Which design feature will limit the size of a failure domain in an enterprise network?
- the purchase of enterprise equipment that is designed for large traffic volume
- the installation of redundant power supplies
- the use of a collapsed core design
- **the use of the building switch block approach**

Which two things should a network administrator modify on a router to perform password recovery? (Choose two.)
- the system image file
- the NVRAM file system
- **the configuration register value**
- **the startup configuration file**
- system ROM

What type of network uses one common infrastructure to carry voice, data, and video signals?
- borderless
- **converged**
- managed
- switched

What are three advantages of using private IP addresses and NAT? (Choose three.)
- **hides private LAN addressing from outside devices that are connected to the Internet**
- **permits LAN expansion without additional public IP addresses**
- reduces CPU usage on customer routers
- creates multiple public IP addresses
- improves the performance of the router that is connected to the Internet
- **conserves registered public IP addresses**

Which two scenarios are examples of remote access VPNs? (Choose two.)
- All users at a large branch office can access company resources through a single VPN connection.
- A small branch office with three employees has a Cisco ASA that is used to create a VPN connection to the HQ.
- A toy manufacturer has a permanent VPN connection to one of its parts suppliers.
- **A mobile sales agent is connecting to the company network via the Internet connection at a hotel.**
- **An employee who is working from home uses VPN client software on a laptop in order to connect to the company network.**

What are three benefits of cloud computing? (Choose three.)

- It utilizes end-user clients to do a substantial amount of data preprocessing and storage.
- It uses open-source software for distributed processing of large datasets.
- **It streamlines the IT operations of an organization by subscribing only to needed services.**
- **It enables access to organizational data anywhere and at any time.**
- It turns raw data into meaningful information by discovering patterns and relationships.
- **It eliminates or reduces the need for onsite IT equipment, maintenance, and management.**

What is a characteristic of a single-area OSPF network?

- All routers share a common forwarding database.
- All routers have the same neighbor table.
- **All routers are in the backbone area.**
- All routers have the same routing table.

What is a WAN?

- a network infrastructure that spans a limited physical area such as a city
- **a network infrastructure that provides access to other networks over a large geographic area**
- a network infrastructure that provides access in a small geographic area
- a network infrastructure designed to provide data storage, retrieval, and replication

A network administrator has been tasked with creating a disaster recovery plan. As part of this plan, the administrator is looking for a backup site for all of the data on the company servers. What service or technology would support this requirement?

- **data center**
- virtualization
- dedicated servers
- software defined networking

Which type of OSPF packet is used by a router to discover neighbor routers and establish neighbor adjacency?

- link-state update
- **hello**
- database description
- link-state request

Which two statements are characteristics of a virus? (Choose two.)
- A virus has an enabling vulnerability, a propagation mechanism, and a payload.
- **A virus can be dormant and then activate at a specific time or date.**
- A virus provides the attacker with sensitive data, such as passwords.
- A virus replicates itself by independently exploiting vulnerabilities in networks.
- **A virus typically requires end-user activation.**

Which public WAN access technology utilizes copper telephone lines to provide access to subscribers that are multiplexed into a single T3 link connection?
- ISDN
- **DSL**
- cable
- dialup

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?
- packet-switched network
- **Ethernet WAN**
- circuit-switched network
- MPLS

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use debuggers?
- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- **to reverse engineer binary files when writing exploits and when analyzing malware**
- to obtain specially designed operating systems preloaded with tools optimized for hacking
- to detect any evidence of a hack or malware in a computer or network

Consider the following output for an ACL that has been applied to a router via the access-class in command. What can a network administrator determine from the output that is shown?

R1#

```
Standard IP access list 2

10 permit 192.168.10.0, wildcard bits 0.0.0.255 (2
matches)

20 deny any (1 match)
```

- Two devices connected to the router have IP addresses of 192.168.10. x .
- **Two devices were able to use SSH or Telnet to gain access to the router.**
- Traffic from one device was not allowed to come into one router port and be routed outbound a different router port.
- Traffic from two devices was allowed to enter one router port and be routed outbound to a different router port.

What command would be used as part of configuring NAT or PAT to clear dynamic entries before the timeout has expired?
- clear ip dhcp
- **clear ip nat translation**
- clear access-list counters
- clear ip pat statistics

What are two characteristics of video traffic? (Choose two.)
- Video traffic consumes less network resources than voice traffic consumes.
- **Video traffic latency should not exceed 400 ms.**
- Video traffic is more resilient to loss than voice traffic is.
- Video traffic requires a minimum of 30 kbs of bandwidth.
- **Video traffic is unpredictable and inconsistent.**

Refer to the exhibit. A technician is configuring R2 for static NAT to allow the client to access the web server. What is a possible reason that the client PC cannot access the web server?
- The IP NAT statement is incorrect.
- Interface Fa0/1 should be identified as the outside NAT interface.
- **Interface S0/0/0 should be identified as the outside NAT interface.**
- The configuration is missing a valid access control list.

In setting up a small office network, the network administrator decides to assign private IP addresses dynamically to workstations and mobile devices. Which feature must be enabled on the company router in order for office devices to access the internet?
- UPnP
- MAC filtering

- **NAT**
- QoS

A data center has recently updated a physical server to host multiple operating systems on a single CPU. The data center can now provide each customer with a separate web server without having to allocate an actual discrete server for each customer. What is the networking trend that is being implemented by the data center in this situation?
- online collaboration
- BYOD
- **virtualization**
- maintaining communication integrity

Refer to the exhibit. Which address or addresses represent the inside global address?
- 192.168.0.100
- 10.1.1.2
- any address in the 10.1.1.0 network
- **209.165.20.25**

Which two IPsec protocols are used to provide data integrity?
- **MD5**
- DH
- AES
- **SHA**
- RSA

If an outside host does not have the Cisco AnyConnect client preinstalled, how would the host gain access to the client image?
- The Cisco AnyConnect client is installed by default on most major operating systems.
- **The host initiates a clientless VPN connection using a compliant web browser to download the client.**
- The host initiates a clientless connection to a TFTP server to download the client.
- The host initiates a clientless connection to an FTP server to download the client.

A company is considering updating the campus WAN connection. Which two WAN options are examples of the private WAN architecture? (Choose two.)
- **leased line**
- cable
- digital subscriber line
- **Ethernet WAN**

- municipal Wi-Fi

Which type of QoS marking is applied to Ethernet frames?
- IP precedence
- DSCP
- ToS
- **CoS**

Refer to the exhibit. Routers R1 and R2 are connected via a serial link. One router is configured as the NTP master, and the other is an NTP client. Which two pieces of information can be obtained from the partial output of the show ntp associations detail command on R2? (Choose two.)
- Both routers are configured to use NTPv2.
- **Router R1 is the master, and R2 is the client**
- The IP address of R2 is 192 168.1.2.
- Router R2 is the master, and R1 is the client
- **The IP address of R1 is 192.168.1.2**

Refer to the exhibit. The network administrator that has the IP address of 10.0.70.23/25 needs to have access to the corporate FTP server (10.0.54.5/28). The FTP server is also a web server that is accessible to all internal employees on networks within the 10.x.x.x address. No other traffic should be allowed to this server. Which extended ACL would be used to filter this traffic, and how would this ACL be applied? (Choose two.)
R1(config)# interface s0/0/0
R1(config-if)# ip access-group 105 out
R2(config)# interface gi0/0
R2(config-if)# ip access-group 105 in

access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 20
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 21
access-list 105 permit tcp 10.0.0.0 0.255.255.255 host 10.0.54.5 eq www
access-list 105 deny ip any host 10.0.54.5
access-list 105 permit ip any any
access-list 105 permit ip host 10.0.70.23 host 10.0.54.5
access-list 105 permit tcp any host 10.0.54.5 eq www
access-list 105 permit ip any any

R1(config)# interface gi0/0
R1(config-if)# ip access-group 105 out
access-list 105 permit tcp host 10.0.54.5 any eq www
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 20
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 21

Refer to the exhibit. If the network administrator created a standard ACL that allows only devices that connect to the R2 G0/0 network access to the devices on the R1 G0/1 interface, how should the ACL be applied?
- inbound on the R2 G0/0 interface
- **outbound on the R1 G0/1 interface**
- inbound on the R1 G0/1 interface
- outbound on the R2 S0/0/1 interface

Which is a characteristic of a Type 2 hypervisor?
- **does not require management console software**
- has direct access to server hardware resources
- best suited for enterprise environments
- installs directly on hardware

What are the two types of VPN connections? (Choose two.)
- PPPoE
- Frame Relay
- **site-to-site**
- **remote access**
- leased line

Refer to the exhibit. What three conclusions can be drawn from the displayed output? (Choose three.)
- **The DR can be reached through the GigabitEthernet 0/0 interface.**
- **There have been 9 seconds since the last hello packet sent.**
- This interface is using the default priority.
- **The router ID values were not the criteria used to select the DR and the BDR.**
- The router ID on the DR router is 3.3.3.3
- The BDR has three neighbors.

Refer to the exhibit. A network administrator is configuring an ACL to limit the connection to R1 vty lines to only the IT group workstations in the network 192.168.22.0/28. The administrator verifies the successful Telnet connections from a workstation with IP 192.168.22.5 to R1 before the ACL is applied. However, after the ACL is applied to the interface Fa0/0, Telnet connections are denied. What is the cause of the connection failure?
- The enable secret password is not configured on R1.
- **The IT group network is included in the deny statement.**
- The permit ACE specifies a wrong port number.
- The permit ACE should specify protocol ip instead of tcp.
- The login command has not been entered for vty lines.

What functionality does mGRE provide to the DMVPN technology?

- **It allows the creation of dynamically allocated tunnels through a permanent tunnel source at the hub and dynamically allocated tunnel destinations at the spokes.**
- It provides secure transport of private information over public networks, such as the Internet.
- It is a Cisco software solution for building multiple VPNs in an easy, dynamic, and scalable manner.
- It creates a distributed mapping database of public IP addresses for all VPN tunnel spokes.

What is used to pre-populate the adjacency table on Cisco devices that use CEF to process packets?

- the FIB
- the routing table
- **the ARP table**
- the DSP

What command would be used as part of configuring NAT or PAT to display information about NAT configuration parameters and the number of addresses in the pool?

- show running-config
- **show ip nat statistics**
- show ip cache
- show version

What is a purpose of establishing a network baseline?

- It provides a statistical average for network performance.
- **It creates a point of reference for future network evaluations.**
- It manages the performance of network devices.
- It checks the security configuration of network devices.

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

Which statement describes a characteristic of standard IPv4 ACLs?
- **They filter traffic based on source IP addresses only.**
- They can be created with a number but not with a name.
- They are configured in the interface configuration mode.
- They can be configured to filter traffic based on both source IP addresses and source ports.

Refer to the exhibit. R1 is configured for NAT as displayed. What is wrong with the configuration?
- **NAT-POOL2 is not bound to ACL 1.**
- Interface Fa0/0 should be identified as an outside NAT interface.
- The NAT pool is incorrect.
- Access-list 1 is misconfigured.

Refer to the exhibit. What method can be used to enable an OSPF router to advertise a default route to neighboring OSPF routers?
- Use a static route pointing to the ISP and redistribute it.
- Use the redistribute static command on R0-A.
- Use the default-information originate command on ISP.
- **Use the default-information originate command on R0-A.**

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use applications such as John the Ripper,THC Hydra, RainbowCrack, and Medusa?
- to capture and analyze packets within traditional Ethernet LANs or WLANs
- to probe and test the robustness of a firewall by using specially created forged packets
- **to make repeated guesses in order to crack a password**

What are two syntax rules for writing a JSON array? (Choose two.)
- **Each value in the array is separated by a comma.**
- The array can include only one value type.
- A space must separate each value in the array.
- A semicolon separates the key and list of values.
- **Values are enclosed in square brackets.**

What is a characteristic of a Trojan horse as it relates to network security?
- An electronic dictionary is used to obtain a password to be used to infiltrate a key network device.
- **Malware is contained in a seemingly legitimate executable program.**

- Extreme quantities of data are sent to a particular network device interface.
- Too much information is destined for a particular memory block, causing additional memory areas to be affecte

An attacker is redirecting traffic to a false default gateway in an attempt to intercept the data traffic of a switched network. What type of attack could achieve this?
- TCP SYN flood
- DNS tunneling
- **DHCP spoofing**
- ARP cache poisoning

A company is developing a security policy for secure communication. In the exchange of critical messages between a headquarters office and a branch office, a hash value should only be recalculated with a predetermined code, thus ensuring the validity of data source. Which aspect of secure communications is addressed?
- data integrity
- non-repudiation
- **origin authentication**
- data confidentiality

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use packet sniffers?
- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- to detect any evidence of a hack or malware in a computer or network
- to probe and test the robustness of a firewall by using specially created forged packets
- **to capture and analyze packets within traditional Ethernet LANs or WLANs**

An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 172.20.0.0 255.255.252.0. What wildcard mask would the administrator use in the OSPF network statement?
- 0.0.15.255
- **0.0.3.255**
- 0.0.7.255
- 0.0.1.255

Match the HTTP method with the RESTful operation.
POST –>> Create
GET –>> Read
PUT/PATCH –>> Update/Replace?Modify
Delete –>> Delete

Refer to the exhibit. What is the OSPF cost to reach the West LAN 172.16.2.0/24 from East?
- 782
- 74
- 128
- **65**

What is one reason to use the ip ospf priority command when the OSPF routing protocol is in use?
- to activate the OSPF neighboring process
- **to influence the DR/BDR election process**
- to provide a backdoor for connectivity during the convergence process
- to streamline and speed up the convergence process

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 210 permit tcp 172.18.20.0 0.0.0.31
172.18.20.32 0.0.0.31 eq ftp .
```

If a packet with a source address of 172.18.20.14, a destination address of 172.18.20.40, and a protocol of 21 is received on the interface, is the packet permitted or denied?
- **Permitted**

What is a characteristic of the two-tier spine-leaf topology of the Cisco ACI fabric architecture?
- The spine and leaf switches are always linked through core switches.
- The spine switches attach to the leaf switches and attach to each other for redundancy.
- The leaf switches always attach to the spines and they are interlinked through a trunk line.
- **The leaf switches always attach to the spines, but they never attach to each other.**

Which two scenarios would result in a duplex mismatch? (Choose two.)
- **connecting a device with autonegotiation to another that is manually set to full-duplex**

- starting and stopping a router interface during a normal operation
- connecting a device with an interface running at 100 Mbps to another with an interface running at 1000 Mbps
- configuring dynamic routing incorrectly
- **manually setting the two connected devices to different duplex modes**

A network technician is configuring SNMPv3 and has set a security level of auth . What is the effect of this setting?
- authenticates a packet by a string match of the username or community string
- **authenticates a packet by using either the HMAC with MD5 method or the SHA method**
- authenticates a packet by using either the HMAC MD5 or 3.HMAC SHA algorithms and encrypts the packet with either the DES, 3DES or AES algorithms
- authenticates a packet by using the SHA algorithm only

What are two types of attacks used on DNS open resolvers? (Choose two.)
- **amplification and reflection**
- **resource utilization**
- fast flux
- ARP poisoning
- cushioning

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit udp 192.168.100.0 0.0.2.255
64.100.40.0 0.0.0.15 eq telnet .
```

If a packet with a source address of 192.168.101.45, a destination address of 64.100.40.4, and a protocol of 23 is received on the interface, is the packet permitted or denied?
- **denied**
- permitted

Which type of resources are required for a Type 1 hypervisor?
- a dedicated VLAN
- **a management console**
- a host operating system

In JSON, what is held within square brackets [ ]?
- nested values

- key/value pairs
- an object
- **an array**

What are three components used in the query portion of a typical RESTful API request? (Choose three.)
- resources
- protocol
- API server
- **format**
- **key**
- **parameters**

A user reports that when the corporate web page URL is entered on a web browser, an error message indicates that the page cannot be displayed. The help-desk technician asks the user to enter the IP address of the web server to see if the page can be displayed. Which troubleshooting method is being used by the technician?
- top-down
- bottom-up
- **divide-and-conquer**
- substitution

Which protocol provides authentication, integrity, and confidentiality services and is a type of VPN?
- MD5
- AES
- **IPsec**
- ESP

Which statement describes a characteristic of Cisco Catalyst 2960 switches?
- They are best used as distribution layer switches.
- **New Cisco Catalyst 2960-C switches support PoE pass-through.**
- They are modular switches.
- They do not support an active switched virtual interface (SVI) with IOS versions prior to 15.x.

Which component of the ACI architecture translates application policies into network programming?
- the hypervisor
- **the Application Policy Infrastructure Controller**
- the Nexus 9000 switch
- the Application Network Profile endpoints

Which two pieces of information should be included in a logical topology diagram of a network? (Choose two.)
- device type
- cable specification
- **interface identifier**
- OS/IOS version
- **connection type**
- cable type and identifier

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?
- **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.

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

Which statement accurately describes a characteristic of IPsec?
- IPsec works at the application layer and protects all application data.
- IPsec is a framework of standards developed by Cisco that relies on OSI algorithms.
- IPsec is a framework of proprietary standards that depend on Cisco specific algorithms.
- IPsec works at the transport layer and protects data at the network layer.
- **IPsec is a framework of open standards that relies on existing algorithms.**

In a large enterprise network, which two functions are performed by routers at the distribution layer? (Choose two.)
- connect users to the network
- provide a high-speed network backbone
- **connect remote networks**
- provide Power over Ethernet to devices
- **provide data traffic security**

Which two statements describe the use of asymmetric algorithms? (Choose two.)

- Public and private keys may be used interchangeably.
- If a public key is used to encrypt the data, a public key must be used to decrypt the data.
- **If a private key is used to encrypt the data, a public key must be used to decrypt the data.**
- **If a public key is used to encrypt the data, a private key must be used to decrypt the data.**
- If a private key is used to encrypt the data, a private key must be used to decrypt the data.

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

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

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

What are two purposes of launching a reconnaissance attack on a network? (Choose two.)

- **to scan for accessibility**
- to retrieve and modify data
- **to gather information about the network and devices**
- to prevent other users from accessing the system
- to escalate access privileges

A group of users on the same network are all complaining about their computers running slowly. After investigating, the technician determines that these computers are part of a zombie network. Which type of malware is used to control these computers?

- **botnet**

- spyware
- virus
- rootkit

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit tcp 10.1.1.0 0.0.0.255 host
192.31.7.45 eq dns .
```

If a packet with a source address of 10.1.1.201, a destination address of 192.31.7.45, and a protocol of 23 is received on the interface, is the packet permitted or denied?
- permitted
- **denied**

Refer to the exhibit. From which location did this router load the IOS?
- **flash memory**
- NVRAM?
- RAM
- ROM
- a TFTP server?

Refer to the exhibit. Which data format is used to represent the data for network automation applications?
- XML
- YAML
- HTML
- **JSON**

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

What is the main function of a hypervisor?
- **It is used to create and manage multiple VM instances on a host machine.**
- It is a device that filters and checks security credentials.
- It is a device that synchronizes a group of sensors.
- It is software used to coordinate and prepare data for analysis.
- It is used by ISPs to monitor cloud computing resources.

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
- **Ethernet WAN**
- VSAT
- ISDN

Refer to the exhibit. As traffic is forwarded out an egress interface with QoS treatment, which congestion avoidance technique is used?

- traffic shaping
- weighted random early detection
- classification and marking
- **traffic policing**

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit tcp 10.1.1.0 0.0.0.255 host
10.1.3.8 eq dns .
```

If a packet with a source address of 10.1.3.8, a destination address of 10.10.3.8, and a protocol of 53 is received on the interface, is the packet permitted or denied?

- **denied**
- permitted

Refer to the exhibit. What is the purpose of the command marked with an arrow shown in the partial configuration output of a Cisco broadband router?

- defines which addresses are allowed into the router
- **defines which addresses can be translated**
- defines which addresses are assigned to a NAT pool
- defines which addresses are allowed out of the router

If a router has two interfaces and is routing both IPv4 and IPv6 traffic, how many ACLs could be created and applied to it?

- 12
- 4
- **8**
- 16

Refer to the exhibit. An administrator first configured an extended ACL as shown by the output of the show access-lists command. The administrator then edited this access-list by issuing the commands below.

```
Router(config)# ip access-list extended 101

Router(config-ext-nacl)# no 20

Router(config-ext-nacl)# 5 permit tcp any any eq 22

Router(config-ext-nacl)# 20 deny udp any any
```

Which two conclusions can be drawn from this new configuration? (Choose two.)
- TFTP packets will be permitted.
- **Ping packets will be permitted.**
- Telnet packets will be permitted.
- **SSH packets will be permitted.**
- All TCP and UDP packets will be denied.

Which troubleshooting approach is more appropriate for a seasoned network administrator rather than a less-experienced network administrator?
- **a less-structured approach based on an educated guess**
- an approach comparing working and nonworking components to spot significant differences
- a structured approach starting with the physical layer and moving up through the layers of the OSI model until the cause of the problem is identified
- an approach that starts with the end-user applications and moves down through the layers of the OSI model until the cause of the problem has been identified

Refer to the exhibit. Many employees are wasting company time accessing social media on their work computers. The company wants to stop this access. What is the best ACL type and placement to use in this situation?
- extended ACL outbound on R2 WAN interface towards the internet
- standard ACL outbound on R2 WAN interface towards the internet
- standard ACL outbound on R2 S0/0/0
- **extended ACLs inbound on R1 G0/0 and G0/1**

Refer to the exhibit. An administrator is trying to configure PAT on R1, but PC-A is unable to access the Internet. The administrator tries to ping a

server on the Internet from PC-A and collects the debugs that are shown in the exhibit. Based on this output, what is most likely the cause of the problem?

- The inside and outside NAT interlaces have been configured backwards
- **The inside global address is not on the same subnet as the ISP**
- The address on Fa0/0 should be 64.100.0.1.
- The NAT source access list matches the wrong address range.

Why is QoS an important issue in a converged network that combines voice, video, and data communications?

- Data communications must be given the first priority.
- **Voice and video communications are more sensitive to latency.**
- Legacy equipment is unable to transmit voice and video without QoS.
- Data communications are sensitive to jitter.

Which statement describes a VPN?

- VPNs use logical connections to create public networks through the Internet.
- VPNs use open source virtualization software to create the tunnel through the Internet.
- VPNs use dedicated physical connections to transfer data between remote users.
- **VPNs use virtual connections to create a private network through a public network.**

n which OSPF state is the DR/BDR election conducted?

- ExStart
- Init
- **Two-Way**
- Exchange

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?

- Cisco Secure Mobility Clientless SSL VPN
- Frame Relay
- remote access VPN using IPsec
- Cisco AnyConnect Secure Mobility Client with SSL
- **site-to-site VPN**

What is the final operational state that will form between an OSPF DR and a DROTHER once the routers reach convergence?
- loading
- established
- **full**
- two-way

Refer to the exhibit. If the switch reboots and all routers have to re-establish OSPF adjacencies, which routers will become the new DR and BDR?
- **Router R3 will become the DR and router R1 will become the BDR.**
- Router R4 will become the DR and router R3 will become the BDR.
- Router R1 will become the DR and router R2 will become the BDR.
- Router R3 will become the DR and router R2 will become the BDR.

Which type of server would be used to keep a historical record of messages from monitored network devices?
- DNS
- print
- DHCP
- **syslog**
- authentication

When QoS is implemented in a converged network, which two factors can be controlled to improve network performance for real-time traffic? (Choose two.)
- packet addressing
- **delay**
- **jitter**
- packet routing
- link speed

In which step of gathering symptoms does the network engineer determine if the problem is at the core, distribution, or access layer of the network?
- Determine ownership.
- Determine the symptoms.
- **Narrow the scope.**
- Document the symptoms.
- Gather information.

What protocol sends periodic advertisements between connected Cisco devices in order to learn device name, IOS version, and the number and type of interfaces?

- **CDP**
- SNMP
- NTP
- LLDP

An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 192.168.0.0 255.255.252.0. What wildcard mask would the administrator use in the OSPF network statement?
- 0.0.0.127
- 0.0.0.31
- **0.0.3.255**
- 0.0.0.63

Refer to the exhibit. An administrator configures the following ACL in order to prevent devices on the 192.168.1.0 subnet from accessing the server at 10.1.1.5:

```
access-list 100 deny ip 192.168.1.0 0.0.0.255 host
10.1.1.5

access-list 100 permit ip any any
```

Where should the administrator place this ACL for the most efficient use of network resources?
- **inbound on router A Fa0/0**
- outbound on router B Fa0/0
- outbound on router A Fa0/1
- inbound on router B Fa0/1

Which type of OSPFv2 packet is used to forward OSPF link change information?
- link-state acknowledgment
- **link-state update**
- hello
- database description

What protocol synchronizes with a private master clock or with a publicly available server on the internet?
- MPLS
- CBWFQ
- TFTP
- **NTP**

Which type of VPN allows multicast and broadcast traffic over a secure site-to-site VPN?
- dynamic multipoint VPN
- SSL VPN
- IPsec virtual tunnel interface
- **GRE over IPsec**

An OSPF router has three directly connected networks; 10.0.0.0/16, 10.1.0.0/16, and 10.2.0.0/16. Which OSPF network command would advertise only the 10.1.0.0 network to neighbors?
- **router(config-router)# network 10.1.0.0 0.0.255.255 area 0**
- router(config-router)# network 10.1.0.0 0.0.15.255 area 0
- router(config-router)# network 10.1.0.0 255.255.255.0 area 0
- router(config-router)# network 10.1.0.0 0.0.0.0 area 0

Refer to the exhibit. Which sequence of commands should be used to configure router A for OSPF?
router ospf 1
network 192.168.10.0 area 0

router ospf 1
network 192.168.10.0

router ospf 1
network 192.168.10.64 255.255.255.192
network 192.168.10.192 255.255.255.252

router ospf 1
network 192.168.10.64 0.0.0.63 area 0
network 192.168.10.192 0.0.0.3 area 0

An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 192.168.0.0 255.255.254.0. What wildcard mask would the administrator use in the OSPF network statement?
- 0.0.7.255
- **0.0.1.255**
- 0.0.3.255
- 0.0.15.255

How does virtualization help with disaster recovery within a data center?
- improvement of business practices
- supply of consistent air flow
- **support of live migration**
- guarantee of power

How does virtualization help with disaster recovery within a data center?
- **Hardware does not have to be identical.**
- **(Other case) Hardware at the recovery site does not have to be identical to production equipment.**
- Power is always provided.
- Less energy is consumed.
- Server provisioning is faster.

Refer to the exhibit. Which devices exist in the failure domain when switch S3 loses power?
- S4 and PC_2
- **PC_3 and AP_2**
- AP_2 and AP_1
- PC_3 and PC_2
- S1 and S4

Which set of access control entries would allow all users on the 192.168.10.0/24 network to access a web server that is located at 172.17.80.1, but would not allow them to use Telnet?
access-list 103 deny tcp host 192.168.10.0 any eq 23
access-list 103 permit tcp host 192.168.10.1 eq 80

access-list 103 permit tcp 192.168.10.0 0.0.0.255 host 172.17.80.1 eq 80
access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq 23
access-list 103 permit tcp 192.168.10.0 0.0.0.255 any eq 80
access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq 23

access-list 103 permit 192.168.10.0 0.0.0.255 host 172.17.80.1
access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq telnet

Refer to the exhibit. A network administrator needs to add an ACE to the TRAFFIC-CONTROL ACL that will deny IP traffic from the subnet 172.23.16.0/20. Which ACE will meet this requirement?
- **5 deny 172.23.16.0 0.0.15.255**
- 5 deny 172.23.16.0 0.0.255.255
- 15 deny 172.23.16.0 0.0.15.255
- 30 deny 172.23.16.0 0.0.15.255

Which step in the link-state routing process is described by a router building a link-state database based on received LSAs?
- executing the SPF algorithm
- **building the topology table**

- selecting the router ID
- declaring a neighbor to be inaccessible

What protocol uses agents, that reside on managed devices, to collect and store information about the device and its operation?
- SYSLOG
- TFTP
- CBWFQ
- **SNMP**

An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 10.27.27.0 255.255.255.0. What wildcard mask would the administrator use in the OSPF network statement?
- 0.0.0.63
- **0.0.0.255**
- 0.0.0.31
- 0.0.0.15

When will an OSPF-enabled router transition from the Down state to the Init state?
- when an OSPF-enabled interface becomes active
- as soon as the router starts
- **when the router receives a hello packet from a neighbor router**
- as soon as the DR/BDR election process is complete

What type of traffic is described as having a high volume of data per packet?
- data
- **video**
- voice

What protocol is a vendor-neutral Layer 2 protocol that advertises the identity and capabilities of the host device to other connected network devices?
- **LLDP**
- NTP
- TFTP
- SNMP

Which step in the link-state routing process is described by a router running an algorithm to determine the best path to each destination?
- building the topology table

- selecting the router ID
- declaring a neighbor to be inaccessible
- **executing the SPF algorithm**

Refer to the exhibit. Which conclusion can be drawn from this OSPF multiaccess network?
- If the DR stops producing Hello packets, a BDR will be elected, and then it promotes itself to assume the role of DR.
- **With an election of the DR, the number of adjacencies is reduced from 6 to 3.**
- When a DR is elected all other non-DR routers become DROTHER.
- All DROTHER routers will send LSAs to the DR and BDR to multicast 224.0.0.5.

Refer to the exhibit. The network administrator has an IP address of 192.168.11.10 and needs access to manage R1. What is the best ACL type and placement to use in this situation?
- extended ACL outbound on R2 WAN interface towards the internet
- **standard ACL inbound on R1 vty lines**
- extended ACLs inbound on R1 G0/0 and G0/1
- extended ACL outbound on R2 S0/0/1

Which type of VPN connects using the Transport Layer Security (TLS) feature?
- **SSL VPN**
- IPsec virtual tunnel interface
- GRE over IPsec
- dynamic multipoint VPN

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

A company has consolidated a number of servers and it is looking for a program or firmware to create and control virtual machines which have access to all the hardware of the consolidated servers. What service or technology would support this requirement?
- Cisco ACI
- software defined networking
- **Type-1 hypervisor**

- APIC-EM

What command would be used as part of configuring NAT or PAT to identify inside local addresses that are to be translated?
- ip nat inside source list 24 interface serial 0/1/0 overload
- ip nat inside source list 14 pool POOL-STAT overload
- **access-list 10 permit 172.19.89.0 0.0.0.255**
- ip nat inside source list ACCTNG pool POOL-STAT

Anycompany has decided to reduce its environmental footprint by reducing energy costs, moving to a smaller facility, and promoting telecommuting, what service or technology would support requirement?
- **-Cloud services**
- Data center
- APIC-EM
- Cisco ACI

Refer to the exhibit. An administrator is trying to back up the current running configuration of the router to a USB drive, and enters the command `copy usbflash0:/R1-config running-config` **on the router command line. After removing the USB drive and connecting it to a PC, the administrator discovers that the running configuration was not properly backed up to the R1-config file. What is the problem?**
- The file already exists on the USB drive and cannot be overwritten.
- The drive was not properly formatted with the FAT16 file system.
- There is no space left on the USB drive.
- The USB drive is not recognized by the router.
- **The command that the administrator used was incorrect.**

Which three types of VPNs are examples of enterprise-managed site-to-site VPNs? (Choose three.)
- Layer 3 MPLS VPN
- **IPsec VPN**
- **Cisco Dynamic Multipoint VPN**
- **GRE over IPsec VPN**
- clientless SSL VPN
- client-based IPsec VPN

Refer to the exhibit. Employees on 192.168.11.0/24 work on critically sensitive information and are not allowed access off their network. What is the best ACL type and placement to use in this situation?
- standard ACL inbound on R1 vty lines
- extended ACL inbound on R1 G0/0

- **standard ACL inbound on R1 G0/1**
- extended ACL inbound on R3 S0/0/1

In an OSPF network which two statements describe the link-state database (LSDB)? (Choose two.)
- **It can be viewed by using the `show ip ospf database` command.**
- A neighbor table is created based on the LSDB.
- It contains a list of only the best routes to a particular network.
- It contains a list of all neighbor routers to which a router has established bidirectional communication.
- **All routers within an area have an identical link-state database.**

In an OSPF network which OSPF structure is used to create the neighbor table on a router?
- **adjacency database**
- link-state database
- routing table
- forwarding database

What protocol is used in a system that consists of `three elements--a manager`, agents, and an information database?
- MPLS
- SYSLOG
- **SNMP**
- TFTP

What type of traffic is described as not resilient to loss?
- data
- **video**
- voice

Refer to the exhibit. Router R1 is configured with static NAT. Addressing on the router and the web server are correctly configured, but there is no connectivity between the web server and users on the Internet. What is a possible reason for this lack of connectivity?
- Interface Fa0/0 should be configured with the command ip nat outside .
- The inside global address is incorrect.
- **The router NAT configuration has an incorrect inside local address.**
- The NAT configuration on interface S0/0/1 is incorrect.

Which type of API would be used to allow authorized salespeople of an organization access to internal sales data from their mobile devices?
- open

- partner
- public
- **private**

Refer to the exhibit. Which data format is used to represent the data for network automation applications?
- **XML**
- HTML
- YAML
- JSON

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit udp 192.168.100.32 0.0.0.7 host
198.133.219.76 eq telnet .
```

If a packet with a source address of 198.133.219.100, a destination address of 198.133.219.170, and a protocol of 23 is received on the interface, is the packet permitted or denied?
- **denied**
- permitted

Refer to the exhibit. If no router ID was manually configured, what would router R1 use as its OSPF router ID?
- 10.0.0.1
- 10.1.0.1
- **192.168.1.100**
- 209.165.201.1

What protocol is a vendor-neutral Layer 2 protocol that advertises the identity and capabilities of the host device to other connected network devices?
- NTP
- **LLDP**
- SNMP
- MPLS

Which type of VPN uses a hub-and-spoke configuration to establish a full mesh topology?
- MPLS VPN
- GRE over IPsec
- IPsec virtual tunnel interface
- **dynamic multipoint VPN**

What is a characteristic of the REST API?
- evolved into what became SOAP
- used for exchanging XML structured information over HTTP or SMTP
- considered slow, complex, and rigid
- **most widely used API for web services**

A student, doing a summer semester of study overseas, has taken hundreds of pictures on a smartphone and wants to back them up in case of loss. What service or technology would support this requirement?
- Cisco ACI
- **cloud services**
- software defined networking
- dedicated servers

Consider the following access list that allows IP phone configuration file transfers from a particular host to a TFTP server:

```
R1(config)# access-list 105 permit udp host 10.0.70.23
host 10.0.54.5 range 1024 5000

R1(config)# access-list 105 deny ip any any

R1(config)# interface gi0/0

R1(config-if)# ip access-group 105 out
```

Which method would allow the network administrator to modify the ACL and include FTP transfers from any source IP address?

R1(config)# interface gi0/0
R1(config-if)# no ip access-group 105 out
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
R1(config)# interface gi0/0
R1(config-if)# ip access-group 105 out

R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21

R1(config)# interface gi0/0
R1(config-if)# no ip access-group 105 out
R1(config)# no access-list 105
R1(config)# access-list 105 permit udp host 10.0.70.23 host 10.0.54.5 range 1024 5000
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
R1(config)# access-list 105 deny ip any any

R1(config)# interface gi0/0
R1(config-if)# ip access-group 105 out
R1(config)# access-list 105 permit udp host 10.0.70.23 host 10.0.54.5 range 1024 5000
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
R1(config)# access-list 105 deny ip any any

Which three statements are generally considered to be best practices in the placement of ACLs? (Choose three.)
- **Filter unwanted traffic before it travels onto a low-bandwidth link.**
- **Place standard ACLs close to the destination IP address of the traffic.**
- Place standard ACLs close to the source IP address of the traffic.
- Place extended ACLs close to the destination IP address of the traffic.
- **Place extended ACLs close to the source IP address of the traffic.**
- For every inbound ACL placed on an interface, there should be a matching outbound ACL.

What command would be used as part of configuring NAT or PAT to display all static translations that have been configured?
- **show ip nat translations**
- show ip pat translations
- show ip cache
- show running-config

A network administrator modified an OSPF-enabled router to have a hello timer setting of 20 seconds. What is the new dead interval time setting by default?
- 40 seconds
- 60 seconds
- **80 seconds**
- 100 seconds

Which type of VPN is the preferred choice for support and ease of deployment for remote access?
- **SSL VPN**
- GRE over IPsec
- dynamic multipoint VPN
- IPsec virtual tunnel interface

What type of traffic is described as predictable and smooth?
- video
- data

- **voice**

Which queuing mechanism has no provision for prioritizing or buffering but simply forwards packets in the order they arrive?
- **FIFO**
- LLQ
- CBWFQ
- WFQ

Refer to the exhibit. A network administrator has configured OSPFv2 on the two Cisco routers. The routers are unable to form a neighbor adjacency. What should be done to fix the problem on router R2?
- **Implement the command no passive-interface Serial0/1.**
- Implement the command network 192.168.2.6 0.0.0.0 area 0 on router R2.
- Change the router-id of router R2 to 2.2.2.2.
- Implement the command network 192.168.3.1 0.0.0.0 area 0 on router R2.

A network administrator is troubleshooting an OSPF problem that involves neighbor adjacency. What should the administrator do?
- Make sure that the router priority is unique on each router.
- Make sure that the DR/BDR election is complete.
- Make sure that the router ID is included in the hello packet.
- **Make sure that the hello and dead interval timers are the same on all routers.**

Refer to the exhibit. Internet privileges for an employee have been revoked because of abuse but the employee still needs access to company resources. What is the best ACL type and placement to use in this situation?

- standard ACL inbound on R2 WAN interface connecting to the internet
- **standard ACL outbound on R2 WAN interface towards the internet**
- standard ACL inbound on R1 G0/0
- standard ACL outbound on R1 G0/0

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 100 permit tcp 192.168.10.0 0.0.0.255
172.17.200.0 0.0.0.255 eq www .
```

If a packet with a source address of 192.168.10.244, a destination address of 172.17.200.56, and a protocol of 80 is received on the interface, is the packet permitted or denied?

- denied
- **permitted**

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use applications such as Nmap, SuperScan, and Angry IP Scanner?

- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- to detect any evidence of a hack or malware in a computer or network
- to reverse engineer binary files when writing exploits and when analyzing malware
- **to probe network devices, servers, and hosts for open TCP or UDP ports**

What command would be used as part of configuring NAT or PAT to display any dynamic PAT translations that have been created by traffic?

- show ip pat translations
- show ip cache
- show running-config
- **show ip nat translations**

An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 172.16.91.0 255.255.255.192. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.31.255
- **0.0.0.63**
- 0.0.15.255
- 0.0.7.255

What type of traffic is described as requiring latency to be no more than 400 milliseconds (ms)?

- **video**
- data
- voice

Refer to the exhibit. Which two configurations would be used to create and apply a standard access list on R1, so that only the 10.0.70.0/25 network devices are allowed to access the internal database server? (Choose two.)

A.
R1(config)# interface GigabitEthernet0/0
R1(config-if)# ip access-group 5 out
B.
R1(config)# access-list 5 permit 10.0.54.0 0.0.1.255

C.
R1(config)# interface Serial0/0/0
R1(config-if)# ip access-group 5 in

D.
R1(config)# access-list 5 permit 10.0.70.0 0.0.0.127
E.
R1(config)# access-list 5 permit any

A network administrator is writing a standard ACL that will deny any traffic from the 172.16.0.0/16 network, but permit all other traffic. Which two commands should be used? (Choose two.)
- Router(config)# access-list 95 deny 172.16.0.0 255.255.0.0
- **Router(config)# access-list 95 permit any**
- Router(config)# access-list 95 host 172.16.0.0
- **Router(config)# access-list 95 deny 172.16.0.0 0.0.255.255**
- Router(config)# access-list 95 172.16.0.0 255.255.255.255
- Router(config)# access-list 95 deny any

Refer to the exhibit. The company has decided that no traffic initiating from any other existing or future network can be transmitted to the Research and Development network. Furthermore, no traffic that originates from the Research and Development network can be transmitted to any other existing or future networks in the company. The network administrator has decided that extended ACLs are better suited for these requirements. Based on the information given, what will the network administrator do?
- One ACL will be placed on the R1 Gi0/0 interface and one ACL will be placed on the R2 Gi0/0 interface.
- Only a numbered ACL will work for this situation.
- One ACL will be placed on the R2 Gi0/0 interface and one ACL will be placed on the R2 S0/0/0 interface.
- **Two ACLs (one in each direction) will be placed on the R2 Gi0/0 interface.**

What protocol uses smaller stratum numbers to indicate that the server is closer to the authorized time source than larger stratum numbers?
- TFTP
- SYSLOG
- **NTP**

- MPLS

Refer to the exhibit. If no router ID was manually configured, what would router Branch1 use as its OSPF router ID?
- 10.0.0.1
- 10.1.0.1
- 192.168.1.100
- 209.165.201.1

Refer to the exhibit. A web designer calls to report that the web server web-s1.cisco.com is not reachable through a web browser. The technician uses command line utilities to verify the problem and to begin the troubleshooting process. Which two things can be determined about the problem? (Choose two.)
- **The web server at 192.168.0.10 is reachable from the source host.**
- **DNS cannot resolve the IP address for the server web-s1.cisco.com.**
- A router is down between the source host and the server web-s1.cisco.com.
- There is a problem with the web server software on web-s1.cisco.com.
- The default gateway between the source host and the server at 192.168.0.10 is down.

What type of traffic is described as tending to be unpredictable, inconsistent, and bursty?
- **video**
- voice
- data

What type of traffic is described as consisting of traffic that requires a higher priority if interactive?
- voice
- **data**
- video

Which type of VPN provides a flexible option to connect a central site with branch sites?
- IPsec virtual tunnel interface
- MPLS VPN
- **dynamic multipoint VPN**
- GRE over IPsec

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use fuzzers?

- **to discover security vulnerabilities of a computer**
- to detect any evidence of a hack or malware in a computer or network
- to reverse engineer binary files when writing exploits and when analyzing malware
- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network

Refer to the exhibit. A network administrator has configured a standard ACL to permit only the two LAN networks attached to R1 to access the network that connects to R2 G0/1 interface, but not the G0/0 interface. When following the best practices, in what location should the standard ACL be applied?
- R1 S0/0/0 outbound
- **R2 G0/0 outbound**
- R2 S0/0/1 outbound
- R1 S0/0/0 inbound
- R2 G0/1 inbound

Two OSPF-enabled routers are connected over a point-to-point link. During the ExStart state, which router will be chosen as the first one to send DBD packets?
- **the router with the highest router ID**
- the router with the lowest IP address on the connecting interface
- the router with the highest IP address on the connecting interface
- the router with the lowest router ID

Which step in the link-state routing process is described by a router sending Hello packets out all of the OSPF-enabled interfaces?
- exchanging link-state advertisements
- electing the designated router
- injecting the default route
- **establishing neighbor adjacencies**

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use forensic tools?
- to obtain specially designed operating systems preloaded with tools optimized for hacking
- **to detect any evidence of a hack or malware in a computer or network**
- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- to reverse engineer binary files when writing exploits and when analyzing malware

Refer to the exhibit. A network administrator has configured OSPFv2 on the two Cisco routers but PC1 is unable to connect to PC2. What is the most likely problem?
- **Interface Fa0/0 has not been activated for OSPFv2 on router R2.**
- Interface Fa0/0 is configured as a passive-interface on router R2.
- Interface S0/0 is configured as a passive-interface on router R2.
- Interface s0/0 has not been activated for OSPFv2 on router R2.

ABCTech is investigating the use of automation for some of its products. In order to control and test these products, the programmers require Windows, Linux, and MAC OS on their computers. What service or technology would support this requirement?
- dedicated servers
- software defined networking
- **virtualization**
- Cisco ACI

A network engineer has noted that some expected network route entries are not displayed in the routing table. Which two commands will provide additional information about the state of router adjacencies, timer intervals, and the area ID? (Choose two.)
- show ip protocols
- **show ip ospf neighbor**
- show running-configuration
- **show ip ospf interface**
- show ip route ospf

Which type of VPN involves the forwarding of traffic over the backbone through the use of labels distributed among core routers?
- **MPLS VPN**
- GRE over IPsec
- IPsec virtual tunnel interface
- dynamic multipoint VPN

Which type of VPN involves a nonsecure tunneling protocol being encapsulated by IPsec?
- SSL VPN
- dynamic multipoint VPN
- **GRE over IPsec**
- IPsec virtual tunnel interface

A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use hacking operation systems?
- to detect any evidence of a hack or malware in a computer or network

- **to obtain specially designed operating systems preloaded with tools optimized for hacking**
- to encode data, using algorithm schemes, to prevent unauthorized access to the encrypted data
- to reverse engineer binary files when writing exploits and when analyzing malware

What command would be used as part of configuring NAT or PAT to identify an interface as part of the external global network?
- ip pat inside
- access-list 10 permit 172.19.89.0 0.0.0.255
- ip nat inside
- **ip nat outside**

To avoid purchasing new hardware, a company wants to take advantage of idle system resources and consolidate the number of servers while allowing for multiple operating systems on a single hardware platform. What service or technology would support this requirement?
- data center
- cloud services
- **virtualization**
- dedicated servers

Which type of VPN routes packets through virtual tunnel interfaces for encryption and forwarding?
- MPLS VPN
- **IPsec virtual tunnel interface**
- dynamic multipoint VPN
- GRE over IPsec

Which step in the link-state routing process is described by a router flooding link-state and cost information about each directly connected link?
- building the topology table
- selecting the router ID
- **exchanging link-state advertisements**
- injecting the default route

What type of traffic is described as using either TCP or UDP depending on the need for error recovery?
- video
- voice
- **data**

Refer to the exhibit. The company CEO demands that one ACL be created to permit email traffic to the internet and deny FTP access. What is the best ACL type and placement to use in this situation?
- **extended ACL outbound on R2 WAN interface towards the internet**
- standard ACL outbound on R2 S0/0/0
- extended ACL inbound on R2 S0/0/0
- standard ACL inbound on R2 WAN interface connecting to the internet

What command would be used as part of configuring NAT or PAT to define a pool of addresses for translation?
- ip nat inside source static 172.19.89.13 198.133.219.65
- ip nat inside source list 24 interface serial 0/1/0 overload
- **ip nat pool POOL-STAT 64.100.14.17 64.100.14.30 netmask 255.255.255.240**
- ip nat outside

What is the name of the layer in the Cisco borderless switched network design that is considered to be the backbone used for high-speed connectivity and fault isolation?
- data link
- access
- **core**
- network
- network access

An ACL is applied inbound on router interface. The ACL consists of a single entry:

```
access-list 210 permit tcp 172.18.20.0 0.0.0.47 any eq
ftp
```

If a packet with a source address of 172.18.20.40, a destination address of 10.33.19.2, and a protocol of 21 is received on the interface, is the packet permitted or denied?
- **permitted**
- denied

What type of traffic is described as consisting of traffic that gets a lower priority if it is not mission-critical?
- video
- **data**
- voice

Which OSPF table is identical on all converged routers within the same OSPF area?
- routing

- neighbor
- adjacency
- **topology**

An ACL is applied inbound on a router interface. The ACL consists of a single entry:
access-list 100 permit tcp 192.168.10.0 0.0.0.255 any eq www .
If a packet with a source address of 192.168.10.45, a destination address of 10.10.3.27, and a protocol of 80 is received on the interface, is the packet permitted or denied?

- **permitted**
- denied

What protocol allows the manager to poll agents to access information from the agent MIB?
- CBWFQ
- SYSLOG
- TFTP
- **SNMP**

What type of traffic is described as being able to tolerate a certain amount of latency, jitter, and loss without any noticeable effects?
- **voice**
- video
- data

What term describes adding a value to the packet header, as close to the source as possible, so that the packet matches a defined policy?
- policing
- **traffic marking**
- weighted random early detection (WRED)
- traffic shaping
- tail drop

Which three traffic-related factors would influence selecting a particular WAN link type? (Choose three.)
- cost of the link
- **amount of traffic**
- distance between sites
- reliability
- **security needs**
- **type of traffic**

What command would be used as part of configuring NAT or PAT to link the inside local addresses to the pool of addresses available for PAT translation?

- ip nat inside source list ACCTNG pool POOL-STAT
- ip nat translation timeout 36000
- **ip nat inside source list 14 pool POOL-STAT overload**
- ip nat inside source static 172.19.89.13 198.133.219.65

What protocol is a vendor-neutral Layer 2 discovery protocol that must be configured separately to transmit and receive information packets?

- SNMP
- MPLS
- **LLDP**
- NTP

An ACL is applied inbound on a router interface. The ACL consists of a single entry:

`access-list 210 permit tcp 172.18.20.0 0.0.0.31 172.18.20.32 0.0.0.31 eq ftp .`

If a packet with a source address of 172.18.20.55, a destination address of 172.18.20.3, and a protocol of 21 is received on the interface, is the packet permitted or denied?

- permitted
- **denied**

Refer to the exhibit. Corporate policy demands that access to the server network be restricted to internal employees only. What is the best ACL type and placement to use in this situation?

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- **extended ACL outbound on R2 S0/0/1**
- standard ACL outbound on R2 S0/0/0
- standard ACL inbound on R2 WAN interface connecting to the internet
- extended ACL inbound on R2 S0/0/0

A technician is working on a Layer 2 switch and notices that a %CDP-4-DUPLEX_MISMATCH message keeps appearing for port G0/5. What command should the technician issue on the switch to start the troubleshooting process?

- show cdp neighbors
- show ip interface brief
- **show interface g0/5**
- show cdp

Which virtual resource would be installed on a network server to provide direct access to hardware resources?
- VMware Fusion
- a management console
- a dedicated VLAN
- **a Type 1 hypervisor**

Refer to the exhibit. A network administrator has configured a standard ACL to permit only the two LAN networks attached to R1 to access the network that connects to R2 G0/1 interface. When following the best practices, in what location should the standard ACL be applied?

- R2 G0/1 inbound
- R2 S0/0/1 outbound
- R1 S0/0/0 outbound
- **R2 G0/1 outbound**
- R2 G0/0 outbound

Which OSPF database is identical on all converged routers within the same OSPF area?
- neighbor
- forwarding
- **link-state**
- adjacency

What are two features to consider when creating a named ACL? (Choose two.)
- **Use alphanumeric characters if needed.**
- Use special characters, such as ! or * to show the importance of the ACL.
- Modify the ACL using a text editor.
- **Be descriptive when creating the ACL name.**
- Use a space for ease of reading to separate the name from the description

What type of traffic is described as requiring at least 384 Kbps of bandwidth?
- voice
- data
- **video**

Which step in the link-state routing process is described by a router inserting best paths into the routing table?
- declaring a neighbor to be inaccessible

- executing the SPF algorithm
- load balancing equal-cost paths
- **choosing the best route**

Anycompany has decided to reduce its environmental footprint by reducing energy costs, moving to a smaller facility, and promoting telecommuting. What service or technology would support this requirement?
- data center
- virtualization
- **cloud services**
- dedicated servers

Which QoS technique smooths packet output rate?
- policing
- **shaping**
- weighted random early detection
- Integrated Services (IntServ)
- marking

efer to the exhibit. The company has provided IP phones to employees on the 192.168.10.0/24 network and the voice traffic will need priority over data traffic. What is the best ACL type and placement to use in this situation?
- **extended ACL inbound on R1 G0/0**
- extended ACL outbound on R2 WAN interface towards the internet
- extended ACL outbound on R2 S0/0/1
- extended ACLs inbound on R1 G0/0 and G0/1

A network technician is configuring SNMPv3 and has set a security level of SNMPv3 authPriv. What is a feature of using this level?
- authenticates a packet by using the SHA algorithm only
- authenticates a packet by a string match of the username or community string
- **authenticates a packet by using either the HMAC with MD5 method or the SHA method**
- authenticates a packet by using either the HMAC MD5 or HMAC SHA algorithms and a username

Single area OSPF:
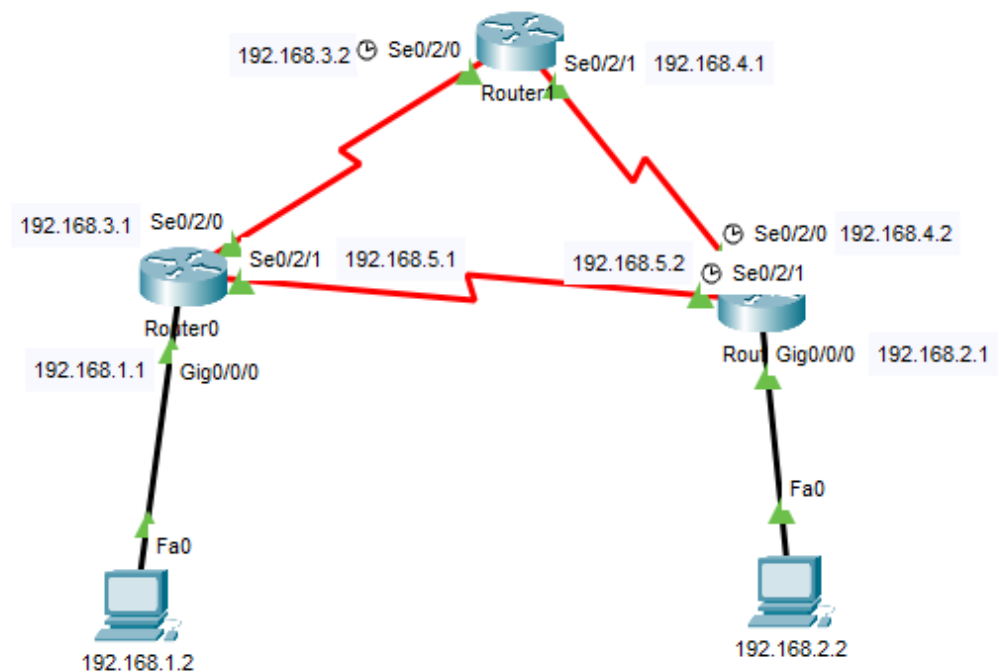
Router 0:
en
conf t
int g0/0/0
ip add 192.168.1.1 255.255.255.0
no sh
ex
int s0/2/0
ip add 192.168.3.1 255.255.255.0
no sh
ex
int s0/2/1
ip add 192.168.5.1 255.255.255.0
no sh
ex
router ospf 1
network 192.168.1.0 0.0.0.255 area 0
network 192.168.3.0 0.0.0.255 area 0
network 192.168.5.0 0.0.0.255 area 0
ex

ex
wr

Router 1:
en
conf t
int s0/2/0
ip add 192.168.3.2 255.255.255.0
no sh
ex
int s0/2/1
ip add 192.168.4.1 255.255.255.0
no sh
ex
router ospf 1
network 192.168.3.0 0.0.0.255 area 0
network 192.168.4.0 0.0.0.255 area 0
ex
ex
wr

Router 2:
en
conf t
int g0/0/0
ip add 192.168.2.1 255.255.255.0
no sh
ex
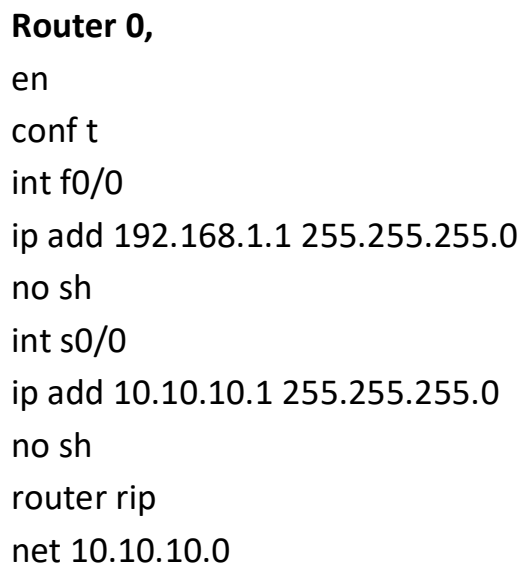int s0/2/0
ip add 192.168.4.2 255.255.255.0
no sh
ex
int s0/2/1
ip add 192.168.5.2 255.255.255.0
no sh

ex

router ospf 1

network 192.168.2.0 0.0.0.255 area 0

network 192.168.4.0 0.0.0.255 area 0

network 192.168.5.0 0.0.0.255 area 0

ex

ex

wr

Standard-ACL:

Router 0,

en

conf t

int f0/0

ip add 192.168.1.1 255.255.255.0

no sh

int s0/0

ip add 10.10.10.1 255.255.255.0

no sh

router rip

net 10.10.10.0

net 192.168.1.0

Router 1,

en

conf t

int f0/0

ip add 172.168.2.1 255.255.0.0

no sh

int s0/0

ip add 10.10.10.2 255.255.255.0

no sh

router rip

net 10.10.10.0

net 172.168.2.0

ex

access-list 14 deny host 172.168.2.3

access-list 14 permit any

int s0/0

ip access-group 14 out

int f0/0

ip access-group 14 in

ex

ex

show access-list 14

do ping from allow and deny pc to server and verify the configuration.

Extended-ACL (using http server):
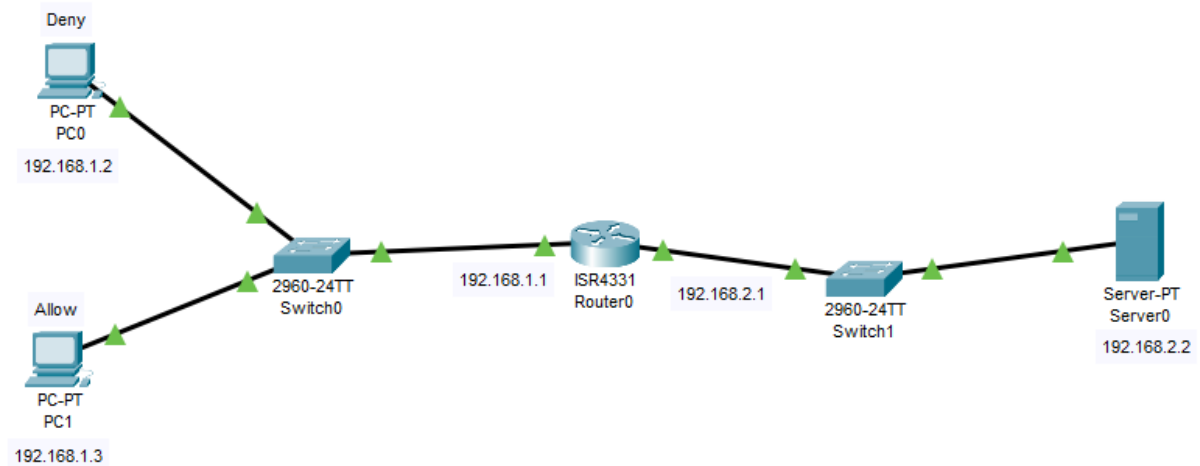
PC0: 192.168.1.2   DGW: 192.168.1.1
PC1: 192.168.1.3   DGW: 192.168.1.1
Server: 192.168.2.2 DGW: 192.168.2.1

Router 0,
en
conf t
int g0/0/0
ip add 192.168.2.1 255.255.255.0
no sh
int g0/0/1
ip add 192.168.1.1 255.255.255.0
no sh
ex
access-list 120 deny tcp host 192.168.1.2 host 192.168.2.2 eq 80
access-list 120 permit to ip any any
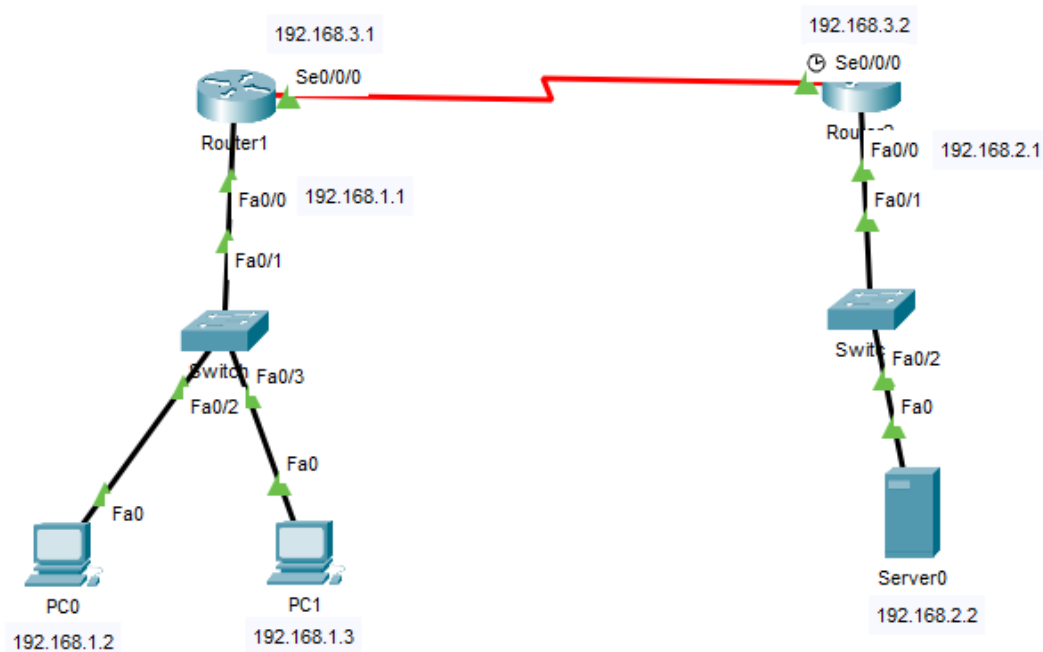int g0/0/1
ip access-group 120 in
end

To verify,
Go to pc0, desktop, web browser, 192.168.2.2
Not showing the result due to deny permission for host 192.168.1.2
Go to pc1, desktop, web browser, 192.168.2.2
Showing the result due to permit permission for host 192.168.1.3

Static NAT:

Router 1,

en

conf t

int f0/0

ip add 192.168.1.1 255.255.255.0

no sh

ex

int s0/0/0

ip add 192.168.3.1 255.255.255.0

no sh

ex
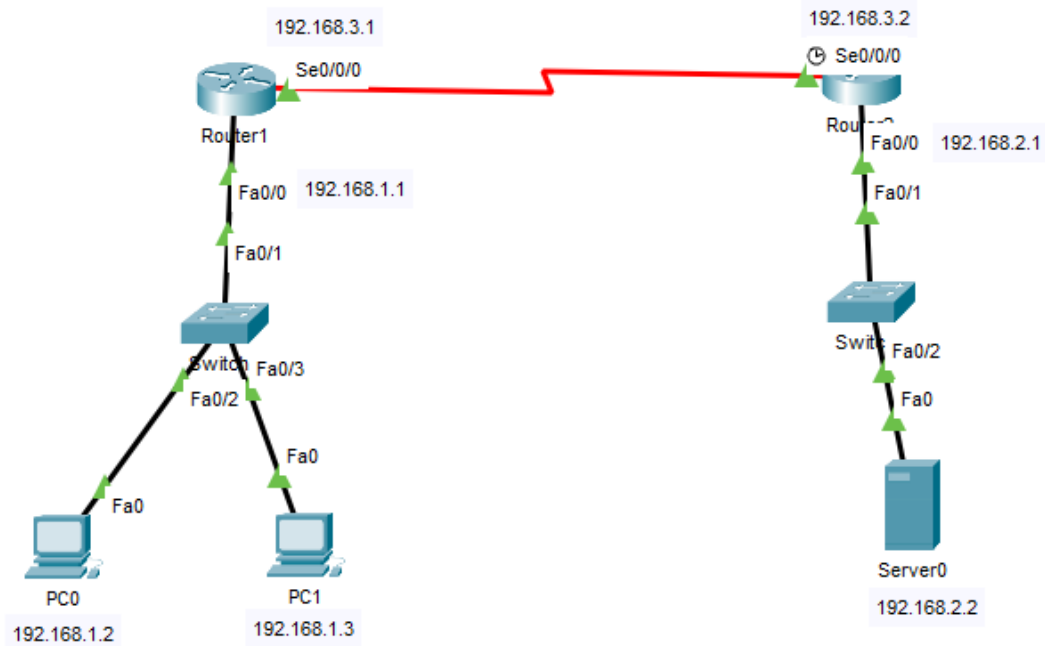
int f0/0
ip nat inside
ex
int s0/0/0
ip nat outside
ex
ip nat inside source static 192.168.1.2 192.168.3.1
ip route 0.0.0.0 0.0.0.0 s0/0/0
ip nat inside source static 192.168.1.3 192.168.3.1
ip route 0.0.0.0 0.0.0.0 s0/0/0

Router 2,
en
conf t
int f0/0
ip add 192.168.2.1 255.255.255.0
no sh
ex
int s0/0/0
ip add 192.168.3.2 255.255.255.0
no sh
ex
Do ping from both pcs to server, it shows the result as successful.

Dynamic NAT:

Router 1,

en

conf t

int f0/0

ip add 192.168.1.1 255.255.255.0

no sh

ex

int s0/0/0

ip add 192.168.3.1 255.255.255.0

no sh

ex

access-list 10 permit 192.168.1.0 0.0.0.255

ip nat pool public 192.168.3.1 192.168.3.10 netmask 255.255.255.240

ip nat inside source list 10 pool public

ip route 0.0.0.0 0.0.0.0 s0/0/0

ex

debug ip nat

Router 2,

en

conf t

int f0/0

ip add 192.168.2.1 255.255.255.0

no sh

ex

int s0/0/0

ip add 192.168.3.2 255.255.255.0
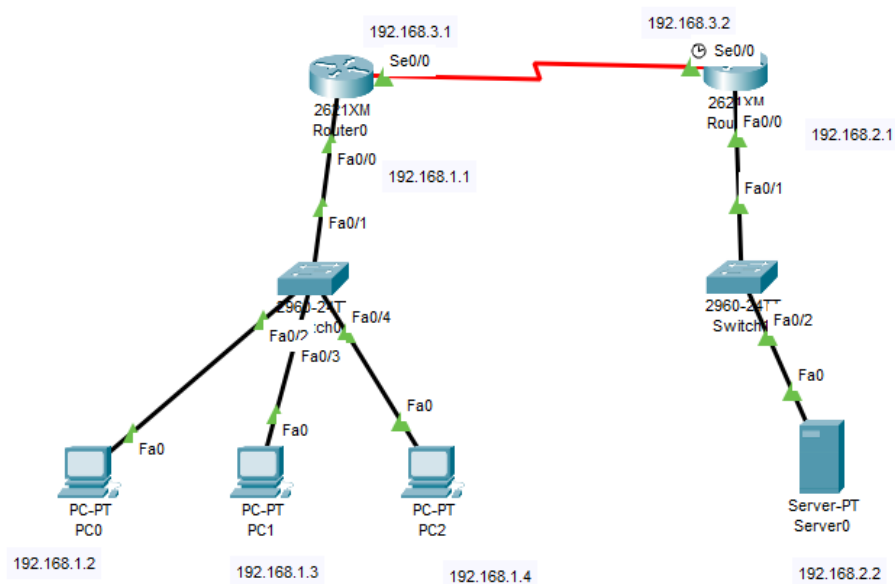
no sh

ex

ip route 0.0.0.0 0.0.0.0 s0/0/0

Do ping from both pcs to server, it shows the result as successful.

Port Address Translation (PAT):

Router 0,

en

conf t

int f0/0

ip add 192.168.1.1 255.255.255.0

no sh

ex

int s0/0

ip add 192.168.3.1 255.255.255.0

no sh

ex

```
router rip
net 192.168.1.0
net 192.168.3.0
access-list 1 permit 192.168.1.0 0.0.0.255
ip nat inside source list 1 interface s0/0 overload
int f0/0
ip nat inside
int s0/0
ip nat outside
ex
ex
```

After doing ping to pc to server or server to pc we can verify it by using below command,

```
sh ip nat translations
```

Router 1,
```
en
conf t
int f0/0
ip add 192.168.2.1 255.255.255.0
no sh
ex
int s0/0
ip add 192.168.3.2 255.255.255.0
no sh
ex
router rip
net 192.168.2.0
net 192.168.3.0
```
Do ping & check connectivity.