

642-813

Cisco

Implementing Cisco Switched Networks

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QUESTION: 1

Company uses layer 3 switches in the Core of their network. Which method of Layer 3 switching uses a forwarding information base (FIB)?

- A. Topology-based switching
- B. Demand-based switching
- C. Route caching
- D. Flow-based switching
- E. None of the other alternatives apply

Answer: A

Explanation:

The Layer 3 engine (essentially a router) maintains routing information, whether from static routes or dynamic routing protocols. Basically, the routing table is reformatted into an ordered list with the most specific route first, for each IP destination subnet in the table. The new format is called a Forwarding Information Base (FIB) and contains routing or forwarding information that the network prefix can reference. In other words, a route to 10.1.0.0/16 might be contained in the FIB, along with routes to 10.1.1.0/24 and 10.1.1.128/25, if those exist. Notice that these examples are increasingly more specific subnets. In the FIB, these would be ordered with the most specific, or longest match, first, followed by less specific subnets. When the switch receives a packet, it can easily examine the destination address and find the longest match entry in the FIB. The FIB also contains the next-hop address for each entry. When a longest match entry is found in the FIB, the Layer 3 next-hop address is found, too.

QUESTION: 2

You need to design the VLAN scheme for the Company network. Which two statements are true about best practices in VLAN design? (Select two)

- A. Routing should occur at the access layer if voice VLANs are utilized. Otherwise, routing should occur at the distribution layer.
- B. Routing should always be performed at the distribution layer.
- C. VLANs should be localized to a switch.
- D. VLANs should be localized to a single switch unless voice VLANs are being utilized.
- E. Routing should not be performed between VLANs located on separate switches.

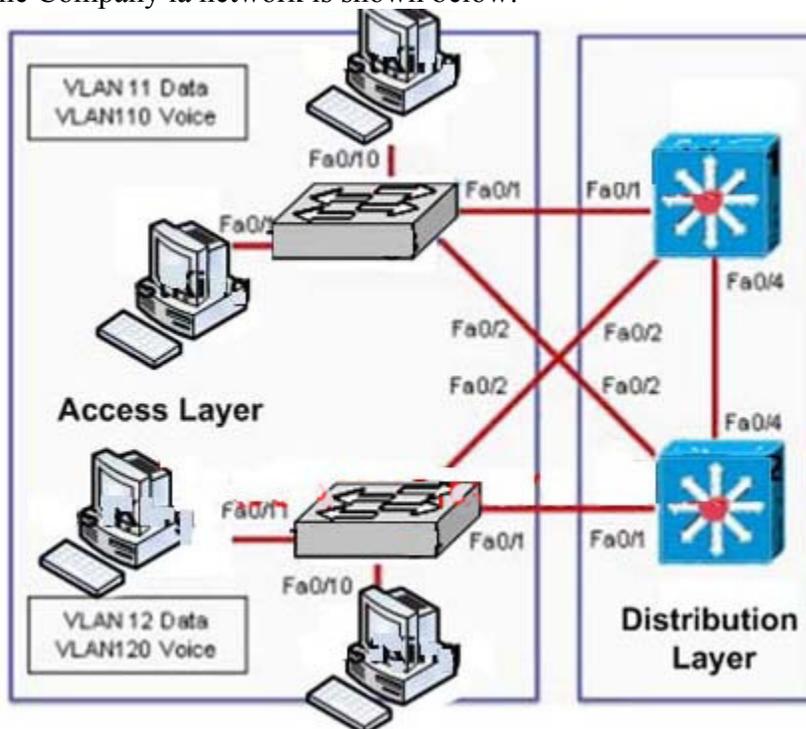
Answer: B, C

Explanation:

In the distribution layer, uplinks from all access layer devices are aggregated, or come together. The distribution layer switches must be capable of processing the total volume of traffic from all the connected devices. These switches should have a port density of high-speed links to support the collection of access layer switches. VLANs and broadcast domains converge at the distribution layer, requiring routing, filtering, and security. The switches at this layer must be capable of performing multilayer switching with high throughput. Only certain Catalyst switch models can provide multilayer switching; be sure to understand which ones can do this. A switched environment offers the technology to overcome flat network limitations. Switched networks can be subdivided into VLANs. By definition, a VLAN is a single broadcast domain. All devices connected to the VLAN receive broadcasts from other VLAN members. However, devices connected to a different VLAN will not receive those same broadcasts. (Naturally, VLAN members also receive unicast packets directed toward them from other VLAN members.) A VLAN consists of defined members communicating as a logical network segment. In contrast, a physical segment consists of devices that must be connected to a physical cable segment. A VLAN can have connected members located anywhere in the campus network, as long as VLAN connectivity is provided between all members. Layer 2 switches are configured with a VLAN mapping and provide the logical connectivity between the VLAN members.

QUESTION: 3

The Company Ia network is shown below:



On the basis of the information provided in the exhibit above, which two sets of procedures are best practices for Layer 2 and 3 failover alignment? (Select two)

- A. Configure the Company1 switch as the standby HSRP router and the STP root for VLANs 11 and 110. Configure the Company2 switch as the standby HSRP router and the STP root for VLANs 12 and 120.
- B. Configure the Company1 switch as the active HSRP router and the backup STP root for VLANs 11 and 110. Configure the Company2 switch as the active HSRP router and the backup STP root for VLANs 12 and 120.
- C. Configure the Company2 switch as the active HSRP router and the STP root for all VLANs. Configure the Company1 switch as the standby HSRP router and backup STP root for all VLANs.
- D. Configure the Company1 switch as the active HSRP router and the STP root for all VLANs. Configure the Company2 switch as the standby HSRP router and backup STP root for all VLANs.
- E. Configure the Company1 switch as the standby HSRP router and the backup STP root for VLANs 12 and 120. Configure the Company2 switch as the standby HSRP router and the backup STP root for VLANs 11 and 110.
- F. Configure the Company1 switch as the active HSRP router and the STP root for VLANs 11 and 110. Configure the Company2 switch as the active HSRP router and the STP root for VLANs 12 and 120.

Answer: E, F

Explanation:

Basically, each of the routers that provides redundancy for a given gateway address is assigned to a common HSRP group. One router is elected as the primary, or active, HSRP router, another is elected as the standby HSRP router, and all the others remain in the listen HSRP state. The routers exchange HSRP hello messages at regular intervals, so they can remain aware of each other's existence, as well as that of the active router. HSRP election is based on a priority value (0 to 255) that is configured on each router in the group. By default, the priority is 100. The router with the highest priority value (255 is highest) becomes the active router for the group. If all router priorities are equal or set to the default value, the router with the highest IP address on the HSRP interface becomes the active router. To set the priority, use the following interface configuration command:

Switch(config-if)# standby group priority priority
When HSRP is configured on an interface, the router progresses through a series of states before becoming active. This forces a router to listen for others in a group and see where it fits into the pecking order. The HSRP state sequence is Disabled, Init, Listen, Speak, Standby, and, finally, Active. You can configure a router to preempt or immediately take over the active role if its priority is the highest at any time. Use the following interface configuration command to allow preemption:
Switch(config-if)# standby group preempt [delay seconds]

QUESTION: 4

If you needed to transport traffic coming from multiple VLANs (connected between switches), and your CTO was insistent on using an open standard, which protocol would you use?

- A. 802.11B
- B. spanning-tree
- C. 802.1Q
- D. ISL
- E. VTP
- F. Q.921

Answer: C

Explanation:

The act involved in the above question is trunking. The two trunking protocols in the answer choices are: 802.1Q and ISL. ISL is Cisco proprietary and IEEE 802.1Q is based on an open standard. When non-Cisco switches are used along with Cisco switches and trunking is required, it is best to use the 802.1Q encapsulation.

Incorrect Answers:

- A: This standard is used in wireless networking and has nothing to do with VLAN switching.
- B: The Spanning Tree Protocol (STP) is used to prevent loops within a bridged network. Each VLAN runs a separate instance of the STP and this is enabled by default.
- D: This is the alternative Cisco proprietary method of trunking.
- E: VLAN Trunking Protocol (VTP) is a Layer 2 messaging protocol that manages the addition, deletion, and renaming of VLANs on a network-wide basis. It is not used to actually transport VLAN traffic.
- F: This is an ISDN signaling standard and is not related with VLAN switching.

QUESTION: 5

Under what circumstances should an administrator prefer local VLANs over end-to-end VLANs?

- A. Eighty percent of traffic on the network is destined for Internet sites.
- B. There are common sets of traffic filtering requirements for workgroups located in multiple buildings.
- C. Eighty percent of a workgroup's traffic is to the workgroup's own local server.
- D. Users are grouped into VLANs independent of physical location.
- E. None of the other alternatives apply

Answer: A

Explanation:

This geographic location can be as large as an entire building or as small as a single switch inside a wiring closet. In a geographic VLAN structure, it is typical to find 80 percent of the traffic remote to the user (server farms and so on) and 20 percent of the traffic local to the user (local server, printers, and so on).

Reference:

Building Cisco Multilayer Switched Networks (Cisco Press) page 93

QUESTION: 6

What are some virtues of implementing end-to-end VLANs? (Choose two)

- A. End-to-end VLANs are easy to manage.
- B. Users are grouped into VLANs independent of a physical location.
- C. Each VLAN has a common set of security and resource requirements for all members.
- D. Resources are restricted to a single location.

Answer: B, C

Explanation:

In an end-to-end VLAN, users are grouped into VLANs independent of physical location and dependent on group or job function. Each VLAN has a common set of security requirements for all members.

Incorrect Answers:

- A: End to end VLANs are more difficult to manage than local VLANs, due to the physical distances that they can span.
- D: In an end-to-end VLAN, network resources are generally distributed across the entire enterprise wide area network.

QUESTION: 7

Which of the following statements is true about the 80/20 rule (Select all that apply)?

- A. 20 percent of the traffic on a network segment should be local
- B. no more than 20 percent of the network traffic should be able to move across a backbone.
- C. no more than 80 percent of the network traffic should be able to move across a backbone.
- D. 80 percent of the traffic on a network segment should be local

Answer: B, D

Explanation:

The 80/20 rule in network design originated from the idea that most of the traffic should remain local to the LAN, since bandwidth is plentiful compared to WAN links, and a great deal of broadcast traffic that is evident at the LAN is not passed over the backbone. Note: With the availability of inexpensive bandwidth and centralized data centers, this rule appears to have become obsolete. In fact, most networks have taken on the 20/80 rules, as opposed to the legacy 80/20 rule.

QUESTION: 8

The Company LAN is becoming saturated with broadcasts and multicast traffic. What could you do to help a network with many multicasts and broadcasts?

- A. Creating smaller broadcast domains by implementing VLANs.
- B. Separate nodes into different hubs.
- C. Creating larger broadcast domains by implementing VLANs.
- D. Separate nodes into different switches.
- E. All of the above.

Answer: A

Explanation:

Controlling broadcast propagation throughout the network is important to reduce the amount of overhead associated with these frames. Routers, which operate at Layer 3 of the OSI model, provide broadcast domain segmentation for each interface. Switches can also provide broadcast domain segmentation using virtual LANs (VLANs). A VLAN is a group of switch ports, within a single or multiple switches, that is defined by the switch hardware and/or software as a single broadcast domain. A VLANs goal is to group devices connected to a switch into logical broadcast domains to control the effect that broadcasts have on other connected devices. A VLAN can be characterized as a logical network.

Reference:

Building Cisco Multilayer Switched Networks (Cisco Press) page 8

QUESTION: 9

The Company LAN switches are being configured to support the use of Dynamic VLANs. Which of the following are true of dynamic VLAN membership? (Select all that apply)

- A. VLAN membership of a user always remains the same even when he/she is moved to another location.

- B. VLAN membership of a user always changes when he/she is moved to another location.
- C. Membership can be static or dynamic.
- D. Membership can be static only.
- E. None of the other alternatives apply.

Answer: A, C

Explanation:

Dynamic VLAN memberships are based on the users MAC address connected to the port. If you have VTP server, a VTP database file, a VTP client switch, and a dynamic port; regardless of where your physical location is, you can still remain in the same VLAN.

Incorrect Answers:

- B: This was true before the use of Dynamic VLAN membership, as VLANs were assigned to ports, not users.
- D: VLAN memberships can be either static or dynamic.

QUESTION: 10

The Company LAN switches are being configured to support the use of Dynamic VLANs. What should be considered when implementing a dynamic VLAN solution? (Select two)

- A. Each switch port is assigned to a specific VLAN.
- B. Dynamic VLANs require a VLAN Membership Policy Server.
- C. Devices are in the same VLAN regardless of which port they attach to.
- D. Dynamic VLAN assignments are made through the command line interface.

Answer: B, C

Explanation:

With VLAN Membership Policy Server (VMPS), you can assign switch ports to VLANs dynamically, based on the source Media Access Control (MAC) address of the device connected to the port. When you move a host from a port on one switch in the network to a port on another switch in the network, the switch assigns the new port to the proper VLAN for that host dynamically.

Note: There are two types of VLAN port configurations: static and dynamic.

Incorrect Answers:

- A: In a static VLAN, the administrator assigns switch ports to the VLAN, and the association does not change until the administrator changes the port assignment. However, this is not the case of dynamic VLANs.
- D: The Command Line Interface is not used for dynamic VLAN assignments.

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