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CCNA 4 (v5.0.3 + v6.0) Chapter 1 Exam Answers Full

1. **A small company with 10 employees uses a single LAN to share information between computers. Which type of connection to the Internet would be appropriate for this company?**
   - private dedicated lines through their local service provider
   - a dialup connection that is supplied by their local telephone service provider
   - Virtual Private Networks that would enable the company to connect easily and securely with employees
   - **a broadband service, such as DSL, through their local service provider***

   For this small office, an appropriate connection to the Internet would be through a common broadband service called Digital Subscriber Line (DSL), available from their local telephone service provider. With so few employees, bandwidth is not a significant problem. If the company were bigger, with branch offices in remote sites, private lines would be more appropriate. Virtual Private Networks would be used if the company had employees who needed to connect to the company via Internet.

2. **Which network scenario will require the use of a WAN?**
   - **Employees need to connect to the corporate email server through a VPN while traveling.***
   - Employees in the branch office need to share files with the headquarters office that is located in a separate building on the same campus network.
   - Employees need to access web pages that are hosted on the corporate web servers in the DMZ within their building.
   - Employee workstations need to obtain dynamically assigned IP addresses.

   When traveling employees need to connect to a corporate email server through a WAN connection, the VPN will create a secure tunnel between an employee laptop and the corporate network over the WAN connection. Obtaining dynamic IP addresses through DHCP is a function of LAN communication. Sharing files among separate buildings on a corporate campus is accomplished through the LAN infrastructure. A DMZ is a protected network inside the corporate LAN infrastructure.

3. **Which statement describes a characteristic of a WAN?**
   - A WAN operates within the same geographic scope of a LAN, but has serial links.
   - A WAN provides end-user network connectivity to the campus backbone.
   - **WAN networks are owned by service providers.***
   - All serial links are considered WAN connections.

   WANs are used to interconnect the enterprise LAN to remote branch site LANs and telecommuter sites. A WAN is owned by a service provider. Although WAN connections are typically made through serial interfaces, not all serial links are connected to a WAN. LANs, not WANs, provide end-user network connectivity in an organization.

4. **What are two common types of circuit-switched WAN technologies? (Choose two.)**
   - **ISDN***
   - DSL
   - **PSTN***
   - ATM
   - Frame Relay

   The two most common types of circuit-switched WAN technologies are the public switched telephone network (PSTN) and the integrated services digital network (ISDN). Frame Relay and ATM are packet-switched WAN technologies. DSL is a WAN technology that offers broadband Internet access.

5. **Which two devices are needed when a digital leased line is used to provide a connection between the customer and the service provider? (Choose two.)**
   - dialup modem
   - access server
   - **DSU***
   - Layer 2 switch
   - **CSU***

   Digital leased lines require a channel service unit (CSU) and a data service unit (DSU). An access server concentrates dialup modem dial-in and dial-out user communications. Dialup modems are used to temporarily enable the use of analog telephone lines for digital data communications. A Layer 2 switch is used to connect a LAN.

6. **What is a requirement of a connectionless packet-switched network?**
   - **Full addressing information must be carried in each data packet.***
   - A virtual circuit is created for the duration of the packet delivery.
   - The network predetermines the route for a packet.
   - Each packet has to carry only an identifier.

   A connection-oriented system predetermines the network path, creates a virtual circuit for the duration of the packet delivery, and requires that each packet only carry an identifier. A connectionless packet-switched network, such as the Internet, requires each data packet to carry addressing information.

7. **What is an advantage of packet-switched technology over circuit-switched technology?**
   - Packet-switched networks do not require an expensive permanent connection to each endpoint.
   - **Packet-switched networks can efficiently use multiple routes inside a service provider network.***
   - Packet-switched networks are less susceptible to jitter than circuit-switched networks are.
   - Packet-switched networks usually experience lower latency than circuit-switched networks experience.

   Packet switching does not require a circuit to be established and is able to route packets across a shared network. The cost of packet switching is lower than that of circuit-switching.

8. **A new corporation needs a data network that must meet certain requirements. The network must provide a low cost connection to sales people dispersed over a large geographical area. Which two types of WAN infrastructure would meet the requirements? (Choose two.)**
   - private infrastructure
   - **public infrastructure***
   - satellite
   - **Internet***
   - dedicated

   VPNs over the Internet provide low cost, secure connections to remote users. VPNs are deployed over the Internet public infrastructure.

9. **What is a long distance fiber-optic media technology that supports both SONET and SDH, and assigns incoming optical signals to specific wavelengths of light?**
   - **DWDM***
   - ISDN
   - MPLS
   - ATM

   ISDN (Integrated Services Digital Network), ATM (Asynchronous Transfer Mode), and MPLS (Multiprotocol Label Switching) do not describe optic fiber technologies.

10. **What are two common high-bandwidth fiber-optic media standards? (Choose two.)**
    - **SONET***
    - **SDH***
    - ANSI
    - ATM
    - ITU

    ATM (Asynchronous Transfer Mode) is a Layer 2 technology. ANSI (American National Standards Institute) and ITU (international Telecommunication Union) are standards organizations.

11. **Which WAN technology is cell-based and well suited to carry voice and video traffic?**
    - VSAT
    - Frame Relay
    - ISDN
    - **ATM***

    ATM is cell-based architecture. The small and fixed cells are well-suited for carrying voice and video traffic because this traffic is intolerant of delay. Video and voice traffic do not have to wait for larger data packets to be transmitted. ISDN is circuit-switched. Frame Relay and VSAT are packet-switched.

12. **Which two technologies use the PSTN network to provide an Internet connection? (Choose two.)**
    - MPLS
    - ATM
    - **dialup***
    - Frame Relay
    - **ISDN***

Dialup and ISDN use the PSTN network to provide WAN connectivity. ATM, MPLS, and Frame Relay require the service providers to build a specific network cloud to support each technology.

13. **A company needs to interconnect several branch offices across a metropolitan area. The network engineer is seeking a solution that provides high-speed converged traffic, including voice, video, and data on the same network infrastructure. The company also wants easy integration to their existing LAN infrastructure in their office locations. Which technology should be recommended?**
   - Frame Relay
   - ISDN
   - VSAT
   - **Ethernet WAN***

   Ethernet WAN uses many Ethernet standards and it connects easily to existing Ethernet LANs. It provides a switched, high-bandwidth Layer 2 network capable of managing data, voice, and video all on the same infrastructure. ISDN, while capable of supporting both voice and data, does not provide high bandwidth. VSAT uses satellite connectivity to establish a private WAN connection but with relatively low bandwidth. Use of VSAT, ISDN, and Frame Relay require specific network devices for the WAN connection and data conversion between LAN and WAN.

14. **Which solution can provide Internet access to remote locations where no regular WAN services are available?**
   - WiMAX
   - **VSAT***
   - Ethernet
   - municipal Wi-Fi

   VSAT provides Internet access through satellites, which is a solution for remote areas. WiMAX and municipal Wi-Fi are used to provide Internet connections in a metropolitan area. Ethernet is a LAN technology.

15. **Which WAN technology establishes a dedicated constant point-to-point connection between two sites?**
   - ATM
   - Frame Relay
   - ISDN
   - **leased lines***

   A leased link establishes a dedicated constant point-to-point connection between two sites. ATM is cell-switched. ISDN is circuit-switched. Frame Relay is packet-switched.

16. **A customer needs a metropolitan area WAN connection that provides high-speed, dedicated bandwidth between two sites. Which type of WAN connection would best fulfill this need?**
   - MPLS
   - **Ethernet WAN***
   - circuit-switched network
   - packet-switched network

   MPLS can use a variety of underlying technologies such as T- and E-Carriers, Carrier Ethernet, ATM, Frame Relay, and DSL, all of which support lower speeds than an Ethernet

WAN. Neither a circuit-switched network, such as the public switched telephone network (PSTN) or Integrated Service Digital Network (ISDN), nor a packet-switched network, is considered high speed.

17. **Which feature is used when connecting to the Internet using DSL?**
   - **DSLAM***
   - LTE
   - CMTS
   - IEEE 802.16

   Long-Term Evolution (LTE) is used with cellular networks. IEEE 802.16 is used by WiMAX networks which provide high-speed broadband wireless service. The cable modem termination system (CMTS) is used by cable networks. A DSL access multiplexer (DSLAM) is used at an Internet provider location to connect multiple subscriber lines to the provider network.

18. **Which connectivity method would be best for a corporate employee who works from home two days a week, but needs secure access to internal corporate databases?**
   - WiMAX
   - DSL
   - **VPN***
   - cable

   VPNs are used by companies for site-to-site connectivity and by remote users to connect securely into the corporate network by the use of VPN client software.

19. **Which wireless technology provides Internet access through cellular networks?**
   - **LTE***
   - municipal WiFi
   - satellite
   - WiMAX

   LTE or LongTerm Evolution is a fourth-generation cellular access technology that supports Internet access.

20. **A home user lives within 10 miles (16 kilometers) of the Internet provider network. Which type of technology provides high-speed broadband service with wireless access for this home user?**
   - municipal Wi-Fi
   - DSL
   - **WiMAX***
   - 802.11

   WiMAX provides high-speed broadband service with wireless access and provides broad coverage. Municipal Wi-Fi is used for emergency services such as fire and police. DSL is a wired solution. 802.11 is a wireless LAN solution.

21. **What is the recommended technology to use over a public WAN infrastructure when a branch office is connected to the corporate site?**
   - **VPN***
   - ATM
   - ISDN

- municipal Wi-Fi

> ISDN and ATM are Layer 1 and 2 technologies that are typically used on private WANs. Municipal WiFi is a wireless public WAN technology. Corporate communications over public WANs should use VPNs for security.

22. **What can cause a reduction in available bandwidth on a cable broadband connection?**
    - committed information rate
    - **number of subscribers***
    - distance from the central office of the provider
    - smaller cells

    > Because the local subscribers share the same cable bandwidth, as more cable modem subscribers join the service, available bandwidth may decrease.

23. **Which equipment is needed for an ISP to provide Internet connections through cable service?**
    - access server
    - **CMTS***
    - CSU/DSU
    - DSLAM

    > The equipment located at a cable service provider office, the cable modem termination system (CMTS), sends and receives digital cable modem signals on a cable network to provide Internet services to cable subscribers. A DSLAM performs a similar function for DSL service providers. A CSU/DSU is used in leased line connections. Access servers are needed to process multiple simultaneous dial-up connections to a Central Office (CO).

24. **Which geographic scope requirement would be considered a distributed WAN scope?**
    - one-to-many
    - global
    - regional
    - local
    - **many-to-many***
    - one-to-one

    > In a business context, a one-to-one scope would encompass a corporation that has a single branch office. A one-to-many WAN scope would encompass a corporation with multiple branch offices. A distributed WAN would have many branch offices connected to many other sites.

25. **A corporation is looking for a solution to connect multiple, newly established remote branch offices. Which consideration is important when selecting a private WAN connection rather than a public WAN connection?**
    - higher data transmission rate
    - lower cost
    - **data security and confidentiality during transmission***
    - website and file exchange service support

    > A private WAN solution that involves dedicated links between sites offers the best security and confidentiality. Both private and public WAN solutions offer comparable connection bandwidth, depending on the technology chosen. Connecting multiple sites with private

WAN connections could be very expensive. The website and file exchange service support is not relevant.

26. Match the type of WAN device or service to the description. (Not all options are used.)
CPE —> devices and inside wiring that are located on the enterprise edge and connect to a carrier link
DCE —> devices that provide an interface for customers to connect to within the WAN cloud
DTE —> customer devices that pass the data from a customer network for transmission over the WAN
local loop —> a physical connection from the customer to the service provider POP

Match the type of WAN device or service to the description. (Not all options are used.)

CPE	service provider facility that connects the CPE to the provider network
DCE	
DTE	devices and inside wiring that are located on the enterprise edge and connect to a carrier link
local loop	
	a physical connection from the customer to the service provider POP
	location where the responsibility for the connection changes from the customer to the service provider
	customer devices that pass the data from a customer network for transmission over the WAN
	devices that provide an interface for customers to connect to within the WAN cloud

Match the type of WAN device or service to the description. (Not all options are used.)

_____

service provider facility that connects the CPE to the provider network

devices and inside wiring that are located on the enterprise edge and connect to a carrier link
CPE

a physical connection from the customer to the service provider POP
local loop

location where the responsibility for the connection changes from the customer to the service provider

customer devices that pass the data from a customer network for transmission over the WAN
DTE

devices that provide an interface for customers to connect to within the WAN cloud
DCE

27. Match the connectivity type to the description. (Not all options are used.)
    set up by a city to provide free Internet access **—> municipal Wi-Fi**
    slow access (upload speed is about one-tenth download speed) **—> satellite Internet**

uses traditional phone network **─> DSL**
uses traditional video network **─> cable**

Match the connectivity type to the description. (Not all options are used.)

|	
set up by a city to provide free Internet access	**cable**
slow access (upload speed is about one-tenth download speed)	
uses traditional phone network	**DSL**
uses traditional video network	
	municipal Wi-Fi
	satellite Internet
	VPN

Match the connectivity type to the description. (Not all options are used.)

cable

uses traditional video network

DSL

uses traditional phone network

municipal Wi-Fi

set up by a city to provide free Internet access

satellite Internet

slow access (upload speed is about one-tenth download speed)

VPN

Older Version

28. **What are two structured engineering principles necessary for successful implementation of a network design? (Choose two.)**
   - quality of service
   - **resiliency ***
   - **modularity ***
   - security
   - availability

29. **What is an important first consideration when starting to design a network?**
   - access security
   - type of applications
   - **size of the network***
   - protocols to be used

30. **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

31. **In which layer of the hierarchical enterprise LAN design model would PoE for VoIP phones and access points be considered?**
    - **access***
    - core
    - data link
    - distribution
    - physical

32. **Refer to the exhibit. Which type of Cisco hierarchical LAN design model is used at school site 1?**
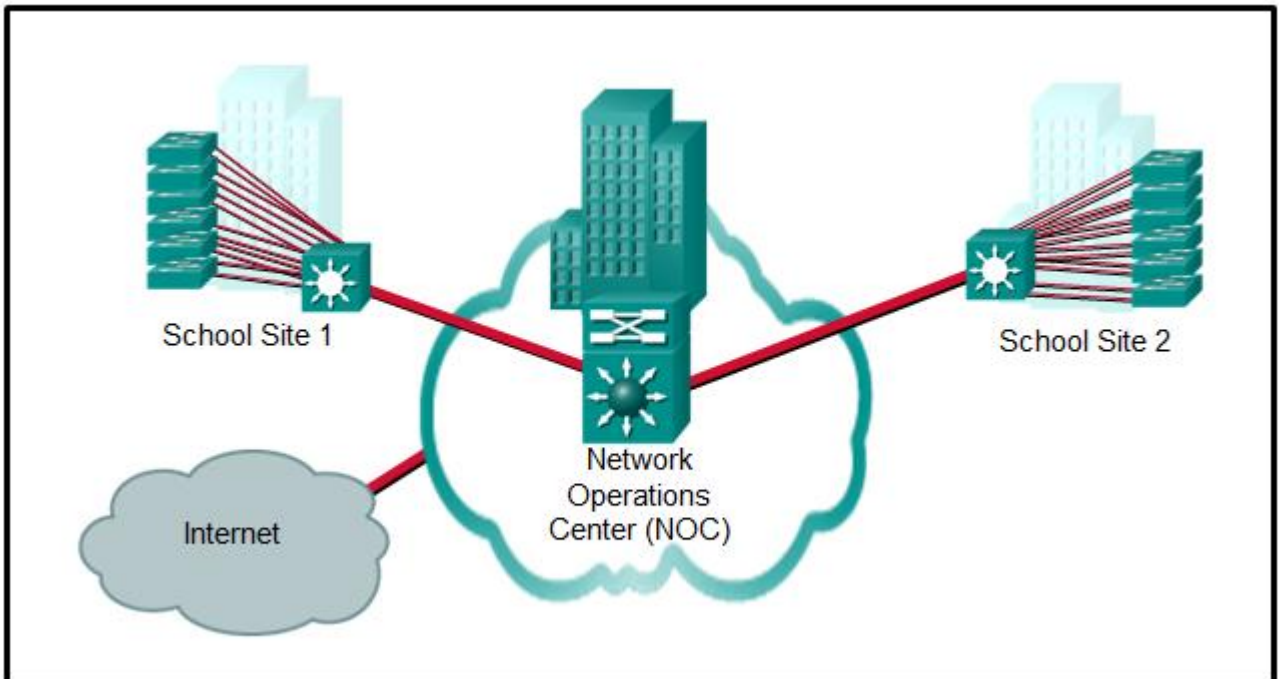
- 3 layer
- 7 layer
- **two-tier collapsed core***
- three-tier

33. **In a hierarchical network design, which layers may be combined into a collapsed core for smaller networks?**
    - core and access
    - **core and distribution***
    - distribution and access
    - core, distribution, and access

34. **The network design for a college with users at five sites is being developed. Where in the campus network architecture would servers used by all users be located?**
    - access-distribution
    - **data center***
    - enterprise edge
    - services

35. **What is one advantage to designing networks in building block fashion for large companies?**

- **failure isolation***
- increased network access time
- mobility
- redundancy

36. **A network engineer wants to redesign the wireless network and make use of wireless network controllers that manage the many deployed wireless access points. In which network design module of the campus network architecture would the centralized wireless network controllers be found?**
    - access-distribution
    - data center
    - enterprise edge
    - **services***

37. **Which network module is the fundamental component of a campus design?**
    - **access-distribution module***
    - services module
    - data center
    - enterprise edge

38. **Which approach in networking allows for network changes, upgrades, or the introduction of new services in a controlled and staged fashion?**
    - borderless
    - static
    - **modular***
    - network module

39. **Refer to the exhibit. Which type of ISP connectivity to the service provider edge is being used by company A?**
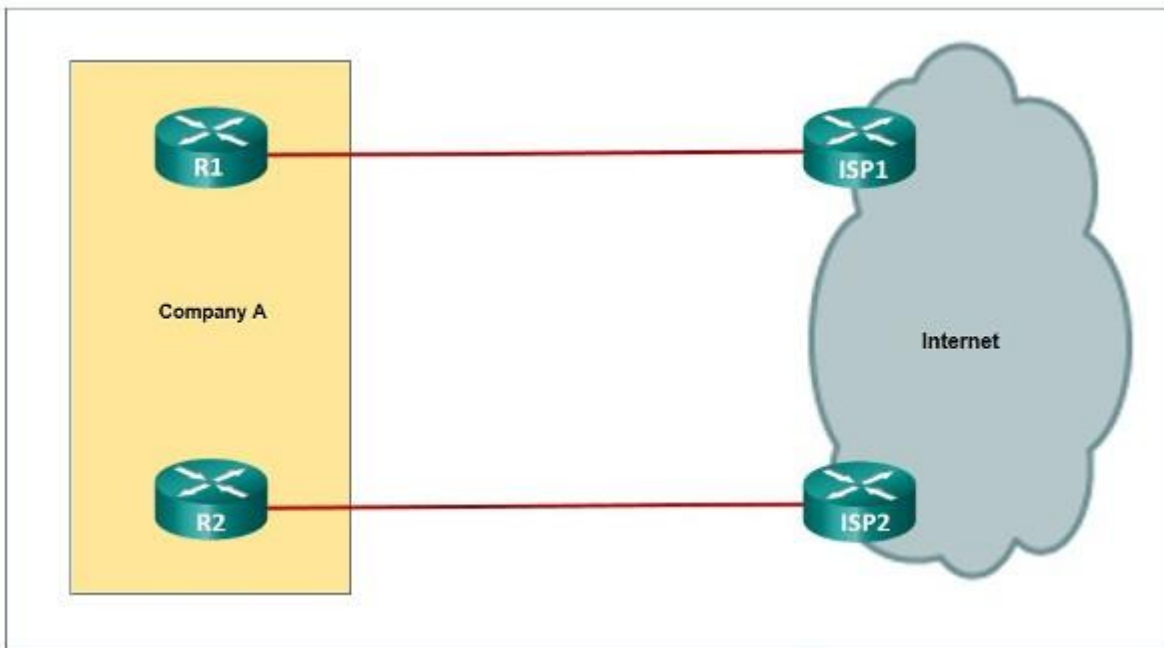
    - single-homed
    - dual-homed
    - **multihomed***
    - dual-multihomed

40. **Which three network architectures have been introduced by Cisco to address the emerging technology challenges created by the evolving business models? (Choose three.)**
    - **Cisco Borderless***
    - Cisco Enterprise Edge
    - **Cisco Data Center***
    - Cisco Enterprise Campus
    - **Cisco Collaboration***
    - Cisco Enterprise Branch

41. **Which layer of the Cisco Collaboration Architecture contains unified communications and conference software such as Cisco WebEx Meetings, WebEx Social, Cisco Jabber, and TelePresence?**
    - **applications and devices***
    - enterprise WAN
    - services module
    - service provider edge

42. **Which Cisco technology allows diverse network devices to connect securely, reliably, and seamlessly to enterprise network resources?**
    - building distribution
    - **Cisco AnyConnect***
    - enterprise edge
    - service provider edge

43. **What is creating a new challenge for IT departments by changing the border of the enterprise network?**
    - company-owned desktops
    - access layer switching
    - **tablets***
    - energy costs

44. **Which network architecture functions through a combination of technologies that include wired, wireless, security, and more?**
    - Cisco Enterprise Campus
    - Cisco Enterprise Branch
    - **Cisco Borderless***
    - Cisco Enterprise Edge

45. **Which network architecture combines individual components to provide a comprehensive solution allowing people to cooperate and contribute to the production of something?**
    - Cisco Enterprise Campus Architecture
    - Cisco Enterprise Branch Architecture
    - Cisco Borderless Network Architecture
    - **Cisco Collaboration Architecture***

46. **Fill in the blank.**
    Reducing the complexity of network design by dividing a network into smaller areas is an example of a **hierarchical** network model.

47. **Fill in the blank. Use the abbreviation.**
    Under the Cisco Enterprise Edge module, the submodule that provides remote access including authentication and IPS appliances is the **VPN** and remote access submodule.

48. **Fill in the blank.**
Reducing the complexity of network design by dividing a network into smaller
areas is an example of a " **hierarchical** " network model.

49. **Match the layer to the corresponding device. (Not all options are used.)**

Match the layer to the corresponding device. (Not all options are used.)

access	ASA
core	high-speed switches
distribution	Layer 2 switches
	Layer 3 switches

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Place the options in the following order:
– not scored –
core -> high-speed switches
access -> Layer 2 switches
distribution -> Layer 3 switches

50. **Match the submodule to the correct Cisco Enterprise Architecture module. (Not all options
are used.)**

Match the submodule to the correct Cisco Enterprise Architecture module. (Not all options are used.)

VPN and remote access	Cisco Enterprise Campus
DMZ	submodule
campus core	submodule
e-commerce	submodule
building distribution	Cisco Enterprise Edge
data center	submodule
PSTN	submodule
	submodule

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Place the options in the following order:
Cisco Enterprise Campus
[+] campus core
[+] building distribution
[+] data center
Cisco Enterprise Edge
[#] VPN and remote access
[#] DMZ
[#] e-commerce

51. **What are two of the top trends that affect network architecture design? (Choose two.)**
   ▪ Internet security
    ▪ internal security attacks

- speed of Internet connectivity
- **cloud computing***
- **BYOD***

52. **Why would a company want network engineers to adhere to structured engineering principles when designing networks?**
   - The resiliency of a network depends on being able to modify portions of the network, add services, or increase network capacity without adding new hardware devices.
   - The network is not expected to remain available under abnormal conditions such as extreme traffic loads or denial-of-service events.
   - **The network can be easily designed because of the separation of the various functions that exist on a network into modules.***
   - A hierarchical network model is a useful high-level tool for designing a reliable network infrastructure, although it increases the complexity of network design.

53. **Refer to the exhibit. Which Cisco Enterprise Architecture module is shown?**
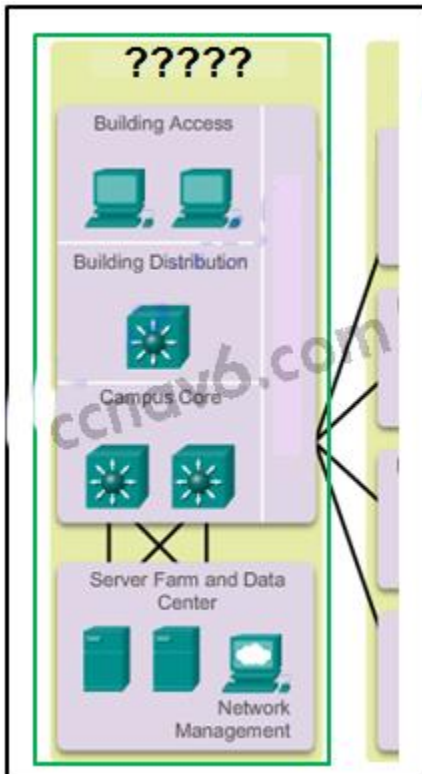
   - campus infrastructure
   - **enterprise campus***
   - enterprise edge
   - remote
   - service provider edge

54. **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***

55. **Which product corresponds to a layer of the Cisco Collaboration Architecture?**
   - Mobility with Cisco Motion
   - Cisco Unified Management Solutions
   - **Network and Computer Infrastructure***
   - Unified Fabric Solutions