology command in EXEC mode.

show ip eigrp topology [as-number | [[ip-address] mask]] [active| all-links| pending| summary| zero-successors]

Syntax Description

<i>as-number</i>	(Optional) Autonomous system number.
<i>ip-address</i>	(Optional) IP address. When specified with a mask, a detailed description of the entry is provided.
<i>mask</i>	(Optional) Subnet mask.
active	(Optional) Displays only active entries in the EIGRP topology table.
all-links	(Optional) Displays all entries in the EIGRP topology table.
pending	(Optional) Displays all entries in the EIGRP topology table that are waiting for an update from a neighbor or are waiting to reply to a neighbor.
summary	(Optional) Displays a summary of the EIGRP topology table.
zero-successors	(Optional) Displays available routes in the EIGRP topology table.

Example:

The following is sample output from the show ip eigrp topology command:

Router# show ip eigrp topology

IP-EIGRP Topology Table for process 77Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply, r - Reply statusP 172.16.90.0 255.255.255.0, 2 successors, FD is 0 via 172.16.80.28 (46251776/46226176), Ethernet0 via 172.16.81.28 (46251776/46226176), Ethernet1 via 172.16.80.31 (46277376/46251776), Serial0P 172.16.81.0 255.255.255.0, 1 successors, FD is 307200 via Connected, Ethernet1 via 172.16.81.28 (307200/281600), Ethernet1 via 172.16.80.28 (307200/281600), Ethernet0 via 172.16.80.31 (332800/307200), Serial0Table33 describes the significant fields shown in the display.

Table 33 show ip eigrp topology Field Descriptions

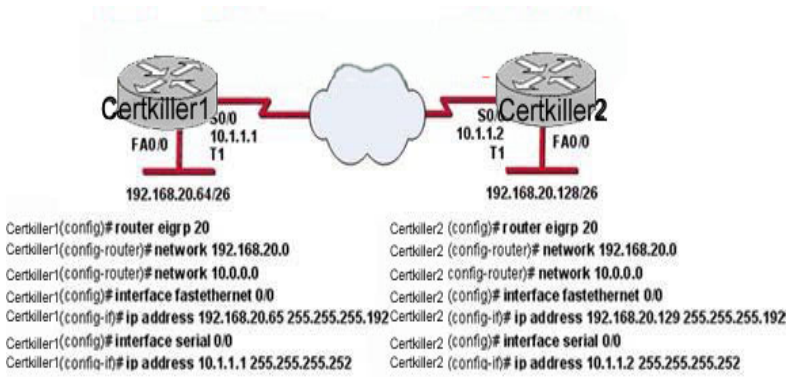
Field	Description
Codes	State of this topology table entry. Passive and Active refer to the EIGRP state with respect to this destination; Update, Query, and Reply refer to the type of packet that is being sent.
P - Passive	No EIGRP computations are being performed for this destination.
A - Active	EIGRP computations are being performed for this destination.
U - Update	Indicates that an update packet was sent to this destination.
Q - Query	Indicates that a query packet was sent to this destination.
R - Reply	Indicates that a reply packet was sent to this destination.
r - Reply status	Flag that is set after the software has sent a query and is waiting for a reply.
172.16.90.0	Destination IP network number.
255.255.255.0	Destination subnet mask.
successors	Number of successors. This number corresponds to the number of next hops in the IP routing table. If "successors" is capitalized, then the route or next hop is in a transition state.
FD	Feasible distance. The feasible distance is the best metric to reach the destination or the best metric that was known when the route went active. This value is used in the feasibility condition check. If the reported distance of the router (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it need not send a query for that destination.
replies	Number of replies that are still outstanding (have not been received) with respect to this destination. This information appears only when the destination is in Active state.
state	Exact EIGRP state that this destination is in. It can be the number 0, 1, 2, or 3. This information appears only when the destination is in the Active state.
via	IP address of the peer that told the software about this destination. The first N of these entries, where n is the number of successors, are the current successors. The remaining entries on the list are feasible successors.
(46251776/46226176)	The first number is the EIGRP metric that represents the cost to the destination. The second number is the EIGRP metric that this peer advertised.
Ethernet0	Interface from which this information was learned.
Serial0	Interface from which this information was learned.

Reference:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1828/products_command_reference_chapter09186a00800c

QUESTION 555

The Certkiller network is shown in the following exhibit:



Why has the network shown in the exhibit failed to converge?

- A. The no auto-summary command needs to be applied to the routers
- B. The network numbers have not been properly configured on the routers
- C. The subnet masks for the network numbers have not been properly configured
- D. The autonomous system number has not been properly configured
- E. The bandwidth values have not been properly configured on the serial interfaces

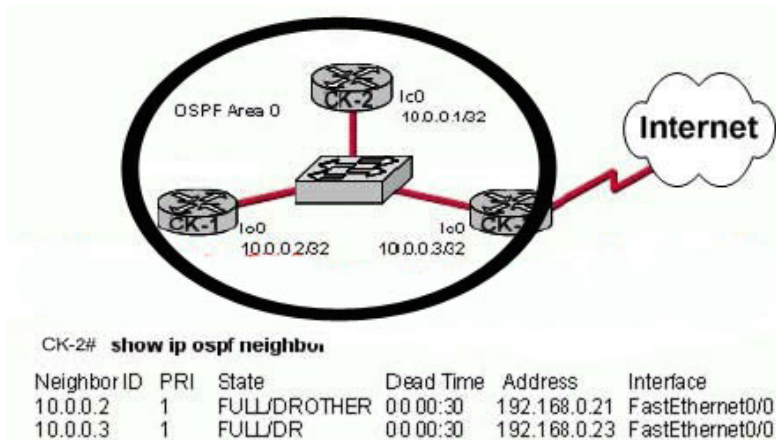
Answer: A

Explanation:

To restore the default behavior of automatic summarization of subnet routes into network-level routes, use the auto-summary command in router configuration mode. To disable this function and transmit subprefix routing information across classful network boundaries, use the no form of this command. Without disabling auto summarization, each router will advertise the 192.168.20.0/24 route, and the specific /26 networks will not be known.

QUESTION 556

The Certkiller OSPF network is shown below:



Based on the output from the show ip ospf neighbor command on CK-2, what must a network administrator do to ensure that CK-2 will always be the DR and CK-3 will never be the DR or BDR for OSPF area 0? (Choose three.)

- A. Set the CK-3 OSPF priority to 0 on the serial interface.

- B. Change the CK-2 FastEthernet IP address to 192.168.0.27.
- C. Set the CK-2 OSPF priority to 255 on the FastEthernet interface.
- D. Change the CK-3 FastEthernet IP address to 192.168.0.27.
- E. Set the CK-3 OSPF priority to 0 on the FastEthernet interface.
- F. Set the CK-1 OSPF priority to 0 on the FastEthernet interface.

Answer: C, E, F

Explanation:

In OSPF, the DR is the router responsible for making adjacencies with all neighbors on a multiaccess network, such as

Ethernet or FDDI. The DR represents the multiaccess network, in that it ensures that every router on the link has the same topology database.

The BDR is the backup to the designated router (DR), in case the DR fails. The BDR performs none of the DR functions while the DR is operating correctly.

Router(config-if)#ip ospf priority number

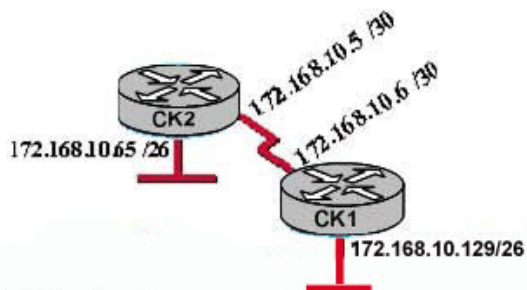
The number in the priority command can be set between 0-255, where the higher the number, the greater the likelihood that this router will be selected as the DR.

To determine manually which router will be the DR, it is necessary to set the priority of the router. A router interface can have a priority of 0 to 255. The value of 0 means that the router cannot be a DR or BDR; otherwise, the higher the priority, the more favorable the chances are of winning the election. If there is more than one router on the segment with the same priority level, the election process picks the router with the highest router ID. The default priority on a Cisco router is 1.

If Priority value is same then goes to the highest IP address assigned in loopback interface then any interface.

QUESTION 557

Refer to the Certkiller network shown below:



```
CK2#Show ip route
Gateway of last resort is not set

172.168.0.0/16 is variably subnetted, 2 subnets, 2 masks
C 172.168.10.4/30 is directly connected, Serial0/1
C 172.168.10.64/26 is directly connected, FastEthernet 0/0
```

In this network, CK1 can ping across the serial link to 172.168.10.5, but cannot ping the FastEthernet interface of CK2 (172.168.10.65). The routing protocol being used is EIGRP, and the routing table of CK2 is shown. Which two statements could be the cause of this problem? (Choose two.)

- A. The serial interface does not have the clockrate set.
- B. EIGRP is not enabled on one of the routers.
- C. The IP addressing scheme has overlapping subnetworks.
- D. The IP addressing scheme is using subnet zero but the ip subnet-zero command has not been enabled on one or both of the routers.
- E. The FastEthernet interface of CK2 is administratively shutdown.
- F. The EIGRP autonomous system numbers configured on the two routers do not match.

Answer: B, F

Explanation:

You can successfully ping over the serial link, which tells us the serial interface is properly configured, but you are unable to ping a network that is not directly connected. Since no EIGRP routes appear in the routing table, this tells us there is something wrong with the EIGRP configuration on either router. The most likely problem is that EIGRP is not enabled on one of the routers, or the EIGRP AS numbers do not match on each router.

QUESTION 558

Refer to the following exhibit:

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

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

A network administrator is troubleshooting the OSPF configuration of routers R1 and R2. The routers cannot establish an adjacency relationship on their common Ethernet link. The graphic shows the output of the show ip ospf interface e0 command for routers R1 and R2. Based on the information in the graphic, what is the cause of this problem?

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

Answer: D

Explanation:

In the exhibit, the two routers have different hello, dead, and wait times. For OSPF neighbors to become adjacent, they need to be the same on both routers.

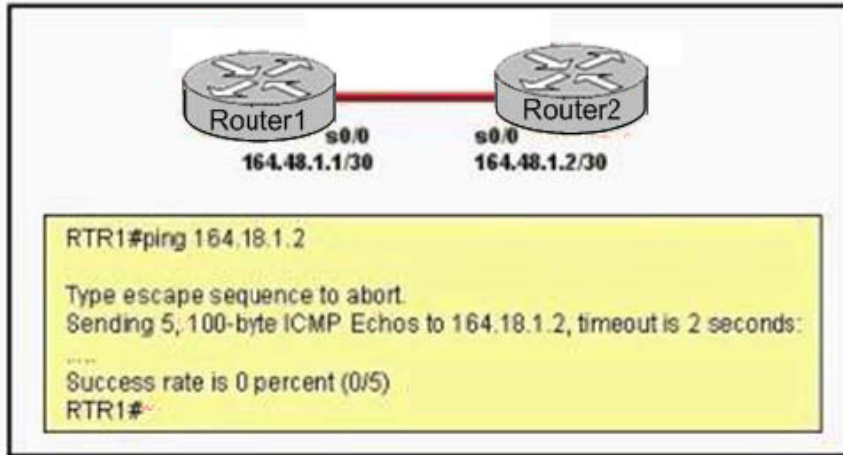
You can set the correct Hello, Dead interval using the following commands:

```
ip ospf hello-interval seconds
```

```
ip ospf dead-interval seconds
```

QUESTION 559

Two Certkiller routers are directly connected as shown below:



A network administrator cannot access Router2 from Router1. The interface is up and the line protocol is up on interface serial 0/0 on Router1. What command can the administrator enter on Router1 to verify the IP address of the serial interface on Router2?

- A. telnet 164.18.1.2
- B. show arp
- C. show cdp neighbors detail
- D. show interfaces
- E. show ip route
- F. trace 164.18.1.2

Answer: C

Explanation:

CDP is the Cisco proprietary protocol developed by Cisco. It is used to collect the information of locally attached or remote devices. If you are unable to ping but are connected, you can use the `show cdp neighbors detail` command to collect the Router's ID, interface, assigned IP address, platform, etc.

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

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

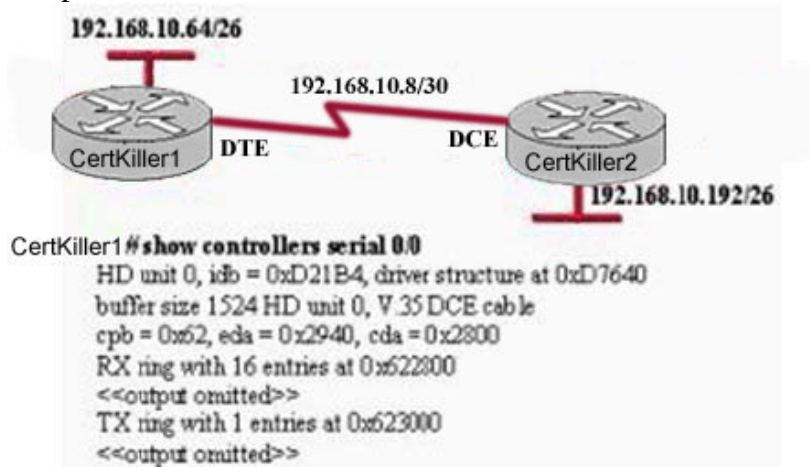
```
-----
Device ID: lab-7206
```

```
Entry address(es):
```

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

QUESTION 560

An administrator cannot connect from Certkiller 1 to Certkiller 2. To troubleshoot this problem, the administrator has entered the command shown in the exhibit.



Based on the output shown, what could be the problem?

- A. The serial interface has a full buffer.
- B. The serial interface is configured for half duplex.
- C. The serial interface has the wrong type of cable attached.
- D. The serial interface does not have a cable attached.
- E. The serial interface is configured for the wrong frame size.

Answer: C

Explanation:

According to the figure DTE cable should connect to Certkiller 1 on interface but while examining using show controllers serial 0/0 command it showing that a DCE is connected so the wrong type of cable is being used.

QUESTION 561

A Certkiller technician needs to verify the protocols that have been configured on a router. Which command displays the status of the network layer protocols active on a router?

- A. show protocols
- B. show version
- C. show stacks
- D. show network protocols
- E. show flash

Answer: A

Explanation:

To display the configured protocols, use the show protocols command. Enter this command at the EXEC prompt:

```
show protocols
```

The command shows the global and interface-specific status of any configured Level 3 protocol; for example, IP, DECnet, Novell, AppleTalk, and so forth. The following is a sample output:

```
Router CK1 #show protocols
```

```
Global values:
```

```
Internet Protocol routing is enabled
```

```
DECNET routing is enabled
```

```
XNS routing is enabled
```

```
Appletalk routing is enabled
```

```
X.25 routing is enabled
```

```
Ethernet 0 is up, line protocol is up
```

```
Internet address is 131.108.1.1, subnet mask is 255.255.255.0
```

```
Decnet cost is 5
```

```
XNS address is 2001.AA00.0400.06CC
```

```
AppleTalk address is 4.129, zone Twilight
```

```
Serial 0 is up, line protocol is up
```

```
Internet address is 192.31.7.49, subnet mask is 255.255.255.240
```

```
Ethernet 1 is up, line protocol is up
```

```
Internet address is 131.108.2.1, subnet mask is 255.255.255.0
```

```
Decnet cost is 5
```

```
XNS address is 2002.AA00.0400.06CC
```

```
AppleTalk address is 254.132, zone Twilight
```

```
Serial 1 is down, line protocol is down
```

```
Internet address is 192.31.7.177, subnet mask is 255.255.255.240
```

```
AppleTalk address is 999.1, zone Magnolia Estates
```

QUESTION 562

Refer to the output of the three router commands shown in the exhibit. A new technician has been told to add a new LAN to the company router. Why has the technician received the error message that is shown following the last command?

640-801

```
CertKiller1 # show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-D03S-M), Version 12.1(5)T12,
RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986 2002 by cisco Systems, Inc
Copyright (c) 1986 2002 by cisco Systems, Inc
Image text bars 080080088080, data date 0x01169028

ROM: System Bootstrap, Version 12.2(10r)1, RELEASE
SOFTWARE (fc1)

Router uptime is 10 minutes
System returned to ROM by power-on
System image file is "flash:c2600-d03s-mz.121-5.T12.bin"

cisco 2621 (MPC860) processor (revision 0x00) with
44032K/5120K bytes of memory

Processor board ID JAD06390AR4 (617842770)
M860 processor part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
Basic Rate ISDN software, Version 1.1.
2 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
1 ISDN Basic Rate interface(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102

CertKiller1 # configure terminal
Enter configuration commands, one per line.
End with CNTL/Z.
CertKiller1 (config)# interface e0
                                     ^
% Invalid input detected at '^' marker.
```

- A. The command was entered from the wrong prompt.
- B. The router does not support LAN interfaces that use Ethernet.
- C. The interface was already configured.
- D. The IOS software loaded on the router is outdated.
- E. The interface type does not exist on this router platform.

Answer: E

Explanation:

The show version command displays the information regarding version of IOS, name of IOS image, configuration register as well all interface name of router. According to the output of show version, there is no ethernet interface so trying to configure the invalid interface. What the technician needs to enter is "interface fastethernet 0" not "ethernet 0".

QUESTION 563

A Certkiller administrator is having trouble with a serial interface and has attempted to view its status with a show command as shown in the graphic. Why was the error message displayed?

```
CertKiller1 > show serial 0/0
                                     ^
%Invalid input deleted at '^' marker.
```

- A. Part of the command is missing.
- B. There is no serial 0/0 interface on the router.
- C. The interface designation must be typed as "s0/0".
- D. The status of serial interfaces cannot be viewed with a show command.

E. The command cannot be entered in this router mode.

Answer: A

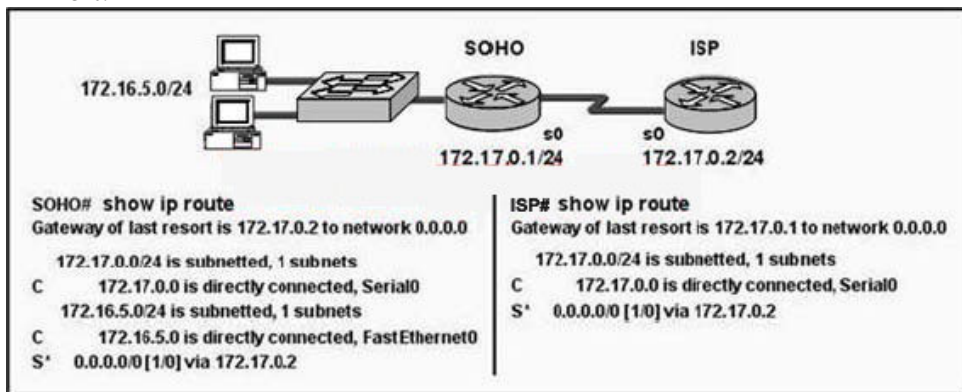
Explanation:

This command is missing the "interface" keyword. The "show serial 0/0" command is invalid. The correct syntax is "show interface serial 0/0"

QUESTION 564

Refer to the topology and command output within the exhibit. When hosts on the 172.16.5.0 network attempt to ping the remote server at 192.168.145.27, the message "Reply from 192.168.145.27:TTL expired in transit" is returned. What is the cause of this problem?

Exhibit:



- A. No static route is configured on the SOHO router to the 192.168.145.0 network.
- B. A routing loop has occurred.
- C. A routing protocol must be configured to send packets between SOHO and ISP.
- D. No static route is configured on the ISP router to the 192.168.145.0 network.

Answer: B

Explanation:

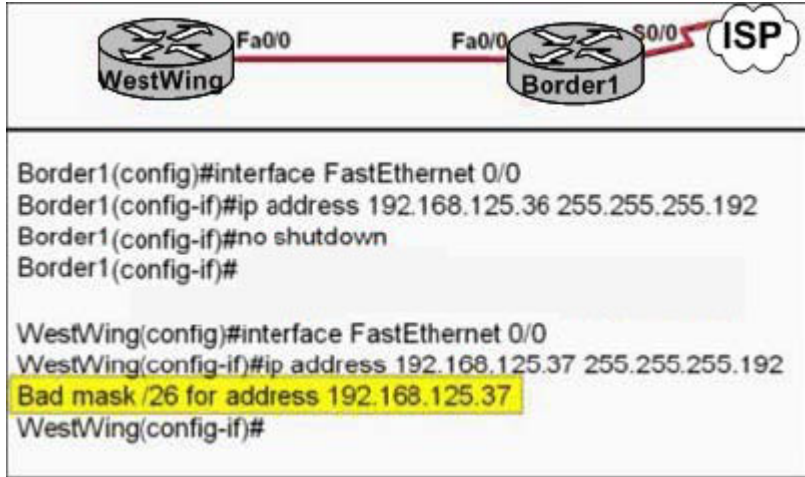
The error message provided in this example means that the amount of hops has exceeded the maximum number. The maximum TTL value is normally 255 router hops, so this error message almost always means that there is a routing loop in the network. This can be verified with the routes shown above. The SOHO router is configured to use the ISP to route all traffic, while the ISP is configured to send all the traffic right back to the SOHO router. This will cause the packets to bounce back and forth until the TTL has exceeded the maximum and is dropped.

QUESTION 565

Refer to the exhibit shown below. A network technician attempts to configure the FastEthernet 0/0 interfaces on the two interconnected routers. The configuration of Border1 is performed without any problems. When the technician attempts to configure the interface on the WestWing router, the error message highlighted in the exhibit is displayed. What is the reason for the error message during the

configuration of WestWing?

Exhibit:



- A. The address being applied to the WestWing interface is a broadcast address.
- B. The FastEthernet 0/0 interface on the Border1 router has the bandwidth improperly configured.
- C. The WestWing router needs to be configured to re-enable the use of subnet zero.
- D. The FastEthernet 0/0 interfaces of the two routers are using different Layer 2 protocols.

Answer: C

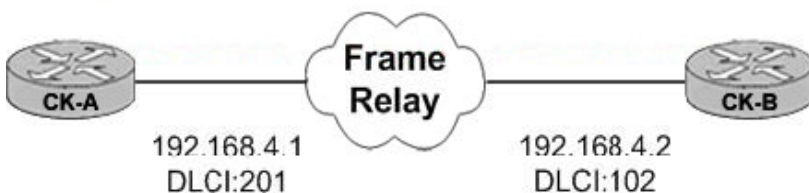
Explanation:

If a network address is subnetted, the first subnet obtained after subnetting the network address is called subnet zero. The class of the network subnetted and the number of subnets obtained after subnetting have no role in determining subnet zero. It is the first subnet obtained when subnetting the network address. Also, when you write the binary equivalent of the subnet zero address, all the subnet bits (bits 17, 18, and 19 in this case) are zeros. Subnet zero is also known as the all-zeros subnet. In this case the IP address 192.168.125.37 address falls in the first subnet of the 192.168.125.0/26 network. In order to force the router to accept this address, the "ip subnet-zero" command must be issued.

QUESTION 566

Refer to the Certkiller network shown below. A ping from 192.168.4.1 to 192.168.4.2 was unsuccessful. Which three commands will provide the most useful troubleshooting information? (Choose three)

Exhibit:



- A. show interfaces

- B. show protocols
- C. show ip route
- D. show frame-relay map
- E. show frame-relay pvc
- F. show ip protocols

Answer: A, D, E

Explanation:

When troubleshooting connections between two directly connected routers over a frame relay network, the first step would be to issue the "show interfaces" command to ensure that the interfaces and line protocol is up for each. If they are indeed up, then the next step would be to troubleshoot the frame relay connection itself and looking at the status of the PVC by using the "show frame-relay map" and "show frame-relay pvc" commands.

Commonly Used Frame Relay Commands:

This section describes two Cisco IOS commands that are especially useful when configuring Frame Relay.

show frame-relay pvc

This command shows the status of the permanent virtual circuit (PVC), packets in and out, dropped packets if there is congestion on the line via forward explicit congestion notification (FECN) and backward explicit congestion notification (BECN), and so on. For a detailed description of the fields used with the show frame-relay pvc command, [click here](#).

show frame-relay map

Use this command to determine if frame-relay inverse-arp resolved a remote IP address to a local DLCI. This command is not enabled for point-to-point subinterfaces. It is useful for multipoint interfaces and subinterfaces only.

Reference:

http://www.cisco.com/en/US/partner/tech/CK7_13/CK2_37/technologies_tech_note09186a008014f8a7.shtml#topic11

QUESTION 567

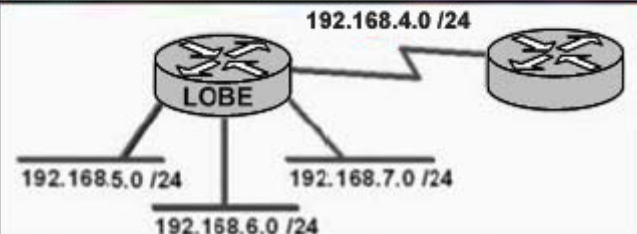
Users on the 192.168.7.0 network shown below report that they are unable to access remote resources. What is the cause of this problem?

Exhibit:

```

LOBE# show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 12 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 1, receive any version
  Interface          Send Recv Triggered RIP Key-chain
FastEthernet0/0      1 12
FastEthernet0/1      1 12
FastEthernet1/0      1 12
FastEthernet1/1      1 12
Serial0/0            1 12
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  192.168.4.0
  192.168.5.0
  192.168.6.0
Routing Information Sources:
  Gateway         Disabled  LastUpdate
192.168.4.0      128      008

```



- A. The hold-down timer is incorrect.
- B. The administrative distance is incorrect.
- C. RIP is not advertising the 192.168.7.0 network.
- D. RIP should be sending updates every 60 seconds.

Answer: C

Explanation:

The list of networks being advertised via RIP can be found under the "Routing for Networks" section. As can be seen from the output, the 192.168.4.0, 192.168.5.0, and 192.168.6.0 networks are being advertised, but not the 192.168.7.0 network. This will result in the other routers within the network not know how to reach users on the 192.168.7.0, resulting in this network being unreachable.

QUESTION 568

Refer to the exhibit shown below. What can be concluded from the output of this debug command?

Exhibit:

```
Border# debug ip ospf events
OSPF events debugging is on
Border#
*Nov 4 03:49:37:477: OSPE: Rcv hello from 10.10.3.3 area 0 from Serial0/3
192.168.255.18
*Nov 4 03:49:37:481: OSPE: End of hello processing
*Nov 4 03:49:37:641: OSPF: Rcv hello from 10.10.1.1 area 0 from Serial0/1
192.168.255.22
*Nov 4 03:49:37:645: OSPF: Mismatched hello parameters from
192.168.255.22
*Nov 4 03:49:37:645: OSPF: Dead R 40 C 56, Hello R 10 C 14
```

- A. The output represents normal OSPF operation.
- B. The OSPF router connected to interface Serial0/1 has NOT formed a neighbor relationship with the Border router.
- C. The interfaces of two OSPF routers connected to the Border router are in the same subnet.
- D. A router is connected to interface Serial0/3 of the Border router. The OSPF router ID of the connected router is the IP address of the connected interface.

Answer: B

Explanation:

This "debug ip ospf events" output shown might appear if any of the following situations occurs:

1. The IP subnet masks for routers on the same network do not match.
2. The OSPF hello interval for the router does not match that configured for a neighbor.
3. The OSPF dead interval for the router does not match that configured for a neighbor.

If a router configured for OSPF routing is not seeing an OSPF neighbor on an attached network, perform the following tasks:

1. Make sure that both routers have been configured with the same IP mask, OSPF hello interval, and OSPF dead interval.
2. Make sure that both neighbors are part of the same area type.

QUESTION 569

While logged into a router, you wish to see the RIP routing updates in real time as they are sent and received. Which command would you issue to see these updates?

- A. Show ip protocols
- B. Show ip route rip
- C. Debug ip rip
- D. Debug ip updates
- E. Debug ip transactions

Answer: C

Explanation:

The command `debug ip rip` will display routing updates as they are sent and received by a router.

Incorrect Answers:

- A. This command will show the routing protocols that the router is using, but it will not show anything in real time. All show commands take a snapshot of what the router is doing at that given time.
- B. This will provide all of the routes that have been learned by the router via RIP, but it will not show the updates in real time.
- D, E. These are invalid commands.

QUESTION 570

You are configuring a brand new router for the first time. In doing so, you log into the router via a console cable and then copy and paste the configuration from a notepad document. After this, the configuration appears as follows:

```
hostname CertkillerA
!
!
interface Ethernet0
 ip address 192.168.10.9 255.255.255.248
!
interface Serial0
 ip address 172.16.25.1 255.255.255.0
 clockrate 56000
!
interface Serial1
 ip address 10.1.1.1 255.255.255.0
!
router rip
 network 192.168.10.0
!
line con 0
 password Certkiller
 login
line aux 0
line vty 0 4
 password Certkiller
 login
end
```

Host 192.168.10.10/29 can't ping the Ethernet interface of the router after the router is installed into the network. Why? (Select only one answer choice)

- A. The new configuration must be saved to the NVRAM before the changes can be effected.
- B. The subnet mask on the router results in miscommunication.
- C. The Ethernet network does not feature in the routing table due to incomplete RIP configuration.
- D. The copied configuration did not overwrite the shutdown command on the Ethernet

interface.

E. The router needs to be rebooted before the changes are effected.

Answer: D

Explanation:

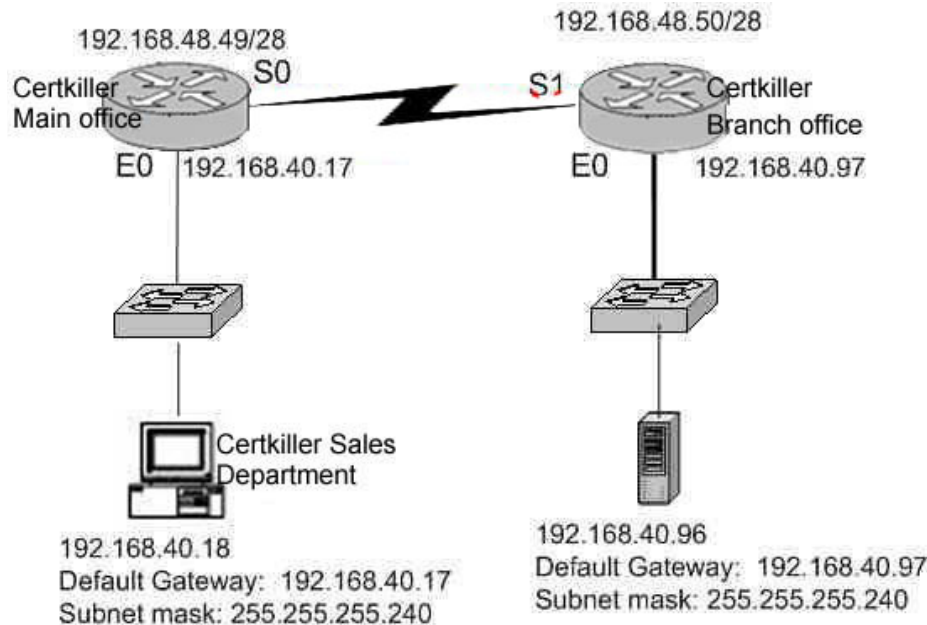
The Default configuration of any interface is always shutdown and always needs the command "no shutdown" in the interface command mode in order to enable the interface.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 379

QUESTION 571

The Certkiller HQ and branch office locations are set up as shown in the diagram below:



Hosts from the sales department are unable to access the new branch office server that was recently installed. Based on the exhibit above, what is the underlying cause of this problem?

- A. The default gateway in the sales department is inaccurate.
- B. The serial 0 interface on the Main Office router and the serial 1 interface on the Branch Office router are not compatible.
- C. The subnet mask of the workstations in the sales department is inaccurate.
- D. The host address of the server at the Branch Office is invalid.
- E. The default gateway of the server at the Branch Office is inaccurate.
- F. None of the above

Answer: D

Explanation:

The host address is incorrectly a network address.

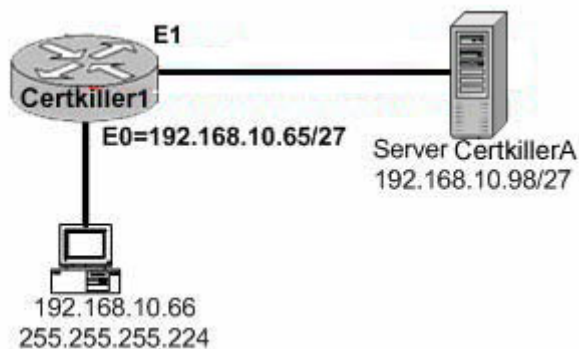
Incorrect Answers:

- A. The default gateway in the sales department is correct.
- B. This is no problem here.
- C. The subnet mask is correct.
- E. The default gateway in the branch office is correct.

Reference: Steve McQuerry, "Interconnecting Cisco Network Devices" (Cisco Press: 2000) pages 233 - 234.

QUESTION 572

The new Certkiller location is displayed below:



A new PC is installed on the LAN of the Certkiller 1 router as shown above. This PC is unable to connect to the Certkiller A server located on the Ethernet 1 network. What is the cause of this?

- A. IP address of the Ethernet 0 router interface is wrong
- B. Server is using an invalid IP address
- C. Workstation default gateway is set incorrectly
- D. Workstation subnet mask is incorrect
- E. Workstation IP address is invalid

Answer: C

Explanation:

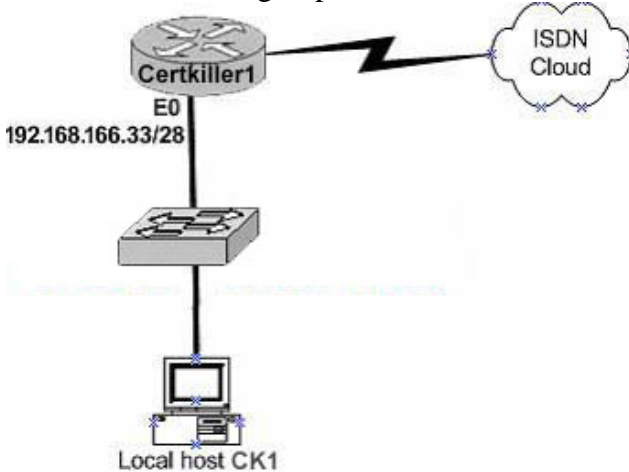
The default gateway of the host (192.168.10.64) is wrong. 192.168.10.64 is the network address of the host's network in this question. The default gateway should be the address of the local interface of the router. In this case: 192.168.10.65.

Incorrect Answers:

- A: The IP address of the Eternet0 interface is valid.
- B: The IP address of the server is valid.
- D: The network uses a 27 bit subnet mask which equates to 255.255.255.224.
- E: The IP host address 192.168.10.66 is a valid host address on the subnet.

QUESTION 573

A new LAN is being implemented on the Certkiller 1 network as shown below:



The local host CK1 can't access any of the resources on the other networks. The configuration of CK1 is as follows:

host address:192.168.166.45

subnet mask:255.255.255.240

default gateway: ..192.168.166.32

What is the underlying cause of this problem?

- A. The default gateway is a network address.
- B. The default gateway is on a different subnet address as the host.
- C. The IP address of the host is on a different subnet.
- D. The host subnet mask is incompatible to the subnet mask of the attached router interface.

Answer: A

Explanation:

The range of the subnet used in this question is 192.168.166.32 to 192.168.166.47.

192.168.166.32 is the network address and 192.168.166.47 is the broadcast. This leaves the usable host address range of 192.168.166.33 to 192.168.166.46.

The default gateway for the host should be 192.168.166.33.

Incorrect Answers:

B: The default gateway is on the same network but it is a network address.

C: The host address is correct.

D: The subnet mask 255.255.255.240 uses 28 bits and is therefore correct.

QUESTION 574

You're working at Certkiller as a network administrator when your MCSE assistant calls you for help. He has attempted to configure Router CK1 and incorrectly configured the router interface with a subnet broadcast address. You have to correct this by first removing the incorrect IP address and then re-entering the first usable IP address of the same subnet.

How will you do this?

- A. CK1 (config-if)# no ip address 190.160.45.31 255.255.255.240
CK1 (config-if)# ip address 190.160.45.17 255.255.255.240
- B. CK1 (config-if)# no ip address 190.160.45.23 255.255.255.252
CK1 (config-if)# ip address 190.160.4.21 255.255.255.252
- C. CK1 (config-if)# no ip address 190.160.45.23 255.255.255.240
CK1 (config-if)# ip address 190.160.45.20 255.255.255.240
- D. CK1 (config-if)# clear ip address 190.160.45.23 255.255.255.0
CK1 (config-if)# no address 190.160.45.17 255.255.255.0
- E. CK1 (config-if)# no ip address 190.160.45.15 255.255.255.252
CK1 (config-if)# ip address 190.160.45.9 255.255.255.252

Answer: A

Explanation:

To set a primary or secondary IP address for an interface, use the ip address interface configuration command. To remove an IP address or disable IP processing, use the no form of this command.

Current Host Range = 190. 160. 45. 17 to 190. 160. 45. 30

Incorrect Answers:

B, C, E: These are all invalid IP address combinations, given that the broadcast address and the first usable IP address combinations do not match.

D. The "clear" command is invalid. To erase a configuration statement, simply add the keyword "no" to the beginning of the configuration statement.

QUESTION 575

Part of the configuration files for routers Certkiller 1 and Certkiller 2 are displayed below:

```
hostname Certkiller 1 hostname Certkiller 2
!!
username Certkiller 2 password bill username Certkiller 1 password bill
!!
interface serial 0 interface serial 0
ip address 12.3.6.2 255.255.0.0 ip address 12.3.6.3 255.255.0.0
encapsulation ppp encapsulation ppp
clockrate 56000 ppp authentication chap
```

If you were to enter the "show interface serial 0" command on router Certkiller 1, which of the following will be displayed? (Choose two)

- A. Serial 0 is down, line protocol is down
- B. Serial 0 is up, line protocol is up
- C. Open: IPCP, CDPCP
- D. LCP closed
- E. LCP open

Answer: B, E

Explanation:

Even though CHAP is only configured on one end of the link, the physical serial interfaces will be up, line protocol up since the encapsulations match with PPP on each end, and the clock rate is set on the DCE end. LCP will be open, since the username and password statements are correctly configured for the PPP CHAP authentication.

QUESTION 576

While troubleshooting a connectivity issue from a PC you obtain the following information:

Local PC IP address: 190.0.3.35/24

Default Gateway: 190.0.3.1

Remote Server: 190.0.5.250/24

You then conduct the following tests from the local PC:

Ping 127.0.0.1 - Unsuccessful

Ping 190.0.3.35 - Successful

Ping 190.0.3.1 - Unsuccessful

Ping 190.0.5.250 - Unsuccessful

What is the underlying cause of this problem?

- A. TCP/IP not correctly installed
- B. Local physical layer problem
- C. NIC not functioning
- D. Remote physical layer problem

Answer: A

Explanation:

Every Windows based PC uses the 127.0.0.1 as the local loopback IP address. Every PC will respond to this local IP address if the TCP/IP stack is correctly installed and running on the machine. If you cannot ping the loopback address of 127.0.0.1, then something is wrong with the TCP/IP protocol stack.

QUESTION 577

While troubleshooting connectivity issues, you log into a remote router. From there, you wish to see the layer 1 and layer 2 status of the interface. Which of the following IOS commands would you issue to check the current IP addressing, as well as the layer 1 and layer 2 status of an interface? (Select three answer choices)

- A. CK1 # show version
- B. CK1 # show protocols
- C. CK1 # show interfaces
- D. CK1 # show controllers
- E. CK1 # show ip interface
- F. CK1 # show startup-config

Answer: C, D, E

Explanation:

"show interfaces" is used to see the IP addresses and layer 2 information configured on the interfaces.

"show controllers" is used to see the layer 1 statistics. It tells about the V.35 cables whether they are physically attached or not.

"show ip interfaces" is used to see the IP addresses configured on the interfaces.

Incorrect Answers:

A. This will show IOS information and hardware information on the router, but will not show any individual interface information.

B. This will show the layer 3 and layer 4 protocols running on the interface, but it will not provide any information on layer one or two.

F. This will only show the information pertaining to the configuration file that is saved in NVRAM.

QUESTION 578

SIMULATION

A local chain of bike shops wants to centralize their business administration and connect their three computer networks together. To do this, the network was set up with 3 routers, which were configured as shown below:

- * The routers are named: Certkiller 1, Certkiller 2, and Certkiller 3, respectively.
- * They are all using RIP as the routing protocol
- * The serial 0 interfaces are responsible for clocking
- * The password for all three routers is " Certkiller "
- * All three routers are using their default subnet mask.
- * The IP addresses are as listed below.

You need to figure out what's causing the miscommunication and make whatever changes are necessary to establish connectivity between the three shops. Click on the correct part of the network below, and make the necessary changes in the configuration.

Certkiller 1

E0 192.168.27.1

E1 192.168.29.1

S0 192.168.31.1

Secret password: Certkiller

Certkiller 2

E0 192.168.35.1

S0 192.168.33.1

S1 192.168.31.2

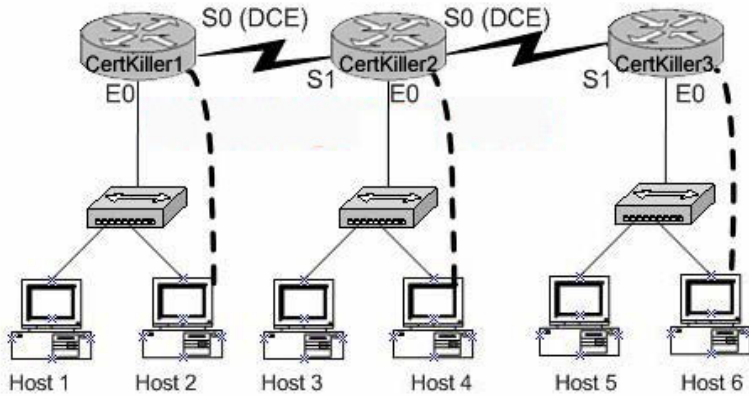
Secret password: Certkiller

Certkiller 3

E0 192.168.37.1

S1 192.168.33.2

Secret password: Certkiller



To configure the router you need to click on the host icon that is connected to the router by a serial cable.

Answer:

Explanation:

Click on Host 2:

Router Certkiller 1:

Certkiller 1> enable

Password: Certkiller

Certkiller 1 # config terminal

Certkiller 1 (config) # interface ethernet 0

Certkiller 1 (config-if) # ip address 192.168.27.1 255.255.255.0

Certkiller 1 (config-if) # no shutdown

Certkiller 1 (config-if) # exit

Certkiller 1 (config) # interface ethernet 1

Certkiller 1 (config-if) # ip address 192.168.29.1 255.255.255.0

Certkiller 1 (config-if) # no shutdown

Certkiller 1 (config-if) # exit

Certkiller 1 (config) # interface serial 0

Certkiller 1 (config-if) # ip address 192.168.31.1 255.255.255.0

Certkiller 3 (config-if) # clock rate 64000

Certkiller 1 (config-if) # no shutdown

Certkiller 1 (config-if) # exit

Certkiller 1 (config) # router rip

Certkiller 1 (config-router) # network 192.168.27.0

Certkiller 1 (config-router) # network 192.168.29.0

Certkiller 1 (config-router) # network 192.168-31.0

Certkiller 1 (config-router) # Ctrl-Z

Certkiller 1 # copy running-config startup-config

Click on Host 4

Router Certkiller 2:

Certkiller 2> enable

Password: Certkiller

Certkiller 2 # config t

```
Certkiller 2 (config) # interface ethernet 0
Certkiller 2 (config-if) # ip address 192.168.35.1 255.255.255.0
Certkiller 2 (config-if) # no shutdown
Certkiller 2 (config-if) # exit
Certkiller 2 (config) # interface serial 0
Certkiller 2 (config-if) # ip address 192.168.33.1 255.255.255.0
Certkiller 2 (config-if) # clock rate 64000
Certkiller 2 (config-if) # no shutdown
Certkiller 2 (config-if) # exit
Certkiller 2 (config) # interface serial 1
Certkiller 2 (config-if) # ip address 192.168.31.2 255.255.255.0
Certkiller 2 (config-if) # no shutdown
Certkiller 2 (config-if) # exit
Certkiller 2 (config) # router rip
Certkiller 2 (config-router) # network 192.168.35.0
Certkiller 2 (config-router) # network 192.168.33.0
Certkiller 2 (config-router) # network 192.168.31.0
Certkiller 2 (config-router) # Ctrl-Z
Certkiller 2 # copy running-config startup-config
Router Certkiller 3:
Click on Host6
Certkiller 3> enable
Password: Certkiller
Certkiller 3 # config t
Certkiller 3 (config) # interface ethernet 0
Certkiller 3 (config-if) # ip address 192.168.37.1 255.255.255.0
Certkiller 3 (config-if) # no shutdown
Certkiller 3 (config-if) # exit
Certkiller 3 (config) # interface serial 1
Certkiller 3 (config-if) # ip address 192.168.33.2 255.255.255.0
Certkiller 3 (config-if) # no shutdown
Certkiller 3 (config-if) # exit
Certkiller 3 (config) # router rip
Certkiller 3 (config-router) # network 192.168.33.0
Certkiller 3 (config-router) # network 192.168.37.0
Certkiller 3 (config-router) # Ctrl-Z
Certkiller 3 # copy running-config startup-config
```

QUESTION 579

SIMULATION

The Certkiller .com network has three different sites with one router at each site. The routers are named Certkiller 1, Certkiller 2, and Certkiller 3. An assistant technician has configured all the routers, but no connectivity exists between the routers. Your task is to identify all error(s) and make the necessary adjustment(s) to establish network connectivity.

The routers have been configured with the following configuration:

640-801

- * They are named Certkiller 1, Certkiller 2, and Certkiller 3.
- * RIP is the routing protocol
- * Clocking is provided on the serial 0 interface.
- * The password on each router is " Certkiller "
- * The subnet mask on all interfaces is the default subnet mask.
- * The IP addresses are listed in the chart below.

Certkiller 1

E0 192.168.3.1

S0 192.168.5.1

Certkiller 2

E0 192.168.8.1

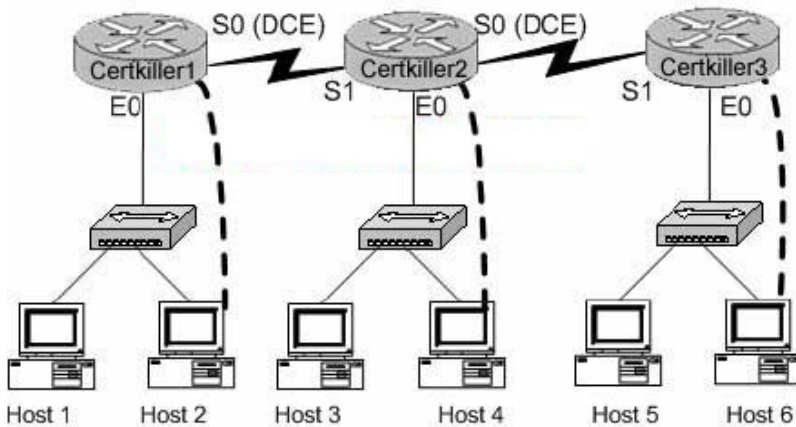
S0 192.168.11.1

S1 192.168.5.2

Certkiller 3

E0 192.168.13.2

S1 192.168.11.2



To configure the router click on a host icon that is connected to the router by a serial console cable.

Answer:

Explanation:

Note: The following solutions are complete. It might not be necessary to configure everything.

Click on Host 2:

Router Certkiller 1:

Certkiller 1> enable

Password: Certkiller

Certkiller 1 # config terminal

Certkiller 1 (config) # interface ethernet 0

Certkiller 1 (config-if) # ip address 192.168.3.1 255.255.255.0

Certkiller 1 (config-if) # no shutdown

Certkiller 1 (config-if) # exit

Certkiller 1 (config) # interface serial 0

Certkiller 1 (config-if) # ip address 192.168.5.1 255.255.255.0

Certkiller 1 (config-if) # clock rate 64000

Certkiller 1 (config-if)# no shutdown

Certkiller 1 (config-if) # exit

Certkiller 1 (config) # router rip

Certkiller 1 (config-router) # network 192.168.3.0

Certkiller 1 (config-router) # network 192.168.5.0

Certkiller 1 (config-router) # Ctrl-Z

Certkiller 1 # copy running-config startup-config

Click on Host 4

Router Certkiller 2:

Certkiller 2> enable

Password: Certkiller

Certkiller 2 # config t

Certkiller 2 (config) # interface ethernet 0

Certkiller 2 (config-if) # ip address 192.168.8.1 255.255.255.0

Certkiller 2 (config-if) # no shutdown

Certkiller 2 (config-if) # exit

Certkiller 2 (config) # interface serial 0

Certkiller 2 (config-if) # ip address 192.168.11.1 255.255.255.0

Certkiller 2 (config-if) # clock rate 64000

Certkiller 2 (config-if) # no shutdown

Certkiller 2 (config-if) # exit

Certkiller 2 (config) # interface serial 1

Certkiller 2 (config-if) # ip address 192.168.5.2 255.255.255.0

Certkiller 2 (config-if) # no shutdown

Certkiller 2 (config-if) # exit

Certkiller 2 (config) # router rip

Certkiller 2 (config-router) # network 192.168.8.0

Certkiller 2 (config-router) # network 192.168.11.0

Certkiller 2 (config-router) # network 192.168.5.0

Certkiller 2 (config-router) # Ctrl-Z

Certkiller 2 # copy running-config startup-config

Router Certkiller 3:

Click on Host F

Certkiller 3> enable

Password: Certkiller

Certkiller 3 # config t

Certkiller 3 (config) # interface ethernet 0

Certkiller 3 (config-if) # ip address 192.168.13.2 255.255.255.0

Certkiller 3 (config-if) # no shutdown

Certkiller 3 (config-if) # exit

Certkiller 3 (config) # interface serial 1

Certkiller 3 (config-if) # ip address 192.168.11.2 255.255.255.0

Certkiller 3 (config-if) # clock rate 64000

Certkiller 3 (config-if) # no shutdown

```
Certkiller 3 (config-if) # exit  
Certkiller 3 (config) # router rip  
Certkiller 3 (config-router) # network 192.168.13.0  
Certkiller 3 (config-router) # network 192.168.11.0  
Certkiller 3 (config-router) # Ctrl-Z  
Certkiller 3 # copy running-config startup-config
```

QUESTION 580

SIMULATION

Your task is to troubleshoot some issues with the existing Certkiller network. The previous network administrator tried to build a network by connecting three routers together, but the routing tables aren't being updated properly.

- * There are three routers named Certkiller 1, Certkiller 2, and Certkiller 3 respectively.
- * Certkiller 2 and Certkiller 3 are configured perfectly and completely operational.
- * The entire networks falls within a single OSPF area

Your goal is to locate and fix this router configuration problem.

Current configuration:

Certkiller 1

E0: 192.168.33.1/24

S0: 192.168.100.5/30

Secret Password: Certkiller

Certkiller 2

E0: 192.168.34.1/24

S0: 192.168.100.10/30

S1: 192.168.100.6/30

Secret Password: Certkiller

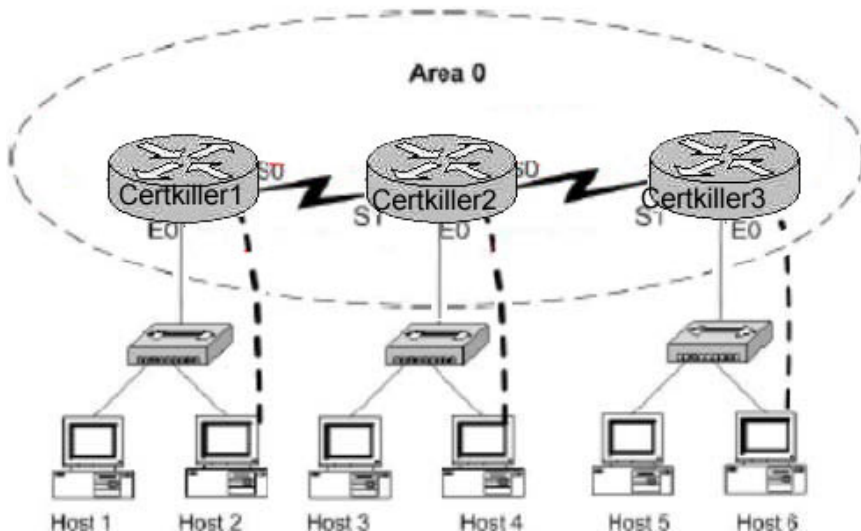
Certkiller 3

E0: 192.168.35.1/24

S1: 192.168.100.9/30

Secret Password: Certkiller

Click on the picture of host connected to a router by a serial console cable.



Answer:

Explanation:

```
Certkiller 1#config t
Certkiller 1(config)#no router ospf 2
Certkiller 1(config)#^Z
Certkiller 1#show ip ospf
Certkiller 1#config t
Certkiller 1(config)#router ospf 2
Certkiller 1(config)#network 192.168.33.0 0.0.0.255 area 0
Certkiller 1(config)#network 192.168.100.4 0.0.0.3 area 0
Certkiller 1(config)#^Z
Certkiller 1#show ip route
Certkiller 1#copy running startup
```

QUESTION 581

SIMULATION

The Certkiller network consists of three routers as shown in the diagram below. All three routers are connected serially, and all links are up and running properly. The Certkiller network is using OSPF as the routing protocol, and all routers are contained in area 0.

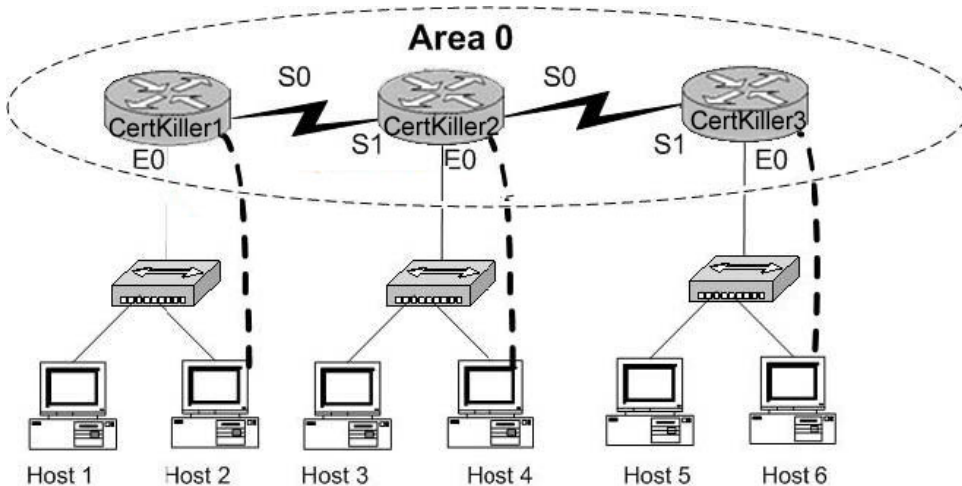
Recently, some router configuration changes were made, and some routing issues have occurred as a result. The router information and configurations are shown below:

- * The three routers: Certkiller 1, Certkiller 2, and Certkiller 3 are connected by their serially and their links are good.
- * The routing protocol is OSPF
- * There's only one OSPF area (area 0)

Locate the configuration problem and reconfigure it correctly:

These are the current configurations:

```
Certkiller 1
E0: 192.168.3.1/24
S0: 172.16.10.5/30
Secret password: Certkiller
Certkiller 2
E0: 192.168.4.1/24
S0: 172.16.10.10/30
S1: 172.16.10.6/30
Secret password: Certkiller
Certkiller 3
E0: 192.168.5.1/24
S1: 172.16.10.9/30
Secret password: Certkiller
```



Answer:

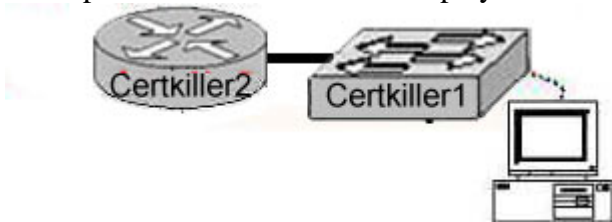
Explanation:

```

Certkiller 2#config
Certkiller 2(config)#no router ospf 2
Certkiller 2(config)#router ospf 2
Certkiller 2(config-router)#network 192.168.4.0 0.0.0.255 area 0
Certkiller 2(config-router)#network 172.16.10.8 0.0.0.3 area 0
Certkiller 2(config-router)#network 172.16.10.4 0.0.0.3 area 0
Certkiller 2(config-router)#Ctrl-Z
Certkiller 2#copy running start
  
```

QUESTION 582

A simple Certkiller network is displayed below:



A Cisco router Certkiller 2 and a Catalyst Switch Certkiller switch are connected as shown in the exhibit. The Certkiller .com technician is working on a computer that is connected to the management console of the switch. In order to configure the default gateway for the switch, the technician needs to learn the IP address of the attached router interface.

Which IOS command will provide this information in the absence of Layer 3 connectivity?

- A. ping router_ip_address
- B. ping switch_ip_address
- C. show ip rarp
- D. show cdp neighbors detail
- E. show ip neighbors

F. show dhcp-config

Answer: D

Explanation:

The "show cdp neighbor detail" command can be issued on a Cisco router or the switch. This command shows the information about all attached devices, assuming that they are also Cisco attached network devices, with CDP enabled.

QUESTION 583

The Certkiller network is shown in the diagram below:



The Ethernet networks connect to router Certkiller 1 in the exhibit have been summarized for router Certkiller 2 as 192.1.144.0/20. Which of the following packet destination addresses will Certkiller 2 forward to Certkiller 1, according to this summary? Select two.

- A. 192.1.159.2
- B. 192.1.160.11
- C. 192.1.138.41
- D. 192.1.151.254
- E. 192.1.143.145
- F. 192.1.1.144

Answer: A, D

Explanation:

To be a part of the advertised summary route, the addresses should have first 20 bit the same as 192.1.144.0. Since first 16 are the same for all, let's check just 4 bits from the 3rd octet for all of them:

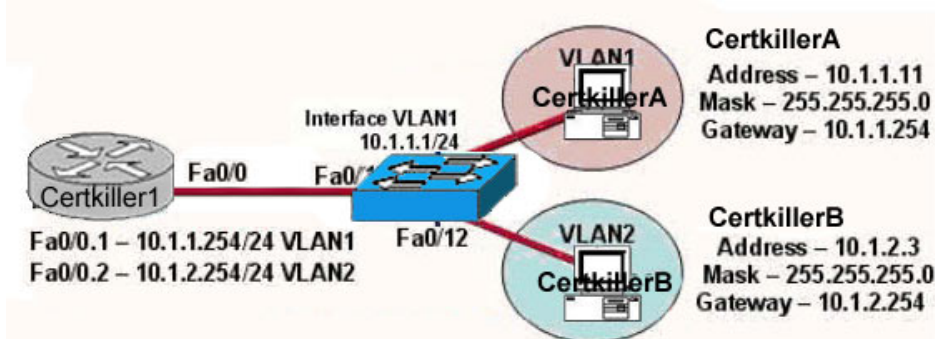
Summary route: 1001

- A: 1001
- B:1010
- C:1000
- D:1001
- E:1000
- F:0000

Based on this, only choice 192.1.159.2 and 192.1.151.254 meet the requirements.

QUESTION 584

A Certkiller network is shown below:



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

- A. Configure the gateway on Certkiller A as 10.1.1.1.
- B. Configure the gateway on Certkiller B as 10.1.2.254.
- C. Configure the IP address of Certkiller A as 10.1.2.2.
- D. Configure the IP address of Certkiller B as 10.1.2.2.
- E. Configure the masks on both hosts to be 255.255.255.224.
- F. Configure the masks on both hosts to be 255.255.255.240.

Answer: B, D

Explanation:

All devices must have their default gateways set to an IP address that is in the same IP network that the station is in. Based on the diagram above, Certkiller B is in VLAN2, so the default gateway for this device should be the IP address of the VLAN 2 interface on the router. In addition, the IP addresses of both devices reside within the same IP subnet. Since they belong to different VLANs, the best method to ensure proper connectivity would be to give Certkiller B an IP address within the same IP range as the VLAN that it belongs to, which is VLAN2 in this example.

QUESTION 585

You work as a network engineer at Certkiller .com. Certkiller users have noticed extremely slow network performance, intermittent connectivity, and connection loss. After entering the show interfaces command, you notice that the Ethernet interface is configured as 100 Mbps full-duplex and that there is evidence of late collisions. What could be the cause of this problem?

- A. duplex mismatch
- B. a routing loop
- C. trunking mode mismatch
- D. improperly configured root bridge
- E. improperly configured static VLAN

Answer: A

Explanation:

A duplex mismatch may result in performance issues, intermittent connectivity, and loss of communication. When troubleshooting NIC issues, verify that the NIC and switch are using a valid configuration. Some third-party NIC cards may fall back to half-duplex operation mode, even though both the switchport and NIC configuration have been manually configured for 100 Mbps, full-duplex. This behavior is due to the fact that NIC autonegotiation link detection is still operating when the NIC has been manually configured. This causes duplex inconsistency between the switchport and the NIC. Symptoms include poor port performance and frame check sequence (FCS) errors that increment on the switchport. To troubleshoot this issue, try manually configuring the switchport to 100 Mbps, half-duplex. If this action resolves the connectivity problems, you may be running into this NIC issue. Try updating to the latest drivers for your NIC, or contact your NIC card vendor for additional support.

Reference:

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

QUESTION 586

You are unable to telnet to a router at address 203.125.12.1 from a workstation with the IP address 203.125.12.23. You suspect that there is a problem with your protocol stack. Which of the following actions is most likely to confirm your diagnosis?

- A. ping 127.0.0.0
- B. ping 203.125.12.1
- C. telnet 127.0.0.1
- D. ping 127.0.0.1
- E. tracert 203.125.12.1

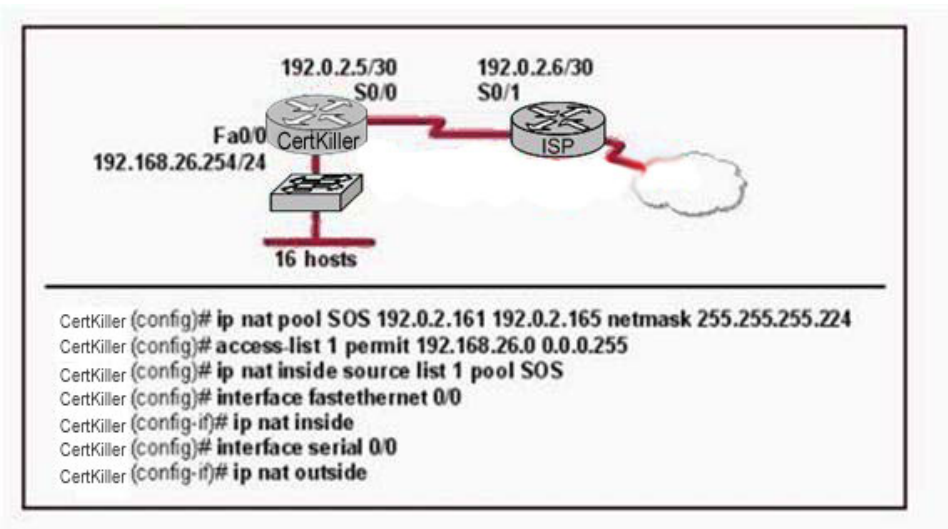
Answer: D

Explanation:

Every Windows based PC uses the 127.0.0.1 as the local loopback IP address. Every PC will respond to this local IP address if the TCP/IP stack is correctly installed and running on the machine. If you cannot ping the loopback address of 127.0.0.1, then something is wrong with the TCP/IP protocol stack

QUESTION 587

The Certkiller network is shown below:



The network at the Certkiller has just been configured for NAT as shown. Initial tests indicate that everything is functioning as intended. However, it is found that a number of hosts cannot access the Internet. What is the problem?

- A. The access list is not correct.
- B. There are not enough IP addresses available in the NAT address pool.
- C. The wrong interface has been configured with the ip nat inside command.
- D. The IP address of the Fa0/0 interface is not usable.
- E. The S0/1 interface of the ISP router is in the wrong subnet.

Answer: B

Explanation:

According to the configuration shown above, the NAT pool only specifies 5 IP addresses (192.0.2.161-165) while there are 16 hosts on the network that need to be translated. This explains why everything functions well for the first hosts, but not for the rest. To fix this issue, more IP addresses need to be specified in the NAT pool named SOS, or alternatively the "overload" keyword could be used to specify many to one address translation, or PAT.

Several internal addresses can be NATed to only one or a few external addresses by using a feature called Port Address Translation (PAT) which is also referred to as "overload", a subset of NAT functionality.

PAT uses unique source port numbers on the Inside Global IP address to distinguish between translations. Because the port number is encoded in 16 bits, the total number could theoretically be as high as 65,536 per IP address. PAT will attempt to preserve the original source port, if this source port is already allocated PAT will attempt to find the first available port number starting from the beginning of the appropriate port group 0-5111, 512-1023 or 1024-65535. If there is still no port available from the appropriate group and more than one IP address is configured, PAT will move to the next IP address and try to allocate the original source port again. This continues until it runs out of available ports and IP addresses.

QUESTION 588

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

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

Answer: E

Explanation:

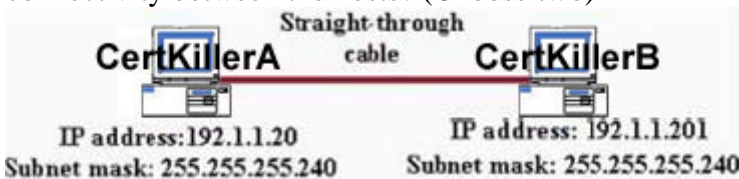
A TCP window is the amount of outstanding (unacknowledged by the recipient) data a sender can send on a particular connection before it gets an acknowledgment back from the receiver that it has gotten some of it.

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

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

QUESTION 589

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



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

Answer: A, C

Explanation:

When connecting like devices (PC to PC, Switch to Switch, etc) a crossover cable should be used. See the table below:

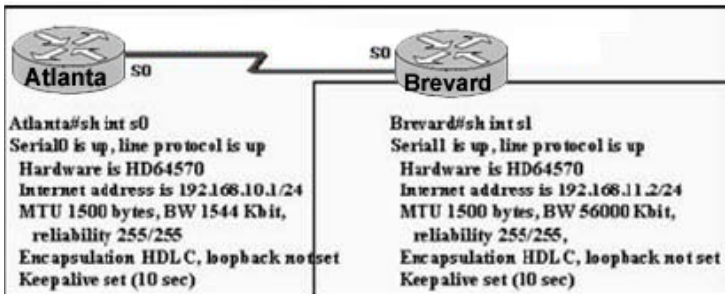
	Hub	Switch	Router	Workstation
Hub	Crossover	Crossover	Straight	Straight
Switch	Crossover	Crossover	Straight	Straight
Router	Straight	Straight	Crossover	Crossover
Workstation	Straight	Straight	Crossover	Crossover

In addition to the incorrect cable type being used, the PCs also need to belong to the same IP subnet. Currently, due to the subnet mask being used, these two are in different subnets. The correct subnet mask should be 255.255.255.0.

QUESTION 590

Two routers named Atlanta and Brevard are connected by their serial interfaces as illustrated, but there is no connectivity between them. The Atlanta router is known to have a correct configuration. Given the partial configurations, identify the problem on the Brevard router that is causing the lack of connectivity.

Exhibit:



- A. An incorrect subnet mask
- B. Incompatible bandwidth between routers
- C. Transmission unit size too large
- D. No loopback set
- E. An incorrect ip address
- F. Incompatible encapsulation at each end

Answer: E

Explanation:

The serial interfaces need to be in the same IP subnet for directly connected routers. As we can see, the Atlanta router is using the 192.168.10.1/24 network, but the Brevard router has been configured using the 192.168.11.2/24 network. It should be configured with the IP address of 192.168.10.2.

QUESTION 591

An administrator of a small LAN has been reviewing error logs of networking devices and notices a large number of errors associated with several MAC addresses. The administrator suspects that some of the errors are being generated

by the routers. Which router commands will allow the administrator to find the ip address associated with each MAC address? (Choose two)

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

Answer: A, E

Explanation:

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

Example:

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

```
CK1 # show arp
Protocol Address Age (min) Hardware Addr Type Interface
Internet 10.0.0.3 0 0004.dd0c.ffcb ARPA Ethernet01
Internet 10.0.0.1 - 0004.dd0c.ff86 ARPA Ethernet0
```

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

```
CK1 # show interfaces
Ethernet 0 is up, line protocol is up
Hardware is MCI Ethernet, address is 0000.0c00.750c (bia 0000.0c00.750c)
Internet address is 10.108.28.8, subnet mask is 255.255.255.0
MTU 1500 bytes, BW 10000 Kbit, DLY 100000 usec, rely 255/255, load 1/255
```

QUESTION 592

The Certkiller router is running RIP as the routing protocol, and the IP routing table is displayed below:

```
Gateway of last resort is 10.1.2.2 to network 0.0.0.0
10.0.0.0/24 is subnetted, 2 subnets
R 10.1.3.0 [120/1] via 10.1.2.2, 00:00:00, Serial0/0
C 10.1.2.0 is directly connected, Serial0/0
C 10.1.5.0 is directly connected, Serial0/1
C 10.1.6.0 is directly connected, FastEthernet0/0
R* 0.0.0.0/0 [120/1] via 10.1.5.5, 00:00:00, Serial0/1
```

Based on the output above, if an administrator pings host 10.1.8.5 from host 10.1.6.100, how will the router Certkiller A process the ICMP packets?

- A. The packets will be discarded.
- B. The packets will be routed out the S0/0 interface.
- C. The packets will be routed out the S0/1 interface.
- D. The packets will be routed out the Fa0/0 interface.

E. The packets will be routed through the 10.1.2.2 gateway.

Answer: C

Explanation:

Since 10.1.8.5 is not located in the routing table, the default gateway will be used to forward the ICMP packet. The default gateway is learned via RIP, with the next hop IP address of 10.1.5.5. This default gateway router lies on the serial 0/1 interface.

Additional Info:

Gateways of last resort selected using the ip default-network command are propagated differently depending on which routing protocol is propagating the default route. For IGRP and EIGRP to propagate the route, the network specified by the ip default-network command must be known to IGRP or EIGRP. This means the network must be an IGRP or EIGRP-derived network in the routing table, or the static route used to generate the route to the network must be redistributed into IGRP or EIGRP, or advertised into these protocols using the network command.

RIP advertises a route to 0.0.0.0 if a gateway of last resort is selected using the ip default-network command. This network specified in the ip default-network command need not be explicitly advertised under RIP. For example, note that the gateway of last resort on this router was learned using the combination of the ip route and ip default-network commands. If you enable RIP on this router, RIP advertises a route to 0.0.0.0 (although not to the Ethernet0 network because of split-horizon):

```
2513(config)#router rip
2513(config-router)#network 161.44.0.0
2513(config-router)#network 131.108.0.0
2513(config-router)#^Z
2513#
%SYS-5-CONFIG_I: Configured from console by console
2513#debug ip rip
*Mar 2 07:39:35.504: RIP: sending v1 update to 255.255.255.255 via Ethernet0
(161.44.192.1)
*Mar 2 07:39:35.508: RIP: build update entries
*Mar 2 07:39:35.508: network 131.108.0.0 metric 1
*Mar 2 07:39:35.512: RIP: sending v1 update to 255.255.255.255 via Serial0
(131.108.99.1)
*Mar 2 07:39:35.516: RIP: build update entries
*Mar 2 07:39:35.520: subnet 0.0.0.0 metric 1
*Mar 2 07:39:35.524: network 161.44.0.0 metric 1
ip route 0.0.0.0 0.0.0.0
```

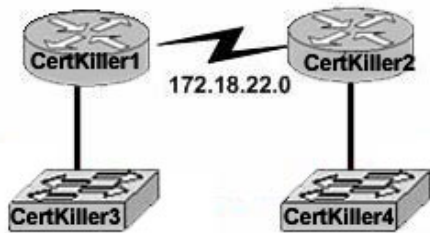
Creating a static route to network 0.0.0.0 0.0.0.0 is another way to set the gateway of last resort on a router. As with the ip default-network command, using the static route to 0.0.0.0 is not dependent on any routing protocols. However, ip routing must be enabled on the router.

In earlier versions of RIP, the default route created using the ip route 0.0.0.0 0.0.0.0 was automatically advertised by RIP routers. In Cisco IOS Software Release 12.0T and later,

RIP does not advertise the default route if the route is not learned via RIP. It may be necessary to redistribute the route into RIP.

QUESTION 593

The topology of the Certkiller network is displayed below, along with the routing table of the Certkiller 1 router:



```
CertKiller1# show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, s - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 172.19.22.2 to network 0.0.0.0

C 172.17.22.0 is directly connected, FastEthernet0/0
C 172.18.22.0 is directly connected, Serial0/0
S* 0.0.0.0 [1/0] via 172.19.22.2
```

172.17.22.0 172.31.5.0

Changes to the Certkiller network were made, and now users on the Certkiller 3 LAN are not able to connect to the Certkiller 4 LAN. Based on the information above, what could be the reason for this?

- A. The Fast Ethernet interface is disabled.
- B. The neighbor relationship table is not updated.
- C. A static route is configured incorrectly.
- D. The routing table on Certkiller 1 is not updated.
- E. IP routing is not enabled.

Answer: C

Explanation:

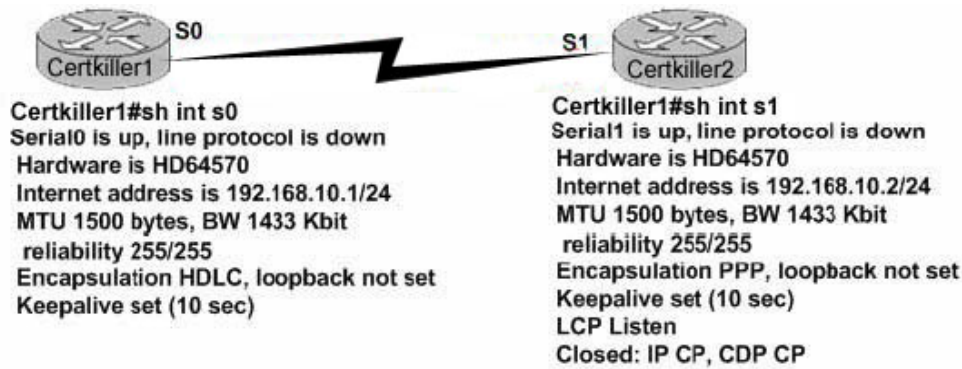
On the bottom line of the command output for 'show ip route' you can see that there is an asterisk by the letter S. The S stands for static route, and the static route is incorrectly configured.

Incorrect Answers:

- A. If this were true, then the users on the LAN would be unable to connect to anything outside of their own network.
- B. It appears that only a single static route is being used on the Certkiller 1 router. Neighbors do not need to be established for static routes.
- D. The routing table consists of a single static route, which is configured incorrectly. The routing tables do not become updated dynamically when static routes are used.
- E. This is not true, as a static route has been configured.

QUESTION 594

A point to point leased line connecting routers Certkiller 1 and Certkiller 2 is installed as shown below:



The two serially connected routers can't communicate. Can you identify the fault on router Certkiller 2?

- A. Link reliability is insufficient
- B. IPCP is not open
- C. Incorrect subnet mask
- D. Incompatible encapsulation
- E. Bandwidth allocation is too low
- F. Incomplete IP address

Answer: D

Explanation:

HDLC and PPP configuration is straightforward. You just need to be sure to configure the same WAN data-link protocol on each end of the serial link. Otherwise, the routers will misinterpret the incoming frames, because each WAN data-link protocol uses a different frame format. The routers must match at each end of the private leased line link.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 310.

QUESTION 595

What kind of message does a PING send out to test connectivity?

- A. ICMP echo request
- B. Information interrupt request
- C. Timestamp reply
- D. Source quench
- E. None of the above

Answer: A

Explanation:

The ping command sends an ICMP echo request packet to the stated destination address. The TCP/IP software at the destination then replies to the ping echo request packet with a similar packet, called the ICMP echo reply.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 146

QUESTION 596

The relevant configuration files for the Certkiller 1 and Certkiller 2 routers are displayed below:

```
Certkiller 1# show running-config Certkiller 2# show running-config
<some output text omitted> <some output text omitted>
enable password cisco enable password cisco
!
hostname Certkiller 1 hostname Certkiller 2
username Certkiller 2 password cisco username Certkiller 1 password cisco1
!!
interface serial 0/0 interface serial 0/0
ip address 10.0.8.1 255.255.248.0 ip address 10.0.15.2 255.255.248.0
encapsulation ppp encapsulation ppp
ppp authentication chap ppp authentication chap
```

With due consideration to the command outputs, which of the following reasons would you attribute the connectivity problem between the two routers?

- A. The authentication needs to be changed to PAP for both routers.
- B. The serial IP addresses of routers are not on the same subnet.
- C. The username/password combination is incorrectly configured.
- D. The router names are incorrectly configured.

Answer: C

Explanation:

When configuring for CHAP authentication, you must enter the other router's user name and password. In this case on router Certkiller 2 has entered incorrect router Certkiller 1's password, which is "cisco1" (it must be "cisco"). As a result CHAP authentication will fail, therefore the connection establishment between the routers will be refused.

Reference:

CCNA Self-Study CCNA ICND
Exam Certification Guide
Chapter 9 page 315
ISBN: 1-58720-083-x
Incorrect Answers:

- A. Either PAP or CHAP can be used for these routers.
- B. Although this appears to be true at first glance, the subnet mask is 255.255.248.0, and the IP addresses on each side of the link are indeed on the same subnet.
- D. The hostnames are configured correctly, but the passwords do not match.

QUESTION 597

There is a connectivity problem between the serial 0/0 interface of router

Certkiller 1 and the serial 0/0 interface of Certkiller 2. A leased line point to point circuit is installed between these two routers. The output from the "show interface serial 0/0" command is displayed below for each of these routers:

Certkiller 1:

```
Serial0/0 is up, line protocol is down
Hardware is HD64570
Internet address is 210.93.105.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
```

Certkiller 2:

```
Serial0/0 is up, line protocol is down
Hardware is HD64570
Internet address is 210.93.105.2/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
```

From your observations of the above exhibit, what is the underlying cause of the problem?

- A. The loopback is not set.
- B. The serial cable is faulty.
- C. The subnet mask is not configured properly.
- D. The IP address is not configured properly.
- E. The Layer 2 frame types are not compatible.
- F. The keepalive setting is not configured properly.

Answer: E

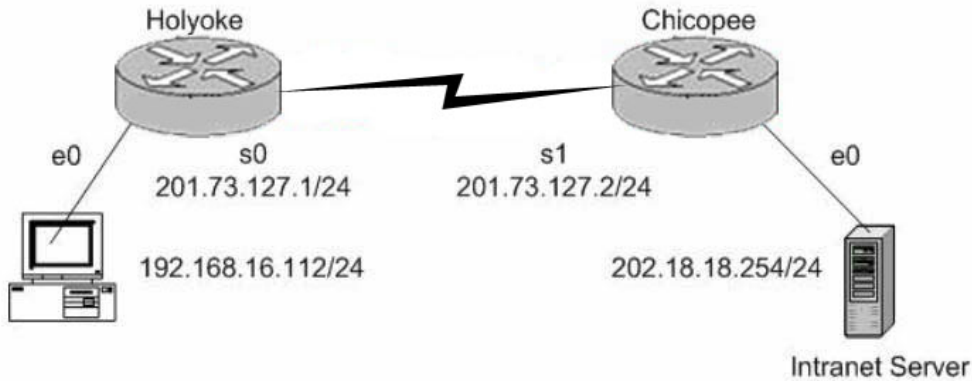
Explanation:

If you see that the line is up but the protocol is down, as just above, you are experiencing a clocking (keepalive) or framing problem. Check the keepalives on both ends to make sure that they match, that the clock rate is set if needed, and that the encapsulation type is the same on both ends. This up/down status would be considered a Data Link Layer (Layer 2) problem. In this specific case, one end of the link is set to PPP encapsulation, and the other end is using HDLC, which is the Cisco proprietary method. Both sides of the connection must be using the same protocol.

QUESTION 598

The Certkiller network consists of the Holyoke and Chicopee locations as shown below:

640-801



Users on the Holyoke router cannot get access to the intranet server attached to interface E0 of the Chicopee router. After investigating you discover that the routing table of the Holyoke router shows that an entry for the Chicopee E0 network is missing.

Which of the command lines below will properly configure the Holyoke router to allow the users access to the intranet server's network?

- A. Holyoke(config)# ip host Chicopee 201.73.127.2
- B. Holyoke(config)# ip network 202.18.38.0
- C. Holyoke(config)# ip network 202.18.18.0 255.255.255.0
- D. Holyoke(config)# ip host Chicopee 201.73.127.0 255.255.255.0
- E. Holyoke(config)# ip route 202.18.18.0 255.255.255.0 201.73.127.2
- F. Holyoke(config)# ip route 201.73.127.0 255.255.255.0 202.18.18.0

Answer: E

Explanation:

We need to add a route for the 202.18.18.0/24 network. We can do this with the ip route command. The correct syntax is: ip route <network> <mask> <gateway>.

QUESTION 599

While logged into a router you manually shut down the serial 0 interface using the "shutdown" interface configuration command. You then issue the "show interface serial 0" command in exec mode. What could you expect the status of the serial 0 interface to be?

- A. Serial 0 is up, line protocol is up
- B. Serial 0 is up, line protocol is down
- C. Serial 0 is down, line protocol is down
- D. Serial 0 is down, line protocol is up
- E. Serial 0 is administratively down, line protocol is down
- F. Serial 0 is administratively down, line protocol is up

Answer: E

Explanation:

To bring down an interface for administrative reasons and, as a side effect, remove the connected router from the routing table, you can use the shutdown interface subcommand. To enable the interface back up, issue the "no shutdown" configuration command.

Incorrect Answers:

- A. This is the status of a fully operational interface.
- B, C. These are the results of line problems or configuration errors.
- D, F. These two interface conditions should never be seen.

QUESTION 600

While troubleshooting a network connectivity issue, you suspect that a router may be missing a route, or may be receiving bad routing information to a destination. What command should you issue to view the route that the router will use to reach a given destination?

- A. ping
- B. trace
- C. show ip route
- D. show interface
- E. show cdp neighbors

Answer: C

Explanation:

To view the IP routing table, issue the "show ip route" command. This can be used to verify a route to a destination.

QUESTION 601

You are the new system administrator at Certkiller .com and have just installed a brand new Cisco router to the Certkiller network. After configuring the router, you try to ping the directly connected serial port of the neighboring router, which was unsuccessful. You then entered the command, 'show running-config' and noticed the phrase 'shutdown' describing the serial interface. If you typed in the command 'show interface s0' what output would you see?

- A. Serial 0 is up, line protocol is down
- B. Serial 0 is down, line protocol is down
- C. Serial 0 is down, line protocol is up
- D. Serial 0 is administratively down, line protocol is down
- E. Serial 0 is administratively down, line protocol is up
- F. Serial 0 is administratively up, line protocol is down

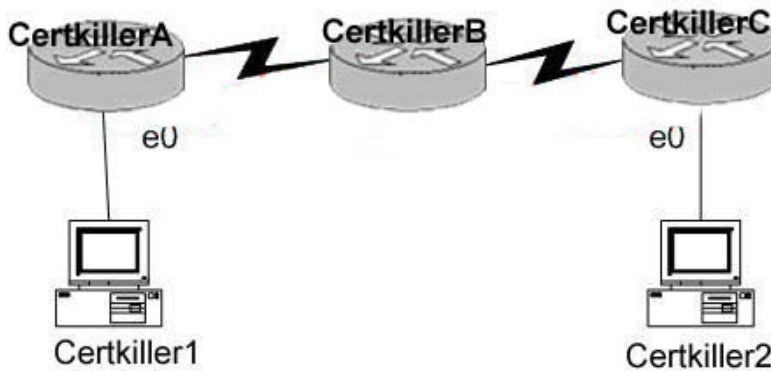
Answer: D

Explanation:

If an interface is shutdown, it will show "administratively down and line protocol down."
"Administratively down" is the status of any interface that has been logically disabled via the Cisco IOS.

QUESTION 602

Three routers are connected together via serial lines as shown below:



Certkiller 1 issues a ping to Certkiller 2, but the ethernet0 interface on router Certkiller C is down. Based on this information, which two of the answer choices below are correct? (Select two answer choices)

- A. Certkiller C will make use of ICMP to inform Certkiller 1, Certkiller A, and Certkiller B that Host 2 is unreachable.
- B. Certkiller C will send a Destination Unreachable message type.
- C. Certkiller C will make use of ICMP to inform Certkiller 1 that Certkiller 2 is unreachable.
- D. Certkiller C will use ICMP to inform Certkiller B that Certkiller 2 is unreachable.
- E. Certkiller C will issue a Router Selection message type.
- F. Certkiller C will issue a Source Quench message type.

Answer: B, C

Explanation

ICMP is an error-reporting protocol for IP. When datagram delivery error occur, ICMP reports these errors to the sender of the datagram.

When the e0 interface on Certkiller C goes down, Certkiller C uses ICMP to send a message back to Certkiller 1 indicating that the datagram could not be delivered.

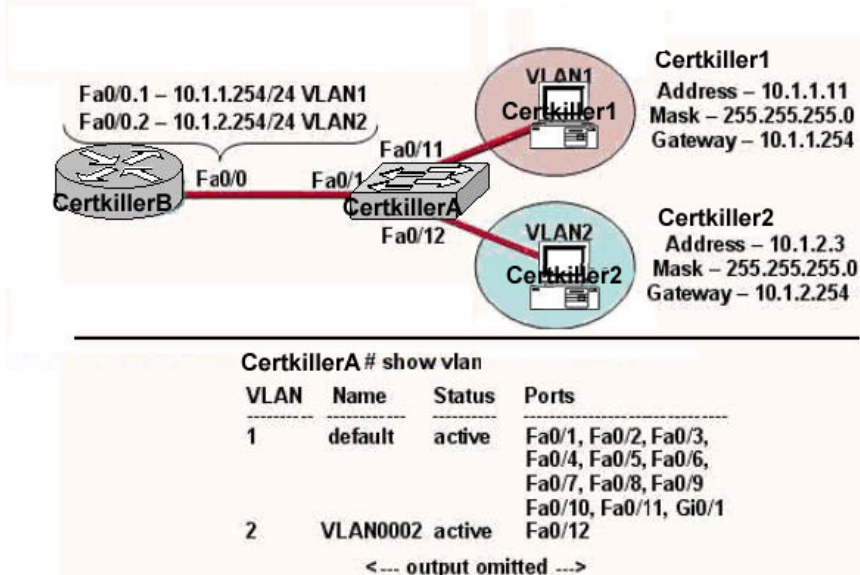
ICMP does not correct the encountered network problem.

Certkiller C will not notify the intermediary devices of the delivery failure. Therefore, Certkiller C will not send ICMP messages to Certkiller B. Datagrams contain only source and destination IP addresses, they do not contain information about all the intermediary devices.

The reporting device (Certkiller C) has only the sender's IP address with which to communicate. Although Certkiller A and B are not notified directly, they might become aware of the down interface on Certkiller C. However, disseminating this information to neighbor routers is not the function of ICMP. ICMP reports on the status of the delivered packet to the sender, its function is not to propagate information about network changes.

QUESTION 603

The Certkiller network is displayed below:



Study the exhibit: the topology and the partial switch command output.

The internetwork shown in the exhibit is experiencing connectivity problems. Host Certkiller 1 is unable to ping Host Certkiller 2.

What needs to be done to enable these hosts to ping each other?

- A. The gateway on Host Certkiller 1 needs to be changed.
- B. The IP address on Host Certkiller 2 needs to be reconfigured.
- C. VLAN2 must be named.
- D. The Fa0/1 interface on the Certkiller A switch must be configured as a trunk port.
- E. Switch port Fa0/1 must be moved to a different VLAN.

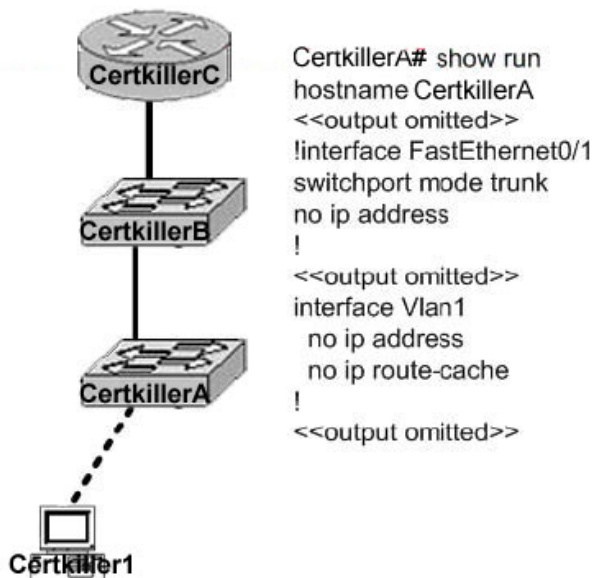
Answer: D

Explanation:

Interface FA0/1 should be in any case configured as a trunk port so that a router could switch packets between the VLANs. The IP addresses are acceptable, so no issues should be caused due this.

QUESTION 604

A Certkiller LAN is shown in the diagram below:



In this network, Host Certkiller 1 is consoled into Switch Certkiller

A. Telnet

connections and pings run from the command prompt on Switch Certkiller A fail.

Which of the following could cause this problem? Select all that apply.

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

Answer: B, D

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

Incorrect Answers:

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

QUESTION 605

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

A. Certkiller B> telnet

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

Answer: C

Explanation:

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

QUESTION 606

The following command was seen on one of the Certkiller devices:

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge  
s- switch, H - Host , I - IGMP, r - Repeater
```

```
Device      total InterFace  Holdtime  Capability  platform  Port ID  
Certkiller1 Ser 0/1          160       R           2621      Ser 0/1  
Certkiller2#
```

What is the meaning of the output of the show cdp neighbors command in the exhibit?

- A. The Certkiller 2 router has a route to the Certkiller 1 router using the Serial 0/1 interface. The route can be directly connected or remote.
- B. The Certkiller 1 switch directly connects to the Certkiller 2 router using the Serial 0/1 interface on both Cisco devices.
- C. The Certkiller 2 device is a Cisco router, and it connects using the Serial 0/1 interface to the Certkiller 1 Cisco router's Serial 0/1 interface.
- D. The Certkiller 2 device is a non-Cisco device that connects to a Cisco router using the Serial 0/1 interface on both devices.

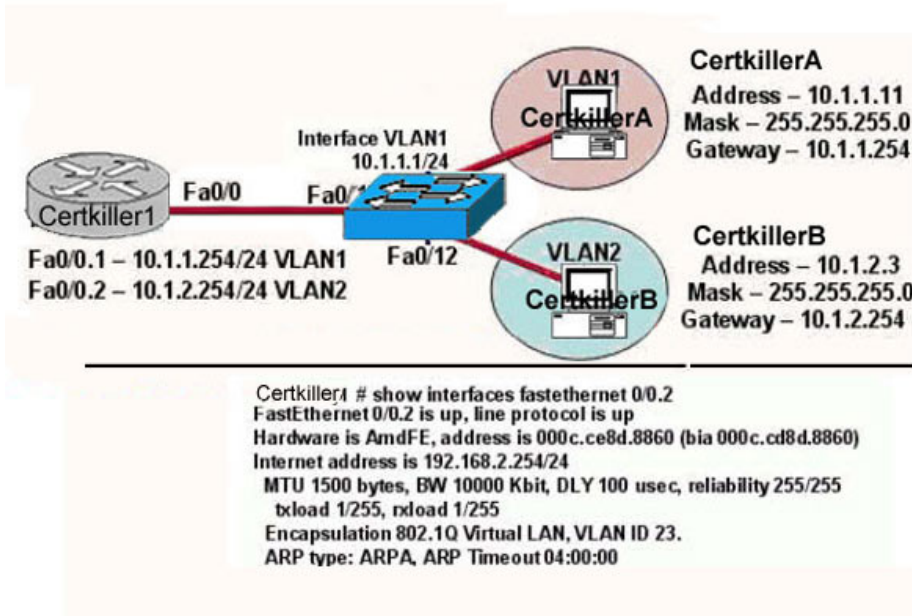
Answer: C

Explanation:

CDP is a media- and protocol-independent protocol that runs on all Cisco-manufactured equipment including routers, bridges, access and communication servers, and switches. Using CDP, you can view information about all the Cisco devices directly attached to the switch. In addition, CDP detects native VLAN and port duplex mismatches. Network management applications can retrieve the device type and SNMP-agent address of neighboring Cisco devices using CDP. This enables applications to send SNMP queries to neighboring devices. CDP allows network management applications to discover Cisco devices that are neighbors of already known devices, in particular, neighbors running lower-layer, transparent protocols. CDP runs on all media that support Subnetwork Access Protocol (SNAP). CDP runs over the data link layer only.

QUESTION 607

A Certkiller network is displayed below:



Host Certkiller B in the diagram is experiencing connectivity problems. Further Testing reveals that it cannot ping the default gateway. Based on the information shown in the exhibit, what is the problem?

- A. The IP address of Certkiller B is on a different subnet than the default gateway.
- B. The Fa0/1 interface on the switch is administratively shutdown.
- C. The switch is connected to the wrong interface on the Certkiller 1 router.
- D. The FastEthernet interface on the Certkiller router is not configured for trunking.
- E. The Fastethernet 0/0.2 interface on the Certkiller 1 router is configured for the wrong VLAN.
- F. The FastEthernet interface of the Certkiller 1 router is configured with the wrong Ethernet encapsulation.

Answer: E

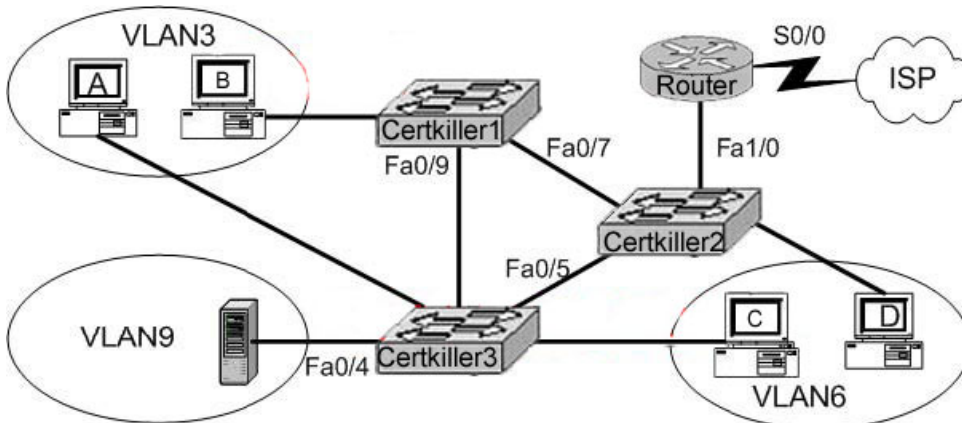
Explanation:

Based on the output shown above, the Fa 0/0.2 interface should be in VLAN 32, which is the same VLAN that other devices in the 192.168.2.X/24 subnet belong to. Interface FA0/0.1 should be configured for VLAN 22, while FA0/0/2 should be configured for VLAN 32.

QUESTION 608

The Certkiller LAN is displayed below:

640-801



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

1. None of the user hosts can access the Internet.
2. None of the user hosts can access the server in VLAN 9.
3. Host A can ping Host B.
4. Host A CANNOT ping Host C or Host D.
5. Host C can ping Host D.

What could cause these symptoms?

- A. Interface S0/0 on the router is down.
- B. Interface Fa1/0 on the router is down.
- C. Interface Fa0/5 on Certkiller 3 is down.
- D. Certkiller 1 is turned off.
- E. Certkiller 3 is turned off.

Answer: B

Explanation:

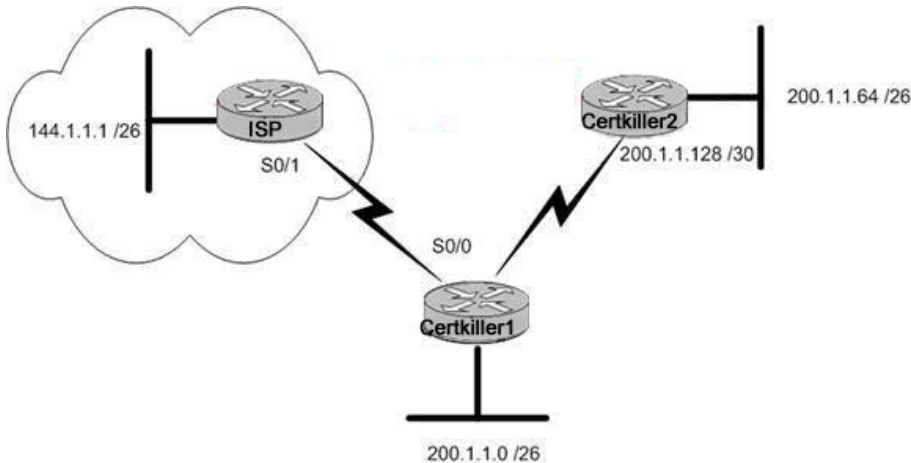
Choice B is correct because a Router is used for communication between different VLANs and it is stated that none of the hosts can access the server in VLAN 9 it means that there is no connection of the network with router so FA1/0 is down. In this example, connectivity problems only occur with inter-VLAN communication, which means the problem is with the routing element.

Incorrect Answers:

- A. This may indeed be true, but until the LAN interface problems of the router is resolved it is not an issue. If this was the only problem, then there would be no problems with Host A trying to reach Host C or D.
- C. This choice is wrong because Host C can ping Host D so FA0/5 cannot be down.
- D, E. Choice D and E are wrong because Host A can Ping Host B it means that the switch Certkiller 1 and switch Certkiller 3 are both functioning properly and is turned on.

QUESTION 609

The Certkiller EIGRP network is displayed in the following diagram:



Refer to the graphic. Certkiller is running EIGRP. Hosts from the 200.1.1.0/26 subnet cannot access a server located on the 200.1.1.64 subnet. The users have previously been able to access this server. After router Certkiller 1 is accessed with the use of Telnet, which of the following commands would be a logical first choice in troubleshooting this problem?

- A. Certkiller 1# show interface s0/0
- B. Certkiller 1# show controllers
- C. Certkiller 1# show ip route
- D. Certkiller 1# show hosts
- E. None of the above

Answer: C

Explanation:

Since the network was previously accessible, and users are only unable to reach a specific subnet, it can be safely assumed that a routing issue is the problem, so viewing the routing table to see how traffic destined to the 200.1.1.64/26 subnet is being routed would be a logical first step.

Incorrect Answers:

A, B. These commands would be used if we had a reason to believe that there was a physical problem with the circuit itself. However, since we can safely telnet into the router remotely, and users appear to be able to reach other networks, we can assume that the physical serial interface is working properly.

D. The "show hosts" command is used to display the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of host names and addresses on the network to which you can connect. It will not help us in any way in this example.

QUESTION 610

The "show interface Ethernet 0" command was issued on a Certkiller router as shown below:

```
router# show interfaces ethernet 0
Ethernet 0 is up, line protocol is up
Hardware is MCI Ethernet, address is aa00.0400.0134 (via 0000.0c00.4369)
Internet address is 131.108.1.1, subnet mask is 255.255.255.0
MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
Encapsulation ARPA, loopback not set, keepalive set (10 sec)
ARP type: ARPA, PROBE, ARP Timeout 4:00:00
Last input 0:00:00, output 0:00:00, output hang never
Output queue RPA loopback not set, queue 0/75, 2 drops
Five minute Hardware is MCI Ethernet,
Five-minute Internet address is 131.108.1.1
2295197 packets input, 305539992 bytes, 0 no buffer
Received 1925500 broadcasts, 534 runts, 0 giants
3 input errors, 3 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 input packets with dribble condition detected
3594664 packets output, 436549843 bytes, 0 underruns
8 output errors, 1790 collisions, 10 interface resets, 0 restarts
```

The router output shown in the graphic indicates that 534 runts have been detected by the router interface. What are possible causes of this condition?

- A. A large number of collisions
- B. A faulty network interface card
- C. A decrease in the size of the collision domain
- D. Fragment-free switching
- E. Incorrect network addressing
- F. TTL failures

Answer: A, B

Explanation:

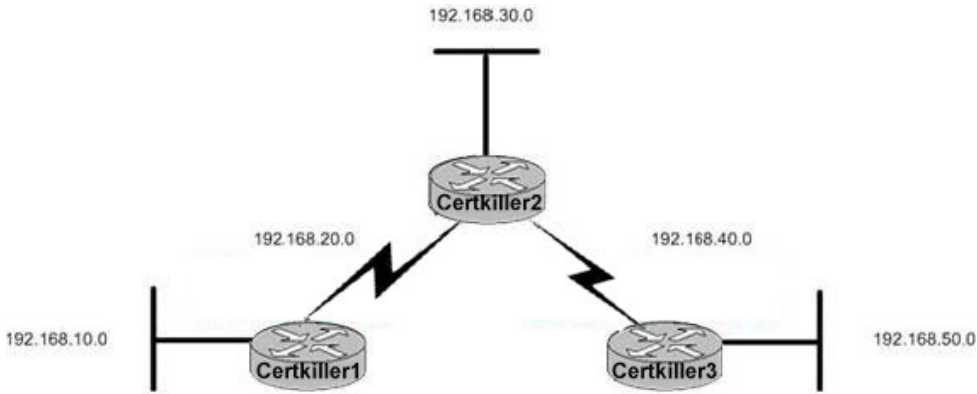
Runts are packets that are discarded because they are smaller than the medium's minimum packet size. Any Ethernet packet that is less than 64 bytes is considered a runt. In half-duplex environments, it is possible for both the switch and the connected device to sense the wire and transmit at exactly the same time and result in a collision. Collisions can cause runts, FCS, and alignment errors, caused when the frame is not completely copied to the wire, which results in fragmented frames. Runts are the result of collisions, faulty NIC's, duplex mismatch, IEEE 802.1Q (dot1q), or an Inter-Switch Link Protocol (ISL) configuration issue.

Reference:

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

QUESTION 611

Three Certkiller routers are connected as shown below:



```
<some output text omitted>  
P 192.168.40.0/24, 1 successor, FD is 21 026560  
  via 192.168.20.2(21026560/2051460), Serial 0/1  
P 192.168.50.0/24, 1 successor, FD is 20 514560  
  via 192.168.20.2(20514560/28160), Serial 0/1  
P 192.168.10.0/24, 1 successor, FD is 28 160  
  via Connected, FastEthernet0/0  
P 192.168.30.0/24, 1 successor, FD is 21 024000  
  via 192.168.20.2(21024000/20512000), Serial 0/1  
P 192.168.20.0/24, 1 successor, FD is 20 512000  
  via Connected, Serial 0/1
```

Based on the information shown above, which of the routers shown could produce the output shown?

- A. Certkiller 1
- B. Certkiller 2
- C. Certkiller 3
- D. Cannot be determined from the information shown

Answer: A

Explanation:

The following is sample output from the show ip eigrp topology command:

Router# show ip eigrp topology

IP-EIGRP Topology Table for process 77

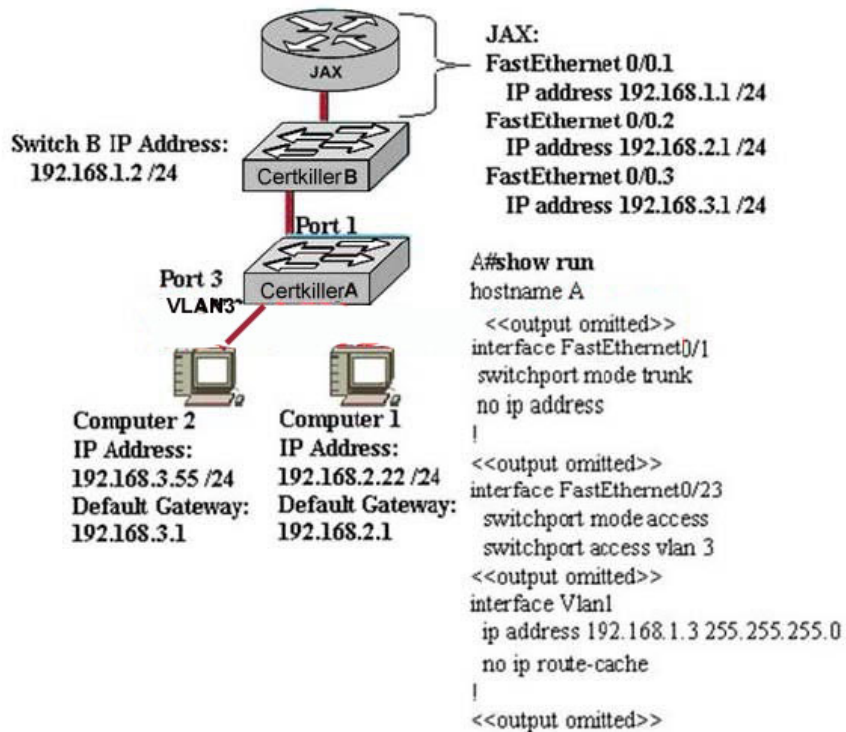
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
r - Reply status

```
P 172.16.90.0 255.255.255.0, 2 successors, FD is 0  
  via 172.16.80.28 (46251776/46226176), Ethernet0  
  via 172.16.81.28 (46251776/46226176), Ethernet1  
  via 172.16.80.31 (46277376/46251776), Serial0  
P 172.16.81.0 255.255.255.0, 1 successors, FD is 307200  
  via Connected, Ethernet1  
  via 172.16.81.28 (307200/281600), Ethernet1  
  via 172.16.80.28 (307200/281600), Ethernet0  
  via 172.16.80.31 (332800/307200), Serial0
```

Since in our example, the networks listed are connected are 192.168.2.0 and 192.168.10.0, this command must have been issued on router Certkiller 1.

QUESTION 612

Some Certkiller devices are connected as shown below:



The router shows the FastEthernet port as being up, and the computer on VLAN 3 can ping all of the FastEthernet IP addresses on the router.

Computer 1 is used to console into switch Certkiller

A. From the command prompt of switch Certkiller A, the switch cannot ping the computer on VLAN 3. The switch configuration shown in the exhibit lists only the commands that are different from the default configuration. What is the problem, based on the information shown?

- A. Computer 1 must be connected to a switch port in order to communicate with a device located on VLAN 3.
- B. Switch Certkiller A does not have a default gateway assigned.
- C. The router is not routing VLAN 3 information.
- D. The computer on VLAN 3 is assigned an incorrect IP address.
- E. Switch A does not have an IP address assigned to the management VLAN.

Answer: B

Explanation:

This scenario requires inter-VLAN routing, which requires a layer three device. Based on the information above, a trunk has indeed been set up to route traffic between VLAN's so the problem is that default gateway has been specified in the switch, so traffic will not be forwarded to the router from the switch from one VLAN to the other.

QUESTION 613

The following was seen on a Certkiller router:

```
Certkiller1#copy tftp flash
Address or name of remote host[]? 192.168.1.5
Source relative to 10250s-1-12113.bin
Destination filename [C28 10]js-1-121-3.bin
Accessing tftp://192.168.1.5/c2600-js-1-121-3.bin...
%Error opening tftp://192.168.1.5/CCC (Timed out)
```

When upgrading the IOS image, the network administrator receives the exhibited message. What could be the cause of this error?

- A. The new IOS image is too large for the router flash memory.
- B. The TFTP server is unreachable from the router.
- C. The new IOS image is not correct for this router platform.
- D. The IOS image on the TFTP server is corrupt.
- E. There is not enough disk space on the TFTP server for the IOS image.

Answer: B

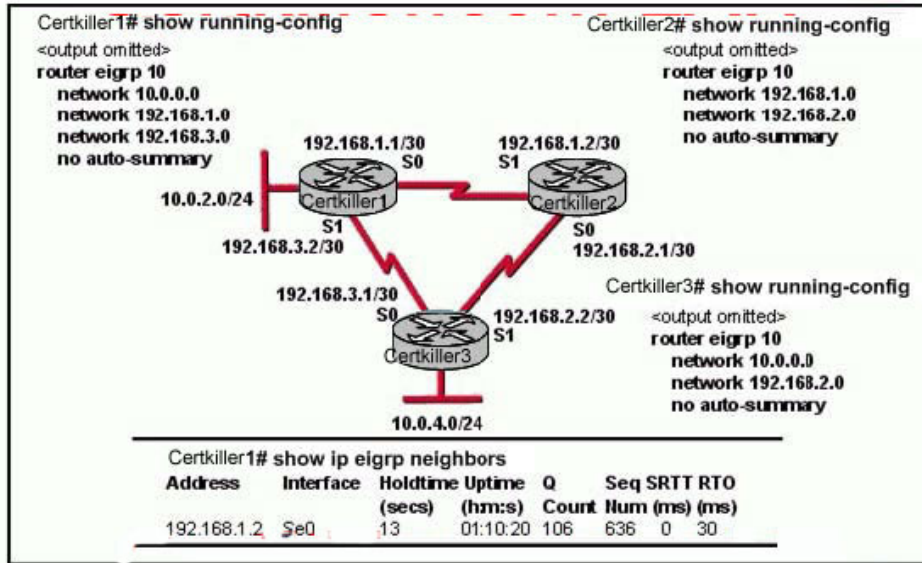
Explanation:

The problem shown here is that the destination file is not reachable. When copying files via TFTP the first step is to ensure that there is connectivity to the TFTP server. You should perform the following steps:

1. Verify that the TFTP server has IP connectivity to the router.
2. Check the IP addresses of the TFTP server and the router or access server targeted for the TFTP software upgrade.
3. Ping the router or access server to verify that a network connection exists between them.

QUESTION 614

Exhibit:



IP addresses and routing for the network are configured as shown in the exhibit. The network administrator issues the show ip eigrp neighbors command from Certkiller 1 and receives the output shown below the topology. Which statement is true?

- A. It is normal for Certkiller 1 to show only one active neighbor at a time to prevent routing loops.
- B. Routing is not completely configured on Certkiller 3.
- C. The IP addresses are not configured properly on Certkiller 1 and Certkiller 3 interfaces.
- D. The no auto-summary command configured on the routers prevents Certkiller 1 and Certkiller 2 from forming a neighbor relationship.

Answer: B

Explanation:

The Router Certkiller 3 is connected to three different networks: 192.168.3.1/30, 192.168.2.2/30, and 10.0.4.0/24 but only 10.0.4.0 and 192.168.2.0 are being advertised via EIGRP. In Certkiller 3, the "network 192.168.3.0" command should be placed under the EIGRP 10 process.

QUESTION 615

Exhibit:

```
-- System Configuration Dialog --  
  
Would you like to enter the initial configuration dialog? [yes/no]:  
% Please answer 'yes' or 'no'.  
Would you like to enter the initial configuration dialog? [yes/no]: n  
  
Would you like terminate autoinstall? [yes]:  
  
Press RETURN to get started!
```

Exhibit:

Please study the exhibit carefully. A network administrator configures a new router and enters the copy startup-config running-config command on the router. The network administrator powers down the router and sets it up at a remote location. When the router starts, it enters the system configuration dialog as shown. What is the cause of the problem?

- A. The network administrator failed to save the configuration.
- B. The configuration register is set to 0x2100.
- C. The boot system flash command is missing from the configuration.
- D. The configuration register is set to 0x2102.
- E. The router is configured with the boot system startup command.

Answer: A

Explanation:

This output is what you get when the router doesn't have a valid startup configuration in NVRAM. When the administrator issued the "copy start run" command, the existing config was then overwritten by the startup config, which in a new router is the factory default (unconfigured) settings. What the administrator meant to issue was the "copy run start" command to save the configuration, not the "copy start run" as shown here.

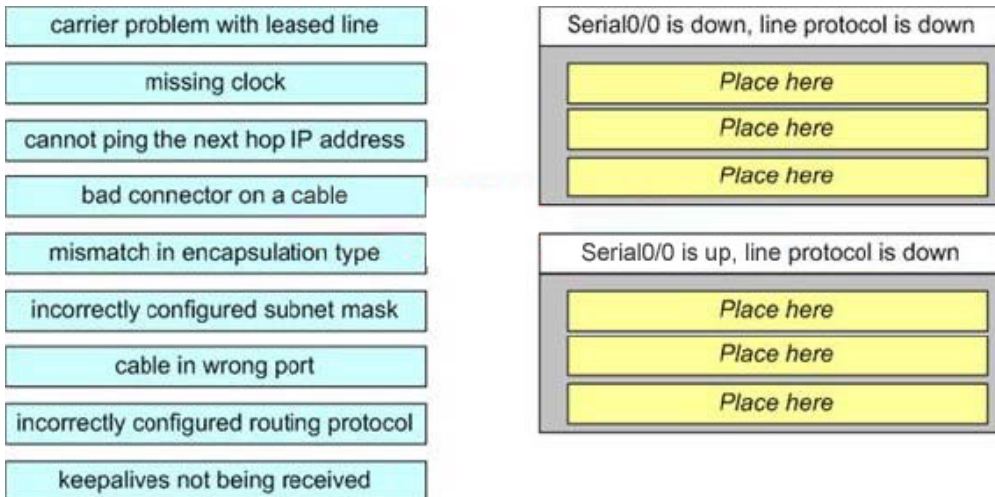
QUESTION 616

DRAG DROP

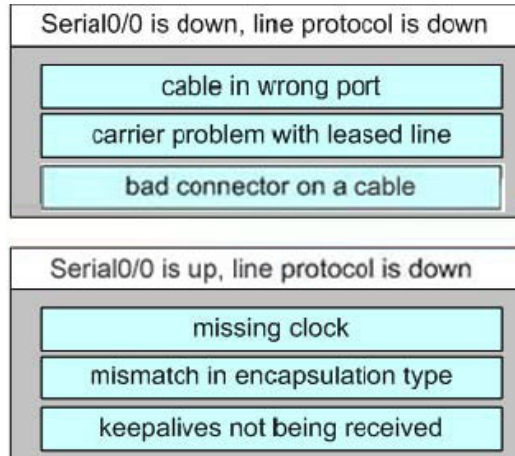
Drag each problem on the left to the interface status message it creates. (Not all options are used.)

Exhibit:

640-801



Answer:



QUESTION 617

During startup, a Certkiller router displays the following error message:
boot cannot open "flash;"
What will the router do next?

- A. Because of damaged flash memory, the router will fail the POST.
- B. It will attempt to locate the IOS from a TFTP server. if this fails, it will initiate the setup dialog.
- C. It will attempt to locate the IOS from a TFTP server. if this fails, it will load a limited IOS from ROM.
- D. It will attempt to locate the configuration file from a TFTP server, if this fails, it will initiate the setup dialog.
- E. It will attempt to locate the configuration file from a TFTP server. if this fails, it will load a limited configuration from ROM.

Answer: C

Explanation:

The boot sequence of a Cisco router is shown below:

Booting up the router and locating the Cisco IOS

1. POST (power on self test)
 2. Bootstrap code executed
 3. Check Configuration Register value (NVRAM) which can be modified using the config-register command
 - 0 = ROM Monitor mode
 - 1 = ROM IOS
 - 2 - 15 = startup-config in NVRAM
 4. Startup-config file: Check for boot system commands (NVRAM)
 - If boot system commands in startup-config
 - a. Run boot system commands in order they appear in startup-config to locate the IOS
 - b. [If boot system commands fail, use default fallback sequence to locate the IOS (Flash, TFTP, ROM)?]
 - If no boot system commands in startup-config use the default fallback sequence in locating the IOS:
 - a. Flash (sequential)
 - b. TFTP server (netboot)
 - c. ROM (partial IOS) or keep retrying TFTP depending upon router model
 5. If IOS is loaded, but there is no startup-config file, the router will use the default fallback sequence for locating the IOS and then it will enter setup mode or the setup dialogue.
 6. If no IOS can be loaded, the router will get the partial IOS version from ROM
- Reference: <http://www.svrops.com/svrops/documents/ciscoboot.htm>

QUESTION 618

What will a router do during startup if a configuration file is not located in NVRAM?

- A. It will search for the configuration file in the locations specified by boot system commands.
- B. It will search for the configuration file in flash and if no configuration file is found there, it will enter the setup dialog.
- C. It will search for the configuration file on a TFTP server and if no configuration file is found there, it will enter the setup dialog.
- D. It will search for the configuration file in flash and if no configuration file is found there, it will load a limited configuration file from ROM.
- E. It will search for the configuration file on a TFTP server and if no configuration file is found there, it will load a limited configuration file from ROM.

Answer: C

Explanation:

When a router boots and is able to locate the IOS it begins to load the configuration file. The configuration file, saved in NVRAM, is loaded into main memory and executed one line at a time. These configuration commands start routing processes, supply addresses for interfaces, and set media characteristics.

If no configuration file exists in NVRAM, the router attempts a network boot and sends a broadcast request for the file on a TFTP server. If this is also not found, the operating system executes a question-driven initial configuration routine called the system configuration dialog.

QUESTION 619

In the Certkiller router below, serial0/0 does not respond to a ping request from a host on the FastEthernet0/0 LAN. How can this problem be corrected?

```
BHM# show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.16.1	YES	NVRAM	up	up
Serial0/0	192.168.15.2	YES	NVRAM	administratively down	down
FastEthernet0/1	192.168.17.1	YES	NVRAM	up	up
Serial0/1	unassigned	YES	NVRAM	administratively down	down

- A. Correct the IP address for Serial 0/0.
- B. Change the encapsulation type on Serial 0/0.
- C. Correct the IP address for FastEthernet 0/0.
- D. Enable autoconfiguration on the Serial 0/0 interface.
- E. Enable the Serial 0/0 interface.

Answer: E

Explanation:

The status of the interface shows "administratively down" which means that the interface was manually shut down, or it was never enabled in the first place. This interface needs to be enabled using the "no shutdown" command under interface serial 0/0 in the configuration.

QUESTION 620

The Hub and Spoke routers are directly connected through their serial interfaces for purposes of testing. Based on the output shown in the exhibit, what must be done to make the serial line operational?

Exhibit: *** MISSING ***

- A. Replace the broken cable between the two devices.
- B. Use the no shutdown command on the Hub router.
- C. Change the IP address on the Spoke router.
- D. Configure the serial 0/0 interface on the Spoke router with a clockrate.
- E. Start the clock on the Hub router.

Answer: D

Explanation:

This error is generated due to the configuration of clock rate command. Go to the interface configuration mode and specify the clock rate.

QUESTION 621

Why is the "show processes" command used on a Certkiller router before a debug command is entered?

- A. To verify that the CPU utilization is low enough to handle the effects of a debug command
- B. To verify the amount of space in flash memory
- C. To view the number of timers that are currently in use
- D. To check if the load meter file has enough space left to store the output of the debug command
- E. To verify the IOS version that is running

Answer: A

Explanation:

The show processes command displays information about the active processes. Issue the show processes cpu command to display detailed CPU utilization statistics on these processes and the show processes memory command to show the amount of memory used.

The following is a sample output of the show processes command:

```
CK1 #show processes
CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%
PID Q Ty PC Runtime(ms) Invoked uSecs Stacks TTY Process
1 C sp 602F3AF0 0 1627 0 2600/3000 0 Load Meter
2 L we 60C5BE00 4 136 29 5572/6000 0 CEF Scanner
3 L st 602D90F8 1676 837 2002 5740/6000 0 Check heaps
4 C we 602D08F8 0 1 0 5568/6000 0 Chunk Manager
5 C we 602DF0E8 0 1 0 5592/6000 0 Pool Manager
6 M st 60251E38 0 2 0 5560/6000 0 Timers
7 M we 600D4940 0 2 0 5568/6000 0 Serial Backgroun
8 M we 6034B718 0 1 0 2584/3000 0 OIR Handler
9 M we 603FA3C8 0 1 0 5612/6000 0 IPC Zone Manager
```

It is always a good idea to check the CPU utilization levels before doing anything that may increase the CPU load, such as using debug commands.

QUESTION 622

A network administrator is having trouble with a remote router. The administrator connects to the router via telnet and types a debug command, but no debug output appears on the screen. What command should the administrator type to view the debug output?

- A. Certkiller 1# show debug
- B. Certkiller 1# debug all
- C. Certkiller 1# terminal monitor
- D. Certkiller 1# no debug *
- E. Certkiller 1# enable debug

Answer: C

Explanation:

To display debug command output and system error messages for the current terminal and session, use the terminal monitor command in EXEC mode.

Remember that all terminal parameter-setting commands are set locally and do not remain in effect after a session is ended. By default, debug messages can be seen when connected to the router via the console, but not when using telnet.

QUESTION 623

Refer to the output shown below. Why was this message received?

```
Certkiller1#telnet 10.3.1.2
  Laying 10.3.1.2... . Open

Password required, but None set

[Connection to 10.3.1.2 closed by foreign host]
Certkiller1#_
```

- A. The login command has not been set on CON 0.
- B. The login command has not been set on the VTY ports.
- C. No enable password has been set.
- D. No VTY password has been set.
- E. No enable secret password has been set.
- F. No console password has been set.

Answer: D

Explanation:

This error is generated due to no telnet being set. For security reasons, the Cisco router will not allow telnet access until a password has been set. You need to set the telnet password using the following example:

```
Router(config)#line vty 0 4
Router(config-line)#password telnet
Router(Config-line)#login
```

QUESTION 624

A router is not operating as expected and the network administrator wants to verify that the router booted using the correct IOS image. Which command should be used to determine which IOS is running on the router?

- A. show memory
- B. show flash
- C. show version
- D. show startup-config
- E. show config-register

Answer: C

Explanation:

The "show version" command displays info about the router and IOS running in RAM as shown below:

```

GAD#show version
Cisco Internetwork Operating System Software
IOS (tm) 1700 Software (C1700-BNSY-L1, Version
12.2(11)P, RELEASE SOFTWARE (fc1)
... <output omitted>...
ROM: System Bootstrap, Version 11.1(10)AA, EARLY
DEPLOYMENT RELEASE SOFTWARE (fc1)
ROM: 1700 Software (C1700-BOOT-R1, Version
11.1(10)AA, EARLY DEPLOYMENT RELEASE SOFTWARE
(fc1)
GAD uptime is 3 weeks 6 days 2 hours, 11 minutes
System restarted by power-on
System image file is "flash:cl700-bnsy-1.122-
11.P", booted via flash
Cisco 1721 (68360) processor (revision C) with
3584K/512K bytes of memory.
Processor board ID 12014633, with hardware
revision 00000000
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP
compliant.
1 Ethernet/IEEE 802.3 interface(s)
2 serial(sync/async) network interface(s)
System/IO memory with parity disabled
2048K bytes of DRAM onboard 2048K bytes of DRAM on
SIMM
System running from FLASH
8K bytes of non-volatile configuration memory.
6144K bytes of processor board PCMCIA flash (Read
ONLY)
Configuration register is: 0x2102
GAD#
  
```

IOS version points to the IOS (tm) 1700 Software line.

Boot ROM version points to the ROM: System Bootstrap line.

Router up time points to the GAD uptime is line.

Last restart method points to the System restarted by power-on line.

Platform points to the Cisco Internetwork Operating System Software line.

Feature set points to the IOS (tm) 1700 Software line.

Location to be used for loading the IOS points to the System image file is line.

System image file & location points to the System image file is line.

Number & type of interfaces on the router points to the 1 Ethernet/IEEE 802.3 interface(s) line.

Configuration register setting points to the Configuration register is: 0x2102 line.

QUESTION 625

Exhibit:

```

CertKiller1#show ru
% Ambiguous command: "show ru"
CertKiller1#_
  
```

Please study the exhibit carefully. Why did the device return this message?

- A. The command is being executed from the wrong router mode.
- B. There is no show command that starts with ru.
- C. The command requires additional options or parameters.
- D. There is more than one show command that starts with the letters ru.

Answer: D

Explanation:

This error gets generated when the command specified is not unique, meaning that more than one command starts with the letters "ru"

One very helpful shortcut tip is instead of having to type out a complete command, you can instead type just enough of it such that the command is not ambiguous. For example, if you were to type sh and press the Tab key, you would be presented with the completed command show. However, typing s alone and pressing tab won't do the same. Many commands start with the letter s, and the router wouldn't be able to determine which

command you were referring to. A good way to get used to entering partial commands is to hit the tab key after entering the first few letters at the command line - this will give you a feel for how much of the command needs to be entered in order for it not to be considered ambiguous.

QUESTION 626

Refer to the exhibit shown below. What could be possible causes for the "Serial0/0 is down" interface status? (Choose two)

```
CK1# show interfaces serial 0/0

Serial0/0 is down; line protocol is down
  Hardware is MK5025
  Serial Internet address is 10.1.1.2/24
  MTU 1500 bytes, BW 1544Kbits, DLY 20000 usec, rely 255/255, load 9/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  <some output omitted>
```

- A. The bandwidth is set too low.
- B. A protocol mismatch exists.
- C. A Layer 1 problem exists.
- D. An incorrect cable is being used.
- E. There is an incorrect IP address on the Serial 0/0 interface.

Answer: C, D

Explanation:

Status Line Condition	Possible Problem	Solution
Serial x is up, line protocol is up	—	This is the proper status line condition. No action is required.
Serial x is down, line protocol is down (DTE mode)	<p>The router is not sensing a CD signal (that is, the CD is not active).</p> <p>A telephone company problem has occurred—line is down or is not connected to CSU/DSU.</p> <p>Cabling is faulty or incorrect.</p> <p>Hardware failure has occurred (CSU/DSU).</p>	<ol style="list-style-type: none"> 1. Check the LEDs on the CSU/DSU to see whether the CD is active, or insert a breakout box on the line to check for the CD signal. 2. Verify that you are using the proper cable and interface (see your hardware installation documentation). 3. Insert a breakout box and check all control leads. 4. Contact your leased-line or other carrier service to see whether there is a problem. 5. Swap faulty parts. 6. If you suspect faulty router hardware, change the serial line to another port. If the connection comes up, the previously connected interface has a problem.

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

QUESTION 627

Which Cisco IOS command confirms that a router has established Layer 1 and Layer 2 connectivity to the telephone company ISDN switch?

- A. show isdn active
- B. show ip interface
- C. show isdn bri0/0
- D. show isdn channel
- E. show isdn status

Answer: E

Explanation:

The show isdn status command displays the status of all ISDN interfaces or a specific ISDN interface. When troubleshooting ISDN Basic Rate Interface (BRI), it is necessary to first determine if the router can properly communicate with the Telco ISDN switch. Once this has been verified, you can proceed on to higher level troubleshooting issues such as dialer interfaces, interesting traffic definitions, PPP negotiation, and

authentication failures.

This show isdn status output is an example of a properly functioning BRI circuit. In this example, Layer 1 is Active, the Terminal Endpoint Identifiers (TEIs) are successfully negotiated, and ISDN Layer 3 (end-to-end) is ready to make or receive calls. The items you should pay attention to are linked to each corresponding field in the Show ISDN

Certkiller 1#show isdn status

The current

ISDN Switchtype

= basic-ni1

ISDN BRI0 interface

Layer 1

Status:

ACTIVE

Layer 2

Status:

TEI = 109, State = MULTIPLE_FRAME_ESTABLISHED

TEI = 110, State = MULTIPLE_FRAME_ESTABLISHED

Spid Status

:

TEI 109, ces = 1, state = 8(established)

spid1 configured, spid1 sent, spid1 valid

Endpoint ID Info: epsf = 0, usid = 1, tid = 1

TEI 110, ces = 2, state = 8(established)

spid2 configured, spid2 sent, spid2 valid

Endpoint ID Info: epsf = 0, usid = 3, tid = 1

Layer 3 Status

:

0 Active Layer 3 Call(s)

Activated dsl 0 CCBs = 0

Total Allocated ISDN CCBs = 0

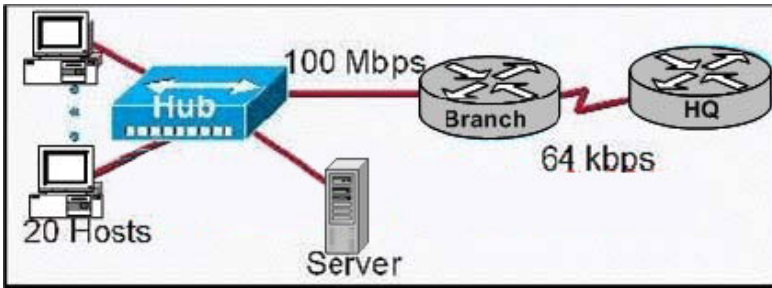
Reference: http://www.cisco.com/warp/public/129/bri_sh_isdn_stat.html

QUESTION 628

Exhibit:

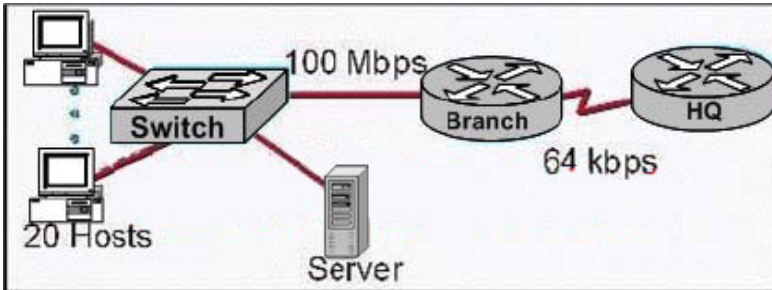
Please study the exhibit carefully. The users in the branch offices of a corporation are experiencing poor network performance when accessing data on the local server. The first exhibit represents a typical branch office of the corporation and the branch office connection to the corporate headquarters. The second diagram represents a design change to the branch office LAN.

Exhibit:



After design

Exhibit:



Will this design change improve the performance of the LAN to the local server?

- A. Yes
- B. No

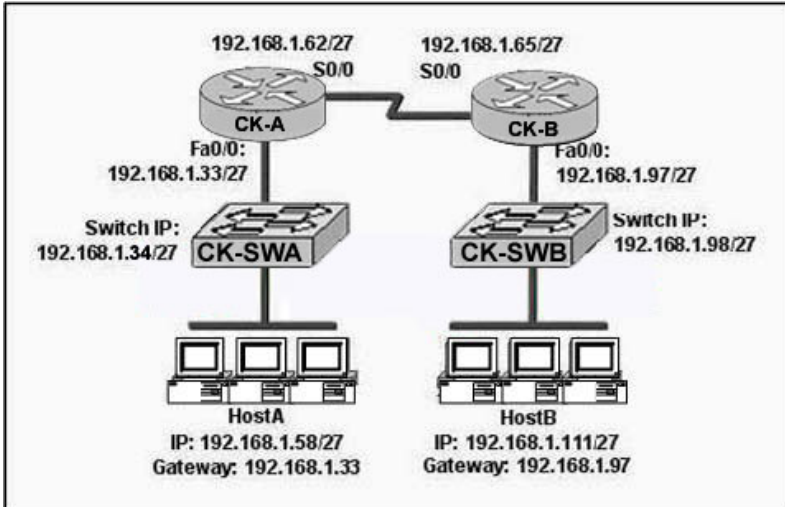
Answer: A

Explanation:

One of the best ways to increase network performance is to replace the network hubs with network switches. Switches are faster and more efficient than hubs. By default, switches break up collision domains. Collision domain is an Ethernet term used to describe the following network scenario. One particular device sends a packet on a network segment, forcing every other device on that segment to pay attention to it. At the same time, a different device tries to transmit, which leads to a collision, after which both devices must retransmit, one at a time. You'll typically find this situation in a hub environment where each host segment connects to a hub that represents only one collision domain and only one broadcast domain. By contrast, each and every port on a switch represents its own collision domain. In contrast, a hub can't break collision domains or broadcast domains. Similarly, a hub provides low bandwidth where a switch provides more bandwidth to all ports. Suppose there are 10 ports with 100 mbps bandwidth; then the hub provides only 10 mbps to each port but a switch provides 100 mbps to all ports aggregated.

QUESTION 629

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



- A. The Fa0/0 interface on RouterB is using a broadcast address.
- B. The serial interfaces of the routers are not on the same subnet.
- C. The address of SwitchA is a subnet address.
- D. The Fa0/0 interface on RouterA is on a subnet that can't be used.
- E. HostA is not on the same subnet as its default gateway.

Answer: B

Explanation:

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

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

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

QUESTION 630

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

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

D. The port is administratively disabled.

Answer: A

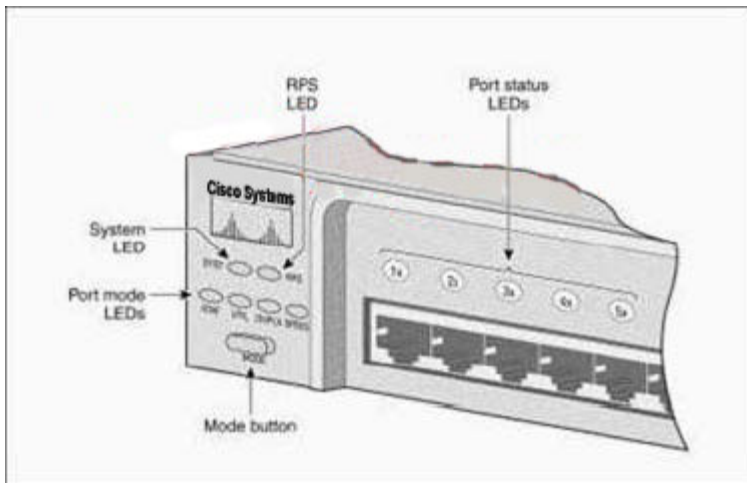
Explanation:

On a Catalyst 2900 series, alternating amber/green port status LED is due to collision fragments. If collision fragments are being generated at a fast enough rate on a switch port, the port status LED displays an alternating green/amber port fault condition.

On a Catalyst 3750 series, alternating green/amber means a link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.

QUESTION 631

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



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

Answer: D

Explanation:

While the switch powers on, it automatically begins POST, a series of tests that verifies that the switch functions properly. When the switch begins POST, the system LED is off. If POST completes successfully, the LED turns green. If POST fails, the LED turns amber.

Symptom	Possible Cause	Resolution
System LED is amber, and all port LEDs are off.	Corrupted software.	Attach a monitor to the serial port to display the switch boot loader. For more information, refer to the switch software configuration guide.

Reference:

http://www.cisco.com/en/US/products/hw/switches/ps4916/products_installation_guide_chapter09186a008017e3

QUESTION 632

The network administrator cannot connect to Switch1 over a Telnet session, although the hosts attached to Switch1 can ping the interface Fa0/0 of the router. Given the information in the graphic and assuming that the router and Switch2 are configured properly, which of the following commands should be issued on Switch1 to correct this problem?

Exhibit:

```
!
interface Vlan1
ip address 192.168.24.2 255.255.255.0
no ip route-cache
!
ip http server
!
line con 8
line vty 0 4
password cisco
login
!
end
```

- A. Switch1(config)# ip default-gateway 192.168.24.1
- B. Switch1(config)# interface fa0/1
Switch1(config-if)# ip address 192.168.24.3 255.255.255.0
- C. Switch1(config)# line con0
Switch1(config-line)# password cisco
Switch1(config-line)# login
- D. Switch1(config)# interface fa0/1
Switch1(config-if)# duplex full
Switch1(config-if)# speed 100
- E. Switch1(config)# interface fa0/1
Switch1(config-if)# switchport mode trunk

Answer: A

Explanation:

To route traffic to other vlans, we need to enter the IP address of the next-hop router interface that is directly connected to the switch where a default gateway is being configured. The default gateway receives IP packets with unresolved destination IP

addresses from the switch.

Once the default gateway is configured, the switch will connectivity to the remote networks with which a host needs to communicate.

QUESTION 633

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

- A. Serial0/1 is up, line protocol is down
- B. Serial0/1 is down, line protocol is down
- C. Serial0/1 is up, line protocol is up
- D. Serial0/1 is administratively down, line protocol is down

Answer: B

Explanation:

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

Status Line Condition	Possible Problem	Solution
Serial x is down, line protocol is down (DTE mode)	The router is not sensing a CD signal (that is, the CD is not active).	1. Check the LEDs on the CSU/DSU to see whether the CD is active, or insert a breakout box on the line to check for the CD signal.
	A telephone company problem has occurred—line is down or is not connected to CSU/DSU. Cabling is faulty or incorrect. Hardware failure has occurred (CSU/DSU).	2. Verify that you are using the proper cable and interface (see your hardware installation documentation). 3. Insert a breakout box and check all control leads. 4. Contact your leased-line or other carrier service to see whether there is a problem. 5. Swap faulty parts.
		6. If you suspect faulty router hardware, change the serial line to another port. If the connection comes up, the previously connected interface has a problem.

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

QUESTION 634

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

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

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

Answer: E

Explanation:

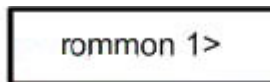
While the switch powers on, it begins POST, a series of tests. POST runs automatically to verify that the switch functions properly. When the switch begins POST, the system LED is off. If POST completes successfully, the LED turns green. If POST fails, the LED turns amber.

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

QUESTION 635

A Certkiller router boots to the prompt shown in the exhibit below. What does this signify, and how should the network administrator respond?

Exhibit:



- A. This prompt signifies that the configuration file was not found in flash memory. The network administrator should use TFTP to transfer a configuration file to the router.
- B. This prompt signifies that the IOS image in flash memory is invalid or corrupt. The network administrator should use TFTP to transfer an IOS image to the router.
- C. This prompt signifies that the configuration file was not found in NVRAM. The network administrator should follow the prompts to enter a basic configuration.
- D. This prompt signifies that the router could not authenticate the user. The network administrator should modify the IOS image and reboot the router.

Answer: B

Explanation:

The default boot sequence for Cisco IOS software:

1. NVRAM
2. Flash (sequential)
3. TFTP server (network boot)
4. ROM (partial IOS)

If a router boots up in ROM mode as shown in this example, it means that the router was unsuccessfully able to find a valid IOS to boot from, and a valid IOS image will need to be loaded onto it.

QUESTION 636

On your newly installed router, you apply the access list illustrated below to interface Ethernet 0 on a Certkiller router. The interface is connected to the 192.168.1.8/29 LAN.

access-list 123 deny tcp 192.168.166.18 0.0.0.7 eq 20 any
access-list 123 deny tcp 192.168.166.18 0.0.0.7 eq 21 any
How will the above access lists affect traffic?

- A. All traffic will be allowed to exit E0 except FTP traffic.
- B. FTP traffic from 192.168.166.19 to any host will be denied.
- C. FTP traffic from 192.168.166.22 to any host will be denied.
- D. All traffic exiting E0 will be denied.
- E. All FTP traffic to network 192.168.166.18/29 from any host will be denied.

Answer: D

Explanation:

By default every access list contains an implicit deny statement at the end. Because of this, only an access list that contains at least one permit statement will be useful. In this example there is no permit statement, so it will deny all traffic exiting E0 Interface.

Incorrect Answers:

- A. It will deny everything, including FTP and telnet traffic.
- B, C, E. It will deny all traffic in addition to the condition mentioned in these answers, because there is no permit statement at the end.

QUESTION 637

On a newly installed router, the following access list is added to the HSSI interface for incoming traffic:

Access-list 101 permit tcp any 10.18.10.0 0.0.0.255 eq 23

What is the effect of the "any" keyword in the above access list?

- A. check any of the bits in the source address
- B. permit any wildcard mask for the address
- C. accept any source address
- D. check any bit in the destination address
- E. permit 255.255.255.255 0.0.0.0
- F. accept any destination

Answer: C

Explanation:

The "any" in this list is the source address to filter. If it is set to any or "0.0.0.0 255.255.255.255", then any source address will be filtered. In the example above, the access list is stating that any TCP traffic from any source going to the 10.18.10.0/24 network will be allowed.

QUESTION 638

Which one of the following commands will display the placement and direction of an IP access control list on the interfaces of a router?

- A. show interface list
- B. show ip route
- C. show ip interface
- D. show ip interface brief
- E. show interface

Answer: C

Explanation:

The command "show ip interface" will include a reference to the access lists enabled on the interface.

QUESTION 639

The relevant portion of the Barrymore router configuration is displayed below:

```
Barrymore#show running-config
<some output text omitted>
enable password cisco
!
username Central password 0 cisco
!
interface BRI0/0
ip address 192.168.0.1 255.255.255.0
encapsulation ppp
dialer idle-timeout 180
dialer map ip 192.168.0.2 name Remote 5552000
dialer-group 1
isdn switch-type basic-ni
no fair-queue
ppp authentication chap
!
ip route 192.168.20.0 255.255.255.0 192.168.0.2
!
router rip
network 192.168.0.0
!
access-list 129 deny tcp 192.168.0.0 0.0.0 255 host
192.168.20.5 eq www
access-list 128 permit ip any any
dialer-list 1 protocol ip list 128
```

In your effort to conserve precious bandwidth, you set up some ACL's to deny internet access to the remote server located at 192.168.20.5. A few minutes after reconfiguring (as shown in the exhibit above) you notice that some web traffic is still going through.

Based on the above output, what do you suspect as to why the traffic still traveling over the ISDN link?

- A. Broadcasts are creating "interesting" traffic.
- B. The access-list is not configured correctly.
- C. The command ip access-group 129 out is missing from the bri0/0 interface.
- D. The dialer-group has not been applied to outbound traffic.

Answer: B

Explanation:

The access list is configured incorrectly

If you change

```
access-list 129 deny tcp 192.168.0.0 0.0.0 255 host 192.168.20.5 eq www
```

```
access-list 128 permit ip any any to access-list 128 deny tcp 192.168.0.0 0.0.0 255 host
```

```
192.168.20.5 eq www
```

```
access-list 128 permit ip any any.
```

Everything would be okay

Incorrect Answers:

C. If you apply the 129 access-list to any interface the result would be everything is blocked.

QUESTION 640

You are a technician at Certkiller . Your assistant applied an IP access control list to Router CK1 . You want to check the placement and direction of the access control list.

Which command should you use?

- A. show access-list
- B. show ip access-list
- C. show ip interface
- D. show interface
- E. show interface list

Answer: C

Explanation:

The show ip interface [name] command can be used to see if the access-list is on the interface. Output will vary depending on how the access-list command was applied but can include:

* Outgoing access list is not set

* Inbound access list is 101

* Outgoing access list is not set

* Inbound access list is 101, default is not set

Incorrect Answers:

A, B. This would simply show you the contents of the ACL, as well as the counters assuming the "log" keyword was configured on the access list. Example:

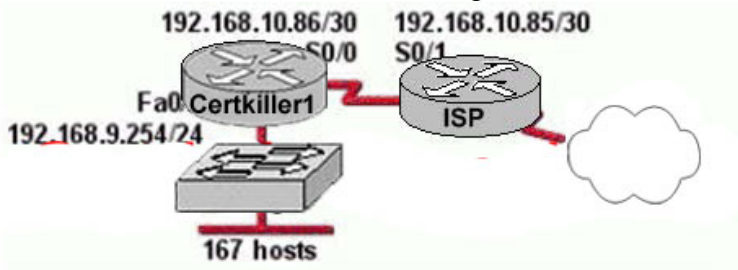
Show access list 101 or show IP access list 101

- * Extended IP access list 101
- * deny tcp any any (1649 matches)
- * deny udp any any (35 matches)
- * deny icmp any any (36 matches)

D. This will display the statistics pertaining to the interface, but not any configured access lists that are applied.

QUESTION 641

The Certkiller WAN is shown in the diagram below:



```
Certkiller1 (config)# ip nat pool c-pool 66.179.148.33 66.179.148.34
netmask 255.255.255.248
Certkiller1 (config)# access-list 1 permit 192.168.9.0 0.0.0.248
Certkiller1 (config)# ip nat inside source list 1 pool c-pool overload
Certkiller1 (config)# interface fastethernet 0/0
Certkiller1 (config-if)# ip nat inside
Certkiller1 (config)# interface serial 0/0
Certkiller1 (config-if)# ip nat outside
```

Study the Exhibit carefully and sequence of configuration commands shown in the graphic. The network at Certkiller 1 has just been configured for NAT as shown.

Initial tests indicate that the network is functioning properly.

However, several users report that they cannot access the Internet. What is the problem?

- A. The NAT pool does not have enough IP addresses.
- B. The access list is not permitting all of the LAN host addresses to be translated.
- C. The NAT inside and NAT outside interfaces are reversed.
- D. The link between the Certkiller routers and the Certkiller 2 ISP

Answer: B

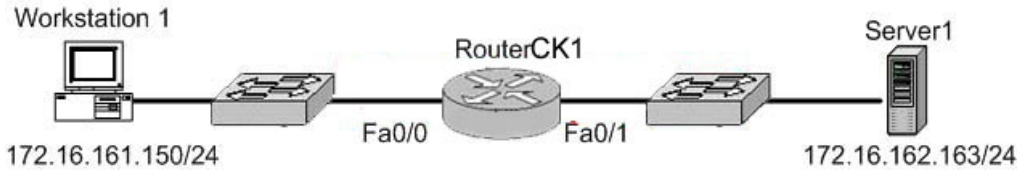
Explanation:

The source of the IP address hosts that should be translated is specified in access list 1, which only specifies 192.168.9.0 0.0.0.7. This will only translate host 192.168.9.1-192.168.9.7. The correct syntax should have been: access-list 1 permit 192.168.9.0 0.0.0.255

QUESTION 642

The network topology for a Certkiller location is shown below:

640-801



Refer to the graphic. It has been decided that Workstation 1 should be denied access to Server1. Which of the following commands are required to prevent only Workstation 1 from accessing Server1 while allowing all other traffic to flow normally? (Choose two)

- A. Router CK1 (config)# interface fa0/0
Router CK1 (config-if)# ip access-group 101 out
- B. Router CK1 (config)# interface fa0/0
Router CK1 (config-if)# ip access-group 101 in
- C. Router CK1 (config)# access-list 101 deny ip host 172.16.161.150 host 172.16.162.163
Router CK1 (config)# access-list 101 permit ip any any
- D. Router CK1 (config)# access-list 101 deny ip 172.16.161.150 0.0.0.255 172.16.162.163 0.0.0.0
Router CK1 (config)# access-list 101 permit ip any any

Answer: B, C

Explanation:

To block communication between Workstation A and Server 1, we have to configure Extended Access List.

To define an extended IP access list, use the extended version of the access-list command in global configuration mode. To remove the access lists, use the no form of this command.

```
access-list access-list-number [dynamic dynamic-name [timeout minutes]] {deny | permit} protocol source source-wildcard destination destination-wildcard
```

Source Address will be of the Workstation A i.e. 172.16.161.150 and destination address will be of the Server 1 i.e. 172.16.162.163.

The access list will be placed on the FA0/0 of Router CK1 .

QUESTION 643

Which wild card mask will enable a network administrator to permit access to the Internet for only hosts that are assigned an address in the range 192.168.8.0 through 192.168.15.255?

- A. 0.0.0.0
- B. 0.0.0.255
- C. 0.0.255.255
- D. 0.0.7.255
- E. 0.0.3.255
- F. None of the above

Answer: D

Explanation:

Wildcard mask summarization example:

This list describes how to summarize a range of networks into a single network for ACL optimization. Consider these networks.

- 192.168.32.0/24
- 192.168.33.0/24
- 192.168.34.0/24
- 192.168.35.0/24
- 192.168.36.0/24
- 192.168.37.0/24
- 192.168.38.0/24
- 192.168.39.0/24

The first two octets and the last octet are the same for each network. This table is an explanation of how to summarize these into a single network.

The third octet for the above networks can be written as seen in this table, according to the octet bit position and address value for each bit.

Decimal	128	64	32	16	8	4	2	1
32	0	0	1	0	0	0	0	0
33	0	0	1	0	0	0	0	1
34	0	0	1	0	0	0	1	0
35	0	0	1	0	0	0	1	1
36	0	0	1	0	0	1	0	0
37	0	0	1	0	0	1	0	1
38	0	0	1	0	0	1	1	0
39	0	0	1	0	0	1	1	1
	M	M	M	M	M	D	D	D

Since the first five bits match, the above eight networks can be summarized into one network (192.168.32.0/21 or 192.168.32.0 255.255.248.0). All eight possible combinations of the three low-order bits are relevant for the network ranges in question. This command defines an ACL that permits this network. If you subtract 255.255.248.0 (normal mask) from 255.255.255.255, it yields 0.0.7.255.

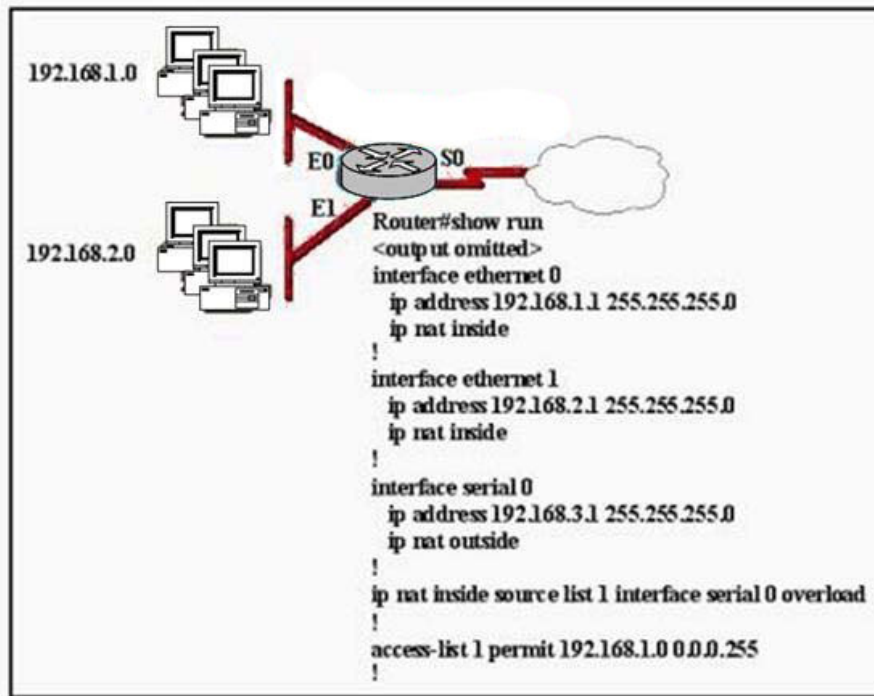
```
access-list acl_permit permit ip 192.168.32.0 0.0.7.255
```

Reference:

http://www.cisco.com/en/US/products/sw/secursw/ps1018/products_tech_note09186a00800a5b9a.shtml#topic2

QUESTION 644

The Certkiller network is shown below:



The network administrator has configured NAT as shown in the graphic. Some clients can access the Internet while others cannot. What should the network administrator do to resolve this problem?

- A. Configure an IP NAT pool.
- B. Properly configure the ACL.
- C. Apply the ACL to the S0 interface.
- D. Configure another interface with the ip nat outside command.
- E. None of the above.

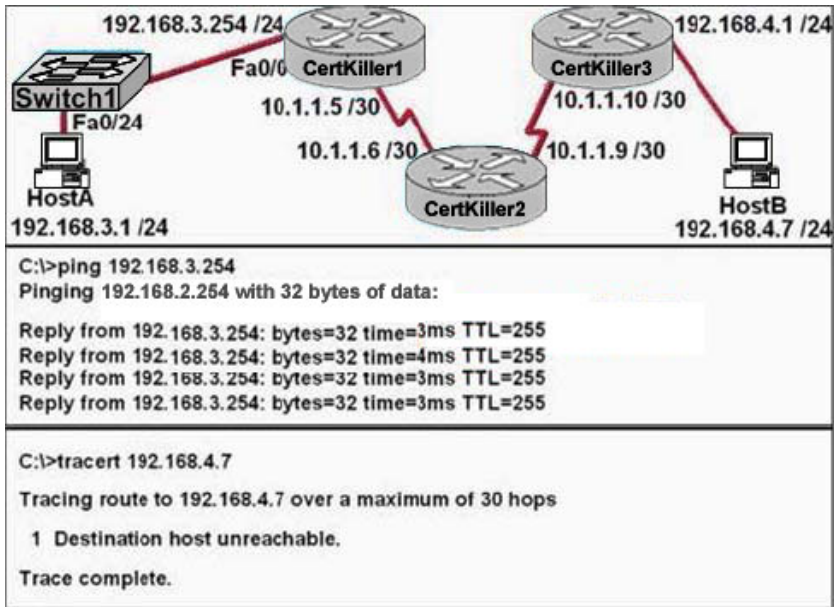
Answer: B

Explanation:

In the exhibit the ACL is only configured for the 192.168.1.0/24 network. In order to make Internet access available to all clients of both networks the access list 1 needs to include both 192.168.1.0/24 and 192.168.2.0/0.

QUESTION 645

In the network shown below, a technician is testing connection problems in the internetwork. What is the problem indicated by the output from HostA?



- A. The gateway address of HostA is incorrect or not configured.
- B. An access list is applied to an interface of Certkiller 3.
- C. The routing on Certkiller 2 is not functioning properly.
- D. The Fa0/24 interface of Switch1 is down.

Answer: A

Explanation:

Since pings sent to router Certkiller 1 are successful, we know that basic connectivity exists at least to the first hop toward the destination. However, when we perform a traceroute to the destination, the first hop does not show up at all. This is due to the fact that the host does not have a default gateway specified, and therefore does not know where to send traffic with a destination address in a different subnet.

Incorrect Answers:

B: Although this may indeed be true, if this were the problem, then the traceroutes would at least reach router Certkiller 3.

C: If this were the problem, then the traceroute would have at least reached the first hop.

D: If this were true, then pings sent to 192.168.3.254 would be unsuccessful.

QUESTION 646

While troubleshooting a serial line problem, you enable ppp authentication debugging as shown below:

```

#debug ppp authentication
ppp serial1: Send CHAP challenge id=34 to remote
ppp serial1: CHAP challenge from P1R2
ppp serial1: CHAP response received from P1R2
ppp serial1: CHAP response id=34 received from P1R2
ppp serial1: Send CHAP success id=34 to remote
ppp serial1: Remote passed CHAP authentication
ppp serial1: Passed CHAP authentication

```

ppp serial1: Passed CHAP authentication with remote

Based on the command output above, what type of 'handshake' was used for PPP authentication?

- A. one-way
- B. two-way
- C. three-way
- D. four-way
- E. no handshakes required during authentication
- F. None of the above

Answer: C

Explanation:

As shown in the above output, CHAP is the mechanism that is being utilized here. CHAP uses a three-way handshake. After the PPP link is established, the host sends a "challenge" message to the remote node. The remote node responds with a value calculated using a one-way hash function. The host checks the response against its own calculation of the expected hash value. If the hash value match, the authentication is acknowledged; otherwise, the connection is terminated.

QUESTION 647

The Certkiller Central and Remote offices are configured as shown below:

```
Central# show running-config Remote# show running-config
<some output text omitted> <some output text omitted>
interface Serial0/0 interface Serial0/0
ip address 10.0.8.1 255.255.248.0 ip address 10.0.15.2 255.255.248.0
encapsulation frame-relay encapsulation frame-relay
frame-relay map ip 10.0.15.2 200 frame-relay map ip 10.0.8.1 100
!!
router rip router rip
network 10.0.0.0 network 10.0.0.0
```

The remote router can be successfully pinged from the central office but the remote users can't access the server at the central office.

Based on the output above, what do you suspect is the cause of this problem?

- A. The Frame Relay PVC is down.
- B. The IP addressing on the Central/Remote serial link is incorrect.
- C. RIP routing information is not being forwarded.
- D. Frame Relay inverse-ARP is not properly configured.

Answer: C

Explanation:

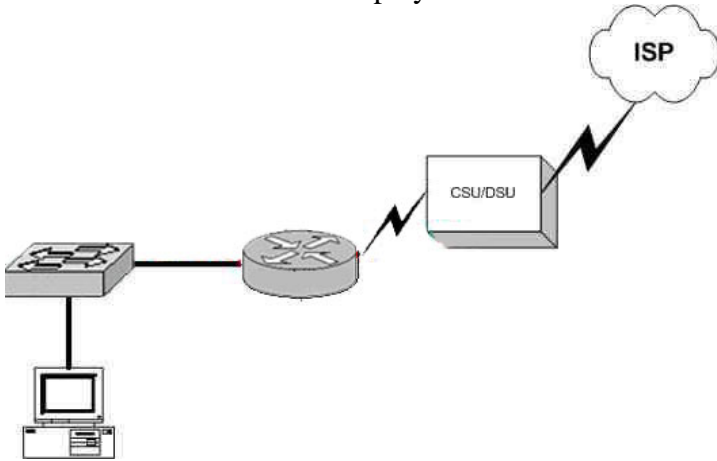
By looking to he output we can see that there are routes and routing protocol is RIP. The remote server can be pinged, we know now that there is a physical connection (for that

answer A + B can be eliminated.

Since the frame relay DLCI's are statically mapped using the "frame-relay map" command, inverse -ARP is not needed. Therefore, choice C is the only possible choice left.

QUESTION 648

The Certkiller network is displayed below:



You are brand new to the company, and you are in the process of discovering the Certkiller network's topology. You have been given a Visio of the network diagram above. Based on this information, what conclusion can you make about the type of Certkiller Internet connection? (Select all that apply)

- A. They are using DSL
- B. They are using frame relay
- C. ISDN is being used
- D. A dedicated T1 circuit is being used
- E. They are using a wireless ISP
- F. They are using a POTS dial up connection

Answer: B, D

Explanation:

The correct answer should be "Frame Relay" & "Dedicated T1". Both WAN technologies use CSU/DSU. These are the only two choices that could be correct based on the fact that a CSU/DSU is being used.

Incorrect Answers:

- A. DSL uses a modem instead of a CSU/DSU
- C. ISDN uses a terminal adapter/NT
- E, F: CSU/DSU's are not used in wireless and dial up connections.

QUESTION 649

You are trying to bring up a new Certkiller location onto your existing frame relay network. The new location is using an Adtran router and you are having difficulties

getting the site to connect via frame to your Cisco HQ router. What is the most likely cause of the problem?

- A. Mismatched LMI types.
- B. Incompatible encapsulation types.
- C. Mismatching IP addresses.
- D. Incorrect DLCI.
- E. None of the above

Answer: B

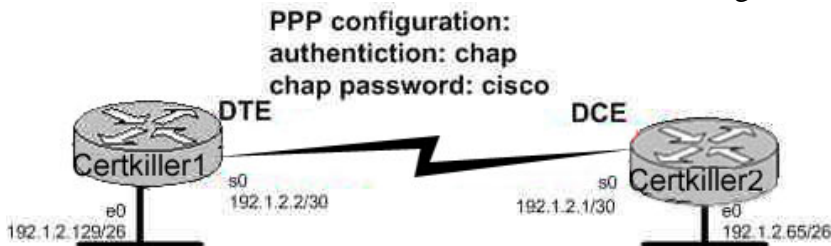
Explanation:

LMI does have to be the same on both "ends", but when you're talking about LMI, one end is your local router and the other end is the carrier's frame relay switch. The two routers can use different LMI types as long as the ports on the frame relay switch use the correct LMI type.

Encapsulation also has to be the same between both ends, but now we're talking about the "ends" being the two routers. Cisco defaults to a proprietary frame relay encapsulation. To interoperate with other vendors, you must use "encapsulation frame-relay ietf". This is a common problem in a multi-vendor environment.

QUESTION 650

The Certkiller 1 and Certkiller 2 routers are connected together as shown below:



Users on the Certkiller 1 LAN are able to successfully access the resources on the Certkiller 2 network. However, users on Certkiller 1 are unable to telnet to the Certkiller 2 router. What do you suspect are the likely causes of this problem? (Select two answer choices)

- A. PPP authentication configuration problem.
- B. A misconfigured IP address or subnet mask
- C. An access control list
- D. A defective serial cable.
- E. No clock rate on interface s0 on Certkiller 2
- F. A missing vty password.

Answer: C, F

Explanation:

An ACL or a router configured without a VTY password will prevent users from being able to telnet into a router.

Incorrect Answers:

A, B, D, E. We know that the network is connected together and communicating back and forth because of the two way CHAP authentication happening. In addition, the LAN users are able to get to each other with no problems. Therefore A is incorrect, B is incorrect, D is incorrect, and E is incorrect.

QUESTION 651

You are an administrator of a network that uses PPP for CHAP authentication over every WAN link. What command would you enter to display the CHAP authentication as it occurs in real time?

- A. show ppp authentication
- B. debug PAP authentication
- C. debug PPP authentication
- D. show interface serial0
- E. show CHAP authentication

Answer: C

Explanation:

Whenever you're asked to display a process in real time, you must use a debug command as show commands do not display anything in real time. Debug PPP authentication will display the authentication process of a PPP line, including the CHAP process.

Incorrect Answers:

A, D, E. This will not display the output in real time.

B. We wish to see information relating to CHAP, not PAP.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 314.

QUESTION 652

You are troubleshooting a WAN connection for Certkiller , and on the router you execute the, "debug ppp authentication" command, and view the following output:

```
#debug ppp authentication
```

```
PPP Serial1: Send CHAP challenge id=34 t remote
```

```
PPP Serial1: CHAP challenge from P1R2
```

```
PPP Serial1: CHAP response received form P1R2
```

```
PPP Serial1: CHAP response id=34 received from P1R2
```

```
PPP Serial1: Send CHAP success id=34 to remote
```

```
PPP Serial1: Remote passed CHAP authentication
```

```
PPP Serial1: Passed CHAP authentication
```

```
PPP Serial1: Passed CHAP authentication with remote
```

What kind of handshake was used for the PPP authentication?

- A. one-way
- B. two-way
- C. three-way

- D. No handshakes required during authentication
- E. None of the above

Answer: C

Explanation:

CHAP uses a one-way hash algorithm, with input to the algorithm being a password and a shared random number. The CHAP challenge states the random number; both routers are preconfigured with the password. The challenged router runs the hash algorithm using the just-learned random number and the secret password and sends the results back to the router that sent the challenge. The router that sent the challenge runs the same algorithm using the random number (sent across the link) and the password (not sent across the link). If the results match, the passwords must match.

QUESTION 653

Study the output script and the network topology exhibit below:

```
Certkiller 1# show running-config  
<some output text omitted>  
interface serial0/0  
bandwidth 64  
ip address 172.16.100.2 255.255.0.0  
encapsulation frame-relay  
frame-relay map ip 172.16.100.1 100 broadcast
```



The Router Certkiller 1 in Hong Kong is connected to the router Certkiller 2 in Tokyo via a new Frame Relay link. However, Certkiller 1 is unable to communicate with Certkiller 2. Based on the above output, what do you suspect as the underlying cause of this problem?

- A. Bandwidth configuration incorrect
- B. IP address not correct
- C. Improper map statement
- D. Improper LMI configuration

Answer: C

Explanation: From looking at the diagram you can see that Hong Kong's DLCI is 100, while Tokyo's DLCI is 200.

The Frame Relay map command is an interface configuration mode command that statically defines a mapping between a network layer address and a DLCI.

Incorrect Answers:

- A. The bandwidth statement is not used by the routers at a physical or data link layer, so

this statement will not have any impact on the function of the frame relay circuit.
B. We do not know what the IP address of the Tokyo side is, so this can not be assumed.
D. The default LMI type is Cisco, and since both routers in this network appear to be Cisco's, we can assume that this is acceptable.

QUESTION 654

While troubleshooting an issue with your frame relay network, you issue the "show frame pvc" command as shown in the exhibit below:

```
PVC Statistics for interface Serial0 (Frame Relay DTE)

      Active  Inactive  Deleted  Static
Local      1         0         0         0
Switched   0         0         0         0
Unused     0         0         0         0

DLCI = 100, DLCI USAGE = LOCAL, PVC STATUS = ACTIVE, INTERFACE =
Serial0

input pkts 1300      output pkts 1270      in bytes 22121000
out bytes 21802000  dropped pkts 4        in FECN pkts 147
in BECN pkts 192   out FECN pkts 259     out BECN pkts 214
in DE pkts 0       out DE pkts 0
out bcast pkts 107 out bcast bytes 19722
pvc create time 00:25:50, last time pvc status changed 00:25:40
```

You're a network administrator at a Certkiller branch office, that's connected to the central headquarters by means of Frame Relay. You've been getting complaints that the connection has suddenly become slow, so you make the assumption that there's too much traffic going through the link.

Taking into consideration the above output from the 'show frame relay pvc' command; which command output value is indicating that there's congestion between the local router and the corporate site?

- A. in DE packets 0
- B. last time PVC status changed 00:25:40
- C. in BECN packets 192
- D. DLCI = 100
- E. in FECN packets 147

Answer: C

Explanation:

BECN stands for Backward Explicit Congestion Notification.

The BECN tells the transmitting device that the Frame Relay network is congested and that it should "back off" to allow better throughput. BECN and FECN go hand to hand together, but since the question specifically asks for what's indicating congestion between the local router and corporate site, BECN is correct.

QUESTION 655

In order to troubleshoot an issue with the Certkiller frame relay network, you log into a remote router via a telnet session and issue the command "debug frame-relay lmi". After a long wait, you fail to see any output. What could be the cause of this problem?

- A. The IP addresses are configured incorrectly.
- B. Frame Relay LMI messages not displayed in real time.
- C. The administrator must issue the enable frame-relay lmi debug command.
- D. The administrator must issue the terminal monitor command.
- E. Debug messages can only be received once through the console port.
- F. The administrator must issue the show frame-relay lmi vty 0 4 command-

Answer: D

Explanation:

In order to see any debugging output from a remote telnet session, the "terminal monitor" command will need to be issued. By default, the network server sends the output from the debug commands to the console terminal. Sending output to a terminal (virtual console) produces less overhead than sending it to the console. Use the privileged EXEC command terminal monitor to send output to a terminal.

Reference:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios1112/dbook/dapple.htm>

QUESTION 656

The configuration of the remote Certkiller 3 router is displayed below:

```
hostname Certkiller 3
!
enable password gatekeeper
!
isdn switch-type basic-5ess
!!
username Central password Certkiller
interface BRI0
ip address 192.168.0.1 255.255.255.0
encapsulation ppp
dialer idle-timeout 180
dialer map ip 192.168.0.2 name Remote 6662000
dialer-group 1
no fair-queue
ppp authentication chap
!
router rip
network 192.168.0.2
!
no ip classless
```

```
ip route 192.168.10.0 255.255.0.0 192.168.0.2
ip route 192.168.20.0 255.255.0.0 192.168.0.2
!
```

```
dialer-list 1 protocol ip permit
```

The Certkiller 3 router is unable to call the remote site. What is the underlying cause of this problem?

- A. The authentication password is missing from the dialer map command.
- B. The switch-type must be configured.
- C. Routing updates are being blocked by the applied dialer-list.
- D. The dialer list only permits one protocol.
- E. The name in the dialer-map must match the name in the username command.
- F. None of the above

Answer: E

Explanation:

The username in the above exhibit is "Central", while the dialer-map name is "Remote". Since the names don't match the call can't be completed because the username in the PPP CHAP authentication will be mismatched.

QUESTION 657

You are attempting to troubleshoot a frame relay problem you are having within the Certkiller network, but you are unsure where to start. You begin by entering the command:

```
Router# show frame-relay ?
```

Which three options will you be prompted for? (Select three answers choices)

- A. dlci
- B. clients
- C. pvc
- D. neighbors
- E. lmi
- F. map

Answer: C, E, F

Explanation:

The valid options for, 'show frame-relay' are: show frame-relay map, show frame-relay lmi, & show frame-relay pvc. In the Cisco IOS, if you don't type in a command specific enough, it will prompt you to select an option.

Incorrect Answers:

A, B, D. Show frame-relay dlci, show frame-relay clients, and show frame-relay neighbors are all invalid commands.

QUESTION 658

The relevant portions of two different Certkiller routers are displayed below:

```
<some output text omitted>
interface serial0/0
ip address 10.0.1.1 255.255.255.0
encapsulation frame-relay
|
router igrp 1
network 10.0.0.0

<some output text omitted>
interface fastethernet0/0
ip address 10.10.1.2 255.255.255.0
|
interface serial0/0
ip address 10.0.1.2 255.255.255.0
encapsulation frame-relay
|
router igrp 2
network 10.0.0.0
```

Users on these two routers are experiencing connectivity problems and are unable to reach each other. After reviewing the command output, what is the most likely cause of the problem?

- A. Incorrect IP addressing.
- B. Frame relay is incorrectly configured.
- C. IGRP is incorrectly configured.
- D. Link state routing protocol is needed.
- E. None of the above.

Answer: C

Explanation:

With IGRP, the process number, or autonomous system number, must match. In this case the router on the left is configured with IGRP 1, while the router on the right is configured with IGRP 2. This is resulting in the routers not exchanging IGRP routing information with each other.

Incorrect Answers:

- A. The IP addressing used here will work. Although IGRP does not support VLSM, all networks are configured using a /24 subnet mask.
- B. Since both routers are obviously Cisco (IGRP is Cisco proprietary) the frame relay configuration is not the problem. Had one of the routers been non-Cisco, then the keyword "ietf" should be placed at the end of the frame-relay encapsulation command.
- D. Link state routing is not required in this network.

QUESTION 659

You have just installed a new web server on the Certkiller network. You are required to ensure that the web server is accessible from the Internet. The network uses private addressing, so an IP-to-registered address mapping is required.

To do this, you enter the following command:

```
Certkiller (config)# ip nat inside source static 192.168.2.1 198.18.1.254
```

You unsuccessfully try to ping the Internet from a PC host on the LAN. During the troubleshooting process, you enter the "show ip nat translations" command but the output is blank.

What is the most likely cause of the problem?

- A. The keyword overload is missing from the command.
- B. The NAT pool must be defined first.
- C. An access list must be defined to create static NAT translations.
- D. The interfaces must be configured for NAT.
- E. None of the above

Answer: D

Explanation:

In order to successfully configure a static NAT translation, the interfaces must be configured for NAT, in addition to the global NAT command that was entered. The router interface that lies on the inside part of the network must be defined using the "ip nat inside" command. Similarly, the WAN interface that is being used for the Internet connection must be defined using the "ip nat outside" command.

Incorrect Answers:

- A. In order to make an internal server reachable from the Internet, a static one to one NAT entry must be configured for the server. The keyword "overload" is used to configure many to one NAT, or PAT.
- B, C. This need not be done in order to create a static NAT entry. These steps are typically done in setting up NAT so that inside LAN users can access the Internet via NAT.

QUESTION 660

Certkiller .com is configuring the serial interface of a Cisco router to connect to the router of a new ISP. A full T1 is being used for the Internet connection. After issuing the show interface serial 0/0 command, it is observed that the interface is UP and the line protocol is DOWN.

Which of the following commands could fix this problem?

- A. Border# copy running-config startup-config
- B. Border(config)# no shutdown
- C. Border(config-if)# encapsulation ppp
- D. Border(config-if)# no cdp enable
- E. Border(config-if)# ip routing

Answer: C

Explanation:

By default, a serial interface on a Cisco router is set for HDLC encapsulation. Many ISP's use PPP encapsulation for the layer 2 protocol since the connection is a point to point type and PPP is an industry standard, while HDLC is Cisco proprietary. Changing the default encapsulation type to PPP could fix this problem.

Incorrect Answers:

- A. This will save the current configuration into NVRAM, but will have no affect with the current state of the serial interface.
- B. If the interface was manually shut down the status would be "administratively down, line protocol down."
- D. CDP is enabled by default on all interfaces, but whether or not CDP is running would not have any impact on the functionality of the serial interface.
- E. IP routing is enabled by default. Additionally, IP routing does not need to be running on the router in order for the serial interface to work.

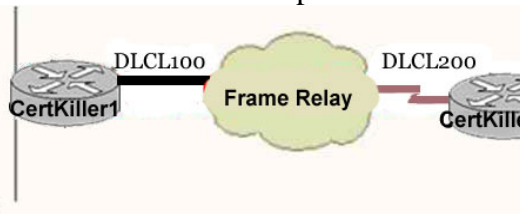
QUESTION 661

The Certkiller Frame Relay network is shown in the output below:

```
CertkillerA# show running-config
```

```
<some output text omitted>
```

```
interface serial0/0
bandwidth 64
ip address 172.16.100.2 255.255.255.0
encapsulation frame-relay
frame-relay map ip 172.16.100.1 200 broadcast
```



You work as a network engineer at Certkiller .com. The topology of the Certkiller .com network is displayed in the exhibit. Router Certkiller A is unable to reach router Certkiller B. Both routes are running IOS version 12.0. After reviewing the command output and the network topology exhibit, what is the most likely cause of the problem?

- A. Incorrect bandwidth configuration
- B. Incorrect LMI configuration
- C. Incorrect map statement
- D. Incorrect IP address

Answer: C

Explanation:

Study the exhibit. The routers have been configured with the wrong DLCI. In this example, the frame relay map that was configured should have specified 100 as the DLCI, not 200.

QUESTION 662

Which command can be used to determine the type of cable attached to the Serial 0/0 interface on a router?

- A. show interfaces serial 0/0
- B. show running-config
- C. show version
- D. show controllers serial 0/0
- E. show ip interface
- F. show line serial 0/0

Answer: D

Explanation:

The show controllers command shows that the physical layer is working and what type of cable is connected. In the output below, CK1 is connected at the DCE end and CK2 at the DTE end.

CK1 #show controllers serial 0 HD unit 1, idb = 0xF22E4, driver structure at 0xF7778
buffer size 1524 HD unit 0 1, V.35 DCE cable, clockrate 64000!--- Output suppressed.

QUESTION 663

DRAG DROP

A Certkiller .com network technician is testing an ISDN circuit that uses PPP between two IP hosts. Match the success indicator with the layer of OSI functionality on the right that the success indicator verifies.

Select from these

The line is up	Layer 3	Place here
A ping of the remote host is successful.	Layer 2	Place here
A telnet connection to the remote host is successful	Layer 1	Place here
A dial session to the remote host is successful.		

Answer:

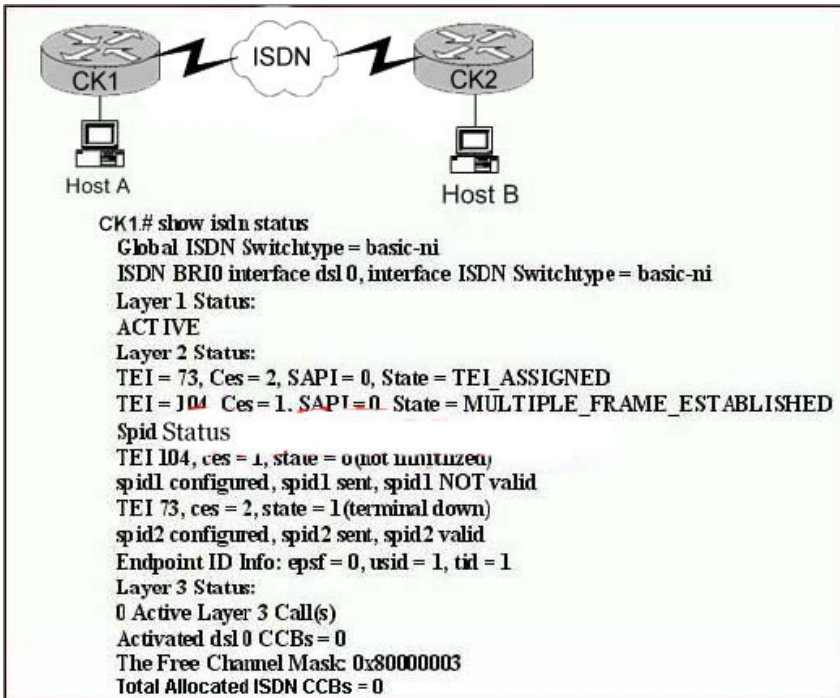
A Certkiller .com network technician is testing an ISDN circuit that uses PPP between two IP hosts. Match the success indicator with the layer of OSI functionality on the right that the success indicator verifies.

Select from these

	Layer 3	A ping of the remote host is successful.
	Layer 2	A dial session to the remote host is successful.
A telnet connection to the remote host is successful	Layer 1	The line is up

QUESTION 664

Routers CK1 and CK2 are connected as shown in the diagram below:



Based only on the topology and the output from the router shown in the graphic, what is the most likely reason Host A cannot ping Host B?

- A. A bad or disconnected cable.
- B. An improperly configured SPID.
- C. A missing route on CK1 and CK2 .
- D. Improperly configured ISDN switch type.
- E. An improperly configured IP address.

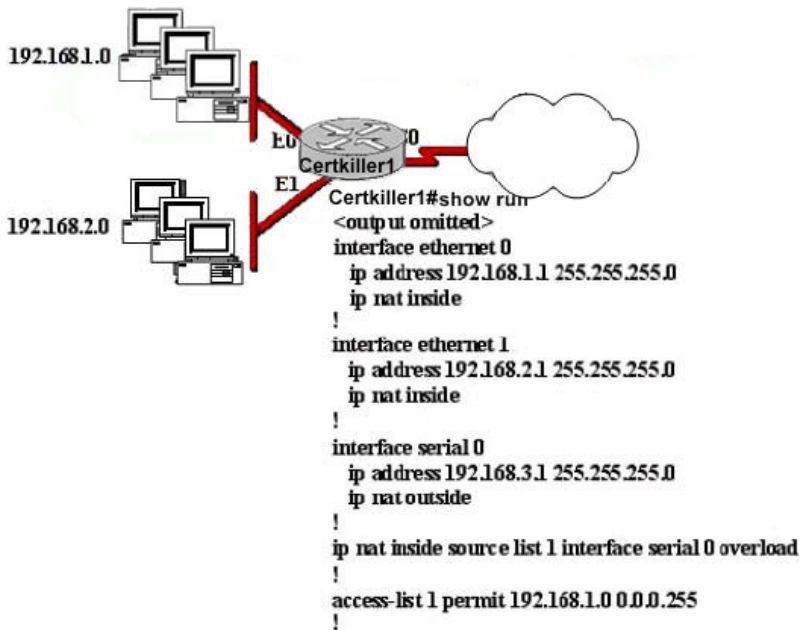
Answer: B

Explanation:

Since one of the SPIDs is working properly, we can safely assume that layers 1 and 2 are functioning properly on this ISDN connection, so the cable, connection, and ISDN switch type configured are all OK. The most logical reason for the output shown above is that the second SPID was not configured correctly.

QUESTION 665

The Certkiller network is shown in the diagram below:



The network administrator has configured NAT as shown in the exhibit. Some clients can access the Internet while others cannot. What should the network administrator do to resolve this problem?

- A. Configure an IP NAT pool.
- B. Properly configure the ACL.
- C. Apply the ACL to the S0 interface.
- D. Configure another interface with the ip nat outside command.
- E. Configure the ip nat inside and ip nat outside commands

Answer: B

Explanation:

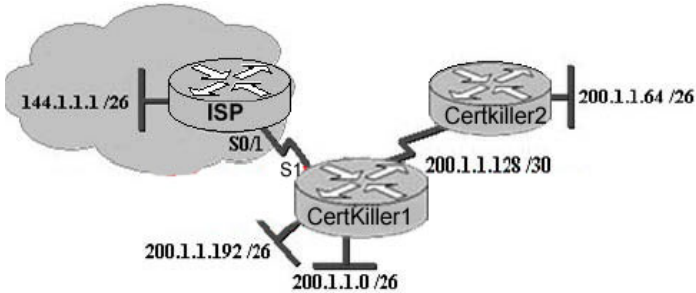
"Some clients can access the Internet while others cannot." this is a huge hint that tell us either:

1. ACL is blocking some people
2. You are not using overload when you should
3. That you are using 2 inside subnets like in this example & 1 of those does not have the IP NAT INSIDE statement against it.

In this example, the access list specified is only allowing users on the 192.168.1.0/24 subnet should be translated, so all of the users on E1 (192.168.2.X/24 subnet) will not get translated, and will therefore not be able to reach the Internet.

QUESTION 666

The Certkiller network topology is displayed below:



Exhibit, Certkiller 1 configuration

```

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

    200.1.1.0/24 is verbally subnetted, 1 subnets, 3 masks
C       200.1.1.192/26 is directly connected, Loopback0
C       200.1.1.128/30 is directly connected, Serial0
D       200.1.1.64/26 [90/2195456] via 200.1.1.130, 00:02:15, Serial0
D       200.1.1.0/24 is a summary, 00:00:41, Null0
C       200.1.1.0/26 is directly connected, Ethernet0
    200.1.2.0/30 is subnetted, 1 subnets
C       200.1.2.4 is directly connected, Serial1
S*    0.0.0.0/0 is directly connected, Serial1
Certkiller1#

```

You work as a network technician at Certkiller .com. Study the information displayed in the exhibits. Based on the output of the Certkiller 1#show ip route command and the information displayed in the network topology exhibit, which of the following is a potential routing problem?

- A. The use of summarization for discontinuous networks
- B. the use of CIDR with a routing protocol that does not support it
- C. the use of VLSM with a routing protocol that does not support it
- D. The use of the no auto-summary command with a protocol that does not support summarization
- E. the use of the ip route 0.0.0.0 0.0.0.0 command with a routing protocol that does not support it

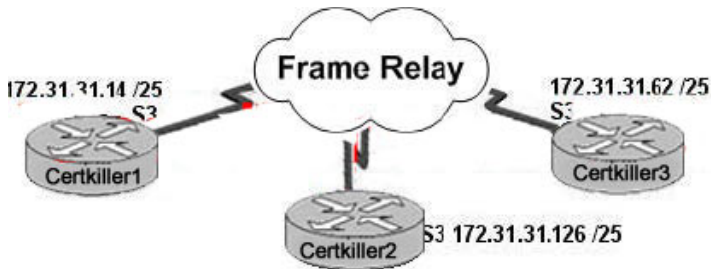
Answer: A

Explanation:

By default, EIGRP will automatically summarize networks at their network boundary, which can cause problems with dis-contiguous IP networks. Since the IP routing table does indeed show a summary route to null 0, the default behavior of EIGRP was not modified. In this network, it would be best to disable the automatic summarization feature of EIGRP.

QUESTION 667

The Certkiller frame relay network is shown in the diagram below:



Exhibit, Configuration:

```
Certkiller1#show frame-relay map
Serial3 (up): ip 172.31.31.126 dlci 205 (0xCD,0x30D0), static, broadcast,
CISCO, status defined active
```

```
Certkiller2#show frame-relay map
Serial3 (up): ip 172.31.31.126 dlci 605 (0x25D,0x94D0), static, broadcast,
CISCO, status defined active
```

```
Certkiller3#show frame-relay map
Serial3 (up): ip 172.31.31.62 dlci 509(0x1FD,0x7CD0), static, broadcast,
CISCO, status deleted
Serial3 (up): ip 172.31.31.14 dlci 502(0x1F6,0x7C60), static, broadcast,
CISCO, status defined, active
```

You work as network technician at Certkiller .com. The Certkiller .com Frame Relay network in the exhibit is not functioning OK.

What is the cause of the problem?

- A. The Certkiller 1 router has the wrong LMI type configured.
- B. Inverse ARP is providing the wrong PVC information to the Certkiller 1.
- C. The S3 interface of the Certkiller 2 router has been configured with the frame-relay encapsulation ietf command.
- D. The frame-relay map statement in the Certkiller 3 router for the PVC to Certkiller 2 is not correct.
- E. The IP address on the serial interface of the Certkiller 3 router is configured incorrectly.

Answer: D

Explanation:

On serial 3 of Certkiller 3 we can see that there are 2 PVC's defined, but only one of them is working and is shown as active. The frame relay map that was used to specify DLCI 509 was incorrect. Incorrect DLCI assignments that are configured normally shown up as "deleted" in the frame relay maps.

QUESTION 668

In which of the following scenarios would the "show cdp neighbors detail" command be an appropriate troubleshooting tool?

- A. Two switches are connected via a trunk. Both switches have been assigned an IP address, subnet mask, and default gateway. A ping is successful between the two switches. However, VLAN information is not passed from one switch to the other switch.
- B. A router and a switch have been assigned an IP address, a subnet mask, and a default

gateway. They are directly connected, but a ping between the two devices fails.

C. A router connects to another router through a serial interface. Both routers have been assigned an IP address, subnet mask, and default gateway. The routers are running RIP and the networks directly connected to the first router do not pass to the second router. However, a ping from one router to the serial interface of the directly connected neighboring router is successful.

D. A router connects to another router via a switch. Both routers and the switch have been assigned an IP address, subnet mask, and default gateway. Neither the routers nor the switch are able to ping one of the hosts that is directly to the switch.

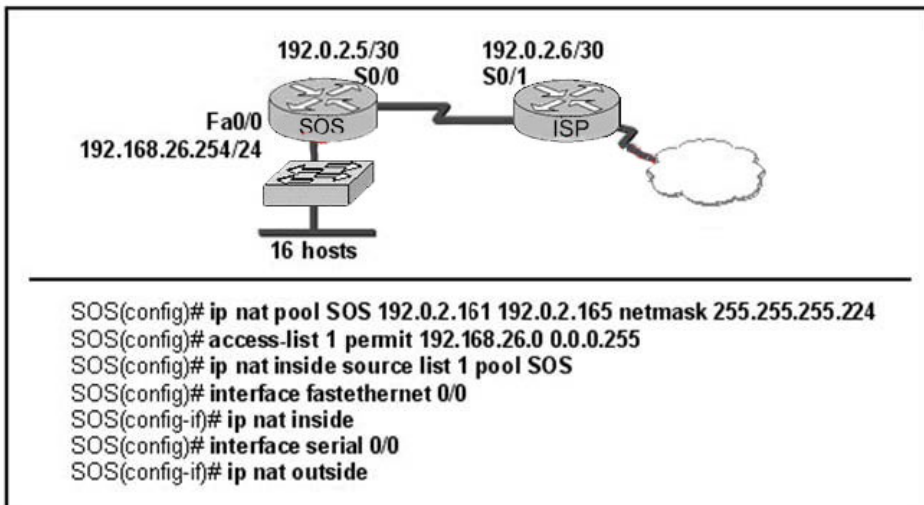
Answer: B

Explanation:

The Cisco Discovery Protocol is a media- and protocol-independent device-discovery protocol that runs on all Cisco-manufactured equipment including routers, access servers, bridges, and switches. Using CDP, a device can advertise its existence to other devices and receive information about other devices on the same LAN or on the remote side of a WAN. CDP runs on all media that support SNAP, including LANs, Frame Relay, and ATM media. Using CDP would be an effective troubleshooting tool for Cisco devices that are directly connected and you want to verify the physical connectivity. It would not be suitable for troubleshooting routing protocol or VLAN operation.

QUESTION 669

The Certkiller Internet connection is displayed in the following diagram:



Refer to the network diagram and configuration shown in the graphic exhibit. The network at the SOS Company has just been configured for NAT as shown. Initial tests indicate that everything is functioning as intended. However, it is found that a number of hosts cannot access the Internet. What is the problem?

- A. The access list is not correct.
- B. There are not enough IP addresses available in the NAT address pool.
- C. The wrong interface has been configured with the ip nat inside command.

- D. The IP address of the Fa0/0 interface is not usable.
 E. The S0/1 interface of the ISP router is in the wrong subnet.

Answer: B

Explanation:

To define a pool of IP addresses for Network Address Translation (NAT), use the `ip nat pool` command in global configuration mode. To remove one or more addresses from the pool, use the `no` form of this command.

```
ip nat pool name start-ip end-ip {netmask netmask | prefix-length prefix-length} [type rotary]
```

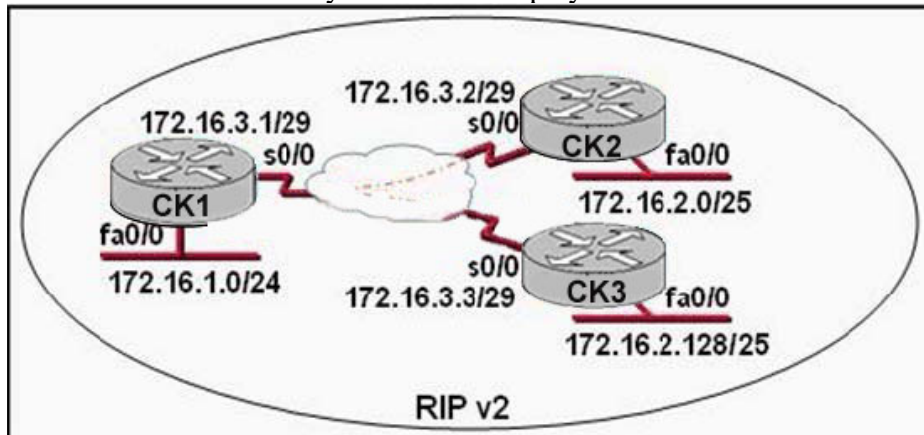
Syntax Description:

<i>name</i>	Name of the pool.
<i>start-ip</i>	Starting IP address that defines the range of addresses in the address pool
<i>end-ip</i>	Ending IP address that defines the range of addresses in the address pool.

In the configuration shown, the total number of addresses defined is from .161 to .165 but the figure shows a requirement of 16 hosts. So choice B is correct. Alternatively, we could have configured port address translation, or NAT overload, to provide Internet access to the given number of hosts.

QUESTION 670

The Certkiller frame relay network is displayed below:



In this network interface S0/0 on CK1 is configured as a multipoint interface to communicate with CK2 and CK3 in this hub-and-spoke Frame Relay topology. While testing this configuration, a technician notes that pings are successful from hosts on the 172.16.1.0/24 network to hosts on both the 172.16.2.0/25 and 172.16.2.128/25 networks. However, pings between hosts on the 172.16.2.0/25 and 172.16.2.128/25 networks are not successful. What could explain this connectivity problem?

- A. The `ip subnet-zero` command has been issued on the CK1 router.

- B. The RIP v2 dynamic routing protocol cannot be used across a Frame Relay network.
- C. Split horizon is preventing CK2 from learning about the CK3 networks and CK3 from learning about the CK2 networks.
- D. The 172.16.2.0/25 and 172.16.2.128/25 networks are overlapping networks that can be seen by CK1 , but not between CK2 and CK3 .
- E. The 172.16.3.0/29 network used on the Frame Relay links is creating a discontinuous network between the CK2 and CK3 router subnetworks.

Answer: C

Explanation:

The problem in this situation is related to split horizon, which reduces incorrect routing information and routing overhead in a distance-vector network by enforcing the rule that information cannot be sent back in the direction from which it was received. In other words, the routing protocol differentiates which interface a network route was learned on, and once it determines this, it won't advertise the route back out of that same interface. in a spoke and hub Frame Relay topology, the Frame Relay interface for the hub router must have split-horizon processing disabled. Otherwise, the spoke routers never receive each other's routes.

QUESTION 671

Exhibit:

```
Router(config)# interface serial 0/0
Router(config-if)# frame-relay lmi-type cisco

% Unrecognized command
Router(config-if)# frame-relay ?
% Unrecognized command
```

Exhibit:

Please study the exhibit carefully. A Certkiller router interface is being configured for Frame Relay. However, as the exhibit shows, the router will not accept the command to configure the LMI type. What is the problem?

- A. The interface does not support Frame Relay connections.
- B. The interface does not have an IP address assigned to it yet.
- C. The interface requires that the no shutdown command be configured first.
- D. The interface requires that the encapsulation frame-relay command be configured first.

Answer: D

Explanation:

Before entering LMI type in interface, you should type the encapsulation frame-relay

command. By default, serial interfaces use HDLC encapsulation, where the LMI type is not a configurable option as HDLC does not understand the concept of LMI.

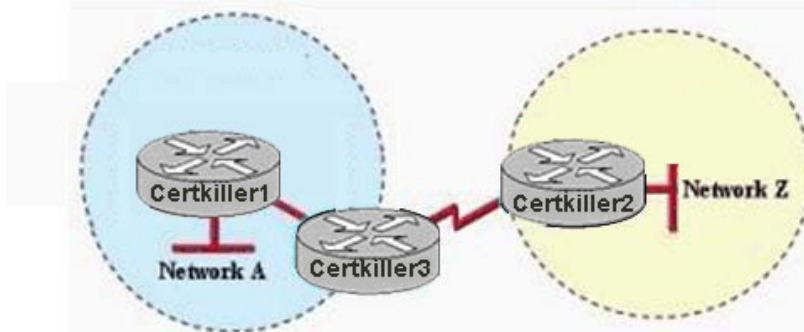
See the sample Configuration steps:

```
Router(config-if)#encapsulation frame-relay {cisco | ietf}  
Router(config-if)#frame-relay lmi-type {ansi | cisco | q933a}
```

QUESTION 672

In the network below, a Certkiller user is trying to send a file from a host on Network A to a server on Network Z. The file transfer fails. The host on Network A can communicate with other hosts on Network

A. Which command, issued from router Certkiller 1, would be the most useful for troubleshooting this problem?



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

Answer: C

Explanation:

This problem is most likely due to a communication problem with the ftp server. Using the show interface command can be used to verify the IP address, speed, errors,, configuration, etc. One of the first steps in troubleshooting any connectivity issue is to issue the "show interfaces" command to ensure that all of the interfaces are up and active.

Incorrect Answers:

- A: This is used to verify the version of IOS that the router is using.
- B: This is used to see the contents of the flash memory.
- D: This command displays the past commands that were issued in the router.
- E: This should only be used after it has been determined that the serial interface is indeed faulty.

QUESTION 673

In the "host to host" layer of the DOD model, which of the following is a valid connection oriented protocol?

- A. ARP

- B. RARP
- C. TCP
- D. UDP
- E. IP
- F. ICMP
- G. BootP

Answer: C

Explanation:

Transport Protocol is a connection oriented protocol that resides at the Host to Host layer of the DOD stack and handles connection oriented communication. In the Department of Defense layer, the host to host layer translates to layer 4 of the OSI model.

QUESTION 674

Which of the following protocols operate at the 'Application layer' of the OSI model? (Select all valid answers)

- A. TCP
- B. Telnet
- C. FTP
- D. ARP
- E. IP
- F. None of the above

Answer: B, C

Explanation:

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

Layer Name Examples

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

Incorrect Answers:

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

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

QUESTION 675

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

- A. Layer 2

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

Answer: C

Explanation:

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

QUESTION 676

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

- A. RIP
- B. STP
- C. IGRP
- D. CDP
- E. VTP

Answer: B

Explanation:

STP (spanning tree protocol) operates on layer 2 to prevent loops in switches and bridges.

Incorrect Answers:

A, C. RIP and IGRP are routing protocols, which are used at layer 3 to maintain a loop free routed environment.

D. CDP does indeed operate at layer 2, but it does not provide for a loop free topology. CDP is used by Cisco devices to discover information about their neighbors.

E. VTP is the VLAN Trunking Protocol, used to pass VLAN information through switches. It relies on the STP mechanism to provide a loop free network.

QUESTION 677

In the communications industry, what are the features and benefits of using the layered OSI model? (Select the two best answers)

- A. It encourages industry standardization by defining what functions occur at each layer

of the model.

- B. It necessitates changes in functionality in one layer to other layers.
- C. It enables equipment efficiency from different vendors to use the same electronic components.
- D. It divides the network communication process into smaller and simpler components, thus aiding component development, design, and troubleshooting.
- E. It supports the evolution of multiple competing standards, and thus enhances business equipment manufacturing opportunities.

Answer: A, D

Explanation:

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

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

QUESTION 678

The TCP/IP network model differs from the more popular OSI model. Which of the layers below belong to the TCP/IP model? (Select all that apply)

- A. Application layer
- B. Session layer
- C. Transport layer
- D. Internet layer
- E. Network layer
- F. Data link layer
- G. Physical layer

Answer: A, C, D

Explanation:

OSI Model	TCP/IP Architecture	TCP/IP Protocols
Application	SNMP, Telnet FTP, TFTP, NTP, NFS, SMTP	SNMP, TELNET, FTP, TFTP, NTP, NFS, SMT0
Presentation		
Session	Transport	TCP, UDP
Transport	Internet	IP OSPF, RIP, ICMP
Network	Network interface	Use of lower layer protocol standards
Data Link		
Physical		

TCP/IP's architecture does not use the presentation and session layers. The application layer protocols use the transport layer services directly. The OSI transport layer provides

connection-oriented service; in TCP/IP, this service is provided by TCP. TCP/IP also provides connectionless service in the transport layer with UDP.

The Internet layer of TCP/IP corresponds to the network layer of the OSI model.

Although OSI network-layer protocols provide connection-oriented (Connection-Model Network Service (CMNS), X.25) or Connectionless Network Service (CLNS), IP provides only connectionless network service. The routing protocols are network layer protocols with an IP protocol number.

Reference: CCNA ICND Exam Certification Guide by Wendell Odem, Page 268.

QUESTION 679

At which layer of the OSI model is the optimal path to a network destination determined at?

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

Answer: E

Explanation:

The Network layer (Internet layer in the DOD model) provides logical addressing and routing through an internetwork. The network layer is layer 3 of the OSI model.

QUESTION 680

In the OSI model, at which layers do WANs operate at? (Select three answer choices)

- A. Application layer
- B. Presentation layer
- C. Session layer
- D. Transport layer
- E. Network layer
- F. Data link layer
- G. Physical layer

Answer: E, F, G

Explanation:

A WAN is a data communications network that covers a relatively broad geographic area and that often uses transmission facilities provided by common carriers, such as telephone companies. WAN technologies generally function at the lower three layers of

the OSI reference model: the physical layer, the data link layer, and the network layer.



QUESTION 681

Which one of the following is the most commonly used layer 2 network device?

- A. Hub
- B. Bridge
- C. Switch
- D. Router
- E. Repeaters
- F. None of the above

Answer: C

Explanation:

A switch segments the network and uses an ASIC for fast switching. Switches have become the more common of the layer two devices, as they offer more features and benefits than bridges.

Incorrect Answers:

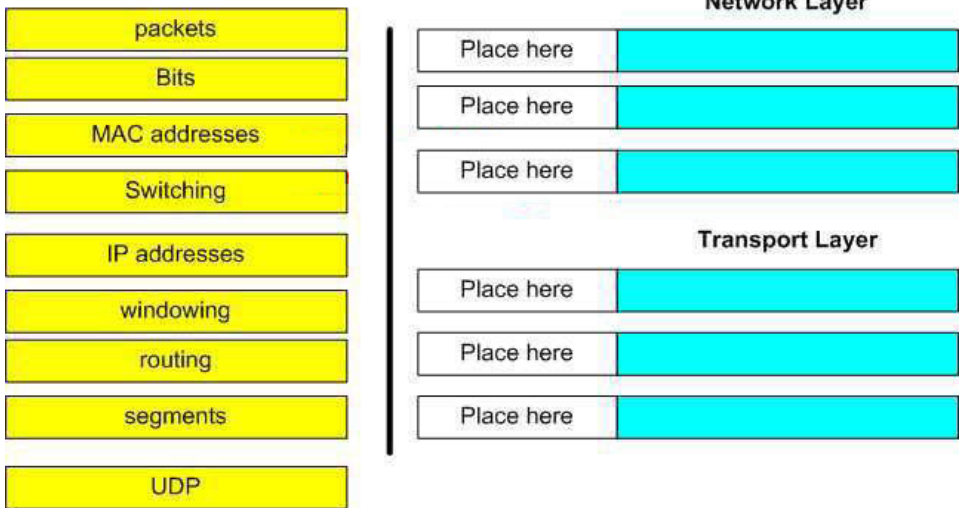
- A, E: Hubs and repeaters operate at layer one.
- B. Bridges have become somewhat obsolete, as switches have become more and more prevalent.
- D. Routers operate at layers 3 and 4.

QUESTION 682

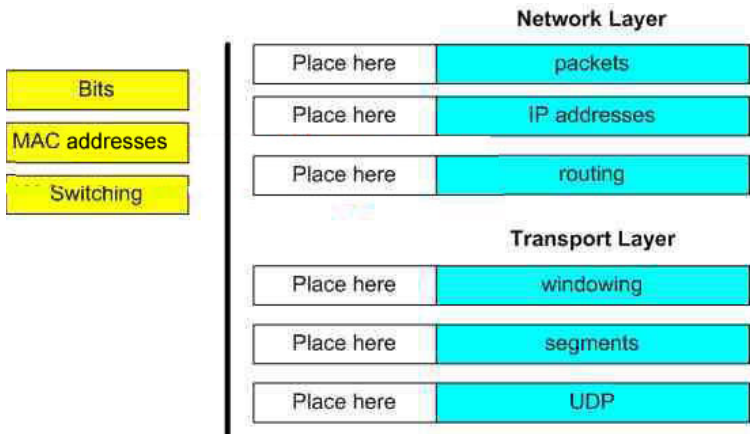
DRAG DROP

Classify the terms on the left into their proper OSI layer categories on the right. Do this by dragging and dropping the correct terms on the left with the correct answers on the right hand side. Note that not all left side options will be used.

640-801



Answer:



QUESTION 683

Which three of the following OSI model layers also belong to the TCP/IP model?
(Select three answer choices)

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

Answer: A, D, E

Explanation:

The Application, Transport, and the Network Interface Layers are all part of the TCP/IP layer model. (The application and transport layer are also layers of the OSI model as well.) However, the session layer, the data link layer, and the physical layer are all exclusively part of the OSI model.

QUESTION 684

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

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

Answer: B, C, E

Explanation:

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

Incorrect Answers:

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

QUESTION 685

Which of the following layers of the TCP/IP model most closely corresponds to the network layer of the OSI model?

- A. Application
- B. Internet
- C. Transport
- D. Network
- E. Data Link

Answer: B

Explanation:

The DOD model consists of the Application/Process, Host to Host, Internet and Network Access layers. The only answer with a DoD model layer (also called the TCP/IP model), is the Internet layer.

QUESTION 686

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

- A. Application
- B. Presentation

- C. Session
- D. Transport
- E. Internet
- F. Data Link
- G. Physical

Answer: A

Explanation:

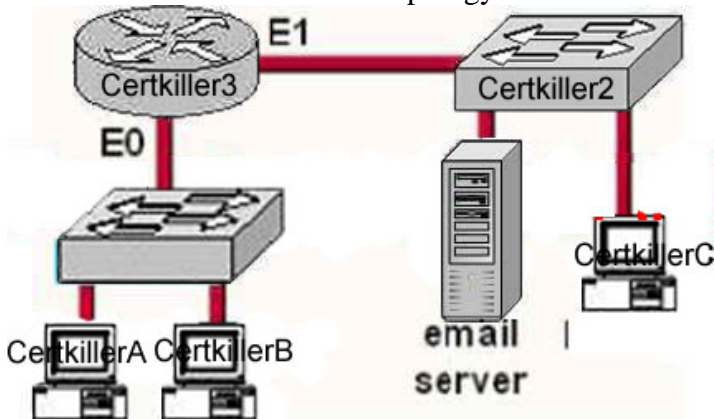
The application layer is the highest layer (layer 7) of the OSI model, and is reserved for end user applications. Since FTP is itself an application, layer 7 is the highest layer used.

Incorrect Answers:

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

QUESTION 687

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



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

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

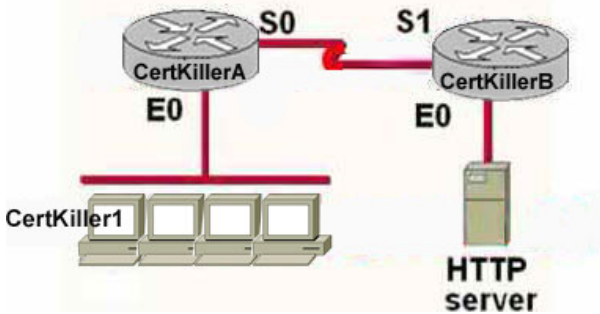
Answer: C

Explanation:

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

QUESTION 688

The Certkiller network topology is shown below:



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

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

Answer: A, D, F

Explanation:

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

QUESTION 689

DRAG DROP

Your boss at Certkiller .com asks you to match the terms with the appropriate OSI layer. Not all options are used.

Network Layer

Transport Layer

Place here

Place here

Place here

Place here

Place here

Place here

Terms, select from these

bits

IP addresses

windowing

parents

mseg emi

routing

UDP

MAC addresses

switching

Answer:

Your boss at Certkiller.com asks you to match the terms with the appropriate OSI layer. Not all options are used

Network Layer

Transport Layer

packets

windowing

IP addresses

segments

routing

UDP

Terms, select from these

bits

MAC addresses

switching

QUESTION 690

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

- A. Application
- B. Presentation
- C. Session
- D. Transport
- E. Network
- F. Data link
- G. Physical

Answer: E

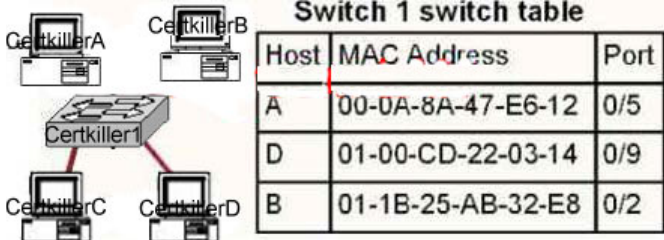
Explanation:

Only network address contains this information. To transmit the packets the sender uses network address and datalink address. But the layer 2 address represents just the address

of the next hop device on the way to the sender. It is changed on each hop. Network address remains the same.

QUESTION 691

A Certkiller LAN is displayed in the diagram below:



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

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

Answer: B

Explanation:

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

Step 1 A frame is received.

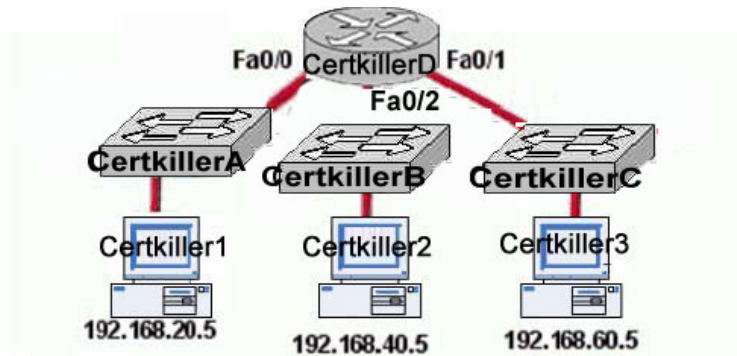
Step 2 If the destination is a broadcast or multicast, forward on all ports.

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

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

QUESTION 692

The Certkiller network is shown below:



CertkillerD# show ip arp

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

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

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

Answer: A, C, F

Explanation:

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

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

1. Check the incoming packet for corruption, and remove the MAC header. The router checks the packet for MAC-layer errors. The router then strips off the MAC header and examines the network-layer header to determine what to do with the packet.
2. Examine the age of the packet. The router must ensure that the packet has not come too far to be forwarded. For example, IPX headers contain a hop count. By default, 15

hops is the maximum number of hops (or routers) that a packet can cross. If a packet has a hop count of 15, the router discards the packet.

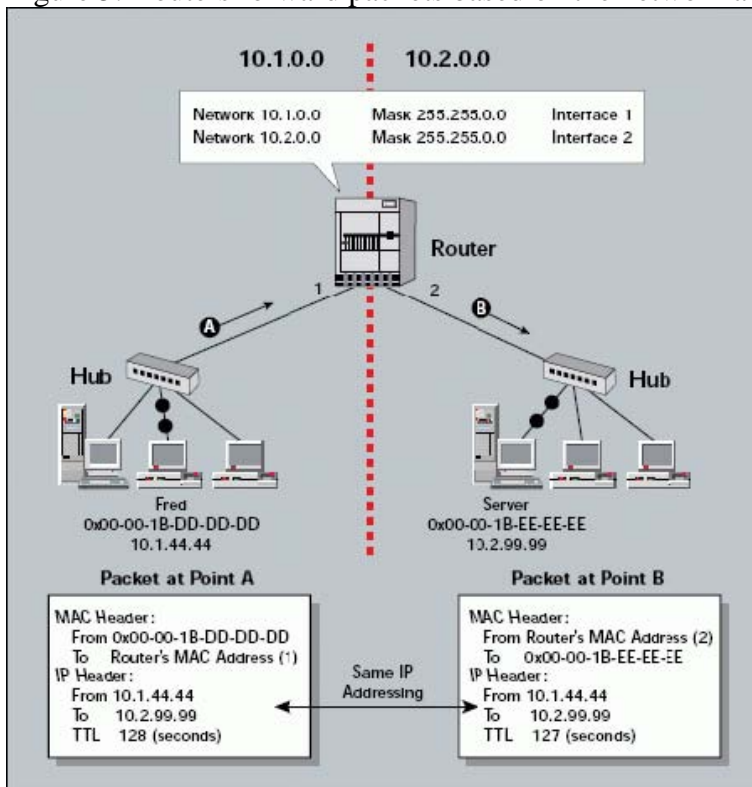
IP headers contain a Time to Live (TTL) value. Unlike the IPX hop count, which increments as the packet is forwarded through each router, the IP TTL value decrements as the IP packet is forwarded through each router. If an IP packet has a TTL value of 1, the router discards the packet. A router cannot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

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

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

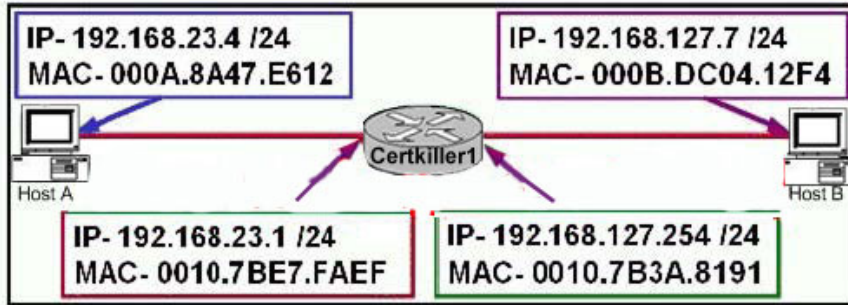
Figure 5 shows the contents of a packet before and after it has been forwarded by a router. Figure 5 also shows the contents of the router's routing tables.

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



QUESTION 693

Exhibit:



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

- A. Source MAC=000A.8A47.E612
Destination MAC=000B.DC04.12F4
Source IP=192.168.23.4
Destination IP=192.168.23.1
- B. Source MAC=000A.8A47.E612
Destination MAC=0010.7BE7.FAEF
Source IP=192.168.23.4
Destination IP=192.168.127.7
- C. Source MAC=000A.8A47.E612
Destination MAC=000B.DC04.12F4
Source IP=192.168.23.4
Destination IP=192.168.127.7
- D. Source MAC=000A.8A47.E612
Destination MAC=0010.7BE7.FAEF
Source IP=192.168.23.4
Destination IP=192.168.23.1

Answer: B

Explanation:

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

QUESTION 694

Exhibit:

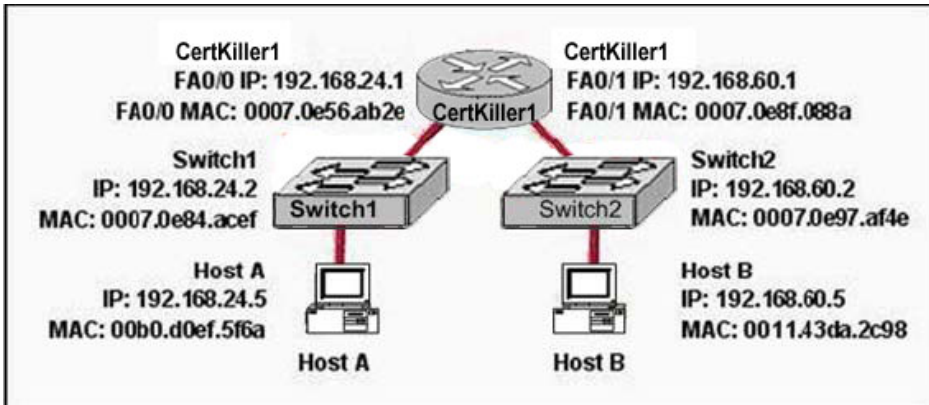


Exhibit:

Please study the exhibit carefully. Host A needs to send data to Host B. Which Layer 2 and Layer 3 destination addresses will be used to send the data from Host A to Host B?

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

Answer: B

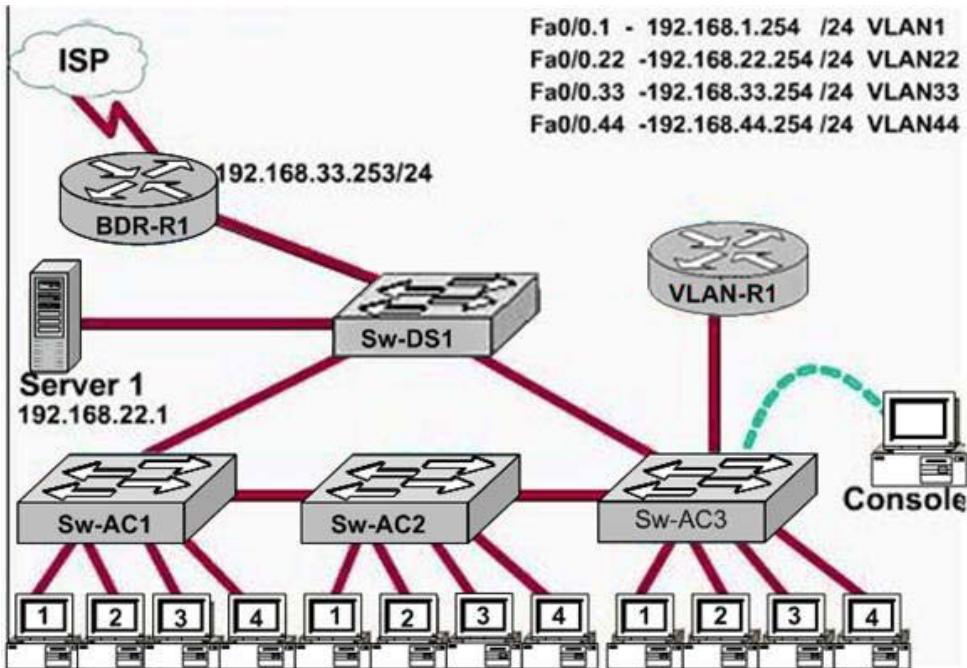
Explanation:

When packets leave from the host, the packets contains the source MAC and IP of the host address. The source and destination IP address will not change. Because the host knows that the destination is on another subnet, it will forward the packet to the default gateway device, so the destination MAC address will be of the default gateway, which is the FA0/0 interface of router Certkiller 1.

QUESTION 695

The Certkiller network is displayed below:

640-801



Based on the information above, what would be the destination MAC address of a frame containing an IP packet with a destination address of 192.0.2.24?

- A. 0009.e8b2.c28c
- B. 000a.b7e9.8360
- C. 000c.ce8d.8720
- D. 0010.5a0c.fd86
- E. 0010.5a0c.fea6
- F. 0010.5a0c.ff9f

Answer: C

Explanation:

Pending due to the fact that this is a lab scenario and results can not be verified. Send your suggestion to [feedback@ Certkiller .com](mailto:feedback@Certkiller.com)

QUESTION 696

The following was seen on a Certkiller switch.

CertKiller1 # **show mac-address-table**

< non-essential output omitted >

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

Frame received by Switch A:

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

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

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

Answer: C

Explanation:

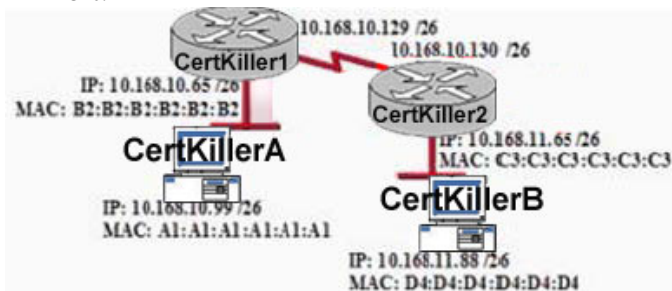
switch ports by examining the source address of frames that are received on that port. the same switch or a different switch.

to all ports except the source to find out the destination host.

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

QUESTION 697

Exhibit:



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

- A. B2:B2:B2:B2:B2:B2
- B. A1:A1:A1:A1:A1:A1
- C. 10.168.10.99
- D. 10.168.11.65

E. C3:C3:C3:C3:C3:C3

F. 10.168.11.88

Answer: C

Explanation:

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

QUESTION 698

DRAG DROP

Your boss, Mrs. Certkiller, asks you to match the options with the appropriate OSI layers.

Not all options will be used.

Options, select from these

Ethernet hubs

TFTP Protocol

Routers

LAN switches

Word processing programs

OSI Layer

Operate at the network layer

Place here

Operate at the data link layer

Place here

Operate at the physical layer

Place here

Operate at the application layer

Place here

Answer:

Options, select from these

Word processing programs

OSI Layer

Options place here

Operate at the network layer

Routers

Operate at the data link layer

LAN switches

Operate at the physical layer

Ethernet hubs

Operate at the application layer

TFTP Protocol

Explanation:

1. Router is used to make internetwork communication so it operates on Layer 3.
2. LAN Switches : Which works on Layer 2 called Datalink layer. Datalink layers divides into two different parts one is LLC and another MAC table.
3. Ethernet Hub : which is called the layers one device, which can't break collision and broadcast domain.
4. TFTP protocol: FTP, HTTP, WWW, TFTP, telnet these applications are works on Application layer.

QUESTION 699

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

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

Answer: D

Explanation:

CDP is a device discovery protocol that runs over Layer 2 (the data link layer) on all Cisco-manufactured devices (routers, bridges, access servers, and switches) and allows network management applications to discover Cisco devices that are neighbors of already

known devices. With CDP, network management applications can learn the device type and the Simple Network Management Protocol (SNMP) agent address of neighboring devices running lower-layer, transparent protocols.

QUESTION 700

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

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

Answer: B, C

Explanation:

The Transport Layer:

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

The transport layer provides mechanisms for:

Segmenting upper layer applications

The establishment, maintenance, and orderly termination of virtual circuits

Information flow control and reliability via TCP.

Transport fault detection and recovery

The Network Layer:

Layer three of the OSI model is the network layer.

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

It provides consistent end-to-end packet delivery services and control information.

It creates and uses layer 3 addresses for use in path determination and to forward packets.

Incorrect Answers:

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

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

E: Packets are encapsulated, not frames.

QUESTION 701

By default, which of the following factors determines the spanning-tree path cost?

- A. It is the individual link cost based on latency
- B. It is the sum of the costs based on bandwidth
- C. It is the total hop count
- D. It is dynamically determined based on load

Answer: B

Explanation:

"The STP cost is an accumulated total path cost based on the available bandwidth of each of the links."

Reference: Sybex CCNA Study Guide 4th Edition (Page 323)

Note: A path cost value is given to each port. The cost is typically based on a guideline established as part of 802.1d. According to the original specification, cost is 1,000 Mbps (1 gigabit per second) divided by the bandwidth of the segment connected to the port.

Therefore, a 10 Mbps connection would have a cost of (1,000/10) 100.

To compensate for the speed of networks increasing beyond the gigabit range, the standard cost has been slightly modified. The new cost values are:

Bandwidth	STP Cost Value
4 Mbps	250
10 Mbps	100
16 Mbps	62
45 Mbps	39
100 Mbps	19
155 Mbps	14
622 Mbps	6
1 Gbps	4
10 Gbps	2

You should also note that the path cost can be an arbitrary value assigned by the network administrator, instead of one of the standard cost values.

Incorrect Answers:

A, D: The STP process does not take into account the latency or load of a link. STP does not recalculate the link costs dynamically.

C. Hop counts are used by RIP routers to calculate the cost of a route to a destination.

The STP process resides at layer 2 of the OSI model, where hop counts are not considered.

QUESTION 702

What is the purpose of the spanning-tree algorithm in a switched LAN?

- A. To provide a monitoring mechanism for networks in switched environments.
- B. To manage VLANs across multiple switches.

- C. To prevent switching loops in networks with redundant switched paths.
- D. To segment a network into multiple collision domains.
- E. To prevent routing loops in networks.

Answer: C

Explanation:

STP is used in LANs with redundant paths or routes to prevent loops in a layer 2 switched or bridged LAN.

Incorrect Answers:

A, B: The primary purpose of STP is to prevent loops, not for monitoring or management of switches or VLANs.

D. VLANs are used to segment a LAN into multiple collision domains, but the STP process alone does not do this.

E. Routers are used to prevent routing loops at layer 3 of the OSI model. STP operates at layer 2.

QUESTION 703

Which two of the following values does STP take into consideration when it elects the root bridge? (Select two answer choices)

- A. The BPDU version number
- B. The access layer bridge setting
- C. The Bridge ID
- D. The spanning-tree update number
- E. The bridge priority
- F. The VLAN number

Answer: C, E

Explanation:

The bridges elect a root bridge based on the bridge IDs in the BPDUs. The root bridge is the bridge with the lowest numeric value for the bridge ID. Because the two part bridge ID starts with the priority value, essentially the bridge with the lowest priority becomes the root. For instance, if one bridge has priority 100, and another bridge has priority 200, the bridge with priority 100 wins, regardless of what MAC address was used to create the bridge ID or each bridge/switch.

Reference: CCNA Self-Study CCNA ICND Exam Certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 39

QUESTION 704

DRAG DROP

Match the Spanning-Tree Protocol states from the bottom to the slot on the upper left that matches their corresponding function on the right.

(Not all the options are used.)

Place here

Place here	populating the MAC address table but not forwarding data frames
Place here	sending and receiving data frames
Place here	preparing to forward data frames without populating the MAC address table
Place here	preventing the use of looped paths

Select from these

root	listening
learning	active
forwarding	blocking

Answer:

Place here

learning	populating the MAC address table but not forwarding data frames
forwarding	sending and receiving data frames
listening	preparing to forward data frames without populating the MAC address table
blocking	preventing the use of looped paths

Select from these

root	active
------	--------

Explanation:

The various STP states are shown below:

- * Listening - Listens to incoming Hello messages to ensure that there are no loops, but does not forward traffic or learn MAC addresses on the interface.
- * Learning - learns MAC addresses and builds a filter table but does not forward frames.
- * Forwarding - Sends and receives all data on the bridged port.
- * Blocking - are used to prevent network loops.

Reference: CCNA Study guide Second Edition (Sybex, Todd Lammle) page 82.

QUESTION 705

The spanning tree information from 4 switches on the Certkiller network is displayed below. Despite their names, all four switches are on the same LAN.

Tampa#show spanning-tree

Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol

Bridge Identifier has priority 32768, address 0002.fd29.c505

Configured hello time 2, max age 20. forward delay 15

Miami#show spanning-tree
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
Bridge Identifier has priority 16384, address 0002.fd29.c504
Configured hello time 2, max age 20, forward delay 15

London#show spanning-tree
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
Bridge Identifier has priority 8192, address 0002.fd29.c503
Configured hello time 2, max age 20, forward delay 15

Cairo#show spanning-tree
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
Bridge Identifier has priority 4096, address 0002.fd29.c502
Configured hello time 2, max age 20, forward delay 15

Based on the outputs of the above exhibit, which one of the switches is the spanning tree root bridge?

- A. Miami
- B. London
- C. Tampa
- D. Cairo

Answer: D

Explanation: Cairo is the correct answer because it has the lowest Bridge priority. The default priority value is 32768 (same as Tampa), and the bridge with the lowest priority will become the root bridge.

A
root bridge is chosen based on the results of the BPDU process between the switches. Initially, every switch considers itself the root bridge. When a switch first powers up on the network, it sends out a BPDU with its own BID as the root BID. When the other switches receive the BPDU, they compare the BID to the one they already have stored as the root BID. If the new root BID has a lower value, they replace the saved one. But if the saved root BID is lower, a BPDU is sent to the new switch with this BID as the root BID. When the new switch receives the BPDU, it realizes that it is not the root bridge and replaces the root BID in its table with the one it just received. The result is that the switch that has the lowest BID is elected by the other switches as the root bridge.

QUESTION 706

Which of the following are spanning tree port states? (Select three answer choices)

- A. Learning
- B. Spanning

- C. Listening
- D. Forwarding
- E. Initializing
- F. Filtering
- G. Permitting

Answer: A, C, D

Explanation:

There are 4 STP states that a bridge port can be in: Blocking, Listening, Learning, and Forwarding:

Spanning-Tree Intermediate States

State	Forwards Data Frames?	Learns MACs Based on Received Frames?	Transitory or Stable State?
Blocking	No	No	Stable
Listening	No	No	Transitory
Learning	No	Yes	Transitory
Forwarding	Yes	Yes	Stable

QUESTION 707

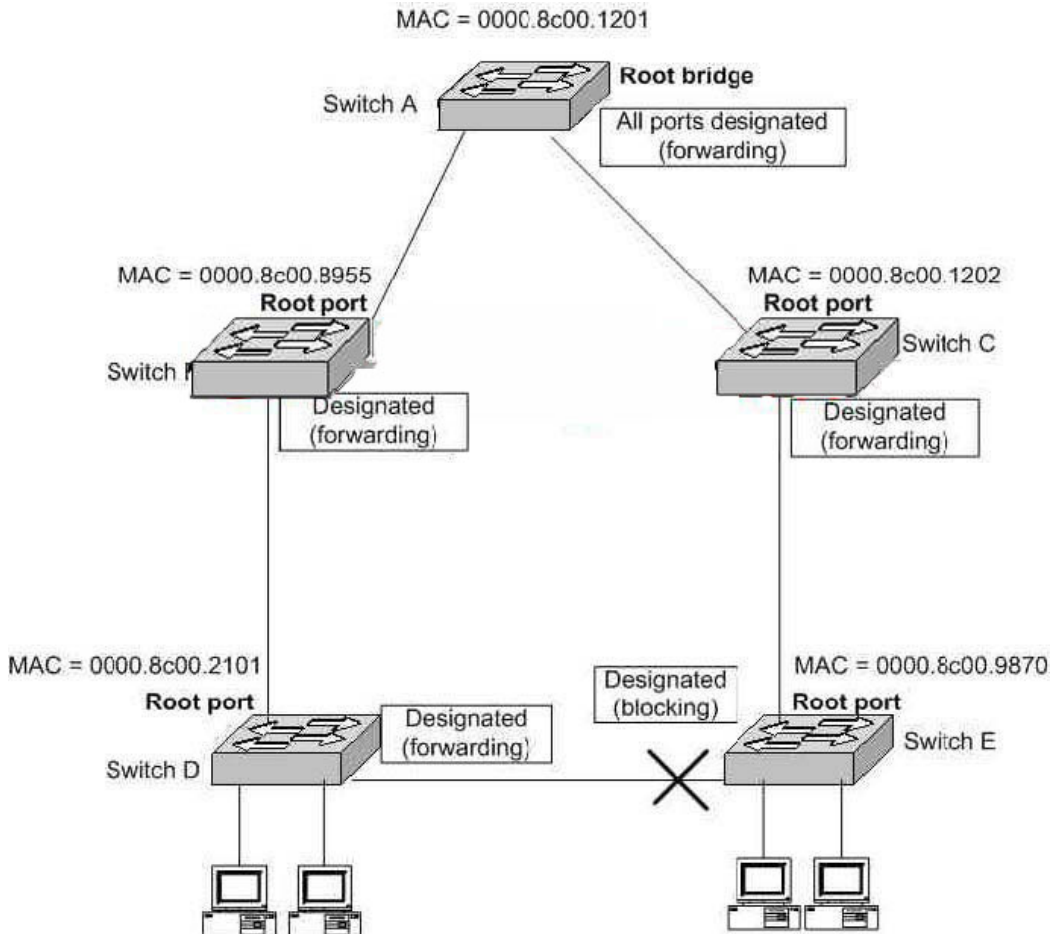
What are the switch and bridge port characteristics of a layer two spanning-tree network that is fully converged?

- A. All switch and bridge ports are in the forwarding state.
- B. All switch and bridge ports are in the stand-by state.
- C. All switch and bridge ports are assigned as either root or designated ports.
- D. All switch and bridge ports are in either the forwarding or blocking state.
- E. All switch and bridge are either blocking or looping.

Answer: D

Explanation:

When a switch first comes up, it will be in the listening and learning states. This is needed so that the switch learns the MAC addresses of the devices on the LAN, and to learn where any loops in the network may exist. After this initial period of listening and learning, the ports will be forwarding to the hosts, or blocking certain ports that create a loop in the network. An example of this is shown below:



In the above figure, after the network has converged, spanning tree protocol puts each port either in designated (Forwarding) or Non-designated (Blocking) state. So, Choice D is correct.

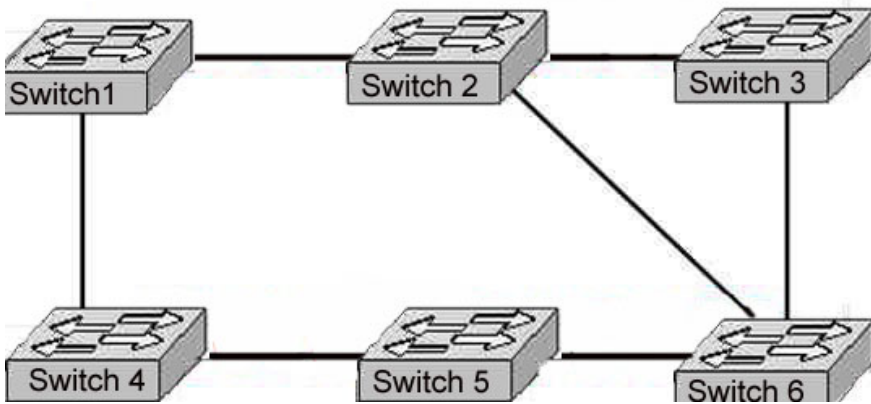
If you get a converged spanning-tree network, you have only two port states.

Forwarding and Blocking. Forwarding: all traffic will be forwarded

Blocking: all traffic to devices that will create a loop in a spanning-tree network will be blocked. It is possible to get redundant paths in large switched and routed networks.

QUESTION 708

The Certkiller LAN consists of 6 switches connected together as shown in the diagram below:



What is the name of the potential problem of this switch setup, and what protocol can prevent its occurrence. (Select only one answer choice)

- A. Routing loops, hold down timers
- B. Switching loops, split horizon
- C. Routing loops, split horizon
- D. Switching loops, VTP
- E. Routing loops, STP
- F. Switching loops, STP

Answer: F

Explanation:

The spanning-tree protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths. Spanning-tree protocol implements the 802.1D IEEE algorithm by exchanging BPDU messages with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This algorithm guarantees that there is one and only one active path between two network devices.

QUESTION 709

In a switched LAN network, what is the Spanning-Tree algorithm used for?

- A. It is used to provide a mechanism for routing updates in switched environments.
- B. It is used to prevent routing loops in networks with redundant routes.
- C. It is used to prevent switching loops in networks with redundant switched routes.
- D. It is used to manage, the addition, deletion, and naming of VLANs across multiple switches.
- E. It is used to segment a network into multiple collision domains.
- F. None of the above.
- G. All of the above are functions of STP.

Answer: C

Explanation:

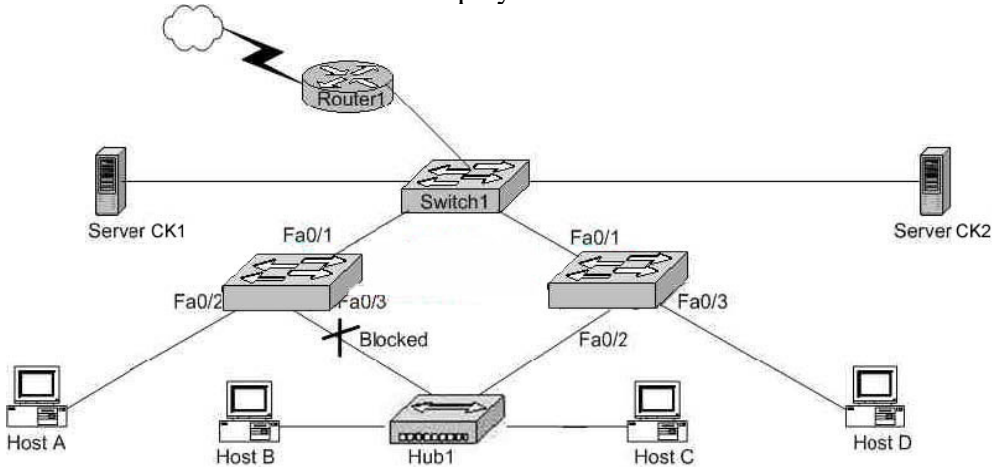
To avoid loops, all bridging devices, including switches, use STP. STP causes each interface on a bridging device to settle into a blocking state or a forwarding state. Blocking means that the interface cannot forward or receive data frames. Forwarding means that the interface can send and receive data frames. By having a correct subset of the interfaces blocked, a single currently active logical path will exist between each pair of LANs. STP resides at the data link layer, so it is used to prevent loops within a switched network. It is not used to prevent routing loops; that is the function of the mechanisms within a routing protocol.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) page 248.

QUESTION 710

The Certkiller switched LAN is displayed in the network below:



In the network shown in the diagram, which ports on Switch2 are receiving BPDUs?

- A. Fa 0/1 only
- B. Fa 0/2 only
- C. Fa 0/3 only
- D. Fa 0/1 and Fa 0/2 only
- E. Fa 0/1 and Fa 0/3 only
- F. All three ports

Answer: E

Explanation:

Spanning-Tree Protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths. Spanning-Tree Protocol implements the 802.1D IEEE algorithm by exchanging BPDUs with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This algorithm guarantees that there is one and only one active path between two network devices.

QUESTION 711

In which Spanning-Tree states does a switch port learn MAC addresses? (Select two)

- A. Blocking
- B. Listening
- C. Forwarding
- D. Learning
- E. Relaying

Answer: C, D

Explanation:

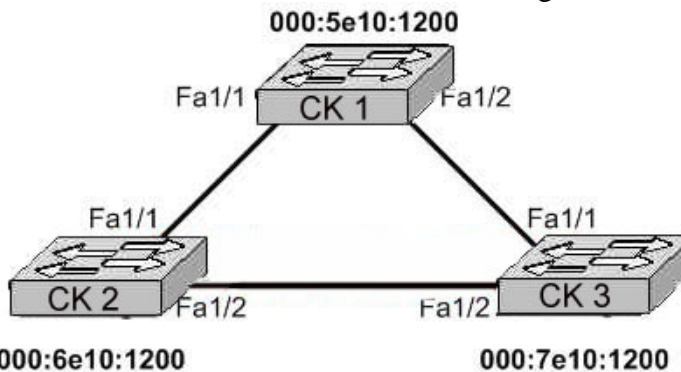
STP uses a couple of port states besides forwarding and blocking.

1. Listening - Listens to incoming Hello messages to ensure that there are no loops, but does not forward traffic. This is an interim state between blocking and forwarding.
2. Learning - Still listens to BPDUs, plus learns MAC addresses from incoming frames. It does not forward traffic. This is an interim state between blocking and forwarding.
3. Disabled - Administratively down.

Reference: Cisco CCNA intro 640-821

QUESTION 712

Three Certkiller switches are connected together as shown in the diagram below:



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

- A. Switch CK1 - Port Fa1/1
- B. Switch CK1 - Port Fa1/2
- C. Switch CK2 - Port Fa1/2
- D. Switch CK2 - Port Fa1/1
- E. Switch CK3 - Port Fa1/1
- F. Switch CK3 - Port Fa1/2

Answer: F

Explanation:

Switch CK1 will become the ROOT BRIDGE because it has the lowest MAC address.

Its both ports will become designated ports so choice A and B are wrong.

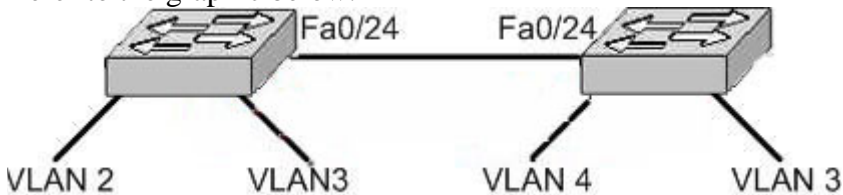
Next Election will be of ROOT PORTS. Port FA1/1 of both the switches CK2 and CK3 will become ROOT ports because they have minimum path cost to reach the root bridge.

So, choices D and E are also wrong.

Next Election will be of Designated Ports on the segment connecting CK2 and CK3 . CK2 has lower MAC address so, its port FA1/2 will become designated port and FA1/2 of CK3 will be placed in a BLOCKING state to avoid switching LOOPS.

QUESTION 713

Refer to the graphic below:



```
CK1# show cdp neighbor
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID    Local Intrfce  Holdtme  Capability Platform Port ID
```

CK1#

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

Device ID    Local Intrfce  Holdtme  Capability Platform Port ID
```

CK2#

In this network two 2950 switches connect through ports Fa0/24 and a straight-through cable. Based on the output of the show cdp neighbor command from both switches and the information given, what can be concluded?

- A. Port Fa/24 on each switch must be configured in VLAN 1 in order for the switches to see neighbor information.
- B. Port Fa0/24 on each switch must be configured as a trunk port in order for neighbor information to be received.
- C. The switches are not cabled properly.
- D. An IP address needs to be assigned to both switches.
- E. VTP is incorrectly configured on switch CK1 .

Answer: C

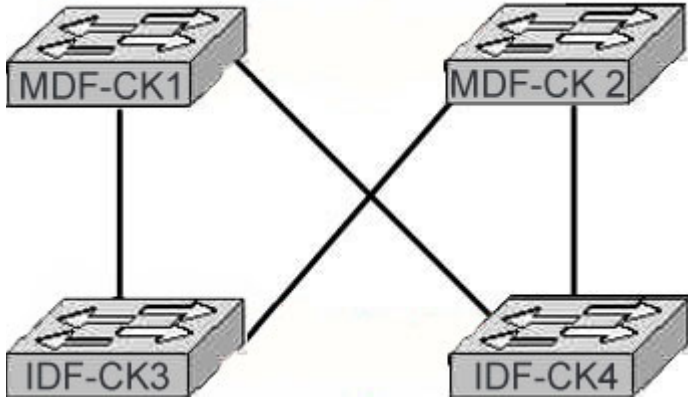
Explanation:

To connect 2 similar devices, we use cross-over cables. In the scenario, two switches are

connected with a straight-through cable, so there will be no communication between the switches. This explains why no CDP neighbors are shown.

QUESTION 714

Four Certkiller switches are connected together as shown below:



The network shown in the exhibit was designed to provide reliability through redundancy. Both of the IDF switches, CK3 , and CK4 , are connected to both of the MDF switches, CK1 and CK2 . Which configuration scenario will provide a loop-free switching environment?

- A. Spanning Tree Protocol should be running on all switches.
- B. Spanning Tree Protocol should be running on only the MDF switches CK1 and CK2 .
- C. Spanning Tree Protocol should be running on only the IDF switches CK3 and CK4 .
- D. Spanning Tree Protocol should be run only on the root bridge.
- E. Spanning Tree Protocol is not needed in this network.

Answer: A

Explanation:

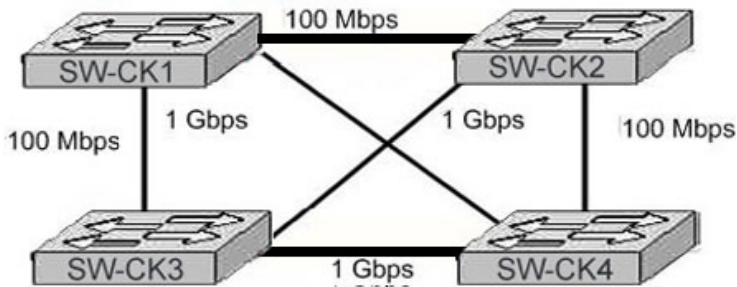
Spanning-Tree Protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths. Spanning-Tree Protocol implements the 802.1D IEEE algorithm by exchanging BPDU messages with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This algorithm guarantees that there is one and only one active path between two network devices.

Reference:

http://www.cisco.com/en/US/tech/ CK3 89/ CK6 21/tsd_technology_support_protocol_home.html

QUESTION 715

Four Certkiller switches are connected together as shown in the diagram below:



Study the Exhibit carefully. What is the purpose of the Spanning Tree Protocol that is operating in the exhibited switch topology?

- A. To elect a particular switch as backup designated switch.
- B. To have one active Layer 2 path through the switches network.
- C. To select the best path to a remote destination that is on a different network.
- D. To learn the MAC addresses of host attached to the switches network.
- E. To distribute VLAN configuration information throughout the switched network.

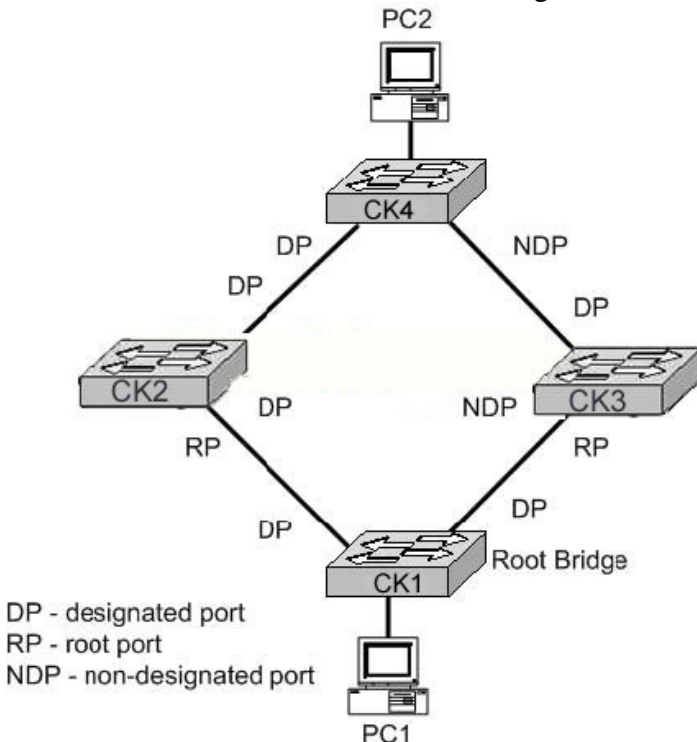
Answer: B

Explanation:

Switches are connected in a way to provide full-mesh topology. So, a redundant path is provided in the case of a link or switch failure. The STP is used to prevent frames from looping throughout the network.

QUESTION 716

Four Certkiller switches are connected together as shown in the network below:



Study the Exhibit carefully. Based on the Spanning Tree Protocol port states shown, over which path will frames flow when set from PC1 to PC2?

- A. CK1 - CK3 - CK4
- B. CK1 - CK2 - CK4
- C. CK1 - CK2 - CK3 - CK4
- D. CK1 - CK3 - CK2 - CK4

Answer: B

Explanation:

As shown in the diagram, port connecting CK3 to CK4 and CK2 to CK3 are non-designated ports. It means that spanning tree has blocked these ports temporarily so; frames will not flow through these ports. The communication will be done via CK1 to CK2 to CK4 through ROOT and DESIGNATED ports.

QUESTION 717

DRAG DROP

You are a trainee technician at Certkiller , Inc. You need to display your knowledge of the Spanning-Tree algorithm.

Connect the Spanning-Tree Protocol states with the correct functions.

(Not all options are used.)

Place here

Place here	populating the MAC address table but not forwarding data frames
Place here	sending and receiving data frames
Place here	preparing to forward data frames without populating the MAC address table
Place here	preventing the use of looped paths

Select from these

root	listening
learning	active
forwarding	blocking

Answer:

Place here

Place here	populating the MAC address table but not forwarding data frames
Place here	sending and receiving data frames
Place here	preparing to forward data frames without populating the MAC address table
Place here	preventing the use of looped paths

Select from these

root	listening
learning	active
forwarding	blocking

Explanation:

- * Listening - Listens to incoming Hello messages to ensure that there are no loops, but does not forward traffic or learn MAC addresses on the interface.
- * Learning - learns MAC addresses and builds a filter table but does not forward frames.
- * Forwarding - Sends and receives all data on the bridged port.
- * Blocking - are used to prevent network loops.

Reference: CCNA Study guide Second Edition (Sybex, Todd Lammle) page 82

QUESTION 718

When is a switched network that is running the Spanning Tree Protocol considered to be fully converged?

- A. when all switches have the same BID as the root switch
- B. when all switches have received the MAC address of each neighboring switch
- C. when every enabled switch port has been assigned a unique identifier
- D. when every operating switch port is in either the blocking or forwarding state
- E. when all switches are in either client, server, or transparent mode

Answer: D

Explanation:

States of the Spanning Tree Protocol:

Blocking A blocked port won't forward frames; it just listens to BPDUs. All ports are in blocking state by default when the switch is powered up. The purpose of the blocking state is to prevent the use of looped paths.

Listening The port listens to BPDUs to make sure no loops occur on the network before passing data frames. A port in listening state prepares to forward data frames without populating the MAC address table.

Learning The switch port listens to BPDUs and learns all the paths in the switched network. A port in learning state populates the MAC address table but doesn't forward data frames.

Forwarding The port sends and receives all data frames on the bridged port.

Disabled A port in the disabled state does not participate in the frame forwarding or STP. A port in the disabled state is virtually nonoperational.

In Blocking States, all ports are in blocking state. The purpose of the blocking state is to prevent the use of looped paths. The forward state sends and receives the all data frames in a loop free network. So these two states are considered to be fully converged.

QUESTION 719

Exhibit:

```
CertkillerSwitch #show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority 32769
             Address 000b.5fe0.7a80
             Cost   19
             Port   17 (FastEthernet0/17)
             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID  Priority 32769 (priority 32768 sys-id-ext 1)
             Address 000b.fdeb.c600
             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
             Aging Time 200
```

Interfare possible notes update for all

Fa0/1	Desg FWD 19	128.1	P2p
Fa0/11	Desg FWD 100	128.11	Shr
Fa0/13	Desg FWD 19	128.13	P2p
Fa0/17	Root FWD 19	128.17	P2p
Fa0/23	Altn BLK 19	128.23	P2p

Based on the output from the show spanning-tree command shown, what can be determined about the switch configuration? (Choose two.)

- A. This switch is the root bridge for VLA.N 1
- B. The 802.1d protocol is enabled on the switch
- C. This switch is connected to port 17 on the root bridge
- D. The switches are using Rapid Spanning Tree Protocol
- E. Port 17 is the root port and port 23 is the redundant link

Answer: B, E

The answer shows that the bridge output is the root bridge for VLAN 1. If that were the case, then there would be no blocked ports for this output. Also, the Root ID and Bridge ID would have the same Address.

QUESTION 720

What value is primarily used to determine which port becomes the root port on each non root switch in a spanning-tree topology?

- A. path cost
- B. lowest port MAC address
- C. VTP revision number
- D. highest port priority number

E. port priority number and MAC address

Answer: A

Explanation:

The root port is always the link directly connected to the root bridge, or the shortest path to the root bridge. If more than one link connects to the root bridge, then a port cost is determined by checking the bandwidth of each link. The lowest cost port becomes the root port.

QUESTION 721

Exhibit:

```
Certkiller1# show spanning-tree

VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    32769
           Address    000d.bdc3.37c0
           Cost        19
           Port        26 (FastEthernet0/2)
           Hello time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Pnomy     32769pnomy32769sys-ld-exL1)
           Address    000d.bdc3.a340
           Hello Time  2 sec Max Age 20 sec Forward Delay 15 sec
           Agin Time  300
```

Based on the information shown above, what can be determined from the output shown?

- A. The Certkiller 1 switch is using VTP.
- B. This is the only switch in the LAN topology.
- C. The Certkiller 1 switch is not the root switch.
- D. The link to the root bridge is through a 1 Gbps connection.
- E. Spanning Tree Protocol is disabled on the Certkiller 1 switch.

Answer: C

Explanation:

The root ID of the switch is the default root ID assigned to all Cisco switches, in order to force this switch to become the Root switch you may issue the spanning-tree vlan 1 priority [0-61440 in increments of 4096] command.

QUESTION 722

What is the purpose of the Spanning Tree Protocol (STP)?

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

E. To enhance the functions of SNMP

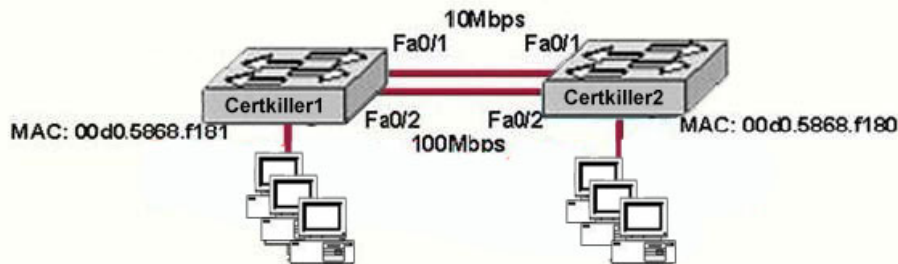
Answer: D

Explanation:

STP's main task is to stop network loops from occurring on your Layer 2 network (bridges or switches). It vigilantly monitors the network to find all links, making sure that no loops occur by shutting down any redundant ones. STP uses the spanning-tree algorithm (STA) to first create a topology database, then search out and destroy redundant links. With STP running, frames will only be forwarded on the premium, STP-picked links.

QUESTION 723

The Certkiller network is shown below:



How will Spanning Tree affect the operation of the network devices shown in the graphic?

- A. Spanning Tree will block client ports that suffer from excessive errors.
- B. Spanning Tree will learn client MAC addresses and assign them to switch ports.
- C. Spanning Tree will allow these switches to load balance across the redundant links to increase network throughput.
- D. Spanning Tree will learn which of the redundant links should be blocked.
- E. Spanning tree will automatically configure the switches with VLAN information.

Answer: D

Explanation:

STP states are as follows:

Disabled-Ports that are administratively shut down by the network administrator, or by the system due to a fault condition, are in the Disabled state. This state is special and is not part of the normal STP progression for a port.

Blocking-After a port initializes, it begins in the Blocking state so that no bridging loops can form. In the Blocking state, a port cannot receive or transmit data and cannot add MAC addresses to its address table. Instead, a port is allowed to receive only BPDUs so that the switch can hear from other neighboring switches. In addition, ports that are put into standby mode to remove a bridging loop enter the Blocking state.

Listening-The port will be moved from Blocking to Listening if the switch thinks that the port can be selected as a Root Port or Designated Port. In other words, the port is on its way to begin forwarding traffic. In the Listening state, the port still cannot send or receive data frames. However, the port is allowed

to receive and send BPDUs so that it can actively participate in the Spanning Tree topology process. Here, the port is finally allowed to become a Root Port or Designated Port because the switch can advertise the port by sending BPDUs to other switches. Should the port lose its Root Port or Designated Port status, it returns to the Blocking state.

Learning-After a period of time called the Forward Delay in the Listening state, the port is allowed to move into the Learning state. The port still sends and receives BPDUs as before. In addition, the switch can now learn new MAC addresses to add to its address table. This gives the port an extra period of silent participation and allows the switch to assemble at least some address table information.

Forwarding-After another Forward Delay period of time in the Learning state, the port is allowed to move into the Forwarding state. The port can now send and receive data frames, collect MAC addresses in its address table, and send and receive BPDUs. The port is now a fully functioning switch port within the Spanning Tree topology.

QUESTION 724

Four Certkiller switches are shown below:



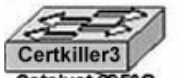
Catalyst 1900
2 MB DRAM

```
Certkiller1# show spantree
VLAN1 is executing the IEEE compatible Spanning Tree Protocol
Bridge Identifier has priority 32768, address 00d0.5868.f180
<output omitted>
```



Catalyst 2900XL
4 MB DRAM
2 100Base-FX ports

```
Certkiller2# show spanning-tree
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
Bridge Identifier has priority 32768, address 00d0.5868.f181
<output omitted>
```



Catalyst 2950G
8 MB DRAM

2 fixed GBIC-based 1000BASE-X uplink ports

```
Certkiller3# show spanning-tree
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
Bridge Identifier has priority 32768, address 00d0.5868.f182
<output omitted>
```



Catalyst 2950G
32 MB DRAM

2 10/100/1000 ports

```
Certkiller4# show spanning-tree
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
Bridge Identifier has priority 32768, address 00d0.5868.f183
<output omitted>
```

Assuming these are the only four switches in the network and the switches are connected with redundant links, which switch will be elected as the spanning-tree root bridge?

- A. Certkiller 1
- B. Certkiller 2
- C. Certkiller 3
- D. Certkiller 4

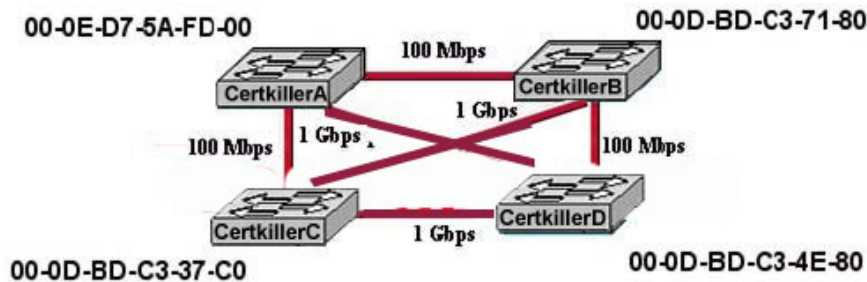
Answer: A

Explanation:

To elect the root bridge in the LAN, first check the priority value. The switch having lowest priority will win the race. If Priority Value is same then it checks the MAC Address, the switch having lowest MAC Address will be the root bridge. Here Switch C has lowest MAC Address so becomes the root bridge. In exhibit all switches has same priority and CertK in1 switch have lowest MAC Address so it becomes the root bridge.

QUESTION 725

Four Certkiller switches are shown below:



The bridge ID for each switch and the bandwidth for each link is shown. Assuming that all switches are set to the default configuration, which ports will be blocking when Spanning Tree has converged? (Choose three.)

- A. Certkiller A port that connects to Certkiller D
- B. Certkiller A port that connects to Certkiller B
- C. Certkiller A port that connects to Certkiller C
- D. Certkiller B port that connects to Certkiller C
- E. Certkiller B port that connects to Certkiller D
- F. Certkiller D port that connects to Certkiller A

Answer: A, B, E

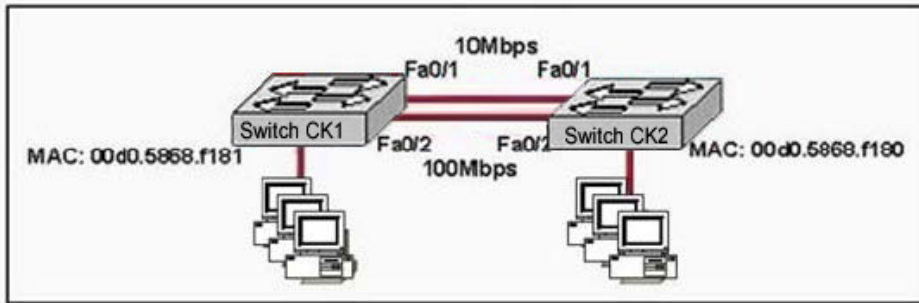
Explanation:

STP uses the concept of cost to determine many things. Selecting a Root Port involves evaluating the Root Path Cost. This value is the cumulative cost of all the links leading to the Root Bridge. A particular switch link has a cost associated with it, too, called the Path Cost. To understand the difference between these values, remember that only the Root Path Cost is carried inside the BPDU. As the Root Path Cost travels along, other switches can modify its value to make it cumulative. The Path Cost, however, is not contained in the BPDU. It is known only to the local switch where the port (or "path" to a neighboring switch) resides.

Path Costs are defined as a 1-byte value, with the default values shown in Table 9-3. Generally, the higher the bandwidth of a link, the lower the cost of transporting data across it. The original IEEE 802.1D standard defined Path Cost as 1000 Mbps divided by the link bandwidth in Mbps. These values are shown in the center column of the table. Modern networks commonly use Gigabit Ethernet and OC-48 ATM, which are both either too close to or greater than the maximum scale of 1000 Mbps. The IEEE now uses a nonlinear scale for Path Cost, as shown in the right column of the table. All Remaining ports then root will be in blocking mode.

QUESTION 726

Two Certkiller switches are shown below:



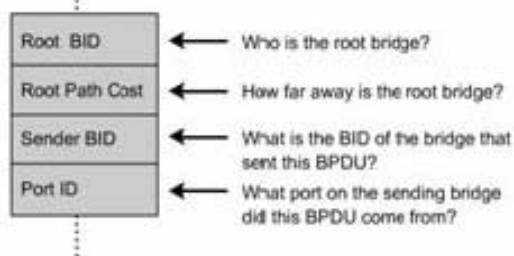
This network is stable and operating properly. Assuming that default STP configurations are running on both switches, which port will be in blocking mode?

- A. Port Fa0/1 on Certkiller 1
- B. Port Fa0/2 on Certkiller 1
- C. Port Fa0/1 on Certkiller 2
- D. Port Fa0/2 on Certkiller 2

Answer: A

Explanation:

Spanning-Tree Protocol (STP) is a Layer 2 protocol that utilizes a special-purpose algorithm to discover physical loops in a network and effect a logical loop-free topology. STP creates a loop-free tree structure consisting of leaves and branches that span the entire Layer 2 network. The actual mechanics of how bridges communicate and how the STP algorithm works will be discussed at length in the following topics. Note that the terms bridge and switch are used interchangeably when discussing STP. In addition, unless otherwise indicated, connections between switches are assumed to be trunks.



The switches move on to selecting Root Ports. The Root Port of a bridge is the port that is closest to the Root Bridge in terms of Path Cost. Every non-Root Bridge must select one Root Port. Again, bridges use the concept of cost to measure closeness. As with some routing metrics, the measure of closeness using STP is not necessarily reflected by hop count. Specifically, bridges track what is referred to as Root Path Cost, which is the cumulative cost of all links to the Root Bridge. So, Answer A is correct.

QUESTION 727

Exhibit:

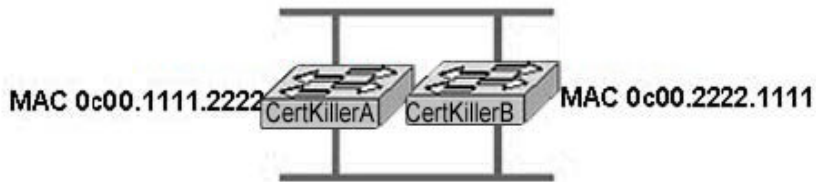


Exhibit:

Please study the exhibit carefully. How can a network administrator ensure that the STP election process would result in Certkiller B being elected as the root switch?

- A. Clear the Certkiller B STP revision number.
- B. Assign Certkiller B a low priority number.
- C. Increase the Certkiller B priority number.
- D. Change the MAC address of Certkiller B

Answer: B

Explanation:

An election process among all connected switches chooses the Root Bridge. Each switch has a unique Bridge ID that identifies it to other switches. The Bridge ID is an 8-byte value consisting of the following fields:

Bridge Priority 2 bytes-The priority or weight of a switch in relation to all other switches. The priority field can have a value of 0 to 65,535 and defaults to 32,768 (or 0x8000) on every Catalyst switch.

MAC Address 6 bytes-The MAC address used by a switch can come from the Supervisor module, the backplane, or a pool of 1024 addresses that are assigned to every Supervisor or backplane depending on the switch model. In any event, this address is hardcoded and unique, and the user cannot change it.

When a switch first powers up, it has a narrow view of its surroundings and assumes that it is the Root Bridge itself. This notion will probably change as other switches check in and enter the election process. The election process then proceeds as follows: Every switch begins by sending out BPDUs with a Root Bridge ID equal to its own Bridge ID and a Sender Bridge ID of its own Bridge ID. The Sender Bridge ID simply tells other switches who is the actual sender of the BPDU message. (After a Root Bridge is decided upon, configuration BPDUs are only sent by the Root Bridge. All other bridges must forward or relay the BPDUs, adding their own Sender Bridge Ids to the message.) Received BPDU messages are analyzed to see if a "better" Root Bridge is being announced. A Root Bridge is considered better if the Root Bridge ID value is lower than another. Again, think of the Root Bridge ID as being broken up into Bridge Priority and MAC address fields. If two Bridge Priority values are equal, the lower MAC address makes the Bridge ID better. When a switch hears of a better Root Bridge, it replaces its own Root Bridge ID with the Root Bridge ID announced in the BPDU. The switch is then required to recommend or advertise the new Root Bridge ID in its own BPDU messages; although, it will still identify itself as the Sender Bridge ID.

QUESTION 728

Which of the following components must be elected before the Spanning Tree Protocol can converge in a switched LAN?

- A. Designated ports.
- B. Duplex operating mode.
- C. Fast mode ports.
- D. Root bridge.
- E. Root ports.
- F. BPDU priority.

Answer: A, D, E

Explanation:

Designated port: Either a root port or a port that has been determined as having the best (lower) cost-a designated port will be marked as a forwarding port.

Root bridge: The root bridge is the bridge with the best bridge ID. With STP, the key is for all the switches in the network to elect a root bridge that becomes the focal point in the network. All other decisions in the network-like which port is to be blocked and which port is to be put in forwarding mode-are made from the perspective of this root bridge.

Root port: Always the link directly connected to the root bridge, or the shortest path to the root bridge. If more than one link connects to the root bridge, then a port cost is determined by checking the bandwidth of each link. The lowest cost port becomes the root port.

So these three components must be elected before the spanning tree protocol can converge in a switched LAN

QUESTION 729

Why would an administrator change the value of the spanning-tree priority of a switch?

- A. in order to optimize the path that frames take from source to destination
- B. to increase the priority so a designated port will become a root port
- C. to increase the BID, so the switch is more likely to become root bridge
- D. in order to allow VLANs to be sent from one switch to another across a single link
- E. to force a given switch to become an STP server

Answer: A

Explanation:

The Bridge Priority is used to measure the preference of a bridge in the spanning-tree Algorithm. The possible values range between 0 and 65,535. The default setting is 32,768. By adjusting the priority, the root bridge can be manually assigned to meet the needs of the network administrator.

QUESTION 730

Output from a Certkiller switch is shown below:

```
JaxSwitch1# show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    32769
           Address    000d.bdc3.37e0
           Cost      19
           Port      26 (FastEthernet0/2)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
           Address    000d.bdc3.a340
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300
```

Based on the information shown above, what can be determined from the output shown?

- A. The JaxSwitch1 switch is using VTP.
- B. This is the only switch in the LAN topology.
- C. The JaxSwitch1 switch is not the root switch.
- D. The link to the root bridge is through a 1 Gbps connection.
- E. Spanning Tree Protocol is disabled on the JaxSwitch1 switch.

Answer: C

Explanation:

The spanning-tree algorithm characterizes STP. The spanning-tree Algorithm relies on a set of parameters to make decisions. The Bridge ID (BID) is the first parameter used by the spanning-tree algorithm. The Bridge ID (BID) is used by STP to determine the center of the bridged network, known as the Root Bridge. The Bridge ID (BID) parameter is an 8-byte field consisting of an ordered pair of numbers. The first is a 2-byte decimal number called the Bridge Priority, and the second is a 6-byte (hexadecimal) MAC address. The Bridge Priority is a decimal number used to measure the preference of a bridge in the spanning-tree Algorithm. The possible values range between 0 and 65,535. The default setting is 32,768.

QUESTION 731

What value is primarily used to determine which port becomes the root port on each nonroot switch in a spanning-tree topology?

- A. path cost
- B. lowest port MAC address
- C. VTP revision number
- D. highest port priority number
- E. port priority number and MAC address

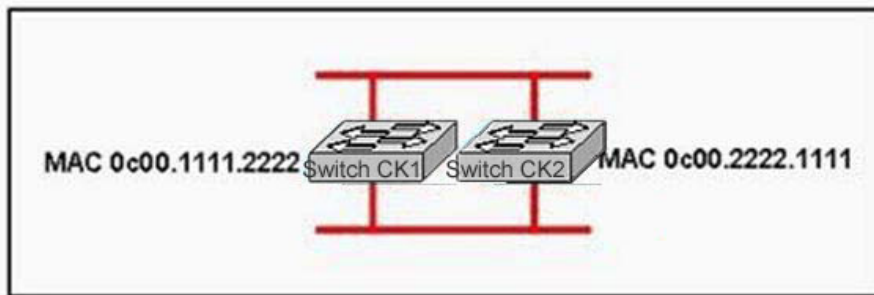
Answer: A

Explanation:

At the conclusion of the root bridge election process, the switches move on to selecting Root Ports. The Root Port of a bridge is the port that is closest to the Root Bridge in terms of Path Cost. Every non-Root Bridge must select one Root Port. Again, bridges use the concept of cost to measure closeness. As with some routing metrics, the measure of closeness using STP is not necessarily reflected by hop count. Specifically, bridges track what is referred to as Root Path Cost, which is the cumulative cost of all links to the Root Bridge.

QUESTION 732

Two Certkiller switches are connected as shown below:



How can a network administrator ensure that the STP election process would result in Switch CK2 being elected as the root switch?

- A. Clear the Switch CK2 STP revision number.
- B. Assign the Switch CK2 a low priority number.
- C. Increase the Switch CK2 priority number.
- D. Change the MAC address of Switch CK2 .

Answer: B

Explanation:

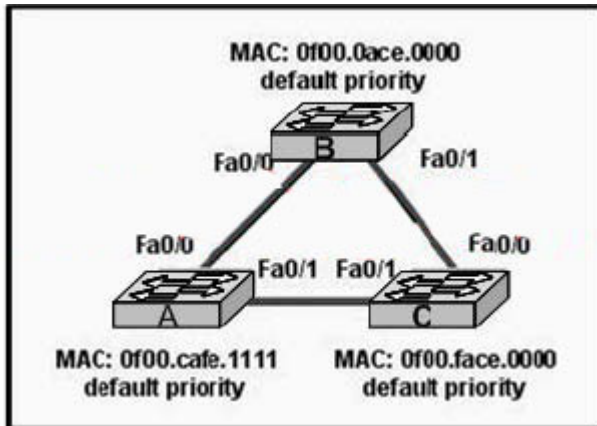
After you decide on the root switch, set the appropriate variables to designate the switch as the root switch. The only variable that you must set is the bridge priority. If the switch has a bridge priority that is lower than all the other switches, the other switches automatically select the switch as the root switch.

Reference:

http://www.cisco.com/en/US/tech/CK3_89/CK6_21/technologies_configuration_example09186a008009467c.shtml

QUESTION 733

Refer to the topology shown in the exhibit below:



Based on the information above, which ports will be STP designated ports if all the links are operating at the same bandwidth? (Choose three)

- A. Switch A - Fa0/1
- B. Switch B - Fa0/0
- C. Switch A - Fa0/0
- D. Switch B - Fa0/1
- E. Switch C - Fa0/0
- F. Switch C - Fa0/1

Answer: A, B, D

Explanation:

To remove the possibility of bridging loops, STP makes a final computation to identify one Designated Port on each network segment. Suppose that two or more switches have ports connected to a single common network segment. If a frame appears on that segment, all the bridges attempt to forward it to its destination. Recall that this behavior was the basis of a bridging loop and should be avoided.

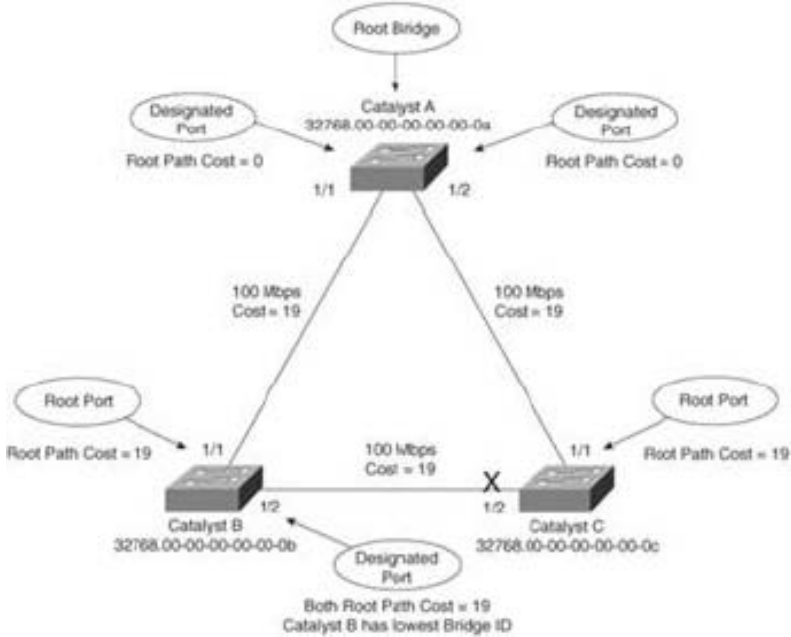
Instead, only one of the links on a segment should forward traffic to and from that segment—the one that is selected as the Designated Port. Switches choose a Designated Port based on the lowest cumulative Root Path Cost to the Root Bridge. For example, a switch always has an idea of its own Root Path Cost, which it announces in its own BPDUs. If a neighboring switch on a shared LAN segment sends a BPDU announcing a lower Root Path Cost, the neighbor must have the Designated Port. If a switch learns only of higher Root Path Costs from other BPDUs received on a port, however, it then correctly assumes that its own receiving port is the Designated Port for the segment.

Notice that the entire STP determination process has served only to identify bridges and ports. All ports are still active, and bridging loops still might lurk in the network. STP has a set of progressive states that each port must go through, regardless of the type or identification. These states actively prevent loops from forming and are described in the next section.

Note:

In each determination process discussed so far, two or more links might have identical Root Path Costs. This results in a tie condition, unless other factors are considered. All tie-breaking STP decisions are based on the following sequence of four conditions:

1. Lowest Root Bridge ID
2. Lowest Root Path Cost to Root Bridge
3. Lowest Sender Bridge ID
4. Lowest Sender Port ID



The three switches have chosen their Designated Ports (DP) for the following reasons:

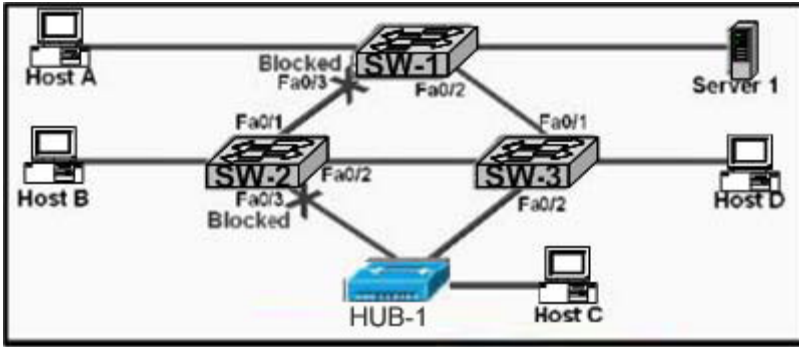
1. Catalyst A- Because this switch is the Root Bridge, all its active ports are Designated Ports, by definition. At the Root Bridge, the Root Path Cost of each port is 0.
2. Catalyst B- Catalyst A port 1/1 is the DP for the Segment A-B because it has the lowest Root Path Cost (0). Catalyst B port 1/2 is the DP for segment B-C. The Root Path Cost for each end of this segment is 19, determined from the incoming BPDU on port 1/1. Because the Root Path Cost is equal on both ports of the segment, the DP must be chosen by the next criteria-the lowest Sender Bridge ID. When Catalyst B sends a BPDU to Catalyst C, it has the lowest MAC address in the Bridge ID. Catalyst C also sends a BPDU to Catalyst B, but its Sender Bridge ID is higher. Therefore, Catalyst B port 1/2 is selected as the segment's DP.
3. Catalyst C- Catalyst A port 1/2 is the DP for Segment A-C because it has the lowest Root Path Cost (0). Catalyst B port 1/2 is the DP for Segment B-C. Therefore, Catalyst C port 1/2 will be neither a Root Port nor a Designated Port. As discussed in the next section, any port that is not elected to either position enters the Blocking state. Where blocking occurs, bridging loops are broken.

Reference: CCNP BCMSN Exam Certification Guide, 3rd Edition, Cisco Press

QUESTION 734

The switches in the exhibit are configured with the default parameters. What can be determined from the exhibit?

Exhibit:



- A. Fa0/2 on SW-1 and Fa0/2 on SW-2 are nondesignated ports.
- B. SW-1 is the backup designated root bridge.
- C. SW-3 is the root bridge.
- D. Fa0/3 on SW-1 and Fa0/3 on SW-2 are attached to the lowest-cost paths to the root bridge.

Answer: C

Explanation:

Remember that one root switch is identified per-VLAN. After the root switch identification, the switches adhere to these rules:

1. STP Rule 1-All ports of the root switch must be in forwarding mode.

Next, each switch determines the best path to get to the root. The switches determine this path by a comparison of the information in all the BPDUs that the switches receive on all ports. The switch uses the port with the least amount of information in the BPDU in order to get to the root switch; the port with the least amount of information in the BPDU is the root port. After a switch determines the root port, the switch proceeds to rule 2.

1. STP Rule 2-The root port must be set to forwarding mode.

In addition, the switches on each LAN segment communicate with each other to determine which switch is best to use in order to move data from that segment to the root bridge. This switch is called the designated switch.

1. STP Rule 3-In a single LAN segment, the port of the designated switch that connects to that LAN segment must be placed in forwarding mode.

2. STP Rule 4-All the other ports in all the switches (VLAN-specific) must be placed in blocking mode. The rule only applies to ports that connect to other bridges or switches. STP does not affect ports that connect to workstations or PCs. These ports remain forwarded.

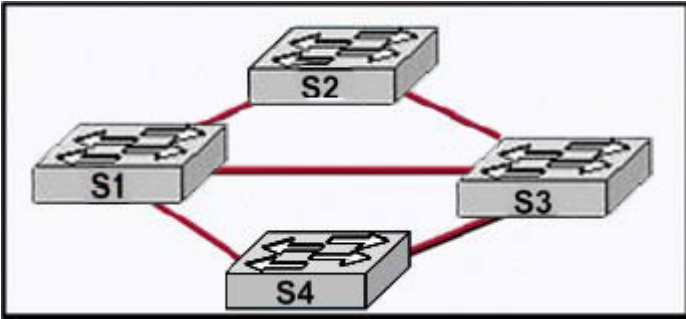
Our answer can be found in Rule 1 above. Since none of the ports in SW-3 are blocking, we can determine that this switch must be the root.

Reference:

http://www.cisco.com/en/US/tech/CK389/CK621/technologies_configuration_example09186a008009467c.shtml

QUESTION 735

Exhibit:



Please study the exhibit carefully. Spanning Tree Protocol has created a loop-free logical topology in the network that is pictured. How many ports have been placed in the blocking mode?

Exhibit:

- A. Three
- B. Two
- C. None
- D. Four
- E. One

Answer: B

Explanation:

In order to provide this desired path redundancy, as well as to avoid a loop condition, STP defines a tree that spans all the switches in an extended network. STP forces certain redundant data paths into a standby (blocked) state and leaves other paths in a forwarding state. If a link in the forwarding state becomes unavailable, STP reconfigures the network and reroutes data paths through the activation of the appropriate standby path.

If we pick any of the switches as root switches, we know that both links on this switch will be non-blocking. We can then quickly determine that there will need to be two blocking ports in order to maintain a loop free topology.

QUESTION 736

Which of the statements below are true regarding the availability of bandwidth on a network? (Select all that apply.)

- A. Bandwidth availability is decreasing.
- B. Bandwidth availability is infinite.
- C. Bandwidth is used when analyzing network performance.
- D. Bandwidth availability is finite.
- E. Bandwidth availability is fixed.

Answer: C, D

Explanation:

C is correct because performance analyzing software is notorious for consuming bandwidth. Most network management devices use SNMP, which consumes bandwidth.

D is correct because although new technologies are providing for more bandwidth and a network can be engineered to give more priority to different devices, there is a finite amount of bandwidth available at any given time.

In

Answer:

A. This is incorrect because new technologies are actually increasing the amount of potential bandwidth.

B. For any given network, the amount of bandwidth available to end users is usually fixed, and based on the speed of the connection to access connection. For example, any given PC with a 10/100 NIC will be limited to 100Mbps of throughput at any given time.

E. This is incorrect because it's always possible to upgrade a scalable technology or allocate resources differently.

QUESTION 737

Which one of the following actions would actually increase congestion on an Ethernet network?

- A. Increasing the number of collision domains.
- B. Micro-segmenting the network.
- C. Adding hubs for connectivity to the network.
- D. Putting additional switches in the network.
- E. Implementing VLANs in the network.

Answer: C

Explanation:

All of the answer choices above except for C are all good ways of reducing network congestion. Hubs on the other hand increase congestion, because they allow the addition of more users, therefore more potential traffic, more collisions (if it's a half-duplex) and their use will result in increased overall congestion.

Incorrect Answers:

A, B, D, E. These answers all describe the use of VLANs, which are used to decrease the size of any given collision domain and to decrease the amount of link level multicast and broadcast traffic.

QUESTION 738

You have an Ethernet network. Which of the conditions below can lead to increased congestion on your network? (Select two answer choices)

- A. The use of Full-Duplex Mode.
- B. The Creation on New Collision Domains.
- C. The Creation on New Broadcast Domains.
- D. The Addition of Hubs to the Network.
- E. The use of switches in the Network.

F. The Amount of ARP or IPX SAP Traffic.

Answer: D, F

Explanation:

Hubs on their own don't create congestion, but the hosts that connect to them do.

Generally, the addition of hubs means additional hosts connected to the hubs, all within the same collision domain. Finally, as networks become larger, more broadcast traffic such as ARP requests and IPX SAP packets get generated, which can lead to increased network congestion.

In

Answer:

A. This is incorrect because the use of full duplex will increase the amount of bandwidth while eliminating collisions at the same time.

B, C. These methods describe the use of segmentation and VLAN use, which will decrease traffic on the individual segments.

E. This is incorrect because switches are the preferred method of reducing collision domains.

QUESTION 739

Which of the following can lead to the contribution of LAN traffic congestion?

(Select all that apply)

A. Too many hosts in a broadcast domain

B. Full duplex operation

C. Broadcast storms

D. Multicasting

E. Segmentation

F. Low bandwidth

Answer: A, C, F

Explanation:

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

In

Answer:

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

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

QUESTION 740

You have been contracted by Certkiller to replace the network cabling of their LAN's. The System Administrator gives you specific instructions that he needs to use cabling in the LAN that is NOT susceptible to EMI.

What kind of cable would you use to satisfy the administrator's needs?

- A. Thicknet coaxial cable.
- B. Thinnet coaxial cable.
- C. Category 5 UTP cable.
- D. Category 5 STP cable.
- E. Fiber optic cable.
- F. All of the above

Answer: E

Explanation:

EMI stands for Electro-Magnetic Interference, which can cause the corruption of packets as they traverse the network. If this is a major concern then fiber is the best choice. Fiber optic cable is more secure, supports longer distances and higher speeds, and is not susceptible to EMI. The major drawback of fiber is that it is the most expensive choice.

QUESTION 741

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

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

Answer: C, E

Explanation:

The IEEE 802.3z standard describes 1000BASE-SX.

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

Incorrect Answers:

- A. This describes the standard used for wireless networks.
- B. This is the standard for token ring networks.
- D. On June 17, 2002 the IEEE 802.3ae specification for 10 Gigabit Ethernet was

approved as an IEEE standard by the IEEE Standards Association (IEEE-SA) Standards Board.

F. IEEE 802.3u describes the standard for 100BASE-TX.

QUESTION 742

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

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

Answer: C

Explanation:

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

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

QUESTION 743

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

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

Answer: B, D

Explanation:

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

Incorrect Answers:

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

QUESTION 744

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

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

Answer: B, D

Explanation:

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

In

Answer:

- A, C. These are incorrect because full duplex doesn't require hubs or switches. Full duplex operation can be used on switch and router ports, as well as PC hosts.
- E. This is incorrect because full duplex actually uses more wiring pairs. In full duplex, both wire pairs are used. Half duplex uses only a single pair.

QUESTION 745

What are the differences between full-duplex Ethernet and half-duplex Ethernet? (Select all that apply)

- A. Half-duplex Ethernet operates in a shared collision domain.
- B. Full-duplex Ethernet has a lower effective throughput.
- C. Half-duplex Ethernet operates in a private collision domain.
- D. Full-duplex Ethernet allows two-way communication.
- E. Half-duplex Ethernet operates in a private broadcast domain.

Answer: A, D

Explanation:

The original Ethernet specifications used a shared bus, over which only one frame could be sent at any point in time. So, a single device could not be sending a frame and receiving a frame at the same time because it would mean that a collision was occurring. Half duplex stations use CSMA/CD to prevent collisions on the network, because the collision domain is shared. Full duplex Ethernet eliminated the need to collision detection, by allowing for two way communication.

Incorrect Answers:

B. Full duplex effectively doubles the throughput of half-duplex operation, because data can be both sent and received at the full 10/100 speed.

C, E. In half duplex operation, the network is shared between all devices in the collision domain.

QUESTION 746

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

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

Answer: A, D

Explanation:

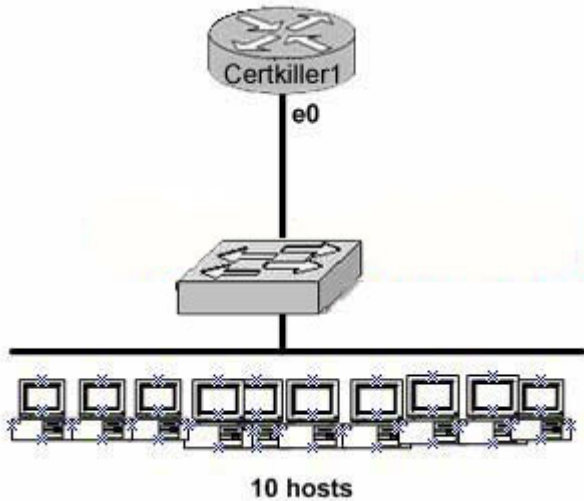
A single device could not be sending a frame and receiving a frame at the same time because it would mean that a collision was occurring. So, devices simply chose not to send a frame while receiving a frame. That logic is called half-duplex logic.

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

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

QUESTION 747

The Certkiller LAN consists of 10 PC users as shown in the diagram below:



Each of the hosts is connected to their own 10Mbps half-duplex switch port to the e0 interface of a router. How much bandwidth is available to each individual host?

- A. 1 Mbps
- B. 10 Mbps
- C. 20 Mbps
- D. 100 Mbps
- E. 120 Mbps

Answer: B

Explanation:

Although ten hosts are sharing a 10Mbps half duplex connection, there are still 10Mbps available to them under the best hypothetical circumstances. Unlike hubs, each switch port will be allocated the entire bandwidth. Hubs are shared devices, so in this example if there was a hub in place then the 10 hosts would all be sharing one 10Mbps connection.

QUESTION 748

Which of the following data network would you implement if you wanted a wireless network that had a relatively high data rate, but was limited to very short distances?

- A. Broadband personal comm. Service (PCS)
- B. Broadband circuit
- C. Infrared
- D. Spread spectrum
- E. Cable

Answer: C

Explanation:

A good example of the range of an infrared is a television remote control or a garage door

opener. Infrared networks are capable of high data rates, but they are limited in the distance between the infrared points, and also by the fact that a line of sight between the nodes is usually required.

In

Answer:

A, D: Although these are both wireless methods, the data rate capabilities are somewhat limited, especially when compared to infrared links.

B, E: Although these are both capable of relatively high data rates, they do not use wireless technology.

QUESTION 749

Which IEEE standard is used to define Wi-Fi?

- A. IEEE 802.3
- B. IEEE 802.5
- C. IEEE 802.11h
- D. IEEE 802.11c
- E. IEEE 802.11

Answer: E

Explanation:

IEEE 802.11 was the original standard for wireless networks. However, the standard had a few ambiguities allowed for potential problems with compatibility between devices. To ensure compatibility, a group of companies formed the Wireless Ethernet Compatibility Alliance (WECA), which has come to be known as the Wi-Fi Alliance, to ensure that their products would work together. The term Wi-Fi is now used to refer to any IEEE 802.11 wireless network products that have passed the Wi-Fi Alliance certification tests.

Incorrect Answers:

- A. This is the standard used for Ethernet networks.
- B. This is the standard used in Token Ring networks.
- C, D: These standards are not currently used. The most prevalent types of wireless 802.11 networks are 802.11a, 802.11b, and 802.11g.

QUESTION 750

What is the maximum data rate specified by the IEEE 802.11B standard for wireless LANs?

- A. 10 Mbps
- B. 11 Mbps
- C. 54 Mbps
- D. 100 Mbps
- E. none of the above

Answer: B

Explanation:

The maximum speed for 802.11b is 11 Mbps.

Incorrect Answers:

- A. This is the maximum speed for legacy Ethernet networks.
- C. This is the maximum speed supported by the other prevalent wireless standards, 802.11a and 802.11g.
- D. This is the maximum speed of fast Ethernet connections.

QUESTION 751

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

- A. 100 meters
- B. 100 feet
- C. 100 yards
- D. 200 meters

Answer: A

Explanation:

The distance standards are in meters and 10BaseT has a distance restriction of 100 meters. If you go further than that, you compromise data integrity. 10BaseT is the predominant cable type used in Ethernet networks.

QUESTION 752

Which of the following are actual varieties of network crosstalk? (Select all the valid answer choices)

- A. Near-end crosstalk(NEXT)
- B. Middle open-end crosstalk(MOEXT)
- C. Power sum near-end crosstalk(PSNEXT)
- D. Jittery crosstalk(JEXT)
- E. Far end crosstalk(FEXT)

Answer: A, C, E

Explanation:

Near End Crosstalk (NEXT) is crosstalk measured at the transmitting end of the cable. Far End Crosstalk (FEXT) is measured at the far end from where the signal was injected into the cable. Power Sum NEXT (PSNEXT) is basically a mathematical calculation that simulates all four wire pairs being energized at the same time. PSNEXT calculations are used to ensure that a cable will not exceed crosstalk noise performance requirements when all pairs are operating simultaneously. PSNEXT is typically used in Gigabit

Ethernet, rather than 10BaseT or 100BaseT.

Reference: Sybex CCNA 4.0 - P. 30

QUESTION 753

Which of the following processes, is used to find the hardware address of a LAN device?

- A. Inverse-ARP
- B. Reverse-ARP
- C. Proxy ARP
- D. ARP

Answer: D

Explanation:

When a device needs to resolve a logical IP address to the physical Ethernet address (MAC), it uses the Address Resolution Protocol (ARP.)

Incorrect Answers:

A, B: Inverse ARP (sometimes also referred to reverse ARP), is used to resolve a known hardware MAC address to the IP address.

QUESTION 754

Which one of the protocols below allows a router to respond to an ARP request destined to a remote host?

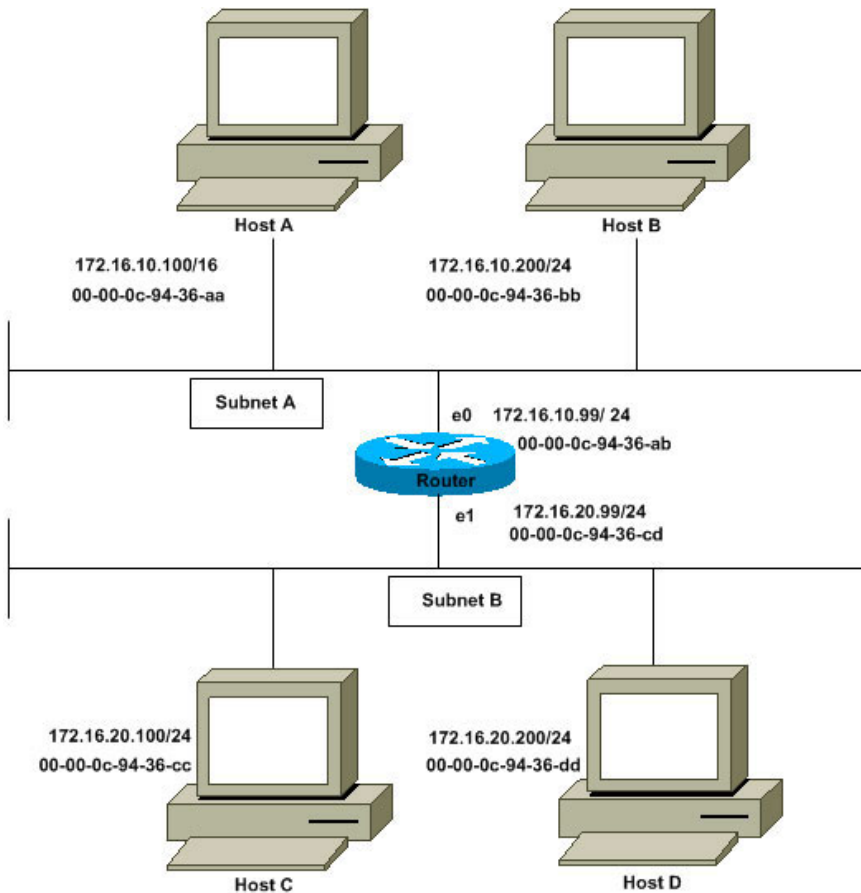
- A. Gateway DP
- B. Reverse ARP
- C. proxy ARP
- D. Inverse ARP
- E. indirect ARP

Answer: C

Explanation:

Below is an example taken from Cisco describing how proxy ARP operates:

Network Diagram



The Host A (172.16.10.100) on Subnet A needs to send packets to Host D (172.16.20.200) on Subnet B. As shown in the diagram above, Host A has a /16 subnet mask. What this means is that Host A believes that it is directly connected to all of network 172.16.0.0. When Host A needs to communicate with any devices it believes are directly connected, it will send an ARP request to the destination. Therefore, when Host A needs to send a packet to Host D, Host A believes that Host D is directly connected, so it sends an ARP request to Host D.

To reach Host D (172.16.20.200), Host A needs the MAC address of Host D.

Therefore, Host A broadcasts an ARP request on Subnet A, as below:

Sender's MAC Address	Sender's IP Address	Target MAC Address	Target IP Address
00-00-0c-94-36-aa	172.16.10.100	00-00-00-00-00-00	172.16.20.200

In above ARP request, Host A (172.16.10.100) is requesting that Host D (172.16.20.200) send its MAC address. The above ARP request packet is then encapsulated in an Ethernet frame with Host A's MAC address as the source address and a broadcast (FFFF.FFFF.FFFF) as the destination address. Since the ARP request is a broadcast, it reaches all the nodes in the Subnet A, including the router's e0 interface, but does not reach Host D. The broadcast will not reach Host D because routers, by default, do not

forward broadcasts.

Since the router knows that the target address (172.16.20.200) is on another subnet and can reach Host D, it will reply with its own MAC address to Host A.

Sender's MAC Address	Sender's IP Address	Target MAC Address	Target IP Address
00-00-0c-94-36-ab	172.16.20.200	00-00-0c-94-36-aa	172.16.10.100

Above is the Proxy ARP reply that the router sends to Host A. The proxy ARP reply

packet is encapsulated in an Ethernet frame with router's MAC address as the source address and Host A's MAC address as the destination address. The ARP replies are always unicast to the original requester.

On receiving this ARP reply, Host A updates its ARP table as below:

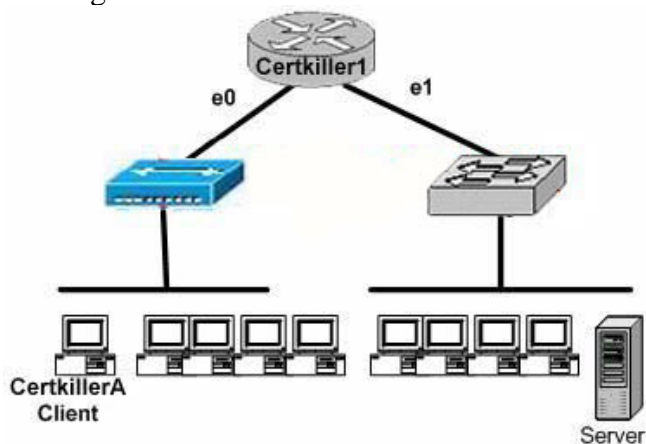
IP Address	MAC Address
172.16.20.200	00-00-0c-94-36-ab

From now on Host A will forward all the packets that it wants to reach 172.16.20.200 (Host D) to the MAC address 00-00-0c-94-36-ab (router). Since the router knows how to reach Host D, the router forwards the packet to Host D. The ARP cache on the hosts in Subnet A is populated with the MAC address of the router for all the hosts on Subnet B. Hence, all packets destined to Subnet B are sent to the router. The router forwards those packets to the hosts in Subnet B.

Reference: <http://www.cisco.com/warp/public/105/5.html>

QUESTION 755

The Certkiller A host and Server are separated by the Certkiller 1 router as shown in the diagram below:



The host Certkiller A is downloading a file from the server. What is the source MAC address on the frames that Certkiller A receives from the server on the network above? (Select only one answer choice)

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

Answer: A

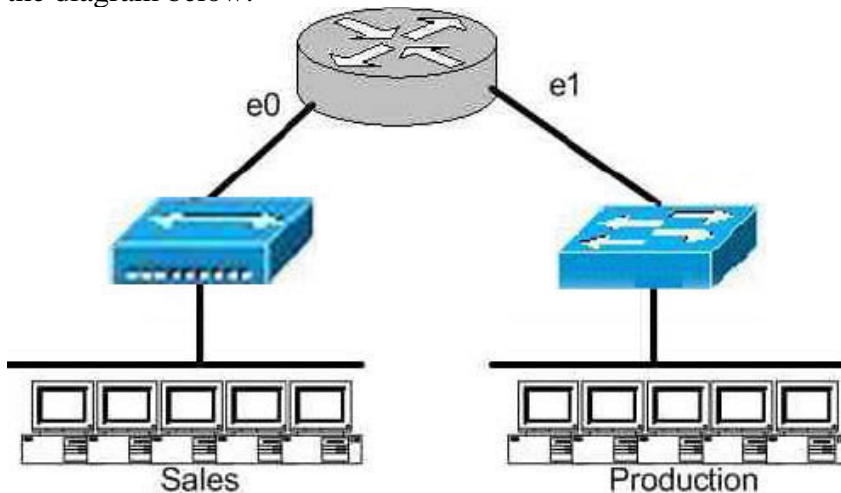
Explanation:

The IP address does not change because it is global, BUT the MAC address does indeed change when traffic crosses a router.

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

QUESTION 756

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



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

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

Answer: A, F

Explanation:

We have two broadcast domains total in this network, one with the Sales network and another consisting of the Production network. We have 5 computers and one port for E1 so we have 6 collision domains because a switch is being used in the Production department and one collision domain for the Sales department because a hub is being used there.

QUESTION 757

Which of the addresses below is an example of a valid unicast address?

- A. 172.31.128.255./18
- B. 255.255.255.255
- C. 192.168.24.59/30
- D. FFFF.FFFF.FFFF
- E. 224.0.0.5
- F. All of the above

Answer: A

Explanation

If we take this address and convert it to binary we have:

10101100.00100000.10|000000.11111111 = valid IP

Incorrect Answers:

- B. This is the all hosts broadcast address
- C. This is a broadcast address for this given subnet.
- D. This is reserved for the all hosts broadcast MAC address.
- E. This is a reserved, class D address. Class D addresses are reserved for multicast use. This particular address is used by OSPF routers.

QUESTION 758

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

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

Answer: B, D, E

Explanation:

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

1. A device with a frame to send listens until Ethernet is not busy.
2. When the Ethernet is not busy, the sender begins sending the frame.
3. The sender listens to make sure that no collision occurred.

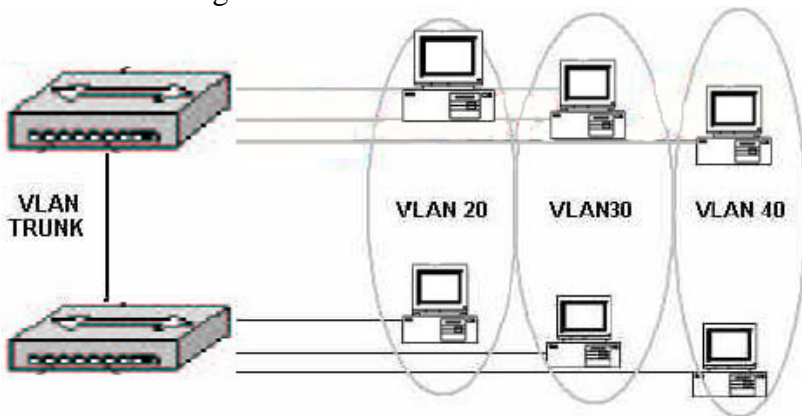
4. Once the senders hear the collision, they each send a jamming signal, to ensure that all stations recognize the collision.
5. After the jamming is complete, each sender randomizes a timer and waits that long.
6. When each timer expires, the process starts over with step 1.

Incorrect Answers:

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

QUESTION 759

A trunk is configured between two Catalyst switches in the Certkiller network as shown in the diagram below:



Based on the information above, how many broadcast domains exist in the diagram?

- A. One
- B. Two
- C. Three
- D. Four
- E. Five
- F. Six

Answer: C

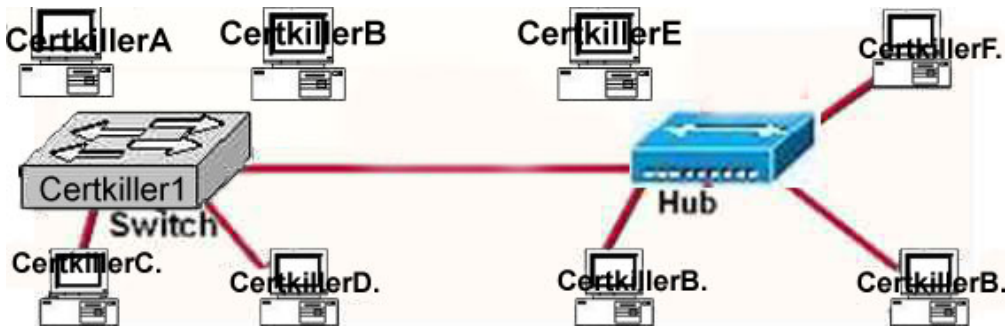
Explanation:

VLANs are used to logically segment a LAN network into multiple sub-networks. Each sub-network then resides in its own separate broadcast domain. In this case, there are 3 separate VLANs on this network, creating 3 different broadcast domains. The Trunk itself is used to carry information for all 3 of these VLANs, and the trunk itself is not considered to reside in a broadcast domain.

QUESTION 760

The Certkiller network is displayed in the following diagram:

640-801



Which statements describe the interconnections displayed in the exhibit? Select two

- A. Traffic from host Certkiller A to host Certkiller D will be collision free.
- B. Traffic from host Certkiller C to host Certkiller G will be collision free.
- C. Traffic from host Certkiller E to host Certkiller G will be collision free.
- D. Host Certkiller B can be connected at full duplex.
- E. Host Certkiller F can be connected at full duplex.

Answer: A, D

Explanation:

Switch connections have many benefits over the use of simple hubs, including full duplex operation and the segmentation of collision domains. When using a switch, each PC can reside within its own collision domain, so communications between two devices attached to a switch will be collision free. However, any station attached to a switch can still experience collisions when communicating with a device attached to a hub. Hubs are shared devices, meaning all devices attached to it reside within the same collision domain.

QUESTION 761

Which of the following are true of Ethernet technology?

- A. Hosts use a logical ring topology.
- B. Hosts use a logical bus topology
- C. Hosts must wait for an electronic signal to transfer data.
- D. Hosts are directly connected to a wiring concentrator called a MSAU.

Answer: B

Explanation:

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

2-3.

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



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

QUESTION 762

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

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

Answer: B, C

Explanation:

Ethernet uses the CSMA/CD access method.

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

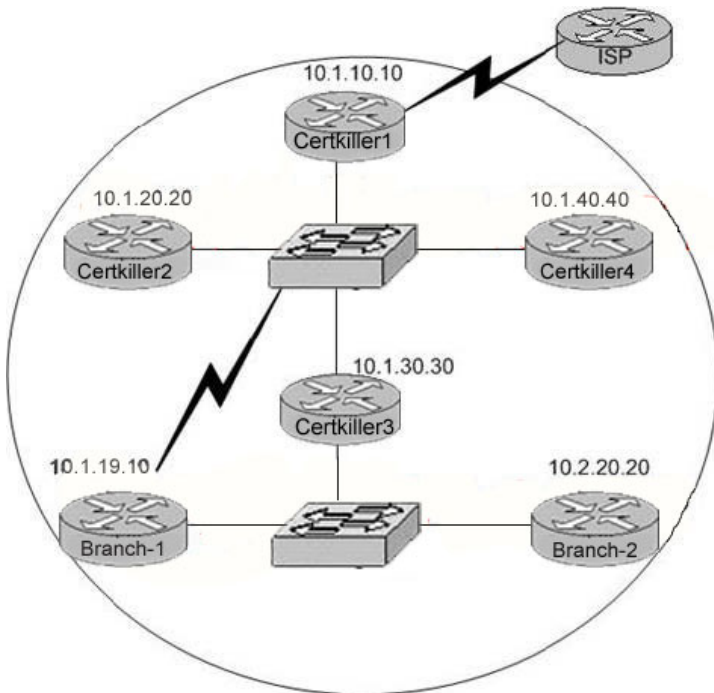
1. A device with a frame to send listens until the Ethernet is not busy.
2. When the Ethernet is not busy, the sender begins sending the frame.
3. The sender listens to make sure that no collision occurred.
4. Once the senders hear the collision, they each send a jamming signal, to ensure that all stations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

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

Reference: Cisco CCNA intro 640-821 p.55

QUESTION 763

The Certkiller OSPF network is displayed below:



The internetwork infrastructure of Certkiller consists of a single OSPF area as shown in the graphic. There is concern that a lack of router resources is impeding internetwork performance. As part of examining the router resources, the OSPF DRs need to be known. All the router OSPF priorities are at the default and the router IDs are shown with each router.

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

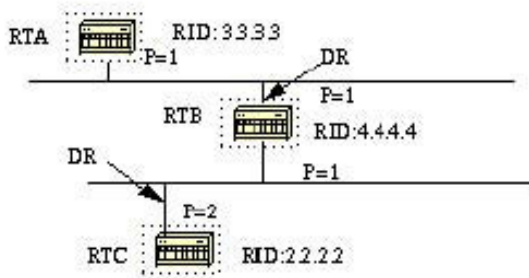
- A. Certkiller -1
- B. Certkiller -2
- C. Certkiller -3
- D. Certkiller -4
- E. Branch-1
- F. Branch-2

Answer: D, F

Explanation:

DR and BDR election is done via the Hello protocol. Hello packets are exchanged via IP multicast packets (Appendix B) on each segment. The router with the highest OSPF priority on a segment will become the DR for that segment. The same process is repeated for the BDR. In case of a tie, the router with the highest RID will win. The default for the interface OSPF priority is one. Remember that the DR and BDR concepts are per multi-access segment. Setting the OSPF priority on an interface is done using the `ip ospf priority <value> interface` command.

A priority value of zero indicates an interface which is not to be elected as DR or BDR. The state of the interface with priority zero will be DROTHER. The following diagram illustrates the DR election:

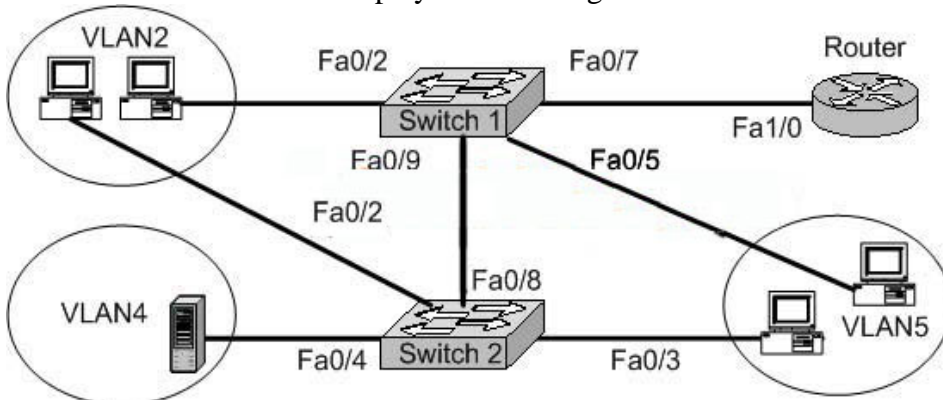


In the above diagram, RTA and RTB have the same interface priority but RTB has a higher RID. RTB would be DR on that segment. RTC has a higher priority than RTB. RTC is DR on that segment.

The default RID is the highest IP address that is active in the router. Based on this info, router Certkiller -4 and Branch-2 will most likely be elected as the DR in their respective networks.

QUESTION 764

The Certkiller network is displayed in the diagram below:



A network associate is trying to understand the operation of the Certkiller network by studying the graphic. All hosts are able to reach the enterprise server on VLAN4. The associate needs to determine which interfaces are functioning as a trunk ports. Which of the interfaces are trunks? (Choose two)

- A. Switch1 - Fa0/2
- B. Switch1 - Fa0/9
- C. Switch2 - Fa0/3
- D. Switch2 - Fa0/4
- E. Switch2 - Fa0/6
- F. Router - Fa1/0

Answer: B, F

Explanation:

Trunks are only used on connections between two switches, or between routers and switches. Trunk ports are not used on connections to end stations, such as servers or computer stations. In this example, only choice B and F are possible trunks.

QUESTION 765

What does a Layer 2 switch do if it receives a frame with a destination MAC address that is not found in its MAC address table?

- A. The frame is dropped.
- B. The frame is addressed with a broadcast MAC address and sent out all ports.
- C. The frame is sent out all ports except the receiving port.
- D. An ARP request is sent out all ports except the receiving port.
- E. A destination unreachable message is sent back to the source address.
- F. None of the above.

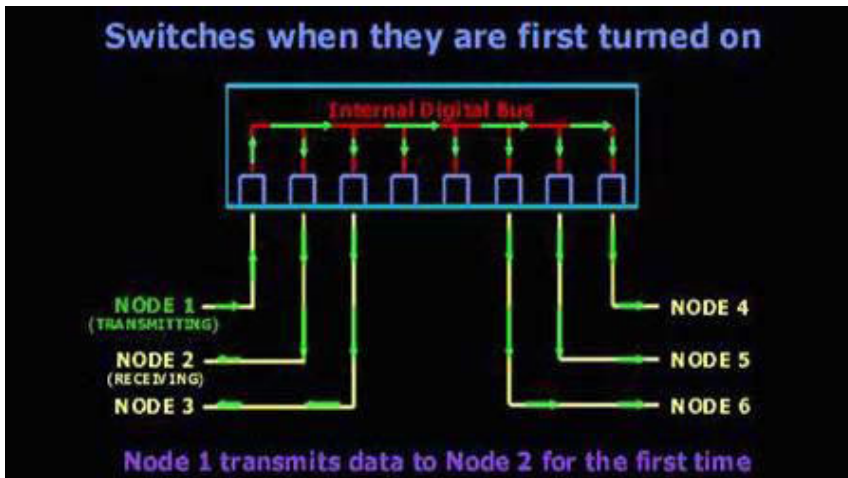
Answer: C

Explanation:

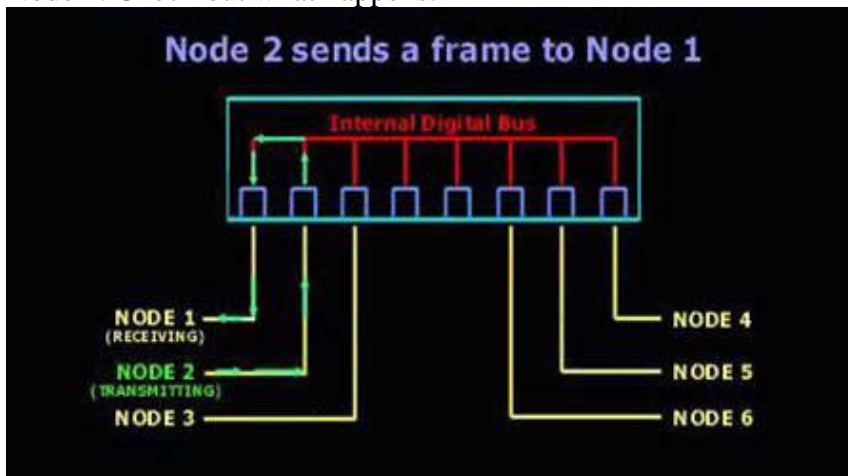
When a switch is powered on, the MAC filtering table is empty. When a device transmits and an interface receives a frame, the switch places the source address in the MAC filtering table remembering the interface the device on which it is located. The switch has no choice but to flood the network with this frame because it has no idea where the destination device is located.

If a device answers and sends a frame back, then the switch will take the source address from that frame and place the MAC address in the database, associating this address with the interface that received the frame.

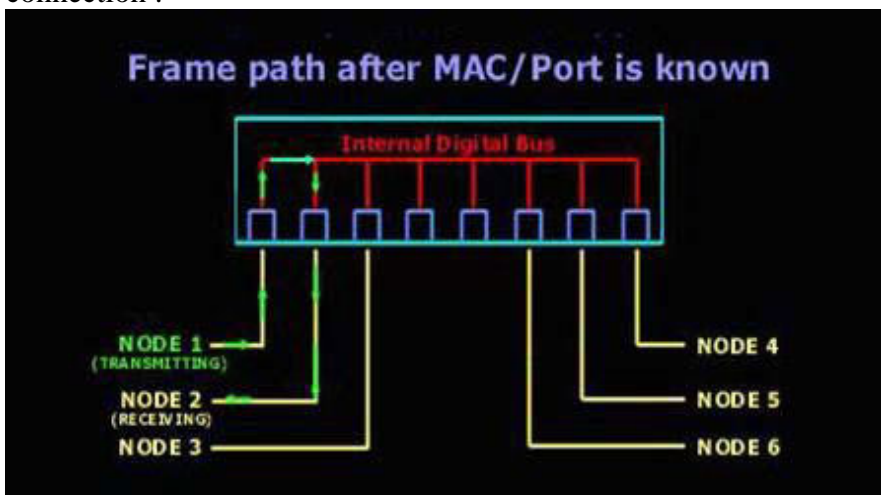
Since the switch has two MAC addresses in the filtering table, the devices can make a point-to-point connection and the frames will only be forwarded between the two devices. This makes Layer 2 switches better than hubs. As we explained early on this page, in a hub network all frames are forwarded out to all ports every time. Most desktop switches these days can hold up to 8000 MAC addresses in their table, and once the table is filled, then starting with the very first MAC entry, the switch will start overwriting the entries. Even though the number of entries might sound big... it only takes a minute or two to fill it up, and if a workstation doesn't talk on the network for that amount of time, then chances are that its MAC address has been removed from the table and the switch will forward to all ports the packet which has as a destination this particular workstation.



After the first frame has been successfully received by Node 2, Node 2 sends a reply to Node 1. Check out what happens:



Notice how the frame is not transmitted to every node on the switch. The switch by now has already learned that Node 1 is on the first port, so it send it straight there without delay. From now on, any communication between the two will be a point-to-point connection :



Forward/filter decision

When a frame arrives at the switch, the first step is to check the destination hardware address, which is compared to the forward/filter MAC database. If the destination hardware address is known, then it will transmit it out the correct port, but if the destination hardware address is not known, then it will broadcast the frame out of all ports, except the one which it received it from. If a device (computer) answers to the broadcast, then the MAC address of that device is added to the MAC database of the switch.

Reference: http://searchnetworking.techtarget.com/tip/1,289483,sid7_gci960389,00.html

QUESTION 766

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

- A. Source MAC address
- B. Source IP address
- C. Source switch port
- D. Destination IP address
- E. Destination port address
- F. Destination MAC address

Answer: F

Explanation:

When a frame arrives at the switch, the first step is to check the destination hardware address, which is compared to the forward/filter MAC database. If the destination hardware address is known, then it will transmit it out the correct port, but if the destination hardware address is not known, then it will broadcast the frame out of all ports, except the one which it received it from. If a device (computer) answers to the broadcast, then the MAC address of that device is added to the MAC database of the switch.

QUESTION 767

What is the function of the CSMA/CD algorithm in Ethernet technologies?

- A. defines how the media is accessed
- B. supplies a token to determine which host has access to the media
- C. defines the encoding of electrical signals on the wire
- D. determines the preamble bits

Answer: A

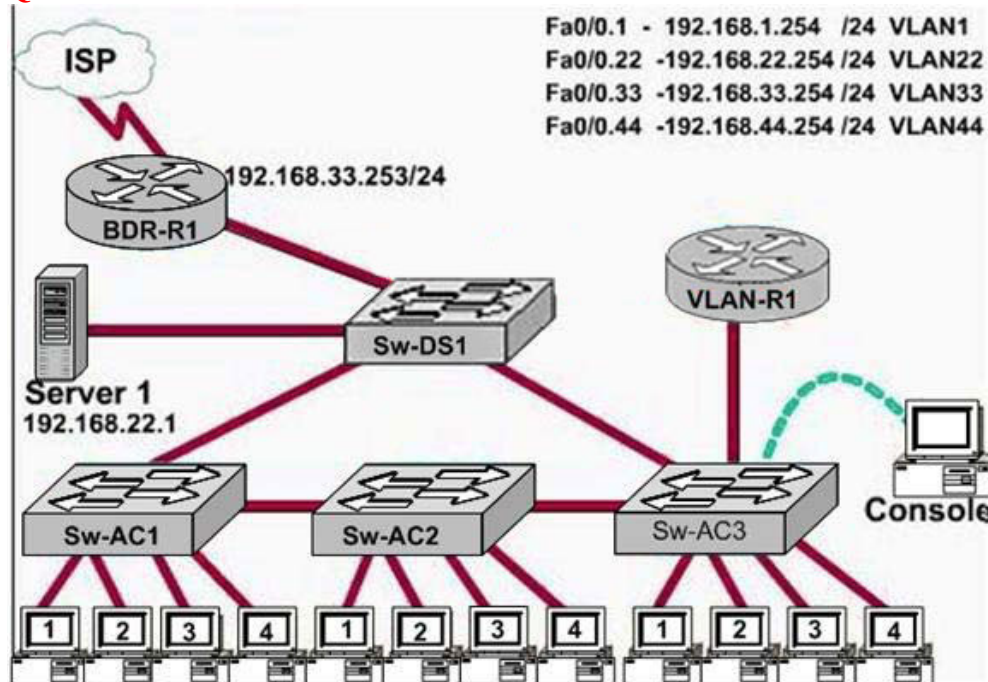
Explanation:

Ethernet networking uses Carrier Sense Multiple Access with Collision Detect (CSMA/CD), a protocol that helps devices share the bandwidth evenly without having two devices transmit at the same time on the network medium. CSMA/CD was created to overcome the problem of those collisions that occur when packets are transmitted simultaneously from different nodes. And trust me, good collision management is crucial,

because when a node transmits in a CSMA/CD network, all the other nodes on the network receive and examine that transmission. Only bridges and routers can effectively prevent a transmission from propagating throughout the entire network! So, how does the CSMA/CD protocol work? Like this: when a host wants to transmit over the network, it first checks for the presence of a digital signal on the wire. If all is clear (no other host is transmitting), the host will then proceed with its transmission. But it doesn't stop there. The transmitting host constantly monitors the wire to make sure no other hosts begin transmitting. If the host detects another signal on the wire, it sends out an extended jam signal that causes all nodes on the segment to stop sending data (think, busy signal). The nodes respond to that jam signal by waiting a while before attempting to transmit again. Back off algorithms determine when the colliding stations can retransmit. If collisions keep occurring after 15 tries, the nodes attempting to transmit will then time out. Pretty clean! The effects of having a CSMA/CD network sustaining heavy collisions include the following:

1. Delay
2. Low throughput
3. Congestion

QUESTION 768



Out of which ports on Sw-Ac3 will a frame be forwarded that has Source MAC address 0010.5a0c.fd86 and destination MAC address 000a.8a47.e612? (Choose two)

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/4
- D. Fa 0/6
- E. Fa 0/8
- F. Fa 0/12

Answer: D, F

QUESTION 769

An administrator issues the show ip interface s0/0 command and the output displays that interface Serial0/0 is up, line protocol is up
What does "line protocol is up" specifically indicate about the interface?

- A. The cable is attached properly.
- B. CDP has discovered the connected device.
- C. Keepalives are being received on the interface.
- D. A carrier detect signal has been received from the connected device.
- E. IP is correctly configured on the interface.

Answer: C

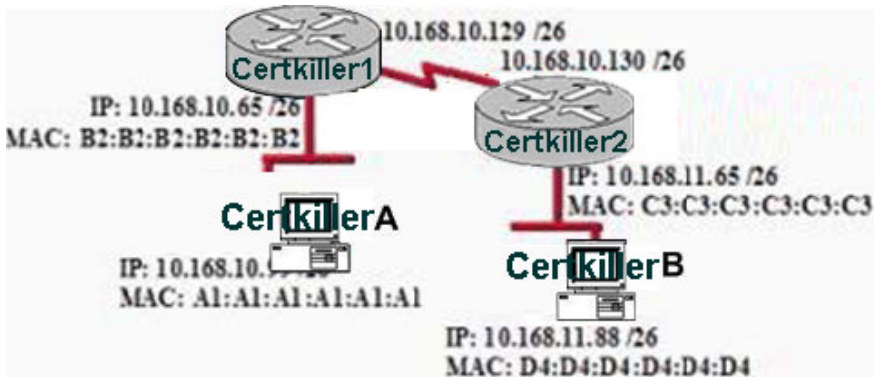
Explanation:

Serial 0/0 is up, line protocol is up is the proper status line condition.
Line serial0/0 is up: This statement represents that the physical connection is good.
Line protocol is up: This represents that the data link layer is OK, meaning that layer 2 keepalives are being received on the interface.
When the line protocol goes down, a possible problem is keep-alives not being sent by remote router.

QUESTION 770

Exhibit:

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



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

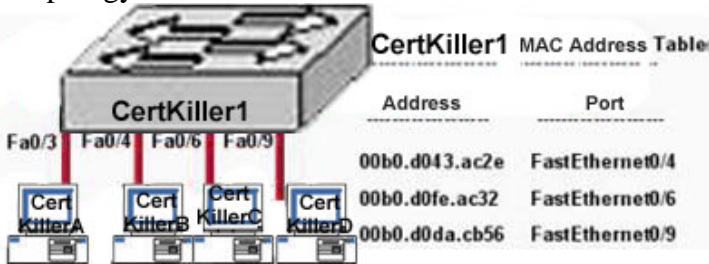
Answer: F

Explanation:

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

QUESTION 771

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



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

- A. The Certkiller 1 switch will flood the frame out of all ports except for port Fa0/3.
- B. The Certkiller 1 switch will discard the frame and send an error message back to host Certkiller A.
- C. The Certkiller 1 switch will add the destination address of the frame to the MAC address table and forward the frame to host D.
- D. The Certkiller 1 switch will add the source address and port to the MAC address table and forward the frame to host Certkiller D.

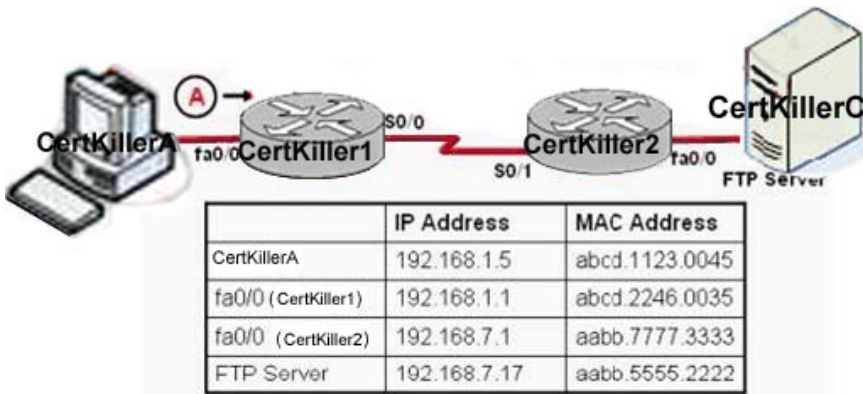
Answer: D

Explanation:

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

QUESTION 772

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



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

Answer: E

Explanation:

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

QUESTION 773

In a switched environment, what does the IEEE 802.1Q standard describe?

- A. VLAN pruning
- B. A method of VLAN trunking
- C. An approach to wireless LAN communication
- D. The operation of VTP
- E. The process for root bridge selection

Answer: B

Explanation:

A broadcast domain must sometimes exist on more than one switch in the network. To accomplish this, one switch must send frames to another switch and indicate which VLAN a particular frame belongs to. On Cisco switches, a trunk link is created to accomplish this VLAN identification. ISL and IEEE 802.1Q are different methods of putting a VLAN identifier in a Layer 2 frame.

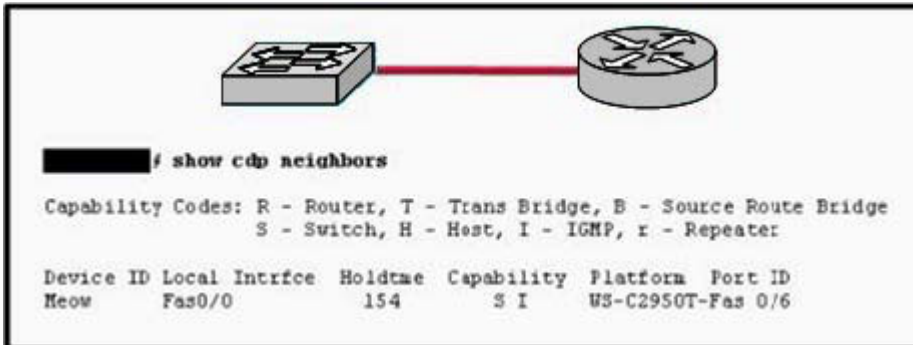
The IEEE 802.1Q protocol interconnects VLANs between multiple switches, routers, and servers. With 802.1Q, a network administrator can define a VLAN topology to span multiple physical devices.

Cisco switches support IEEE 802.1Q for FastEthernet and Gigabit Ethernet interfaces.

An 802.1Q trunk link provides VLAN identification by adding a 4-byte tag to an Ethernet Frame as it leaves a trunk port.

QUESTION 774

The "show cdp neighbors" command was issued on a Certkiller device as shown below:



Based on this information, what can be concluded from the topology and the device output?

- A. The IOS command was issued at the switch command line.
- B. The hostname for the router is Meow.
- C. Layer 1 connectivity exists between the two devices.
- D. The output information was received on port Fa0/6.

Answer: C

Explanation:

Cisco Discovery Protocol (CDP) is primarily used to obtain protocol addresses of neighboring devices and discover the platform of those devices. CDP can also be used to show information about the interfaces your router uses. CDP is media- and protocol-independent, and runs on all Cisco-manufactured equipment including routers, bridges, access servers, and switches.

CDP operates at layer 2 of the OSI model. In this example, the device does indeed see its neighbor device via CDP. Since every layer of the OSI model requires the underlying layer to function, we can deduce that layer 1 connectivity must exist in order for layer 2 protocols such as CDP to work.

Incorrect Answers:

- A: This can not be determined, as both switches and routers support CDP.
- B: Since we can not be sure what device this command was issued, we can not be sure. Although we know there is a device named "Meow" we can not be sure which device this is.
- D: According to the output, the information was received on port Fa 0/0, not Fa 0/6.

QUESTION 775

Part of the job as a network administrator is being able to make a distinction between routed protocols and routing protocols. Which of the following statements is true regarding them? (Choose all that apply)

- A. A routing protocol is assigned to an interface and determines the method of packet

delivery.

- B. A routed protocol is assigned to an interface and determines the method of packet delivery.
- C. A routing protocol determines the path of a packet through a network.
- D. A routed protocol determines the path of a packet through a network.
- E. A routing protocol operates at the transport layer of the OSI model.
- F. A routed protocol updates the routing table of a router.

Answer: B, C

Explanation:

A routing protocol learns routes and puts those routes in a routing table. Examples of routing protocols are EIGRP, OSPF, and BGP.

A routed protocol is the type of packet forwarded, or routed, through a network.

Examples of routed protocols include IP, IPX, and Appletalk.

Incorrect Answers:

- A. Routing protocols are assigned to routers. This answer correctly describes a routed protocol.
- D. This describes the function of a routing protocol.
- E. Routing protocols operate at layer 3, which is the network layer, of the OSI model.
- F. This is a function of a routing protocol.

QUESTION 776

Which one of the routing protocol below does NOT use a distance vector algorithm to calculate a route to a given destination? (Select all that apply)

- A. RIP
- B. IPX RIP
- C. IGRP
- D. OSPF
- E. IS-IS

Answer: D, E

Explanation:

Only OSPF and IS-IS are true link-state routing protocols. The other choices are distance-vector routing protocols.

QUESTION 777

Non-contiguous networks can pose a problem for network reachability in certain circumstances. Which of the following routing protocols have means of minimizing the risk? (Select three choices)

- A. RIP v1
- B. RIP v2

- C. EIGRP
- D. IGRP
- E. OSPF
- F. VLSM

Answer: B, C, E

Explanation:

OSPF, RIP version 2, and EIGRP all provide support for discontinuous networks. This is provided by the fact that subnet mask information is advertised along with the routes, and these protocols all support Variable Length Subnet Masks (VLSM).

Incorrect Answers:

- A. Whenever RIP version 1 advertises a network across a different major net boundary, RIP summarizes the advertised network at the major net boundary. RIP version 2 is an updated version of RIP, and one of the main features that it was able to provide over RIPv1 is support for VLSM information.
- D. IGRP does not support VLSM. Like RIP version 2, EIGRP is the updated version of IGRP, which provides support for VLSM.
- F. VLSM is the feature that is required to support non-contiguous networks, but VLSM is not itself a routing protocol.

QUESTION 778

DRAG DROP

Study the exhibit below regarding various routing protocols and their characteristics.

Move the correct statements on the left to its associated routing protocol on the right side. (Note: Not all choices will be used)

Select these	Place RIP Version 1 characteristics here
has a default administrative distance of 100	place here
has a default administrative distance of 100	place here
has a default administrative distance of 120	place here
has a maximum hop count of 15	Place IGRP characteristics here
has a maximum hop count of 224	place here
has a maximum hop count of 255	place here
use hop count to determine best path	Place EIGRP characteristics here
uses DUAL algorithm	place here
uses SPF algorithm	place here
supports classless routing	place here

Answer:

Select these	Place RIP Version 1 characteristics here
has a default administrative distance of 100	use hop count to determine best path
has a maximum hop count of 15	has a maximum hop count of 15
	has a default administrative distance of 100
	Place IGRP characteristics here
	has a maximum hop count of 255
	has a default administrative distance of 100
	Place EIGRP characteristics here
uses SPF algorithm	uses DUAL algorithm
	supports classless routing
	has a maximum hop count of 224

Explanation:

Enhanced IGRP (EIGRP)

It is a classless, enhanced distance-vector, Cisco proprietary protocol. Like IGRP, EIGRP uses the concept of an autonomous system to describe the set of contiguous routers that run the same routing protocol and share routing information. But unlike IGRP, EIGRP includes the subnet mask in its route updates. The advertisement of subnet information allows us to use VLSM and summarization when designing our networks. EIGRP is sometimes referred to as a hybrid routing protocol because it has characteristics of both distance-vector and link-state protocols.

EIGRP has a maximum hop count of 224.

EIGRP supports two types of routes:

Internal EIGRP route: These are routes originated within a specific autonomous system by EIGRP routers that are members of the same autonomous system. The administrative distance of an internal EIGRP route is 90.

External EIGRP route: These routes appear within EIGRP routing tables due to either manual or automatic redistribution, and they represent networks that originated outside of the EIGRP autonomous system. The administrative distance of an external EIGRP route is 170.

Reference: Todd Lammle, CCNA Study Guide 4th Edition, Sybex Inc. 2004, Page 266 & 270.

EIGRP Metric

EIGRP metric is different than that of IGRP by a factor of 256 because of the metric field size: IGRP uses only 24 bits in its update packet for the metric field, whereas EIGRP uses 32 bits in its update packet for the metric field. The difference of 8 bits requires the IGRP metric to be multiplied by 256 to obtain the EIGRP metric.

Reference: Troubleshooting IP Routing Protocols, Cisco Press, ISBN 1-58705-019-6,

QUESTION 779

Which of the following technologies can be used in distance vector routing protocols to prevent routing loops? (Select two)

- A. Spanning Tree Protocol
- B. Shortest path first tree
- C. Link-state advertisements (LSA)
- D. Hold-down timers
- E. Split horizon
- F. VRRP

Answer: D, E

Explanation:

In order to prevent information from looping throughout a network, distance vector protocols, such as RIP version 2, use the following mechanisms:

* Split horizon - the routing protocol advertises routes out an interface only if they were not learned from updates entering that interface.

* Hold-down timer - After finding out that a router to a subnet has failed, a router waits a

certain period of time before believing any other routing information about that subnet. In addition to these, a finite number of hops are also used. This ensures that packets do not loop through a network indefinitely.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 154.

QUESTION 780

Which of the following routing protocols are less likely prone to problems in non contiguous networks? (Select all valid responses)

- A. IGRP
- B. ICMP
- C. OSPF
- D. RIP v1
- E. RIP v2
- F. EIGRP

Answer: C, E, F

Explanation:

OSPF, RIP v2, and EIGRP all support VLSM information, which will eliminate the problems that can arise from non contiguous networks.

Incorrect Answers:

A, D. IGRP and RIP version 1 are distance vector routing protocols that do not support VLSM information, so they are prone to problems that can arise from discontinuous network schemes.

B. ICMP (Internet Control Message Protocol) is not a routing protocol. It is used primarily for the management and monitoring of networks.

QUESTION 781

Which of the following statements describe the characteristic of link state routing protocols? (Choose all that apply.)

- A. The exchange of an advertisement is triggered by a change in the network.
- B. All routers exchange routing tables with each other in a multipoint network.
- C. Packets are routed based upon the shortest path to the destination.
- D. Paths are chosen depending on the cost efficiency factor.
- E. Every router in an OSPF area is capable of representing the entire network topology.
- F. Only the designated router in an OSPF area can represent the entire network topology.

Answer: A, C, E

Explanation:

The predominant link state routing protocols are OSPF and IS-IS. The following describes the features and functionality of OSPF:

Open Shortest Path First

- * Each router discovers its neighbors on each interface. The list of neighbors is kept in a neighbor table.
- * Each router uses a reliable protocol to exchange topology information with its neighbors.
- * Each router places the learned topology information into its topology database.
- * Each router runs the SPF algorithm against its own topology database.
- * Each router runs the SPF algorithm against its own topology database to calculate the best routes to each subnet in the database.
- * Each router places the best route to each subnet into the IP routing table.

The following list points out some of the key features of OSPF:

- * Converges very quickly - from the point of recognizing a failure, it often can converge in less than 10 seconds.
- * Supports VLSM.
- * Uses short Hello messages on a short regular interval, with the absence of hello messages indicating that a neighbor is no longer reachable.
- * Sends partial updates when link status changes and floods full updates every 30 minutes. The flooding, however, does not happen all at once, so the overhead is minimal.
- * Uses cost for the metric.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 417

QUESTION 782

In EIGRP, what kind of route information is stored in RAM and maintained by way of hello packets and update packets? (Select two answer choices)

- A. Neighbor Table
- B. SRF Table
- C. RTP Table
- D. Topology Table
- E. Query Table
- F. Dual Table

Answer: A, D

Explanation:

In EIGRP the only two tables of significance are the neighbor table and the topology table.

Reference: Sybex CCNA Study Guide edition 4, Page 271.

QUESTION 783

What is the maximum number of hops OSPF allows before it deems a network unreachable?

- A. 15
- B. 16

- C. 99
- D. 255
- E. Unlimited

Answer: E

Explanation:

OSPF is a link state protocol. Link state protocols do not use hops to mark networks as unreachable. Instead OSPF implements a steady state operation to its adjacent neighbors by sending and receiving small Hello packets periodically. When an OSPF router does not receive a Hello packet for a specified time period, it assumes that the neighbor is down. The router then runs the SPF algorithm to calculate new routes.

Reference:

Certkiller 640-801 Study Guide, Section 5.2 "Steady State Operation".

Incorrect Answers:

- A. This is the maximum number of hops that a RIP network could use before the route is deemed unreachable.
- B. When a RIP routes receives a routing update for a route that shows a hop count of 16, the route is considered to be unreachable. RIP routers use this to prevent packets from looping through the network indefinitely, but OSPF routers do not.

QUESTION 784

On the topic of the OSPF hello protocol; which of the statements below are true?
(Select two answer choices)

- A. The OSPF Hello protocol provides dynamic neighbor discovery.
- B. The OSPF Hello protocol detects unreachable neighbors in 90 second intervals.
- C. The OSPF Hello protocol maintains neighbor relationships.
- D. The OSPF Hello protocol negotiates correctness parameters between neighboring interfaces.
- E. The OSPF Hello protocol uses timers to elect the router with the fastest links at the designated router.
- F. The OSPF Hello protocol broadcast hello packets throughout the internetwork to discover all routers that are running OSPF.

Answer: A, C

Explanation:

The Hello Packet

OSPF contains a protocol (the Hello protocol) that is used to establish and maintain relationships between neighboring nodes. These relationships are called adjacencies. Adjacencies are the basis for the exchange of routing data in OSPF.

It is through the use of this protocol, and packet type, that an OSPF node discovers the other OSPF nodes in its area. Its name is intentionally significant; the Hello protocol establishes communications between potential neighboring routers. The Hello protocol

uses a special subpacket structure that is appended to the standard 24-octet OSPF header. Together, these structures form a hello packet.

All routers in an OSPF network must adhere to certain conventions that must be uniform throughout the network. These conventions include the following:

1. The network mask
2. The interval at which hello packets will be broadcast (the hello interval)
3. The amount of time that must elapse before a non responding router will be declared dead (that is, the router dead interval) by the other routers in the network
4. All routers in an OSPF network must agree to use the same value for each of these parameters; otherwise, the network might not operate properly. These parameters are exchanged using hello packets. Together, they comprise the basis for neighborly communications. They ensure that neighbor relationships (known as adjacencies) are not formed between routers in different subnets and that all members of the network agree on how frequently to stay in contact with each other.

The hello packet also includes a listing of other routers (using their unique router IDs) that the source router has recently been in contact with. This field, the Neighbor field, facilitates the neighbor discovery process. The hello packet also contains several other fields such as Designated Router and Backup Designated Router. These fields are useful in maintaining adjacencies and support the operation of the OSPF network in both periods of stability and convergence.

QUESTION 785

A routing table contains static, RIP, and IGRP routes destined to the same network and network mask; with each set to its default administrative distance. Which route will it take?

- A. The RIP route
- B. The static route
- C. The IGRP route
- D. All three with a round robin load balancing technique.

Answer: B

Explanation:

To decide which route to use, IOS uses a concept called Administrative Distance. Administrative distance is a number that denotes how believable an entire routing protocol is on a single router. The lower the number, the better, or more believable the routing protocol.

Route Type Administrative Distance

- * Static 1
- * IGRP 100
- * RIP 120

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 177

QUESTION 786

You are an administrator and you've just configured OSPF on a router with both physical and logical interfaces. Which of the following factors determine the router ID?

- A. The lowest network number of any interface.
- B. The highest network number of any interface.
- C. The highest IP address of any logical interface.
- D. The middle IP address of any logical interface.
- E. The lowest IP address of any physical interface.
- F. The highest IP address of any physical interface.
- G. The lowest IP address of any logical interface.

Answer: C

Explanation:

Physical interface address is used only if there are no loopback addresses.

Sybex 5th p. 308:

"Router ID The Router ID (RID) is an IP address used to identify the router.

Cisco chooses the Router ID by using the highest IP address of all configured loopback interfaces. If no loopback interfaces are configured with addresses, OSPF will choose the highest IP address of all active physical interfaces."

QUESTION 787

Under which network type circumstance would an OSPF router establish router adjacencies while not performing the DR/BDR election process?

- A. Point-to-point
- B. Broadcast
- C. Non-broadcast multi-access
- D. Backbone area 0
- E. None of the above

Answer: A

Explanation:

If there's a point to point connection, there's no need for a designated router or a backup designated router election since only two routers can exist on a point to point network segment.

Incorrect Answers:

B, C. All OSPF routers in a broadcast and non-broadcast multi-access network go through the DR and BDR election process.

D. The backbone area is not a network type, but a collection of OSPF networks links. Area 0 is reserved as the backbone area, and routers within area 0 may or may not go through the DR/BDR election process, depending on the network type.

QUESTION 788

On the assumption that every OSPF router in a particular area is configured with the same priority value; which secondary value would be used as a router ID when there is no loopback interface set?

- A. The IP address of the first Fast Ethernet interface.
- B. The IP address of the console management interface.
- C. The highest IP address among its active interfaces.
- D. The lowest IP address among its active interfaces.
- E. The priority value until a loopback interface is configured.

Answer: C

Explanation:

Ordinarily the loopback interface would be selected as the router ID, but since there is no loopback interface set, the router ID will be the IP address of the first active interface. If by chance that particular interface has more than one IP address, then the highest address will be selected as the Router ID in theory. In practice, the first interface to come up in an OSPF router will become the router ID, since the election process is non-preemptive.

QUESTION 789

What are the different characteristics of distance vector and link state routing protocols?

- A. Distance vector protocols send the entire routing table to directly connected neighbors.
- B. Distance vector protocols are responsible for sending updates to all networks listed in the routing table.
- C. Link state protocols are responsible for sending the entire routing table to the whole network.
- D. Link state protocols send updates regarding their own links status to all other routers on the network.
- E. None of the above

Answer: A, D

Explanation:

Distance Vector Protocols:

Distance Vector Protocols advertise routing information by sending messages, called routing updates, out the interfaces on a router. These updates contain a series of entries, with each entry representing a subnet and a metric.

Link-State Protocols:

Sends partial updates when link status changes and floods full updates every 30 minutes. The flooding, however, does not happen all at once, so the overhead is minimal.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 413 + 419

QUESTION 790

On the topic of OSPF routing; which of the following are the traits of an OSPF area? (Select three)

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

Answer: C, D, E

Explanation:

OSPF uses areas in a hierarchical fashion, and the backbone area is always area 0. All other areas have at least one connection to area 0. If, for some reason, any area does not have a direct connection to the backbone area 0, then an OSPF virtual link must be configured. OSPF networks do not require multiple areas, as all routers can be contained within a single area. If an OSPF network is configured as a single area, then area 0 does not need to be used.

Incorrect Answers:

- A. Loopback interfaces are often used in OSPF networks, so that the router ID can be configured. However, this is not a requirement.
- B. The area-id can be an integer between 0 and 4294967295.
- F. Single area OSPF networks do not have to be configured with the backbone area 0. Although area 1 can indeed be used, it is not required that area 1 is used. Single area OSPF networks can be any integer from 0-4294967295.

QUESTION 791

If the bandwidth of an OSPF interface is 64, what would be the calculated cost of the link?

- A. 1
- B. 10
- C. 1562
- D. 64000
- E. 128000
- F. None of the above

Answer: C

Explanation:

The question states that OSPF interface has been configured with the bandwidth 64 command. Cisco IOS always interprets the values for the bandwidth command as being in kbps, so the bandwidth is configured as 64 kbps. The metric for any OSPF defaults to $100,000,000/\text{bandwidth}$. So, in this example:

$$100,000,000 / 64000 = 1562.5$$

Reference: Sybex CCNA Study Guide edition 4, page 284.

QUESTION 792

What are some of the characteristics of the OSPF routing protocol? (Select all valid answer choices)

- A. It confines network instability to a single area of network.
- B. It increases the routing overhead of the network
- C. It supports VLSM
- D. It routes between Autonomous Systems.
- E. It allows extensive control of routing updates
- F. None of the above

Answer: A, C, E

Explanation:

The following describes some of the features and functionality of the OSPF protocol:

Open Shortest Path First

- * Each router discovers its neighbors on each interface. The list of neighbors is kept in a neighbor table.
- * Each router uses a reliable protocol to exchange topology information with its neighbors.
- * Each router places the learned topology information into its topology database.
- * Each router runs the SPF algorithm against its own topology database.
- * Each router runs the SPF algorithm against its own topology database to calculate the best routes to each subnet in the database.
- * Each router places the best route to each subnet into the IP routing table.

The following list points out some of the key features of OSPF:

- * Converges very quickly - from the point of recognizing a failure, it often can converge in less than 10 seconds.
- * Supports VLSM.
- * Uses short Hello messages on a short regular interval, with the absence of hello messages indicating that a neighbor is no longer reachable.
- * Sends partial updates when link status changes and floods full updates every 30 minutes. The flooding, however, does not happen all at once, so the overhead is minimal.
- * Uses cost for the metric.

In

Answer:

- B. This is incorrect because the hierarchical design characteristics of OSPF actually

reduce the overhead on larger networks.

D. This is not true as OSPF doesn't route between Autonomous Systems. OSPF is an IGP. Routing between autonomous systems is reserved for EGP protocols such as BGP.

QUESTION 793

Which of the following are characteristics of OSPF areas?

- A. Hierarchical OSPF networks need to be in one area
- B. Multiple OSPF areas must connect to area 0
- C. Single area OSPF networks must be configured in area 1
- D. Areas can be assigned any number from 0 to 63535
- E. Area 0 is called the backbone area
- F. Each OSPF area need to be configured with a loopback interface

Answer: B, E

Explanation:

OSPF uses areas in a hierarchical fashion, and the backbone area is always area 0. All other areas have at least one connection to area 0. If, for some reason, any area does not have a direct connection to the backbone area 0, then an OSPF virtual link must be configured. OSPF networks do not require multiple areas, as all routers can be contained within a single area. If an OSPF network is configured as a single area, then area 0 does not need to be used.

Incorrect Answers:

- A. For a hierarchy of areas to be configured, multiple areas can be configured. When multiple areas are set up in a network, the backbone area must be area 0.
 - C. Single area OSPF networks do not have to be configured with the backbone area 0. Although area 1 can indeed be used, it is not required that area 1 is used. Single area OSPF networks can be any integer from 0-4294967295.
 - D. The area-id can be an integer between 0 and 4294967295.
 - F. Loopback interfaces are often used in OSPF networks, so that the router ID can be configured. However, this is not a requirement.
-

QUESTION 794

On what kinds of networks does OSPF elect a backup designated router?

- A. Point-to-point and point-to-multipoint networks
- B. Nonbroadcast and broadcast multipoint multicasting
- C. Point-to-point and multi-access broadcasting
- D. Point-to-multipoint and multi-access broadcasting
- E. Nonbroadcast and broadcast multi-access

Answer: E

Explanation:

DR and BDR are elected on broadcast and nonbroadcast multi-access networks.

Reference: Sybex CCNA Study Guide 4th Edition (Page 283)

QUESTION 795

By default, how often does a router running IGRP send its complete routing table to its neighbors?

- A. Every 5 minutes
- B. Every 90 seconds
- C. Every 60 seconds
- D. Every 30 seconds

Answer: B

Explanation:

IGRP enabled routers send their complete routing table to all their neighbors every 90 seconds.

Incorrect Answers:

D. This is the duration for the entire RIP table to be sent to neighbors in networks using RIP, not IGRP.

QUESTION 796

Which two of the following are valid characteristics of EIGRP? (Select two answer choices)

- A. Has a maximum hop count of 25
- B. Can differentiate between internal and external routes
- C. Uses a 32-bit metric
- D. Can maintain only one routing table
- E. Need all networks to use the same subnet mask
- F. Supports only one routed protocol

Answer: B, C

Explanation:

By default, the EIGRP composite metric is a 32-bit quantity that is a sum of the segment delays and the lowest segment bandwidth.

Enhanced IGRP supports internal and external routes. Internal routes originate within an Enhanced IGRP AS. Therefore, a directly attached network that is configured to run Enhanced IGRP is considered an internal route and is propagated with this information throughout the Enhanced IGRP AS. External routes are learned by another routing protocol or reside in the routing table as static routes. These routes are tagged individually with the identity of their origin.

Incorrect Answers:

A. This choice is wrong since it does not use hop count but a metrics that includes:

bandwidth*, delay*, load, reliability, and MTU size. (* used by default).

D. This choice is wrong since we know that it keeps a three tables (neighbor table, topology table, and route table) and if you want to be a nit pick and say it still only supports one route table, then if you configure IP and IPX on the router, you will have two route tables one for each protocol.

E. This choice is wrong since we know that EIGRP supports VLSM.

F. This choice is wrong since we know it supports IP, IPX and Appletalk.

QUESTION 797

In EIGRP; what is a feasible successor (FS) and where is it stored?

- A. A FS is a primary route, stored in the routing table
- B. A FS is a backup route, stored in the routing table
- C. A FS is a backup route, stored in the topology table
- D. A FS is a primary route, stored in the topology table
- E. None of the above

Answer: C

Explanation:

The following are some terms relating to EIGRP:

1. Feasible Distance: The lowest calculated metric to each destination
2. Feasibility Condition: A condition that is met if a neighbor's advertised distance to a destination is lower than the router's Feasible Distance to that same destination.
3. Successor: The neighbor that has been selected as the next hop for a given destination based on the Feasibility Condition.

Reference:

Jeff Doyle, Routing TCP/IP, Volume I, Chapter 8: Enhanced Interior Gateway Routing Protocol (EIGRP), p.336-337, Cisco Press, (ISBN 1-57870-041-8)

Additional info:

The Feasible Condition is met when the receiving router has a Feasible Distance (FD) to a particular network and it receives an update from a neighbor with a lower advertised or Reported Distance (RD) to that network. The neighbor then becomes a Feasible Successor (FS) for that route because it is one hop closer to the destination network.

There may be a number of Feasible Successors in a meshed network environment.

The RD for a neighbor to reach a particular network must always be less than the FD for the local router to reach that same network. In this way EIGRP avoids routing loops. This is why routes that have RD larger than the FD are not entered into the Topology table.

Reference: Ravi Malhotra, IP Routing, Chapter 4: Enhanced Interior Gateway Routing Protocol (EIGRP), O'Reilly Press, January 2002 (ISBN 0-596-00275-0)

QUESTION 798

What is OSPF's default administrative distance (AD)?

- A. 90
- B. 100

- C. 110
- D. 120
- E. 170

Answer: C

Explanation:

The administrative distance values are configured on a single router and are not exchanged with other routers. Table lists the various sources of routing information, along with the default administrative distance.

Default Administrative Distances

Route Type	Administrative Distance
Connected	0
Static	1
EIGRP summary route	5
EBGP	20
EIGRP (internal)	90
IGRP	100
OSPF	110
IS-IS	115
RIP	120
EIGRP (external)	170
iBGP (external)	200

QUESTION 799

What are two characteristics of the OSPF process identifier? (Select two answer choices)

- A. It is needed to identify a unique instance of an OSPF database.
- B. It is an optional parameter only necessary if multiple OSPF processes are used.
- C. It is locally significant.
- D. It is globally insignificant
- E. All routers in the same OSPF area must have the same process ID to exchange routing information.

Answer: A, C

Explanation:

The OSPF process ID is locally significant, and is only used by the local router to discriminate between multiple OSPF processes. In any given OSPF network, the process ID's do not need to match between neighboring routers. This is in contrast to other routing protocols, such as EIGRP.

Additional info:

```
router ospf process-id  
no router ospf process-id  
process-id
```

Internally used identification parameter for an OSPF routing process. It is locally

assigned and can be any positive integer. A unique value is assigned for each OSPF routing process.

Reference:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1826/products_command_summary_chapter09186a00800d

QUESTION 800

Which one of the following answer choices below is true regarding the OSPF topology database?

- A. All entries in the topology database will be included on each router.
- B. All routers in the same OSPF area will have one topology database.
- C. The Dijkstra algorithm is used in the creation of the topology database.
- D. LSA packets are used to update and maintain the topology database.

Answer: D

Explanation:

The LSA (link state advertisement) is used to describe a subnet, network mask, metric, etc. pertaining to the routing entries. It is what keeps the OSPF topology database updated and maintained.

In

Answer:

- A. This is incorrect because every entry in the topology database won't necessarily be included on each router.
- B. This is incorrect because each router has its own topology database.
- C. This is incorrect because although the Dijkstra algorithm is associated with OSPF, it works by processing the information that's already in the database, not for creating the database.

Reference: CCNA Self-Study CCNA ICND Exam Certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 192.

QUESTION 801

The Certkiller router is running both RIP and IGRP, and the same route is learned by this router from both of these methods. However, when you issue the command "show ip route" you see only the IGRP route, and not the RIP route. Why is this?

- A. IGRP has a faster update timer.
- B. IGRP has a lower administrative distance.
- C. RIP has a higher metric value for that route.
- D. The IGRP route has fewer hops.
- E. The RIP path has a routing loop.

Answer: B

Explanation:

To decide which route to use, IOS uses a concept called the administrative distance. The administrative distance is a number that denotes how believable an entire routing protocol is on a single router. The lower the number, the better, or more believable, the routing protocol. For instance, RIP has a default administrative distance of 120, and IGRP defaults to 100, making IGRP more believable than RIP. So, when both routing protocols learn routes to the same subnet, the router adds only the IGRP route to the routing table.

Reference: CCNA ICND Exam Certification Guide by Wendell Odem, Page 177

QUESTION 802

In a point-to-point network, which address are OSPF hello packets sent to?

- A. 127.0.0.1
- B. 192.168.0.5
- C. 223.0.0.1
- D. 172.16.0.1
- E. 224.0.0.5
- F. 254.255.255.255.255

Answer: E

Explanation:

The multicast IP address 224.0.0.5 is known as 'AllSPFRouters.' All routers running OSPF should be prepared to receive packets sent to this address since hello packets are always sent to this destination. Also, certain OSPF protocol packets are sent to this address during the flooding procedure.

Incorrect Answers:

- A. This is the IP address reserved for the internal loopback on PC hosts. All windows based PC's will use this internal IP address, assuming that the TCP/IP stack is correctly installed.
 - B, D. These addresses are part of the range of addresses reserved for internal use, as defined in RFC 1918.
-

QUESTION 803

What kind of information does a router running a link-state routing protocol need to create and maintain its topological database? (Select two answer choices.)

- A. LSAs from other routers
- B. Beacons received on point-to-point links
- C. hello packets
- D. Routing tables received from neighbors
- E. SAP packets sent by other routers
- F. TTL packets from exclusive routers

Answer: A, C

Explanation:

LSA stands for (Link State Advertisement). It is an update sent out by an OSPF router to advertise the subnet number, subnet mask, cost (metric), etc. so that other routers can update their topology databases. Hello packets are sent out by routers as a way of keeping in touch with neighboring routers to tell that they are still up and their routes are still usable.

Reference: CCNA Self-Study CCNA ICND Exam Certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 192 -193

Incorrect Answers:

- B. Beacons are used in token ring networks as a sign of an error or fault.
- D. This would be more accurate of a distance vector protocol, not a link state routing protocol.
- E. SAP entries are used in IPX networks, not for IP routing protocols.

QUESTION 804

What kind of packets does OSPF send to keep up connectivity with its neighboring routers?

- A. SPF packets
- B. hello packets
- C. keepalive packets
- D. dead interval packets
- E. LSU packets

Answer: B

Explanation:

Hello packets simply identify the subnet, the router sending the packets and a few other details. As long as a router continues to receive Hellos from existing neighbors, the attached link must still be usable, and the neighbor that sent the Hello must still be up and working.

Reference: CCNA Self-Study CCNA ICND Exam Certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 192 -193

Incorrect Answers:

- A, E. SPF (shortest path first) and LSU (link state update) packets are not used to maintain connectivity between neighbors.
- C. Keepalive packets do not exist. Hello packets perform the functions of a keepalive packet.

QUESTION 805

Which one of the following statements best explains the split horizon rule used in distance vector routing protocols?

640-801

- A. Only routers can split boundaries (horizons) between concentric networks.
- B. Each AS must keep routing tables converged to prevent dead routes from being advertised across boundaries.
- C. Networks can only remain fully converged if all information is sent out all active interfaces.
- D. Information about a route should not be sent back in the direction from which the original update came.
- E. Distance vector protocols need fall back routers that are responsible for momentary loops.

Answer: D

Explanation:

Simply said, the rule of split horizons says that routing information should not be sent out the same interface that it was learned on. This is used to prevent routing loops in the network, but it can also cause problems on NBMA networks, such as a hub and spoke frame relay network. Split horizons include two related concepts that affect what routes are included in a routing update:

An update does not include the subnet of the interface out which the update is sent

All routes with outgoing interface of interface x are not included in updates sent out that same interface x.

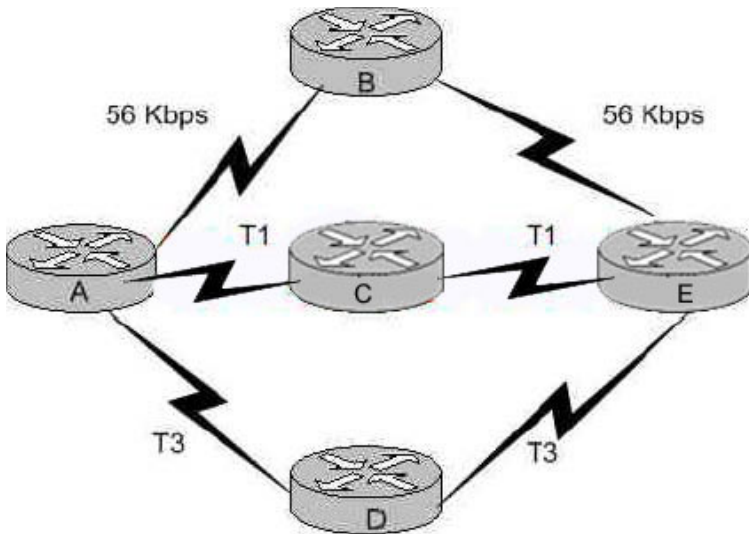
Incorrect Answers

- A. There is no such requirement
- C. This is not a feature of split horizon
- B. This is not a related feature for split horizon
- E. Distance vector protocols updates routing table at regular intervals instead of Topology changes

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

QUESTION 806

The Certkiller network consists of 5 routers connected together as shown in the diagram below:



Router A is going to route data over to router E. Which of the statements below regarding the decisions router A will make could be true? (Select three answer choices)

- A. Router A will determine that all paths have an equal cost if RIP is the routing protocol.
- B. Router A will install only the ADE path in its routing table if RIP is the routing protocol.
- C. Router A will determine that path ACE has the lowest cost if IGRP is the routing protocol.
- D. Router A will determine that path ADE has the lowest cost if IGRP is the routing protocol.
- E. Router A will use the route information learned by IGRP if both RIP and IGRP are configured on router A.
- F. Router A will use the route information learned by RIP if both RIP and IGRP are configured on router A.

Answer: A, D, E

Explanation:

Choice A is correct because as far as router A is concerned, the path to router E is one hop away regardless of which path is chosen. Since RIP uses the hop count as the metric, they will all appear to be equal. Choice E is correct because IGRP's default administrative distance is 100, while RIP's default administrative distance is 120.

The protocol with the lowest administrative distance is always preferred.

IGRP can load-balance up to six unequal links. RIP networks must have the same hop count to load-balance, whereas IGRP uses bandwidth to determine how to load-balance.

To load-balance over unequal-cost links, you must use the variance command, which controls the load balancing between the best metric and the worst acceptable metric.

Speed of T3 line is 45Mbps and IGRP uses BW as a metric for the shortest path selection so it will use the route via Routers ADE so, choice D is correct.

Incorrect Answers:

B. RIP uses hop counts as the only metric, so they will all appear to be equal even though the diagram shows that the path through ADE contains much more bandwidth than the other alternatives.

C. IGRP uses bandwidth as part of the calculation, so it will choose the router with the T3 circuits over the 56k and T1 links.

F. Since IGRP has a lower AD than RIP, the IGRP route will be preferred over the RIP route.

QUESTION 807

Which of the following statements are correct in regard to classless routing protocols? (Select two)

- A. Discontiguous subnets are not allowed.
- B. Variable length subnet masks are allowed.
- C. RIP v1 is a classless routing protocol.
- D. IGRP supports classless routing within the same autonomous system.
- E. RIP v2 supports classless routing.

Answer: B, E

Explanation:

Classless and Classful Routing Protocols

Some routing protocols must consider the Class A, B, or C network number that a subnet resides in when performing some of its tasks. Other routing protocols can ignore Class A, B, and C rules altogether. Routing protocols that must consider class rules are called classful routing protocols; those that do not need to consider class rules are called classless routing protocols.

You can easily remember which routing protocols fall into each category because of one fact:

Classful routing protocols do not transmit the mask information along with the subnet number, whereas classless routing protocols do transmit mask information.

You might recall that routing protocols that support VLSM do so because they send mask information along with the routing information. Table 7-3 lists the routing protocols and whether they transmit mask information, support VLSM, and are classless or classful.

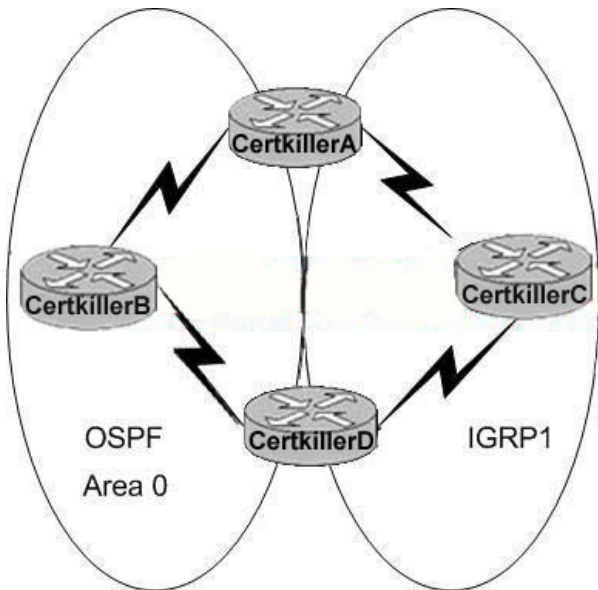
Table 7-3 Interior IP Routing Protocol: Classless or Classful?

Routing Protocol	Classless	Sends Mask/Prefix in Routing Updates	VLSM Support	Route Summarization Support
RIP-1	No	Yes	No	No
IGRP	No	No	No	No
RIP-2	Yes	Yes	Yes	Yes
EIGRP	Yes	Yes	Yes	Yes
OSPF	Yes	Yes	Yes	Yes

Reference: CCNA ICND Exam Certification Guide by Wendell Odem, Pg.233

QUESTION 808

The Certkiller network consists of 4 routers using both OSPF and IGRP as shown in the diagram below:



In the Certkiller network the following are true:

- * All of the parameters are set to default
- * All the connected networks are properly advertised
- * There is NO route redistribution

Which path will router Certkiller A take to get to router Certkiller D?

- A. It will take the route via Certkiller B.
- B. It will take the route via Certkiller C.
- C. It will use the route with the highest metric.
- D. It will load balance over both paths.
- E. It will take the shortest route
- F. None of the above

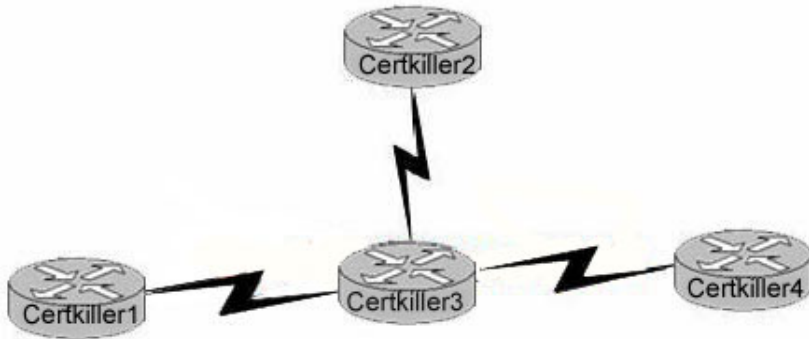
Answer: B

Explanation:

Based on the diagram, router A will learn how to reach the destination located at router D via 2 separate methods: IGRP and OSPF. By default IGRP has a lower administrative distance (OSPF's administrative distance is 110, IGRP's is only 100) so with all else being equal, IGRP will be selected over the OSPF route, so it will choose the route via router C.

QUESTION 809

The following exhibit shows the router topology for the Certkiller network.



On the assumption that every router is running RIP; which of the statements below correctly describe the way the routers exchange their routing tables? (Select all valid answer choices)

- A. Certkiller 4 exchanges directly with Certkiller 3.
- B. Certkiller 4 exchanges directly with Certkiller 2.
- C. Certkiller 4 exchanges directly with Certkiller 1.
- D. Certkiller 1 exchanges directly with Certkiller 3.
- E. Certkiller 1 exchanges directly with Certkiller 2.
- F. Certkiller 1 exchanges directly with Certkiller 4.

Answer: A, D

Explanation:

RIP exchanges routing tables with their adjacent neighbors. Therefore, Certkiller 3 will exchange routes with Certkiller 1, Certkiller 2 and Certkiller 4. Similarly, Certkiller 1 will exchange routes with Certkiller 3; Certkiller 2 will exchange routes with Certkiller 3; and Certkiller 4 will exchange routes with Certkiller 3. RIP, unlike OSPF, only exchange information with their directly connected neighbors. With link state protocols such as OSPF and IS-IS, information is flooded to all routers within the network system.

QUESTION 810

The Certkiller network is utilizing RIP as the IP routing protocol. Router CK1 learns how to reach the same destination via 6 different paths. All paths have the same metric and administrative distance. With all routers using the default operation, which of the paths will be chosen to reach the destination?

- A. Only the first two paths that are learned.
- B. Four of the paths.
- C. All six routes in a routed robin fashion.
- D. The oldest two paths in the routing table.
- E. The first path learned to the destination network.

Answer: B

Explanation:

It's possible to have a network that has multiple links to the same remote network, and if

that's the case, the administrative distance is checked first. If the AD is the same, the protocol will have to use other metrics to determine the best path to use to that remote network.

RIP uses only hop count to determine the best path to a network. If RIP finds more than one link to the same remote network with the same hop count, it will automatically perform a round-robin load balancing. RIP can perform load balancing for up to six equal-cost links (four by default).

QUESTION 811

A RIP router has an entry in the routing table for a specific network destination. It then gets updated with another entry for that same destination, but with a higher path cost (hop count) than the one already in the routing table. What will the router do in this situation?

- A. It will ignore the update and take no further action.
- B. It will add the update information to its routing table.
- C. It will replace the existing routing table entry with the update information.
- D. It will delete the existing routing table and will send out hello packets to rebuild the routing table.

Answer: A

Explanation:

If a router learns multiple routes to the same subnet, it chooses the best route based on the metric. This is assuming that the router learned the route from the same routing protocol. If learned from a different routing protocol, then the route with the lowest AD will be installed into the routing table.

Reference: CCNA Self-Study CCNA ICND Exam Certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 150.

Incorrect Answers:

- B, C. Only one route to a given destination is placed into the routing table, and the route with the lowest metric is always chosen.
- D. This would prove to be a very inefficient method. If this were true, then the entire routing table would be rebuilt for each router nearly every time an update was received.

QUESTION 812

The Certkiller network has been configured with OSPF as the routing protocol. What is the default administrative distance of the OSPF routing protocol?

- A. 90
- B. 100
- C. 110
- D. 120
- E. 130
- F. 170
- G. 200

Answer: C

Explanation:

The default administrative distance of OSPF is 110. In Cisco networks, the default AD is shown in the following table:

Route Source	Default Distance Values
Connected interface	0
Static route*	1
Enhanced Interior Gateway Routing Protocol (EIGRP) summary route	5
External Border Gateway Protocol (BGP)	20
Internal EIGRP	90
IGRP	100
OSPF	110
Intermediate System-to-Intermediate System (IS-IS)	115
Routing Information Protocol (RIP)	120
Exterior Gateway Protocol (EGP)	140
On Demand Routing (ODR)	160
External EIGRP	170
Internal BGP	200
Unknown**	255

Reference:

http://www.cisco.com/en/US/tech/CK365/technologies_tech_note09186a0080094195.shtml

QUESTION 813

DRAG DROP

OSPF is being configured on the entire Certkiller network. Match the OSPF term in the left with its description on the right.

area	Indicates that routers can discover link-state information	Place here
full state	A collection of routers and networks	Place here
designated router (DR)	The router responsible for route synchronization	Place here
exchange state	Indicates that routers should all have identical link state databases	Place here

Answer:

Indicates that routers can discover link-state information	full state
A collection of routers and networks	area
The router responsible for route synchronization	designated router (DR)
Indicates that routers should all have identical link state databases	exchange state

QUESTION 814

The routers named Certkiller 1 and Certkiller 2 are both configured with RIP only. What will happen in the event of Certkiller 1 receiving a routing update that contains a higher cost path to a network already in its routing table?

- A. The update information will be added to the existing routing table.
- B. The update information will replace the existing routing table entry.
- C. The update will be ignored and thus no further action will occur.
- D. The existing routing table entry will be purged from the routing table and all routers will attempt convergence.

Answer: C

Explanation:

In both RIP version 1 and RIP version 2, when routing updates are received where the metric is higher than the metric that is currently installed in the routing table for that route, it is discarded. Only routes with a better metric (lower hop count) are accepted and installed in the routing table.

QUESTION 815

A new network has been configured using OSPF as the routing protocol. With which network type will OSPF establish router adjacencies but not perform the

DR/BDR election process?

- A. point-to-point
- B. Backbone area 0
- C. Broadcast multicast
- D. Non-broadcast multi-access
- E. The DR/BDR process is done for all interface types

Answer: A

Explanation:

OSPF will always form an adjacency with the neighbor on the other side of a point-to-point interface such as point-to-point serial lines. There is no concept of DR or BDR. The state of the serial interfaces is point to point. Since there are only 2 routers in any point to point connection, the DR/BDR election process is not required.

Reference: <http://www.cisco.com/warp/public/104/2.html#10.1>

QUESTION 816

In what location are EIGRP successor routes stored?

- A. In the routing table only.
- B. In the neighbor table only.
- C. In the topology table only.
- D. In the routing table and neighbor table.
- E. In the routing table and topology table.
- F. In the topology table and neighbor table.

Answer: E

Explanation:

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

Feasible successors are viewed by a router as neighbors that are downstream with respect to the destination. These neighbors and the associated metrics are placed in the forwarding table. Successor information is needed by the routing table and by the topology table, so they are stored in both.

QUESTION 817

Which of the following statements regarding EIGRP successor routes is valid?

(Choose two options.)

- A. A successor route is used by EIGRP to forward traffic to destination.
- B. Successor routes are saved in the topology table to be used if the primary route fails.
- C. Successor routes are flagged as "active" in the routing table.

- D. A successor route may be backed up by a feasible successor route.
- E. Successor routes are stored in the neighbor table following the discovery process.

Answer: A, D

Explanation:

The DUAL finite state machine embodies the decision process for all route computations. It tracks all routes advertised by all neighbors. The distance information, known as a metric, is used by DUAL to select efficient loop free paths.

DUAL selects routes to be inserted into a routing table based on feasible successors. A successor is a neighboring router used for packet forwarding that has a least cost path to a destination that is guaranteed not to be part of a routing loop. When there are no feasible successors but there are neighbors advertising the destination, a recomputation must occur. This is the process where a new successor is determined. The amount of time it takes to recompute the route affects the convergence time. Even though the recomputation is not processor-intensive, it is advantageous to avoid recomputation if it is not necessary. When a topology change occurs, DUAL will test for feasible successors. If there are feasible successors, it will use any it finds in order to avoid any unnecessary recomputation. Feasible successors are defined in more detail later in this document.

Feasible Successors

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

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

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

Reference:

http://www.cisco.com/en/US/tech/CK3_65/CK2_07/technologies_tech_note09186a0080093f07.shtml#feasible

QUESTION 818

Which statements are true regarding classless routing protocols? Select two.

- A. The use of discontinuous subnets is not allowed
- B. The use of variable length subnet masks is permitted
- C. RIP v1 is a classless routing protocol
- D. IGRP supports classless routing within the same autonomous system
- E. RIP v2 supports classless routing

Answer: B, E

Explanation:

Classless routing protocols transmit the subnet mask along with each route in the routing

updates sent by that protocol. Classful routing protocols do not transmit mask information. So, only classful routing protocol supports VLSM. To say that a routing protocol is classless is to say that it supports VLSM, and vice versa. RIP v2 is a classless protocol.

QUESTION 819

Which tables of EIGRP route information are held in RAM and maintained through the use of hello and update packets? (Select two)

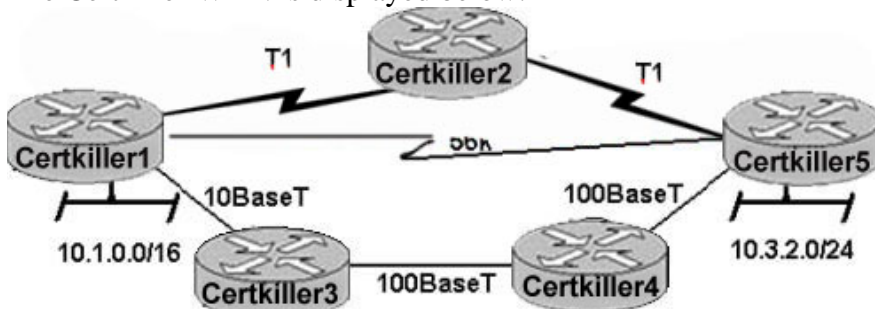
- A. Neighbor table
- B. SPF table
- C. RTP table
- D. Topology table
- E. Query table
- F. DUAL table

Answer: A, D

EIGRP updates are sent using update packets, and EIGRP route information is stored in both the neighbor table and the topology table.

QUESTION 820

The Certkiller WAN is displayed below:



Assume that the routing Protocol referenced in each choice below is configuration with its default settings and the given routing protocol is running on all the routers. Which two conditional statements accurately state the path that will be chosen between network 10.1.0.0 and 10.3.2.0 for the routing protocol mentioned? (Choose Two)

- A. If RIPv2 is the routing protocol; the path will be from Certkiller 1 to Certkiller 3 to Certkiller 4 to Certkiller 5.
- B. If RIPv2 is the routing protocol; the path will be from Certkiller 1 to Certkiller 5.
- C. If EIGRP is the routing protocol; the path will be from Certkiller 1 to Certkiller 3 to Certkiller 4 to Certkiller 5.
- D. If EIGRP is the routing protocol, the path will be from Certkiller 1 to Certkiller 2 to Certkiller 5.
- E. If OSPF is the routing protocol; the path will be from Certkiller 1 to Certkiller 5.

Answer: B, C

Explanation:

RIP, IGRP both are called the distance vector Protocols. RIP uses the number of hops as a metric.

RIP:

- _ Based on distance vector Logic
- _ Uses hop count for the metric
- _ Sends periodic full routing updates every 30 seconds
- _ Converges slowly, often taking 3 to 5 minutes
- _ Does not support VLSM, also making it a classful routing protocol (RIP V)

IGRP

IGRP calculates the metric based on a mathematical formula that you do not really need to know for the exam. The formula uses bandwidth and delay as input and results in an integer value, the metric, between 1 and 4,294,967,295.

When RIP is used as the Routing Protocol, it selects CK1 - CK5 because it has less hops.

When IGRP uses as Routing Protocol, it select CK1 - CK3 - CK4 - CK5 because having more bandwidth. IGRP uses bandwidth to calculate the path.

QUESTION 821

A router has EIGRP configured as the only routing protocol. How does EIGRP respond if there is no feasible successor route to a destination network and the successor route fails?

- A. It immediately sends its entire routing table to its neighbors.
- B. EIGRP sends a Hello packet to the DR to inform it of the route failure.
- C. It automatically forwards traffic to a fallback default route until a successor route is found.
- D. It sends queries out to neighbors until a new successor route is found.
- E. It places the route in holddown until LSA updates inform it of a new route to the network.

Answer: D

Explanation:

EIGRP will send queries for successor if it can't find a path to destination (if no feasible successors already exist).

QUESTION 822

Which of the following describe the process identifier that is used to run OSPF on a router? (Choose two)

- A. It is logically significant.
- B. It is globally significant.
- C. It is needed to identify a unique instance of an OSPF database.
- D. It is an optional parameter required only if multiple OSPF processes are running on the router.

E. All routers in the same OSPF area must have the same process ID if they are to exchange routing information.

Answer: A, C

Explanation:

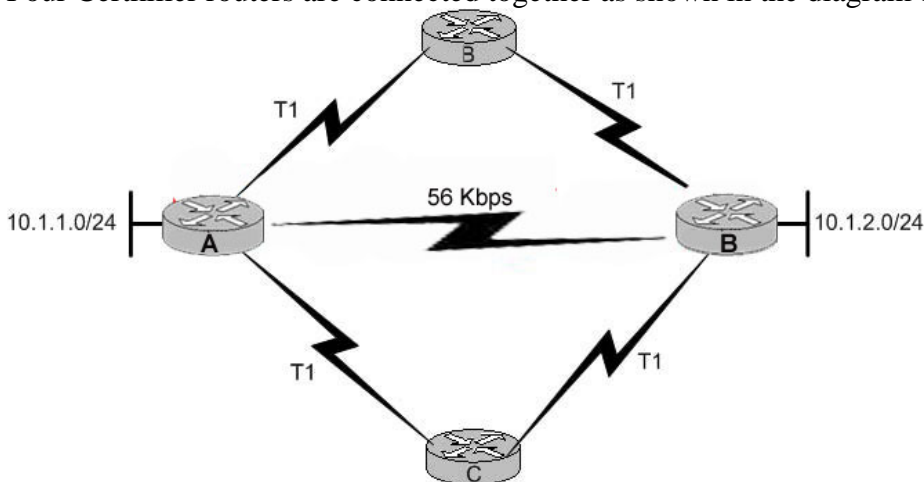
The process ID is the ID of the OSPF process to which the interface belongs. The process ID is local to the router, and two OSPF neighboring routers can have different OSPF process IDs. (This is not true of Enhanced Interior Gateway Routing Protocol [EIGRP], in which the routers need to be in the same autonomous system). Cisco IOS(r) Software can run multiple OSPF processes on the same router, and the process ID merely distinguishes one process from the other. The process ID should be a positive integer. In this example, the process ID is 1.

Reference:

http://www.cisco.com/en/US/tech/CK365/technologies_tech_note09186a0080094056.shtml#processid

QUESTION 823

Four Certkiller routers are connected together as shown in the diagram below:



Study the Exhibit carefully. How will router A choose a path to the 10.1.2.0/24 network when different routing protocols are configured? (Choose three)

- A. If RIPv2 is the routing protocol, only the path AD will be installed in the routing table by defaults.
- B. If RIPv2 is the routing protocol, the equal cost paths ABD and ACD will be installed in the routing table by default.
- C. If EIGRP is the routing protocol, only path AD will be installed in the routing table by default.
- D. If EIGRP is the routing protocol, the equal cost paths ABD and ACD will be installed in the routing table by default.
- E. If EIGRP and OSPF are both running on the network, the EIGRP paths will be installed in the routing table.
- F. If EIGRP and OSPF are both running on the network, the OSPF paths will be installed in

the routing table.

Answer: A, D, E

Explanation:

Path selection criteria for RIP and RIPv2 is Hop count so, Path AD will be used because of 1 hop count. Choice A is correct.

EIGRP has lower administrative distance of 90 than OSPF 110 so EIGRP will be preferred. Choice E is correct.

EIGRP uses bandwidth for the path selection criteria. Paths ABD and ACD have same bandwidth so it will do load balancing. Both paths will be used. Choice D is correct.

QUESTION 824

What does a router do if it has no EIGRP feasible successor route to a destination network and the successor route to that destination network is inactive status?

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

Answer: C

Explanation:

When the primary route is not available, EIGRP immediately uses the feasible successor as the backup route. This shortens convergence time. Now, if the primary route is gone and no feasible successor is available, the route is in active state. The only way for EIGRP to converge quickly is to query its neighbors about the unavailable route. If the neighbor doesn't know the status of the route, the neighbor asks its neighbors, and so on, until the edge of the network is reached. The query stops if one of the following occurs:

All queries are answered from all the neighbors.

The end of network is reached.

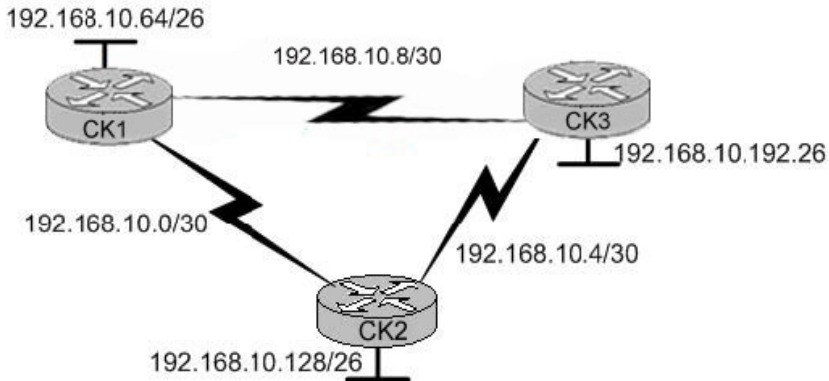
The lost route is unknown to the neighbors.

Reference:

<http://www.ciscopress.com/articles/article.asp?p=27839&rl=1>

QUESTION 825

Three Certkiller routers are connected together as shown below:



CK3 #show ip route

Gateway of last resort is not set

192.168.10.0/24 is variably subnetted, 6 subnets, 2 subnets, 2 masks

D 192.168.10.64/26 [90/2195456] via 192.168.10.9, 00:03:31, Serial0/0

D 192.168.10.0/30 [90/2681856] via 192.168.10.9, 00:03:31, Serial0/0

C 192.168.10.4/30 is directly connected, Serial 0/1

C 192.168.10.8/30 is directly connected, Serial 0/0

C 192.168.10.192/26 is directly connected, FastEthernet0/0

D 192.168.10.128/26 [90/2195456] via 192.168.10.5, 00:03:31, Serial 0/1

Study the Exhibit carefully directly above. Certkiller uses EIGRP as the routing protocol. What path will packets take from a host on the 192.168.10.192/26 network to a host on the LAN attached to router CK1 ?

- A. The path of the packets will be CK3 to CK2 to CK1 .
- B. The path of the packets will be CK3 to CK1 to CK2 .
- C. The path of the packets will be both CK3 to CK2 to CK1 and CK3 and CK1 .
- D. The path of the packets will be CK3 to CK1 .

Answer: D

Explanation:

Choice D is correct because in the Routing Table of CK3 , Path to reach 192.168.10.64/26 is via 192.168.10.9 which is the address on the serial interface connecting CK1 and CK3 .

QUESTION 826

How does route poisoning work with holddown timers to prevent routing loops?

- A. Information learned from one source is not distributed back to that source.
- B. Routing updates from the poisoned source are ignored until a holddown timer expires.
- C. Failed routes are advertised with infinite metrics.
- D. New routing updates are ignored until the network has converged.
- E. A route is marked as unavailable when its time-to-live is exceeded.

Answer: C

Explanation:

Distance vector protocols use poison reverse, holddown timers and split horizon methods for preventing loop prevention.

Whereas split horizons should prevent routing loops between neighbor routers, poison reverse updates are intended to defeat larger routing loops. While the simple split horizon scheme omits routes learned from one neighbor in updates sent to that neighbor, split horizon with poison reverse includes such routes in updates, but sets their metrics to infinity.

Poison reverse thus establishes a single direction through which routes can be reached via a particular interface. Such an interface should not be traversed in the opposite direction to reach a particular destination. Poison reverse ensures this single direction by blocking the other way (by poisoning it with a high cost, such as infinity in the case of RIP). Its effect is best seen in the following situation: once a router discovers it has lost contact with a neighboring router, it will immediately forward a routing update with the inoperable route metric set to infinity. Additionally, the router will broadcast the route, with an infinite metric, for several regular routing update periods to ensure that all other routers on the internetwork have received the information and gradually converge.

QUESTION 827

Some of the Certkiller routers have been configured with default routes. What are some of the advantages of using default routes? (Choose two)

- A. They establish routes that will never go down.
- B. They keep routing tables small.
- C. They require a great deal of CPU power.
- D. They allow connectivity to remote networks that are not in the routing table.
- E. They direct traffic from the Internet into corporate networks.

Answer: B, D

Explanation:

Routers use default routing as a last resort when all other methods (directly connected, static, or dynamic) have been exhausted. For stub networks, a single default static route could be used to provide connectivity to the entire network. This is desirable for stub networks where only a single link connects the remote location to the rest of the networks. Because all of the traffic only has one link to use, a single default route will make the routing table as small as possible, while providing for connectivity to networks not in the routing table, since as traffic destined for the Internet.

Incorrect Answers:

- A. Although default routes are normally statically assigned, these routes can still go down. If the interface used as the default route should go down, or the next hop IP address of the default route become unreachable, the static default route will go down.
- C. Using static routes, including default routes, is the least CPU-intensive method of routing.
- E. To influence the way incoming traffic from the Internet gets to a corporation, BGP routing would be used, not default routing.

QUESTION 828

You have just configured a static default route on router CK1 . What is the purpose of a default route?

- A. It is a route to be used when the routing protocol fails.
- B. It is a route configured by an ISP that sends traffic into a corporate network.
- C. It is a route used when a packet is destined for a remote network that is not listed in the routing table.
- D. It is a route manually configured for a specific remote network for which a routing protocol is not configured.
- E. It is used to send traffic to a stub network.

Answer: C

Explanation:

Every IP host needs to have a default route either manually configured or dynamically learned. Default routes provide end hosts a way out of their local subnet and routers with a router of last resort if no other route (specifically relating to the destination) exists in the routers route table.

Routers use default routing as a last resort when all other methods (directly connected, static, or dynamic) have been exhausted. Routers inspect received datagrams to identify the logical Network layer address of the ultimate destination. If a directly connected static or dynamic route exists within the router's route table, it forwards the datagram. If the destination remains unknown, that is, no method of routing has resulted in a learned route; it forces the router to use a default route. Typically, administrators implement default routes on point-to-point (a link with only two routers) or dial-up connections, linking Certkiller .com's network to the outside work.

Reference: <http://www.informit.com/articles/article.asp?p=26129&seqNum=4&rl=1>

QUESTION 829

The following command was issued on CK1 :

```
CK1#show frame-relay map
Serial0/0 (up): ip 172.16.3.1 dlci 100 (0x64, 0x1840), dynamic
broadcast,, status defined, active
```

What is the meaning of the term "dynamic" as displayed in the output of the show frame-relay map command shown?

- A. The Serial0/0 interface is passing traffic.
- B. The DLCI 100 was dynamically allocated by the router.
- C. The Serial0/0 interface acquired the IP address of 172.16.3.1 from a DHCP server.
- D. The DLCI 100 will be dynamically changed as required to adapt to changes in the Frame Relay cloud.
- E. The mapping between DLCI 100 and the end station IP address 172.16.3.1 was learned through Inverse ARP.

Answer: E

Explanation:

Inverse Address Resolution Protocol (Inverse ARP) was developed to provide a mechanism for dynamic DLCI to Layer 3 address maps. Inverse ARP works much the same way Address Resolution Protocol (ARP) works on a LAN. However, with ARP, the device knows the Layer 3 IP address and needs to know the remote data link MAC address. With Inverse ARP, the router knows the Layer 2 address which is the DLCI, but needs to know the remote Layer 3 IP address.

When using dynamic address mapping, Inverse ARP requests a next-hop protocol address for each active PVC. Once the requesting router receives an Inverse ARP response, it updates its DLCI-to-Layer 3 address mapping table. Dynamic address mapping is enabled by default for all protocols enabled on a physical interface. If the Frame Relay environment supports LMI autosensing and Inverse ARP, dynamic address mapping takes place automatically. Therefore, no static address mapping is required.

QUESTION 830

On point-to-point networks, OSPF hello packets are addressed to which address?

- A. 127.0.0.1
- B. 172.16.0.1
- C. 192.168.0.5
- D. 223.0.0.1
- E. 224.0.0.5
- F. 254.255.255.255

Answer: E

Explanation:

At Layer 3 of the OSI model, Hello packets are addressed to the multicast address 224.0.0.5. This address effectively means all OSPF routers. OSPF routers use Hello packets to initiate new adjacencies and to ensure that adjacent neighbors have not disappeared. Hellos are sent every ten seconds by default on multiaccess and point-to-point networks. On interfaces that connect to NBMA networks, such as Frame Relay, Hellos are sent every 30 seconds.

QUESTION 831

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

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

Answer: A, C, E

Explanation:

Some of the benefits of OSPF include:

1. Speed of convergence - In large networks, RIP convergence can take several minutes, since the entire routing table of each router is copied and shared with directly connected neighboring routers. In addition, a distance vector routing algorithm may experience hold down or route aging periods. With OSPF, convergence is faster because only the routing changes, not the entire routing table, are flooded rapidly to other routers in the OSPF network.
2. Support for Variable-Length Subnet Masking (VLSM) - RIP v1 is a classful protocol and does not support VLSM. In contrast, OSPF, a classless protocol, supports VLSM.
- Network size - In a RIP environment, a network that is more than 15 hops away is considered unreachable. Such limitations restrict the size of a RIP network to small topologies. On the other hand, OSPF has virtually no distance limitations and is appropriate for intermediate to large size networks.
3. Use of bandwidth - RIP broadcasts full routing tables to all neighbors every 30 seconds. This is especially problematic over slow WAN links because these updates consume bandwidth. Alternately, OSPF multicasts minimize the size of link-state updates and send the updates only when there is a network change.
4. Path Selection - RIP selects a path by measuring the hop count, or distance, to other routers. It does not take into consideration the available bandwidth on the link or delays in the network. In contrast, OSPF selects optimal routes using cost as a factor. Note: "Cost" is a metric based on bandwidth.
5. Grouping of members - RIP uses a flat topology and all routers are part of the same network. Therefore, communication between routers at each end of the network must travel through the entire network. Unfortunately, changes in even one router will affect every device in the RIP network. OSPF, on the other hand, uses the concept of 'areas' and can effectively segment a network into smaller clusters of routers. By narrowing the scope of communication within areas, OSPF limits traffic regionally and can prevent changes in one area from affecting performance in other areas. This use of areas allows a network to scale efficiently.

QUESTION 832

Refer to the router topology shown in the graphic. Assuming that all routers are running OSPF, which statements correctly describe how the routers exchange routing information? (Choose two.)

Exhibit: missing

- A. Denmark exchanges with Utah, Paris, and Berlin.
- B. Utah exchanges only with Denmark.
- C. Berlin exchanges with Denmark, Utah, and Paris.
- D. Paris exchanges only with Denmark.
- E. Denmark exchanges with only Paris and Utah.

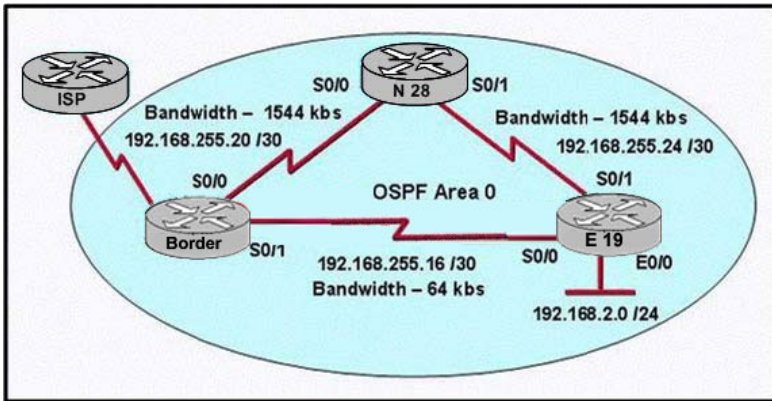
Answer: A, C

QUESTION 833

Exhibit:

Please study the exhibit carefully. In the internetwork shown, all of the routers are operational and OSPF has converged, what will be the output from the show ip route command issued on the Border router?

Exhibit:



- A. Gateway of last resort is 10.10.10.6 of network 0.0.0.0
 10.0.0.0/30 is subnetted, 1 subnets
 C 10.10.10.4 is directly connected, Serial0/2
 192.168.255.0/30 is subnetted, 3 subnets
 C 192.168.255.20 is directly connected, Serial0/0
 C 192.168.255.16 is directly connected, Serial0/1
 O 192.168.255.24[110/128]via 192.168.255.22, 00:12:40, Serial0/0
 O 192.168.2.0/24[110/138]via 192.168.255.22, 00:12:40, Serial0/0
 S* 0.0.0.0/0[1/0] via 10.10.10.6
- B. Gateway of last resort is 10.10.10.6 of network 0.0.0.0
 10.0.0.0/30 is subnetted, 1 subnets
 C 10.10.10.4 is directly connected, Serial0/2
 192.168.255.0/30 is subnetted, 3 subnets
 C 192.168.255.20 is directly connected, Serial0/0
 C 192.168.255.16 is directly connected, Serial0/1
 O 192.168.255.24[110/128]via 192.168.255.22, 00:12:40, Serial0/1
 O 192.168.2.0/24[110/1572]via 192.168.255.18, 00:00:11, Serial0/0
 S* 0.0.0.0/0[1/0] via 10.10.10.6
- C. Gateway of last resort is 10.10.10.6 of network 0.0.0.0
 10.0.0.0/30 is subnetted, 1 subnets
 C 10.10.10.4 is directly connected, Serial0/2
 192.168.255.0/30 is subnetted, 3 subnets
 C 192.168.255.20 is directly connected, Serial0/0
 C 192.168.255.16 is directly connected, Serial0/1
 O 192.168.255.24[110/128]via 192.168.255.22, 00:12:40, Serial0/0
 O 192.168.2.0[110/1572]via 192.168.255.18, 00:00:11, Serial0/1
 S* 0.0.0.0/0[1/0] via 10.10.10.6

- D. Gateway of last resort is 10.10.10.6 of network 0.0.0.0/0
- 10.0.0.0/30 is subnetted, 1 subnets
- C 10.10.10.4 is directly connected, Serial0/2
- 192.168.255.0/20 is subnetted, 3 subnets
- C 192.168.255.20 is directly connected, Serial0/0
- C 192.168.255.16 is directly connected, Serial0/1
- O 192.168.255.24[110/128]via 192.168.255.22, 00:12:40, Serial0/0
- O 192.168.2.0[110/1572]via 192.168.255.18, 00:00:11, Serial0/1
- [110/1572]via 192.168.255.22, 00:00:07, Serial0/0
- S* 0.0.0.0/0[1/0] via 10.10.10.6

Answer: A

Explanation:

The key to this question lies in the cost of the route to the 192.168.2.0/24 network. With OSPF, the cost of a link is $10,000,000/BW$. Here we can see that the best path is over the two T1 links instead of the single 64K circuit. The OSPF cost of a link on a 1544kbps T1 line is 64. Since there are two T1 links, the cost now becomes 128. Finally, when we add the cost of the Ethernet link (10) the cost then becomes 138. Since choice A is the only option with the correct cost to this network it is correct. The other answers assume that the single 64K link is best, which is why the cost to the 192.168.2.0/24 network shows as 1572.

Note: If this were a RIP network, then the best path would indeed be over the single slower link as RIP does not consider the bandwidth of the link, only the number of hops.

QUESTION 834

An OSPF interface has been configured with the bandwidth 64 command. What will be the calculated OSPF cost of this link?

- A. 1
- B. 10
- C. 1562
- D. 64000
- E. 128000

Answer: C

Explanation:

Cisco had to implement its own method of calculating the cost for each OSPF enabled interface. Cisco uses a simple equation of $108/\text{bandwidth}$. The bandwidth is the configured bandwidth for the interface. Using this rule, a 100Mbps Fast Ethernet interface would have a default OSPF cost of 1 and a 10Mbps Ethernet interface would have a cost of 10. For a 64kbps circuit, $100,000,000/64000=1562.5$. OSPF rounds this value to 1562.

QUESTION 835

Refer to the graphic. What is the meaning of this output of the show cdp neighbors command?

Exhibit: missing

- A. The Orlando router has a route to the Jacksonville router using the Serial 0/1 interface. The route can be directly connected or remote.
- B. The Jacksonville switch directly connects to the Orlando router using the Serial 0/1 interface on both Cisco devices.
- C. The Orlando device is a Cisco router, and it connects using the Serial 0/1 interface to the Jacksonville Cisco router's Serial 0/1 interface.
- D. The Orlando device is a non-Cisco device that connects to a Cisco router using the Serial 0/1 interface on both devices.
- E. The Orlando router has an interface acting as a trunk to the Jacksonville device. Both network devices are from Cisco.

Answer: C

Explanation:

QUESTION 836

The command frame-relay map ip 10.121.16.8 102 broadcast was entered on the router. Which of the following statements is true concerning this command?

- A. This command should be executed from the global configuration mode.
- B. The IP address 10.121.16.8 is the local router port used to forward data.
- C. 102 is the remote DLCI that will receive the information.
- D. This command is required for all Frame Relay configurations.
- E. The broadcast option allows packets, such as RIP updates, to be forwarded across the PVC.

Answer: E

Explanation:

The broadcast keyword is commonly used with the frame-relay map command. The broadcast keyword provides two functions. First, it forwards broadcasts when multicasting is not enabled and secondly, it simplifies the configuration of OSPF for nonbroadcast networks that use Frame Relay.

The broadcast keyword might also be required for routing protocols such as RIP that depend on regular routing table updates. This is especially true when the router at the remote end is waiting for a routing update packet to arrive before adding the route.

QUESTION 837

Which statements accurately describe CDP? (Choose three)

- A. CDP is a datalink layer protocol.

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

Answer: A, E, F

Explanation:

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

QUESTION 838

What is the difference between the Cisco router IOS commands show cdp neighbor detail and show cdp entry?

- A. The show cdp entry command shows neighbor information for specific neighbors only, while show cdp neighbor detail lists each neighbor with detailed output on each.
- B. The show cdp entry command shows neighbor information for all neighbors with one line of output for each, while show cdp neighbor detail lists each neighbor with detailed output on each.
- C. The show cdp neighbor detail command shows all neighbor information, while show cdp entry displays only one line of output for each neighbor.
- D. The show cdp neighbor detail command shows neighbor information for a single neighbor only, while show cdp entry displays detailed output on each neighbor known.

Answer: A

Explanation:

The show cdp entry command shows neighbor information for specific neighbors only, while show cdp neighbor detail displays detailed information about a neighbor (or neighbors) including network address, enabled protocols, hold time, and software version.

QUESTION 839

DRAG DROP

Routing has been configured on the local router with these commands:

```
local(config)#ip route 0.0.0.0 0.0.0.0 192.168.1.1  
local(config)#ip route 10.1.0.0 255.255.255.0 192.168.2.2
```

640-801

local(config)#ip route 10.1.0.0 255.255.0.0 192.168.3.3

Drag each destination IP address on the left to its correct next hop address on the right.

Exhibit:

10.1.1.10	Next hop 192.168.1.1
10.1.1.14	Place here
10.2.1.3	Place here
10.1.4.6	Next hop 192.168.2.2
10.1.0.123	Place here
10.6.8.4	Place here
	Next hop 192.168.3.3
	Place here
	Place here

Answer:

Next hop 192.168.1.1
10.2.1.3
10.6.8.4
Next hop 192.168.2.2
10.1.1.14
10.1.0.123
Next hop 192.168.3.3
10.1.1.10
10.1.4.6

QUESTION 840

A large corporation that frequently integrates networks from newly acquired businesses has just decided to use OSPF as the corporate routing protocol instead of EIGRP. What two benefits will the change from EIGRP to OSPF provide to the corporation? (Choose two)

- A. The ability to automatically summarize networks
- B. The ability to redistribute default and static routes
- C. The ability to use VLSM
- D. The ability to support multi-vendor routers
- E. The ability to create a hierarchical design using areas

Answer: D, E

Explanation:

Open Shortest Path First (OSPF) is a routing protocol developed for Internet Protocol (IP) networks by the Interior Gateway Protocol (IGP) working group of the Internet

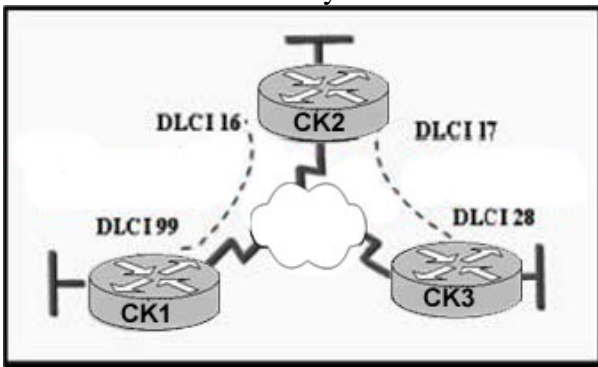
Engineering Task Force (IETF). Unlike, EIGRP, OSPF is standards based which is supported by multiple router vendors.

Unlike RIP and EIGRP, OSPF can operate within a hierarchy. The largest entity within the hierarchy is the autonomous system (AS), which is a collection of networks under a common administration that share a common routing strategy. OSPF is an intra-AS (interior gateway) routing protocol, although it is capable of receiving routes from and sending routes to other ASs.

An AS can be divided into a number of areas, which are groups of contiguous networks and attached hosts. Routers with multiple interfaces can participate in multiple areas. These routers, which are called Area Border Routers, maintain separate topological databases for each area.

QUESTION 841

The Certkiller frame relay network is shown below:



In this network, which statement describes DLCI 17?

- A. DLCI 17 is the Layer 2 address used by CK2 to describe a PVC to CK3 .
- B. DLCI 17 describes the ISDN circuit between CK2 and CK3 .
- C. DLCI 17 describes a PVC on CK2 . It cannot be used on CK3 or CK1 .
- D. DLCI 17 describes the dial-up circuit from CK2 and CK3 to the service provider.

Answer: A

Explanation:

DLCI-Data Link Connection Identifier Bits: The DLCI serves to identify the virtual connection so that the receiving end knows which information connection a frame belongs to. Note that this DLCI has only local significance. Frame Relay is strictly a Layer 2 protocol suite

QUESTION 842

DRAG DROP

Drag each EIGRP term or concept on the left to its appropriate description on the right. Note: Not all options are used.

Exhibit:

640-801

Select from these	Place here
neighbor table	backup route
topology table	lists adjacent routers
routing table	contains only the successor routes
successor route	route installed in the routing table
summary route	holds all the feasible routes in the AS
feasible successor	

Answer:

Place here

feasible successor
neighbor table
routing table
successor route
topology table

QUESTION 843

Which statement about RIP routing is true?

- A. If RIP version 2 is used, the subnet mask is sent to neighboring RIP routers.
- B. The no ip classless command enables classful RIP routing.
- C. Subnetting is not supported if RIP is being used.
- D. Classless routing is the default method used by RIP on a router.

Answer: A

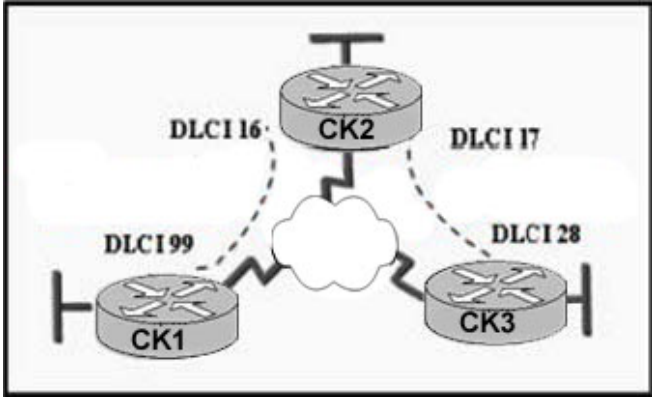
Explanation:

RIP v2 announcements send the subnet mask (also known as a network mask) along with the network ID. RIP v2 can be used in subnetted, supernetted, and variable-length subnet mask environments. Subnets of a network ID do not have to be contiguous (they can be disjointed subnets).

QUESTION 844

Refer to the exhibit below:

Exhibit:



In this frame relay network, which IP addresses would be assigned to the interfaces with point-to-point PVCs?

- A. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.10.1 /24
DLCI 99: 192.168.10.2 /24
DLCI 28: 192.168.10.3 /24
- B. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.11.1 /24
DLCI 99: 192.168.12.1 /24
DLCI 28: 192.168.13.1 /24
- C. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.10.2 /24
DLCI 99: 192.168.10.3 /24
DLCI 28: 192.168.10.4 /24
- D. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.11.1 /24
DLCI 99: 192.168.10.2 /24
DLCI 28: 192.168.11.2 /24

Answer: D

Explanation:

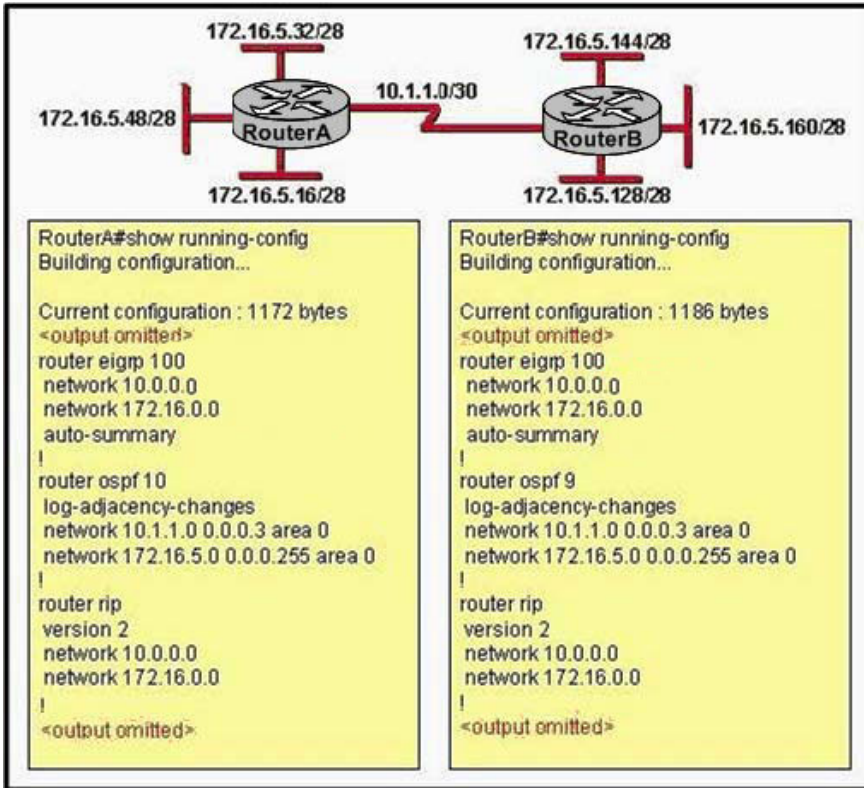
With Point to point PVC's, two subinterfaces would be created on router CK2 , one for each connection to the remote locations. In this network, the connection to CK1 would require one IP subnet, and the connection to router CK3 would require another. These two subnets must be separated, as each subinterface requires a distinct IP network. Only choice D correctly shows one IP subnet allocated to the CK1 - CK2 network, and one for the CK2 - CK3 connection.

QUESTION 845

Exhibit:

Please study the exhibit carefully. Given the partial output from the show running-config command displayed on both routers, which routing protocol would be used to route packets to the 172.16.5.48/28 network from RouterB?

Exhibit:



- A. OSPF
- B. RIP
- C. EIGRP
- D. No route will be installed to 172.16.5.48/28.

Answer: A

Explanation:

Normally, routers will choose EIGRP routes over OSPF and RIP routes because EIGRP has a lower administrative distance than the other two. However, in this case, auto summarization has been turned on, so the routers will automatically summarize at the network boundary. This will result in each router sending out only the summarized, 172.16.0.0/16 route.

However, OSPF does not summarize by default so RouterB will receive the specific 172.16.5.48/28 announcement from RouterA via OSPF. Because routers always choose the most specific route to the destination, regardless of the administrative distance, RouterB will use this OSPF route.

QUESTION 846

Which characteristics are representative of link-state routing protocols? (Choose three)

- A. Provides common view of entire topology
- B. Utilizes event-triggered updates
- C. Exchanges routing tables with neighbors

- D. Calculates shortest path
- E. Utilizes frequent periodic updates

Answer: A, B, D

Explanation:

Link-state algorithms (also known as shortest path first algorithms) flood routing information to all nodes in the internetwork. Each router, however, sends only the portion of the routing table that describes the state of its own links. In link-state algorithms, each router builds a picture of the entire network in its routing tables. Distance vector algorithms (also known as Bellman-Ford algorithms) call for each router to send all or some portion of its routing table, but only to its neighbors. In essence, link-state algorithms send small updates everywhere, while distance vector algorithms send larger updates only to neighboring routers. Distance vector algorithms know only about their neighbors.

The primary advantage of link-state routing is that it reacts more quickly, and in a bounded amount of time, to connectivity changes. Also, the link-state packets that are sent over the network are smaller than the packets used in distance-vector routing.

Distance-vector routing requires a node's entire routing table to be transmitted, while in link-state routing only information about the node's immediate neighbors are transmitted. Therefore, these packets are small enough that they do not use network resources to any significant degree. The primary disadvantage of link-state routing is that it requires more storage and more computing to run than distance-vector routing.

Incorrect Answers:

C, E: These are characteristics of distance vector routing protocols.

QUESTION 847

What are two reasons why the Certkiller network administrator would use CDP in a network? (Choose two)

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

Answer: A, E

Explanation:

Cisco Discovery Protocol (CDP) is primarily used to obtain protocol addresses of neighboring devices and discover the platform of those devices. CDP can also be used to show information about the interfaces your router uses. CDP is media- and protocol-independent, and runs on all Cisco-manufactured equipment including routers, bridges, access servers, and switches.

CDP runs on all media that support Subnetwork Access Protocol (SNAP), including

local-area network (LAN), Frame Relay, and Asynchronous Transfer Mode (ATM) physical media. CDP runs over the data link layer only. Therefore, two systems that support different network-layer protocols can learn about each other.

QUESTION 848

Which three statements are true about RIP? (Choose three.)

- A. RIPv1 does not support routing update authentication. RIPv2 does support routing update authentication.
- B. RIPv1 does not support advertising routes across WANs. RIPv2 supports advertising routes across LANs as well as WANs.
- C. RIPv1 does not include subnet information in routing updates. RIPv2 does include subnet information in routing updates.
- D. RIPv1 sends periodic routing updates over the multicast IP address 224.0.0.10. RIPv2 sends periodic routing updates over the multicast IP address 224.0.0.9.
- E. RIPv1 does not support a network addressing scheme in which hosts within the same major network have different subnet masks. RIPv2 does allow hosts within the same major network to have different subnet masks.
- F. RIPv1 uses hold-down timers and split horizon to prevent routing loops. RIPv2 does not require hold-down timers or split horizon to prevent routing loops.

Answer: A, C, E

Explanation:

RIP version 2 (v2) as defined in RFC 1723 seeks to address some of the problems associated with RIP v1.

Features of RIP v2:

To help today's IP internetworks minimize broadcast traffic, use variable length subnetting to conserve IP addresses, and secure their routing environment from misconfigured or malicious routers, several key features were added to RIP v2 that were not available in version 1, including:

Multicast RIP Announcements:

Rather than broadcasting RIP announcements, RIP v2 supports sending RIP announcements to the IP multicast address of 224.0.0.9. Non-RIP nodes are not disturbed by RIP router announcement traffic.

The use of multicast announcements is optional. The broadcasting of RIP v2 announcements is also supported.

Subnet Masks:

RIP v2 announcements send the subnet mask (also known as a network mask) along with the network ID. RIP v2 can be used in subnetted, supernetted, and variable-length subnet mask environments. Subnets of a network ID do not have to be contiguous (they can be disjointed subnets).

Authentication:

RIP v2 supports the use of authentication mechanisms to verify the origin of incoming RIP announcements. Simple password authentication was defined in RFC 1723, but newer authentication mechanisms such as Message Digest 5 (MD5) are available.

QUESTION 849

Which of the following are key characteristics of PPP? (Choose three.)

- A. Provides error correction
- B. Maps Layer 2 to Layer 3 address
- C. Encapsulates several routed protocols
- D. Can be used over analog circuits
- E. Supports IP only

Answer: A, C, D

Explanation:

Unlike HDLC which is Cisco proprietary, PPP was designed for multi-protocol interoperability and works over serial and analog circuits. PPP supports authentication, using either PAP or CHAP. Finally, PPP supports error correction and the use of bonded multilink circuits.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 308-310

QUESTION 850

What can be determined from the line of show ip route output shown in the exhibit? (Choose two)

Exhibit:

```
R 10.10.10.8 [120/2] via 10.10.10.6, 00:00:25, Serial0/1
```

- A. The 10.10.10.8 network is two hops away from this router.
- B. The next routing update can be expected in 35 seconds.
- C. The IP address 10.10.10.6 is configured on S0/1.
- D. The IP address 10.10.10.8 is configured on S0/1.
- E. This route is using the default administrative distance.

Answer: A, E

Explanation:

When issuing the "show ip route" command, the first number in the brackets is the administrative distance of the information source; the second number is the metric for the route. In this case, the value of 120 is the default AD for RIP routes, and the 2 represents the metric, which is the number of router hops in RIP.

QUESTION 851

RIP debugging was enabled on a Certkiller router as shown below:

Exhibit:

```
Main#debug ip rip
RIP protocol debugging is on
Main#
*Mar 1 17:43:00.567: RIP: received v1 update from 192.168.255.21 on
Serial0/0
*Mar 1 17:43:00.571: 192.168.2.0 in 2 hops
*Mar 1 17:43:00.571: 192.168.255.16 in 1 hops
*Mar 1 17:43:44.419: RIP: received v1 update from 192.168.255.26 on
Serial0/1
*Mar 1 17:43:41.423: 192.168.2.0 in 1 hops
*Mar 1 17:43:41.427: 192.168.255.16 in 1 hops
*Mar 1 17:43:55.099: RIP: sending v1 update to 255.255.255.255 via
Serial0/0 (192.168.255.22)
*Mar 1 17:43:55.103: RIP: build update entries
*Mar 1 17:43:55.103: network 192.168.2.0 metric 2
*Mar 1 17:43:55.107: subnet 192.168.255.24 metric 1
*Mar 1 17:43:55.111: RIP: sending v1 update to 255.255.255.255 via
Serial0/1 (192.168.255.25)
*Mar 1 17:43:55.115: RIP: build update entries
*Mar 1 17:43:55.119: subnet 192.168.255.20 metric 1
```

Based on this info, which route will be found in the routing table of the Main router?

- A. C 192.168.2.0 is directly connected, Serial0/1
- B. R 192.168.255.16 [120/2] via 192.168.255.21, 00:00:22, Serial0/0
- C. R 192.168.2.0/24 [120/1] via 192.168.255.26, 00:00:24, Serial0/1
- D. R 192.168.255.16 [120/1] via 192.168.255.26, 00:00:24, Serial0/1

Answer: C

Explanation:

We can see from the output that the 192.168.20.0 network was received from both the serial 0/0 and serial 0/1 interfaces. However, the route received from serial 0/0 (with neighbor IP address 192.168.255.21) had a metric of 2 (meaning that this route is 2 hops away) while the one received from interface serial 0/1 (neighbor IP address 192.168.255.26) had a metric of 1. This router will accept the route with the lowest. In the routing table, the number values inside of the brackets indicate the administrative distance and metric of the route. In this case the [120/1] means that the route has an AD of 120, which is the default for RIP, and a metric of 1, which is one hop.

QUESTION 852

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

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

Answer: B, D, E, F

Explanation:

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

In

Answer:

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

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

QUESTION 853

Which of the following protocols utilize UDP as the layer 4 transport mechanism?
(Choose all that apply)

- A. TACACS
- B. Telnet
- C. SMTP
- D. SNMP
- E. HTTP
- F. TFTP

Answer: D, F

Explanation:

SNMP and TFTP use UDP as the transport mechanism. Generally speaking, protocols that use the keywords "trivial" or "simple" uses UDP, since connectionless, best effort delivery mechanism usually suffice. SNMP uses UDP port 161, while TFTP uses UDP port 69.

Incorrect Answers:

- A. TACACS uses TCP port 49
- B. Telnet uses TCP port 23
- C. SMTP uses TCP port 25
- E. HTTP uses TCP port 80

QUESTION 854

Which one of the following protocols uses both UDP and TCP ports for the transport layer operation?

- A. FTP

- B. TFTP
- C. SMTP
- D. Telnet
- E. DNS

Answer: E

Explanation:

TCP and UDP must use port numbers to communicate with the upper layers. Port numbers keep track of different conversations crossing the network simultaneously. Originating-source port numbers are dynamically assigned by the source host, which will be some number starting at 1024. 1023 and below are defined in RFC 1700, which discusses what is called well-known port numbers.

Virtual circuits that do not use an application with a well-known port number are assigned port numbers randomly chosen from within a specific range instead. These port numbers identify the source and destination host in the TCP segment. Only DNS uses both UDP and TCP port 53.

QUESTION 855

Which of the following protocols utilize TCP? (Choose all that apply)

- A. NTP
- B. NNTP
- C. SMTP
- D. SNMP
- E. HTTPS
- F. TFTP

Answer: B, C, E

Explanation:

B. NNTP uses TCP port 119

C. SMTP uses TCP port 25

E. HTTPS uses TCP port 443

Incorrect Answers:

A. NTP uses UDP port 123

D. SNMP uses UDP port 161

F. TFTP uses UDP port 69

QUESTION 856

Although TCP segments differ from UDP segments, they both contain some common fields. What two segments do they share in common? (Select two answer choices)

- A. Source address

- B. Options
- C. Sequence number
- D. Sources
- E. Destination port
- F. Checksum

Answer: E, F

Explanation:

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

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

313844

TCP Packet Field Descriptions

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

1. SourcePort and DestinationPort-Identifies points at which upper-layer source and destination processes receive TCP services.
- 2.
3. Sequence Number-Usually specifies the number assigned to the first byte of data in the current message. In the connection-establishment phase, this field also can be used to identify an initial sequence number to be used in an upcoming transmission.
- 4.
5. Acknowledgment Number-Contains the sequence number of the next byte of data the sender of the packet expects to receive.
- 6.
7. Data Offset-Indicates the number of 32-bit words in the TCP header.
- 8.
9. Reserved-Remains reserved for future use.
- 10.
11. Flags-Carries a variety of control information, including the SYN and ACK bits used for connection establishment, and the FIN bit used for connection termination.
- 12.
13. Window-Specifies the size of the sender's receive window (that is, the buffer space

available for incoming data).

- 14.
- 15. Checksum-Indicates whether the header was damaged in transit.
- 16.
- 17. Urgent Pointer-Points to the first urgent data byte in the packet.
- 18.
- 19. Options-Specifies various TCP options.
- 20.
- 21. Data-Contains upper-layer information.

User Datagram Protocol (UDP)

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

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

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

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

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

A UDP packet consists of four fields.



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

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

QUESTION 857

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

- A. UDP will send an ICMP Information Request to the source host.
- B. UDP will pass the information in the datagrams up to the next OSI layer in the order that they arrive.

- C. UDP will drop the datagrams.
- D. UDP will use the sequence numbers in the datagram headers to reassemble the data in the correct order.
- E. UDP will not acknowledge the datagrams and wait for a retransmission of the datagrams.

Answer: B

Explanation:

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

UDP provides a service for applications to exchange messages. Unlike TCP, UDP is connectionless and provides no reliability, no windowing, and no reordering of the received data

. However, UDP provides some functions of TCP , such as data transfer, segmentation, and multiplexing using port numbers, and it does so with fewer bytes of overhead and with less processing required. UDP data transfer differs from TCP data transfer in that no reordering or recovery is accomplished. Applications that use UDP are tolerant of lost data, or they have some application mechanism to recover data loss.

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

QUESTION 858

A legacy network that is prone to errors may have issues with services that use UDP. Which of the following services could have problems in this case, due to the fact that UDP is used? (Select three answer choices.)

- A. DNS
- B. Telnet
- C. SMTP
- D. SNMP
- E. HTTP
- F. TFTP

Answer: A, D, F

Explanation:

- A. DNS uses both UDP and TCP (port 53)
- D. SNMP uses UDP port 161
- F. TFTP uses UDP port 69

Incorrect Answers:

- B. Telnet uses TCP port 23
- C. SMTP uses TCP port 25
- E. HTTP uses TCP port 80

QUESTION 859

Regarding DHCP (dynamic host configuration protocol), which two of the following choices below are true? (Select two answer choices)

- A. The DHCP Discover message uses FF-FF-FF-FF-FF as the Layer 2 destination address.
- B. The DHCP Discover message uses UDP as the transport layer protocol.
- C. The DHCP Discover message uses a special Layer 2 multicast address as the destination address.
- D. The DHCP Discover message uses TCP as the transport layer protocol.
- E. The DHCP Discover message does not use a Layer 2 destination address.
- F. The DHCP Discover message does not require a transport layer protocol.

Answer: A, B

Explanation:

DHCP uses UDP as its transport protocol. DHCP messages from a client to a server are sent to the DHCP server port (UDP port 67), and DHCP messages from a server to a client are sent to the DHCP client port (UDP port 68). The client broadcasts a DHCPDISCOVER message on its local physical subnet. The DHCPDISCOVER message may include options that suggest values for the network address and lease duration. BOOTP relay agents may pass the message on to DHCP servers not on the same physical subnet.

Each server may respond with a DHCPOFFER message that includes an available network address in the "ipaddr" field (and other configuration parameters in DHCP options). Servers need not reserve the offered network address, although the protocol will work more efficiently if the server avoids allocating the offered network address to another client. The server unicasts the DHCPOFFER message to the client (using the DHCP/BOOTP relay agent if necessary) if possible, or may broadcast the message to a broadcast address (preferably 255.255.255.255) on the client's subnet. Incorrect Answers: C. DHCP messages are broadcast to the "all hosts" address. IP multicast addresses are not used.

D. UDP is used, not TCP.

E. Since DHCP is used so that a client can obtain an IP address, a layer two destination address must be used, as the layer 3 IP address does not yet exist on the client for the return traffic.

F. DHCP, along with nearly every other type of traffic, requires the use of a transport layer protocol.

QUESTION 860

DRAG DROP

Drag the Layer 4 network services on the left with its corresponding TCP port number on the right. Note that all choices should be used when completed.

DNS	Place here	
FTP	Place here	
Telnet	Place here	25
HTTP	Place here	53
SNMP	Place here	80
SMTP	Place here	161

Answer:

FTP	
Telnet	23
SNMP	161
DNS	53
HTTP	80
SMTP	25

QUESTION 861

Which protocol below uses TCP port 443?

- A. HTML
- B. HTTPS
- C. TFTP
- D. Telnet
- E. SMTP

Answer: B

Explanation:

HTTPS is the secured version of the HTTP application, which normally uses 128 bit SSL encryption to secure the information sent and received on a web page. An example is a

banking web site, or a trustworthy shopping web site that takes credit card information. It is an application layer protocol which uses TCP port 443.

Incorrect Answers:

- A. HTML is not a protocol.
- C. TFTP uses UDP port 69.
- D. Telnet uses TCP port 23.
- E. SMTP uses TCP port 25.

QUESTION 862

Which protocol automates all of the following functions for hosts on a network: IP configuration, IP addresses, subnet masks, default gateways, and DNS server information?

- A. CDP
- B. SNMP
- C. DHCP
- D. ARP
- E. DNS
- F. None of the above

Answer: C

Explanation:

DHCP uses the concept of the client making a request and the server supplying the IP address to the client, plus other information such as the default gateway, subnet mask, DNS IP address, and other information.

Incorrect Answers:

- A. CDP is the Cisco Discovery Protocol. It is used by Cisco devices at the data link layer to obtain information about their directly connected neighbors.
- B. SNMP is the Simple Network Management Protocol. This is used for the maintenance, management, and monitoring of network devices.
- D. ARP is the Address Resolution Protocol, which is used to resolve layer 2 MAC addresses to layer 3 IP addresses.
- E. DNS is the Domain Name Service. It is used to resolve domain names (for example, www.Certkiller.com) to IP addresses. The IP address location of primary and secondary DNS resolver servers can be obtained for hosts using DHCP.

QUESTION 863

What does the term computer language refer to?

- A. Binary
- B. Decimal
- C. Hexadecimal
- D. Octal

E. All of the above

Answer: A

Explanation:

Computers speak in binary code; meaning that every piece of data is fundamentally either a 1 or a 0, and all data aspects within a computer is a series of 1s and 0s.

QUESTION 864

Which three address ranges are used for internal private address blocks as defined by RFC 1918? (Choose all that apply)

- A. 0.0.0.0 to 255.255.255
- B. 10.0.0.0 to 10.255.255.255
- C. 172.16.0.0 to 172.16.255.255
- D. 172.16.0.0 to 172.31.255.255
- E. 127.0.0.0. to 127.255.255.255
- F. 192.168.0.0 to 192.168.255.255
- G. 224.0.0.0 to 239.255.255.255

Answer: B, D, F

Explanation:

RFC 1918 defines three different IP address ranges as private, meaning that they can be used by any private network for internal use, and these ranges are not to be used in the Internet. The class A private range is 10.0.0.0 to 10.255.255.255. The class B address range is 172.16.0.0 to 172.31.255.255. The class C private IP address range is 192.168.0.0 to 192.168.255.255.

Incorrect Answers:

- A. The 0.0.0.0 network address is invalid and can not be used.
 - C. The correct address range is 172.16.X.X through 172.31.X.X
 - E. The 127.0.0.1 address is reserved for the internal loopback IP address, but the entire 127.X.X.X range is not defined in RFC 1918 as a private address range for networks.
 - G. This address range describes the class D multicast address range.
-

QUESTION 865

What statements are true regarding ICMP packets? Choose two

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

Answer: C, D

Explanation:

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

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

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

Incorrect Answers

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

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

QUESTION 866

Exhibit:

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

The exhibit displays the partial contents of an encapsulation header.

Which of the following are true of the network traffic represented in this diagram?

(Select three)

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

Answer: B, C, E

Explanation:

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

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

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

QUESTION 867

DRAG DROP

Your Certkiller .com boss asks you to match the networks services with the corresponding Layer 4 protocols.

Network service	TCP
FTP	Place here
SNMP	Place here
SMTP	Place here
TFTP	Place here
TELNET	UDP
HTTP	Place here
	Place here

Answer:

TCP
FTP
Telnet
HTTP
SMTP

UDP
TFTP
SNMP

Explanation:

FTP uses TCP Port Numbers 20 and 21. Port 20 is used for Data. Port 21 is used for Control.

Telnet used TCP Port Number 23.

HTTP uses TCP Port Number 80.

SMTP uses TCP Port Number 25.

SNMP uses UDP Port Number 161.

TFTP uses UDP Port Number 69.

QUESTION 868

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

- A. FTP
- B. SMTP
- C. Telnet
- D. DNS
- E. All of the above

Answer: D

Explanation:

FTP : TCP Port 20 or 21

SMTP : TCP Port 25

Telnet : TCP Port 23

DNS : both TCP and UDP Port 53

QUESTION 869

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

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

Answer: E

Explanation:

Several concurrent Telnet connections to a router are allowed. The `line vty 0 4` command signifies that this configuration applies to vtys (virtual teletypes—terminals) 0 through 4. Only these five vtys are allowed by the IOS unless it is an IOS for a dial access server, such as a Cisco AS5300. All five vtys typically have the same password, which is handy because users connecting to the router via a Telnet cannot choose which vty they get.

QUESTION 870

Which fields are included in the TCP header? (Choose three).

- A. Source Port
- B. Acknowledgement Number
- C. Request Number
- D. Destination Address
- E. Window
- F. Data

Answer: A, B, E

Explanation:

640-801

TCP header:

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Source Port										Destination Port																					
Sequence Number																															
Acknowledgment Number																															
Data Offset				reserved			ECN			Control Bits						Window															
Checksum																Urgent Pointer															
Options and padding ...																															
Data ...																															

Source Port: 16 bits.

Destination Port: 16 bits.

Sequence Number: 32 bits.

The sequence number of the first data byte in this segment. If the SYN bit is set, the sequence number is the initial sequence number and the first data byte is initial sequence number + 1.

Acknowledgment Number: 32 bits.

If the ACK bit is set, this field contains the value of the next sequence number the sender of the segment is expecting to receive. Once a connection is established this is always sent.

Data Offset: 4 bits.

The number of 32-bit words in the TCP header. This indicates where the data begins. The length of the TCP header is always a multiple of 32 bits.

Reserved: 3 bits.

Must be cleared to zero.

ECN, Explicit Congestion Notification: 3 bits.

Added in RFC 3168.

Control Bits: 6 bits.

Window: 16 bits, unsigned.

The number of data bytes beginning with the one indicated in the acknowledgment field which the sender of this segment is willing to accept.

Checksum: 16 bits.

This is computed as the 16-bit one's complement of the one's complement sum of a pseudo header of information from the IP header, the TCP header, and the data, padded as needed with zero bytes at the end to make a multiple of two bytes.

Urgent Pointer: 16 bits, unsigned.

If the URG bit is set, this field points to the sequence number of the last byte in a sequence of urgent data.

Options: 0 to 44 bytes.

Options occupy space at the end of the TCP header. All options are included in the checksum. An option may begin on any byte boundary. The TCP header must be padded with zeros to make the header length a multiple of 32 bits.

Data: Variable length.

QUESTION 871

The Certkiller network administrator issues the ping 192.168.2.5 command and successfully tests connectivity to a host that has been newly connected to the network. Which protocols were used during the test? (Choose two)

- A. ARP
- B. CDP
- C. DHCP
- D. DNS
- E. ICMP

Answer: A, E

Explanation:

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

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

QUESTION 872

Which of the following IP addresses can be assigned to host devices? (Choose two)

- A. 205.7.8.32/27
- B. 191.168.10.2/23
- C. 127.0.0.1
- D. 224.0.0.10
- E. 203.123.45.47/28
- F. 10.10.0.0/13

Answer: B, F

Explanation:

Only choices B and F are valid host IP addresses given the subnet masks.

Incorrect Answers:

- A: The 205.7.8.32/27 address is the network IP address.
- C: This is the internal loopback IP address that is assigned to IP hosts.
- D: This IP address is a multicast IP address used for RIP advertisements.
- E: The 203.123.45.47 is broadcast address

Remember that multicast, broadcast, network addresses, and loopback addresses can't be assigned to end hosts.

QUESTION 873

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

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

Answer: B, D, E

Explanation:

TCP (Transmission Control Protocol) is a reliable mechanism for data delivery. SMTP, FTP and HTTP services use TCP via ports 25, 20/21, and 80, respectively.

QUESTION 874

Which of the following host addresses are members of networks that can be routed across the public Internet? (Choose three.)

- A. 10.172.13.65
- B. 172.16.223.125
- C. 172.64.12.29
- D. 192.168.23.252
- E. 198.234.12.95
- F. 212.193.48.254

Answer: C, E, F

Explanation:

In Internet terminology, a private network is a network that uses RFC 1918 IP address space. Computers may be allocated addresses from this address space when it's necessary for them to communicate with other computing devices on an internal (non-Internet) network but not directly with the Internet.

Three blocks of IP addresses are reserved for private use and are not routed over the Internet. Companies can assign these addresses to nodes on their private LANs at any time without conflict.

CIDR

From To Representation

10.0.0.0 10.255.255.255 10/8

172.16.0.0 172.31.255.255 172.16/12

192.168.0.0 192.168.255.255 192.168/16

QUESTION 875

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

- A. Buffering
- B. Cut-through
- C. Windowing
- D. Congestion avoidance
- E. Load balancing

Answer: A, C, D

Explanation:

Data transmission flow control occurs at layer 4 with the help of buffering, windowing and congestion avoidance.

Reference: CCNA Cisco Certified Network Associate Study Guide, 5th Edition, Todd Lammle, chapter 1, page 17.

QUESTION 876

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

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

Answer: B, E

Explanation:

Ethernet networking uses Carrier Sense Multiple Access with Collision Detect (CSMA/CD), a protocol that helps devices share the bandwidth evenly without having two devices transmit at the same time on the network medium. CSMA/CD was created to overcome the problem of those collisions that occur when packets are transmitted simultaneously from different nodes. And trust me, good collision management is crucial, because when a node transmits in a CSMA/CD network, all the other nodes on the network receive and examine that transmission. Only bridges and routers can effectively prevent a transmission from propagating throughout the entire network! So, how does the CSMA/CD protocol work? Like this: when a host wants to transmit over the network, it first checks for the presence of a digital signal on the wire.

If all is clear (no other host is transmitting), the host will then proceed with its transmission. But it doesn't stop there. The transmitting host constantly monitors the wire to make sure no other hosts begin transmitting. If the host detects another signal on the wire, it sends out an extended jam signal that causes all nodes on the segment to stop sending data (think, busy signal). The nodes respond to that jam signal by waiting a while before attempting to transmit again. Backoff algorithms determine when the colliding stations can retransmit. If collisions keep occurring after 15 tries, the nodes attempting to transmit will then time out.

QUESTION 877

Which Layer 4 protocol is used for a Telnet connection?

- A. IP
- B. ICMP
- C. DNS
- D. TCP
- E. UDP

Answer: D

Explanation:

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

QUESTION 878

A network administrator needs to create 29 subnetworks while maximizing the number of host addresses available on each subnet. How many bits must be borrowed from the host field of the network address to provide the required number of subnets with the most hosts per subnet?

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

Answer: E

Explanation:

Answer E is correct because if we use 5 bits for the network portion, this will create 32 subnets, which exceeds the number of subnets needed. If we use 4 bits, this will only create 16 networks. If we use more than 5, we will not be maximizing the number of host addresses per network.

QUESTION 879

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

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

Answer: B

Explanation:

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

- /22 172.16.148.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.152.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.156.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.160.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.164.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.168.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.172.0 - 255.255.252.0 - 1022 hosts
- /22 172.16.176.0 - 255.255.252.0 - 1022 hosts

QUESTION 880

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

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

Answer: B, C, E

Explanation:

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

10BaseT network will usually only give you 3- to 4Mbps-at most. Full-duplex Ethernet uses two pairs of wires, instead of one wire pair like half duplex. Also, full duplex uses a point-to-point connection between the transmitter of the transmitting device and the receiver of the receiving device, which means that with full-duplex data transfer, you get a faster data transfer compared to half duplex. And because the transmitted data is sent on a different set of wires than the received data, no collisions occur. The reason you don't need to worry about collisions is because now Full-duplex Ethernet is like a freeway with multiple lanes instead of the single-lane road provided by half duplex. Full-duplex Ethernet is supposed to offer 100 percent efficiency in both directions; this means you can get 20Mbps with a 10Mbps Ethernet running full duplex, or 200Mbps for FastEthernet.

QUESTION 881

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

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

Answer: A

Explanation:

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

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

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

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

Layer 4 protocols include the following:

- * Transmission Control Protocol (TCP)
- * User Datagram Protocol (UDP)
- * Sequenced Packet Exchange (SPX)A reliable communications protocol created by Novell NetWare

QUESTION 882

Exhibit:

Please study the exhibit carefully. The partial frame shown in the exhibit displays select header information as it arrives at the destination host. Which choice represents the correct header information in the responding frame returned to the

remote host?

Exhibit:

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

The choice will be ordered in

Destination/Source/Destination/Source/Destination/Source/SYN/ACK

- A. 000d.56ad.a313/000a.8a47.e612/192.168.14.2/192.168.14.1/42335/23/0 /0
- B. 000a.8a47.e612/000d.56ad.a313/192.168.14.2/192.168.14.1/23/42335/0 /1
- C. 000d.56ad.a313/000a.8a47.e612/192.168.14.1/192.168.14.2/42335/23/0 /1
- D. 000a.8a47.e612/000d.56ad.a313/192.168.14.2/192.168.14.1/23/42335/1 /1
- E. 000a.8a47.e612/000d.56ad.a313/192.168.14.2/192.168.14.1/42335/23/1 /1

Answer: B

Explanation:

For the return packets back to the original host, the destination/source MAC addresses and IP addresses will be fundamentally flipped as the receiver now becomes the sender. The destination port number will remain unchanged, as this traffic type (which can be seen as telnet traffic because of the TCP port 23 being used) will also not change. Here, the return traffic will send an acknowledgement back to the sender that the data was received, so the SYN becomes 0 but the ACK bit is set.

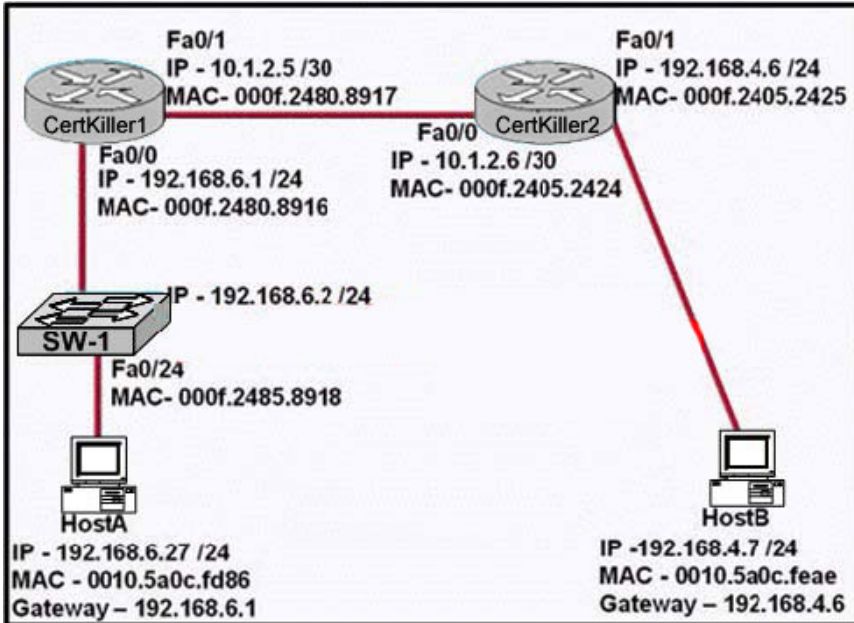
QUESTION 883

Exhibit:

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

They will be in the format Interface address/Physical address/ Type

Exhibit:



- A. 192.168.6.1/000f.2480.8916/dynamic
- B. 192.168.4.7/000f.2480.8916/dynamic
- C. 192.168.6.2/000f.2480.8918 /dynamic
- D. 192.168.4.7/0010.5a0c.feae/dynamic
- E. 192.168.6.1/0010.5a0c.feae /dynamic
- F. 192.168.6.2/0010.5a0c.feae /dynamic

Answer: A

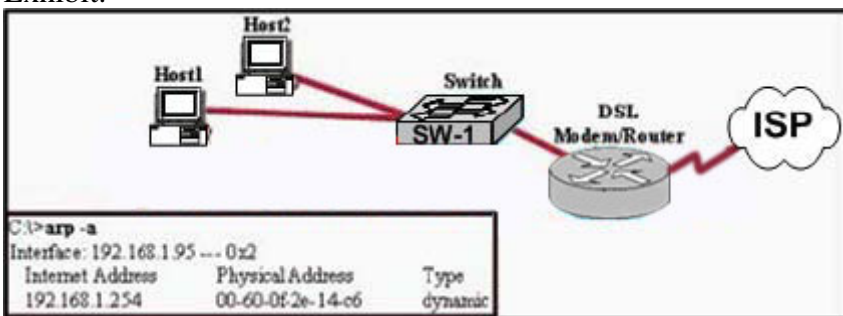
Explanation:

When a host tries to send any data transmission to another host that resides in a different IP subnet, that host will send this data to their default gateway. In this case, the default gateway of Host A is the Fa 0/0 interface of router Certkiller 1. Due to this, the ARP entry will show the MAC and IP address of this interface for all traffic destined to another IP subnet.

QUESTION 884

The user of Host1 wants to ping the DSL modem/router at 192.168.1.254. Based on the Host1 ARP table that is shown in the exhibit, what will Host1 do?

Exhibit:



- A. Send Layer 3 broadcast packets to which the DSL modem/router responds

- B. Send a unicast ARP packet to the DSL modern/router
- C. Send a Layer 2 broadcast that is received by Host2, the switch, and the DSL modern/router
- D. Send unicast ICMP packets to the DSL modern/router

Answer: D

Explanation:

Address Resolution Protocol (ARP) is a network protocol, which maps a network layer protocol address to a data link layer hardware address. For example, ARP is used to resolve IP address to the corresponding Ethernet address.

A host in an Ethernet network can communicate with another host, only if it knows the Ethernet address (MAC address) of that host. The higher level protocols like IP use a different kind of addressing scheme (like IP address) from the lower level hardware addressing scheme like MAC address. ARP is used to get the Ethernet address of a host from its IP address. ARP is extensively used by all the hosts in an Ethernet network. In this case, there is already an entry for this IP address, meaning the this host already knows the MAC to IP address mapping for this destination so there is no need to send out an ARP request; instead it will send the ICMP packet directly to 192.168.1.254 via unicast.

QUESTION 885

Catalyst switches utilize a special technology to identify and prevent topology loops and ensure that data flows properly through a single network path. What is the name of this technology?

- A. VTP
- B. ISL
- C. 802.1Q
- D. STP
- E. None of the above

Answer: D

Explanation:

Catalyst switches use the STP (spanning tree protocol) to prevent loops and to ensure data flows through a single network path. A separate instance of the STP mechanism is applied to every individual VLAN that is configured on the Catalyst switch.

Incorrect Answers:

- A. VTP is the VLAN Trunking Protocol, which is used by Catalyst switches to pass VLAN information between switches. By itself, it does not provide any mechanism for detecting and preventing loops.
- B, C. Inter-Switch Link (ISL) and 802.1Q are encapsulation types used for the creation of trunks. ISL is Cisco proprietary and 802.1Q is the industry standard method, but neither of these two options provide for any way to prevent a layer 2 loop in the network.

QUESTION 886

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

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

Answer: B, C

Explanation:

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

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

Reference:

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

Incorrect Answers:

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

QUESTION 887

You want your Catalyst switch to implement a switching method that holds a packet in its memory until the data portion of the respected packet reaches the switch. Which method should you employ on your Catalyst switch?

- A. Fast Forward
- B. Store and forward
- C. Frag-free
- D. None of the above

Answer: C

Explanation:

Fragment Free switching

filters out the majority of packet errors before forwarding begins. In a properly functioning network, most packet "errors" are due to collisions which are resolved within the first 64 bytes of the packet. These collisions cause packet fragments. After a packet has successfully passed this fragment threshold, it will continue to be received without error with near-certainty. (The next biggest cause of failure arises from "late" collisions which can occur when the network is physically interrupted.) This is how the Fragment Free option works.

Fragment Free switching waits until the received packet passes the 64-byte fragment threshold and then forwards the packet.

Incorrect Answers:

A. Fast Forward switching is optimized for performance. It offers the lowest level of latency by immediately forwarding a packet upon receipt of only the destination address (after the first 6 bytes are received).

Because Fast Forward does not wait until the entire packet is received before forwarding, this form of switching may sometimes relay a packet that has an error. Although this will be an infrequent occurrence and the destination network adapter will discard the faulty packet upon receipt, this superfluous traffic may be deemed unacceptable in certain environments. Such cut-through overhead can be reduced by using the Fragment Free option.

B. Another switching mode supported by Catalyst switches is the traditional Store-and-Forward bridging mode. Complete packets are stored and checked for errors prior to transmission. Latency varies by packet size since the entire packet needs to be received prior to transmission.

Store-and-Forward is the most error-free form of switching; however, the forwarding latency is higher than either of the two cut-through switching modes.

Reference:

http://www.cisco.com/en/US/partner/products/hw/switches/ps570/products_user_guide_chapter09186a008007d4

QUESTION 888

What are some characteristics of the typical VLAN arrangement? (Select all that apply)

- A. VLANs logically divide a switch into multiple, independent switches at Layer 2.
- B. Trunk links can carry traffic for multiple VLANs.
- C. VLAN implementation significantly increases traffic due to added trunking information.
- D. A VLAN can span multiple switches.
- E. VLANs extend the collision domain to include multiple switches.
- F. VLANs typically decrease the number of multiple switches.

Answer: A, B, D

Explanation:

VLANs give you the power of making virtual LAN networks to subdivide collision

domains into smaller units of functionality. Without being limited by physical location. A is correct because that is the exact function of a VLAN. B is correct because trunk links are used to carry traffic for multiple VLANs. D is correct because a VLAN can and often does span across multiple switches, through the use of VTP
In

Answer:

- C. This choice is incorrect because although trunking information uses bandwidth, the amount isn't at all significant.
- E. This is incorrect because VLANs do the exact opposite, and are used to segment collision domains.
- F. This is incorrect because VLANs themselves have no power in decreasing the numbers of multiple switches.

QUESTION 889

Which of the following answers are correct characteristics of microsegmentation, in the context of a Local Area Network (LAN)? (Select two answer choices)

- A. Dedicated paths between sending and receiving hosts are established.
- B. Multiple subnetwork broadcast addresses are created.
- C. Multiple ARP tables are needed.
- D. The decrease in the number of collision domains.
- E. Broadcast domains are enhanced.
- F. Additional bandwidth is used to connect hosts.

Answer: A, F

Explanation:

Microsegmentation works exactly the same way as it is defined. The network is segmented into smaller pieces to reduce the collision domains. This is done through the use of VLANs. A is correct because dedicated paths are established, and F is correct because all these new paths do take up some overhead. Every host within a VLAN will have the overhead of a VLAN ID tag added to each frame. Although this additional overhead is minimal, it is overhead nonetheless.

Incorrect Answers:

- B. This would only be true if the switch was layer 3 capable, or a trunk was created to a router with multiple subinterfaces for each VLAN. If traffic from one VLAN needs to be sent to hosts on another VLAN, then inter-VLAN routing is required, and this will indeed add additional subnet broadcast addresses. However, the process of segmentation itself does not require inter-VLAN routing, so choice B is not necessarily true.
- C. Only one ARP table is needed per switch.
- D, E: Segmenting the network through the use of VLANs will actually increase the total number of collision domains.

QUESTION 890

You are an administrator of a switched network and your goal is to reduce some of

the administrative overhead on your network. You plan on achieving this by configuring a new VLAN for each department in your network. However, you need to share the VLAN information across numerous switches throughout your network. Which of the following would allow you accomplish this?

- A. STP
- B. GVRP
- C. SNMP
- D. VTP
- E. DHCP

Answer: D

Explanation:

The VTP (VLAN Trunking Protocol) is a Cisco Layer 2 messaging protocol that manages the addition, deletion, and renaming of VLANs on a network-wide basis. It allows for VLAN information to span multiple switches within the switch domain.

In

Answer:

- A. STP is a switching protocol but it is used for preventing network loops.
- B. GVARP is an actual protocol used in switch administration, but it beyond the scope of what a CCNA is expected to know.
- C. SNMP is a protocol used for managing and monitoring networks
- E. DHCP is the Dynamic Host Configuration Protocol, which allows for PC's to obtain their IP address dynamically upon booting up, along with their DNS and default gateway information.

QUESTION 891

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

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

Answer: E

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

Incorrect Answers:

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

QUESTION 892

You wish to segment your LAN into multiple broadcast domains. Which technology method should you implement in order to do this?

- A. Transparent bridging
- B. Cut-through switching
- C. Fragment-free switches
- D. Virtual LANs
- E. Store-and-forward switching

Answer: D

Explanation:

The creation of VLANs in a switch will provide separate Broadcast domains. By default, all ports in a Catalyst switch belong to VLAN 1. By creating additional VLANs, the LAN will be logically segmented into separate broadcast domains.

Incorrect Answers

- A. Transparent bridging is called Transparent because the endpoints devices do not need to know that the bridges exists. It will not play any role for creating separate broadcast domain
- B, E. Both of these are switching methods.
- C. This has nothing to do with the creation of multiple broadcast domains.

QUESTION 893

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

- A. Bridges are faster than switches because they have fewer ports.
- B. A switch is a multiport bridge,
- C. Bridges and switches learn MAC addresses by examining the source MAC address of each frame received.
- D. A bridge will forward a broadcast but a switch will not.
- E. Bridges and switches increase the size of a collision domain.
- F. None of the above statements are true.

Answer: B, C

Explanation:

Both bridges and switches build the bridge table by listening to incoming frames and examining the source MAC address in the frame.

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

Incorrect Answers:

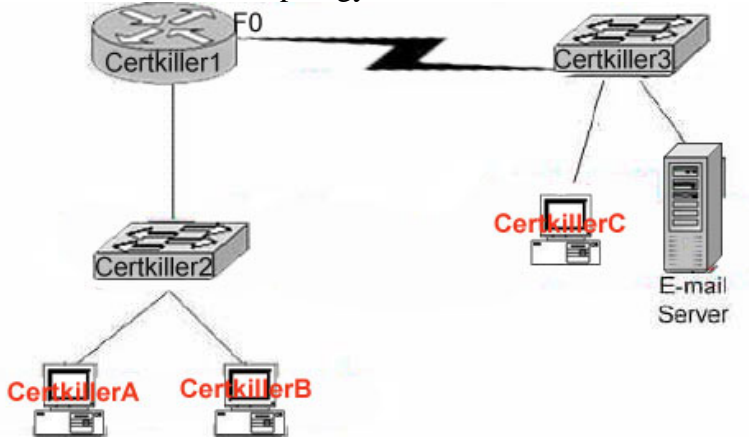
A. Switches are generally faster than bridges. Bridges also do not necessarily have fewer ports than switches.

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

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

QUESTION 894

The Certkiller network topology is shown below:



Which destination addresses will the computer Certkiller A use to send data to the computer Certkiller C? (Select two answer choices)

- A. The IP address of Switch Certkiller 2
- B. The MAC address of Switch Certkiller 2
- C. The IP address of Certkiller C
- D. The MAC address of Certkiller C
- E. The IP address of the router Certkiller 1's E0 interface.
- F. The Mac address of the router Certkiller 1's E0 interface.

Answer: C, F

Explanation:

The correct answer should be destination IP address of the server. The source and destination IP address should not change throughout the duration of the data transmission . The destination MAC addresses belong to the nearest router for traffic that is destined to

a host that is on a different network.

Incorrect Answers:

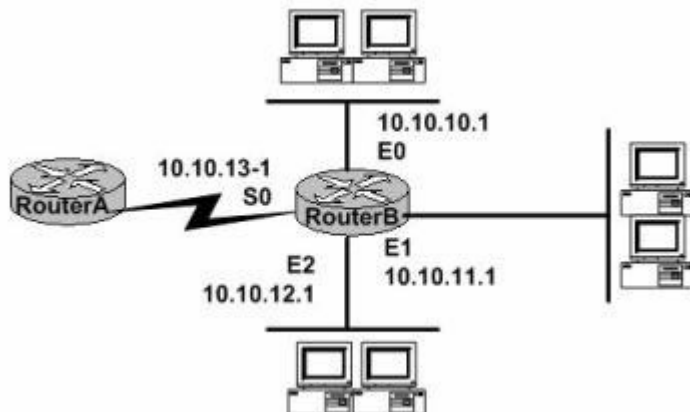
A, B: The IP address and MAC address should never be used as the destination address, unless the traffic is actually meant to be sent to the switch itself.

D. The MAC address used as the destination will address will come from the Ethernet port of the router, because the host resides on a different network.

E. Destination MAC addresses belong to the nearest router, but not the nearest IP address.

QUESTION 895

Observe the Certkiller network shown below:



Router B has to forward an IP datagram to 10.10.10.10; which of the interfaces will be used by router B when forwarding this datagram?

- A. S0
- B. E0
- C. E1
- D. E2
- E. E0, E1, E2
- F. None of the above

Answer: B

Explanation:

IP address 10.10.10.10 is on the 10.10.10.0 network. This network is attached to the E0 interface on Router B. This would then be used as the path to an address on the 10.10.10.0 network.

Incorrect Answers:

A, C, D. The router is used to segment traffic, so that local traffic on one segment does not get broadcasted or forwarded out the other interfaces unless it needs to.

E. This answer would imply that all LAN traffic gets broadcasted to all LAN ports. This would only be true if the device used was a switch or hub, or perhaps in the case where bridging was being utilized with the router. However, in this case it is clear that each LAN segment lies in its own IP subnet, so the traffic will only be forwarded out the single interface that is needed.

QUESTION 896

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

- A. Packet switching
- B. Collision prevention on a LAN segment.
- C. Packet filtering
- D. Broadcast domain enlargement
- E. Broadcast forwarding
- F. Internetwork communication

Answer: A, C, F

Explanation:

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

Incorrect Answers:

- B. Routers can indeed be used to segment a network separate a collision domain, since routers do not forward LAN broadcasts and multicasts to other interfaces. However, routers alone can not prevent all collisions from occurring on any given LAN segment.
- D. Routers actually segment LANs into smaller broadcast domains.
- E. Routers do not forward broadcast and multicast traffic out the additional interfaces by default. Unless bridging or IP helpers are configured on the router, LAN broadcasts are blocked at the router level.

QUESTION 897

After replacing the NIC card of a PC on the LAN, your Cisco switch shows a new MAC address is attached to that port. Which of the following answer choices below correctly describe a MAC address? (Select all that apply)

- A. It is a globally unique IP address.
- B. It is a globally unique 48 bit address
- C. It is provided by the manufacturer of the NIC.
- D. It is used as part of the IPX/SPX configuration.
- E. It is a logical address.

Answer: B, C

Explanation:

The IEEE defines the format and assignment of LAN addresses. The IEEE requires globally unique MAC (Media Access Control) addresses on all network interface cards (NICs). The IEEE calls these addresses MAC addresses because the MAC protocols such

as IEEE 802.3 define the addressing details. To ensure a unique MAC address, the Ethernet card manufacturers encode the MAC address onto the card, usually in a ROM chip, using a 48 bit hardware address.

Incorrect Answers:

- A. A MAC address is a hardware based layer 2 address, that can be used with any network type. IP addresses are used only in TCP/IP networks, and are used at layer 3 of the OSI model.
- D. MAC addresses can be used for any upper level data network, including IP, IPX, and Appletalk networks. It is not specifically designed for IPX/SPX.
- E. It is a hardware based, burned in address.

QUESTION 898

On a Cisco network, which of the following modes of flow control are commonly used to mitigate the effects of busy data networks? (Select three answer choices)

- A. Source Quench.
- B. Learning.
- C. Buffering.
- D. Windowing.
- E. Cut-Through.

Answer: A, C, D

Explanation:

There are three commonly used methods for handling network congestion as described below:

Source Quench Messages

Source quench messages are used by receiving devices to help prevent their buffers from overflowing. The receiving device sends a source quench message to request that the source reduce its current rate of data transmission.

Buffering

Buffering is used by network devices to temporarily store bursts of excess data in memory until they can be processed. Occasional data bursts are easily handled by buffering. However, buffers can overflow if data continues at high speeds

Windowing

Windowing is a flow-control method in which the source device requires an acknowledgement from the destination after a certain number of packets have been transmitted.

1. The source device sends a few packets to the destination device.
2. After receiving the packets, the destination device sends an acknowledgment to the source.
3. The source receives the acknowledgment and sends the same amount of packets.
4. If the destination does not receive one or more of the packets for some reason (such as overflowing buffers), it does not send an acknowledgment. The source will then retransmit the packets at a reduced transmission rate.

Incorrect Answers:

B. Learning is a step that a bridge port takes when booting up. It is one of the four states that a bridge port can be in (listening, learning, forwarding, blocking).

E. This is one of switching type used to determine how a switch should process the incoming frames. It is not related to flow control.

QUESTION 899

When selecting a Network Interface Card (NIC), which of the following factors need to be considered? (Select three)

- A. The type of application used on the network
- B. The type of system bus used by the computers
- C. The type of memory installed in each computer
- D. The type of media used in the network topology
- E. The type of protocols used in the network
- F. The physical layout of the network hosts

Answer: B, D, F

Explanation:

NICs are used to physically connect a station to a network, so only layer 1 of the OSI model will be used. Only the system bus type, media type (ethernet, token ring, etc) and physical elements need to be considered. Anything residing above layer 1, such as the protocols and applications used on the network, will not be of concern when determining the NIC card to use.

QUESTION 900

If NVRAM lacks boot system commands, where does the router look for the Cisco IOS by default?

- A. ROM
- B. RAM
- C. Flash
- D. Bootstrap
- E. Startup-.config

Answer: C

Explanation:

Flash memory - Either an EEPROM or a PCMCIA card, Flash memory stores fully functional IOS images and is the default location where the router gets its IOS at boot time. Flash memory also can be used to store any other files, including configuration files.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) page 187

QUESTION 901

Exhibit:



The exhibit shows some common router ports.
Which port can be used for a WAN T1 connection?

- A. AUI
- B. BRI
- C. Console
- D. Serial 0
- E. None of the above

Answer: D

Explanation:

There are only two ways to connect to a T1 line, either with a serial cable to an external T1 DSU/CSU or by using an internal CSU/DSU interface commonly found in most modern routers.

QUESTION 902

What functions do routers perform in a network? (Choose two).

- A. Packet Switching
- B. Access Layer Security
- C. Path Selection.
- D. VLAN Membership Assignment.
- E. Bridging between LAN segments.
- F. Micro-segmentation of Broadcast Domains.

Answer: A, C

Explanation:

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

QUESTION 903

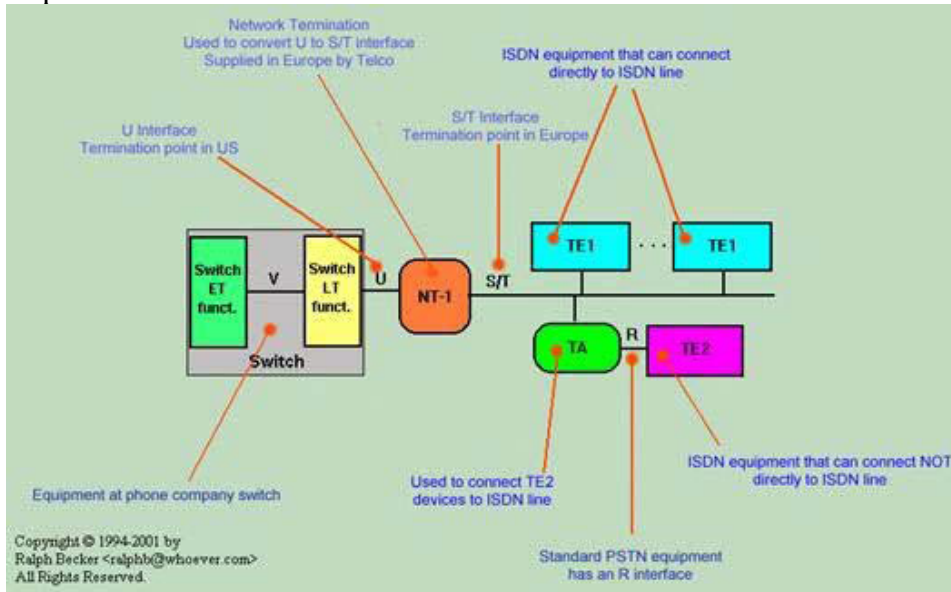
Which device enables a router serial interface to connect to the ISDN BRI?

- A. NT2
- B. NT1
- C. TE
- D. TA

E. TE1

Answer: D

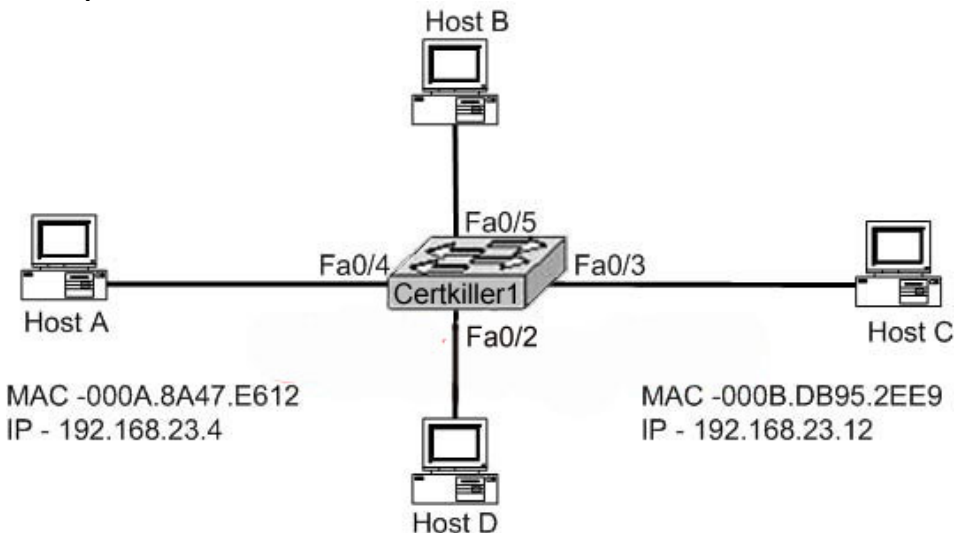
Explanation:



TA: Terminal Adaptor. This lets old, TE2 stuff talk to the ISDN network. It also adapts other kinds of equipment, like ethernet interfaces, to ISDN.

QUESTION 904

A simple Certkiller network is shown below:



Study the Exhibit carefully. Certkiller 1 has just been restarted and has passed the POST routine. When Host A begins communicating with Host C, what will the switch do?

- A. Certkiller 1 will add 192.168.23.4 to the CAM table.
- B. Certkiller 1 will add 192.168.23.12 to the CAM table.

- C. Certkiller 1 will add 000A.8A47.E612 to the CAM table.
- D. Certkiller 1 will add 000B.DB95.2EE9 to the CAM table.

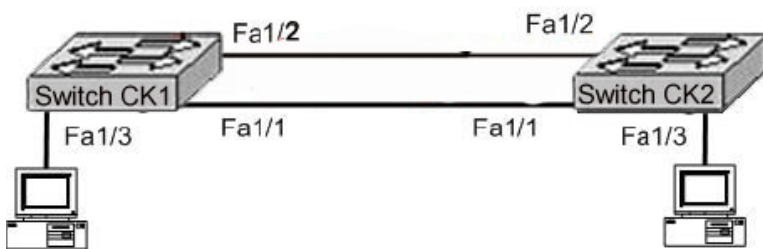
Answer: C

Explanation:

When the power of a switch is turned on, its MAC address table is empty. Switch starts building its CAM table on the base of source MAC addresses. When host A will start communication with host C, switch will enter the source MAC of Host A in its switching table and will flood the message.

QUESTION 905

Switches CK1 and CK2 are connected as shown below:



Study the Exhibit carefully. Which ports could safely be configured with PortFast?
(Choose two)

- A. Switch CK1 - port Fa1/2
- B. Switch CK2 - port Fa1/2
- C. Switch CK1 - port Fa1/3
- D. Switch CK2 - port Fa1/3
- E. Switch CK1 - port Fa1/1

Answer: C, D

Explanation:

Using Port Fast:

1. Immediately brings an interface configured as an access or trunk port to the forwarding state from a blocking state, bypassing the listening and learning states
 2. Normally used for single server/workstation can be enabled on a trunk
- So, Port fast can only be enabled to a switch port attaching to workstation or a server
.Reference: <http://www.911networks.com/node/273>

QUESTION 906

DRAG DROP

Place the parameters in the correct sequence to configure dial-on-demand routing (DDR) on an ISDN BRI interface.

640-801

Place here	Select from these	
Place 1st parameter here	unicast	<next-hop-address>
Place 2nd parameter here	dial string	dialer
Place 3rd parameter here	map	group
Place 4th parameter here	dialer-list	<protocol>
Place 5th parameter here		

Answer:

Explanation:

Place 1st - dialer

Place 2nd - map

Place 3rd - protocol

Place 4th - next-hop-address

Place 5th - dial string

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 342

QUESTION 907

DRAG DROP

Match the ISDN term on the left to the appropriate description on the right. Please note: Not all options on the left apply.

LAPD	A serial interface on a router
LAPB	An ISDN data link signaling standard
TE1	Contact to the reference
ITU.T.430	
TE2	
NT1	

Answer:

	A serial interface on a router	TE2
	An ISDN data link signaling standard	LAPD
	Connects the U reference point to the telco	NT1

Explanation:

* LAPD - provides the data link protocol that allows delivery of messages across that D-channel to the local switch.

* LAPB - Protocol and is designed primarily to satisfy the signaling requirements of

ISDN basic access. It is defined by ITU-T Recommendations Q.920 and Q.921.

* TE1 - ISDN -capable four-wire cable. Understands signaling and 2B=D. Uses an S reference point.

* ITU.T.430 - Defines connectors, encoding, framing, and reference points.

*

TE2 - Equipment that does not understand ISDN protocols and specifications (no ISDN awareness). Uses an R reference point, typically an RS-232 or V.35 cable, to connect to a TA.

* NT1 - CPE equipment in North America. Connects with a U reference point (two-wire) to the telco.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page Chapter 10

QUESTION 908

Exhibit:

```
R1#show interfaces <<output omitted>>
<<output omitted>> is up, line protocol is up
Hammer and gona 335.121.040time out 0:00:00 id 1/255
Hammer and gona 335.121.040time out 0:00:00 id 1/255
Hammer and gona 335.121.040time out 0:00:00
ARP type: ARPA, ARP Timeout 04:00:00
<<output omitted>>
```

Exhibit:

Please study the exhibit carefully. Assuming that the router is configured with the default settings, what type of router interface is this?

- A. Ethernet
- B. FastEthernet
- C. Gigabit Ethernet
- D. Asynchronous serial
- E. Synchronous serial

Answer: B

Explanation:

See the output of Serial Interface and compare.

RouterA#show interfaces serial 0

Serial0 is down, line protocol is down

Hardware is HD64570

Internet address is 192.168.0.1/24

MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255

Encapsulation HDLC, loopback not set

Keepalive set (10 sec)

Last input never, output never, output hang never

Last clearing of "show interface" counters never

Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0

Queueing strategy: fifo

Output queue :0/40 (size/max)

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 0 bits/sec, 0 packets/sec

0 packets input, 0 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort

0 packets output, 0 bytes, 0 underruns

0 output errors, 0 collisions, 2 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=down DSR=down DTR=up RTS=up CTS=down

In this exhibit the BW=10000Kbit and the encapsulation type is ARPA which means it could only be a Fast Ethernet interface.

QUESTION 909

DRAG DROP

Drag the cable type on the left to the purpose for which it is best suited on the right.

(Not all options are used)

crossover	Place here	switch access port to router
null modem	Place here	switch to switch
straight-through	Place here	PC COM port to switch
rollover		
9-25 pin serial		

Answer:

Drag the cable type on the left to the purpose for which it is best suited on the right.

(Not all options are used)

	straight-through	switch access port to router
null modem	crossover	switch to switch
	rollover	PC COM port to switch
9-25 pin serial		

Explanation:

1. Straight-through cable: Host to Switch, Switch to Router.
2. Crossover: Host to Host, Switch to Switch, Host to Router's Ethernet port.
3. Rollover: PC to Switch's console port or router's console port.

QUESTION 910

Which statement about the "ip classless" router configuration command is true?

- A. The ip classless command is enabled by default in recent versions of IOS.
- B. The ip classless command should only be enabled when static routing is being used instead of a routing protocol.
- C. The ip classless command should be enabled by the network administrator whenever RIPv1 or IGRP is being used.
- D. The ip classless command should be enabled by the network administrator whenever OSPF, RIPv2, or EIGRP is being used.

Answer: A

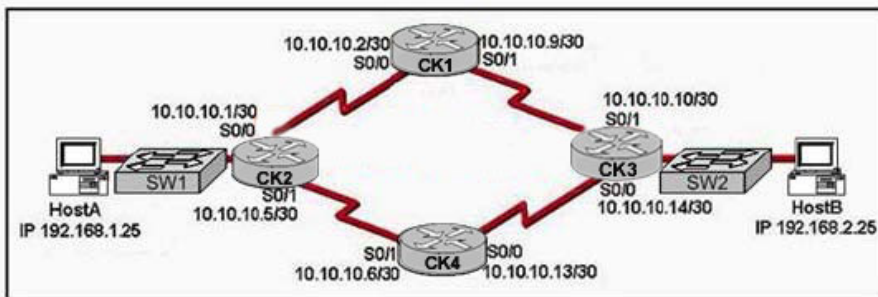
Explanation:

All Cisco routers are classful routers, meaning that they expect a default subnet mask on each interface of the router. When a router receives a packet for a destination subnet that's not in the routing table, it will drop packets by default. If you are using the default routing, you should use the ip classless command because it is possible that no remote subnet will be in routing table.

The ip classless command is enabled on the Cisco routers by default in version 12.0 and higher. Disable ip classless if your network does not have a subnetted range of IP addresses. If you are subnetting a block of IP address allocated to you by the American Registry for Internet Numbers (ARIN), you should ensure that ip classless is enabled.. It allows the router to advertise the subnetted addresses to its neighbors:

QUESTION 911

The Certkiller network is shown in the exhibit below:



The show ip route command was issued from one of the routers shown in the exhibit and the following output was displayed:

```
10.0.0.0/30 is subnetted, 4 subnets
O 10.10.10.8 [110/128] via 10.10.10.2, 00:02:44, Serial0/0
O 10.10.10.12 [110/128] via 10.10.10.6, 00:02:44, Serial0/1
C 10.10.10.0 is directly connected, Serial0/0
C 10.10.10.4 is directly connected, Serial0/1
C 192.168.1.0/24 is directly connected, FastEthernet0/0
O 192.168.2.0/24 [110/138] via 10.10.10.6, 00:02:44, Serial0/1 [110/138] via 10.10.10.2, 00:02:44, Serial0
```

Which router produced this output?

- A. CK1
- B. CK2
- C. CK3
- D. CK4

Answer: B

Explanation:

You can see the host having address 192.168.1.25 is connected to the CK2 router through switch SW1 in the ethernet port of the router. Based on the diagram, the 192.168.1.0 is connected to the LAN port of CK2 , and in the routing table we see that this network is indeed shown as a connected route on the Fa 0/0 interface.

QUESTION 912

One type of frame switching uses low-latency forwarding and then switches to a higher-latency error checking mode when an error threshold is exceeded. What is the name of this frame switching mode?

- A. Store and forward
- B. Fragment-free
- C. Adaptive cut-through
- D. Fast-forward

Answer: C

Explanation:

Adaptive cut-through is a modified form of cut-through switching in which the switch waits for the collision window (64 bytes) to pass before forwarding. It means that each frame will be checked into the data field to make sure no fragmentation has occurred.

QUESTION 913

The MAC table of a Certkiller switch is shown below:

```
Switch-1# show mac address-table
Dynamic Addresses Count          3
Secure Addresses (User-defined) Count  0
Static Addresses (User-defined) Count  0
System Self Addresses Count       41
Total Mac addresses              50
Non-static Address Table
-----
Destination Address  Address Type  VLAN  Destination Port
-----
0010.0de0.e289      Dynamic      1     FastEthernet0/1
0010.7b00.1540      Dynamic      2     FastEthernet0/3
0010.7b00.1545      Dynamic      2     FastEthernet0/2
```

Switch-1 needs to send data to a host with a MAC address of 00b0.d056.efa4. What will Switch-1 do with this data?

- A. Switch-1 will drop the data because it does not have an entry for that MAC address.
- B. Switch-1 will flood the data out all of its ports except the port from which the data originated.
- C. Switch-1 will send an ARP request out all its ports except the port from which the data originated.
- D. Switch-1 will forward the data to its default gateway.

Answer: B

Explanation:

Switches work as follows:

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

This could cause confusion in frame forwarding.

The MAC address entry is automatically discarded or aged out after 300 seconds

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

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

QUESTION 914

A Certkiller router boots up in ROMMON mode. What is ROM Monitor (ROMMON)?

- A. A memory component for storing the saved configuration file
- B. A memory management tool
- C. An operating system used for hardware troubleshooting and for password recovery
- D. Temporary storage space for the router operating files
- E. The source of the primary Cisco IOS software image

Answer: C

Explanation:

The ROM Monitor is a very limited code set that enables you to perform elementary functions to manually get the router or switch back to a functioning state. You can perform low-level diagnostics and even copy a new IOS file to the Cisco device over the console port. It is also used after the break sequence is issued during bootup for password recovery use.

QUESTION 915

Which Cisco IOS command identifies the system hardware and the IOS currently

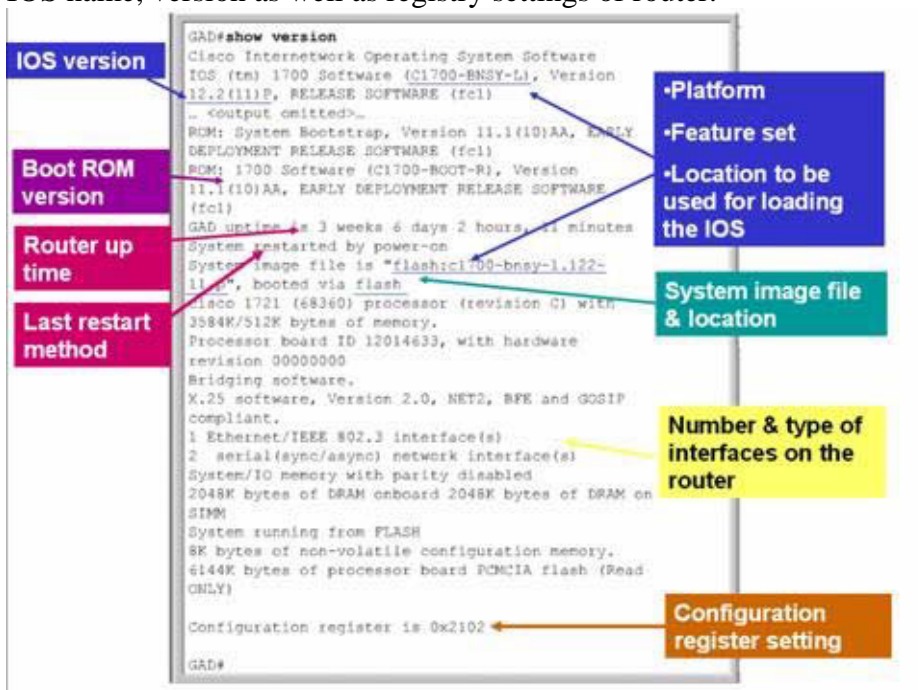
running on a router?

- A. show version
- B. show startup-config
- C. show running-config
- D. show processes
- E. show controllers

Answer: A

Explanation:

The "show version" command displays the information regarding hardware of router, IOS name, version as well as registry settings of router.



QUESTION 916

What two commands can be used to view the amount of memory that is used to hold the router IOS? (Choose two.)

- A. Certkiller 1# show version
- B. Certkiller 1# show running-config
- C. Certkiller 1# show flash memory
- D. Certkiller 1# show flash
- E. Certkiller 1# show memory

Answer: A, D

Explanation:

Different Cisco IOS versions and feature sets will ultimately dictate the size of the IOS

file and the amount of Flash and DRAM memory required to run the IOS. If you are planning to upgrade to a new IOS, you must make sure that you have enough memory (the more, the better) in your device. To see the amount of Flash you have and the current IOS file stored in Flash memory, utilize the show flash command as follows:

```
Router>show flashSystem flash directory:File Length Name/status 1 5510192  
c2600-is-mz.120-3.T3.bin[5510256 bytes used, 2878352 available, 8388608 total]8192K  
bytes of processor board System flash (Read/Write)Typically, the filename of the IOS  
file in Flash correctly reflects the actual IOS version running currently on the device.  
However, an administrator can easily change the filename to his or her own purposes, or  
there could be multiple IOS files stored on the Flash and you are not sure which one is  
running currently. To ensure the correct version of IOS, use the widely practical show  
version command.
```

QUESTION 917

Exhibit:

Please study the exhibit carefully. Switch Certkiller A receives the frame with the addressing shown in the exhibit. According to the command output also shown in the exhibit, how will Switch Certkiller A handle this frame?

```
CertKillerA# show mac-address-table  
< non-essential output omitted >
```

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

Frame received by CertKillerA:

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

- A. It will flood the frame out all ports except Fa0/3.
- B. It will forward the frame out port Fa0/3 only.
- C. It will flood the frame out all ports.
- D. It will forward the frame out port Fa0/6 only.
- E. It will drop the frame.

Answer: D

Explanation:

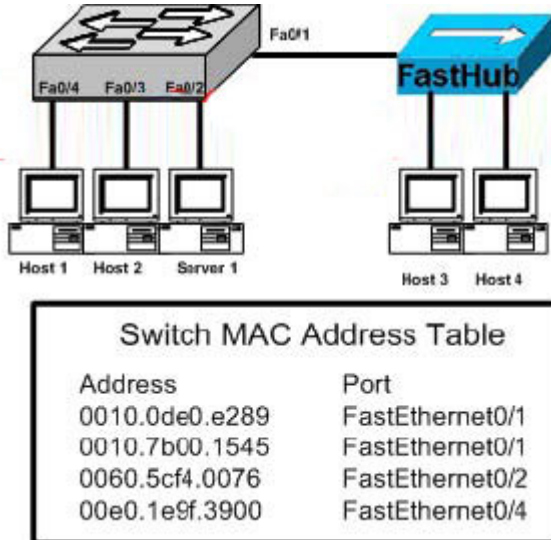
When frame receives the frame, it checks the source address on MAC table if MAC address found in MAC table it tries to forward if not in MAC table adds the Address on MAC table. After checking the source address, it checks the destination address on MAC table, if MAC address found on MAC table it forwards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

QUESTION 918

Exhibit:

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

Exhibit:



- A. Either Host3 or Host4 has just had the NIC replaced.
- B. Data from Host3 and Host4 has been received by switch port FastEthernet 0/1.
- C. Host3 and Host4 are on two different VLANs.
- D. Data from two of the devices connected to the switch has been sent to Host3.

Answer: B

Explanation:

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

QUESTION 919

Before installing a new, upgraded version of the IOS, what should be checked on the router, and which command should be used to gather this information? (Choose two)

- A. show running-config
- B. show version
- C. the version of the bootstrap software present on the router
- D. the amount of available ROM
- E. the amount of available flash and RAM memory
- F. show processes

Answer: B, E

Explanation:

To upgrade the IOS, the first two steps are:

1. Download the Cisco IOS software image to your workstation or PC.
2. Install the new Cisco IOS software image in the outbound directory of the TFTP server.

The TFTP server looks for the router's Cisco IOS software image in this directory. Make sure that the image you want to copy to your Flash is in this directory.

Check the memory requirements needed for the Software image being upgraded, which is mentioned in the Downloads download page. Using the show version command, verify that you have enough memory.

```
Router# show version
```

```
Cisco Internetwork Operating System Software
```

```
IOS (tm) C827-4V Software (C827V-Y6-M), Version 12.1(1)XB, EARLY
```

```
DEPLOYMENT RELE
```

```
ASE SOFTWARE (fc1)
```

```
Copyright (c) 1986-2000 by cisco Systems, Inc.
```

```
Compiled Mon 10-Apr-00 13:45 by phanguye
```

```
Image text-base: 0x80013170, data-base: 0x8067D780
```

```
ROM: System Bootstrap, Version 12.1(1r)XB1, RELEASE SOFTWARE (fc1)
```

```
Router uptime is 0 minutes
```

```
System returned to ROM by reload
```

```
System image file is "flash:c827v-y6-mz.121-1.XB"
```

```
CISCO C827-4V (MPC855T) processor (revision 0x502) with 15360K/1024K bytes of memory.
```

```
Processor board ID JAD043100FS (1979977378), with hardware revision 1987
```

```
CPU rev number 5
```

```
Bridging software.
```

```
4 POTS Ports
```

```
1 Ethernet/IEEE 802.3 interface(s)
```

```
1 ATM network interface(s)
```

```
128K bytes of non-volatile configuration memory.
```

```
8192K bytes of processor board System flash (Read/Write)
```

```
Configuration register is 0x2102
```

QUESTION 920

An administrator is configuring a router that will act as the hub in a Frame Relay hub-and-spoke topology. What is the advantage of using point-to-point subinterfaces instead of a multipoint interface on this router?

- A. Point-to-point subinterfaces offer greater security compared to a multipoint interface configuration.
- B. It avoids split-horizon issues with distance vector routing protocols.
- C. Only one IP network address needs to be used to communicate with all the spoke devices.
- D. Only a single physical interface is needed with point-to-point subinterfaces, whereas a

multipoint interface logically combines multiple physical interfaces.

Answer: B

Explanation:

Frame Relay supports two types of interfaces: point-to-point and multipoint. The one you choose determines whether you need to use the configuration commands that ensure IP address to data-link connection identifier (DLCI) mappings. After configuring the PVC itself, you must tell the router which PVC to use in order to reach a specific destination. Let's look at these options:

1. Point-to-point subinterface - With point-to-point subinterfaces, each pair of routers has its own subnet. If you put the PVC on a point-to-point subinterface, the router assumes that there is only one point-to-point PVC configured on the subinterface. Therefore, any IP packets with a destination IP address in the same subnet are forwarded on this VC. This is the simplest way to configure the mapping and is therefore the recommended method. Use the frame-relay interface-dlci command to assign a DLCI to a specified Frame Relay subinterface. On partially meshed Frame Relay networks, the problem of split horizon can be overcome by using point to point frame relay subinterfaces.
2. Multipoint networks - Multipoint networks have three or more routers in the same subnet. If you put the PVC in a point-to-multipoint subinterface or in the main interface (which is multipoint by default), you need to either configure a static mapping or enable inverse Address Resolution Protocol (ARP) for dynamic mapping.

QUESTION 921

How should a router that is being used in a Frame Relay network be configured to avoid split horizon issues from preventing routing updates?

- A. Configure a single sub-interface to establish multiple PVC connections to multiple remote router interfaces.
- B. Configure a separate sub-interface for each PVC with a unique DLCI and subnet assigned to the sub-interface.
- C. Configure many sub-interfaces on the same subnet.
- D. Configure each Frame Relay circuit as a point-to-point line to support multicast and broadcast traffic.

Answer: B

Explanation:

Point-To-Point Subinterfaces:

The concept of subinterfaces was originally created in order to better handle issues caused by split-horizon over Non-Broadcast Multiple Access (NBMA) networks (e.g. frame relay, X.25) and distance-vector based routing protocols (e.g. IPX RIP/SAP, AppleTalk). Split-horizon dictates that a routing update received on an interface cannot be retransmitted out onto the same interface. This rule holds even if the routing update was received on one frame relay PVC and destined to retransmit out onto another frame relay PVC. Referring to figure 2, this would mean that sites B and C can exchange

routing information with site A, but would not be able to exchange routing information with each other. Split-horizon does not allow Site A to send routing updates received from Site B on to Site C and vice versa.

Note: For TCP/IP, Cisco routers can disable split-horizon limitations on all frame relay interfaces and multipoint subinterfaces and do this by default. However, split-horizon cannot be disabled for other protocols like IPX and AppleTalk. These other protocols must use subinterfaces if dynamic routing is desired.

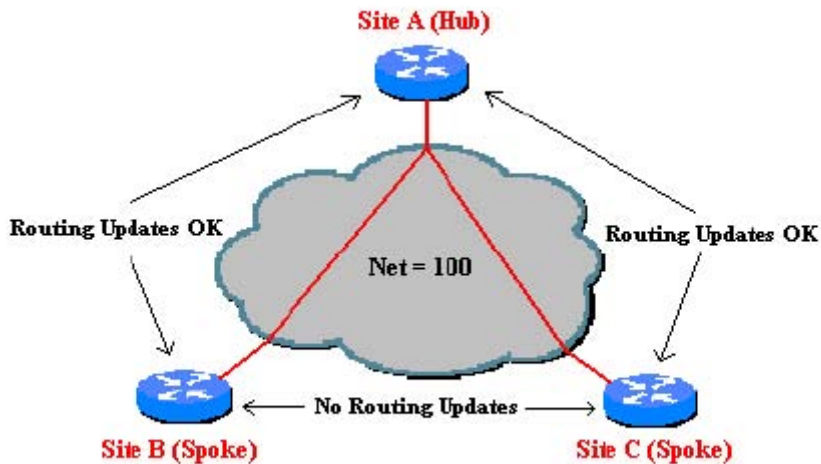


Figure 2: Split-horizon does not allow remote sites to send routing updates to each other.

By dividing the partially-meshed frame relay network into a number of virtual, point-to-point networks using subinterfaces, the split-horizon problem can be overcome. Each new point-to-point subnetwork is assigned its own network number. To the routed protocol, each subnetwork now appears to be located on separate interfaces (Figure 3). Routing updates received from Site B on one logical point-to-point subinterface can be forwarded to site C on a separate logical interface without violating split horizon.

QUESTION 922

DRAG DROP

Drag the security features on the left to the specific security risks they help protect against on the right. (Not all options are used).

Select from these	Place here
access-group	remote access to device console
console password	access to the console 0 line
enable secret	access to connected networks or resources
CHAP authentication	viewing of passwords
VTY password	access to privileged mode
service password-encryption	

Answer:

Place here

VTY password

console password

access-group

service password-encryption

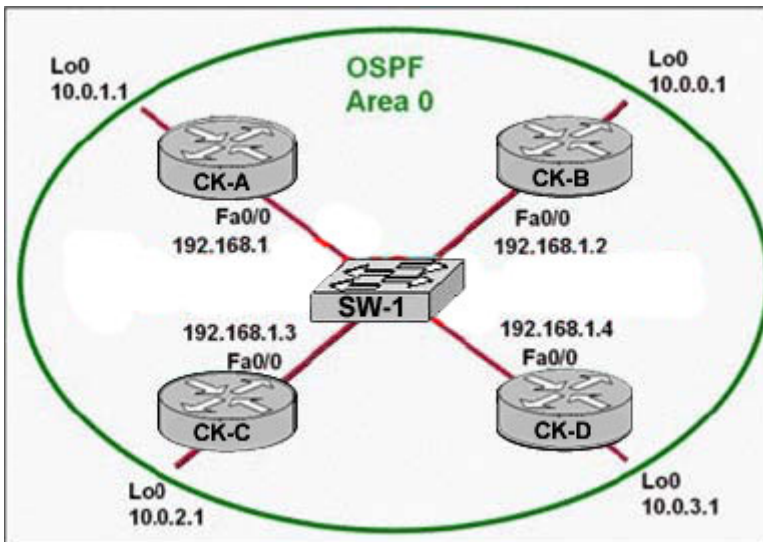
enable secret

QUESTION 923

Exhibit:

Please study the exhibit carefully. Which two statements are true about the loopback address that is configured on CK-B? (Choose two.)

Exhibit:



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

Answer: B, E

Explanation:

A loopback interface is virtual in nature, and thus will never go down as long as the router is powered on. It doesn't rely on any physical network or cable to be plugged in. This makes it a prime choice for any good reference point. That brings us to the "why" about using it.

When OSPF routers talk to one another, they all identify themselves. That is done by a RID, or Router ID value. An OSPF router may talk to many neighbors out multiple interfaces, but it only has one Router ID it uses for all conversations.

How does a router choose its identifier? Well, there are a couple ways. Typically, the router chooses its highest IP address of all physical interfaces. However, if there's a loopback interface (seen as a manual intervention), the OSPF process will always use the loopback address as its RID value.

In this network, stability is ensured for CK-B as it will not become the DR or the BDR because the other routers will have a higher router ID since they have a higher loopback IP address. The DR/BDR election process is as follows:

A designated router (DR) is the router elected by the network by elections. The DR is elected based on the following default criteria:

- * If the priority setting on a OSPF router is set to 0, that means it can NEVER become a DR or BDR.
- * When a DR fails and the BDR takes over, there is another election to see who becomes the replacement BDR.
- * The router sending the Hello packets with the highest priority.
- * If two or more routers tie with the highest priority setting, the router sending the Hello with the highest RID (Router ID) wins.
- * (NOTE) A RID is the highest logical (loopback) IP address configured on a router, if no logical/loopback IP address is set then the Router uses the highest IP address configured on its interfaces. (e.g. 192.168.0.1 would be higher than 10.1.1.2)
- * Usually the router with the second highest priority number becomes the BDR (Backup Designated Router)
- * The range of priority values range from 1 - 255, with a higher value increasing its chances of becoming DR or BDR.
- * IF a HIGHER priority OSPF router comes online AFTER the election has taken place, it will not become DR or BDR until (at least) the DR and BDR fail.

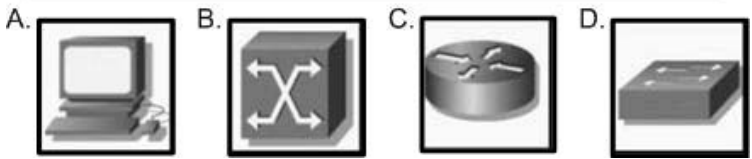
QUESTION 924

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

Exhibit:

```

Sw1-2960#show mac-address-table
Mac Address Table
-----
Vlan  Mac Address      Type      Ports
----  -
All   0014.a8a8.8780    STATIC    CPU
All   0100.0ccc.cccc    STATIC    CPU
All   0100.0ccc.cccd    STATIC    CPU
All   0100.0cdd.dddd    STATIC    CPU
1     0001.af07.ad76    DYNAMIC   Fa0/7
1     0001.e640.3b4b    DYNAMIC   Fa0/23
1     0001.e640.4b2b    DYNAMIC   Fa0/23
1     0001.e658.63ea    DYNAMIC   Fa0/23
1     0002.fde1.6acb    DYNAMIC   Fa0/14
1     0004.0077.7179    DYNAMIC   Fa0/23
1     0005.32a9.9c97    DYNAMIC   Fa0/23
1     0006.5b88.dfc4    DYNAMIC   Gi0/2
1     0006.5bdd.736d    STATIC    Fa0/9
1     0006.5bdd.6eb5    DYNAMIC   Fa0/5
1     0006.5bdd.6fee    DYNAMIC   Fa0/23
1     0006.5bdd.7027    DYNAMIC   Fa0/23
1     0006.5bdd.72fd    DYNAMIC   Fa0/23
1     0006.5bdd.7425    DYNAMIC   Fa0/23
1     0006.5bdd.74b5    DYNAMIC   Fa0/23
1     0006.5bdd.7027    DYNAMIC   Fa0/23
1     0006.5bdd.7027    DYNAMIC   Fa0/23
1     0006.5bdd.72fd    DYNAMIC   Fa0/23
1     0006.5bdd.7425    DYNAMIC   Fa0/23
1     0001.1f16.be89    DYNAMIC   Fa0/23
1     000f.1f16.bea2    DYNAMIC   Fa0/23
1     000f.1f16.bfe6    DYNAMIC   Fa0/23
1     000f.8f20.b7b5    DYNAMIC   Fa0/18
1     0010.22fe.466b    DYNAMIC   Fa0/6
1     0010.22fe.4ad8    DYNAMIC   Fa0/23
1     0010.4b08.194b    DYNAMIC   Fa0/23
1     0010.4bca.7ee4    DYNAMIC   Fa0/23
1     0010.5a04.3faa    DYNAMIC   Fa0/3
1     0010.5a0a.8567    DYNAMIC   Fa0/14
1     0010.7be7.fae7    DYNAMIC   Fa0/14
1     0011.1165.8acf    DYNAMIC   Fa0/23
1     0013.720b.40c3    DYNAMIC   Fa0/19
1     0014.f26e.ed8e    DYNAMIC   Fa0/23
1     0014.f26e.edb5    DYNAMIC   Fa0/23
1     0020.afe8.b95c    DYNAMIC   Fa0/23
1     0040.9654.49bb    DYNAMIC   Fa0/2
1     0050.049b.371b    DYNAMIC   Fa0/23
1     0060.088d.5551    DYNAMIC   Fa0/2
1     0080.9120.1766    DYNAMIC   Fa0/8
1     0090.96ae.4f94    DYNAMIC   Fa0/18
1     0090.96ae.6151    DYNAMIC   Fa0/18
1     00a0.c949.702a    DYNAMIC   Fa0/15
1     00b0.d020.d4fb    DYNAMIC   Fa0/23
1     00c0.4f79.72b8    DYNAMIC   Fa0/23
1     0050.049b.371b    DYNAMIC   Fa0/22
1     0060.088d.5551    DYNAMIC   Fa0/21
1     0080.9120.1766    DYNAMIC   Fa0/20
1     0090.96ae.4f94    DYNAMIC   Fa0/17
Total: 55 Addresses for this criterion: 55
<output continued>
Sw1-2960#
  
```

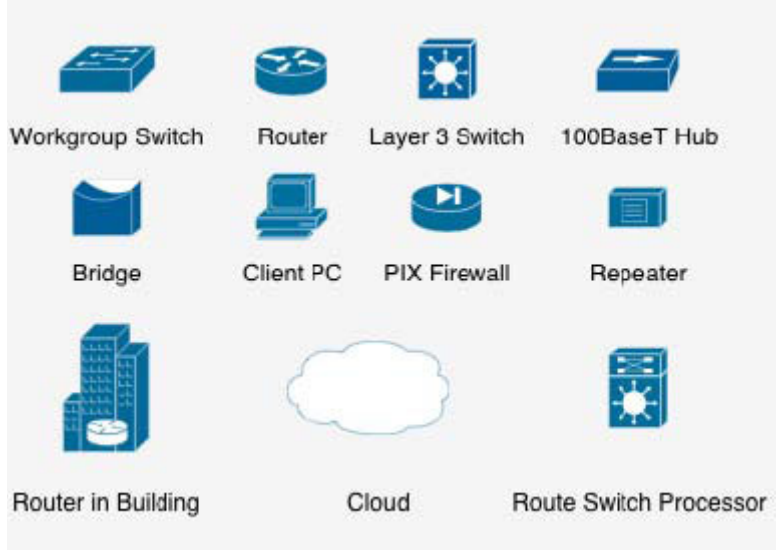


- A. Picture A
- B. Picture B
- C. Picture C
- D. Picture D

Answer: D

Explanation:

Some of the common Cisco symbols are shown below:



Note: Choice B in this question represents an ATM switch, which is not pictured above. From the output shown in this question, we can see that there a numerous different MAC

addresses associated with port Fa 0/23. This can only mean that a device with multiple hosts attached to it is plugged into this port, such as a hub or another switch.

QUESTION 925

DRAG DROP

Drag the options on the left under the type of switch port that they describe on the right.

carries traffic for a single VLAN	Access Port Place here Place here Place here
Facilitates interVLAN communication when connected to a Layer 3 device	
Connects an end-user workstation to a switch	
Carries traffic for multiple VLANs	Trunk Port Place here Place here Place here
Uses 802.1q to identify traffic from different VLANs	
Uses a straight-through cable to connect a device	

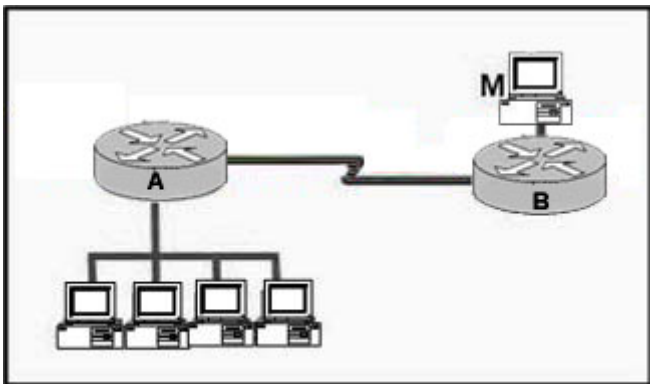
Answer:

Access Port
carries traffic for a single VLAN
Connects an end-user workstation to a switch
Uses a straight-through cable to connect a device

Trunk Port
Facilitates interVLAN communication when connected to a Layer 3 device
Carries traffic for multiple VLANs
Uses 802.1q to identify traffic from different VLANs

QUESTION 926

Refer to the exhibit below:



In this network, an administrator on workstation M uses Telnet to log in to the command line interface of router

A. The administrator wishes to discover

information about active workstations on the LAN attached to router A, including their IP and MAC addresses. Which command will provide this information?

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

Answer: C

Explanation:

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

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

```
CK1 # show ip arp
Protocol Address Age(min) Hardware Addr Type Interface
Internet 172.16.233.22 9 0000.0c59.f892 ARPA Ethernet0/0
Internet 172.16.233.21 8 0000.0c07.ac00 ARPA Ethernet0/0
Internet 172.16.233.19 - 0000.0c63.1300 ARPA Ethernet0/0
Internet 172.16.233.30 9 0000.0c36.6965 ARPA Ethernet0/0
```

Reference:

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

QUESTION 927

Which of one the following fields is contained within an IEEE Ethernet frame header?

- A. source and destination MAC address
- B. source MAC address and destination network address only
- C. source and destination network address only
- D. source network address and destination MAC address
- E. source and destination MAC address and source and destination network address

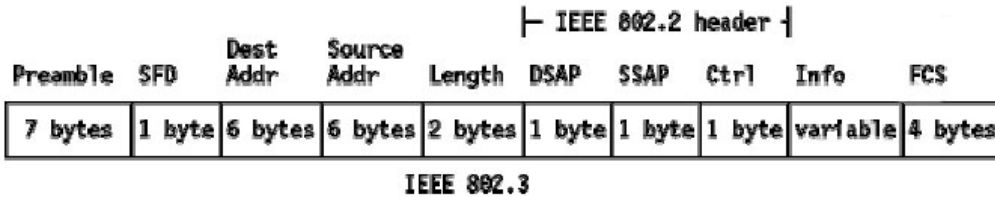
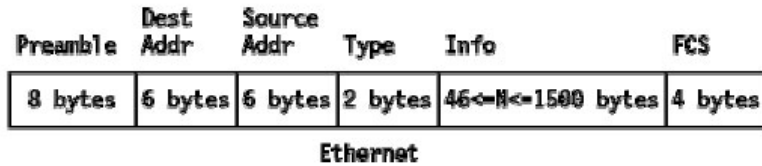
Answer: A

Explanation:

Two frame formats can be used on Ethernet:

1. The standard issued in 1978 by Xerox Corporation, Intel Corporation and Digital Equipment Corporation, usually called Ethernet (or DIX Ethernet).
2. The international IEEE 802.3 standard, a more recently defined standard.

The difference between the two standards is in the use of one of the header fields, which contains a protocol-type number for Ethernet and the length of the data in the frame for IEEE 802.3.



As shown in the diagram above, the only address that IEEE Ethernet frame headers contain are the source and destination MAC addresses.

Reference: <http://www.auggy.mlnet.com/ibm/3376c28.html>

QUESTION 928

Which frame field do error detection schemes view to perform their function?

- A. ERR
- B. Flag
- C. FCS
- D. MTU
- E. MAC
- F. PDU

Answer: C

Explanation:

Most data-link protocols include a FCS (frame check sequence) or a CRC (Cyclical redundancy check) field in the data-link trailer. This field contains a value that is the result of a mathematical formula applied to the data in the frame, which is applied check for any errors that may have occurred during the transport.

Reference: CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 51.

QUESTION 929

Error detection schemes check errors in the data packets by reading which field frame IDs?

- A. MTU
- B. PDU
- C. FCS
- D. Flag
- E. MAC
- F. BRI

Answer: C

Explanation:

Frame Check Sequence (FCS) field

Ethernet uses a Cyclic Redundancy Check (CRC) algorithm to detect transmission errors.

The Frame Check Sequence field is filled (using a CRC) by the sending host. If the receiving host detects a wrong CRC, it will throw away that packet.

Incorrect Answers:

A. MTU is the Maximum Transmission Unit, which is set to 1500 bytes by default for ethernet packets.

B, D. This is not part of the data packet.

E. This is the Media Access Control, which is used most often to describe the layer 2 physical address of a device.

F. BRI is related to an ISDN connection, describing a circuit with 2 bearer channels and a single data channel. It has absolutely nothing to do with error correction in a data packet.

QUESTION 930

Regarding PAR (Positive Acknowledgement and Re-transmission), which of the answer choices below are correct? (Select all that apply.)

A. The source device will only retransmit lost packets on the request of the destination device.

B. The source device starts a timer when it sends a segment and retransmits if an acknowledgment is not received before the timer expires.

C. The destination device acknowledges receipt of a segment by sending a packet with a new sequence number and the ACK bit sent.

D. The destination device acknowledges receipt of a segment by sending a packet that indicates the next sequence number it expects.

E. If the destination device does not receive a segment, all segments are retransmitted.

F. The source device keeps a record of all segments sent and expects and acknowledgment of each.

Answer: B, D, F

Explanation:

Answer B: The sender sets a re-transmission timer, awaiting acknowledgement, just in case the acknowledgement is lost, or in call all the transmitted segments are lost.

Answer D: The client will reply with an acknowledgement that requests for the next sequence number.

Answer F: The only way to know that it has sent the certain sequence number by keeping a record of it.

Incorrect Answers:

A. This is not true, as this would cause problems if the acknowledgement was lost in transmission. In a PAR transmission, the sender uses a timer system to resend the data if

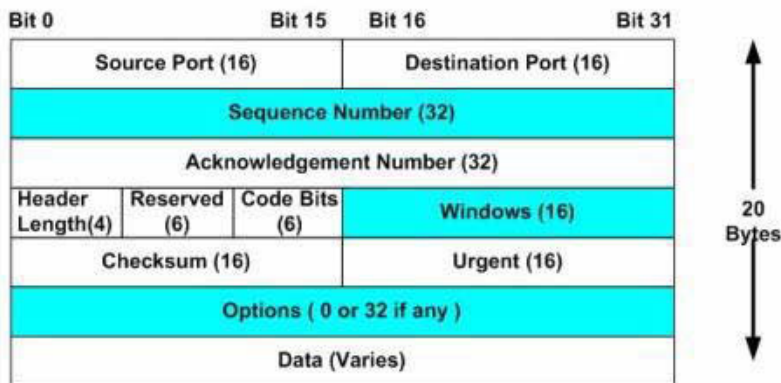
not acknowledged in a timely manner.

C. The receiver sends the next expected sequence number to the sender, not a randomly chosen new sequence number.

E. Only data within the window that is missing the acknowledgement will be resent. All data within the window size will be retransmitted, but not all data in the entire segment.

QUESTION 931

Study the following exhibit:



The exhibit above is representative of which of the following data structures?

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

Answer: E

Explanation:

This diagram represents a TCP segment. TCP is a connection oriented protocol, which means it sends the data according to the sliding window algorithm, and uses acknowledgements. The diagram above shows the areas where windows and acknowledgement numbers are used. UDP data structures do not use these fields.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) page 151.

QUESTION 932

What term is used to describe the process where one frame is placed into a different type of frame?

- A. Framing
- B. De-encapsulation
- C. Encapsulation
- D. De-framing

E. None of the above

Answer: C

Explanation:

Encapsulation is defined as: "The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the physical layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), and followed by the application protocol data."

When a frame is placed inside another frame it is know as encapsulation. To restore the frame to its original state is de-encapsulation.

QUESTION 933

A PC on a network segment sends data to another PC on a different segment.

Which of the following correctly describe the correct order of how this data will be encapsulated?

- A. Data, Frame, Packet, Segment, Bit
- B. Data, Frame, Segment, Packet, Bit
- C. Data, Packet, Frame, Segment, Bit
- D. Data, Packet, Segment, Frame, Bit
- E. Data, Segment, Frame, Packet, Bit
- F. Data, Segment, Packet, Frame, Bit

Answer: F

Explanation:

Data Encapsulation steps:

Step 1 Create the application data and headers

* Data

Step 2 Package the data for transport

* Segment

Step 3 Add the destination and source network layer addresses to the data

* Packet

Step 4 Add the destination and source data link layer addresses to the data

* Frame

Step 5 Transmit the bits

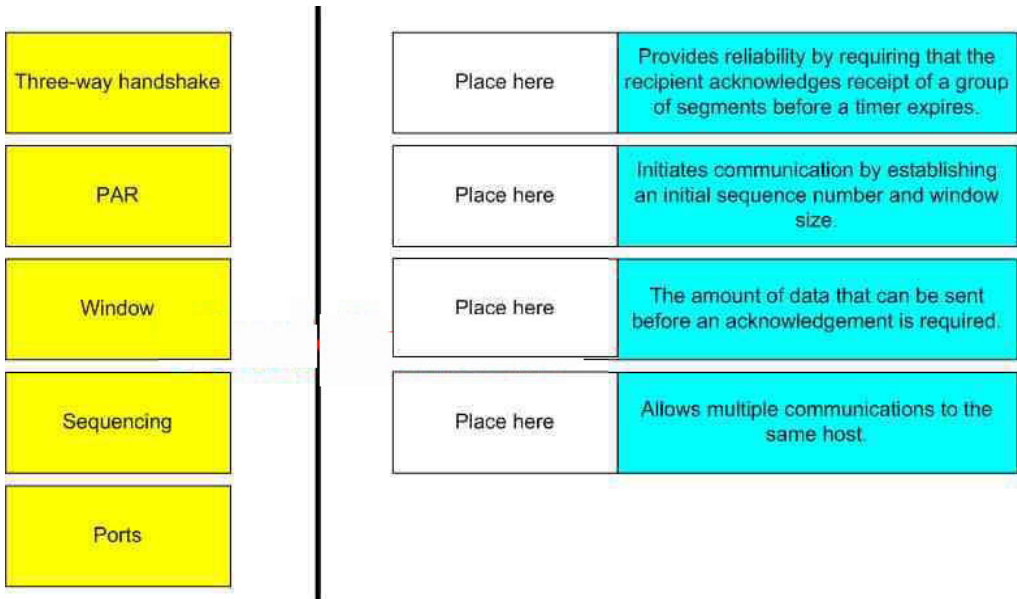
* Bit

QUESTION 934

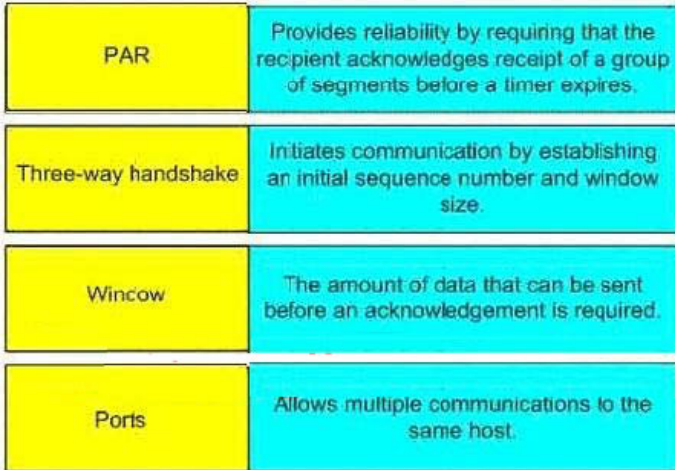
DRAG DROP

Classify terms on the left hand side with their associated descriptions on the right hand side. (Not all of the answer choices are used)

640-801



Answer:



QUESTION 935

The command "ip route 192.168.24.64 255.255.255.192 192.168.8.2 100" was configured on a router named CK1 . No routing protocols or other static routes are configured on the Corporate router yet.

Based on this information, which statement is true about this command?

- A. This command sets a gateway of last resort for the CK1 router.
- B. The number 100 indicates the number of hops to the destination network.
- C. The interface with IP address 192.168.8.2 is on the CK1 router.
- D. The command creates a static route for all IP traffic with the source address 192.168.24.64.
- E. Packets destined for host 192.168.24.124 will be sent to 192.168.8.2.
- F. None of the above

Answer: E

Explanation:

This configuration command will establish a static route, where all traffic destined to the 192.168.64/26 network will be sent to the next hop router that has the 192.168.8.2 IP address. The value of 100 at the end of the static route means that the administrative distance of 100 will be assigned to the route. By default, static routes have an AD of 1. In this case, it is much higher but all traffic to this destination will still be used by this route since no other routes exist in CK1 .

Incorrect Answers:

- A. The default route is also called the "all 0's" route since it is set with the "ip route 0.0.0.0 0.0.0.0" command.
- B. The value of 100 is used to set the administrative distance, not the number of hops.
- C. The IP address set in a static route is used for the next hop router, not the local router.
- D. Static routes are used to tell the router how and where to forward traffic that is destined for particular networks, not for traffic that is sourced from networks.

QUESTION 936

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

- A. It ensures that data is retransmitted if an acknowledgment is not received.
- B. It reassembles segments in the correct order on the destination device.
- C. It provides a mechanism for the receiver to control the transmission speed.
- D. It regulates the size of each datagram segment.
- E. All of the above are functions of flow control

Answer: C

Explanation:

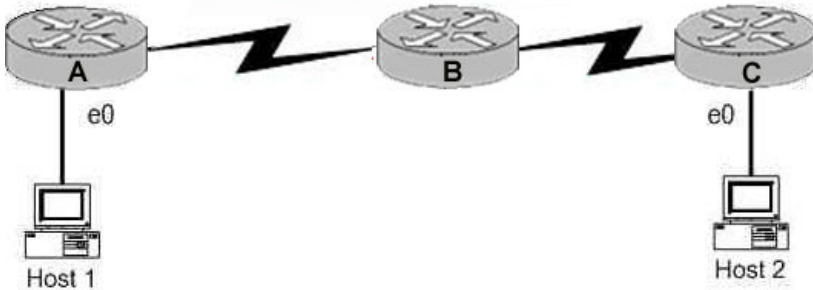
Flow control paces the transmission of data between a sending device and a receiving device. Flow control ensures that the receiving device can absorb the data sent to it before the sending device sends more. When the buffers on the receiving device are full, a message is sent to the sending device to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

Incorrect Answers:

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

QUESTION 937

Three different Certkiller routers are connected as shown below:



Host 1 is trying to communicate with Host 2. The e0 interface on Router C is down. Which of the following are true? (Choose two)

- A. Router C will use ICMP to inform Host 1 that Host 2 cannot be reached.
- B. Router C will use ICMP to inform Router B that Host 2 cannot be reached.
- C. Router C will use ICMP to inform Host 1, Router A, and Router B that Host 2 cannot be reached.
- D. Router C will send a Destination Unreachable message type.
- E. Router C will send a Router Selection message type.
- F. Router C will send a Source Quench message type.

Answer:

A. D

Explanation:

When a packet reaches a router that is destined for a network that is not in the routing table or for a network that is down, the router will send an ICMP destination unreachable message back to the sender. This informs the sending station that the packet could not be forwarded to the destination, and this information will be sent to the sending station, not to the router.

QUESTION 938

A router receives a packet on interface 172.16.45.66/26. The source IP of the packet is 172.16.45.127/26 and the destination is 172.16.46.191/26. How will the router handle the packet?

- A. The destination is a host on another subnet, so the router will not forward the packet.
- B. The destination is a host on the same subnet, so the router will forward the packet.
- C. The destination is a broadcast address, so the router will not forward the packet.
- D. The destination is a network address, so the router will forward the packet.

Answer: C

Explanation:

/26 means 2-bits of subnetting. There will be 4 subnets having 64 hosts in each subnet.

Subnets will be

172.16.46.0 ----- 172.16.46.63 (0-63)

172.16.46.64 ----- 172.16.46.127 (64-127)

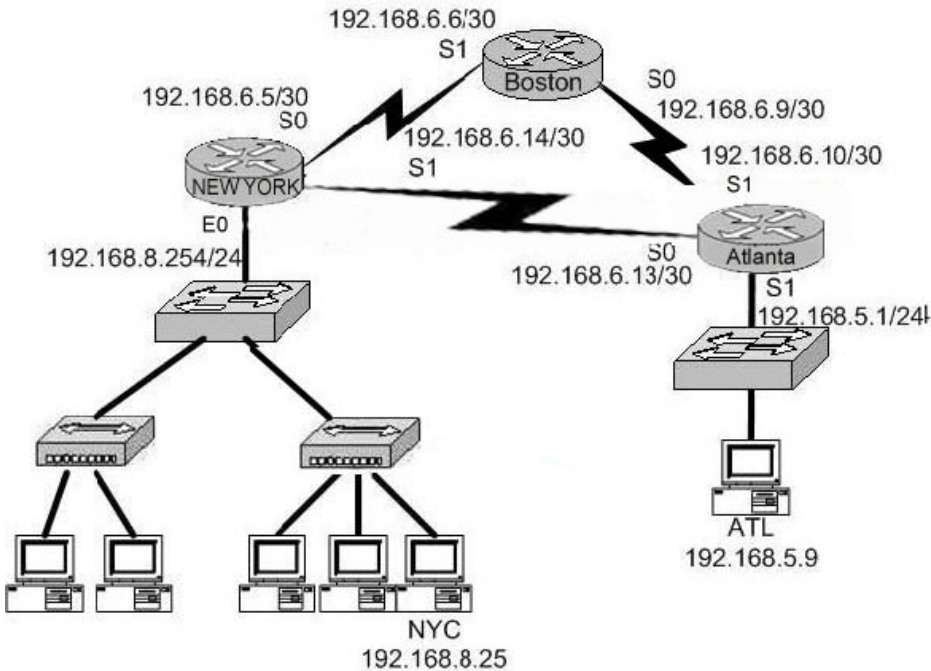
172.16.46.128 ----- 172.16.46.191 (128-191)

172.16.46.192 ----- 172.16.46.255 (192-255)

The destination address is 172.16.46.191 which indicates a BROADCAST address so, router will not process this broadcast.

QUESTION 939

The Certkiller EIGRP network is shown below:



The internetwork shown in the graphic is using the EIGRP routing protocol. What will be the destination address of a packet destined for host NYC as it leaves the ATLANTA router?

- A. 192.168.6.5
- B. 192.168.6.6
- C. 192.168.6.9
- D. 192.168.6.14
- E. 192.168.8.25
- F. 192.168.8.254

Answer: E

Explanation:

In case of Routing Source and Destination IP Addresses never change, so a packet destined to NYC will always have 192.168.8.25 as a destination IP Address.

QUESTION 940

What does an Ethernet switch do when it receives a frame? (Choose two.)

- A. If the switch does not have an entry in its switching table for the source MAC address

in the frame, the switch adds the MAC address to the switching table for the incoming switch port.

B. If the switch does not have an entry in its switching table for the source MAC address in the frame, the switch does not detect this because the switch examines only the destination MAC address in the frame for forwarding purposes.

C. If the switch does not have an entry in its switching table for the destination MAC address of the frame, the switch floods an ARP request out all its ports. When the ARP reply is received, the switch adds the MAC address to its switching table and forwards the frame out the appropriate port.

D. If the switch does not have an entry in its switching table for the destination MAC address in the frame, the switch floods the frame out all ports except the port the frame arrived on. It does not add the destination MAC address to its switching table.

Answer: A, D

Explanation:

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

Step 1 A frame is received.

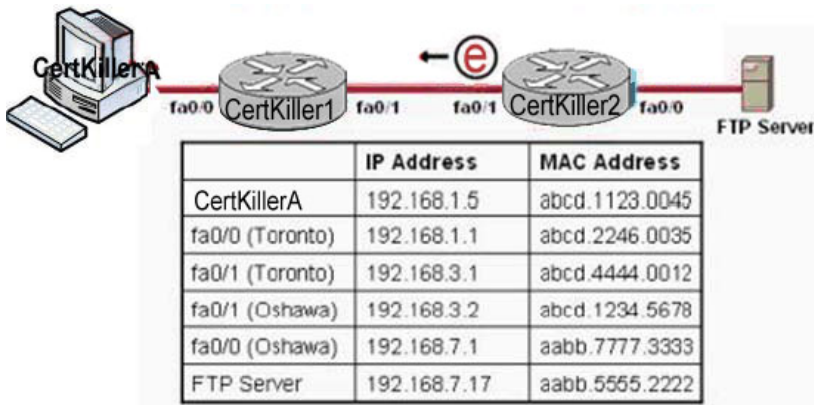
Step 2 If the destination is a broadcast or multicast, forward on all ports.

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

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

QUESTION 941

Exhibit:



Please study the exhibit carefully. HostB is sending a file to Host A. B represents the frame as it leaves the Oshawa router. What is the Layer 2 destination address of the frame at this point?

- A. aabb.5555.2222
- B. abcd.2246.0035
- C. abcd.1234.5678
- D. abcd.1123.0045
- E. abcd.4444.0012

Answer: E

Explanation:

The IP address does not change because it is global, BUT the MAC address does indeed change when traffic crosses a router.

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

QUESTION 942

What will Certkiller Ethernet switch do if it receives a unicast frame with a destination MAC that is NOT listed in the switch table?

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

Answer: E

Explanation:

As a frame comes into a switch, the switch saves the originating MAC address and the originating (hardware) port in the switch's MAC address table. This table often uses content-addressable memory, so it is sometimes called the "CAM table". The switch then selectively transmits the frame from specific ports based on the frame's destination MAC address and previous entries in the MAC address table. If the destination MAC address is unknown, for instance, a broadcast address or (for simpler switches) a multicast address, the switch simply transmits the frame out of all of the connected interfaces except the incoming port. If the destination MAC address is known, the frame is forwarded only to the corresponding port in the MAC address table. If the destination port is the same as the originating port, the frame is filtered out and not forwarded.

QUESTION 943

Refer to the exhibit below. How will this router handle a packet destined for 192.0.2.156?

Exhibit:

```

router# show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
U - per-user static route, o - ODR

Gateway of last resort is 192.168.4.1 to network 0.0.0.0

10.0.0.0/24 is Subtracted, 3 subnets
C 10.0.2.0 is directly connected, Ethernet1
D 10.0.3.0 [90/2195456] via 192.168.1.2, 00:03:01, Serial0
D 10.0.4.0 [90/2195456] via 192.168.3.1, 00:03:01, Serial1
C 192.168.1.0/24 is directly connected, Serial0
D 192.168.2.0/24 [90/2681856] via 192.168.1.2, 00:03:01, Serial0
  [90/2681856] via 192.168.3.1, 00:03:01, Serial1
C 192.168.3.0/24 is directly connected, Serial1
C 192.168.4.0/24 is directly connected, Serial2
    
```

- A. The router will drop the packet.
- B. The router will return the packet to its source.
- C. The router will forward the packet via Serial2.
- D. The router will forward the packet via either Serial0 or Serial1.

Answer: C

Explanation:

In this example, there is not explicit routing entry for this destination IP address, so the gateway of last resort will be used. Here we can see that the gateway of last resort is 192.168.4.1, which means that all traffic to unknown destinations will be forwarded out the interface with that IP address. The last entry in the table shows that this network is directly connected via interface Serial 2, so the router will forward the packet out this interface.

QUESTION 944

Exhibit:

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

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

Exhibit:

- A. The local host has received 42,335 bytes from the remote host as a part of this conversation.
- B. The source host is a Telnet server.
- C. The Layer 2 address of the source host is 192.168.14.2.

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

Answer: D

Explanation:

In this example, we know that this is a TCP segment, since there are the SYN and ACK fields present. We also know that this traffic is telnet, as the destination port is 23 and telnet uses TCP port 23. Finally, we can also see that this TCP segment is an initial one, as the SYN bit is set.

Incorrect Answers:

A: The 42335 value shown in the source section is the source port, which is normally a randomized value. It has nothing to do with the number of bytes sent or received.

B: We know that the destination host is a telnet server, not the source host.

C: 192.168.14.2 is the layer 3 IP address, not the layer 2 MAC address.

QUESTION 945

Which WAN service utilizes two different encapsulation types (one for data and one for signaling) on its data link layer?

- A. ISDN
- B. Frame Relay
- C. ATM
- D. FDDI

Answer: A

Explanation:

ISDN uses "out-of-band" signaling, which means that the clocking is done on the "D" (data) channel and not the same channels as the actual data. ISDN BRI circuits are also referred to as 2B+1D circuits, as they use 2 64 kbps channels as the bearer channels, and one 16 kbps D channel which is used for the signaling.

Incorrect Answers:

B. Frame Relay uses only one type of encapsulation for the data and LMI as the connection identifier for each circuit.

C. ATM uses a uniform, 53 byte cell format for data transmission.

D. FDDI is a legacy network standard, normally used in LAN environments, not as a WAN. It also does not utilize multiple encapsulation types.

QUESTION 946

In Frame Relay; what is the purpose of Inverse ARP? (Select only one answer choice)

- A. It is used to map a known IP address to a MAC address
- B. It is used to map a known DLCI to a MAC address
- C. It is used to map a known MAC address to an IP address
- D. It is used to map a known DLCI to an IP address

E. It is used to map a known MAC address to DLCI

Answer: D

Explanation:

Just as ARP resolves IP addresses to MAC addresses, Inverse ARP maps a known DLCI to an IP address.

Incorrect Answers:

A, C: ARP and Reverse ARP (RARP) are used for IP address/MAC address mappings.

B, E: DLCI do not have a need to discover the MAC address of a host, so a DLCI is never mapped to a MAC address.

QUESTION 947

What are some common layer 2 encapsulations for a WAN link? (Select all the appropriate answer choices)

- A. Ethernet
- B. PPP
- C. Token Ring
- D. HDLC
- E. Frame Relay
- F. POTS

Answer: B, D, E

Explanation:

WAN data-link protocols used on point-to-point serial links provide the basic function of data delivery across that one link. The two most popular WAN data-link protocols are High-Level Data Link Control (HDLC) and PPP. A very popular WAN is frame relay, which is less expensive than dedicated point to point serial links, and is usually set up in a hub and spoke environment using a series of virtual circuits.

Reference:

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

Incorrect Answers:

A, C: Ethernet and Token ring networks are used in Local Area Networks, not in Wide Area Networks (although this is changing as the use of metro and long haul Ethernet links become more popular and cost-effective).

F. POTS stands for the "plain old telephone service." Although the use of phone lines and modems have been used to connect computers together over long distances for years, POTS is not a layer 2 encapsulation type. In fact, many phone line data connections use PPP as the layer 2 encapsulation type.

QUESTION 948

Which of the following correctly describe characteristics of PPP? (Select all valid answer choices)

- A. Encapsulates several different types of routing protocols.
- B. Supports only IP.
- C. Can be used over analog circuits.
- D. Is proprietary to Cisco
- E. Supports error correction.

Answer: A, C

Explanation:

Characteristics of PPP:

* PPP can be used on either type of line (dial or switched lines), because data-link protocols are designed for point-to-point environment.

* PPP uses one LCP per link and one Control Protocol for each Layer 3 protocol defined on the link. If a router is configured for IPX, Apple Talk, and IP on a PPP serial link, the router configured for PPP encapsulation automatically tries to bring up the appropriate control protocols for each layer 3 protocol.

Incorrect Answers:

B. PPP can be used to support any higher layer protocol, including IP, IPX, Appletalk, etc.

D. PPP is an industry standard used in point to point data networks. The Cisco proprietary method that is similar to PPP is HDLC.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 309

QUESTION 949

Which one of the WAN data-link protocols below is used for out-of-band signaling?

- A. HDLC
- B. NCP
- C. PAP
- D. LAPD
- E. LAPB
- F. None of the above

Answer: D

Explanation:

Out-of-band signaling is telecommunication signaling (exchange of information in order to control a telephone call) that is done on a channel that is dedicated for the purpose and separate from the channels used for the telephone call. An example of this is the D channel on an ISDN BRI circuit. LAPD is used by ISDN lines for signaling to set up and bring down circuits. LAPD is formally defined in Q.921.

QUESTION 950

You are preparing to create a point to point WAN by connecting a Cisco router with a Juniper router by way of their serial links. Which one of the following commands would you use?

- A. CK1 (config-if)# encapsulation hdlc ansi
- B. CK1 (config-if)# encapsulation ppp
- C. CK1 (config-if)# encapsulation LAPD
- D. CK1 (config-if)# encapsulation frame-relay ietf
- E. CK1 (config)#encapsulation ppp

Answer: B

Explanation:

PPP is the best encapsulation type to use, when connecting routers of different manufacturers, because PPP is non proprietary (unlike HDLC). PPP is an industry standard layer 2 encapsulation type that is supported by every router manufacturer.

Incorrect Answers:

- A. HDLC is a cisco proprietary method of encapsulation for connecting a point to point connection. Although HDLC has become so popular that many other router vendors also support it, HDLC ANSI is not an option that can be used.
- C. LAPD is used as an out of band signaling protocol on connections such as ISDN. It is not a choice that can be made in this case.
- D. This would be the correct choice if the connection was a frame relay connection, instead of a leased line connection. The ietf keyword is needed for connecting frame links to routers that are non-cisco.
- E. This command needs to be placed in interface configuration mode, not in global configuration mode.

QUESTION 951

Which WAN technology was designed to give homes and small business high speed digital dial-up service over already existing communication infrastructure?

- A. X25
- B. Frame Relay
- C. ATM
- D. ISDN
- E. ATX
- F. None of the above

Answer: D

Explanation:

ISDN stands for Integrated Services Digital Network, precisely because it was designed to be integrated with current digital telephone services. It was originally designed to

bring relatively high speed voice and data services to home users, as well as corporate users.

Note: This question is obviously a bit dated, as a better choice in today's marketplace would be DSL, which also provides even higher speeds over the existing telephone infrastructure.

QUESTION 952

A new asynchronous connection is being installed in your network. Which pair of WAN encapsulations types is suitable for asynchronous lines?

- A. PPP and ATM
- B. PPP and SDLC
- C. ATM and HDLC
- D. SDLC and HDLC

Answer: A

Explanation:

By now you should know that PPP is very feature rich, and it supports asynchronous communication. It is the encapsulation type for ISDN and modems, as well as point to point serial connections.

ATM stands for Asynchronous Transfer Mode, so by its name alone you know that it is good for an asynchronous connection. ATM has a lot in common with Frame Relay, but it works with SONNET on the layer 1 level, and uses a uniform sized 53 byte cell for all communications.

In

Answer:

C, D: These are both incorrect because they contain HDLC, and HDLC only supports synchronous links.

B: This is incorrect because it contains SDLC, which stands for Synchronous Data Link Control. Obviously, the name alone should tell you that it does not support asynchronous data lines.

References:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Pages 308-317

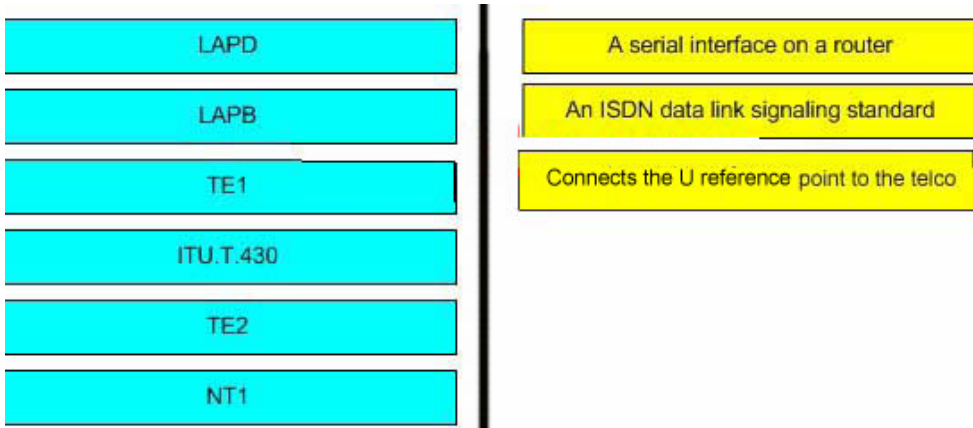
CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 101-103

QUESTION 953

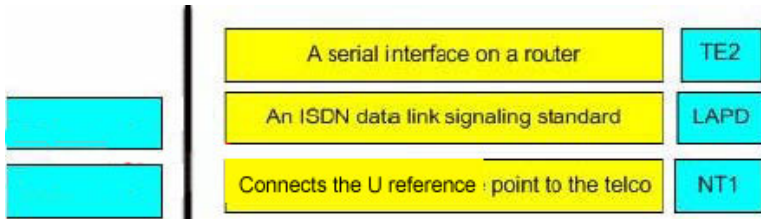
DRAG DROP

Classify the ISDN terms on the right hand side to their corresponding description on the left side. (Not all the options on the left will be used)

640-801



Answer:



Explanation:

* LAPD - provides the data link protocol that allows delivery of messages across that D-channel to the local switch.

* LAPB - Protocol and is designed primarily to satisfy the signaling requirements of ISDN basic access. It is defined by ITU-T Recommendations Q.920 and Q.921.

* TE1 - ISDN -capable four-wire cable. Understands signaling and 2B=D. Uses an S reference point.

* ITU.T.430 - Defines connectors, encoding, framing, and reference points.

*

TE2 - Equipment that does not understand ISDN protocols and specifications (no ISDN awareness). Uses an R reference point, typically an RS-232 or V.35 cable, to connect to a TA.

* NT1 - CPE equipment in North America. Connects with a U reference point (two-wire) to the Telco.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page Chapter 10.

QUESTION 954

You have a single ISDN BRI B channel. What is its maximum bandwidth capacity of this one channel?

- A. 16kb/s
- B. 64kb/s
- C. 128kb/s
- D. 144kb/s
- E. 192kb/s
- F. 256kb/s

Answer: B

Explanation:

A single ISDN BRI B channel only has a maximum bandwidth of 64kbps. You need two of them together just to get 128kbps. A complete ISDN circuit is 2B+1D, with 2 64kbps B channels and one 64 kbps D channel.

QUESTION 955

Which of the following are correct regarding ISDN? (Select all that apply)

- A. Legacy DDR can use port information to define interesting traffic.
- B. Legacy DDR can configure multiple dialer configurations on the same interface.
- C. Legacy DDR can use ACLs to define interesting traffic.
- D. HDLC or PPP can be used to encapsulate ISDN D channel information.
- E. The BRI interfaces on ISDN routers with dialer profiles configured cannot belong to multiple dialer pools.
- F. Dialer profiles cannot use extended ACLs to define interesting traffic.

Answer: A, B, C

Explanation:

Dialer profiles separate logical configurations from the physical interfaces that receive or make calls. Because of this separation, interfaces such as ISDN, asynchronous modems, or synchronous serial connections can be shared by multiple dialer profile configurations. Dialer profiles allow logical and physical configurations to be bound together dynamically on a per call basis, allowing physical interfaces to take on different characteristics based on incoming or outgoing call requirements. Dialer profiles can define encapsulation, access control lists, minimum or maximum calls, and toggle features on or off. Dialer profiles are particularly useful where multiple ISDN B channels are to be used to connect to multiple remote destinations simultaneously. In such a case, one dialer profile can be bound to one set of B channels while another dialer profile can be bound to another set of B channels, thus allowing the same physical interface to connect to multiple remote destinations simultaneously.

Interesting traffic can be defined using both standard and extended access lists, meaning that information from layer 3 addresses and layer 4 ports can be utilized.

Incorrect Answers:

- D. HDLC is not a valid option for ISDN connections.
- E. This statement is incorrect. Dialer profiles can indeed be used with multiple dialer pools.
- F. Any type of access list can be used to define the interesting traffic. Interesting traffic can be defined using both standard and extended access lists, meaning that information from layer 3 addresses and layer 4 ports can be configured.

QUESTION 956

Which of the following statements regarding ISDN are correct? (Select all that apply)

- A. Each ISDN B channel has transmission speeds of up to 64 kbps.
- B. The ISDN B channel can carry video, voice or data.
- C. The ISDN B channel transmission rate varies depending on the service used.
- D. The ISDN D channel transmits control information.
- E. The ISDN B channels can be configured with different subnets and encapsulation types when dialer profiles are configured.

Answer: A, B, D

Explanation:

Each B channel has a maximum throughput of 64 kbps and can carry encoded pulse code modulation digital voice, video, or data. They are used mainly for circuit-switched data communications such as High-Level Data Link Control (HDLC) and Point-to-Point Protocol (PPP). However, they can also carry packet-switched data communications. The router uses the D channel to dial destination phone numbers. It has a bandwidth of 16 kbps for BRI or 64 kbps for PRI. Although the D channel is used mainly for signaling, it too can also carry packet-switched data.

Incorrect Answers:

- C. The individual B channels can be set at 56 kbps or 64 kbps, but this value is static and can not be changed dynamically based on the service that is being used at the time.
- E. Although dialer profiles can be used to place individual B channels into separate logical interfaces with different IP subnets, the encapsulation type can not be changed.

QUESTION 957

In regard to a default Frame-Relay data network, what kind of physical network is it classified as?

- A. Point-to-point
- B. Broadcast multi-access
- C. Nonbroadcast multipoint
- D. Nonbroadcast multi-access
- E. Broadcast point-to-multipoint

Answer: D

Explanation:

Frame relay networks are considered to be NBMA networks. Frame Relay is a WAN protocol that operates at the physical and data link layers of the Open System Interconnection (OSI) reference model. This protocol is standardized by both the International Telecommunication Union Telecommunications Standardization Sector (ITU-T) and American National Standards Institute (ANSI).

Frame Relay uses statistical multiplexing techniques to provide network access in a packet-switched network. It is strictly a Layer 2 protocol suite. Being a Layer 2 protocol enables Frame Relay to offer higher performance WAN applications (such as LAN interconnection) than the older protocols (such as X.25), which incorporated Layer 3

functions. Given these performance benefits, Frame Relay is a popular WAN medium. However, it has some limitations with regard to IP multicast. To illustrate, Frame Relay is a Layer 2 nonbroadcast multiaccess (NBMA) network protocol. IP multicast networks are designed to utilize the capabilities of Layer 2 broadcast media such as on a LAN.

QUESTION 958

Which of the following statements correctly describes the characteristics of a Frame Relay point-to-point subinterface? (Select two answer choices)

- A. Needs to use Inverse ARP.
- B. Maps a single IP subnet per DLCI.
- C. Maps a single IP subnet across multiple DLCIs.
- D. Resolves NBMA (non broadcast multi access) split horizon issues.
- E. Requires use of the frame-relay map command.
- F. None of the above

Answer: B, D

Explanation:

B is correct because only one DLCI can be configured per point-to-point subinterface. The command 'frame-relay interface-dlci' associates the selected point-to-point subinterface with only one DLCI.

Subinterfaces were originally created to take care of split-horizon issues from distance vector routing protocols over non-broadcast multiple access networks, because split horizon prevents routing updates received on one interface from retransmitting out onto the same interface. This is true even if the routing update is received on one frame relay PVC destined out to another frame relay PVC! By partitioning the frame relay network into numerous point-to-point networks using subinterfaces; each new point-to-point subnetwork gets their own network number assigned. Therefore, the routed protocol views each subnetwork as if it was located on a separate interface.

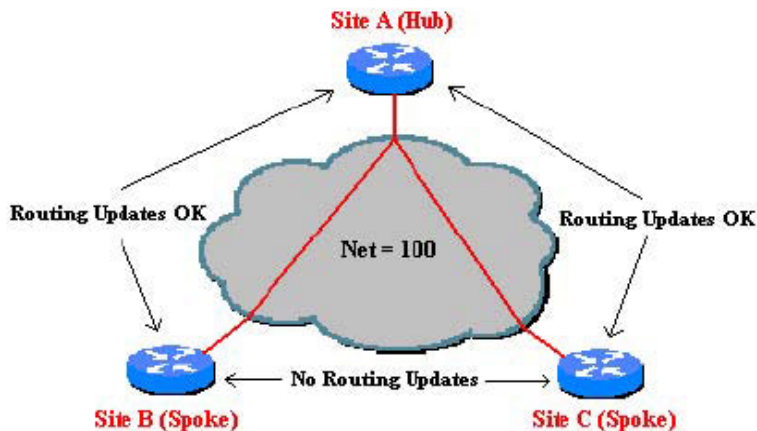


Figure 2: Split-horizon does not allow remote sites to send routing updates to each other.

Incorrect Answers:

- A. Since only one DLCI is assigned per subnet in a logical point to point interface, there is no need for Inverse ARP, since both the DLCI and IP addresses are already known.
 - C. The IP subnet is mapped across a single virtual circuit, so only one DLCI is mapped per subinterface.
 - E. This command would be needed when multiple virtual circuits are being configured on one physical interface. When logical subinterfaces are used, the "frame-relay interface-dlci" command is used, not this command.
- Reference: <http://www.ciscopress.com/articles/article.asp?p=170741&seqNum=6>

QUESTION 959

Regarding Frame Relay Multipoint subinterfaces; which statement is true?

- A. An IP address is required on the physical interface
- B. All routers are required to be fully meshed
- C. All routers must be in the same subnet to forward routing updates and broadcasts
- D. Multipoint is the default configuration for Frame Relay subinterfaces

Answer: C

Explanation:

Unlike Frame Relay point-to-point connections, multipoint Frame Relay router interfaces must all be in the same subnet. With multipoint, a single subinterface is used to establish multiple PVC connections to multiple physical interfaces or subinterfaces on remote routers. In this case, all the participating interfaces are in the same subnet, and each interface has its own local DLCI. Because the subinterface is acting like a regular NBMA Frame Relay network in this environment, broadcast traffic is subject to the split horizon rule.

Incorrect Answers:

- A. The IP address is required on the logical subinterface, not the physical interface.
- B. It is never an absolute requirement for a frame relay network to be fully meshed. The vast majority of frame relay networks are configured in a hub and spoke fashion, to avoid all of the charges associated with the numerous PVC's needed to be fully meshed.
- D. Point to point is the default frame relay subinterface type.

QUESTION 960

The Certkiller Frame Relay network is displayed below:



In regard to router Certkiller 1; what is the function of the Frame Relay DLCI?

- A. Defines the signaling standard between Certkiller 1 and Certkiller 2.
- B. Classifies the encapsulation used between Certkiller 1 and Certkiller 2.
- C. Identifies the circuit between Certkiller 2 and the frame switch.

- D. Classifies the circuit between Certkiller 1 and Certkiller 2.
- E. Defines the signaling standard between Certkiller 1 and the frame switch.

Answer: C

Explanation:

Certkiller 1 sends frames with DLCI, and they reach the local switch. The local switch sees the DLCI field and forwards the frame through the Frame Relay network until it reaches the switch connected to Certkiller 2. The Certkiller 2's local switch forwards the frame out of the access link to Certkiller 2. DLCI information is considered to be locally significant, meaning that the DLCI is used between the end router and the carrier's local frame relay switch.

Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 386

Incorrect Answers:

- A, E. DLCI is used only as a circuit identifier (DLCI=Data Link Circuit Identifier), and not used for signaling.
- B. The encapsulation options are not defined with DLCIs.
- D. The DLCI information is considered to be locally significant, meaning that the DLCI is used between the end router and the carrier's local frame relay switch. The DLCI is not used end to end (router to router).

QUESTION 961

Your frame relay network uses DLCI information on each of the PVC's. What is the purpose of them?

- A. They determine the encapsulation type employed by the Frame Relay.
- B. They identify the logical circuit between a local router and a Frame Relay WAN switch.
- C. They represent the physical address of the router.
- D. They represent the keepalives in the maintenance of PVC.

Answer: B

Explanation:

Routers use the data-link connection identifier (DLCI) as the Frame Relay address, which identifies the VC over which the frame should travel.

Data Link Connection Identifiers are the "hardware address" on a Frame Relay network.

They identify a routers PVC to the Frame Relay switch.

Incorrect Answers:

- A. DLCI information is not used to determine the encapsulation of the frame relay circuit in any way.
- C. A DLCI is used at layer two, but it is a separate identifier that is not related to the hardware MAC address of any device.
- D. The function of a keepalive is handled by LMI in a frame network, not the DLCI.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) page 377

QUESTION 962

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

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

Answer: B, D

Explanation:

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

Incorrect Answers:

- A, C. This command can be applied to both LAN and WAN interface types.
 - E. The speed command is used on LAN interfaces, and is not used on WAN interface types.
-

QUESTION 963

WAN data link encapsulation types include which of the following? (Choose two)

- A. T1
- B. Frame Relay
- C. DSL
- D. PPP
- E. ISDN
- F. IPX

Answer: B, D

Explanation:

Frame relay and PPP is used with WAN encapsulation.

Frame Relay most closely compares to the OSI data link layer (Layer 2). If you remember that the word "frame" describes the data link layer protocol data unit (PDU), it will be easy to remember that Frame Relay relates to OSI Layer 2. Like other data-link protocols, Frame Relay can be used to deliver packets (Layer 3 PDUs) between routers.

QUESTION 964

Inverse ARP is being used in the Certkiller frame relay network. What is the purpose of Inverse ARP?

- A. To map a known IP address to a MAC address
- B. To map a known DLCI to a MAC address
- C. To map a known MAC address to an IP address
- D. To map a known DLCI address to a IP address
- E. To map a known IP address to a SPID address
- F. To map a known SPID address to a MAC address

Answer: D

Explanation:

Just as ARP resolves IP addresses to MAC addresses, Inverse ARP maps a known DLCI to an IP address.

Note: Do not mix up inverse ARP and reverse ARP. There is a Reverse ARP (RARP) for host machines that don't know their IP address. RARP enables them to request their IP address from the gateway's ARP cache.

QUESTION 965

Which WAN protocol is used for out-of-band signaling?

- A. NCP
- B. HDLC
- C. LAPB
- D. LAPD

Answer: D

Explanation:

The D channel remains up all the time so that new signaling messages can be sent and received. Because the signals are sent outside the channel used for data, this is called out-of-band signaling. LAPD protocol manages D channel.

Reference: Cisco CCNA ICND 640-811 p.330

QUESTION 966

Which ISDN device converts the four-wire BRI signals from an S/T interface into the two-wire signals of a U interface?

- A. TE1
- B. NT-2
- C. TA
- D. TE2
- E. NT-1

Answer: E

Explanation:

When using a router BRI card with an S/T reference point, the router must be cabled to an external NT1, which in turn is plugged into the line from the telco (the U interface)

Reference: Cisco CCNA ICND p.331

QUESTION 967

Which statements are true regarding ISDN channels? (Select three)

- A. Each B channel can transmit up to 64 kbps
- B. The ISDN B channel carries voice or data
- C. The ISDN D channel transmits control information.
- D. The D channel transmission rate varies depending on the service used.
- E. HDLC or PPP can be used to encapsulate D channel information.

Answer: A, B, C

Explanation:

Integrated Services Digital Network (ISDN) is essentially digital telephone service. ISDN envisions telephone companies providing "Integrated Services," capable of handling voice, data, and video over the same circuits.

The two primary variants of ISDN are BRI (Basic Rate Interface) and PRI (Primary Rate Interface). BRI, sometimes referred to as 2B+D, provides two 64 kbps B channels and a 16 kbps D channel over a single 192 kbps circuit (the remaining bandwidth is used for framing). The D channel is used for control information. BRI is the ISDN equivalent of a single phone line, though it can handle two calls simultaneously over its two B channels. PRI, essentially ISDN over T1, is referred to as 23B+D and provides 23 B channels and a 64 kbps D channel. PRI is intended for use by an Internet Service Provider, for example, multiplexing almost two dozen calls over a single pair of wires.

QUESTION 968

At a branch location, Certkiller .com has deployed a non modular router that is equipped with two serial interfaces and two Ethernet interfaces.

What additional equipment must be used to allow the branch office to connect to the central office by using an ISDN service?

- A. A serial cable with a V.35 to RJ45 adapter
- B. A CSU/DSU
- C. An external ISDN TA and NT1
- D. The non-modular router cannot connect to an ISDN service. The network administrator must purchase a modular router with an ISDN BRI-U card.

Answer: C

Explanation:

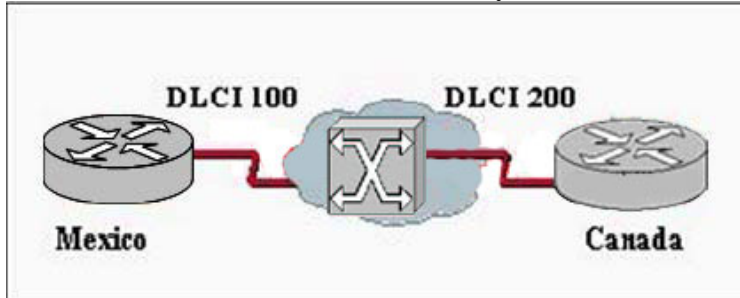
ISDN Terminals

NT1 The network termination 1 (NT1) device implements the ISDN Physical layer specifications and connects the user devices to the ISDN network by converting the network from a four-wire to the two-wire network used by ISDN.

TA A terminal adapter (TA) converts TE2 non-ISDN signaling to signal that's used by the ISDN switch. It connects into an NT1 device for conversion into a two-wire ISDN network.

QUESTION 969

The Certkiller international frame relay network is shown below:



The Frame Relay circuit between Mexico and Canada is experiencing congestion. Which types of notification are used to alleviate the congestion? (Choose three.)

- A. FECN
- B. CIR
- C. BECN
- D. DE
- E. DLCI 100 is down
- F. DLCI 200 is down

Answer: A, C, D

Explanation:

In a frame relay network, FECN (forward explicit congestion notification) is a header bit transmitted by the source (sending) terminal requesting that the destination (receiving) terminal slow down its requests for data. BECN (backward explicit congestion notification) is a header bit transmitted by the destination terminal requesting that the source terminal send data more slowly. FECN and BECN are intended to minimize the possibility that packets will be discarded (and thus have to be resent) when more packets arrive than can be handled.

If the source terminal in a communications circuit generates frequent FECN bits, it indicates that the available network bandwidth (at that time) is not as great as can be supported by the destination terminal. Likewise, if the destination generates frequent BECN bits, it means the available network bandwidth (at that time) is not as great as can be supported by the source. In either case, the root cause is lack of available bandwidth at the times during which FECN or BECN bits are generated. This can occur because of outdated or inadequate network infrastructure, heavy network traffic, high levels of line noise, or portions of the system going down. Identifying and resolving these issues can

improve overall network performance, especially when the system is called upon to carry a large volume of traffic.

Discard Eligibility (DE)

When there is congestion on the line, the network must decide which frames to discard in order to free the line. Discard Eligibility provides the network with a signal to determine which frames to discard. The network will discard frames with a DE value of 1 before discarding other frames.

The DE bit may be set by the user on some of its lower-priority frames. Alternatively, the network may set the DE bit to indicate to other nodes that a frame should be preferentially selected for discard, if necessary.

QUESTION 970

Exhibit:

```
R1# show frame-relay pvc 202

PVC Statistics for interface Serial1 (Frame Relay DTE)

DLCI = 202, DLCI USAGE = LOCAL PVC STATUS = ACTIVE, INTERFACE = Serial0/0

input pkts 2878      output pkts 2879      in bytes 964143
out bytes 964641     dropped pkts 0        in pkts dropped 0
out pkts dropped 0   out bytes dropped 0
in FECN pkts 0      in BECN pkts 0       out FECN pkts 0
out BECN pkts 0     in DE pkts 0         out DE pkts 0
out bcast pkts 2699 out bcast bytes 753021
pvc create time 1d20h, last time pvc status changed 1d20h
<output omitted>
```

Exhibit:

Please study the exhibit carefully. What does the STATUS=ACTIVE refer to in the output of the show frame-relay pvc command?

- A. The PVC is experiencing congestion.
- B. The Frame Relay switch is correctly programmed with the DLCI and is operational.
- C. The router is actively broadcasting to establish a link to the Frame Relay switch.
- D. The router is connected to the local Frame Relay switch, but not to the far end device.

Answer: B

Explanation:

The Frame Relay switch uses LMI to report the status of configured PVCs. The three possible PVC states are as follows:

Active state - Indicates that the connection is active and that routers can exchange data.

This is the state of an operational PVC.

Inactive state - Indicates that the local connection to the Frame Relay switch is working, but the remote router connection to the Frame Relay switch is not working.

Deleted state - Indicates that no LMI is being received from the Frame Relay switch, or that there is no service between the CPE router and Frame Relay switch.

QUESTION 971

Which PPP sub-protocol negotiates authentication options?

- A. NCP
- B. ISDN
- C. SLIP
- D. LCP
- E. DLCI

Answer: D

Explanation:

PPP defines the Link Control Protocol (LCP). The job of the LCP is to establish, configure, and test the data-link connection. When hosts negotiate a PPP connection, they exchange LCP packets. These packets allow link partners to dynamically negotiate link options, including authentication, compression, and MLP. The protocol field is used to identify various Layer 3 protocols, such as IP or IPX. The LCP field allows for the following features:

1. Authentication
2. Callback
3. Compression
4. Multilink PPP

Once the LCP establishes the Layer 2 connection, the Network Control Protocol (NCP) takes over. Link partners exchange NCP packets to establish and configure different network-layer protocols including IP, IPX, and AppleTalk. Each Layer 3 protocol has its own NCP. For example, IP's NCP is IPCP. IPX's NCP is IPXCP and Appletalk's NCP is ATALKCP.

QUESTION 972

With the use of leased lines, Certkiller .com currently connects to its five remote branch offices. Which alternative could be used to provide connection-oriented, high performance, packet-switched connectivity?

- A. PPP
- B. DSL
- C. ISDN
- D. Frame Relay
- E. POTS

Answer: D

Explanation:

Frame Relay uses statistical multiplexing techniques to provide network access in a packet-switched network. There are three packet switching technologies which can be used:

1. 1Frame Relay

- 2. X.25
- 3. ATM

ISDN also contains some packet switching techniques, but only frame relay is connection oriented. Frame relay also offers higher speed options.

QUESTION 973

Which of the following are options for Frame Relay LMI types on Cisco routers?
(Choose three)

- A. Cisco
- B. IEEE
- C. Q933a
- D. ANSI
- E. IETF
- F. Q.931

Answer: A, C, D

Explanation:

Setting the LMI Type:

If the router or access server is attached to a public data network (PDN), the LMI type must match the type used on the public network. Otherwise, the LMI type can be set to suit the needs of your private Frame Relay network.

You can set one of three types of LMIs on our devices: ANSI T1.617 Annex D, Cisco, and ITU-T Q.933 Annex

A. To do so, use the following commands beginning in interface configuration mode:

	Command	Purpose
Step 1	<code>frame-relay lmi-type {ansi cisco q933a}</code>	Sets the LMI type.

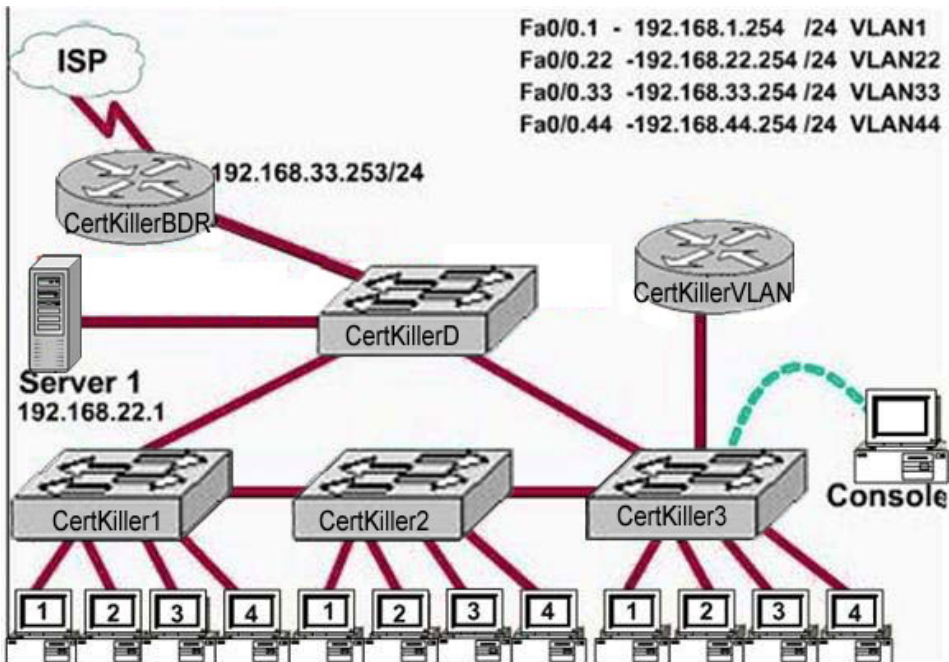
Reference:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgr/wan_c/wcdfrely.htm

Topic 1, Certkiller 1, Scenario

You work as a network technician at Certkiller . The network topology at the Certkiller main office in Denver is displayed in the network topology exhibit.

Exhibit: Network Topology



Exhibit, Certkiller X

<pre>SwX#show vlan VLAN Name Status Ports ----- 1 default active Fa0/1, Fa0/2, Fa0/3 Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12 Gi0/1, Gi0/2 2 students active 3 admin active 4 faculty active</pre>	<pre>SwX# show vtp stat VTP Version : 2 Configuration Revision : 6 Maximum VLANs supported locally : 250 Number of existing VLANs : 8 VTP Operating Mode : Server VTP Domain Name : home-office VTP Pruning Mode : Disabled VTP V2 Mode : Disabled VTP Traps Generation : Disabled MD5 digest : 0xD8 0xD8 0x38 0x22 0x98 0xE3 0xAC 0x65 Configuration last modified by 0.0.0.0 at 3-28-99 01:24:88</pre>
---	---

Study the Certkiller X exhibit carefully.

Certkiller X was taken out of the production network for maintenance. It will be reconnected to the Fa0/16 port of Certkiller 3.

Topic 1, Certkiller 1 (5 Questions)

QUESTION 974

Please refer to the Certkiller 1 Scenario.

What happens to the network when Certkiller X is reconnected and a trunk exists between the two switches?

- A. All VLANs except the default VLAN will be removed from all switches.
- B. All existing switches will have the students, admin, faculty, Servers, Management, Production, and no-where VLANs.
- C. The VLANs Servers, Management, Production, and no-where will replace the VLANs on SwX.
- D. The VLANs Servers, Management, Production, and no-where will be removed from

existing switches.

Answer: D

QUESTION 975

Please refer to the Certkiller 1 Scenario.

What interface did Sw-AC3 associate with source MAC address 0010.5a0c.ffba?

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/6
- D. Fa 0/8
- E. Fa 0/9
- F. Fa /12

Answer: C

QUESTION 976

Please refer to the Certkiller 1 Scenario.

To which port of Certkiller 3 is router VLAN-R1 connected?

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/6
- D. Fa 0/8
- E. Fa 0/9
- F. Fa 0/12

Answer:

QUESTION 977

Please refer to the Certkiller 1 Scenario.

Which ports on Certkiller 3 are operating as trunks? (Choose three)

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/4
- D. Fa 0/6
- E. Fa 0/9
- F. Fa 0/12

Answer: A, B, F

QUESTION 978

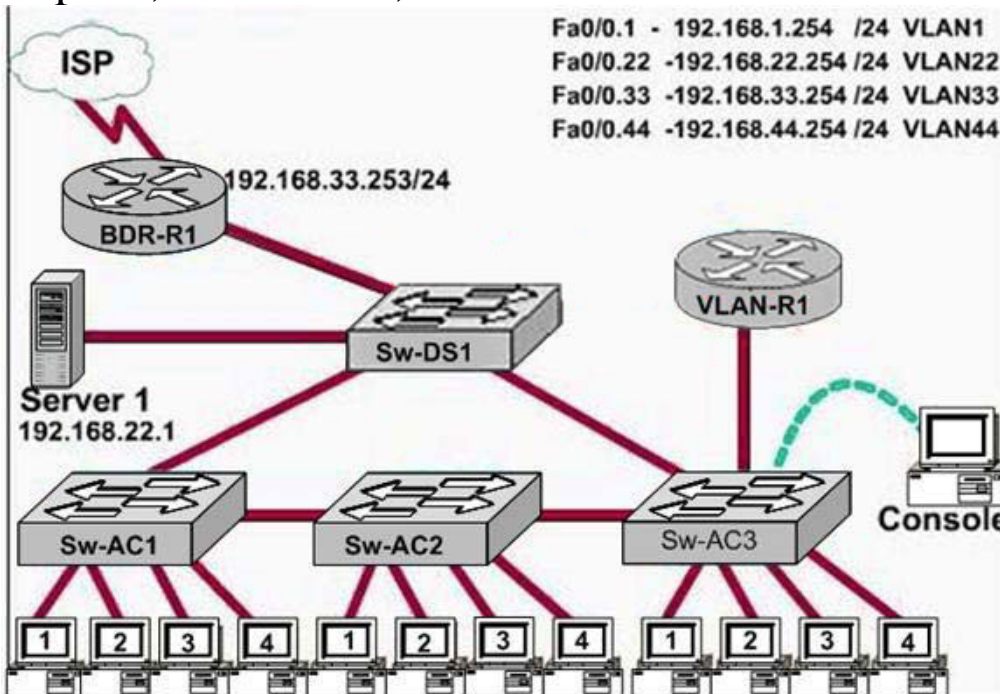
Refer to the section 1 network exhibit.

Which switch is the root bridge for VLAN 1?

- A. Certkiller D
- B. Certkiller 1
- C. Certkiller 2
- D. Certkiller 3

Answer: A

Topic 2, Certkiller 2, Scenario



Topic 2, Certkiller 2 (8 Questions)

QUESTION 979

Refer to the Certkiller 2 Scenario.

For which switch did Sw-AC3 receive the VLAN information?

- A. Sw-DS1
- B. Sw-AC1
- C. Sw-AC2
- D. Sw-AC3 (locally)

Answer: C

QUESTION 980

Refer to the Certkiller 2 Scenario.

What address should be configured as the default-gateway for the host connected to interface Fa0/4 of Sw-AC3?

- A. 192.168.1.254
- B. 192.168.22.254
- C. 192.168.33.254
- D. 192.168.44.254

Answer: B

QUESTION 981

Refer to the Certkiller 2 Scenario.

What interface did Sw-AC3 associate with source MAC address 0010.5a0c.ffba?

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/6
- D. Fa 0/8
- E. Fa 0/9
- F. Fa 0/12

Answer: C

QUESTION 982

Refer to the Certkiller 2 Scenario.

Out of which port on Sw-Ac3 would a frame containing an IP packet with a destination address that is not on a local LAN be forwarded?

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/4
- D. Fa 0/8
- E. Fa 0/9
- F. Fa 0/12

Answer: C

QUESTION 983

Refer to the Certkiller 2 Scenario.

Which switch is the root bridge for VLAN 1?

- A. Sw-DS1
- B. Sw-AC1
- C. Sw-AC2
- D. Sw-AC3

Answer: C

QUESTION 984

Refer to the Certkiller 2 Scenario.

Out of which ports on Sw-Ac3 will a frame be forwarded that has Source MAC address 0010.5a0a-860a and destination MAC address 000a.8a47.e612? Select three.

- A. Fa 0/1
- B. Fa 0/3
- C. Fa 0/4
- D. Fa 0/6
- E. Fa 0/7
- F. Fa 0/12

Answer: B, C, F

QUESTION 985

Refer to the Certkiller 2 Scenario.

What ports on Sw-AC3 are operating as trunks? Select three.

- Fa 0/1
- Fa 0/3
- Fa 0/4
- Fa 0/6
- Fa 0/9
- Fa 0/12

Answer: B, E, F

QUESTION 986

Please refer to the Certkiller 2 Scenario.

Certkiller X was taken out of the production network for maintenance. It will be reconnected to the Fa0/16 port of Certkiller 3.

What happens to the network when Certkiller X is reconnected and a trunk exists between the two switches?

- A. All VLANs except the default VLAN will be removed from all switches.
- B. All existing switches will have the students, admin, faculty, Servers, Management, Production, and no-where VLANs.
- C. The VLANs Servers, Management, Production, and no-where will replace the VLANs on SwX.
- D. The VLANs Servers, Management, Production, and no-where will be removed from existing switches.

Answer: D

Topic 3, Mixed Questions (74 questions)

QUESTION 987

What is the function of the command `switchport trunk native vlan 150` on the Cisco Catalyst Switch?

- A. It creates a VLAN 150 interface
- B. It designates VLAN 150 for untagged traffic
- C. It blocks VLAN 150 traffic from passing on the trunk
- D. It designates VLAN 150 as the default for all unknown tagged traffic.

Answer: B

Explanation:

In 802.1Q trunking, all VLAN packets are tagged on the trunk link to indicate the VLAN to which they belong. Frames belonging to the Native VLAN are sent untagged on the trunk link. The Native VLAN contains ports not assigned to other VLANs that by default belong to VLAN 1. VLAN 1 is the Native VLAN by default, but VLANs other than VLAN 1 may be designated as the Native VLAN. However, the Native VLAN must be the same on trunked switches in 802.1Q trunking. If a VLAN other than VLAN 1 is to be the Native VLAN, it needs to be identified on the trunk ports. In the interface configuration mode of the trunk port(s), the IOS-based command to designate the Native VLAN is `switchport trunk native`.

`Switch(config-if)#switchport trunk native vlan vlan-id`

The `switchport trunk native vlan` command is only necessary when changing the native VLAN from something other than VLAN 1 or changing it back to VLAN 1.

QUESTION 988

You work as a network technician at Certkiller .com. Study the exhibit carefully. What should you do to allow the workstations connected to the `fastethernet0/0` interface to obtain an IP Address?

```
CertKiller2 # show running-config
Current configuration:
!
version 12.1
!Hostname ABC
!
ip subnet-zero
ip name-server 192.16.1.1
ip dhcp excluded-address 10.90.201.1
!
ip dhcp pool ABC_DHCP
 network 10.90.201.0 255.255.255.0
 default-router 10.90.201.1
 dns-server 192.31.7.152
!
interface FastEthernet 0/0
 no ip directed-broadcast
 ip nat inside
!
interface Serial 0/0
 description to ISP circuit ID ALDS1-3456AX4743-00
 ip address 192.31.7.38 255.255.255.252
 ip nat outside
!
ip nat inside source list 14 interface serial 0/0 overload
ip classless
ip route 0.0.0.0 0.0.0.0 192.31.7.37
!
access-list 14 permit 10.90.201.0 0.0.0.255
```

- A. Apply access-group 14 to interface `FastEthernet 0/0`

- B. Add access-list 14 permit any any to the access list configuration
- C. Configure IP Address of the FastEthernet 0/0 interface to 10.90.201.1
- D. Add an interface description to the FastEthernet 0/0 interface configuration.

Answer: C

Explanation:

According to question and exhibit:

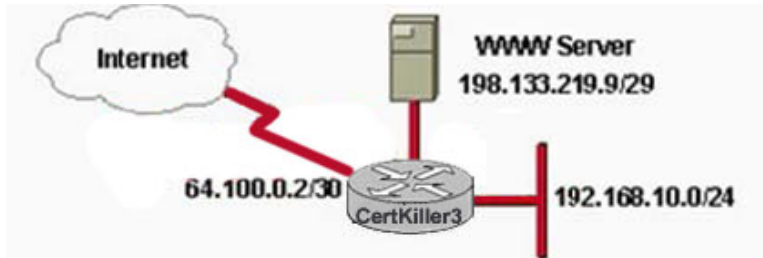
Router is configured for DHCP, which can provide the IP Address to host. And Host is connected on fastethernet0/0 interface. IP Address is not assigned on host connected interface. Until assigning the same subnet of pool on interface, host unable to obtain IP Address from Router.

QUESTION 989

Exhibit #1:

```
hostname CertKiller3
interface FastEthernet 0/0
  ip address 198.133.219.14 255.255.255.248
  no shutdown
interface FastEthernet 0/1
  ip address 192.168.10.254 255.255.255.0
  no shutdown
interface Serial 0/0
  ip address 64.100.0.2 255.255.255.252
  no shutdown
ip route 0.0.0.0 0.0.0.0 64.100.0.1
```

Exhibit #2:



```
<output omitted>
Gateway of last resort is 64.100.0.1 to network 0.0.0.0

64.0.0.0/30 is subnetted, 1 subnets
C   64.100.0.0 is directly connected, Serial0/0
C   192.168.10.0/24 is directly connected, FastEthernet0/1
198.133.219.0/29 is subnetted, 1 subnets
C   198.133.219.8 is directly connected, FastEthernet0/0
S*  0.0.0.0 [1/0] via 64.100.0.1
#CertKiller3
```

You work as a network technician at Certkiller .com. Study the exhibit carefully. What can be said in this scenario?

- A. The default route should have a next hop address of 64.100.0.3

- B. Hosts on the LAN that is connected to FastEthernet 0/1 are using public IP Addressing.
- C. The address of the subnet segment with the WWW server will support seven more servers.
- D. The addressing scheme allows users on the Internet to access the WWW server.
- E. Hosts on the LAN that is connected to FastEthernet 0/1 will not be able to access the Internet without address Translation.

Answer: D,E

Explanation:

According to first exhibit,

IP Address for FastEthernet0/0 : 198.133.219.14

IP Address for FastEthernet 0/1: 192.168.10.254

IP Address for Serial0/0: 64.100.0.2

According to Second Exhibit:

WWW server in 192.133.219.9/29 Network

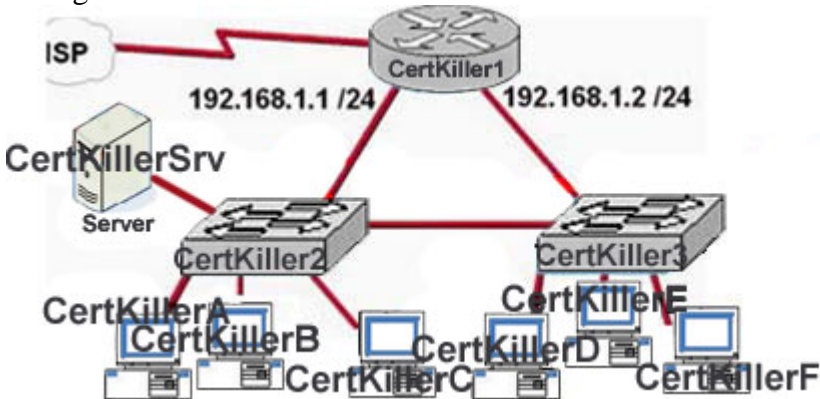
Internet on 64.100.0.2/30 Network

LAN is on 192.168.10.0/24 Network

According to this information we can know that there are three different networks and only a default route is defined with 64.100.0.2 and NAT is not configured. User can access WWW server but needs to be configured NAT (Network Address Translation).

QUESTION 990

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



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

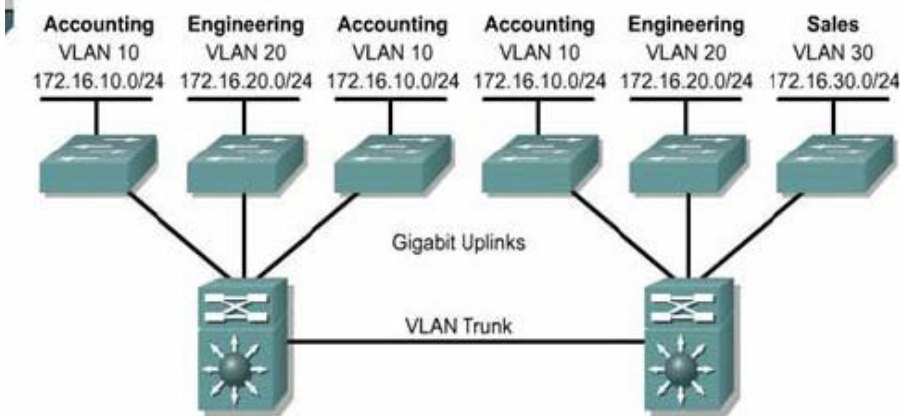
Answer: C

Explanation:

A VLAN is a group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same LAN segment.

Networks that use the campus-wide or end-to-end VLANs logically segment a switched network based on the functions of an organization, project teams, or applications rather than on a physical or geographical basis. For example, all workstations and servers used by a particular workgroup can be connected to the same VLAN, regardless of their physical network connections or interaction with other workgroups. Network reconfiguration can be done through software instead of physically relocating devices.

Here is the sample Network Designed with VLAN

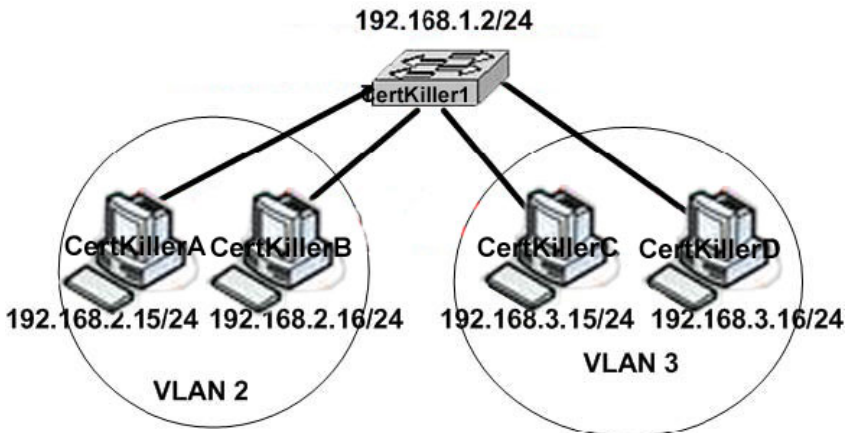


In exhibit, all servers, two switches on two networks on same VLAN so router will not accept the addressing scheme.

QUESTION 991

You work as a network technician at Certkiller .com. Study the exhibit carefully. Host Certkiller A can communicate with Host Certkiller B but not with Host Certkiller C or Host Certkiller D. What should the network administrator do to solve this problem?

Exhibit:



A. Configure the VLAN trunking protocol on the switch

- B. Configure a router to route between VLAN2 and VLAN3
- C. Configure two separate switches for the hosts on VLANs 2 and 3
- D. Configure Hosts Certkiller C and Certkiller D with IP Addresses in the 192.168.2.0

Answer: B

Explanation:

In order to provide routing between VLANs, three key components must be present. These are a VLAN capable switch, a router

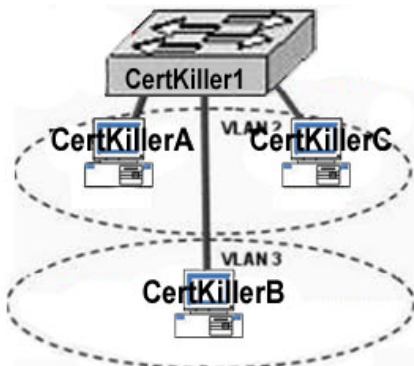
The router can either be an external standalone unit or it can be integrated within the switch hardware.

Common names used to describe routers that are integrated within the switch itself include: Route Switch Module (RSM), Route Processor (RP), Layer 3 Services Module or the switch is simply referred to as a Layer 3 switch.

Host Certkiller C and Host Certkiller D are belonging to different VLAN so needs the define route path in router.

QUESTION 992

Which IP Addressing scheme would be correct for the topology shown in the graphic?



- A. Certkiller A - 192.168.10.22/24; Certkiller B - 192.168.10.23/24; Certkiller C - 192.168.10.24/24
- B. Certkiller A - 192.168.10.22/24; Certkiller B - 192.168.11.23/24; Certkiller C - 192.168.10.23/24
- C. Certkiller A - 192.168.10.22/24; Certkiller B - 192.168.10.23/24; Certkiller C - 192.168.11.23/24
- D. Certkiller A - 192.168.11.22/24; Certkiller B - 192.168.11.23/24; Certkiller C - 192.168.10.24/24

Answer: B

Explanation:

Answer B is correct because One VLAN= One subnet.

Certkiller A, Certkiller C are in same VLAN and Certkiller B are on different VLAN so Certkiller A, Certkiller C should be in same subnet and Certkiller B is in different VLAN.

QUESTION 993

You work as a network technician at Certkiller .com. Study the exhibit carefully. Which routing protocol is in use on the Certkiller 3 router?

```
CertKiller3 #show ip protocols
Routing Protocol is                     
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 192.168.2.5
  Number of areas in this router is 1 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.16.2.4 0.0.0.3 area 0
    192.168.1.0 0.0.0.255 area 0
    192.168.2.4 0.0.0.3 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.2.6      110          00:06:35
    192.168.2.5      110          00:06:35
  Distance: (default is 110)
```

- A. RIP V2
- B. IGRP
- C. EIGRP
- D. OSPF
- E. RIP V1

Answer: D

Explanation:

Administrative Distances

The administrative distance (AD) is used to rate the trustworthiness of routing information received on a router from a neighbor router. An administrative distance is an integer from 0 to 255, where 0 is the most trusted and 255 means no traffic will be passed via this route.

Default Administrative Distances

Connected interface 0

Static route 1

Enhanced Interior Gateway Routing Protocol (EIGRP) 90

Interior Gateway Routing Protocol (IGRP) 100

Open Shortest Path First (OSPF) protocol 110

Routing Information Protocol (RIP) 120

External EIGRP 170

Unknown 255 (this route will never be used)

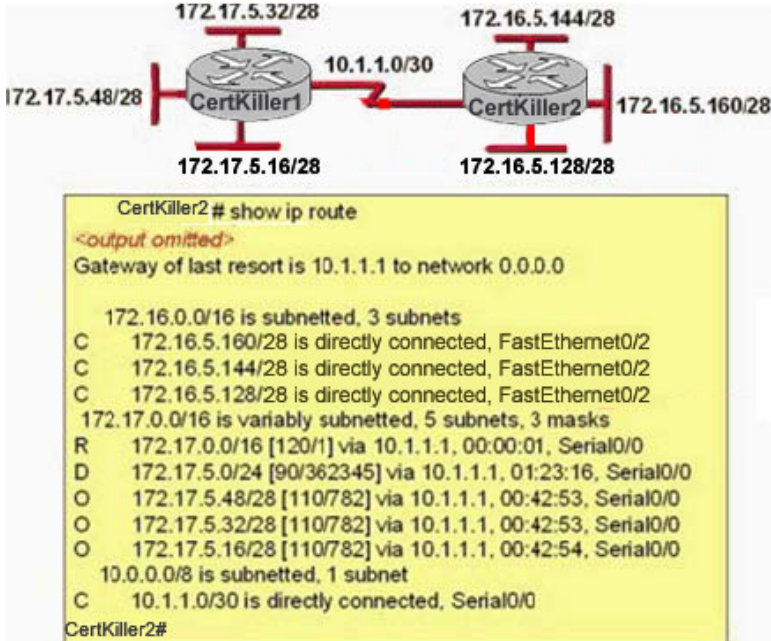
According to output Administrative distance 110 and router belongs in area0 so OSPF routing protocol is used.

QUESTION 994

You work as a network technician at Certkiller .com. Study the exhibit carefully.

Given the partial output from the show ip route command on Certkiller 2, what is the

source of the route what would be used to route packets from Certkiller 2 to the IP Address 172.16.5.37?



- A. EIGRP
- B. OSPF
- C. RIP
- D. static route

Answer: B

Explanation:

According to exhibit, 172.17.5.37 is belongs to 172.17.5.32/28 network and is sourced from OSPF network because in route output sourced is defined by O symbol that is OSPF.

QUESTION 995

DRAG DROP

You work as a network technician at Certkiller .com.

You need to configure a router as a host with the address of 192.168.125.34/27 needs to be denied access to all hosts outside its own subnet.

You need to specify the protocol, address and mask of the following command:

access-list 100 deny protocol address mask any

640-801

Options, select from these

0.0.0.0	192.168.125.0
192.168.125.32	192.168.125.34
255.255.255.255	udp
tcp	ip
Protocol	Place here
Address	Place here
Mask	Place here

Answer:

Options, select from these

	192.168.125.0
192.168.125.32	
255.255.255.255	udp
tcp	
Protocol	ip
Address	192.168.125.34
Mask	0.0.0.0

Explanation:

Extended access lists Extended access lists can evaluate many of the other fields in the Layer 3 and Layer 4 header of an IP packet. They can evaluate source and destination IP addresses, the protocol field in the Network layer header, and the port number at the Transport layer header. This gives extended access lists the ability to make much more granular decisions when they are controlling traffic.

Syntax: access-list <Number> <Permit or Deny> <Protocol> <Source> <Destination> <service name or port>

Example:

```
#access-list 101 permit tcp 192.168.0.0 0.0.0.255 host 172.16.0.1 eq 25  
#access-list 101 deny any any
```

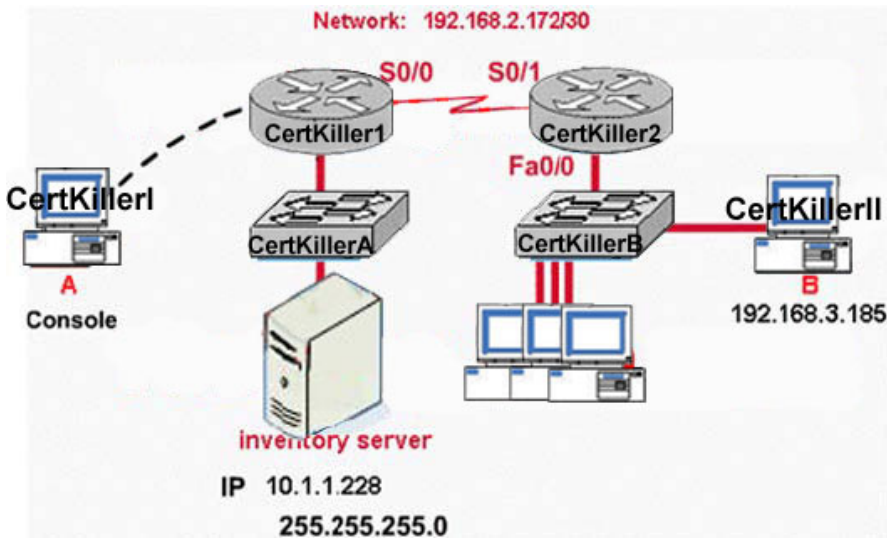
According to question, host with address 192.168.125.34 needs to deny used 192.168.125.34 0.0.0.0 address.

QUESTION 996

SIMULATION

The routers in the entire store network shown in the diagram have been partially configured. Your task is to complete the addressing configuration of the Certkiller 1 router and the LAN interface configuration of the Certkiller 2 router. Layer 3 connectivity should be established between the Host Certkiller B on the Certkiller 2 router LAN and the inventory server attached to the Certkiller 1 Router. Use various router show commands to determine the correct configuration values that must be used. The only usable router console is attached to the Certkiller 1 Router. You can access host Certkiller II to test your results.

Enable Secret Password on all routers: Certkiller



Vty lines "0-4" password: Certkiller

In this Simulation you need to troubleshoot.

1. Login to the Certkiller 1 Router
 2. Display the running-configuration using show run
 3. you will get output serial interface configuration like:
interface serial0/0
description connected to Certkiller 2
no ip address
encapsulation hdlc
clock rate 640000
 4. You got the problem, there is no IP Address in Certkiller 1 router's serial 0/0 interface
 5. Verify the IP Address of connected neighbors using cdp
 - a. show cdp neighbors detailyou will get information of Certkiller 2 router's information including IP Address. Like:
IP Address: 192.168.2.174 on S0/1
- Now you need to set IP 192.168.2.173 on Serial0/0 of Certkiller 1 Router.
6. Certkiller 1# configure terminal
 7. Certkiller 1(config)#interface serial0/0
 8. Certkiller 1(config-if)# ip address 192.168.2.173 255.255.255.252
 9. Certkiller 1(config-if)#no shutdown

10. Certkiller 1#copy run start

Now you will be able to ping with Certkiller 2 router as well as telnet to Certkiller 2 router.

11. telnet to Certkiller 2 router

a. Certkiller 1#telnet 192.168.2.174

12. Configure the FastEthernet0/0 as like:

Certkiller 2(config)#interface fa0/0

Certkiller 2(config-if)#description connected to LAN host

Certkiller 2(config-if)#ip address 192.168.3.184 255.255.255.0

Certkiller 2(config-if)#no shutdown

Certkiller 2(config-if)#keepalive 10

Certkiller 2#copy run start

12. Now ping from host

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

show cdp neighbors detail : Displays information of connected neighbors with layer 3 address.

You need to assign same network IP of Serial0/1 of Certkiller 2. So you need to find out information using cdp command.

After login into Certkiller 2 router using telnet and assign the IP Address on FastEthernet0/0, where host is connected by following steps:

1. Configure terminal
2. Interface fastethernet0/0
3. ip address <IP> <Subnet Mask>
4. no shutdown

Finally copy the running configuration into startup configuration.

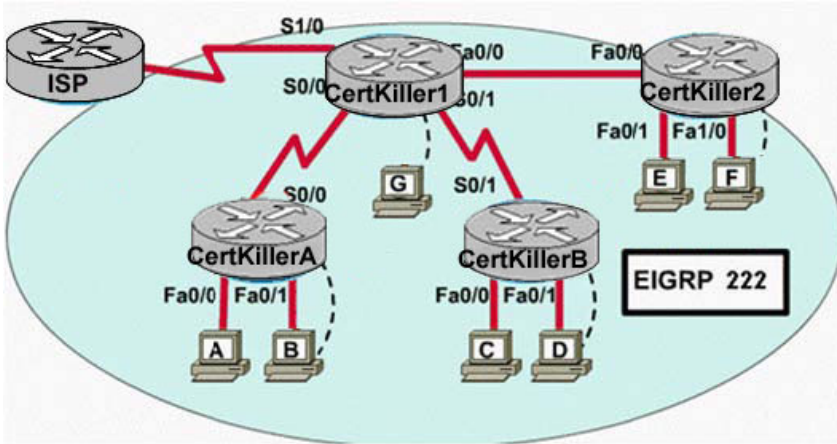
QUESTION 997

SIMULATION

After Adding Certkiller 2 router no routing updates are being exchanged between dRegional1 and the new location. All other interconnectivity and Internet Access for the existing locations of the company are working properly.

The task is to identify the faults and correct the router configuration to provide the full connectivity between the routers.

Passwords on All routers are : Certkiller



Answer:

Explanation:

This is the lab question needs to find out the problem and solve them.

1. IP Address of Certkiller 1 Router Interface is:

2. 1. Fa0/0 192.168.77.33

2. S1/0 198.0.18.6

3. S0/0 192.168.36.13

4. S0/1 192.168.80.33

2. Verify the Configuration on all routers

3. Routers are using EIGRP as a Routing protocol

4. Certkiller 1 router is configured as:

```
router eigrp 222
```

```
network 192.168.36.0
```

```
network 192.168.80.0
```

```
network 192.168.85.0
```

```
network 198.0.18.0
```

```
no auto-summary
```

In the configuration one invalid network is configured. 192.168.85.0. Remove this network.

```
Certkiller 1#config terminal
```

```
Certkiller 1(Config)#router eigrp 222
```

```
Certkiller 1(Config-router)#no network 192.168.85.0
```

EIGRP is a classless, enhanced distance-vector protocol that gives us a real edge over another Cisco proprietary protocol, IGRP. That's basically why it's called Enhanced IGRP. Like IGRP, EIGRP uses the concept of an autonomous system to describe the set of contiguous routers that run the same routing protocol and share routing information. Unlike IGRP, EIGRP includes the subnet mask in its route updates. And as you now know, the advertisement of subnet information allows you to use Variable Length Subnet Masking (VLSM) and summarization when you design your networks! EIGRP is sometimes referred to as a hybrid routing protocol because it has characteristics of both distance-vector and link-state protocols. For example, EIGRP doesn't send link-state packets as OSPF does; instead, it sends traditional distance-vector updates containing information about networks plus the cost of reaching them from the perspective of the

advertising router. And EIGRP has link-state characteristics as well-it synchronizes routing tables between neighbors at startup, and then it sends specific updates only when topology changes occur.

Features of EIGRP

1. Support for IP, IPX, and AppleTalk via protocol-dependent modules
2. Efficient neighbor discovery
3. Communication via Reliable Transport Protocol (RTP)
4. Best path selection via the diffusing update algorithm (DUAL)
5. Support for multiple autonomous systems (AS)
6. Support for Variable Length Subnet Masking (VLSM) and summarization

Configuring EIGRP

You need to publish connected network in EIGRP

```
Router(config)#router EIGRP AS
```

```
Router(config-router)#network network_address
```

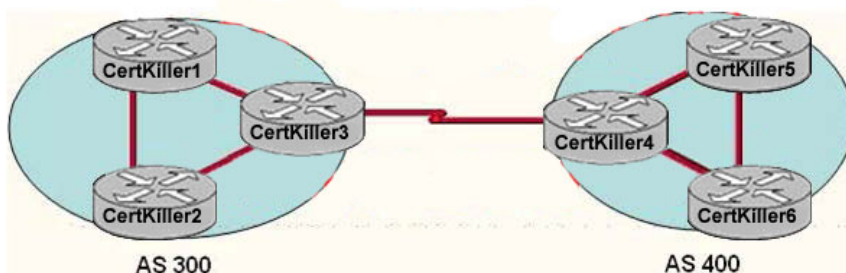
To remove network from EIGRP

```
Router(config)#router EIGRP AS
```

```
Router(config-router)#no network network_address
```

QUESTION 998

Network topology exhibit:



You work as a network technician at Certkiller .com. You must choose a routing protocol to connect the two autonomous systems displayed in the network topology exhibit. Which protocol should you choose?

- A. EIGRP
- B. BGP
- C. RIP
- D. OSP

Answer: B

Explanation:

BGP is an extremely complex protocol used throughout the Internet and within multinational organizations. Its main purpose is to connect very large networks or autonomous systems.

In many cases, the routing policy that is implemented in an AS is consistent with the policy for the ISP. In these cases, it is not necessary or even desirable, to use BGP to exchange routing information with the ISP. Instead, connectivity can be achieved through a combination of static routes and default routes.

Do not use BGP within the AS in the following situations:

1. There is only a single connection to the Internet or other AS.
2. Internet routing policy and route selection are not of concern to the AS.
3. The BGP routers have insufficient RAM or processor power to handle constant updates.
4. There is limited understanding of route filtering and the BGP path selection process.
5. Low bandwidth link between autonomous systems

QUESTION 999

Network Topology Exhibit:

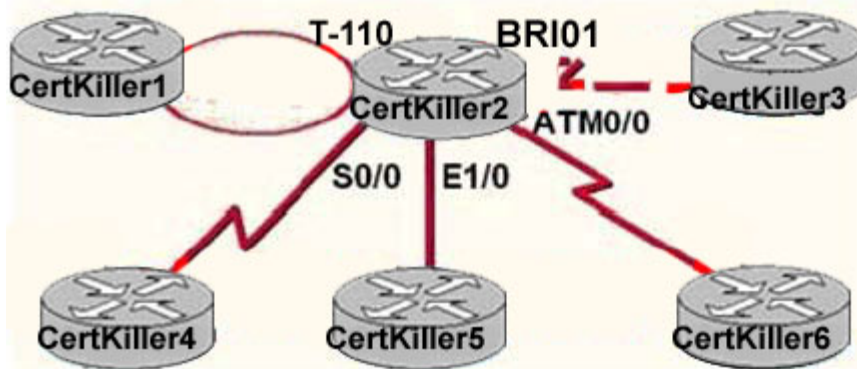


Exhibit:

```
CertKiller2 #show ip route
<output omitted>
192.168.49.0/28 is subnetted, 5 subnets
D   192.168.49.64 [90/120510]   via 192.168.126.2, 11:15:56, TokenRing1/0
D   192.168.49.80 [90/20514560] via 192.168.126.6, 11:15:56, Serial0/0
D   192.168.49.32 [90/30720]   via 192.168.126.10, 11:15:56, Ethernet1/0
D   192.168.49.48 [90/540]     via 192.168.126.14, 11:15:56, ATM0/0
D   192.168.49.0 [90/30721640] via 192.168.126.18, 11:15:56, BRI0/1
 192.168.126.0/30 is subnetted 5subnets
C   192.168.126.0 is directly connected, TakenRing1/0
C   192.168.126.4 is directly connected, Serial0/0
C   192.168.126.8 is directly connected, Ethernet1/0
C   192.168.126.12 is directly connected, ATM0/1
C   192.168.126.16 is directly connected, BRI0/1
```

You work as a network technician at Certkiller .com. Study the exhibits carefully. A packet addressed to the host with an IP address of 192.168.49.91 arrives at router Certkiller 2. From the information in the diagram, out of which interface will the packet be forwarded?

- A. TokenRing 1/0
- B. Serial 0/0
- C. ATM0/0
- D. BRI0/1
- E. Ethernet0/0

Answer: B

Explanation:

```
D 192.168.49.80 [90/20514560] via 192.168.126.6, 11:15:56, Serial0/0
```

The above line of output of routing table specified the exit point for 192.168.49.91 host.

QUESTION 1000

Exhibit:

```
CertKiller1 # show version
```

```
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-D-M), Version 12.2(13b), RELEASE SOFTWARE
(fc1)
Copyright (c) 1986-2003 by cisco Systems, Inc.
Compiled Wed 19-Feb-03 16:08 by pwade
Image text-base: 0x8000808C, data-base: 0x80B4599C
```

```
ROM: System Bootstrap, Version 12.2(7r) [cmong 7r], RELEASE SOFTWARE (fc1)
```

```
Router uptime is 3 days
System netruned to COM by over-on
System image file is "frash.c26(18d m2.122 18b.bin"
```

```
cisco 2620XM (MPC860P) processor (revision 0x100) with 28672K/4096K bytes of
memory.
```

```
Processor board ID JAE07170HVK (4011562896)
```

```
M860 processor: part number 5, mask 2
```

```
Bridging software.
```

```
X.25 software, Version 3.0.0.
```

```
1 FastEthernet/IEEE 802.3 interface(s)
```

```
2 low speed serial(sgna/async) network interface(s)
```

```
32K bytes of over-volatile configuration memory
```

```
16384K bytes of processor board System flash (Read/Write)
```

```
Configuration register is 0x2102 (will be 0x2100 at next reload)
```

You work as a network technician at Certkiller .com. You want to update the IOS on Certkiller 1, but you are unsure which version of the Operating System that is in used at the moment.

- A. MPC860P
- B. JAE07170HVK
- C. C2600-d-mz.122-13b.bin