Check Your Understanding - Network Components

1. Which of the following is the name for all computers connected to a network that participate directly in network communication?
   - servers
   - intermediary devices
   - hosts
   - media
2. When data is encoded as pulses of light, which media is being used to transmit the data?
   - wireless
   - Fiber-optic cable
   - copper cable
3. Which two devices are intermediary devices? (Choose two)
   - hosts
   - routers
   - servers
   - switches

Check Your Understanding - Network Representations and Topologies

1. Which connection physically connects the end device to the network?
   - Port
   - NIC
   - Interface
2. Which connections are specialized ports on a networking device that connect to individual networks?
   - Port
   - NIC
   - Interface
3. Which type of network topology lets you see which end devices are connected to which intermediary devices and what media is being used?
   - Physical topology
   - Logical topology
4. Which type of network topology lets you see the actual location of intermediary devices and cable installation?
   - [ ] Physical topology
   - [ ] Logical topology

Check Your Understanding - Common Types of Networks

1. Which network infrastructure provides access to users and end devices in a small geographical area, which is typically a network in a department in an enterprise, a home, or small business? Extranet
   - Intranet
   - LAN
   - WAN
2. Which network infrastructure might an organization use to provide secure and safe access to individuals who work for a different organization but require access to the organization's data? Extranet
   - Intranet
   - LAN
   - WAN
3. Which network infrastructure provides access to other networks over a large geographical area, which is often owned and managed by a telecommunications service provider?
   - Extranet
   - Intranet
   - LAN
   - WAN

Check Your Understanding - Reliable Networks

1. When designers follow accepted standards and protocols, which of the four basic characteristics of network architecture is achieved?
   - fault tolerance
   - Scalability
   - QoS
   - Security
2. Confidentiality, integrity, and availability are requirements of which of the four basic characteristics of network architecture?
   - fault tolerance
   - Scalability
   - QoS

- [ ] Security

3. With which type of policy, a router can manage the flow of data and voice traffic, giving priority to voice communications if the network experiences congestion?
   - [ ] fault tolerance
   - [ ] Scalability
   - [ ] QoS

   - [ ] Security
4. Having multiple paths to a destination is known as redundancy. This is an example of which characteristic of network architecture?
   - [ ] fault tolerance
   - [ ] Scalability
   - [ ] QoS
   - [ ] Security

Check Your Understanding - Network Trends

1. Which feature is a good conferencing tool to use with others who are located elsewhere in your city, or even in another country?
   - [ ] BYOD
   - [ ] Video communications
   - [ ] Cloud computing
2. Which feature describes using personal tools to access information and communicate across a business or campus network?
   - [ ] BYOD
   - [ ] Video communications
   - [ ] Cloud computing
3. Which feature contains options such as Public, Private, Custom and Hybrid?
   - [ ] BYOD
   - [ ] Video communications
   - [ ] Cloud computing
4. Which feature is being used when connecting a device to the network using an electrical outlet?
   - [ ] Smart home technology
   - [ ] Powerline
   - [ ] Wireless broadband
5. Which feature uses the same cellular technology as a smart phone?
   - [ ] Smart home technology
   - [ ] Powerline
   - [ ] Wireless broadband

Check Your Understanding - The Rules

1. What is the process of converting information into the proper form for transmission?
   - Formatting
   - Encoding
   - Encapsulation
2. Which step of the communication process is concerned with properly identifying the address of the sender and receiver?
   - Formatting
   - Encoding
   - Encapsulation

3. Which three are components of message timing? (Choose three.)
   - Flow control
   - Sequence numbers
   - Access method
   - Retransmit time
   - Response timeout
4. Which delivery method is used to transmit information to one or more end devices, but not all devices on the network?
   - Unicast
   - Multicast
   - Broadcast

Check Your Understanding - Protocols

1. BGP and OSPF are examples of which type of protocol?
   - network communication
   - network security
   - routing
   - service discovery
2. Which two protocols are service discovery protocols? (Choose two.)
   - DNS
   - TCP
   - SSH
   - DHCP
3. What is the purpose of the sequencing function in network communication?
   - to uniquely label transmitted segments of data for proper reassembly by the receiver
   - to determine if data is corrupted during transmission
   - to ensure data flows at an efficient rate between sender and receiver
   - to guarantee delivery of data
4. This protocol is responsible for guaranteeing the reliable delivery of information.

- [ ] TCP
- [ ] IP
- [ ] HTTP
- [ ] Ethernet

Check Your Understanding - Protocol Suites

1. UDP and TCP belong to which layer of the TCP/IP protocol?
   - [ ] application
   - [ ] transport
   - [ ] internet
   - [ ] network access

2. Which two protocols belong in the TCP/IP model application layer?
   - EIGRP
   - DNS
   - OSPF
   - ICMP
   - DHCP
3. Which protocol operates at the network access layer of the TCP/IP model?
   - [ ] HTTP
   - [ ] IP
   - [ ] DNS
   - [ ] Ethernet
4. Which of the following are protocols that provide feedback from the destination host to the source host regarding errors in packet delivery? (Choose two.)
   - IPv4
   - TCP
   - ICMPv4
   - IPv6
   - UDP
   - ICMPv6
5. A device receives a data link frame with data and processes and removes the Ethernet information. What information would be the next to be processed by the receiving device?
   - [ ] HTTP at the application layer
   - [ ] HTML at the application layer
   - [ ] IP at the internet layer
   - [ ] UDP at the internet layer
   - [ ] TCP at the transport layer

6. Which services are provided by the internet layer of the TCP/IP protocol suite? (Choose three.)

File Transfer

Address Resolution

Routing Protocols

Messaging

Ethernet

Internet Protocol

Check Your Understanding - Standards Organizations

1. True or false. Standards organizations are usually vendor-neutral.

- [ ] True
- [ ] False

2. This standards organization is concerned with the Request for Comments (RFC) documents that specify new protocols and update existing ones.

- [ ] Internet Society (ISOC)
- [ ] Internet Engineering Task Force (IETF)
- [ ] Internet Architecture Board (IAB)
- [ ] Internet Research Task Force (IRTF)

3. This standards organization is responsible for IP address allocation and domain name management.

- [ ] Internet Society (ISOC)
- [ ] Internet Engineering Task Force (IETF)
- [ ] Internet Architecture Board (IAB)
- [ ] Internet Assigned Numbers Authority (IANA)

4. What types of standards are developed by the Electronics Industries Alliance (EIA)?

- [ ] electric wiring and connectors
- [ ] radio equipment and cell towers
- [ ] video compression and broadband communications
- [ ] Voice over IP (VoIP) and satellite communications

Check Your Understanding - Data Encapsulation

1. What is the process of dividing a large data stream into smaller pieces prior to transmission?

- [ ] sequencing

- duplexing
- multiplexing
- segmentation

2. What is the PDU associated with the transport layer?
   - segment
   - packet
   - bits
   - frame
3. Which protocol stack layer encapsulates data into frames?
   - data link
   - transport
   - network
   - application
4. What is the name of the process of adding protocol information to data as it moves down the protocol stack?
   - de-encapsulation
   - sequencing
   - segmentation

   - encapsulation

Check Your Understanding - Data Access

1. True or false? Frames exchanged between devices in different IP networks must be forwarded to a default gateway.
   - True
   - False
2. True or false? The right-most part of an IP address is used to identify the network that a device belongs to.
   - True
   - False
3. What is used to determine the network portion of an IPv4 address?
   - subnet mask
   - MAC address
   - right-most part of the IP address
   - left-most part of the MAC address
4. Which of the following statements are true regarding network layer and data link layer addresses? (Choose three.)

   Data link layer addresses are logical and network layer addresses are physical.

   Network layer addresses are expressed as 12 hexadecimal digits and data link layer addresses are decimal.

Network layer addresses are logical and data link addresses are expressed as 12 hexadecimal digits. Data link layer addresses are physical and network layer addresses are logical.

Network layer addresses are either 32 or 128 bits in length.

Data link layer addresses are 32 bits in length.

5. What is the order of the two addresses in the data link frame?
   - source MAC, destination MAC
   - destination MAC, source IP
   - destination IP, source IP
   - destination MAC, source MAC
   - source IP, destination IP
6. True or False? Data Link addresses are physical so they never change in the data link frame from source to destination.
   - True
   - False

Module Quiz - Protocols and Models

1. Which three acronyms/initialisms represent standards organizations? (Choose three.)

   IEEE

   OSI

   TCP/IP

   IANA

   MAC

   IETF
2. What type of communication will send a message to all devices on a local area network?
   - unicast
   - allcast
   - multicast
   - broadcast
3. In computer communication, what is the purpose of message encoding?
   - to break large messages into smaller frames
   - to negotiate correct timing for successful communication
   - to interpret information
   - to convert information to the appropriate form for transmission
4. Which message delivery option is used when all devices need to receive the same message simultaneously?
   - broadcast
   - multicast

duplex

unicast

5. What are two benefits of using a layered network model? (Choose two.)

It ensures a device at one layer can function at the next higher layer.

It prevents technology in one layer from affecting other layers.

It speeds up packet delivery.

It prevents designers from creating their own model.

It assists in protocol design.

6. What is the purpose of protocols in data communications?

dictating the content of the message sent during communication

specifying the device operating systems that will support the communication providing the rules required for a specific type of communication to occur

specifying the bandwidth of the channel or medium for each type of communication 7. Which logical address is used for delivery of data to a remote network?

destination port number

destination IP address

destination MAC address

source MAC address

source IP address

8. What is the general term that is used to describe a piece of data at any layer of a networking model?

frame

protocol data unit

segment

packet

9. Which two protocols function at the internet layer? (Choose two.)

ICMP

POP

BOOTP

PPP

IP

10. Which layer of the OSI model defines services to segment and reassemble data for individual communications between end devices?

transport

application

session

network

presentation

11. Which type of communication will send a message to a group of host destinations simultaneously? broadcast
    multicast
    unicast
    anycast
12. What process is used to receive transmitted data and convert it into a readable message? encapsulation
    access control
    decoding
    flow control
13. What is done to an IP packet before it is transmitted over the physical medium? It is tagged with information guaranteeing reliable delivery.
    It is segmented into smaller individual pieces.
    It is encapsulated in a Layer 2 frame.
    It is encapsulated into a TCP segment.
14. What process is used to place one message inside another message for transfer from the source to the destination?
    decoding
    flow control
    encapsulation
    access control
15. A web client is sending a request for a webpage to a web server. From the perspective of the client, what is the correct order of the protocol stack that is used to prepare the request for transmission? HTTP, IP, TCP, Ethernet
    HTTP, TCP, IP, Ethernet
    Ethernet, IP, TCP, HTTP
    Ethernet, TCP, IP, HTTP

Module Quiz - Physical Layer

1. A network administrator is troubleshooting connectivity issues on a server. Using a tester, the administrator notices that the signals generated by the server NIC are distorted and not usable. In which layer of the OSI model is the error categorized?
    network layer
    presentation layer
    data link layer
    physical layer

2. What type of cable is used to connect a workstation serial port to a Cisco router console port?

- crossover
- coaxial
- straight-through
- rollover

3. Why are two strands of fiber used for a single fiber optic connection?

- The two strands allow the data to travel for longer distances without degrading.
- They increase the speed at which the data can travel.
- They allow for full-duplex connectivity.
- They prevent crosstalk from causing interference on the connection.

4. Which procedure is used to reduce the effect of crosstalk in copper cables?

- requiring proper grounding connections
- twisting opposing circuit wire pairs together
- avoiding sharp bends during installation
- designing a cable infrastructure to avoid crosstalk interference
- wrapping the bundle of wires with metallic shielding

5. What is one advantage of using fiber optic cabling rather than copper cabling?

- It is able to carry signals much farther than copper cabling.
- It is usually cheaper than copper cabling.
- It is able to be installed around sharp bends.
- It is easier to terminate and install than copper cabling.

6. A network administrator is designing a new network infrastructure that includes both wired and wireless connectivity. Under which situation would a wireless connection be recommended?

- The end-user device requires a dedicated connection because of performance requirements.
- The end-user device needs mobility when connecting to the network.
- The end-user device only has an Ethernet NIC.
- The end-user device area has a high concentration of RFI.

7. Which type of UTP cable is used to connect a PC to a switch port?

- rollover
- straight-through
- console
- crossover

8. What is the definition of bandwidth?

- the amount of data that can flow from one place to another in a given amount of time
- the measure of usable data transferred over a given period of time
- the speed at which bits travel on the network
- the speed of bits across the media over a given period of time

9. What is the purpose of the OSI physical layer?

- exchanging frames between nodes over physical network media
- transmitting bits across the local media
- performing error detection on received frames
- controlling access to media

10. Which characteristic describes crosstalk?

- the weakening of the network signal over long cable lengths
- the loss of wireless signal over excessive distance from the access point
- the distortion of the network signal from fluorescent lighting
- the distortion of the transmitted messages from signals carried in adjacent wires

11. Which standards organization oversees development of wireless LAN standards?

- TIA
- ISO
- IEEE
- IANA

Check Your Understanding - Binary Number System

1. Which is the binary equivalent to the 192.168.11.10 IP address?

- 11000000.11000000.00001011.00001010
- 11000000.10101000.00001011.00001010
- 11000000.10101000.00001010.00001011
- 11000000.10101000.00001011.00010010

2. Which of the following is the binary equivalent to the 172.16.31.30 IP address?

- 11000000.00010000.00011111.00011110
- 10101000.00010000.00011111.00011110
- 10101100.00010000.00011110.00011110
- 10101100.00010000.00011111.00011110

Check Your Understanding - Hexadecimal Number System

1. Which is the hexadecimal equivalent of 202?

- B10
- BA

- C10
- CA

2. Which is the hexadecimal equivalent of 254?

- [ ] EA
- [ ] ED
- [ ] FA
- [ ] FE

3. Which is the decimal equivalent of A9?

- [ ] 168
- [ ] 169
- [ ] 170
- [ ] 171

4. Which of the following is the decimal equivalent of 7D?

- [ ] 124
- [ ] 125
- [ ] 126
- [ ] 127

Module Quiz - Number Systems

1. What is the binary representation for the decimal number 173?

- [ ] 10100111
- [ ] 10110101
- [ ] 10101101
- [ ] 10100101

2. Given the binary address of 11101100 00010001 00001100 00001010, which address does this represent in dotted decimal format?

- [ ] 236.17.12.6
- [ ] 234.17.10.9
- [ ] 234.16.12.10
- [ ] 236.17.12.10

3. How many binary bits exist within an IPv6 address?

- [ ] 32
- [ ] 64
- [ ] 128
- [ ] 256
- [ ] 48

4. What is the binary equivalent of the decimal number 232?

- [ ] 11000110
- [ ] 10011000

- 11110010
- 11101000

5. Which two statements are correct about IPv4 and IPv6 addresses? (Choose two.)

IPv4 addresses are 128 bits in length.

IPv6 addresses are represented by hexadecimal numbers.

IPv4 addresses are 32 bits in length.

IPv6 addresses are 64 bits in length.

IPv4 addresses are represented by hexadecimal numbers.

IPv6 addresses are 32 bits in length.

6. Which IPv4 address format was created for ease of use by people and is expressed as 201.192.1.14?

- hexadecimal
- dotted decimal
- ASCII
- binary

7. What is the dotted decimal representation of the IPv4 address 11001011.00000000.01110001.11010011?

- 192.0.2.199
- 209.165.201.223
- 198.51.100.201
- 203.0.113.211

8. What is the decimal equivalent of the binary number 10010101?

- 149
- 192
- 157
- 168

9. What is the decimal equivalent of the hex number 0x3F?

- 93
- 77
- 87
- 63

10. What is the dotted decimal representation of the IPv4 address which is represented as the binary string 00001010.01100100.00010101.00000001?

- 10.100.21.1
- 100.10.11.1
- 10.10.20.1

- [ ] 100.21.10.1

11. What is the decimal equivalent of 0xC9?
    - [ ] 200
    - [ ] 185

    - [ ] 199
    - [ ] 201
12. Which is a valid hexadecimal number?
    - [ ] j
    - [ ] g
    - [ ] h
    - [ ] f
13. What is the binary representation of 0xCA?
    - [ ] 11001010
    - [ ] 10111010
    - [ ] 11011010
    - [ ] 11010101
14. How many bits are in an IPv4 address?
    - [ ] 128
    - [ ] 64
    - [ ] 256
    - [ ] 32

Check Your Understanding - Purpose of the Data Link Layer

1. What is another name for the OSI data link layer?
    - [ ] Layer 1
    - [ ] Layer 2
    - [ ] Layer 3
    - [ ] Layer 6
2. The IEEE 802 LAN/MAN data link layer consists of which two sublayers? (Choose two.)

    Network Control Protocol

    Logical Link Control

    Media Access Control

    Link Control Protocol
3. What Layer 2 function does a router perform? (Choose three.)

    Accepts a frame from a medium

De-encapsulates the frame

Refers to its Layer 3 routing table for a matching destination network

Re-encapsulates the packet into a new frame

Check Your Understanding - Topologies

1. Which topology displays networking device layer IP addresses?

- aerial topology
- IP address topology
- logical topology
- physical topology

2. Which LAN topology is a hybrid topology?

- bus
- extended star
- ring
- star

3. Which media access control method is used in legacy Ethernet LANs?

- carrier sense multiple access/collision annoyance
- carrier sense multiple access/collision avoidance
- carrier sense multiple access/collision destruction
- carrier sense multiple access/collision detection

Check Your Understanding - Data Link Frame

1. What does the data link layer add to a Layer 3 packet to create a frame? (Choose two.)

flags

sequence number

header

trailer

2. Which lists the Layer 2 and Layer 3 address fields in the correct order?

destination NIC address, source NIC address, source IP address, destination IP address source NIC address, destination NIC address, source IP address, destination IP address destination NIC address, source NIC address, destination IP address, source IP address source NIC address, destination NIC address, destination IP address, source IP address

Module Quiz - Data Link Layer

1. What identifier is used at the data link layer to uniquely identify an Ethernet device?

TCP port number

sequence number

UDP port number

IP address

MAC address

2. What attribute of a NIC would place it at the data link layer of the OSI model?

attached Ethernet cable

TCP/IP protocol stack

IP address

RJ-45 port

MAC address

3. What is true concerning physical and logical topologies?

Physical topologies are concerned with how a network transfers frames. The logical topology is always the same as the physical topology.

Logical topologies refer to how a network transfers data between devices.

Physical topologies display the IP addressing scheme of each network. 4. What method is used to manage contention-based access on a wireless network? token passing

CSMA/CA

CSMA/CD

priority ordering

5. A technician has been asked to develop a physical topology for a network that provides a high level of redundancy. Which physical topology requires that every node is attached to every other node on the network?

star

hierarchical

mesh

ring

bus

6. Which statement describes the half-duplex mode of data transmission? Data that is transmitted over the network can only flow in one direction. Data that is transmitted over the network flows in one direction at a time. Data that is transmitted over the network flows in one direction to many different destinations simultaneously.

Data that is transmitted over the network flows in both directions at the same time. 7. Which data link layer media access control method does Ethernet use with legacy Ethernet

hubs?

- token passing
- turn taking
- CSMA/CD
- determinism

8. What are the two sublayers of the OSI model data link layer? (Choose two.)

- MAC
- internet
- LLC
- transport
- physical
- network access

9. What type of physical topology can be created by connecting all Ethernet cables to a central device?

- bus
- mesh
- star
- ring

Check Your Understanding - Switch Speeds and Forwarding Methods

1. What are two methods for switching data between ports on a switch? (Choose two.)

- cut-off switching
- cut-through switching
- store-and-forward switching
- store-and-supply switching
- store-and-restore switching

2. Which switching method can be implemented using fast-forward switching or fragment-free switching?

- cut-off switching
- cut-through switching
- store-and-forward switching
- store-and-restore switching

3. Which two types of memory buffering techniques are used by switches? (Choose two.)

- long-term memory buffering
- port-based memory buffering
- shared memory buffering

short-term memory buffering

Module Quiz - Ethernet Switching

1. What statement describes a characteristic of MAC addresses?
   - They are only routable within the private network.
   - They must be globally unique.
   - They are added as part of a Layer 3 PDU.
   - They have a 32-bit binary value.
2. What will a host on an Ethernet network do if it receives a frame with a unicast destination MAC address that does not match its own MAC address?
   - It will forward the frame to the next host.
   - It will discard the frame.
   - It will strip off the data-link frame to check the destination IP address.
   - It will remove the frame from the media.
3. Which network device makes forwarding decisions based on the destination MAC address that is contained in the frame?
   - hub

   - switch
   - repeater
   - router
4. Which network device has the primary function to send data to a specific destination based on the information found in the MAC address table?
   - switch
   - router
   - hub
   - modem
5. What addressing information is recorded by a switch to build its MAC address table?
   - the destination Layer 3 address of incoming packets
   - the destination Layer 2 address of outgoing frames
   - the source Layer 2 address of incoming frames
   - the source Layer 3 address of outgoing packets

Check Your Understanding - IP Characteristics

1. Which OSI layer sends segments to be encapsulated in an IPv4 or IPv6 packet?
   - data link layer

- network layer
- transport layer
- session layer

2. Which layer is responsible for taking an IP packet and preparing it for transmission over the communications medium?
   - physical layer
   - network layer
   - data link layer
   - transport layer
3. Which delivery method does not guarantee that the packet will be delivered fully without errors?
   - connectionless
   - best effort
   - media independent

Check Your Understanding - IPv4 & IPv6 Packet

1. What are the two most commonly referenced fields in an IPv4 packet header that indicate where the packet is coming from and where it is going? (Choose two.)
   - destination IP address
   - protocol
   - Time to Live
   - source IP address
   - Differentiated Services (DS)
2. Which three options are major issues associated with IPv4? (Choose three.)
   - IP address depletion
   - increased network complexity and Internet routing table expansion
   - always on connections
   - lack of end-to-end connectivity
   - global and political boundaries
   - too many IPv4 addresses available
3. Which two options are improvements provided by IPv6 as compared to IPv4? (Choose two.)
   - header supports additional fields for complex packets
   - increased the IP address space
   - standardizes the use of NAT
   - supports class-based networks
   - uses a simpler header to provide improved packet handling

Check Your Understanding - How a Host

Routes

1. Which default gateway statement is true?
   - A default gateway is required to send packets to other hosts on the local network.
   - The default gateway address is the IP address of a switch on a remote network.
   - The default gateway address is the IP address of the router on the local network.
   - Traffic can only be forwarded outside the local network if there is no default gateway.
2. Which two commands could be entered on a Windows host to view its IPv4 and IPv6 routing table? (Choose two.)
   - **netroute -l**
   - **netstat -r**
   - **print route**
   - **route print**
   - **print net**

Module Quiz - Network Layer

1. Which command can be used on a Windows host to display the routing table?
   - **show ip route**
   - **netstat –r**
   - **netstat –s**
   - **tracert**
2. What information is added during encapsulation at OSI Layer 3?

   - source and destination MAC
   - source and destination application protocol
   - source and destination IP address
   - source and destination port number
3. Which characteristic describes an IPv6 enhancement over IPv4?
   - The IPv6 header is simpler than the IPv4 header is, which improves packet handling.
   - The IPv6 address space is four times bigger than the IPv4 address space. IPv6 addresses are based on 128-bit flat addressing as opposed to IPv4 which is based on 32-bit hierarchical addressing.
   - Both IPv4 and IPv6 support authentication, but only IPv6 supports privacy capabilities. 4. Which statement accurately describes a characteristic of IPv4?
   - All IPv4 addresses are assignable to hosts.
   - IPv4 has a 32-bit address space.
   - IPv4 natively supports IPsec.

An IPv4 header has fewer fields than an IPv6 header has.

5. When a router receives a packet, what information must be examined in order for the packet to be forwarded to a remote destination?

destination MAC address

source MAC address

source IP address

destination IP address

6. A computer has to send a packet to a destination host in the same LAN. How will the packet be sent?

The packet will be sent only to the default gateway.

The packet will be sent directly to the destination host.

The packet will be sent to the default gateway first, and then, depending on the response from the gateway, it may be sent to the destination host.

The packet will first be sent to the default gateway, and then from the default gateway it will be sent directly to the destination host.

7. Which IPv4 address can a host use to ping the loopback interface?

126.0.0.1

127.0.0.0

127.0.0.1

126.0.0.0

8. When a connectionless protocol is in use at a lower layer of the OSI model, how is missing data detected and retransmitted if necessary?

Network layer IP protocols manage the communication sessions if connection-oriented transport services are not available.

Upper-layer connection-oriented protocols keep track of the data received and can request retransmission from the upper-level protocols on the sending host. The best-effort delivery process guarantees that all packets that are sent are received.

Connectionless acknowledgements are used to request retransmission. 9. What was the reason for the creation and implementation of IPv6?

to relieve IPv4 address depletion

to provide more address space in the Internet Names Registry

to allow NAT support for private addressing

to make reading a 32-bit address easier

10. Which information is used by routers to forward a data packet toward its destination?

destination IP address

destination data-link address

source IP address

- source data-link address

11. Which field in an IPv4 packet header will typically stay the same during its transmission?
    - Flag
    - Packet Length
    - Time-to-Live
    - Destination Address

Check Your Understanding - MAC and IP

1. What destination MAC address would be included in a frame sent from a source device to a destination device on the same local network?
    - A broadcast MAC address of FF-FF-FF-FF-FF-FF.
    - The MAC address of the destination device.
    - The MAC address of the local router interface.
2. What destination MAC address would be included in a frame sent from a source device to a destination device on a remote local network?
    - A broadcast MAC address of FF-FF-FF-FF-FF-FF.
    - The MAC address of the destination device.
    - The MAC address of the local router interface.
3. What two protocols are used to determine the MAC address of a known destination device IP address (IPv4 and IPv6)?
    - DHCP
    - ARP
    - DNS
    - ND

Module Quiz - IPv4 Addressing

1. What is the prefix length notation for the subnet mask 255.255.255.224?
    - /28
    - /26
    - /25
    - /27

2. How many valid host addresses are available on an IPv4 subnet that is configured with a /26 mask?
    - 254
    - 64
    - 190
    - 62

- [ ] 192

3. Which subnet mask would be used if 5 host bits are available?
   - [ ] 255.255.255.224
   - [ ] 255.255.255.128
   - [ ] 255.255.255.240
   - [ ] 255.255.255.0
4. A network administrator subnets the 192.168.10.0/24 network into subnets with /26 masks. How many equal-sized subnets are created?
   - [ ] 2
   - [ ] 64
   - [ ] 16
   - [ ] 4
   - [ ] 8
   - [ ] 1
5. What subnet mask is represented by the slash notation /20?
   - [ ] 255.255.255.0
   - [ ] 255.255.240.0
   - [ ] 255.255.255.248
   - [ ] 255.255.255.192
   - [ ] 255.255.224.0
6. Why does a Layer 3 device perform the ANDing process on a destination IP address and subnet mask?
   - [ ] to identify the network address of the destination network
   - [ ] to identify the broadcast address of the destination network
   - [ ] to identify faulty frames
   - [ ] to identify the host address of the destination host
7. How many usable IP addresses are available on the 192.168.1.0/27 network?
   - [ ] 32
   - [ ] 30
   - [ ] 16
   - [ ] 256
   - [ ] 62

   - [ ] 254
8. Which subnet mask would be used if exactly 4 host bits are available?
   - [ ] 255.255.255.224

- [ ] 255.255.255.248
- [ ] 255.255.255.128
- [ ] 255.255.255.240

9. Which two parts are components of an IPv4 address? (Choose two.)

- logical portion
- network portion
- subnet portion
- broadcast portion
- physical portion
- host portion

10. If a network device has a mask of /26, how many IP addresses are available for hosts on this network?

- [ ] 32
- [ ] 14
- [ ] 16
- [ ] 64
- [ ] 30
- [ ] 62

11. What does the IP address 172.17.4.250/24 represent?

- [ ] multicast address
- [ ] host address
- [ ] network address
- [ ] broadcast address

12. If a network device has a mask of /28, how many IP addresses are available for hosts on this network?

- [ ] 16
- [ ] 32
- [ ] 62
- [ ] 254
- [ ] 256
- [ ] 14

13. What is the purpose of the subnet mask in conjunction with an IP address?

- [ ] to determine the subnet to which the host belongs
- [ ] to identify whether the address is public or private
- [ ] to mask the IP address to outsiders
- [ ] to uniquely identify a host on a network

14. A network administrator is variably subnetting a network. The smallest subnet has a mask of 255.255.255.224. How many usable host addresses will this subnet provide? 2
    - 6
    - 62
    - 30
    - 14

Check Your Understanding - Transportation of Data

1. Which layer is responsible for establishing a temporary communication session between the source and destination host applications?
    - application layer
    - data link layer
    - network layer
    - physical layer
    - transport layer
2. Which three are transport layer responsibilities? (Choose three.)
    - conversation multiplexing
    - identifying frames
    - identifying routing information
    - segmenting data and reassembling segments
    - tracking individual conversations
3. Which transport layer protocol statement is true?
    - TCP has fewer fields than UDP.
    - TCP is faster than UDP.
    - UDP is a best-effort delivery protocol.
    - UDP provides reliability.

Check Your Understanding - TCP Overview

1. Which transport layer protocol ensures reliable same-order delivery?
    - ICMP
    - IP
    - TCP
    - UDP
2. Which two applications would use the TCP transport layer protocol? (Choose two.)
    - FTP
    - HTTP

ICMP

TFTP

VoIP

Check Your Understanding - UDP Overview

1. Which of the following is a stateless best-effort delivery transport layer protocol?
   - ICMP
   - IP
   - TCP
   - UDP
2. Which two applications would use the UDP transport layer protocol? (Choose two.)
   - FTP
   - HTTP
   - ICMP
   - TFTP
   - VoIP
3. Which two fields are the same in a TCP and UDP header? (Choose two.)
   - Control bits
   - Destination port number
   - Sequence number
   - Source port number
   - Well-known port number

Check Your Understanding - Port Numbers

1. Assume a host with IP address 10.1.1.10 wants to request web services from a server at 10.1.1.254. Which of the following would display the correct socket pair?
   - 1099:10.1.1.10, 80:10.1.1.254
   - 10.1.1.10:80, 10.1.1.254:1099
   - 10.1.1.10:1099, 10.1.1.254:80
   - 80:10.1.1.10, 1099:10.1.1.254
2. Which port group includes port numbers for FTP, HTTP, and TFTP applications?
   - dynamic ports
   - private ports
   - registered ports
   - well-known ports
3. Which Windows command would display the protocols in use, the local address and port numbers, the foreign address and port numbers, and the connection state?
   - ipconfig /all

- ping
- netstat
- traceroute

Check Your Understanding - TCP Communication Process

1. Which of the following would be valid source and destination ports for a host connecting to an email server?
   - Source: 25, Destination: 49152
   - Source: 80, Destination: 49152
   - Source: 49152, Destination: 25
   - Source: 49152, Destination: 80
2. Which of the following would be valid source and destination ports for a host connecting to a DNS server?
   - Source: 53, Destination: 49152
   - Source: 1812, Destination: 49152
   - Source: 49152, Destination: 53
   - Source: 49152, Destination: 1812

Module Quiz - Transport Layer

1. What is the complete range of TCP and UDP well-known ports?
   - 1024 - 49151
   - 0 to 255
   - 256 - 1023
   - 0 to 1023
2. What is a socket?
   - the combination of a source IP address and port number or a destination IP address and port number
   - the combination of the source and destination sequence and acknowledgment numbers
   - the combination of the source and destination sequence numbers and port numbers
   - the combination of the source and destination IP address and source and destination Ethernet address
3. How does a networked server manage requests from multiple clients for different services?
   - The server sends all requests through a default gateway.
   - Each request is tracked through the physical address of the client.
   - Each request has a combination of source and destination port numbers, coming from a unique IP address.
   - The server uses IP addresses to identify different services.

4. What happens if part of an FTP message is not delivered to the destination?

- The FTP source host sends a query to the destination host.
- The message is lost because FTP does not use a reliable delivery method.
- The part of the FTP message that was lost is re-sent.
- The entire FTP message is re-sent.

5. What type of applications are best suited for using UDP?

- applications that are sensitive to packet loss
- applications that require retransmission of lost segments
- applications that are sensitive to delay
- applications that need reliable delivery

6. Which two operations are provided by TCP but not by UDP? (Choose two.)

- identifying the applications
- retransmitting any unacknowledged data
- reconstructing data in the order received
- identifying individual conversations
- acknowledging received data

7. What is the purpose of using a source port number in a TCP communication?

- to inquire for a nonreceived segment
- to notify the remote device that the conversation is over
- to keep track of multiple conversations between devices
- to assemble the segments that arrived out of order

8. Which two flags in the TCP header are used in a TCP three-way handshake to establish connectivity between two network devices? (Choose two.)

- FIN
- URG
- PSH
- RST
- SYN
- ACK

9. Which two services or protocols use the preferred UDP protocol for fast transmission and low overhead? (Choose two)

- FTP
- HTTP
- DNS
- POP3
- VoIP

10. Which number or set of numbers represents a socket?

- 01-23-45-67-89-AB
- 10.1.1.15
- 192.168.1.1:80
- 21

11. What is a responsibility of transport layer protocols?
    - providing network access
    - translating private IP addresses to public IP addresses
    - tracking individual conversations
    - determining the best path to forward a packet

Check Your Understanding - Application, Session, Presentation

1. This layer of the OSI model is concerned with the protocols that exchange data between programs running on hosts.
    - application
    - transport
    - network
    - physical
2. MKV, GIF, and JPG standards are associated with which OSI layer?
    - application
    - presentation
    - session
    - transport
3. These three OSI layers define the same functions as the TCP/IP model application layer.
    - application
    - presentation
    - session
    - transport
    - network
    - data link
4. Which two are protocols that belong in the OSI application layer?
    - PNG
    - DNS
    - SMTP
5. This is a function of the OSI session layer.
    - compress and decompress data

- provide an interface between applications
- format data for the application layer
- exchange of information to initiate dialog between peers

Module Quiz - Application Layer

1. On a home network, which device is most likely to provide dynamic IPv4 addressing to clients on the home network?
   - a dedicated file server
   - a home router
   - a DNS server
   - an ISP DHCP server
2. What part of the URL, http://www.cisco.com/index.html, represents the top-level DNS domain?

   - index
   - www
   - .com
   - http
3. What are two characteristics of the application layer of the TCP/IP model? (Choose two.)
   - closest to the end user
   - the creation and maintenance of dialogue between source and destination
   - applications responsibility for logical addressing
   - responsibility for physical addressing
   - the establishing of window size
4. Which protocol can be used to transfer messages from an email server to an email client?
   - HTTP
   - POP3
   - SMTP
   - SNMP
5. Which application layer protocol is used to provide file-sharing and print services to Microsoft applications?
   - HTTP
   - SMB
   - DHCP
   - SMTP
6. Which three protocols or standards are used at the application layer of the TCP/IP model? (Choose three.)
   - GIF
   - HTTP
   - UDP

TCP

MPEG

IP

7. Why is DHCP for IPv4 preferred for use on large networks?

DHCP uses a reliable transport layer protocol.

Hosts on large networks require more IPv4 addressing configuration settings than do hosts on small networks.

Large networks send more requests for domain to IP address resolution than do smaller networks. It is a more efficient way to manage IPv4 addresses than static address assignment is.

It prevents sharing of files that are copyrighted.

8. An author is uploading one chapter document from a personal computer to a file server of a book publisher. What role is the personal computer assuming in this network model?

client

master

server

slave

transient

9. Which statement is true about FTP?

FTP does not provide reliability during data transmission.

FTP is a peer-to-peer application.

The client can download data from or upload data to the server.

The client can choose if FTP is going to establish one or two connections with the server. 10. A wireless host needs to request an IPv4 address. What protocol would be used to process the request?

FTP

DHCP

ICMP

HTTP

SNMP

11. Which TCP/IP model layer is closest to the end user?

transport

application

network access

internet

12. When retrieving email messages, which protocol allows for easy, centralized storage and backup of emails that would be desirable for a small- to medium-sized business?

IMAP

SMTP

- [ ] POP
- [ ] HTTPS

13. Which protocol uses encryption?
    - [ ] DNS
    - [ ] HTTPS
    - [ ] DHCP
    - [ ] FTP
14. Which two tasks can be performed by a local DNS server? (Choose two.)

    allowing data transfer between two network devices

    mapping name-to-IP addresses for internal hosts

    retrieving email messages

    forwarding name resolution requests between servers

    providing IP addresses to local hosts