
CHAPTER 10

IGMP

Exercises

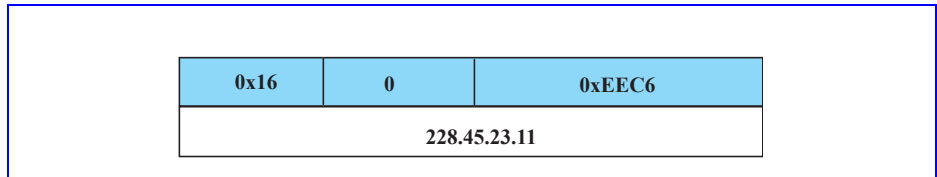
1. There is no need for a report message to travel outside of its own network because its only purpose is to inform the next router in the spanning tree of group membership. There is no need for a query message to travel outside of the local network because its only purpose is to poll the local network for membership in any groups.
3. 00000001 00000000 01011110 00011000 00111100 00001001
5. The host must send as many as five different report messages at random times in order to preserve membership in five different groups.
7. See Figure 10.1.

Figure 10.1 *Exercise 7*

4	5	0	28	
1			0	0
1	2		0xEE9B	
202.45.33.21				
224.0.0.1				
0x11		100	Checksum	
0				

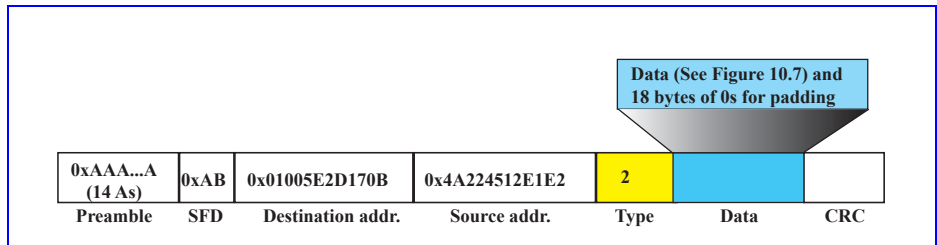
9. See Figure 10.2.

Figure 10.2 Exercise 9



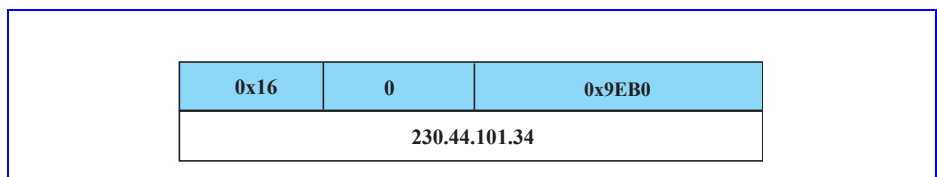
11. See Figure 10.3.

Figure 10.3 Exercise 11



13. If the router cannot find the groupid in its table, it drops the packet.
15. No action should be taken.
17. When the host receives the request from the process, it should create a new entry in its group table setting the state for the group to Delaying and its reference count to 1. It should also set a timer. When the timer expires, it should send a report message to the router. See Figure 10.4

Figure 10.4 Exercise 17



19. When the router receives the report from the host, it should create a new entry in its group table setting the state for the group to Delaying. It should also set a timer. When the timer expires, it should send a report message to the next higher router in

the spanning tree. See Figure 10.5.

Figure 10.5 Exercise 19

0x16	0	0xF7A6
232.54.10.34		

21. When the router receives the report about groupid 225.32.56.8 (a new membership), it should create a new entry in its group table setting the state for the group to Delaying. It should also set a timer. When the timer expires, it should send a report message to the next higher router in the spanning tree to indicate the new member of that group. Since the groups 225.4.6.7 and 226.34.12.9 are both listed in the group table, no action needs to be taken for these groups. Since there was no response for groups 225.11.6.8, 226.23.22.67, and 229.12.4.89, they should all be removed from the group table (have their state marked Free).

23.

- This is a membership report.
- The checksum is 0xF9C0 (1111 1001 1100 0000).
- The groupid is 225.42.19.20

25. Yes there is an error. The message is a leave report but its groupid field is all 0s – it should indicate a groupid. Also, the checksum does not reflect the contents of the packet.

27. $2^{28} = 268,435,456$

29.

- 00000001 00000000 01011110 00010010 01001000 00001000
(0x01005E124808)
- 00000001 00000000 01011110 00010010 01001000 00001000
(0x01005E124808)
- 00000001 00000000 01011110 00010010 00000110 01011000
(0x01005E120658)
- 00000001 00000000 01011110 01011000 00001100 00001000
(0x01005E580C08)

Note that *a* and *b* represent the same Ethernet address.

