
CHAPTER 13

Routing Protocols

13.1 MULTIPLE-CHOICE QUESTIONS

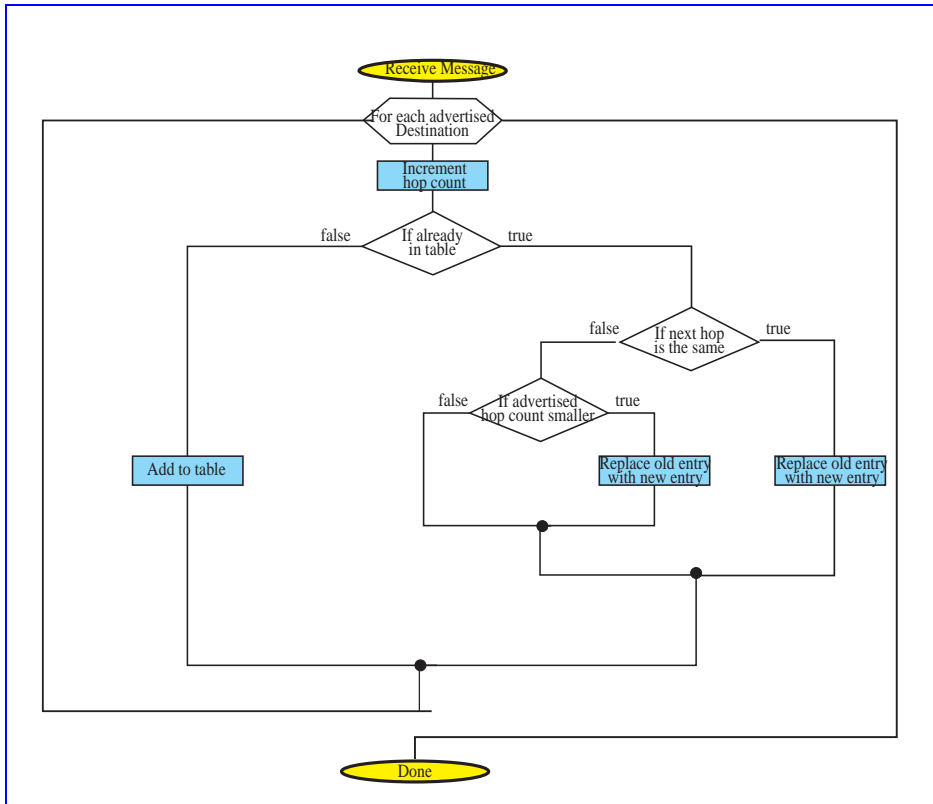
- | | | | | |
|-------|-------|-------|-------|-------|
| 1. b | 3. a | 5. c | 7. b | 9. d |
| 11. a | 13. a | 15. b | 17. c | 19. a |
| 21. b | 23. a | 25. b | 27. b | 29. b |
| 31. d | 33. d | 35. b | 37. b | 39. a |
| 41. b | 43. d | | | |

13.2 EXERCISES

45. A RIP message is used by a router to request routing information about an autonomous system or to periodically share its knowledge with its neighbors.
47. The hop count limit helps RIP instability by limiting the number of times a message can be sent through the same router, thereby limiting the back and forth updating that may occur if part of a network goes down.
49. Split horizons utilizes selectivity in the sending of routing messages. It prevents a router from sending information about a particular network out of the same port from which it received the information. Poison reverse sends information about all of the networks of which it is aware out of all of its ports, but the information it sends in the direction of a network lists that network as unreachable.
51. The authentication type indicates the authentication method used by a particular message. The authentication data field carries the actual authentication data, for instance a password. The purpose of authentication is to provide some degree of security for network communication.
53. See Figure 13.1.
55. The general formula can be given as follows:

$$\text{Number of bytes in the message} = 4 + 20 \times N$$

Figure 13.1 Exercise 53



N is the number of advertised networks. A RIP message that advertises a single network ($N = 1$) would be 24 bytes.

57. 20

59. net1 3 C

net2 2 C

net3 1 F

net4 5 G

61. See Figure 13.2.

Figure 13.2 Exercise 61

Com: 2	Version	Reserved
Family: 2		All 0s
net 1		
All 0s		
All 0s		
4		
Family: 2		All 0s
net 2		
All 0s		
All 0s		
2		
Family: 2		All 0s
net 3		
All 0s		
All 0s		
1		
Family: 2		All 0s
net 4		
All 0s		
All 0s		
5		

63. See Figure 13.3.

Figure 13.3 Exercise 63

Ver: 2		Type: 4		Length: 84	
IP address of router D					
Area ID					
Checksum			Authentication type		
Authentication data					
Number of Advertisements: 2					
Age: 0		Reserved		0	1
Type: 1					
IP address of router D					
IP address of router D					
Sequence number					
Fletcher's checksum			Length: 60		
Reserved	E	B	Reserved		Links: 2
IP address for designated router of N3					
Router address					
Type: 2	2		2		
TOS	Reserved		Metric for TOS		
IP address of router A					
Interface Number					
Type: 1	2		8		
TOS	Reserved		Metric for TOS		

65. See Figure 13.4.

Figure 13.4 Exercise 65

Ver: 2	Type: 4	Length: 52		
IP address of designated router for N2				
Area ID				
Checksum		Authentication type		
Authentication data				
Age: 0		Reserved	1	Type: 2
IP address of designated router (C)				
IP address of router C				
Sequence number				
Fletcher's checksum		Length: 28		
Network mask for N2				
IP address of router C				

67. See Figure 13.5.

Figure 13.5 Exercise 67

Ver: 2	Type: 4	Length: 52		
IP address of designated router for N5				
Area ID				
Checksum		Authentication type		
Authentication data				
Age: 0		Reserved	1	Type: 2
IP address of designated router (F)				
IP address of router F				
Sequence number				
Fletcher's checksum		Length: 28		
Network mask for N5				
IP address of router F				

69. See Figure 13.6.

Figure 13.6 Exercise 69

Ver: 2	Type: 4	Length: 60			
IP address of router D					
Area ID					
Checksum			Authentication type		
Authentication data					
Age: 0		Reserved	0	1	Type: 2
IP address of router D					
IP address of router D					
Sequence number					
Fletcher's checksum			Length: 36		
Network mask for N3					
IP address of router D					
IP address of router E					
IP address of router F					

- 71. See Figure 13.7.
- 73. See Figure 13.8.
- 75. See Figure 13.9.
- 77. See Figure 13.10.
- 79. See Figure 13.11.

Figure 13.7 Exercise 71

From router C to 163.43.0.0

Ver: 2	Type: 1	Length: 52		
163.43.27.4				
Area ID				
Checksum		Authentication type		
Authentication data				
255.255.0.0				
Hello interval	0	0	1	Priority
Dead interval				
Designated router for 163.43.0.0				
Backup designated router for 163.43.0.0				
163.43.31.8				
163.43.97.2				

From router C to 199.7.33.0

Ver: 2	Type: 1	Length: 52		
199.7.33.26				
Area ID				
Checksum		Authentication type		
Authentication data				
255.255.255.0				
Hello interval	0	1	1	Priority
Dead interval				
199.7.33.26				
199.7.33.26				
163.43.31.8				
163.43.97.2				

Figure 13.8 Exercise 73

This part is repeated.

Ver: 2	Type: 3	Length: variable		
163.43.27.4				
Area ID				
Checksum		Authentication type		
Authentication data				
1				
163.43.31.8				
163.43.31.8				

Figure 13.9 Exercise 75

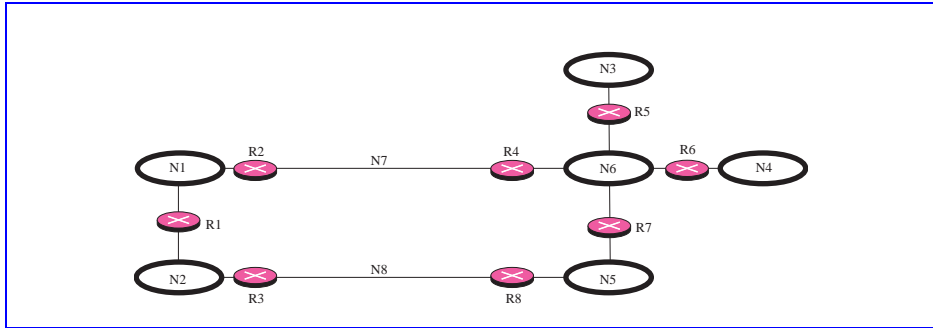


Figure 13.10 Exercise 77

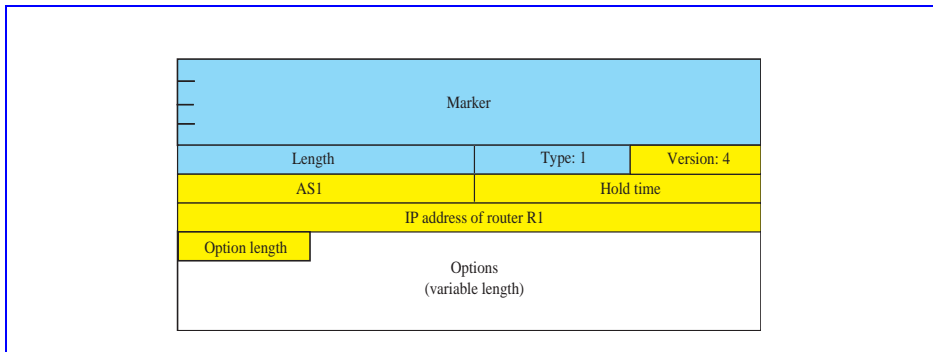


Figure 13.11 Exercise 79

