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CCNA 4 (v5.0.3 + v6.0) Practice Final Exam Answers Full

1. **Which two components of a WAN would more likely be used by an ISP? (Choose two.)**
   - demarcation point
   - **toll network***
   - **CO***
   - CPE
   - DTE

   The central office (CO), also known as the point of presence (POP), houses the service provider equipment. The toll network contains communication equipment that is used to span the WAN provider network. The customer premises equipment (CPE) and data terminal equipment (DTE) are commonly located at the customer site. The demarcation point delineates where the ISP equipment and wiring ends and the customer responsibility begins. The demarcation point is located inside the customer building.

2. **What are two advantages of packet switching over circuit switching? (Choose two.)**
   - There are fewer delays in the data communications processes.
   - **Multiple pairs of nodes can communicate over the same network channel.***
   - A dedicated secure circuit is established between each pair of communicating nodes.
   - A connection through the service provider network is established quickly before communications start.
   - **The communication costs are lower.***

   The setting up of a dedicated circuit through the service provider network between each pair of communicating nodes, and fewer delays in the data communications processes are advantages of circuit-switched networks.

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

   ISDN and PSTN are the most common circuit-switched technologies. Circuit-switched networks form a dedicated circuit or channel before communication occurs.

4. **Under which two categories of WAN connections does Frame Relay fit? (Choose two.)**
   - **packet-switched***
   - public infrastructure
   - dedicated
   - **private infrastructure***
   - Internet

   A packet-switched private infrastructure like Frame Relay is a lower cost alternative to expensive leased lines.

5. **Which WAN technology is capable of transferring voice and video traffic by utilizing a fixed payload of 48 bytes for every frame?**
   - Ethernet WAN
   - ISDN
   - **ATM***
   - Frame Relay

   ATM cells always have a fixed length of 53 bytes. The ATM cell contains a 5-byte ATM header followed by 48 bytes of ATM payload.

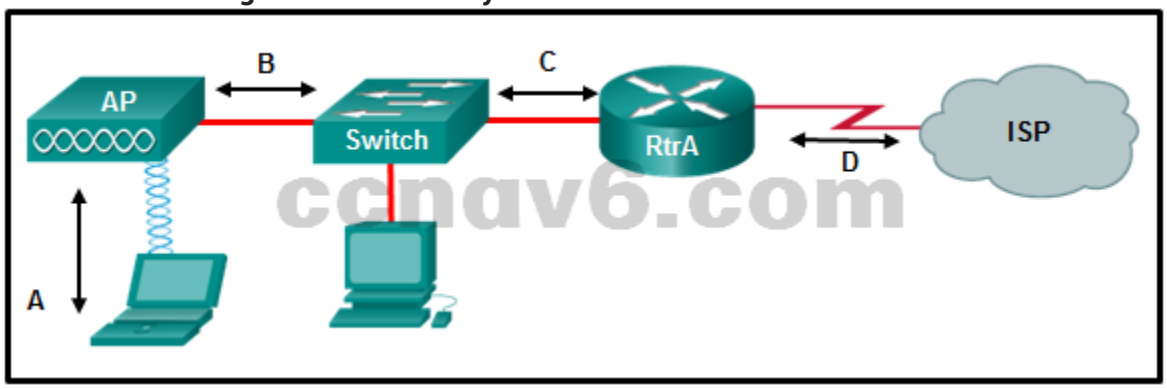
6. **Which type of long distance telecommunication technology provides point-to-point connections and cellular access?**
   - mobile broadband
   - **WiMax***
   - satellite
   - municipal Wi-Fi

   WiMax towers are capable of connection to other WiMax towers by means of line-of-sight microwave links or they can provide cellular access to devices. Municipal Wi-Fi satellite technology and mobile broadband do not provide long distance point-to-point technology while providing mobile device access.

7. **A small law firm wants to connect to the Internet at relatively high speed but with low cost. In addition, the firm prefers that the connection be through a dedicated link to the service provider. Which connection type should be selected?**
   - cable
   - ISDN
   - leased line
   - **DSL***

   Both DSL and cable connections can provide relative high speed Internet connections with reasonable cost. Whereas DSL subscribers establish individual links to the service provider, local cable service subscribers (in the neighborhood) share the same cable bandwidth. As more users join the cable service, available bandwidth may be below the expected rate. Both leased line and ISDN connections are dedicated links from the customer to the service provider, but they are more expensive than either DSL or cable services.

8. **Refer to the exhibit. What type of Layer 2 encapsulation will be used for connection D on the basis of this configuration on a newly installed router:**



RtrA(config)# interface serial0/0/0

RtrA(config-if)# ip address 128.107.0.2 255.255.255.252
RtrA(config-if)# no shutdown

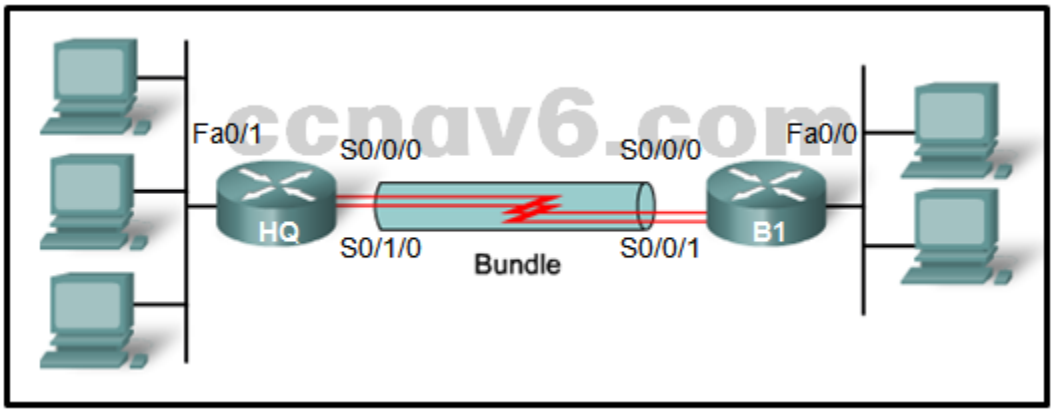
- Frame Relay
- **HDLC***
- PPP
- Ethernet

HDLC is the default encapsulation method on Cisco router serial interfaces. If no other encapsulation is configured, the interface will default to HDLC.

9. **Which two protocols in combination should be used to establish a link with secure authentication between a Cisco and a non-Cisco router? (Choose two.)**
   - **CHAP***
   - PAP
   - HDLC
   - **PPP***
   - SLIP

   On a Cisco router the version of HDLC used is proprietary. Therefore, with a link between a Cisco and a non-Cisco router, PPP should be used. Of the two authentication types that PPP supports (PAP and CHAP), CHAP is more secure.

10. **Which statement is true about NCP?**
    - NCP tests the link to ensure that the link quality is sufficient.
    - **Each network protocol has a corresponding NCP.***
    - Link termination is the responsibility of NCP.
    - NCP establishes the initial link between PPP devices.
11. **Refer to the exhibit. Which three steps are required to configure Multilink PPP on the HQ router? (Choose three.)**



- **Assign the serial interfaces to the multilink bundle.***
- **Create and configure the multilink interface.***
- Enable PPP encapsulation on the multilink interface.
- **Enable PPP encapsulation on the serial interfaces.***
- Assign the Fast Ethernet interface to the multilink bundle.
- Bind the multilink bundle to the Fast Ethernet interface.

PPP multilink spreads traffic across bundled physical WAN links. To configure PPP multilink on a router, creating the multilink bundle begins with creation of the multilink interface. The serial interfaces are the WAN links in the exhibit and must be assigned to the multilink

bundle. The serial interfaces must also be enabled for PPP encapsulation to become part of the multilink group.

12. **A network engineer is troubleshooting the failure of CHAP authentication over a PPP WAN link between two routers. When CHAP authentication is not included as part of the interface configuration on both routers, communication across the link is successful. What could be causing CHAP to fail?**
    - The username configured on each router matches the hostname of the other router.
    - The hostname configured on each router is different.
    - The clock rate has not been configured on the DCE serial interface.
    - **The secret password configured on each router is different.***

    The secret password configured on each router must be the same for successful CHAP authentication. A different hostname is expected to be configured on each router, and the username configured on each router must match the hostname of the other router for successful CHAP authentication. The DCE interface clock rate is configured because communication across the link is successful when CHAP is not configured.

13. **Which statement describes the difference between CHAP and PAP in PPP authentication?**
    - **PAP uses a two-way handshake method and CHAP uses a three-way handshake method.***
    - PAP sends the password encrypted and CHAP does not send the password at all.
    - PAP and CHAP provide equivalent protection against replay attacks.
    - PAP sends the password once and CHAP sends the password repeatedly until acknowledgment of authentication is received.

    Another difference between PAP and CHAP is that CHAP sends periodic challenges whereas PAP only authenticates one time.

14. **A technician at a remote location is troubleshooting a router and has emailed partial debug command output to a network engineer at the central office. The message that is received by the engineer only contains a number of LCP messages that relate to a serial interface. Which WAN protocol is being used on the link?**
    - **PPP***
    - VPN
    - HDLC
    - Frame Relay

    LCP (Link Control Protocol) is a component of PPP.

15. **Which DSL technology provides higher downstream bandwidth to the user than upstream bandwidth?**
    - CDMA
    - SDSL
    - TDMA
    - **ADSL***

    ADSL provides higher downstream bandwidth to the user than upload bandwidth. SDSL provides the same capacity in both directions. TDMA and CDMA are not DSL technologies.

16. **Which communication protocol allows the creation of a tunnel through the DSL connection between the customer router and the ISP router to send PPP frames?**
    - POTS

- CHAP
- ADSL
- **PPPoE***

PPPoE, Point-to-Point Protocol over Ethernet, creates a tunnel through the DSL connection for the purpose of transmitting serial data up and down a wide frequency band and allows multiple subscribers connected to the network to transmit and receive concurrently.

17. **Which group of APIs are used by an SDN controller to communicate with various applications?**
- **northbound APIs***
- westbound APIs
- southbound APIs
- eastbound APIs

Software defined networking (SDN) is a network architecture developed to virtualize the network. SDN moves the control plane from each network device to a central network controller. The SDN controller uses northbound APIs to communicate with the upstream applications. It also uses southbound APIs to define the behavior of the downstream virtual switches and routers.

18. **Which two technologies are core components of Cisco ACI architecture? (Choose two.)**
- OpenFlow enabled switches
- **Application Policy Infrastructure Controller***
- Transparent Interconnection of Lots of Links
- **Application Network Profile***
- Interface to the Routing System

The Cisco ACI architecture contains three core components:
Application Network Profile (ANP) – An ANP is a collection of end-point groups (EPG), their connections, and the policies that define those connections.
Application Policy Infrastructure Controller (APIC) – APIC is a centralized software controller that manages and operates a scalable ACI clustered fabric.
Cisco Nexus 9000 Series switches – Provides an application-aware switching fabric and works with an APIC to manage the virtual and physical network infrastructure.
OpenFlow enabled switches are required in SDN implementation. Both Interface to the Routing System (I2RS) and Transparent Interconnection of Lots of Links (TRILL) are different approaches developed for network virtualization.

19. **Two corporations have just completed a merger. The network engineer has been asked to connect the two corporate networks without the expense of leased lines. Which solution would be the most cost effective method of providing a proper and secure connection between the two corporate networks?**
- **site-to-site VPN***
- Cisco Secure Mobility Clientless SSL VPN
- Cisco AnyConnect Secure Mobility Client with SSL
- remote access VPN using IPsec
- Frame Relay

The site-to-site VPN is an extension of a classic WAN network that provides a static interconnection of entire networks. Frame Relay would be a better choice than leased lines,

but would be more expensive than implementing site-to-site VPNs. The other options refer to remote access VPNs which are better suited for connecting users to the corporate network versus interconnecting two or more networks.

20. **When GRE is configured on a router, what do the tunnel source and tunnel destination addresses on the tunnel interface refer to?**
    - the IP addresses of tunnel interfaces on intermediate routers between the connected routers
    - the IP addresses of the two LANs that are being connected together by the VPN
    - **the IP addresses at each end of the WAN link between the routers***
    - the IP address of host on the LAN that is being extended virtually

    A site-to-site VPN is established with a GRE tunnel. It does not link two LANs, but rather it extends the reach of a single LAN across a WAN. Tunnel interfaces are configured on routers at each end of the VPN, not in the intermediate routers.

21. **Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.**
    What problem is preventing the hosts from communicating across the VPN tunnel?
    - **The tunnel IP addresses are incorrect.***
    - The EIGRP configuration is incorrect.
    - The tunnel destinations addresses are incorrect.
    - The tunnel source interfaces are incorrect.

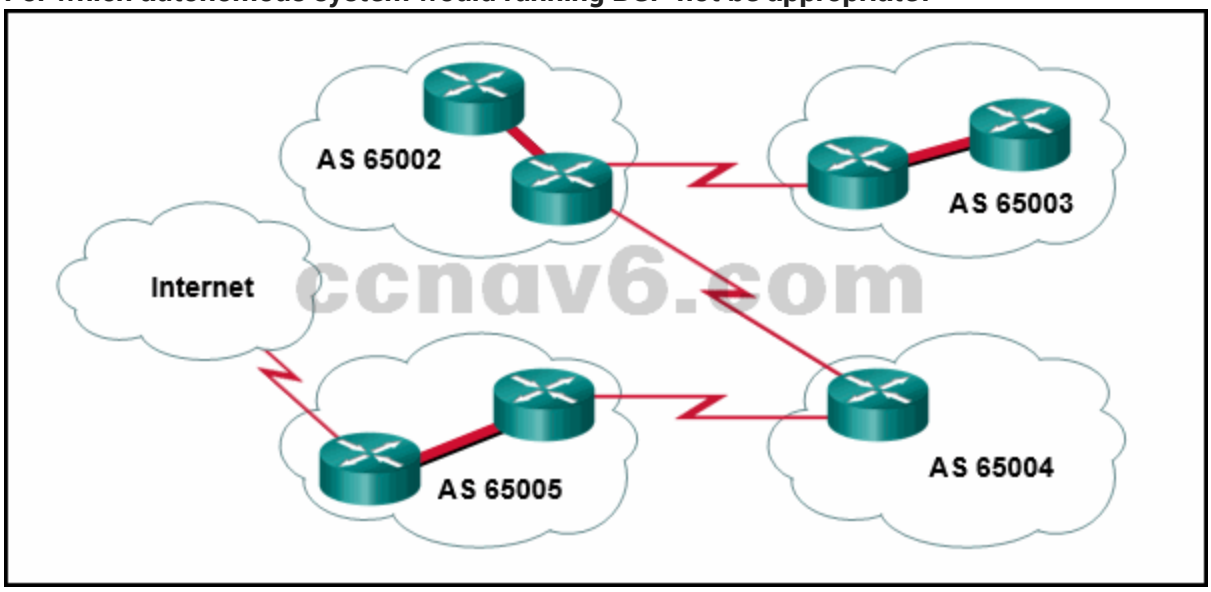
    The IP address of the tunnel interface on B-Gateway is incorrect. It should be in the 172.16.1.0/24 network. Changing this address will bring up the tunnel interfaces and allow the hosts to ping each other.

22. **Which routing protocol is used to exchange routing information between autonomous systems on the Internet?**
    - OSPF
    - EIGRP
    - IS-IS
    - **BGP***

    Exterior routing protocols exchange routing information between autonomous systems. BGP is the only exterior routing protocol in use today on the Internet.

23. **The graphic shows four autonomous systems (AS). AS 65002 is connected to AS 65003 and to AS 65004. AS 65003 is connected only to AS 65002. AS 65004 is connected to AS 65002 and AS 65005. AS 65005 is connected to AS 65003 and to the Internet.Refer to the exhibit.**

For which autonomous system would running BGP not be appropriate?



- 65004
- 65005
- 65002
- **65003***

It is appropriate to use BGP when an autonomous system is multihomed, or has more than one connection to another autonomous system or to the Internet. BGP is not appropriate for single-homed autonomous systems. Autonomous system 65003 is a single-homed AS because it is only connected to one other autonomous system, 65002.

24. **What two functions describe uses of an access control list? (Choose two.)**
    - ACLs can permit or deny traffic based upon the MAC address originating on the router.
    - **ACLs provide a basic level of security for network access.***
    - **ACLs can control which areas a host can access on a network.***
    - ACLs assist the router in determining the best path to a destination.
    - Standard ACLs can restrict access to specific applications and ports.
25. **A network administrator is explaining to a junior colleague the use of the lt and gt keywords when filtering packets using an extended ACL. Where would the lt or gt keywords be used?**
    - in an IPv6 extended ACL that stops packets going to one specific destination VLAN
    - in an IPv6 named ACL that permits FTP traffic from one particular LAN getting to another LAN
    - **in an IPv4 extended ACL that allows packets from a range of TCP ports destined for a specific network device***
    - in an IPv4 named standard ACL that has specific UDP protocols that are allowed to be used on a specific server

    The lt and gt keywords are used for defining a range of port numbers that are less than a particular port number or greater than a particular port number.
26. **Refer to the exhibit. A router has an existing ACL that permits all traffic from the 172.16.0.0 network. The administrator attempts to add a new ACE to the ACL that denies packets from host 172.16.0.1 and receives the error message that is shown in the exhibit. What action can the administrator take to block packets from host 172.16.0.1 while still permitting all**

other traffic from the 172.16.0.0 network?

```
Router(config)# access-list 1 deny 172.16.0.1
% Access rule can't be configured at higher sequence num
as it is part of the existing rule at sequence num 10
Router(config)# exit
Router# show access-lists 1
Standard IP access list 1
    10 permit 172.16.0.0, wildcard bits 0.0.255.255
```

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- Add a deny any any ACE to access-list 1.
- Manually add the new deny ACE with a sequence number of 15.
- Create a second access list denying the host and apply it to the same interface.
- **Manually add the new deny ACE with a sequence number of 5.***

Because the new deny ACE is a host address that falls within the existing 172.16.0.0 network that is permitted, the router rejects the command and displays an error message. For the new deny ACE to take effect, it must be manually configured by the administrator with a sequence number that is less than 10.

27. **Which three implicit access control entries are automatically added to the end of an IPv6 ACL? (Choose three.)**
    - deny icmp any any
    - permit ipv6 any any
    - **deny ipv6 any any***
    - **permit icmp any any nd-na***
    - **permit icmp any any nd-ns***
    - deny ip any any

    All IPv6 ACLs automatically include two implicit permit statements; permit icmp any any nd-ns and permit icmp any any nd-na. These statements allow the router interface to perform neighbor discovery operations. There is also an implicit deny ipv6 any any automatically included at the very end of any IPv6 ACL that blocks all IPv6 packets not otherwise permitted.

28. **Which statement describes a difference between the operation of inbound and outbound ACLs?**
    - **Inbound ACLs are processed before the packets are routed while outbound ACLs are processed after the routing is completed.***
    - On a network interface, more than one inbound ACL can be configured but only one outbound ACL can be configured.
    - In contrast to outbound ALCs, inbound ACLs can be used to filter packets with multiple criteria.
    - Inbound ACLs can be used in both routers and switches but outbound ACLs can be used only on routers.

    With an inbound ACL, incoming packets are processed before they are routed. With an outbound ACL, packets are first routed to the outbound interface, then they are processed. Thus processing inbound is more efficient from the router perspective. The structure, filtering methods, and limitations (on an interface, only one inbound and one outbound ACL can be configured) are the same for both types of ACLs.

29. **What is the result of a DHCP starvation attack?**
- Clients receive IP address assignments from a rogue DHCP server.
- The attacker provides incorrect DNS and default gateway information to clients.
- The IP addresses assigned to legitimate clients are hijacked.
- **Legitimate clients are unable to lease IP addresses.***

DCHP starvation attacks are launched by an attacker with the intent to create a DoS for DHCP clients. To accomplish this goal, the attacker uses a tool that sends many DHCPDISCOVER messages to lease the entire pool of available IP addresses, thus denying them to legitimate hosts.

30. **What is a recommended best practice when dealing with the native VLAN?**
- Turn off DTP.
- Use port security.
- **Assign it to an unused VLAN.***
- Assign the same VLAN number as the management VLAN.

Port security cannot be enabled on a trunk and trunks are the only types of ports that have a native VLAN. Even though turning DTP off on a trunk is a best practice, it does not have anything to do with native VLAN risks. To prevent security breaches that take advantage of the native VLAN, place the native VLAN in an unused VLAN other than VLAN 1. The management VLAN should also be an unused VLAN that is different from the native VLAN and something other than VLAN 1.

31. **Which management protocol can be used securely with Cisco devices to retrieve or write to variables in a MIB?**
- SNMP version 1
- SNMP version 2
- SNMP version 2c
- **SNMP version 3***
- SNMP version 3 is considered the secure version of SNMP.

32. **What are two benefits of using SNMP traps? (Choose two.)**
- They limit access for management systems only.
- **They eliminate the need for some periodic polling requests.***
- They can provide statistics on TCP/IP packets that flow through Cisco devices.
- They can passively listen for exported NetFlow datagrams.
- **They reduce the load on network and agent resources.***

SNMP can be used to collect and store information about a device. SNMP managers can periodically poll SNMP agents for information stored in the MIB of the agent. To reduce the amount of polling and thus the load on the network and the SNMP agent, traps can be set on the agent that send information to the manager without the need for polling.

33. **What is an advantage of SNMPv3 over SNMPv1 or SNMPv2?**
- mobility
- support of other network monitoring protocols
- faster response times
- **security***

SNMPv3 provides for the authentication and encryption of network management and monitoring packets sent between a device and the SNMP manager(s).

34. **What network monitoring tool copies traffic moving through one switch port, and sends the copied traffic to another switch port for analysis?**
    - **SPAN***
    - SNMP
    - syslog
    - 802.1X

    The Switched Port Analyzer (SPAN) feature of Cisco switches allows traffic that is coming into or out of a switch port to be copied to a different port so that it can be collected and analyzed with network monitoring software.

35. **RSPAN depends on which type of VLAN?**
    - **RSPAN VLAN***
    - default VLAN
    - native VLAN
    - black hole VLAN
    - management VLAN
    - private VLAN

    Remote SPAN (RSPAN) allows source and destination ports to be in different switches. RSPAN uses two sessions. One session is used as the source and one session is used to copy or receive the traffic from a VLAN. The traffic for each RSPAN session is carried over trunk links in a user-specified RSPAN VLAN that is dedicated (for that RSPAN session) in all participating switches.

36. **Why is QoS an important issue in a converged network that combines voice, video, and data communications?**
    - **Voice and video communications are more sensitive to latency.***
    - Legacy equipment is unable to transmit voice and video without QoS.
    - Data communications must be given the first priority.
    - Data communications are sensitive to jitter.

    Without any QoS mechanisms in place, time-sensitive packets, such as voice and video, will be dropped with the same frequency as email and web browsing traffic.

37. **What are two characteristics of voice traffic? (Choose two.)**
    - It is insensitive to packet loss.
    - **It consumes few network resources.***
    - It can tolerate latency up to 400 ms.
    - **It is delay sensitive.***
    - It is bursty.

    Voice traffic does not consume much in the way of network resources, such as bandwidth. However, it is very sensitive to delay and dropped packets. For good voice quality, the amount of latency should be less than 150 milliseconds and packet loss less than 1%.

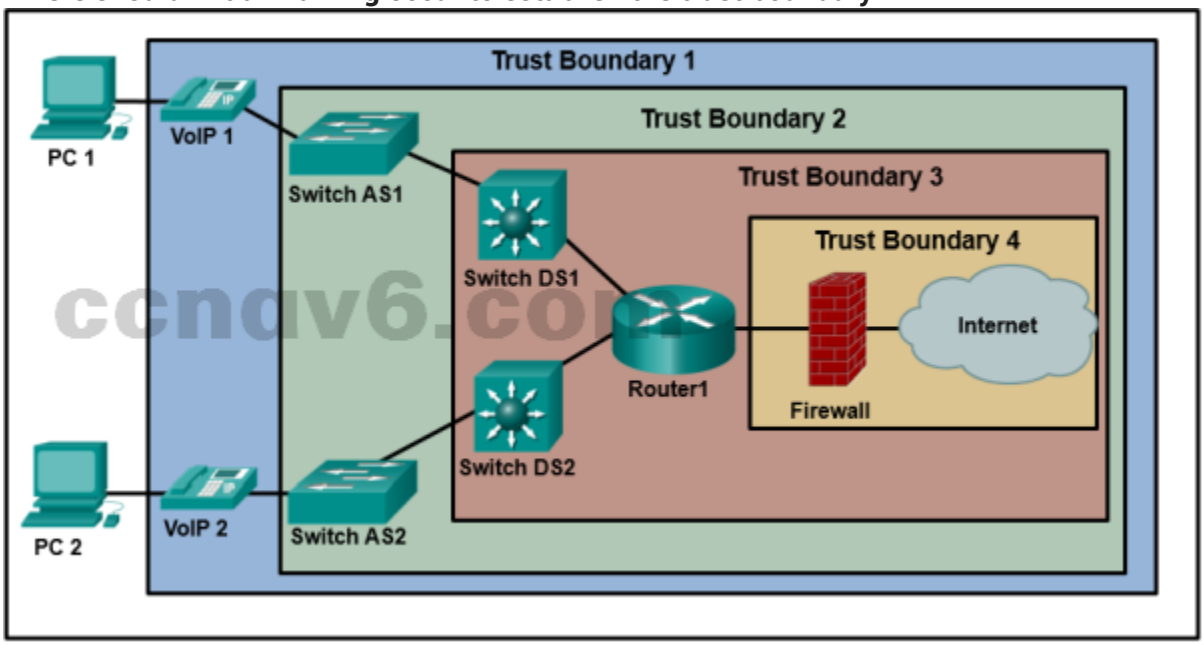
38. **True or False. DiffServ is a QoS strategy that enforces end-to-end guarantees.**
    - true
    - **false***

    Unlike IntServ which provides QoS guarantees through the use of a resource reservation mechanism, DiffServ cannot guarantee end-to-end QoS. With DiffServ, a QoS policy is applied and enforced on a hop-by-hop basis.

39. **What QoS step must occur before packets can be marked?**
- policing
- shaping
- queuing
- **classifying***

Traffic must be classified before it can be marked. After traffic has been marked, then actions can be taken to provide a specific level of service.

40. **Refer to the exhibit. A network administrator has deployed QoS and has configured the network to mark traffic on the VoIP phones as well as the Layer 2 and Layer 3 switches. Where should initial marking occur to establish the trust boundary?**



- Trust Boundary 4
- Trust Boundary 3
- **Trust Boundary 1***
- Trust Boundary 2

Traffic should be classified and marked as close to its source as possible. The trust boundary identifies at which device marked traffic should be trusted. Traffic marked on VoIP phones would be considered trusted as it moves into the enterprise network.

41. **Which IoT pillar provides the infrastructure for application mobility?**
- the management and automation pillar
- **the application enablement platform pillar***
- the Fog computing pillar
- the network connectivity pillar

Providing the infrastructure for application hosting and application mobility between cloud and fog computing is the function of the application enablement platform pillar.

42. **What are three abstraction layers of a computer system? (Choose three.)**
- **firmware***
- network
- **hardware***

- data
- **services***
- security

Abstraction layers help describe network protocols within the architecture of a computer system. Each layer uses programming code to interface with the layers above and below. The following abstraction layers make up a computer system:
Hardware
Firmware
Assembler
Kernel
OS
Services

43. **Users are reporting longer delays in authentication and in accessing network resources during certain time periods of the week. What kind of information should network engineers check to find out if this situation is part of a normal network behavior?**
    - network configuration files
    - debug output and packet captures
    - syslog records and messages
    - **the network performance baseline***

    The network engineers should first establish that the reported performance of the network is in fact abnormal. This is done by referring to the documented network performance baseline.Once it has been verified that the network is not having a proper performance, then specific troubleshooting processes can be applied.

44. **A user is unable to connect to the Internet. The network administrator decides to use the top-down troubleshooting approach. Which action should the administrator perform first?**
    - Run the tracert command to identify the faulty device.
    - Check the patch cable connection from the PC to the wall.
    - Run the ipconfig command to verify the IP address, subnet mask, and gateway on the PC.
    - **Enter an IP address in the address bar of the web browser to determine if DNS has failed.***

    The top-down troubleshooting method starts with the applications and moves down through the layers of the OSI model until the cause of the problem is identified. Using a web brwoser to test DNS resolution is a troubleshooting step at the application layer.

45. **How do network administrators use IP SLAs to monitor a network and to detect a network failure early?**
    - **by simulating network data and IP services to collect network performance data in real time***
    - by using network protocol analyzers to evaluate errors
    - by taking a snap shot of network performance and comparing with an established baseline
    - by measuring the CPU and memory usage on routers and switches

    The Cisco IOS IP Service Level Agreements (SLAs) feature is a useful tool to discover a network failure. Network administrators use IP SLAs to simulate network data and IP services to collect network performance information in real time. The results can help network administrators detect signs of network issues in the early stages.

46. **What are two examples of network problems that are found at the data link layer? (Choose two.)**
    - **encapsulation errors***
    - incorrect interface clock rates
    - late collisions and jabber
    - **framing errors***
    - electromagnetic interference

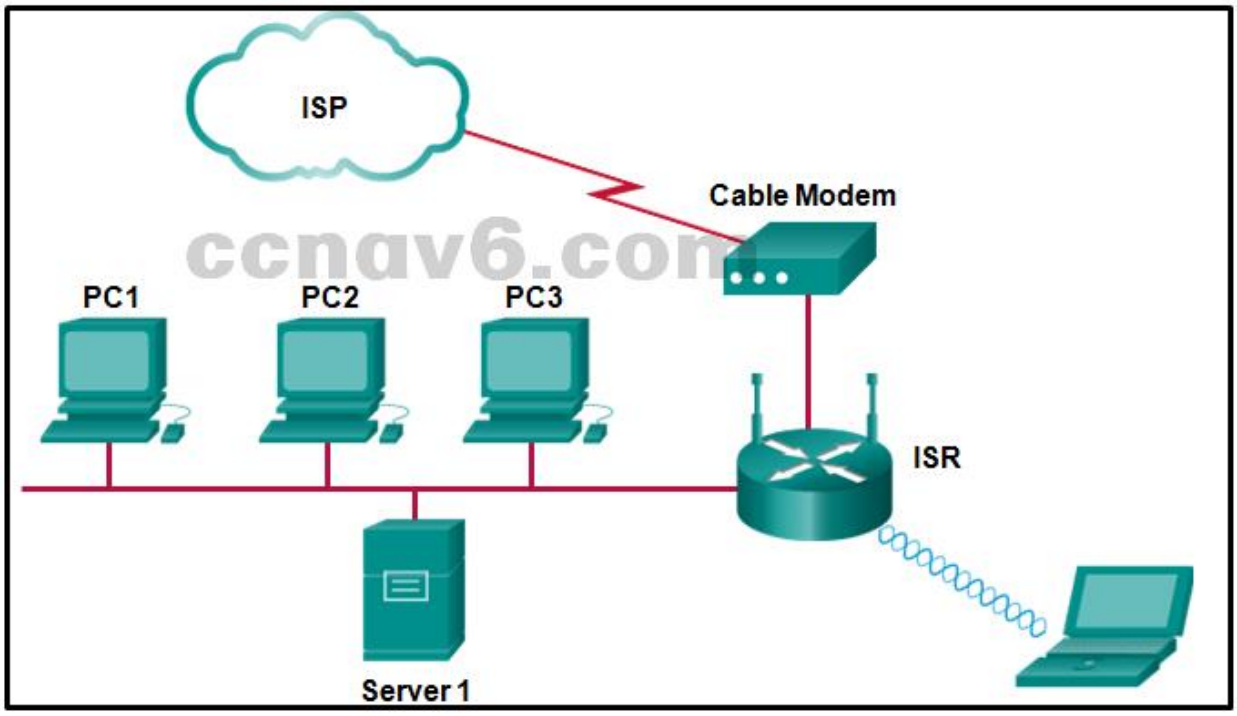
    Both encapsulation and framing errors are network problems that are associated with the data link layer. Electromagnetic interference, incorrect interface clock rates, and late collisions and jabber are indications of physical layer problems.

47. **The output of the show ip interface brief command indicates that Serial0/0/0 is up but the line protocol is down. What are two possible causes for the line protocol being in the down state? (Choose two.)**
    - **The encapsulation on the Serial0/0/0 interface is incorrect.***
    - The clock rate is not set on the DTE.
    - A network is missing from the routing protocol configuration.
    - **Keepalives are not being sent by the remote device.***
    - An incorrect default gateway is set on the router.

    A router interface may experience Layer 2 issues such as framing problems, keepalives not received but expected, and encapsulation problems. The status of the interface that is experiencing Layer 2 problems would indicate line protocol down.

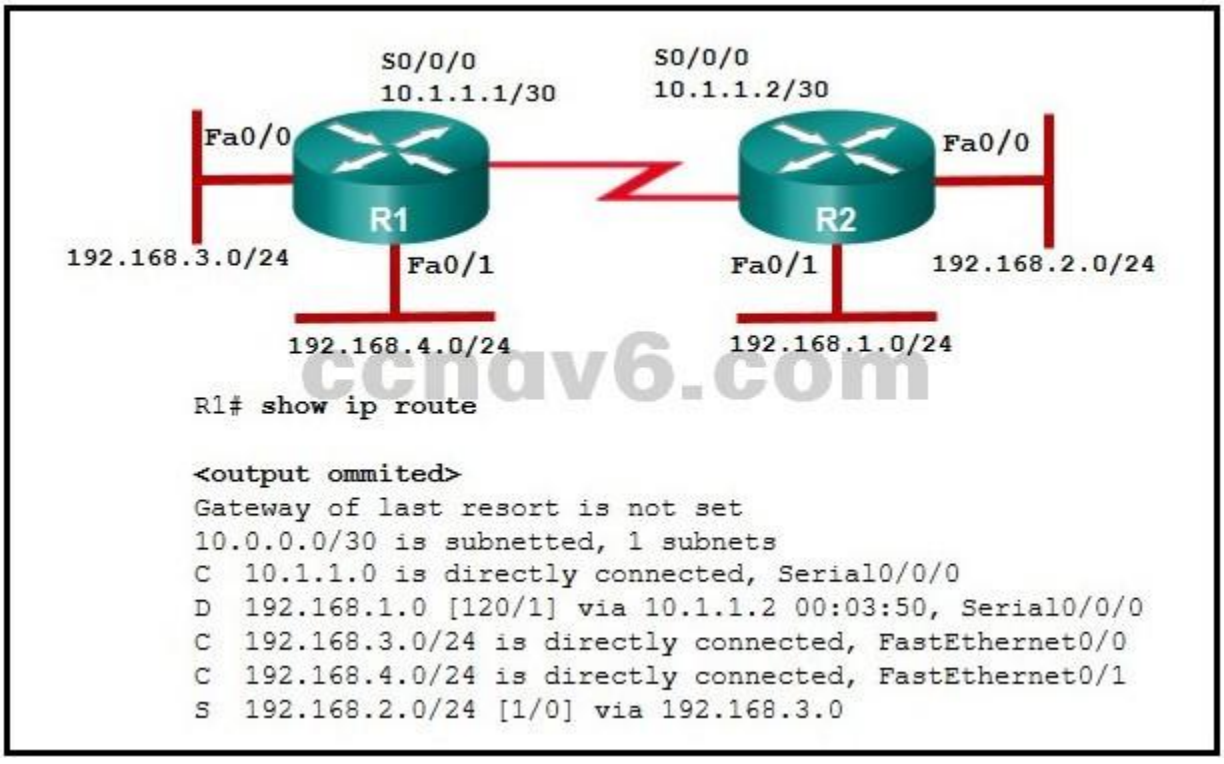
48. **Refer to the exhibit. A small office uses an ISR to provide connectivity for both wired and wireless computers. One day, a sales person who is using a laptop cannot connect to Server1 through the wireless network. A network technician attempts to determine if the problem is on the wireless or the wired network. The technician pings successfully from the wireless laptop to the default gateway IP address on the ISR. What should be the next**

troubleshooting step?



- **Ping from Server1 to its gateway IP address.***
- Ping from Server1 to PC1.
- Ping from the laptop to PC1.
- Ping from the laptop to the Ethernet port on the cable modem.

49. **Refer to the exhibit. A ping from R1 to 10.1.1.2 is successful, but a ping from R1 to any address in the 192.168.2.0 network fails. What is the cause of this problem?**



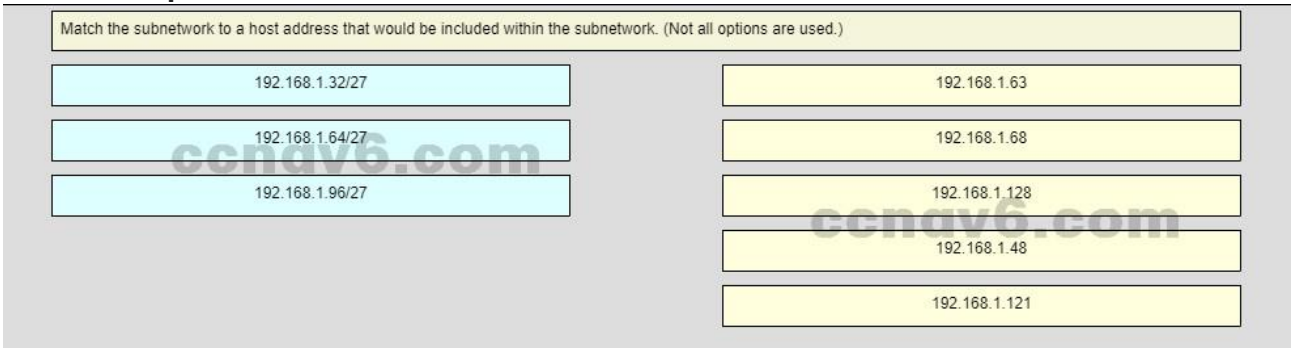
- A default route is not configured on R1.

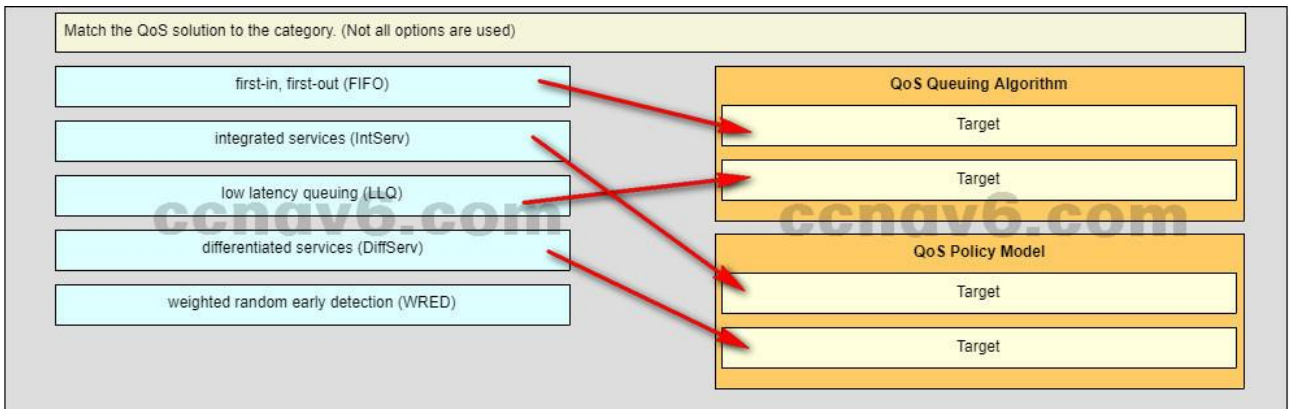
- **The static route for 192.168.2.0 is incorrectly configured.***
- The serial interface between the two routers is down.
- There is no gateway of last resort at R1.

50. **Which feature is unique to IPv6 ACLs when compared to those of IPv4 ACLs?**
- the use of named ACL statements
- **an implicit permit of neighbor discovery packets***
- the use of wildcard masks
- an implicit deny any any statement

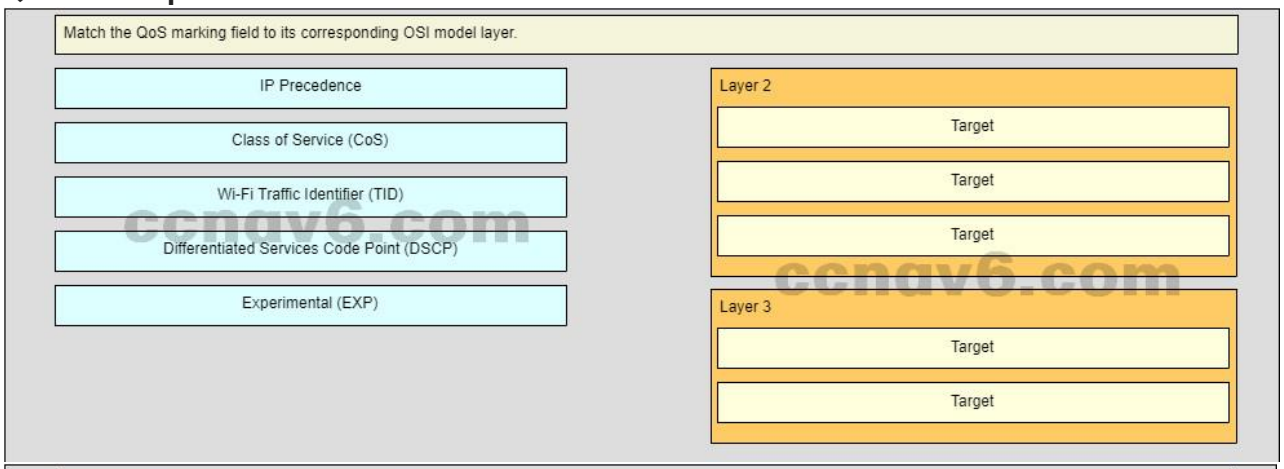
One of the major differences between IPv6 and IPv4 ACLs are two implicit permit statements at the end of any IPv6 ACL. These two permit statements allow neighbor discovery operations to function on the router interface.

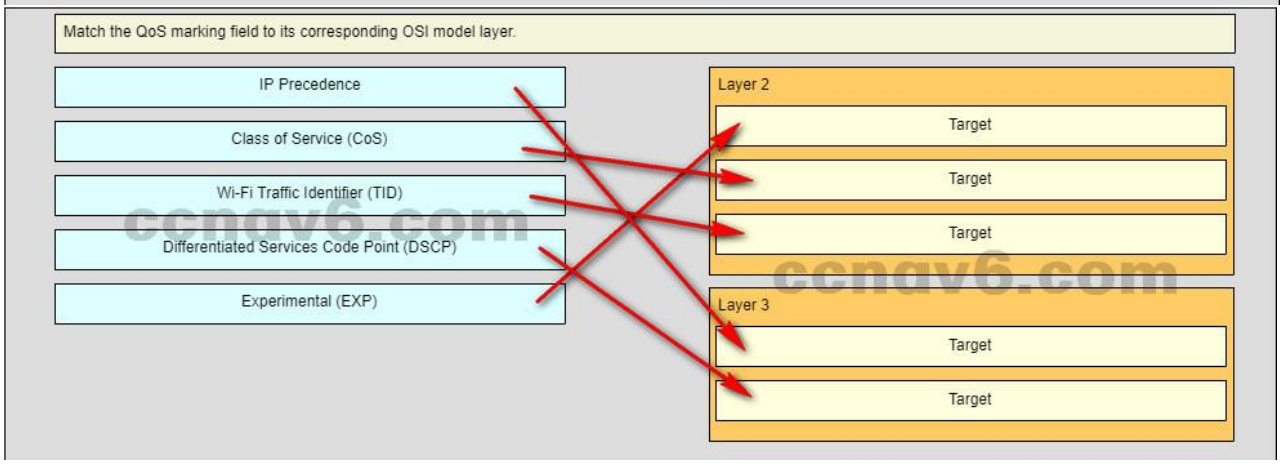
51. **Question as presented:**





52. **Question as presented:**





53. **Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.**
A user reports that PC0 cannot visit the web server www.server.com. Troubleshoot the network configuration to identify the problem. What are three configuration issues that are causing the problem? (Choose three.)

- **SW1 has a port configuration issue.***
- There is an encapsulation issue for the link between Branch and SW1.
- **One of the interfaces on Branch is not activated.***
- **Routing on HQ is not configured correctly.***
- The subinterface g0/0.1 on Branch is configured incorrectly for VLAN 10.
- VLAN 20 is not created correctly on SW1.

On SW1, where VLANs are implemented, each port should be assigned to a proper VLAN. The physical interface on Branch must be activated to maintain the link status between Branch and various VLANs on SW1. In order to allow communication to remote networks, proper routing must be configured on both Branch and HQ routers.

Older Version

1. **Which three items are normally included when a log message is generated by a syslog client and forwarded to a syslog server? (Choose three.)**
   - **date and time of message***
   - **ID of sending device***
   - length of message

- **message ID***
- checksum field
- community ID

2. **Which WAN technology uses a fixed payload of 48 bytes and is transported across both switched and permanent virtual circuits?**
   - **ATM***
   - ISDN
   - Frame Relay
   - metro Ethernet
3. **What can cause a reduction in available bandwidth on a cable broadband connection?**
   - smaller cells
   - **number of subscribers***
   - committed information rate
   - distance from the central office of the provider
4. **A technician has been asked to configure a broadband connection for a teleworker. The technician has been instructed that all uploads and downloads for the connection must use existing phone lines. Which broadband technology should be used?**
   - cable
   - **DSL***
   - ISDN
   - POTS
5. **Which three algorithms can be used to encrypt user data in an IPSec VPN framework? (Choose three.)**
   - **3DES ***
   - **AES***
   - Diffie-Hellman
   - **DES***
   - ESP
   - SHA
6. **Which two Layer 1 requirements are outlined in the Data-over-Cable Service Interface Specification (DOCSIS)? (Choose two.)**
   - **channel widths***
   - access method
   - maximum data rate
   - **modulation techniques***
   - compression techniques
7. **What makes the Cisco EasyVPN application a useful tool for VPN implementation?**
   - It provides encryption algorithms unavailable in other systems.
   - It ensures that remote workers actually use the VPN for connectivity.
   - **It simplifies the configuration tasks for the device that is used as the VPN server.***
   - It allows a greater variety of network devices to be used for VPN connections.
8. **How many addresses will be available for dynamic NAT translation when a router is configured with the following commands?**
   Router(config)#ip nat pool TAME 209.165.201.23 209.165.201.30 netmask 255.255.255.224
   Router(config)#ip nat inside source list 9 pool TAME

- 7
- **8***
- 9
- 10
- 24
- 31

9. **Which three statements are true regarding the Frame Relay LMI? (Choose three.)**
   - **The LMI provides a virtual circuit (VC) status mechanism.***
   - The LMI type must always be manually configured.
   - The available LMI types are CHAP and PAP.
   - **The LMI types supported by Cisco routers are CISCO and IETF. ***
   - **The LMI type configured on the router must match the one used on the Frame Relay switch.***
   - The LMI uses reserved DLCIs to exchange messages between the DTE and DCE.
10. **The output of the show ip interface brief command indicates that Serial0 is up but the line protocol is down. What are two possible causes for the line protocol being in the down state? (Choose two.)**
    - The clock rate is not set on the DTE.
    - An incorrect default gateway is set on the router.
    - A network is missing from the routing protocol configuration.
    - **The encapsulation on the Serial0 interface is incorrect. ***
    - **Keepalives are not being sent by the remote device.***
11. **How does an SNMP trap aid network monitoring and management?**
    - It reports to the management station by responding to polls.
    - It collects information for the management station by using polling devices.
    - **It sends an alert message to the management station when a threshold is reached.***
    - It flags attempts to begin a DoS attack on the network.
12. **What are two characteristics of DSL technology? (Choose two.)**
    - Uploads typically offer larger transfer rates than downloads.
    - **Service providers deploy DSL in the local loop of the telephone network.***
    - DSL download rates are reduced by large volumes of POTS voice traffic.
    - **Filters and splitters allow POTS and DSL traffic to share the same medium.***
    - DSL is a shared medium that allows many users to share bandwidth available from the DSLAM.
13. **A network administrator has moved the company intranet web server from a switch port to a dedicated router interface. How can the administrator determine how this change has affected performance and availability on the company intranet?**
    - **Conduct a performance test and compare with the baseline that was established previously.***
    - Determine performance on the intranet by monitoring load times of company web pages from remote sites.
    - Interview departmental administrative assistants and determine if they think load time for web pages has improved.
    - Compare the hit counts on the company web server for the current week to the values that were recorded in previous weeks.
14. **Which two statements about NetFlow are true? (Choose two.)**

- **NetFlow can be used to create baseline documentation.***
- NetFlow can be used to collect performance indicators such as interface errors, CPU usage, and memory usage.
- NetFlow can be used to monitor traffic statistics, including packet payload content.
- **NetFlow is a Cisco-specific feature that enables the collection of detailed traffic profiles.***
- NetFlow is a network monitoring and event reporting tool.
- NetFlow traffic collectors use a "pull" based model to acquire traffic statistics from ports of interest.

15. **What are three parameters that are used by NetFlow to classify traffic? (Choose three.)**
    - **ingress interface ***
    - **TOS field***
    - egress interface
    - number of packets
    - number of bytes
    - **port number***
16. **What is the purpose of the Cisco Enterprise Architecture?**
    - It replaces the three-layer hierarchical model with a flat network approach.
    - **It provides an enterprise-wide system network architecture that helps protect, optimize, and grow the network infrastructure that supports the business processes of a company.***
    - It provides services and functionality to the core layer by grouping various components into a single component that is located in the access layer.
    - It reduces overall network traffic by grouping server farms, the management server, corporate intranet, and e-commerce routers in the same layer.
17. **Refer to the exhibit. While planning an upgrade, a network administrator uses the Cisco NetFlow utility to analyze data flow in the current network. What generated the most packets?**

```
R1# show ip cache flow

<output omitted>

Protocol      Total    Flows   Packets  Bytes    Packets  Active(Sec)  Idle(Sec)
              Flows    /Sec    /Flow    /Pkt     /Sec     /Flow        /Flow
TCP-Telnet        9     0.0       13       4      0.0        5.2         10.8
TCP-FTP          28     0.0        7       2      0.0        0.8         10.4
TCP-WWW          64     0.0        7     123      0.0        0.3          2.4
TCP-other        16     0.0       75     840      0.1        0.0          4.1
UDP-DNS          78     0.0        1      72      0.0        0.0         15.4
UDP-other        96     0.0        3      88      0.1        4.5         15.5
ICMP             26     0.0        1      70      0.0        0.8         15.4
Total:         1368     0.1                318      0.3        1.2         14.6

<output omitted>
```

    - ICMP
    - TCP-Telnet
    - **TCP-other***
    - UDP-DNS
    - UDP-other
18. **Which is a clientless VPN solution for mobile workers?**
    - GRE

- IPsec
- SSH
- **SSL***

19. **What is IPsec?**
    - **a specification for the way in which a group of protocols and algorithms combine to create VPNs***
    - a protocol that is used to create a VPN at Layer 2 of the OSI model
    - a 56-bit authentication and encryption method that must be used to create VPN tunnels
    - a means by which routers and VPN gateways read and forward packets with encrypted packet headers
20. **What are two significant benefits that are provided by IPsec? (Choose two.)**
    - authentication
    - **encryption***
    - automatic creation of a public network
    - automatic creation of a private network
    - **encapsulation***
21. **How does STDM allocate bandwidth on a serial connection?**
    - It statically assigns bandwidth based upon pre-assigned time slots.
    - It ensures each of the time slices are assigned to individual conversations.
    - **It keeps track of conversations that require extra bandwidth. It then dynamically reassigns unused time slices on an as-needed basis.***
    - It ensures that bandwidth is allocated to each channel or time slot regardless of whether the station using the channel has data to
22. **Which statement is true about the operation of a site-to-site VPN connection?**
    - The data is encrypted and decrypted by the sending and target hosts.
    - **The data is encrypted and decrypted by VPN gateways at both the sending and receiving sides.***
    - The data is encrypted by the sending host and decrypted by the VPN gateway at the receiving side.
    - The data is encrypted by the VPN gateway at the sending side and decrypted by the target host.
23. **Which two products are part of the Cisco Collaboration Architecture? (Choose two.)**
    - Cisco Borderless End Point
    - **Cisco TelePresence ***
    - **Cisco Unified Communications***
    - Cisco Unified Computing
    - Cisco Virtual Private Network
24. **A company has been assigned the 203.0.113.0/27 block of IP addresses by the ISP. The company has over 6000 internal devices. What type of NAT would be most appropriate for the employee workstations of the company?**
    - static NAT
    - dynamic NAT
    - port forwarding
    - PAT off the external router interface
    - **dynamic NAT overload using the pool of addresses***

25. **An administrator needs to configure a router so that internal network servers are accessible from the Internet. Each server is configured with a private IPv4 address. What type of NAT should the administrator configure?**
    - PAT
    - dynamic NAT
    - **static NAT***
    - NAT overloading
26. **Refer to the exhibit. Based on the configuration of R1, which device is the inside host and what is the inside local address of this host?**


```
R1# show running-config
<output omitted>
!
interface FastEthernet0/0
 ip nat outside
<output omitted>
!
interface FastEthernet0/1
 ip nat inside
<output omitted>
!
ip nat inside source static 209.165.200.225 64.100.0.100
!
<output omitted>
```

    - PC-A with address 64.100.0.100
    - PC-A with address 209.165.200.225
    - PC-B with address 64.100.0.100
    - **PC-B with address 209.165.200.225***

27. **Refer to the exhibit. A PC at address 10.1.1.45 is unable to access the Internet. What is the most likely cause of the problem?**

```
R1# show ip nat statistics
Total active translations: 4 (0 static, 4 dynamic; 2 extended)
Peak translations: 33, occurred 00:00:46 ago
Outside interfaces:
  FastEthernet0/1
Inside interfaces:
  FastEthernet0/0
Hits: 42  Misses: 0
CEF Translated packets: 42, CEF Punted packets: 0
Expired translations: 0
Dynamic mappings:
-- Inside Source
[Id: 1] access-list 1 pool NATPOOL refcount 4
 pool NATPOOL: netmask 255.255.255.224
        start 209.165.201.10 end 209.165.201.11
        type generic, total addresses 2, allocated 2 (100%), misses 0

R1# show ip nat translations
Pro Inside global      Inside local       Outside local      Outside global
icmp 209.165.201.10:6  10.1.1.33:6        209.165.200.226:6  209.165.200.226:6
--- 209.165.201.10     10.1.1.33          ---                ---
icmp 209.165.201.11:3  10.1.1.123:3       209.165.200.226:3  209.165.200.226:3
--- 209.165.201.11     10.1.1.123         ---                ---
```

- **The NAT pool has been exhausted.***
- The wrong netmask was used on the NAT pool.
- Access-list 1 has not been configured properly.
- The inside and outside interfaces have been configured backwards.

28. **Which three parts of a Frame Relay Layer 2 PDU are used for congestion control? (Choose three.)**
    - the 10-bit DLCI
    - the Extended Address field
    - the C/R bit
    - **the FECN bit ***
    - **the BECN bit ***
    - **the DE bit***

29. **Refer to the exhibit. A network administrator has configured router Edge_Router as shown in the output. Connectivity is failing between Edge_Router and a non-Cisco router running Frame Relay. What should be done to repair this Layer 2 connectivity?**

```
Edge_Router(config)# interface serial 0/1/0
Edge_Router(config-if)# ip address 192.168.14.6 255.255.255.252
Edge_Router(config-if)# encapsulation frame-relay
Edge_Router(config-if)# frame-relay map ip 192.168.14.5 201
Edge_Router(config-if)# frame-relay lmi-type q933a
Edge_Router(config-if)# no shutdown
Edge_Router(config-if)# exit
Edge_Router(config)# router ospf 10
Edge_Router(config-router)# network 192.168.14.4 0.0.0.3 area 0
Edge_Router(config-router)# exit
```

- Issue the ietf keyword when enabling Frame Relay on interface serial 0/1/0.

- Issue the broadcast keyword when performing static mapping on interface serial 0/1/0.
- Correct the IP address used in the frame-relay map command.
- Issue the frame-relay lmi-type ansi command on interface serial 0/1/0.
- Modify the OSPF process-id from 10 to 1.

30. **What is the relationship between the DE and the CIR in Frame Relay?**
    - When the CIR is exceeded, an Inverse ARP DE message notifies the source to reduce frame transmission speed.
    - The DE bit will indicate when the CIR committed burst size should be applied.
    - **When the CIR on a given DLCI is exceeded, the DE bit of frames above the CIR is set.***
    - The XON/XOFF flow control mechanism sets the DE bit when the CIR is exceeded.
31. **Which IEEE standard defines the WiMax technology?**
    - 802.3
    - 802.5
    - 802.11
    - **802.16***
32. **For a VPN, which technology provides secure remote access over broadband?**
    - QoS
    - ADSL
    - LTE
    - **IPsec***
33. **Which two technologies are implemented by organizations to support teleworker remote connections? (Choose two.)**
    - CMTS
    - CDMA
    - DOCSIS
    - **VPN ***
    - **IPsec***
34. **Which basic network module of the Enterprise Architecture is the fundamental component of a campus design?**
    - data center
    - services module
    - **access-distribution***
    - enterprise edge
35. **Refer to the exhibit. Which three events will occur as a result of the configuration shown on R1? (Choose three.)**

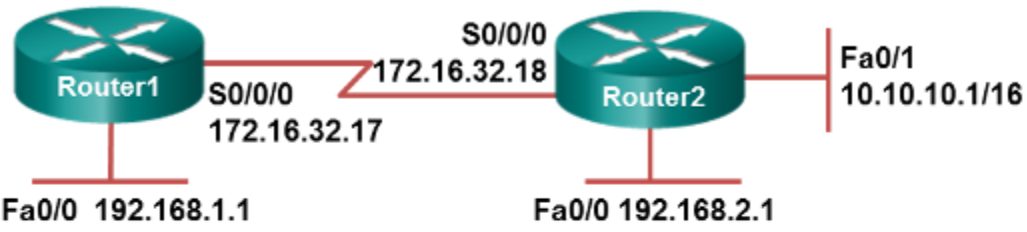
```
R1(config)# logging 192.168.1.5
R1(config)# logging trap 3
R1(config)# logging source-interface GigabitEthernet 0/1
```

    - **Messages that are sent to the syslog server will be limited to levels 3 or lower.***
    - Messages that are sent to the syslog server will be limited to levels 3 and higher.
    - Only traffic that originates from the GigabitEthernet 0/1 interface will be monitored.
    - **Messages that are sent to the syslog server will use 192.168.1.5 as the destination IP address. ***
    - **The syslog messages will contain the IP address the GigabitEthernet 0/1 interface.***

- For multiple occurrences of the same error, only the first three messages will be sent to the server.

36. **What is a disadvantage of a packet-switched network compared to a circuit-switched network?**
    - higher cost
    - fixed capacity
    - less flexibility
    - **higher latency***
37. **What is a type of VPN that is generally transparent to the end user?**
    - **site-to-site***
    - remote access
    - public
    - private
38. **Which statement best describes a WAN?**
    - **A WAN interconnects LANs over long distances.***
    - A WAN is a public utility that enables access to the Internet.
    - WAN is another name for the Internet.
    - A WAN is a LAN that is extended to provide secure remote network access.
39. **How many 64 kb/s voice channels are combined to produce a T1 line?**
    - 8
    - 16
    - **24***
    - 32
40. **In the Cisco Enterprise Architectures network design approach what is the purpose of the enterprise edge module?**
    - to provide access to IP telephony services, wireless controller services, and unified services
    - to provide high-speed connectivity and protection for servers
    - to forward traffic from one local network to another
    - **to provide Internet, VPN, and WAN connections***
41. **Refer to the exhibit. A network administrator is troubleshooting the OSPF network. The 10.10.0.0/16 network is not showing up in the routing table of Router1. What is the probable**

cause of this problem?



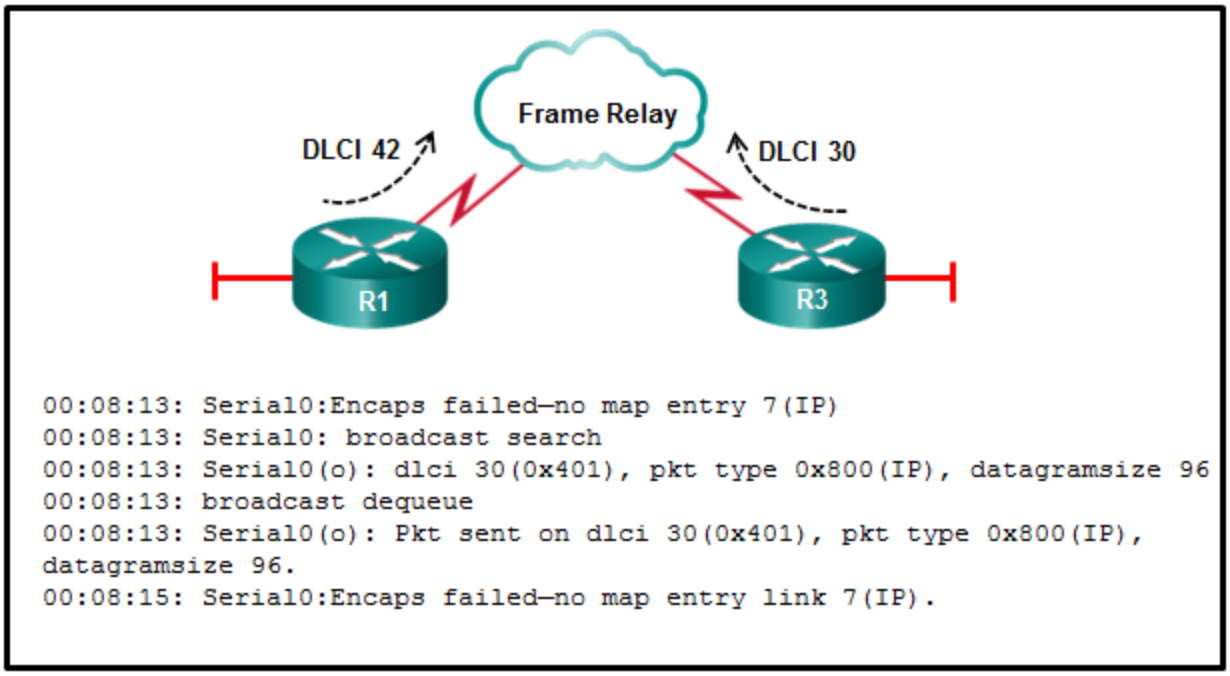

```
Router1# show ip route
<output omitted>
     172.16.0.0/30 is subnetted, 1 subnets
C       172.16.32.16 is directly connected, Serial0/0/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
O    192.168.2.0/24 [110/65] via 172.16.32.18, 00:06:04, Serial0/0/0
```

```
Router2# show ip protocols
Routing Protocol is "ospf 1"
  <output omitted>
  Routing for Networks:
    10.0.0.0 0.0.0.255 area 0
    172.16.32.16 0.0.0.3 area 0
    192.168.2.0 0.0.0.255 area 0
```

- The serial interface on Router2 is down.
- The OSPF process is not running on Router2.
- The OSPF process is configured incorrectly on Router1.
- **There is an incorrect wildcard mask statement for network 10.10.0.0/16 on Router2.***

42. **Refer to the exhibit. R3 has the following configuration:**
R3# show running-config
–some output text omitted–
interface serial0
bandwidth 128
ip address 192.168.11.2 255.255.255.0
encapsulation frame-relay
frame-relay map ip 192.168.11.2 30 broadcastAfter the command R3# debug frame-relay packet is executed, a ping is issued from R3 to R1 but is unsuccessful. Based on the output of the debug command shown in the graphic and the router configuration, what is the

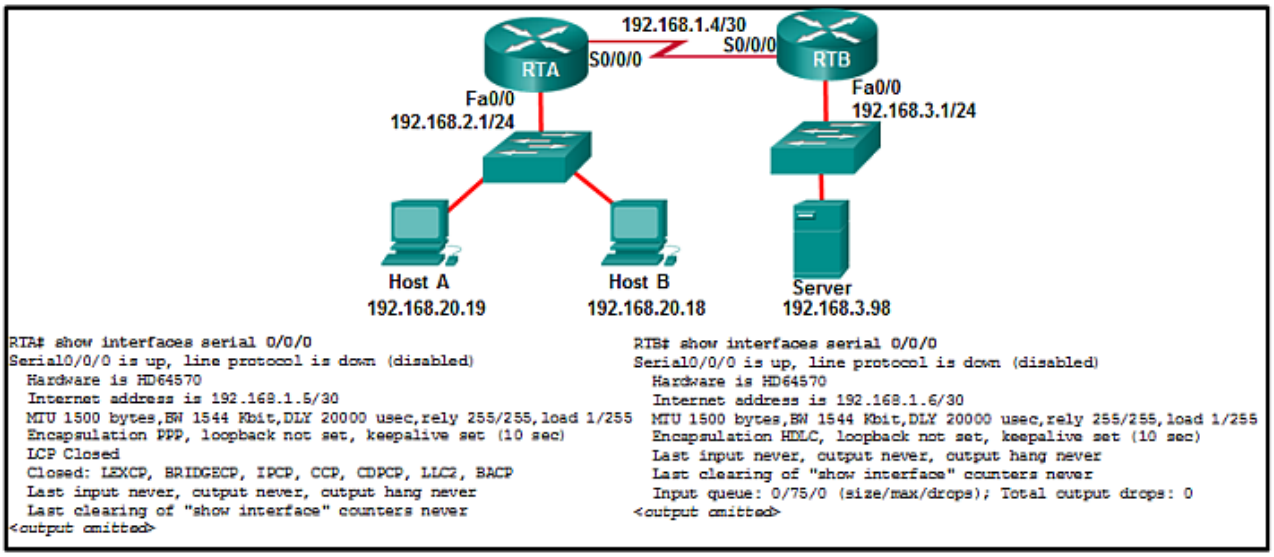
problem?



- No clock rate has been configured on interface s0.
- There is an incorrect DLCI number in the map statement.
- **An incorrect IP address exists in the map statement.***
- The encapsulation frame-relay command is missing the broadcast keyword.

43. **The security policy in a company specifies that the staff in the sales department must use a VPN to connect to the corporate network to access the sales data when they travel to meet customers. What component is needed by the sales staff to establish a remote VPN connection?**
    - VPN gateway
    - VPN appliance
    - VPN concentrator
    - **VPN client software***
44. **Which PPP protocol allows a device to specify an IP address for routing over the PPP link?**
    - PAP
    - CHAP
    - LCP
    - **IPCP***
45. **Refer to the exhibit. A network administrator has configured routers RTA and RTB, but cannot ping from serial interface to serial interface. Which layer of the OSI model is the**

most likely cause of the problem?



- application
- transport
- network
- **data link***
- physical

46. **What is the default location for Cisco routers and switches to send critical logging events?**
    - auxiliary port
    - **console port***
    - syslog server
    - virtual terminal
47. **Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.**
    Which message is displayed on the web browser?
    - Well done!
    - **PPP is working!***
    - PPP configured!
    - Configured correctly!
48. **Open the PT activity. Perform the tasks in the activity instructions and then answer the question.**
    What is the IP address or range of IP addresses that are used as the inside global address for packets that originate from PC1 and are going to the server?
    - 209.165.200.231
    - **209.165.200.225 – 200.165.200.229***
    - 209.165.200.231 – 209.165.200.239
    - 192.168.10.21
    - 192.168.10.1 – 192.168.10.254
49. **A technician is talking to a colleague at a rival company and comparing DSL transfer rates between the two companies. Both companies are in the same city, use the same service provider, and have the same rate/service plan. What is the explanation for why Company A reports higher download speeds than Company B?**
    - Company B shares the conection to the DSLAM with more clients than Company A.

- Company A only uses microfilters on branch locations.
- **Company A is closer to the service provider.***
- Company B has a higher volume of POTS voice traffic than Company A.

50. **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 usually experience lower latency than circuit-switched networks experience.
- Packet-switched networks are less susceptible to jitter than circuit-switched networks are.

51. **Which statement describes cable?**
- The cable subscriber must purchase a cable modem termination system (CMTS)
- **Delivering services over a cable network requires downstream frequencies in the 50 to 860 MHz range, and upstream frequencies in the 5 to 42 MHz range.***
- Each cable subscriber has dedicated upstream and downstream bandwidth.
- Cable subscribers may expect up to 27 Mbps