# CCNA 4 Chapter 6 Exam Answers 2018 (v5.0.3 + v6.0) – Full 100%



CCNA Exam Answers 2017

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1. **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

   Delay is the latency between a sending and receiving device. Jitter is the variation in the delay of the received packets. Both delay and jitter need to be controlled in order to support real-time voice and video traffic.

2. **A network engineer performs a ping test and receives a value that shows the time it takes for a packet to travel from a source to a destination device and return. Which term describes the value?**
   - bandwidth
   - **latency***
   - priority
   - jitter

   Latency refers to the time it takes for a packet to travel from a source device to a destination device. Jitter is the variation in the latency values of received packets. Bandwidth is the measurement of how much traffic is transmitted in a single second. Priority is the preferential treatment of specific classes of traffic.

3. **What are two characteristics of voice traffic? (Choose two.)**
   - **Dropped voice packets are not retransmitted.***
   - Voice traffic requires at least 384 kbs of bandwidth.
   - **Voice traffic latency should not exceed 150 ms.***
   - Voice traffic is unpredictable and inconsistent.
   - Voice traffic consumes lots of network resources.

Voice traffic does not consume a lot of network resources, such as bandwidth. However, it is very sensitive to delay and dropped packets cannot be retransmitted. For good voice quality, the amount of latency should always be less than 150 milliseconds.

4. **How does a Cisco router using tail drop handle congestion when a traffic queue becomes full?**
    - The router will remove the packet in the front of the queue, move all other packets forward, and insert the just arrived packet at the end.
    - **The router will drop any packet that arrives at the end of the queue.***
    - The router will remove the most recent data placed in the queue to make space for an arriving packet.
    - The router will only drop non delay-sensitive data that is close to the end of the queue.

   Tail drop is also known as packet drop and is used by a router to discard any packet that arrives at the tail end of a queue. Tail drop treats all traffic equally and does not differentiate between delay-sensitive data and other traffic.

5. **For classifying packets into classes with CBWFQ, what is the purpose of configuring a maximum packet limit for a class?**
    - to control the maximum number of packets that can be received each second on an ingress interface
    - **to control the maximum number of packets allowed in a single queue***
    - to control the maximum number of packets that can be forwarded each second on an egress interface
    - to control the maximum number of packets allowed to be discarded

   The maximum packet limit characteristic is the maximum number of packets allowed to accumulate in the queue for a specific class that is defined using CBWFQ.

6. **A network engineer is selecting a QoS method to control congestion on a VPN tunnel link between the headquarters site and a branch office. Which queuing method cannot be used to classify and control VPN traffic?**
    - FIFO
    - LLQ
    - CBWFQ
    - **WFQ***

   Weighted fair queuing (WFQ) does not support tunneling and encryption because these features modify the packet content information required by WFQ for classification.

7. **An administrator has mastered the use of access control lists (ACLs) and wants to deploy QoS by defining different traffic classes through the use of ACLs. Which queuing method provides this functionality?**
    - **CBWFQ***
    - WFQ
    - FCFS
    - FIFO

   Class-based weighted fair queuing (CBWFQ) provides support for user-defined traffic

classes. CBWFQ allows an administrator to define traffic classes based on match criteria such as protocols, access control lists (ACLs), and input interfaces.

8. **Which queuing algorithm has only a single queue and treats all packets equally?**
    - LLQ
    - **FIFO***
    - WFQ
    - CBWFQ

    FIFO queuing sends packets out an interface in the order that they had arrived and does not make a decision about packet priority. All packets are treated equally.

9. **A network administrator is deploying QoS with the ability to provide a special queue for voice traffic so that voice traffic is forwarded before network traffic in other queues. Which queuing method would be the best choice?**
    - FIFO
    - WFQ
    - **LLQ***
    - CBWFQ

    Low latency queuing (LLQ) allows delay-sensitive data, such as voice traffic, to be defined in a strict priority queue (PQ) and to always be sent first before any packets in any other queue are forwarded.

10. **What are two characteristics of DiffServ QoS model? (Choose two.)**
    - **can divide network traffic into classes based on business requirements***
    - the easiest QoS model to deploy
    - delivers end to end QoS
    - uses the Resource Reservation Protocol (RSVP) to signal QoS requirements
    - **groups all TCP flows into a single class***

    The DiffServ QoS model is commonly used in modern networks and is the easiest QoS model to deploy. TCP flows are grouped into a single class. Network devices are setup to service multiple classes of traffic where each class of traffic has different QoS requirements.

11. **What are two characteristics of the best-effort QoS model? (Choose two.)**
    - **It treats all network packets in the same way.***
    - It allows end hosts to signal their QoS needs to the network.
    - It uses a connection-oriented approach with QoS.
    - It provides preferential treatment for voice packets.
    - **It does not provide a delivery guarantee for packets.***

    The best-effort QoS model provides no guarantees and it is commonly used on the Internet. The best-effort QoS model treats all network packets in the same way.

12. **What role do network devices play in the IntServ QoS model?**
    - Network devices use QoS on a hop-by-hop basis to provide excellent scalability.
    - **Network devices ensure that resources are available before traffic is allowed to be sent by a host through the network.***

- Network devices are configured to service multiple classes of traffic and handle traffic as it may arrive.
- Network devices provide a best-effort approach to forwarding traffic.

The IntServ QoS model uses resource reservation to guarantee bandwidth and packet-loss rates from end to end. IntServ uses a connection-oriented approach to ensure that available resources are sufficient in the network for the traffic to have a specific level of QoS.

13. **Which QoS model is very resource intensive and provides the highest guarantee of QoS?**
    - **IntServ***
    - DiffServ
    - soft QoS
    - best-effort

    The IntServ QoS model uses resource reservation and admission control mechanisms to schedule network resources.

14. **In QoS models, which type of traffic is commonly provided the most preferential treatment over all other application traffic?**
    - **voice traffic***
    - web traffic
    - email
    - file transfers

    Voice traffic from IP phones is commonly provided preferential treatment over all other application traffic such as email, web traffic, and file transfers.

15. **What are two approaches to prevent packet loss due to congestion on an interface? (Choose two.)**
    - Decrease buffer space.
    - Disable queuing mechanisms.
    - **Increase link capacity.***
    - **Drop lower-priority packets.***
    - Prevent bursts of traffic.

    There are three approaches to prevent sensitive traffic from being dropped:
    Increase link capacity to ease or prevent congestion.
    Guarantee enough bandwidth and increase buffer space to accommodate bursts of traffic from fragile flows.
    Prevent congestion by dropping lower-priority packets before congestion occurs.

16. **What two fields are available in IPv4 and IPv6 headers to mark packets for QoS? (Choose two.)**
    - **Type of Service***
    - Priority
    - **Traffic Class***
    - VLAN ID
    - Class of Service

    IPv4 uses an 8-bit Type of Service field to mark packets at Layer 3 and IPv6 uses an 8-bit Traffic Class field to mark packets at Layer 3. The fields are used by receiving

devices to forward the packets based on the appropriate assigned QoS policy.

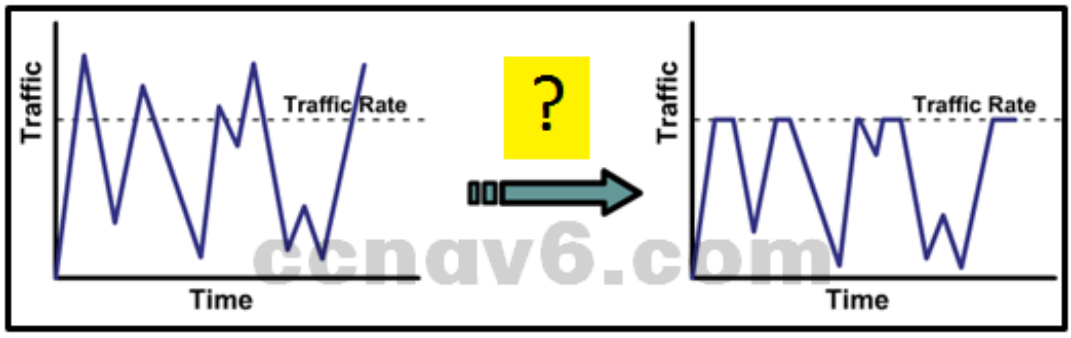
17. **What is the benefit of deploying Layer 3 QoS marking across an enterprise network?**
    - Layer 3 marking can be carried in the 802.1Q fields.
    - **Layer 3 marking can carry the QoS information end-to-end.***
    - Layer 3 marking can be used to carry non-IP traffic.
    - Layer 3 marking can carry QoS information on switches that are not IP aware.

    Marking traffic at Layer 2 or Layer 3 is very important and will affect how traffic is treated in a network using QoS.
    Layer 2 marking of frames can be performed for non-IP traffic.
    Layer 2 marking of frames is the only QoS option available for switches that are not "IP aware."
    Layer 3 marking will carry the QoS information end-to-end.

18. **Which QoS technology provides congestion avoidance by allowing TCP traffic to be throttled before buffers become full and tail drops occur?**
    - traffic policing
    - best-effort
    - first-in, first-out
    - **weighted random early detection***

    The weighted random early detection (WRED) algorithm provides congestion avoidance on network interfaces by allowing TCP traffic to be throttled before buffers are exhausted. This maximizes network use and TCP-based application performance while minimizing tail drop.

19. **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***

    Traffic shaping buffers excess packets in a queue and then forwards the traffic over increments of time, which creates a smoothed packet output rate. Traffic policing drops traffic when the amount of traffic reaches a configured maximum rate, which creates an output rate that appears as a saw-tooth with crests and troughs.

20. **Which QoS model uses the DSCP bits to mark packets and provides 64 possible classes of service?**

- best-effort
- IntServ
- **DiffServ***
- FIFO

The DiffServ model uses 6-bits known as the DiffServ Code Point (DSCP) bits to mark traffic and offers a maximum of 64 possible classes of service. Diffserv-aware routers can then implement per-hop behaviors (PHBs) that can control packet forwarding based on the specified class of service.

21. **Which QoS technique retains excess packets in a separate queue for later transmission?**
    - classifying
    - **shaping***
    - queuing
    - marking

    As network traffic exits an interface it is queued and then shaped to smooth out the packet output rate. Classification and marking should occur early on to identify traffic and classify how the traffic should be treated.

## Older Version

22. **What are two disadvantages of employing teleworkers in an organization? (Choose two.)**
    - increased usage of sick or vacation days
    - **increased difficulty of tracking task progress***
    - slower customer service response times
    - **the need to implement a new management style***
    - increase in office expenses
23. **Which technology provides a secure connection between a SOHO and the headquarters office?**
    - **VPN***
    - WiMax
    - QoS
    - PPPoE
24. **What functionality is required on routers to provide remote workers with VoIP and videoconferencing capabilities?**
    - IPsec
    - **QoS***
    - VPN
    - PPPoE
25. **Which networking technology will ensure reliable and secure remote access when a teleworker connects to a corporate network?**
    - **an encrypted VPN tunnel***
    - routers with QoS capability
    - a VoIP and videoconferencing capable connection
    - broadband (cable or DSL) access to the corporate network
26. **In which layer of the TCP/IP protocol model does IPsec apply security to**

**network data?**

- application
- transport
- **internet***
- network access

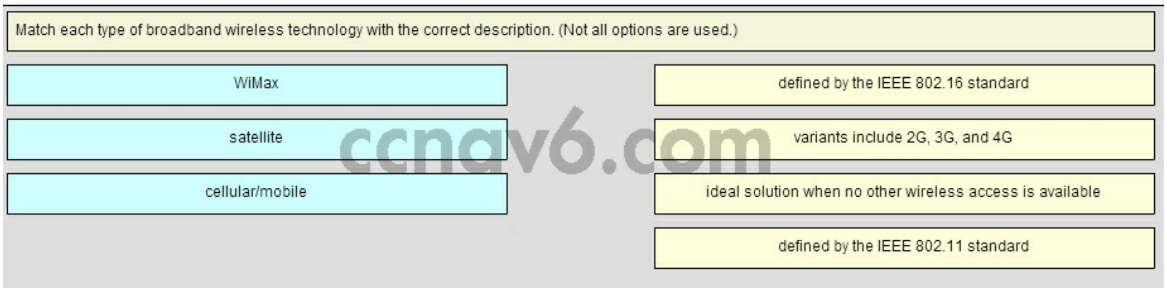
27. **What are two Layer 2 WAN technologies that can provide secure remote connections between corporate branch offices? (Choose two.)**
    - LTE
    - **Frame Relay***
    - **leased lines***
    - QoS
    - IPsec
28. **Which two network components does a teleworker require to connect remotely and securely from home to the corporate network? (Choose two.)**
    - **VPN client software or VPN-enabled router***
    - multifunction security appliance
    - **broadband Internet connection***
    - VPN server or concentrator
    - authentication server
29. **Which two OSI Layer 1 specifications does DOCSIS define for a cable Internet connection? (Choose two.)**
    - a deterministic media access method
    - **channel bandwidth ***
    - **modulation technique***
    - VPN tunneling requirements
    - the separation of the voice and data transmissions
30. **Which cable network communication technology is secure, extremely resistant to noise, and employs spread-spectrum technology?**
    - FDMA
    - CDMA
    - TDMA
    - **S-CDMA***
31. **Which standard specifies the channel frequencies and the deterministic access method of cable networks?**
    - **DOCSIS***
    - LTE
    - WiMAX
    - 802.16
32. **What advantage does DSL have compared to cable technology?**
    - DSL upload and download speeds are always the same.
    - DSL is faster.
    - DSL has no distance limitations.
    - **DSL is not a shared medium.***
33. **Which medium is used for delivering data via DSL technology through PSTN?**
    - fiber
    - **copper***

- radio frequency
- wireless

34. **How is voice traffic affected when the customer uses ADSL technology?**
    - No special equipment is needed to separate voice and data signals.
    - Voice traffic is interrupted if the ADSL service fails.
    - **ADSL signals can distort voice transmissions.***
    - Voice signals are on a separate wire pair from ADSL signals.
35. **Which DSL technology provides higher downstream bandwidth to the user than upstream bandwidth?**
    - **ADSL***
    - SDSL
    - CDMA
    - TDMA
36. **Which broadband wireless technology is based on the 802.11 standard?**
    - **municipal Wi-Fi***
    - WiMAX
    - CDMA
    - UMTS
37. **Which type of long distance telecommunication technology provides point-to-point connections and cellular access?**
    - **WiMax***
    - municipal Wi-Fi
    - satellite
    - mobile broadband
38. **A company is looking for the least expensive broadband solution that provides at least 10 Mb/s download speed. The company is located 5 miles from the nearest provider. Which broadband solution would be appropriate?**
    - satellite
    - DSL
    - WiMax
    - **cable***
39. **Which broadband technology would be best for a user that needs remote access when traveling in mountains and at sea?**
    - Wi-Fi Mesh
    - mobile broadband
    - WiMax
    - **satellite***
40. **Why is the MTU for a PPPoE DSL configuration reduced from 1500 bytes to 1492?**
    - to enable CHAP authentication
    - to reduce congestion on the DSL link
    - **to accommodate the PPPoE headers***
    - to establish a secure tunnel with less overhead
41. **What are two characteristics of a PPPoE configuration on a Cisco customer router? (Choose two.)**
    - **The PPP configuration is on the dialer interface.***

- An MTU size of 1492 bytes is configured on the Ethernet interface.
- **The Ethernet interface does not have an IP address.***
- The customer router CHAP username and password are independent of what is configured on the ISP router.
- The dialer pool command is applied to the Ethernet interface to link it to the dialer interface.

42. **Fill in the blank.**
DOCSIS specifies the **MAC** sub-layer as a Layer 2 requirement that defines either a deterministic access method, TDMA, or S-CDMA.
43. **Fill in the blank. Use only an acronym.**
**PPPoE** creates a PPP tunnel through the DSL connection for the purpose of sending PPP frames.
44. **Match each type of broadband wireless technology with the correct description. (Not all options are used.)**

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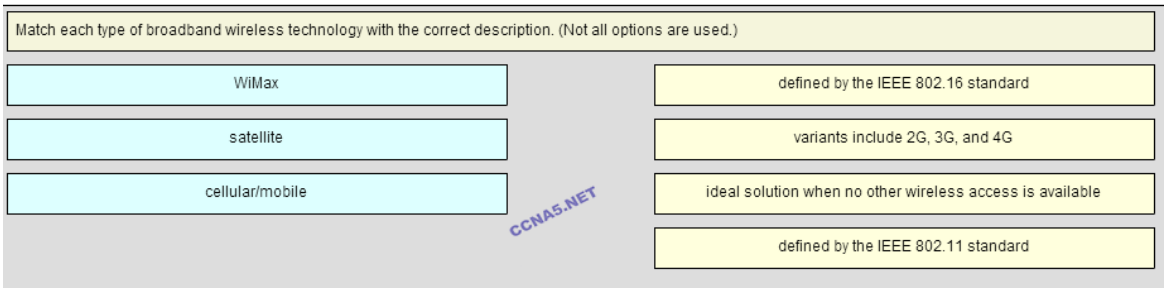
46. **What functionality is required on routers tprovide remote workers with VoIP and videoconferencing capabilities?**
    - PPPoE
    - **QoS***
    - VPN
    - IPsec
47. **What technology provides service providers the capability to use authentication, accounting, and link management features to customers over Ethernet networks?**
    - QoS
    - **PPPoE***
    - ISDN
    - DSL
48. **Match each type of broadband wireless technology with the correct description. (Not all options are used.)**




**Place the options in the following order:**

define by the IEEE 802.16 standard -> **WiMax**
variants include 2G, 3G, and 4G -> **Cellular/Mobile**
ideal solution when no other wirelless access is available -> **Satellite**
**– not scored –**

49. **What are two features of wavelengths in the electromagnetic spectrum? (Choose two.)**
    - They are the rate at which current or voltage cycles occur.
    - **They are calculated by the speed of propagation of the electromagnetic signal divided by its frequency in cycles per second.***
    - **They are the distance from the peak of one radio wave to the peak of the next radio wave.***
    - They are the distance from the peak of one radio wave to the trough of the next radio wave.
    - They are calculated by the number of waves per second.
50. **When PPPoE is configured on a customer router, which two commands must have the same value for the configuration to work? (Choose two.)**
    - ppp chap hostname 2
    - **pppoe-client dial-pool-number 2***
    - ppp chap password 2
    - interface dialer 2
    - **dialer pool 2***
    - interface gigabitethernet 0/2
51. **What mobile broadband communication Layer 2 technology uses a special coding scheme to assign each transmitter a specific code?**
    - UMTS
    - TDMA
    - FDMA
    - **CDMA***
52. **What two layers of the OSI model are defined by DOCSIS? (Choose two.)**
    - **Layer 1***
    - **Layer 2***
    - Layer 3
    - Layer 4
    - Layer 5
    - Layer 6
    - Layer 7

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