CHAPTER 6

Delivery, Forwarding, and Routing of IP Packets

Exercises

1. Direct; both hosts are on the same network (same netid, **137.23**).

3. See Table 6.1.

Table 6.1 *Exercise 3*

Class	Destination	Next Hop	I.
Class A	111.0.0.0	---	m1
Class B	145.80.0.0	111.25.19.20	m1
	170.14.0.0	111.25.19.20	m1
Class C	192.16.7.0	111.15.17.32	m1
Default	0	**default router**	m0

5.

Destination address: **192.16.7.42**

Binary: 1100 0000 0001 0000 0000 0111 0010 1010

Shift copy of address: 0000 0000 0000 0000 0000 0000 0000 **1100** = **12**

Destination network: **class C**

Network address: **192.16.7.0**

Next hop address: 111.15.17.32

Interface: m0

7.

Destination address: **147.26.50.30**

Binary: 1001 0011 0001 1010 0011 0010 0001 1110

Shift copy of address: 0000 0000 0000 0000 0000 0000 0000 **1001** = **9**

Destination network: **class B**

Network address: **147.26.0.0**

Next hop address: 111.30.31.18
Interface: m0

9.

Destination address: 135.11.80.21

Mask: **/18**

Network address: **135.11.64.0**

Next hop address: default
Interface: m4

11.

Destination address: 202.70.20.30

Mask: **/26**	Result: 202.70.20.0	**No match**
Mask: **/25**	Result: 202.70.20.0	**No match**
Mask: **/24**	Result: 202.70.20.0	**No match**
Mask: **/22**	Result: 202.70.20.0	**No match**

Next hop address: **180.70.65.200 (default router)**
Interface: m2

13. A routing table for a LAN not connected to the Internet and with no subnets can have a routing table with host-specific addresses. There is no next-hop address since all packets remain within the network.

15. If the packet with destination address 140.24.7.194 arrives at R3, it gets sent to interface m0. If it arrives at R2, it gets sent to interface m1 and then to router R3. The only way R1 can receive the packet is if the packet comes from organization 1, 2, or 3; it goes to R1 and is sent out from interface m3.

17. See Table 6.2.

Table 6.2 *Exercise 17: Routing table for regional ISP*

Mask	Network address	Next-hop address	Interface
/20	120.14.64.0	---	m0
/20	120.14.96.0	---	m2
/20	120.14.112.0	---	m3
/0	0.0.0.0	**default router**	m4

19. See Table 6.3.

Table 6.3 *Exercise 19: Routing table for local ISP 2*

Mask	Network address	Next-hop address	Interface
/22	120.14.96.0	---	m0
/22	120.14.100.0	---	m1
/22	120.14.104.0	---	m2
/22	120.14.108.0	---	m3
/0	0.0.0.0	**default router**	m4

21. See Table 6.4.

Table 6.4 *Exercise 21: Routing table for small ISP 1*

Mask	Network address	Next-hop address	Interface
/30	120.14.64.0	------------------	m0
/30	120.14.64.4	------------------	m1
/30	120.14.64.8	------------------	m2
/30	120.14.64.12	------------------	m3
.	.	.	.
.	.	.	.
.	.	.	.
/30	120.14.65.252	------------------	m127
/0	0.0.0.0	**default router**	m128