Network+ Guide to Networks, 5th Edition

Chapter 2 Solutions

Review Questions

1. Which of the following standards organizations has established guidelines for installing network cables in commercial buildings?

   a. TIA/EIA

2. Which technology does the IEEE 802.3 specification describe?

   b. Ethernet LANs

3. Which of the following IEEE specifications pertains to wireless networking?

   d. 802.11

4. Which layer of the OSI model is responsible for issuing acknowledgments (ACKs)?

   d. Transport layer

5. 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?

   d. Session layer

6. 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. Network layer

7. In which two layers of the OSI model do NICs belong?

   d. Physical and Data Link layers

8. Which standards organization developed the OSI model?

   a. ISO

9. Under what circumstances would the Transport layer use segmentation?

   c. When the destination node cannot accept the size of the data blocks transmitted by the source node

10. Which OSI model layer generates and detects voltage so as to transmit and receive signals carrying data?

    a. Physical layer

11. What type of address follows a hierarchical format?

c. Network addresses

12. If the TCP protocol did not receive an acknowledgment for data it transmitted, what would it do?

    c. Retransmit the data to the recipient

13. You have just installed a new NIC in your computer and see the following stamped on it: 000A5E1A8DA2. This unique identifier is an example of what kind of address?

    b. MAC address

14. Which part of a MAC address is unique to each manufacturer?

    b. The block ID

15. What is the purpose of the trailer field added to a frame in the Data Link layer?

    a. To mark the end of a frame

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

17. Which layer of the OSI model encapsulates Network layer packets?

    c. Data Link layer

18. 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?

    b. The receiving node's Data Link layer requests a retransmission.

19. In which of the following situations would it be most desirable to use a connectionless Transport layer protocol?

    c. When viewing a movie clip on the Web

20. Which of the following would be found in a Data Link layer header?

    d. The source's physical address

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 XP, Windows Vista, or Linux workstation, a skill they will likely use when troubleshooting network problems.

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

Section 3, Steps 1 – 9: Students obtain the MAC 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.

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.