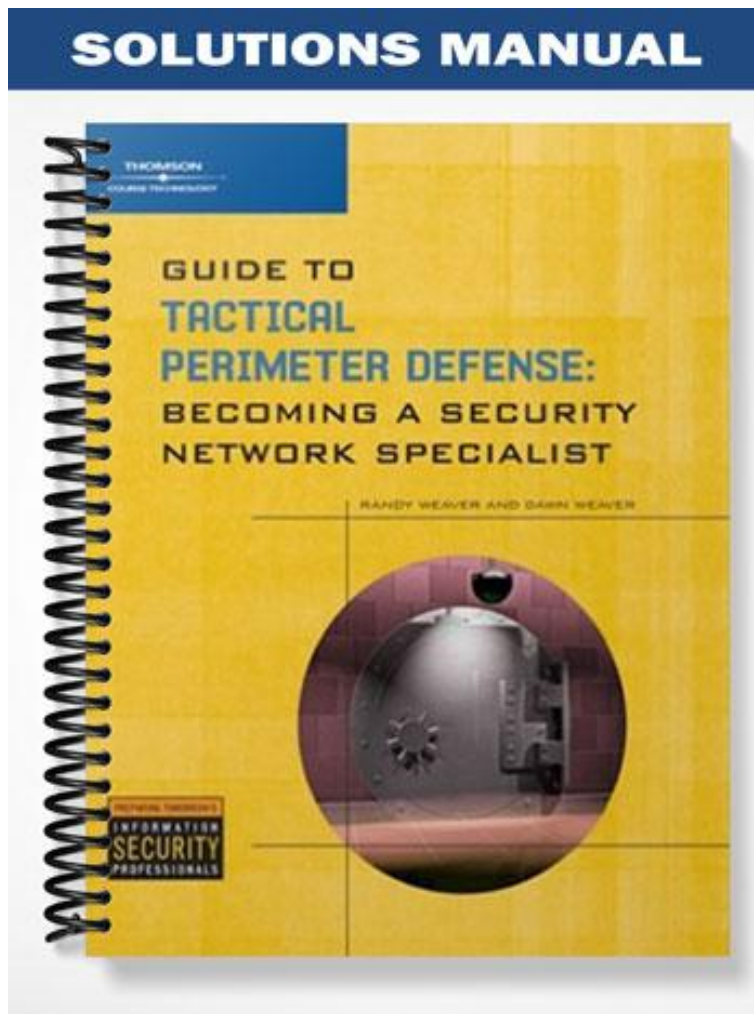


# SOLUTIONS MANUAL



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## Chapter 2 Solutions

### Review Questions

1. What advantages does IPv6 have over IPv4? (Choose all that apply.)
  - b. IPv6 uses a 128-bit address space.
  - d. IPv6 incorporates IPSec.
2. A Class C address has a first octet decimal range of \_\_\_\_\_ to \_\_\_\_\_.
  - d. 192, 223
3. Which of the following is a method of hiding internal host IP addresses? (Choose all that apply.)
  - a. Network Address Translation (NAT)
  - c. proxy servers
4. The reserved Class A address 127.0.0.1 is used for which of the following?
  - b. testing the TCP/IP local interface
5. What are the primary subdivisions of an IP datagram? (Choose all that apply.)
  - a. data
  - d. header
6. Why is UDP considered unreliable?
  - c. It is connectionless.
7. In CIDR notation, the IP address/subnet mask 191.9.205.22 255.255.192.0 are written as \_\_\_\_\_.
  - b. 191.9.205.22/18
8. How do routers handle packets that are too large to pass through because of frame size limitations?
  - d. Routers break packets into smaller pieces called fragments.
9. Fragmentation of IP packets causes several security problems. How should you configure the firewall or packet filter to prevent harm from fragmented packets? (Choose all that apply.)
  - a. Reassemble packets and allow only completed packets to pass.
  - c. Drop all fragmented packets.
10. Which of the following is an IPv6 protocol? (Choose all that apply.)
  - c. Multicast Listener Discovery
  - d. Neighbor Detection
11. A DNS server translates \_\_\_\_\_ to \_\_\_\_\_.
  - c. FQDNs, IP addresses
12. Why is fragmentation considered a security risk?
  - b. Fragments numbered 1 or higher are passed through filters.

13. Which of the following is used for one-to-many communication, in which a single host can send packets to a group of recipients?
  - a. multicast
14. Which of the following is used to display interface information in IPv6?
  - d. Ipv6.exe
15. Before a client initiates a TCP session, it must determine which two items?
  - a. sequence number
  - d. port number to use for the session
16. When one party in a TCP session is ready to end the session, it sends a packet with the \_\_\_\_\_ flag set.
  - d. FIN
17. An ICMPv6 header is indicated by a next header value of \_\_\_\_\_.
  - c. 58
18. Sent by a node to determine a neighbor's link-layer address, the Neighbor Solicitation message has an ICMPv6 type code of \_\_\_\_\_.
  - d. 135
19. Compressing the IPv6 address 1080:0:0:0:8:800:200C:417A results in which of the following?
  - b. 1080::8:800:200C:417A
20. The loopback address in IPv6 is 0:0:0:0:0:0:0:1, which can be compressed to \_\_\_\_\_.
  - c. ::1
21. Which of the following commands is used to delete an IPv6 interface (replacing *if#* with the interface number)?
  - a. ipv6 ifd *if#*

## Activities

### Activity 2-2: Using Wireshark

Encourage students to analyze and identify parts of the packets they have captured and determine the purpose of different packet types.

## Hands-On Projects

### Hands-On Project 2-3: Calculating Subnets

Step 3: Subnet mask is 255.255.255.224 or /27. There are 32 hosts per network.

Step 4: The network class is C, and the subnet mask 255.255.255.254 or /31. There are 128 subnets. It isn't possible to subnet this address into 512 subnetworks. 128 is the maximum number of subnetworks from this address subnetted as a Class C. Having 512 subnets would require subnetting the address as Class A or Class B.

Step 5: Four networks, 64 hosts per network. Subnet mask is 255.255.255.192 or /26.

### **Hands-On Project 2-4: Working with Wireshark**

Step 8: Wireshark did not capture Pings to the loopback address. They don't pass through the NIC, and Wireshark captures only traffic being transmitted or received. A Ping operation is processed by the NIC's internal TCP/IP stack and used as a testing mechanism for the protocol stack. It doesn't generate traffic "on the wire" that Wireshark is designed to capture.

Step 9: Students should be able to identify the Telnet connection attempt from their computers. The information in Wireshark should specify the Telnet SYN attempt.

## **Case Projects**

### **Case Project 2-1: Evaluating IP Addressing and Subnetting Hierarchy for Green Globe**

Students' answers will vary depending on their assessments of Green Globe's requirements, their skills, and contributions from project team members. Evaluate each proposal based on its own merit, or consider a peer review in class. Encourage class discussions and interaction.