
CHAPTER 6

Delivery and Routing of IP Packets

6.1 MULTIPLE-CHOICE QUESTIONS

1. c 2. d 3. b 4. a 5. d 6. b 7. c 8. d 9. b 10. a
11. b 12. a 13. c 14. b 15. d 16. c

6.2 EXERCISES

17. Direct
18. Indirect
19. Indirect
20. Direct if no subnetting is used. It could be indirect if subnetting has been used.
21. No next hop (at home); interface m0
22. 111.15.17.32; interface m0
23. 111.20.18.14; interface m0
24. 111.30.31.18; interface m0
25. No next hop (at home); interface m2
26. No next hop (at home); interface m1
27. 111.30.31.18; interface m0
28. 111.30.31.18; interface m0
29. 111.30.31.18; interface m0
30. See Table 6.1. The interface to the rest of the Internet is m0; the interface to the network 111.0.0.0 is m1.

Table 6.1 *Exercise 30*

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.0.0.0	111.0.0.0		U	0	0	

Table 6.1 Exercise 30

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.255	194.17.21.16	111.20.18.14	UGH	0	0	
255.255.255.0	193.14.5.0	111.25.19.20	UG	0	0	
255.255.255.0	192.16.7.0	111.15.17.32	UG	0	0	
255.255.255.0	194.17.21.0	111.20.18.14	UG	0	0	
0.0.0.0	0.0.0.0		U	0	0	

31. See Table 6.2. The interface to the network 111.0.0.0 is m0; the interface to the network 192.16.7.0 is m1.

Table 6.2 Exercise 31

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.0.0.0	111.0.0.0		U	0	0	
255.255.255.0	192.16.7.0		U	0	0	
255.255.255.255	194.17.21.16	192.16.7.52	UGH	0	0	
255.255.255.0	193.14.5.0	111.25.19.20	UG	0	0	
255.255.255.0	194.17.21.0	192.16.7.52	UG	0	0	
0.0.0.0	0.0.0.0	111.30.31.18	UG	0	0	

32. See Table 6.3. The interface to the network 111.0.0.0 is m0; the interface to the network 194.17.21.0 is m1.

Table 6.3 Exercise 32

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.0.0.0	111.0.0.0		U	0	0	
255.255.255.0	194.17.21.0		U	0	0	
255.255.255.0	192.16.7.0	194.17.21.68	UG	0	0	
255.255.255.0	193.14.5.0	111.25.19.20	UG	0	0	
0.0.0.0	0.0.0.0	111.30.31.18	UG	0	0	

33. See Table 6.4. The interface to the network 192.16.7.0 is m0; the interface to the network 194.17.21.0 is m1.

Table 6.4 Exercise 33

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	192.16.7.0		U	0	0	
255.255.255.0	194.17.21.0		U	0	0	

Table 6.4 Exercise 33

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.0.0.0	111.0.0.0	192.16.7.5	UG	0	0	
255.255.255.0	193.14.5.0	192.16.7.5	UG	0	0	
0.0.0.0	0.0.0.0	192.16.7.5	UG	0	0	

34. See Table 6.5.

Table 6.5 Exercise 34

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.0.0	134.18.0.0	---	U	0	0	
255.255.0.0	129.8.0.0	134.18.5.1	UG	0	0	
255.255.255.0	220.3.6.0	134.18.5.1	UG	0	0	
0.0.0.0	0.0.0.0	---	U	0	0	

35. See Table 6.6.

Table 6.6 Exercise 35

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	220.3.6.0	---	U	0	0	
255.255.0.0	129.8.0.0	---	U	0	0	
255.255.0.0	134.18.0.0	222.13.16.41	UG	0	0	
0.0.0.0	0.0.0.0	222.13.16.41	UG	0	0	

36. See Table 6.7.

Table 6.7 Exercise 36

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	80.4.6.0	---	U	0	0	
255.255.255.0	80.4.5.0	80.4.6.2	UG	0	0	
255.255.255.0	200.8.4.0	201.4.10.13	UG	0	0	
0.0.0.0	0.0.0.0	201.4.10.13	UG	0	0	

37. See Table 6.8.

Table 6.8 Exercise 37

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	200.8.4.0	---	U	0	0	

Table 6.8 Exercise 37

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	80.4.6.0	210.7.2.9	UG	0	0	
255.255.255.0	80.4.5.0	210.7.2.9	UG	0	0	
0.0.0.0	0.0.0.0	200.8.4.17	UG	0	0	

38. See Table 6.9.

Table 6.9 Exercise 38

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	80.4.5.0	----	U	0	0	
255.255.255.0	80.4.6.0	80.4.5.9	UG	0	0	
255.255.255.0	200.8.4.0	210.7.2.12	UG	0	0	
0.0.0.0	0.0.0.0	210.7.2.12	UG	0	0	

39. See Table 6.10.

Table 6.10 Exercise 39

<i>Mask</i>	<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
255.255.255.0	80.4.6.0	---	U	0	0	
255.255.255.0	80.4.5.0	----	U	0	0	
255.255.255.0	200.8.4.0	80.4.6.1	UG	0	0	
0.0.0.0	0.0.0.0	80.4.6.1	UG	0	0	

40. This is a good example to show that it is sometimes very difficult to find the topology of the network if a routing table is given. The routing table in this exercise gives two destination addresses that are neither network-specific nor host-specific addresses. The destination addresses (in the first and second lines) are host addresses, but the masks are not 255.255.255.255. This problem cannot be solved using the given routing table.

41. See Table 6.11.

Table 6.11 Exercise 41

<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
111.0.0/8	-	U	0	0	m0
193.14.5.160/27	-	U	0	0	m2
193.14.5.192/27	-	U	0	0	m1
194.17.21.16/32	111.20.18.14	UGH	0	0	m0
192.16.7.0/24	111.15.17.32	UG	0	0	m0

Table 6.11 Exercise 41

<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
194.17.21.0/24	111.20.18.14	UG	0	0	m0
0.0.0.0/0	111.30.31.18	UG	0	0	m0

42. See Table 6.12.

Table 6.12 Exercise 42

<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
134.18.0.0/16	---	U	0	0	m0
129.8.0.0/16	222.13.16.40	UG	0	0	m1
220.3.6.0/24	222.13.60.40	UG	0	0	m1
0.0.0.0/0	134.18.5.2	UG	0	0	m0

43. See Table 6.14.

Table 6.13 Exercise 43

<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
200.8.4.0/24	----	U	0	0	m2
80.4.5.0/24	210.4.10.3 or 200.8.4.12	UG	0	0	m1 or m2
80.4.6.0/24	210.4.10.3 or 200.8.4.12	UG	0	0	m1 or m2
0.0.0.0/0	????????????	UG	0	0	m0

44. See Table 6.14.

Table 6.14 Exercise 44

<i>Destination</i>	<i>Next Hop</i>	<i>F.</i>	<i>R.C.</i>	<i>U.</i>	<i>I.</i>
110.70.0.0/16	-	U	0	0	m0
180.14.0.0/16	-	U	0	0	m2
190.17.0.0/16	-	U	0	0	m1
130.4.0.0/16	190.17.6.5	UG	0	0	m1
140.6.0.0/16	180.14.2.5	UG	0	0	m2
0.0.0.0/0	110.70.4.6	UG	0	0	m0

45.

- a. 5
- b. 25

- c. 200
- d. 1000
- e. 0

46.

- a. 50
- b. 50
- c. 50
- d. 50