Chapter 22: Quiz – Enterprise Network Architecture (Answers) CCNPv8 ENCOR

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1. What is a characteristic of the distribution layer in the three layer hierarchical model?

- acts as the backbone for the network, aggregating and distributing network traffic throughout the campus
- **provides access to the rest of the network through switching, routing, and network access policies**
- distributes access to end users
- represents the network edge

Explanation: One of the functions of the distribution layer is aggregating large-scale wiring closet networks. Providing access to end users is a function of the access layer, which is the network edge. Acting as a backbone is a function of the core layer.

2. What is a definition of a two-tier LAN network design?

- access and core layers collapsed into one tier, and the distribution layer on a separate tier
- access and distribution layers collapsed into one tier, and the core layer on a separate tier
- **distribution and core layers collapsed into one tier, and the access layer on a separate tier**
- access, distribution, and core layers collapsed into one tier, with a separate backbone layer

Explanation: Maintaining three separate network tiers is not always required or cost-efficient. All network designs require an access layer, but a two-tier design can collapse the distribution and core layers into one layer to serve the needs of a small location with few users.

3. A network technician is evaluating the desirable features of both access and distribution layer switches. Which two features are common to switches at these two layers? (Choose two.)

- **QoS**
- PoE
- connectivity to the data center

- **link aggregation**
- application based filtering

Explanation: Because the access layer is the connection point for endpoints, it plays a big role in ensuring the network is protected from malicious attacks. This protection includes making sure that the end users and endpoints connecting to the network are prevented from accessing services for which they are not authorized. Furthermore, the QoS trust boundary and QoS mechanisms are typically enabled on this layer. The primary function of the distribution layer is to aggregate access layer switches in a given building or campus.

4. What are two benefits of extending access layer connectivity to users through a wireless medium? (Choose two.)

- **increased flexibility**
- decreased number of critical points of failure
- **reduced costs**
- increased bandwidth availability
- increased network management options

Explanation: Wireless connectivity at the access layer provides increased flexibility, reduced costs, and the ability to grow and adapt to changing business requirements. Utilizing wireless routers and access points can provide an increase in the number of central points of failure. Wireless routers and access points will not provide an increase in bandwidth availability.

5. Which task would typically require only services that are located at the access layer of the hierarchical design model?

- connecting to the corporate web server to update sales figures
- using a VPN from home to send data to the main office server farm
- responding to an email from a co-worker in another department
- printing a meeting agenda on a departmental network printer in a different VLAN
- **intra-VLAN communications between two hosts that reside on the same local departmental network**

Explanation: In the hierarchical LAN design, the access layer switches are not interconnected to each other. Communication between endpoints on different access layer switches occurs through the distribution layer, so an example of a task that typically requires only services located at the access layer is an intra-VLAN communication between two hosts that reside on the same local departmental network.

6. What feature is more important at the core layer than at any other hierarchical network design layer?

- easy access of end devices
- aggregation of network links
- QoS classification and marking
- data security
- **packet switching speed**

Explanation: Even though QoS classification and marking can be done at any layer, it typically is done at the access layer when possible. High availability easy access is also a function of the access layer. Data security can also be a part of any layer, but the access layer tends to focus on port security and the distribution layer on policy-based security. The core layer is considered to be the network backbone of the hierarchical network design model. Packet switching speed is critical for the core layer to provide high-speed, availability, and redundancy.

7. Which Cisco Enterprise Architecture module consists of a building or group of buildings consisting of many LANs in a fixed geographic area?

- enterprise branch
- enterprise edge
- **enterprise campus**
- enterprise data center

Explanation: The enterprise campus module consists of many LANs and is usually limited to a fixed geographic area. It can consist of a single building or multiple buildings.

8. A network administrator is planning the upgrade of an enterprise LAN to feature Layer 3 support for the application of data security policies, aggregated links, and redundant devices and links. Which switches in the hierarchical three-layer design model support these network requirements?

- core switches
- access switches
- backbone switches
- **distribution switches**

Explanation: The primary function of the distribution layer is to aggregate access layer switches in a given building or campus. The distribution layer provides a boundary between the Layer 2 domain of the access layer and the Layer 3 domain of the core. This boundary provides two key functions for the LAN. On the Layer 2 side, the distribution layer creates a boundary for Spanning Tree Protocol (STP), limiting propagation of Layer 2 faults. On the Layer 3 side, the distribution layer provides a logical point to summarize IP routing information when it enters the core layer. The distribution switches need to be deployed in pairs for redundancy.

9. Which two devices would commonly be found at the access layer of the hierarchical enterprise LAN design model? (Choose two.)

- **access point**
- firewall
- **Layer 2 switch**
- Layer 3 device
- modular switch

Explanation: While some designs do route at the access layer, the two devices that should always be placed at the access layer of the hierarchical design model are an access point and a Layer 2 switch. A modular switch is commonly used at the core layer. Routing by a Layer 3 device is commonly used in the distribution layer. The firewall is a device in the Internet edge network design.

10. What do companies gain from the services performed at the network edge?

- faster communication with server farms
- **stronger security against malicious attacks**
- faster communication with Internet destinations
- enhanced performance and reliability through VLANs and redundant trunk links

Explanation: Because the access layer (network edge) is the connection point for endpoints, it plays a big role in ensuring that the network is protected from malicious attacks. This protection includes making sure the end users and endpoints connecting to the network are prevented from accessing services for which they are not authorized.

11. On a campus network, personnel who are located in a five site college have access to servers found in one location. In which network block of the campus network architecture would these servers be found?

- WAN edge
- **data center**
- Internet edge
- network services

Explanation: In this hierarchical model, the distribution/core layer provides connectivity to the WAN edge block, the Internet edge block, the network services block, and data center. The WAN edge block is used to connect to remote data centers, remote branches or other campus networks. The Internet edge block is used for regular Internet access, ecommerce, to connect to remote branches, and remote VPN access. The data center/server room block is where business critical servers are placed to serve up websites, corporate e-mail, business applications, storage, big data processing, and backup services. The network services edge is

where devices providing network services reside such as the Wireless LAN Controllers (WLCs), Identity Services Engine (ISE), Telepresence Manager, and Cisco Unified Communications Manager (CUCM).

12. A network engineer has to decide between a Layer 2 Access Layer (STP-based) and a Layer 3 Access Layer (Routed access) campus design option. Which statement must be considered for a decision to be made?

- The STP based access option supports spanning VLANs across multiple access switches, whereas the Routed access option does not.
- The Routed access option is the best cost-effective solution.
- The STP based option does not require FHRP, whereas the Routed access option does.
- **The Routed access option offers easier troubleshooting than the STP-based option.**

Explanation: The Routed access design has a number of advantages over the STP-based design:

- No FHRP required – no need for FHRP protocols such as HSRP and VRRP.
- No STP required – since there are no L2 links to block, this design removes the need for STP.
- Easier troubleshooting – It offers common end-to-end troubleshooting tools (such as ping and traceroute).

The Routed access is an excellent design for many environments, but it has the same limitation as the STP-based design, in which it does not support spanning VLANs across multiple access switches. Additionally, it might not be the most cost-effective solution because access layer switches with Layer 3 routing capability might cost more than Layer 2 switches do.