5.1.10 Practice Questions

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Score: 100%

Passing Score: 80%

Question 1. ✓ Correct

Which of the following describes the role of Access Switches and how they are implemented in the design of a local area network on a university or corporate campus? (Select three.)

- [ ] Not needed in a three-tier network design.
- [x] Connected to distribution switches using one or more ports or uplinks.
- [ ] Linked to each other via high-speed connections.
- [x] Give end users access to the local area network.
- [ ] Constitute the second tier in a two-tier network design.
- [x] Communicate with each other through distribution switches.
- [ ] Connected to high-speed core switches.

Explanation

An access switch, as its name suggests, gives end users access to the local area network. That is, end user devices are connected to access switches, and these switches send data to and from specific computers or nodes that are connected to them. In an office building, each floor will usually contain one or more access switches with cables that run from the switch to individual rooms or cubicles.

Each of these access switches communicate with each other through distribution switches. Typically, each access switch is connected to a distribution switch using one or more ports or uplinks. The multiple connections not only increase redundancy, but also the maximum bandwidth between the switches.

References

5.1.2 Switch Architecture Facts

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Question 2. ✓ Correct

An Ethernet frame has just arrived on a switch port. The switch examines the destination MAC address of the frame. It is a unicast address, but no mapping exists in the CAM table for the destination address.

Assuming that no VLANs are configured, what happens next?

- A new entry is added to the CAM table that maps the source device's MAC address to the port on which the frame was received.
- → The switch sends a copy of the frame to all connected devices on all ports.
- The switch sends the frame to the switch port specified in the CAM table.
- The switch ignores the frame and does not forward it.

Explanation

When a frame arrives on a switch interface, the switch examines the frame's destination MAC address. If it is a unicast address, but no mapping exists in the CAM table for the destination address, the switch floods the frame to all ports that are members of the same VLAN. Connected devices to whom the frame is not addressed drop the frame. The device to which the frame is addressed receives and processes the frame.

Filtering occurs when a switch ignores a frame and does not forward it because the destination device is connected to the same port from which the frame was received. If the source MAC address is not in the switch's CAM table, a new entry is added to the table that maps the source device's MAC address to the port on which the frame was received. If the destination MAC address of the frame is a unicast address and a mapping exists in the CAM table for the destination address, the switch sends the frame to the switch port specified in the CAM table.

References

5.1.3 Switch Operations

5.1.4 Unicast, Broadcast, and Multicast Frames

5.1.5 Switch Operations Facts

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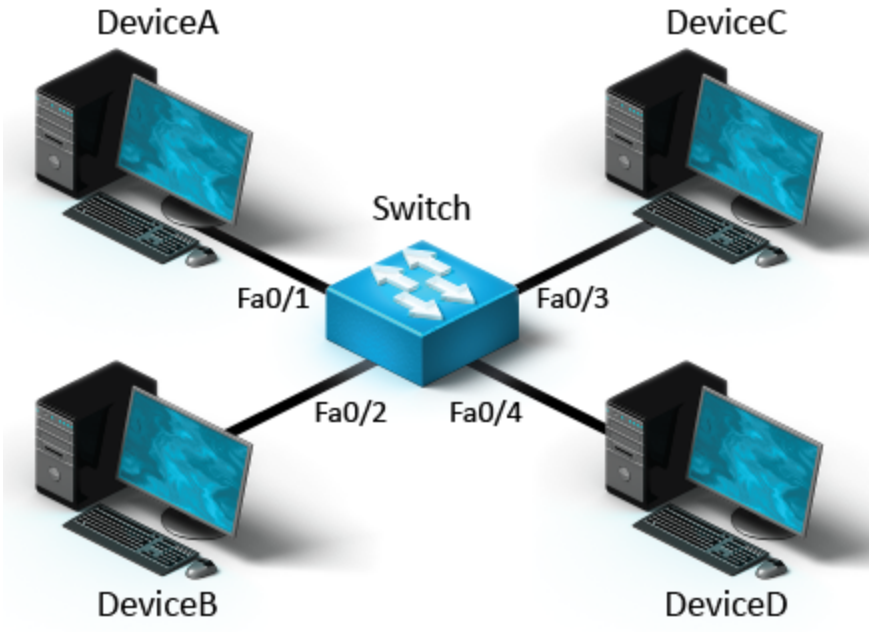
Question 3. ✓ Correct

Device B sends a frame to Device A on the network shown. The switch has an entry in its CAM table for Device A in its database, but not for Device B.

Which of the following best describes what the switch does with the message?



- The switch records the address and port for Device B in its database. It sends the frame out all ports except Fa0/2.
- The switch sends the frame out port Fa0/1.
- The switch sends the frame out all ports except Fa0/2.
- → The switch records the address and port for Device B in its database. It sends the frame out port Fa0/1.

Explanation

If an entry for the sending device does not currently exist in the switch's database, it records the device address and its port. If it knows the destination device's location, it sends the frame out that port.

If the switch does not know the destination device's location, it sends the frame out all ports except for the port on which the frame was received.

References

5.1.3 Switch Operations

5.1.4 Unicast, Broadcast, and Multicast Frames

5.1.5 Switch Operations Facts

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Question 4. ✓ Correct

You have a switch connected to a small network as shown. A hub connects Wrk1 and Wrk5 to the switch. The switch has the following information in its CAM table:

Port	Device
Fa0/1	Wrk1 Wrk5
Fa0/2	--
Fa0/3	Wrk3
Fa0/4	--

Wrk1 sends a frame addressed to Wrk5. What will the switch do with the frame? (Select two.)

- [ ] Record the location of Wrk1 in its database.

- [ ] Forward the frame out port Fa0/1.
- [x] → Not record the location of any device.
- [ ] Forward the frame out all ports.
- [ ] Forward the frame out all ports except Fa0/1.
- [ ] Record the location of Wrk5 in its database.
- [x] → Drop the frame.

Explanation

Because the switch knows the location of both the sending device (Wrk1) and the location of the destination device (Wrk5), it will not record any information in its database. Because the destination port is the same as the source port, it will drop the frame and not forward it out any other port.

References

5.1.3 Switch Operations

5.1.4 Unicast, Broadcast, and Multicast Frames

5.1.5 Switch Operations Facts

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Question 5. ✓ Correct

You have a network consisting of a switch, a router, a hub, and several workstations connected as shown in the graphic. No VLANs have been configured.

How many collision domains exist on the network shown?

- 1
- 2
- 3
- → 4
- 5
- 7

Explanation

The network has four collision domains. Each switch port is in its own collision domain. All computers connected to a hub share the same collision domain.

References

4.5.9 IPv6 Implementation Strategy Facts

5.1.6 Collision and Broadcast Domains

5.1.7 Broadcast and Collision Domain Facts

5.1.8 Switching Methods

5.1.9 Switching Method Facts

resources\text\t_lanseg_ccna7\q_lanseg_01_ccna7.question.xml

Question 6. ✓ Correct

You administer a network that uses bridges to connect network segments. The network is currently suffering from serious broadcast storms.

What can you do to solve the problem?

- ○ Install a central gateway to absorb broadcast storms.
- ○ Install a repeater at the end of each segment.
- ○ Replace the bridges with gateways.
- → ◉ Replace the bridges with routers.

Explanation

Broadcast messages are sent to every computer on the network. Too many broadcast messages can degrade system performance. A broadcast storm occurs when there are so many broadcast messages on the network that they approach or exceed the network bandwidth. Bridges, which operate at the Data Link layer, forward broadcasts. You can use routers to segment the network, which prevents broadcast storms because routers do not forward broadcasts from network to network.

References

2.5.8 Ethernet Standards Facts

5.1.6 Collision and Broadcast Domains

5.1.7 Broadcast and Collision Domain Facts

resources\text\t_lanseg_ccna7\q_lanseg_02_ccna7.question.xml

Question 7. ✓ Correct

Which of the following are advantages of using bridges to segment LAN traffic? (Select two.)

- [ ] Bridges can translate upper-layer protocols.
- [x] → Bridges can link network segments that use different physical media (as long as they have the same architecture).
- [ ] Bridges combine network traffic into a single distinct segment.
- [x] → Bridges create separate collision domains.
- [ ] Bridges create separate broadcast domains.

Explanation

Bridges are the most economical method of relieving network congestion. They create separate collision domains by dividing network traffic into two distinct segments.

However, they do not create separate broadcast domains because broadcast traffic is forwarded by the bridge. Bridges can link segments that use different transmission media as long as they use the same architecture. They cannot translate between upper-layer protocols because they operate at the Data Link layer.

References

2.5.8 Ethernet Standards Facts

5.1.6 Collision and Broadcast Domains

5.1.7 Broadcast and Collision Domain Facts

resources\text\t_lanseg_ccna7\q_lanseg_03_ccna7.question.xml

Question 8. ✓ Correct

You are the network administrator for a rapidly growing company with a 100BaseT network. Users have recently complained about slow file transfers. In a check of network traffic, you discover a high number of collisions.

Which connectivity device would best reduce the number of collisions and prepare for future growth?

- Router
- → Switch
- Hub
- Bridge

Explanation

A switch would be the best choice in this situation. Switches can provide benefits at a lower cost per port, and they offer more administration options.

A bridge segments traffic and reduces collisions, but it would be harder to maintain and to add new bridges as the network grows.

A router would prepare for growth and reduce collisions.

References

4.5.9 IPv6 Implementation Strategy Facts

5.1.6 Collision and Broadcast Domains

5.1.7 Broadcast and Collision Domain Facts

5.1.8 Switching Methods

5.1.9 Switching Method Facts

resources\text\t_lanseg_ccna7\q_lanseg_04_ccna7.question.xml

Question 9. ✓ Correct

Which frame processing method causes a switch to wait until the first 64 bytes of the frame have been received before forwarding the frame to the destination device?

- Store-and-forward
- Adaptive
- Cut-through
- → Fragment-free

Explanation

When using fragment-free processing, the switch starts to forward a frame before the entire the frame has arrived. The switch waits until the first 64 bytes of the frame are received before forwarding the frame to the destination device. Typically, a collision is detected within the first 64 bytes of a frame transmission. By waiting until the first 64 bytes have arrived, it is assumed that any frames corrupted by a collision are detected by the switch.

When using store-and-forward processing, the switch fully buffers frames and checks their integrity before forwarding them. When using cut-through processing, the switch starts to forward a frame as soon as its header is received, but before the rest of the frame has arrived. As a result, corrupt frames are forwarded before they can be detected. The adaptive frame processing option automatically selects a processing method (store-and-forward, cut-through, or fragment-free).

References

4.5.9 IPv6 Implementation Strategy Facts

5.1.6 Collision and Broadcast Domains

5.1.7 Broadcast and Collision Domain Facts

5.1.8 Switching Methods

5.1.9 Switching Method Facts

resources\text\t_switchmethod_ccna7\q_switchmethod_01_ccna7.question.xml

Question 10. ✓ Correct

Which of the following are true of store-and-forward switches? (Select three.)

- [ ] Frames with errors are forwarded.
- [x] → Frames with errors are dropped.
- [ ] Latency is less than with cut-through switches.
- [ ] Frames are forwarded without being checked for errors.
- [ ] All frames are forwarded, regardless of whether they contain errors.
- [x] → Frames are checked for errors before being forwarded.
- [x] → Latency is greater than with cut-through switches.

Explanation

Store-and-forward switches receive the entire frame, verify its integrity (check for errors), and then forward it to the correct port. Frames with errors are dropped.

Cut-through switches do not check for errors. They forward frames regardless of their integrity. Because store-and-forward switches check for errors, latency (delay time) is greater than with cut-through switches.

References

4.5.9 IPv6 Implementation Strategy Facts

5.1.6 Collision and Broadcast Domains

5.1.7 Broadcast and Collision Domain Facts

5.1.8 Switching Methods

5.1.9 Switching Method Facts

resources\text\t_switchmethod_ccna7\q_switchmethod_02_ccna7.question.xml