

Network+ Guide to Networks, 6th Edition

Chapter 2 Solutions

Review Questions

1. Your supervisor has asked you to correct several cable management problems that might be slowing down the network. Which organization's standards will guide you in assessing your firm's current cabling situation?
 - a. ISO
 - b. ITU
 - c. TIA/EIA**
 - d. IEEE
2. Which technology does the IEEE 802.11 specification describe?
 - a. Network security
 - b. Ethernet LANs
 - c. Logical Link Control
 - d. Wireless networks**
3. You are configuring clients to communicate over an Ethernet LAN. Which of the following IEEE specifications will identify which frame type your client should use?
 - a. 801.2

- b. 802.3**
 - c. 802.11
 - d. 801.16
4. Which layer of the OSI model is responsible for issuing acknowledgments (ACKs)?
- a. Application layer
 - b. Data Link layer
 - c. Network layer
 - d. Transport layer**
5. Suppose your network is connected to another network via a router. Which OSI model layer provides the information necessary to direct data between the two networks?
- a. Data Link layer
 - b. Physical layer
 - c. Network layer**
 - d. Session layer
6. In which two layers of the OSI model do NICs belong?
- a. Presentation and Application layers
 - b. Transport and Network layers
 - c. Network and Data Link layers
 - d. Physical and Data Link layers**
7. Which OSI model layer is responsible for keeping open a communications path between your computer and the server when you dial in to a remote access server?
- a. Session layer**
 - b. Data Link layer

- c. Presentation layer
 - d. Physical layer
8. Under what circumstances would the Transport layer use segmentation?
- a. When too many data frames are flooding into a receiving node's NIC
 - b. When more than 10 percent of transmitted frames are damaged
 - c. When the destination node cannot accept the size of the data blocks transmitted by the source node**
 - d. When the source node requests that data blocks be segmented for faster processing
9. Which OSI model layer generates and detects voltage so as to transmit and receive signals carrying data?
- a. Physical layer**
 - b. Data Link layer
 - c. Network layer
 - d. Transport layer
10. An IP address is an example of what type of address?
- a. Physical layer
 - b. Network layer**
 - c. MAC sublayer
 - d. Data Link sublayer
11. If the TCP protocol did not receive an acknowledgment for data it transmitted, what would it do?

- a. Issue its own acknowledgment, indicating to the recipient that it did not receive the acknowledgment it expected
 - b. Issue a warning frame to tell the recipient it would retransmit the data if it did not receive the acknowledgment within a certain time frame
 - c. Reestablish the connection with the recipient
 - d. Retransmit the data to the recipient**
12. Which part of a MAC address is unique to each manufacturer?
- a. The destination ID
 - b. The OUI**
 - c. The physical node ID
 - d. The SYN
13. What is the purpose of the trailer field added to a frame in the Data Link layer?
- a. To indicate the sum of the error-checking algorithm
 - b. To signal the rate at which a node can receive the data
 - c. To mark the end of a frame**
 - d. To represent the frame's sequence number
14. Which layer of the OSI model encapsulates Network layer packets?
- a. Physical layer
 - b. Session layer
 - c. Data Link layer**
 - d. Transport layer
15. At what OSI model layer do protocols manage data delivery priorities?
- a. Presentation layer

- b. Session layer
 - c. Transport layer
 - d. Network layer**
16. What are the sublayers of the Data Link layer as defined in the IEEE 802 standards?
- a. Logical Link Control sublayer and Media Access Control sublayer**
 - b. Transport Control sublayer and Media Access Control sublayer
 - c. Logical Link Control sublayer and Physical Addressing sublayer
 - d. Transport Control sublayer and Data Link Control sublayer
17. Suppose that, at the receiving node, a frame's FCS doesn't match the FCS it was issued at the transmitting node. What happens as a result?
- a. The receiving node's Transport layer assesses the error and corrects it.
 - b. The transmitting node's Data Link layer assesses the error and corrects it.
 - c. The receiving node's Data Link layer requests a retransmission.**
 - d. The transmitting node's Transport layer immediately issues a replacement frame.
18. In which of the following situations would it be most desirable to use a connectionless Transport layer protocol?
- a. When retrieving a spreadsheet from a busy file server
 - b. When viewing a movie on the Web**
 - c. When connecting to a graphics-intensive Web site
 - d. When sending an e-mail message to a long list of recipients
19. Which of the following would be found in a Data Link layer header?
- a. The packet's fragmentation offset
 - b. The packet's sequence number

- c. The source's logical address
- d. The source's physical address**

20. By default, what is the largest data payload that packets on an Ethernet network can accept?

- a. 64 bytes
- b. 128 bytes
- c. 1500 bytes**
- d. 2400 bytes

Hands-On Projects

Project 2-1

In this project, students become familiar with the role of IEEE in setting networking standards. They also learn how to find the IEEE standards that are available online. Finally, by viewing a popular IEEE standard, they become familiar with the content and scope of an IEEE standards document.

Project 2-2

This project provides students with a way to make tangible the invisible and theoretical process of data transformation through the OSI Model layers. By drawing PDUs at each layer, students will strengthen their understanding of each layer's function and establish a mental image they can later recall.

Project 2-3

This project provides students with two methods of discerning the MAC address of a Windows or Linux workstation, a skill they might use when troubleshooting network problems.

Sections 1 and 2, Steps 1 – 4: Students obtain the physical address of their Windows or Linux workstations electronically.

Section 3, Steps 1 – 9: Students obtain the physical address of their workstations by viewing the NIC's printed sticker.

Note: If a network administrator has changed the NIC's MAC address through a configuration utility, these two addresses will not match.

Case Projects

Case Project 2-1

Students should answer that because two different frame types cannot directly exchange information on a network, the NIC's configuration must be returned to its original settings (using Ethernet frames) to communicate on the network. In addition, students should be able to explain why policies to restrict changes on shared lab computers are important.

Case Project 2-2

The student's drawing should illustrate that at the Application layer, HTTP initiates a request from the Web client to the Web server (and later, interprets the resulting response). Next, the request for the Web page data will follow the same

process of requesting, translation, security, session negotiation, routing, error-checking, addressing, and framing down through the OSI model layers as described in the example of a mail message request in the chapter.

Case Project 2-3

A network architect is typically most interested in Layers 1 through 4 of the OSI model. Students should understand that designing a network with routers requires a complete understanding of Network layer functions and network addressing. Higher layer problems, including encoding or session problems, require a closer look at how the software or operating system of a device is interacting with the network or with other nodes on the network.