
CHAPTER 17

BOOTP and DHCP

17.1 MULTIPLE-CHOICE QUESTIONS

1. d 3. b 5. c 7. d 9. c
11. d 13. c 15. d

17.2 EXERCISES

17. The minimum length of a BOOTP packet is 236 bytes. The maximum is 300 bytes.
19. See Figure 17.1.

Figure 17.1 Exercise 19

Code: 2	Hardware type	Hardware length	Hop count
Transaction ID			
No. of seconds		0	
Client IP address			
Client IP address			
Server IP address			
Gateway IP address			
Client hardware address			
99.130.83.99			
1	4	Subnet mask	
Subnet mask		0	255

21. 65,535
23. See Figure 17.2.

Figure 17.2 Exercise 23

Code: 2	Hardware type: 1	Hardware length: 6	Hop count
Transaction ID			
No. of seconds		0	
Client IP address			
Client IP address			
Server IP address			
Gateway IP address			
0x00112115			
0xEA21			
10 bytes of 0s (This field must be 16 bytes long, so 10 bytes of 0s are added.)			

25. See Figure 17.3.

Figure 17.3 Exercise 25

67		68	
52		Checksum	
Code: 2	Hardware type: 1	Hardware length: 6	Hop count
Transaction ID			
No. of seconds		0	
Client IP address			
Client IP address			
Server IP address			
Gateway IP address			
0x00112115			
0xEA21			
10 bytes of 0s			

27. See Figure 17.4.

29. A newly added host needs to know the address of a router because when the host needs to send a message outside of its own local network, it must send the packet to a router for delivery.

31. BOOTP needs the services of TFTP because the BOOTP packet is of a set size and format. If a BOOTP client needs more information than a packet can hold, the client must retrieve the information using some other method.

33. See Figure 17.5.

35. See Figure 17.6.

37. See Figure 17.7.

39. See Figure 17.8.

Figure 17.4 Exercise 27

4	5	0	72	
Identification			0	0
TTL		17	Header checksum	
Server IP address				
Client IP address				
67			68	
52			Checksum	
Code: 2	Hardware type: 1	Hardware length: 6	Hop count	
Transaction ID				
No. of seconds			0	
Client IP address				
Client IP address				
Server IP address				
Gateway IP address				
0x00112115				
0xEA21				
10 bytes of 0s				

Figure 17.5 Exercise 33

Code: 2	Hardware type	Hardware length	Hop count	
Transaction ID				
No. of seconds		0	0	
Offered IP address				
Offered IP address				
Server IP address				
Gateway IP address				
Client hardware address				
99.130.83.99				
53	1	2	0	
Other options such as defining lease length, etc.				

Figure 17.6 Exercise 35

Code: 2	Hardware type	Hardware length	Hop count
Transaction ID			
No. of seconds	0	0	
Client IP address			
Client IP address			
Server IP address			
Gateway IP address			
Client hardware address			
99.130.83.99			
53	1	4	255

Figure 17.7 Exercise 37

Code: 2	Hardware type	Hardware length	Hop count
Transaction ID			
No. of seconds	0	0	
Client IP address			
Client IP address			
Server IP address			
Gateway IP address			
Client hardware address			
99.130.83.99			
53	1	6	255

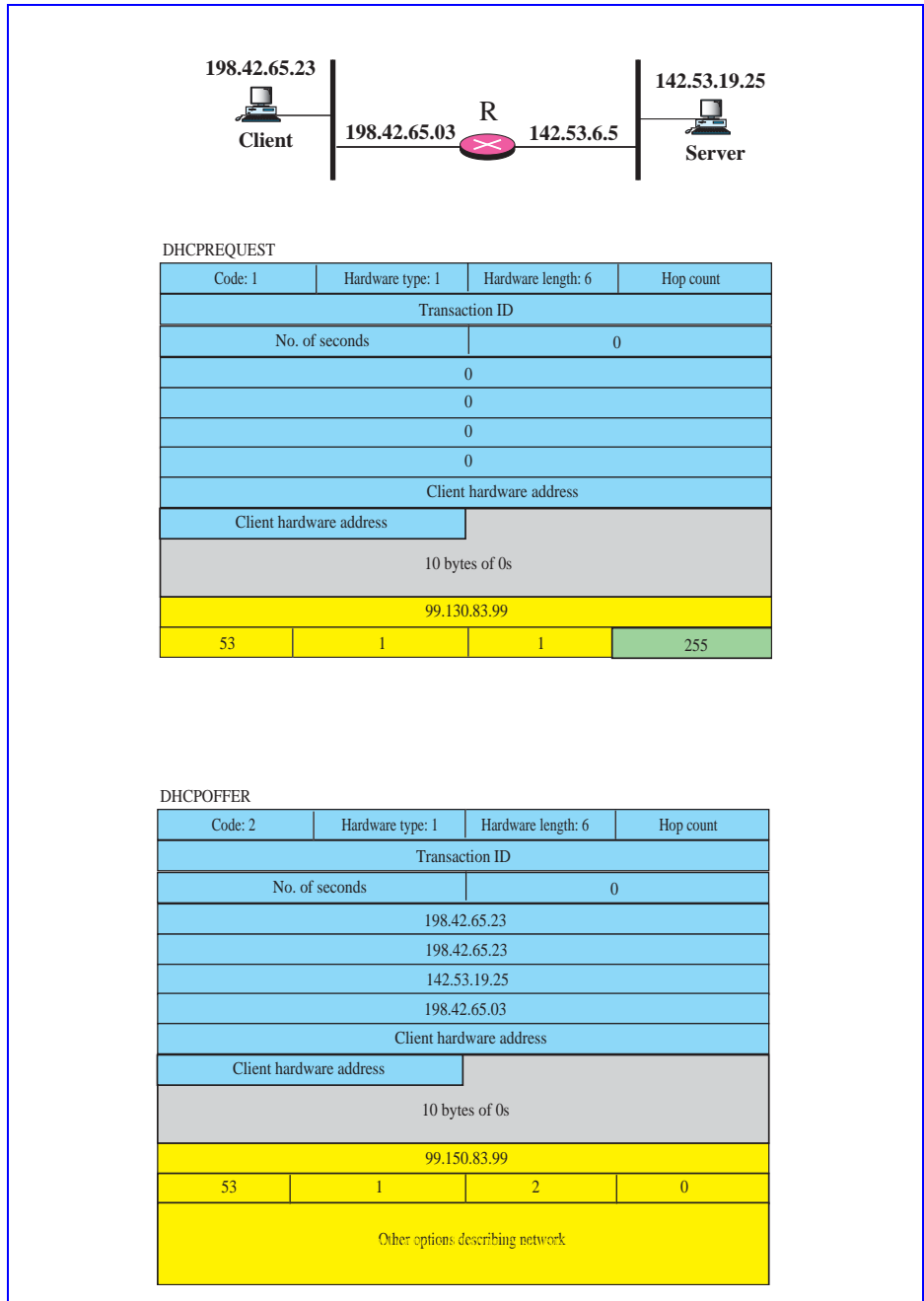
41. BOOTP Server:

1. Wait endlessly for client requests.
2. When request is received:
 1. Retrieve boot information for the client from the database.
 2. Configure the boot information in a BOOTP packet.
 3. Send packet back to client via UDP.
 4. Return to step 1 and wait.

43. DHCP Server:

1. Endlessly wait for client to send a DHCPDISCOVER message.
2. Upon receipt of message:
 1. Check static database mapping hosts to IP addresses.
 2. If found:

Figure 17.8 Exercise 39



1. Respond as a BOOTP server would respond.
3. Else:
 1. Select address from pool of available addresses.
 2. Lock the address.

3. Send DHCP OFFER message to client.
4. If DHCPREQUEST is received from client:
 1. Send DHCPACK to client.
 2. Add address to dynamic database.
 3. Set expiration timer for address.
3. Continue to wait for address to expire or for renew requests.
4. If renew request (DHCPREQUEST) message received:
 1. If client may renew lease for address:
 1. Send DHCPACK message.
 2. Reset timer.
 2. Else
 1. Send DHCPNACK message.
 2. Remove address from dynamic database.
 3. Return address to address pool.
5. If DHCPRELEASE message received from client:
 1. Remove address from dynamic database.
 2. Return address to address pool.