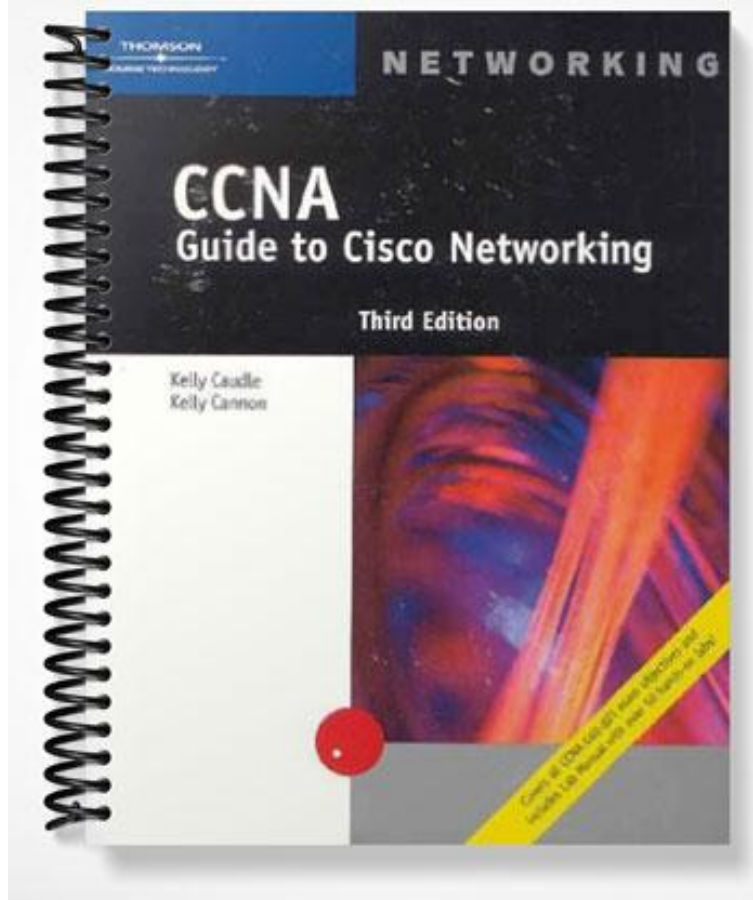


SOLUTIONS MANUAL



Chapter 2 Solutions

Review Questions

1. Routers operate at which layer of the OSI model?
 - a. Data Link
 - b. Presentation
 - c. Session
 - d. Network**
2. Bridges operate at which layer of the OSI model?
 - a. Network
 - b. Data Link**
 - c. Session
 - d. Transport
3. Bridges provide which of the following benefits? (Choose all that apply.)
 - a. Reduced network traffic**
 - b. Reduced broadcast traffic
 - c. Minimized collisions**
 - d. Faster response time than repeaters
4. Which of the following is an appropriate description of a broadcast storm?
 - a. Noise on the network
 - b. A large amount of traffic that passes directly through routers
 - c. An electrical condition caused by the sun
 - d. An error condition in which many broadcasts are sent simultaneously across the entire network**
5. Which of the following best describes a network segment?
 - a. A section of the network that has been separated from other segments by a router, bridge, or switch**
 - b. A piece of broken twisted-pair cable
 - c. A piece of broken coaxial cable
 - d. A portion of the network that has been isolated with a repeater
6. A router that has eight ports will require how many IP addresses?
 - a. Four
 - b. Six
 - c. Eight**
 - d. Nine
 - e. Ten
7. If a bridge receives a frame that has a destination MAC address located on the same segment from which it came, what will happen to the frame at the bridge?
 - a. It will be forwarded.
 - b. It will be dropped.**
 - c. The source signal will be repeated on all segments.
 - d. The destination address will be repeated on all segments.
8. Which of the following is not true about bridges?
 - a. Bridges do not forward broadcast traffic.**
 - b. Bridges segment the network.
 - c. Bridges reduce the likelihood of a collision.
 - d. Bridges operate at the Data Link layer.
9. Which of the following is not true about routers?
 - a. Routers operate at the Network layer.
 - b. Routers segment the network.

c. Routers reduce broadcast traffic.

d. Routers are faster than repeaters.

10. Which of the following is not true about switches?

a. Switches operate at the Data Link layer.

b. Switches create virtual network segments.

c. Switches do not segment the network.

d. Switches create private connections between two points.

11. Which type of addresses do routers use?

a. Logical

b. Physical

c. MAC

d. Data Link

12. A _____ can reduce broadcast traffic.

a. bridge

b. router

c. repeater

d. connector

13. Which of the following is the correct name for a device that operates at both the Data Link and Network layers of the OSI reference model?

a. Router

b. Bridge

c. Switch

d. Brouter

e. Hub

14. When two stations broadcast at the same time on a single segment of an Ethernet network, what happens?

a. Contention

b. Crash

c. Collision

d. Interruption

15. Which type of addresses do bridges use?

a. Logical

b. Physical

c. IP

d. TCP

16. When must you change the IP address of a given host on a network segmented with routers?

a. When that computer is moved to a different segment on the network

b. When the network card is replaced

c. When the router is replaced

d. When a bridge is replaced

17. Which of the following OSI layers contains media access control information?

a. Physical

b. Data Link

c. Transport

d. Presentation

e. Session

f. Network

18. A switch divides network communications at which layer of the OSI model?

a. Presentation

b. Network

c. Transport

d. Data Link

19. Which of the following devices translates between different protocols?

- a. Bridge
- b. Switch
- c. Router

d. Gateway

20. Rank the following devices from lowest to highest latency.

- a. Hub
- b. Switch
- c. Gateway
- d. Router

The correct ranking order is a, b, d, c.

21. Typically, which is the best device for increasing performance on your LAN?

- a. Hub
- b. Bridge
- c. Switch**
- d. Router

22. What kind of bridges do Ethernet networks use?

- a. Translation
- b. Source-routing
- c. Transparent**
- d. Brooklyn

23. What kind of bridges will connect an Ethernet network to a Token Ring network?

- a. Translation**
- b. Source-routing
- c. Transparent
- d. Brooklyn

24. Why don't repeaters and hubs segment the network?

- a. They only work at the Physical layer where there is nothing to filter.**
- b. They are not considered devices.
- c. They operate at the Network layer where segmentation can't occur.
- d. They do segment the network.

25. Another name for IP address is _____ address, and another name for a MAC address is _____ address.

- a. Ethernet, logical
- b. physical, Ethernet
- c. logical, physical**
- d. NIC, software

26. What device provides functions similar to a hub in wireless networks?

- a. Wireless local area network
- b. Optical repeater
- c. Virtual local area network
- d. Wireless access point**

Case Projects

Case Project 1

Routers increase performance on a network by segmenting large networks into smaller networks. Routers keep traffic not meant for a segment off of that segment and routers do not forward broadcast traffic. Thus, routers minimize collisions and broadcast traffic. Routers are best used on large networks using routable protocols such as TCP/IP and IPX/SPX. Routers should not be used to increase network

performance on relatively small networks and/or networks using nonroutable protocols such as NetBEUI.

Case Project 2

A bridge or a switch is more appropriate for relatively small networks such as Sampson's. Also, a router will not work with nonroutable protocols, which apparently Sampson is using. Jennifer is correct.

Case Project 3

A brouter can operate at the Data Link layer like a bridge and the Network layer like a router. When a brouter receives packets based on a nonroutable protocol such as NetBEUI, the brouter makes forwarding decisions based on the MAC address (layer 2). When a brouter receives packets based on a routable protocol such as TCP/IP, the brouter makes forwarding decisions based on the logical address (layer 3).

Case Project 4

Lisa is partially correct. An active hub repeats the signal and is often called a multiport repeater. Moe, however, is technically correct. A passive hub would not be considered a repeater. Other more sophisticated hubs perform advanced functions not performed by repeaters. Also, although many other devices boost the network signal and are therefore performing the function that repeaters do these other devices do many more things and can't be considered repeaters.

Case Project 5

Repeaters do not segment the network. They have nothing to filter on because they only work at the physical layer. Bridges do segment the network at layer 2 based on MAC addresses. They create collision domains. Routers also segment the network. They segment at layer 3 based on logical addresses such as IP addresses. Routers create collision domains and also broadcast domains because they do not forward broadcasts like bridges.