IPv6 - Details, Details…

Objectives

Analyze a routing table to determine the route source, administrative distance, and metric for a given route to include IPv4/IPv6.

Scenario

After studying the concepts presented in this chapter concerning IPv6, you should be able to read a routing table easily and interpret the IPv6 routing information listed within it.

With a partner, use the IPv6 routing table diagram shown below. Record your answers to the Reflection questions. Then compare your answers with, at least, one other group from the class.

Required Resources

- Routing Table Diagram (as shown below)
- Two PCs or bring your own devices (BYODs): one PC or BYOD will display the Routing Table Diagram for your group to access while recording answers to the Reflection questions on the other PC or BYOD.

Routing Table Diagram

```
R3# show ipv6 route
IPv6 Routing Table - default - 8 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, I1 - ISIS L1, I2 - ISIS L2
       IA - ISIS interarea, IS - ISIS summary, D - EIGRP, EX - EIGRP external
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
R   2001:DB8:CAFE:1::/64 [120/3]
     via FE80::FE99:47FF:FE71:78A0, Serial0/0/1
R   2001:DB8:CAFE:2::/64 [120/2]
     via FE80::FE99:47FF:FE71:78A0, Serial0/0/1
C   2001:DB8:CAFE:3::/64 [0/0]
     via GigabitEthernet0/0, directly connected
L   2001:DB8:CAFE:3::1/128 [0/0]
     via GigabitEthernet0/0, receive
(output omitted)
```

Reflection

1. How many different IPv6 networks are shown on the routing table diagram? List them in the table provided below.

Routing Table IPv6 Networks

2. The 2001:DB8:CAFE:3:: route is listed twice on the routing table, once with a /64 and once with a /128. What is the significance of this dual network entry?

3. How many routes in this table are RIP routes? What type of RIP routes are listed: RIP, RIPv2, or RIPng?

4. Use the first RIP route, as listed on the routing table, as a reference. What is the administrative distance of this route? What is the cost? What is the significance of these two values?

5. Use the second RIP route, as referenced by the routing table diagram. How many hops would it take to get to the 2001:DB8:CAFE:2::/64 network? What would happen to this routing table entry if the cost for this route exceeded 15 hops?

6. You are designing an IPv6 addressing scheme to add another router to your network's physical topology. Use the /64 prefix for this addressing scheme and an IPv6 network base of 2001:DB8:CAFF:2::/64,. What would be the next, numerical network assignment you could use if the first three hextets remained the same? Justify your answer.