

Chapter 1

Introduction to Networking

Review Questions

1. In the client-server model, what is the primary protocol used for communication between a browser and web server?
 - a. FTP
 - b. TCP
 - c. HTTP
 - d. SSL

Answer: c. HTTP

2. Which two encryption protocols might be used to provide secure transmissions for browser and web server communications?
 - a. HTTP and HTTPS
 - b. SSL and TLS
 - c. SSL and HTTP
 - d. TCP and UDP

Answer: b. SSL and TLS

3. Which email protocol allows an email client to download email messages to the local computer?
- a. IMAP4
 - b. SMTP
 - c. TCP
 - d. POP3

Answer: d. POP3

4. Which email protocol allows an email client to read mail stored on the mail server?
- a. IMAP4
 - b. SMTP
 - c. TCP
 - d. POP3

Answer: a. IMAP4

5. Which application embedded in Windows operating systems allows remote control of a computer and uses the RDP secure protocol for transmissions?
- a. Telnet
 - b. Remote Desktop
 - c. SFTP
 - d. SSH

Answer: b. Remote Desktop

6. A network consists of five computers, all running Windows 10 Professional. All the computers are connected to a switch, which is connected to a router, which is connected to the Internet. Which networking model does the network use?
- a. Star-bus
 - b. Ring
 - c. Hybrid
 - d. Peer-to-peer

Answer: d. Peer-to-peer

7. In Question 6, suppose one computer is upgraded from Windows 10 Professional to Windows Server 2016. Which networking model can the network now support that it could not support without the upgrade?
- a. Hybrid
 - b. Client-server
 - c. Star-bus
 - d. Ring

Answer: b. Client-server

8. A network consists of seven computers and a network printer, all connected directly to one switch. Which network topology does this network use?
- a. Hybrid

- b. Mesh
- c. Star-bus
- d. Star

Answer: d. Star

9. In Question 8, suppose a new switch is connected to the first switch by way of a network cable, and three computers are connected to the new switch. Which network topology is now used?

- a. Hybrid
- b. Mesh
- c. Star-bus
- d. Star

Answer: c. Star-bus

10. Which type of address is used at the Transport layer to identify the receiving application?

- a. IP address
- b. Port
- c. MAC address
- d. Protocol

Answer: b. Port

11. What is the name of the domain controller database that Windows Server 2016 uses to store data about user access and resources on the network?

Answer: Active Directory

12. What is the fundamental distinction between a Layer 2 switch and a router?

Answer: A Layer 2 switch belongs only to its local network, and a router belongs to two or more networks.

13. What is the fundamental distinction between a node and a host?

Answer: A host is a computer that hosts a resource on the network, and a node is any computer or device that can be addressed on the network.

14. What is the fundamental distinction between a MAN and a WAN?

Answer: A MAN covers a small geographical area, and a WAN covers a large geographical area.

15. What is a message called that is delivered by TCP? What is a message called that is delivered by UDP? At which layer do the two protocols work?

Answer: Segment

Answer: Datagram

Answer: Transport layer

16. At the Network layer, what type of address is used to identify the receiving host?

Answer: IP address

17. At the Data Link layer, which type of network address is used to identify the receiving node?

Answer: Physical address, MAC address, hardware address, or Data Link layer address

18. A computer is unable to access the network. When you check the LED lights near the computer's network port, you discover the lights are not lit. Which layer of the OSI model are you using to troubleshoot this problem? At which two layers does the network adapter work?

Answer: Physical layer

Answer: Data Link layer and Physical layer

19. A user complains that he cannot access a particular website, although he is able to access other websites. At which layer of the OSI model should you begin troubleshooting this problem?

Answer: Application layer

20. A user complains that Skype drops her videoconference calls and she must reconnect. At which layer of the OSI model should you begin troubleshooting? Which OSI layer is responsible for not dropping the Skype connection?

Answer: Application layer

Answer: Session layer

Solutions

Lab Manual for Network+ Guide to Networks, 8th Edition

Chapter 1

Lab 1.1

1. Convert the following decimal numbers to binary numbers using a calculator or by manual calculations. (To access Windows Calculator in Windows 10, type **calculator** in the search box and press **Enter**.)

- 14 = _____
- 77 = _____
- 128 = _____
- 223 = _____
- 255 = _____

Answers:

- 14 = 1110 binary
- 77 = 0100 1101 binary
- 128 = 1000 0000 binary
- 223 = 1101 1111 binary
- 255 = 1111 1111 binary

2. Convert the following decimal numbers to hexadecimal notation:

- 13 = _____
- 240 = _____
- 255 = _____
- 58880 = _____

- 65535 = _____

Answers:

- 13 = D
- 240 = F0
- 255 = FF
- 58880 = E600
- 65535 = FFFF

3. Convert the following binary numbers to hexadecimal notation:

- 100 = _____
- 1011 = _____
- 111101 = _____
- 11111000 = _____
- 10110011 = _____
- 00000001 = _____

Answers:

- 100 = 4 hex
- 1011 = B hex
- 111101 = 1D hex
- 11111000 = F8 hex
- 10110011 = B3 hex
- 00000001 = 1 hex

4. Hexadecimal numbers are often preceded by “0x.” However, when converting a hexadecimal number, do not include the “0x” in the entry on the calculator. Convert the following

hexadecimal numbers to binary numbers:

- $0x0016 =$ _____
- $0x00F8 =$ _____
- $0x00B2B =$ _____
- $0x005A =$ _____
- $0x1234 =$ _____

Answers:

- $0x0016 = 0001\ 0110$ binary
- $0x00F8 = 1111\ 1000$ binary
- $0x00B2B = 1011\ 0010\ 1011$ binary
- $0x005A = 0101\ 1010$ binary
- $0x1234 = 0001\ 0010\ 0011\ 0100$ binary

5. Convert the following hexadecimal numbers to decimal:

- $0x0013 =$ _____
- $0x00AB =$ _____
- $0x01CE =$ _____
- $0x812A =$ _____

Answers:

- $0x0013 = 19$
- $0x00AB = 171$
- $0x01CE = 462$
- $0x812A = 33,066$

6. Convert the following binary numbers to decimal:

- $1011 =$ _____
- $0001\ 1011 =$ _____
- $1010\ 1010 =$ _____
- $0001\ 1111\ 0100 =$ _____
- $0101\ 1101\ 1101 =$ _____
- $0011\ 1110\ 0000\ 1111 =$ _____

Answers:

- $1011 = 11$
- $0001\ 1011 = 27$
- $1010\ 1010 = 170$
- $0001\ 1111\ 0100 = 500$
- $0101\ 1101\ 1101 = 1,501$
- $0011\ 1110\ 0000\ 1111 = 15,887$

[B HD] **Review Questions**

1. How long, in bits, is a typical MAC address?
 - a. 32 bits
 - b. 48 bits
 - c. 64 bits
 - d. No two MAC addresses are the same length

Answer: b. 48 bits

2. What value is used to tell the OS which application running on the computer is to receive a request from a client computer?
 - a. MAC address

- b. IP address
- c. Port number
- d. Subnet mask

Answer: c. Port number

3. What device determines the point where one local network ends and another local network begins?
- a. Router
 - b. Client computer
 - c. Server
 - d. Network adapter

Answer: a. Router

4. In the hexadecimal system, what decimal value does the letter A represent?
- a. 1
 - b. 16
 - c. 10
 - d. 100

Answer: c. 10

5. Write the following IPv6 address using a short hand method:

2001:0:4147:0:0:1c32:0:fe99.

- a. 2001:0:4147:0:0:1c32:0:fe99
- b. 2001::4147::1c32:0:fe99
- c. 2001::4147:0:0:1c32:0:fe99
- d. 2001:0:4147::1c32:0:fe99

Answer: d. 2001:0:4147::1c32:0:fe99