

# 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
    2001:DB8:CAFE:1::/64 [120/3]
R
    via FE80::FE99:47FF:FE71:78A0, Serial0/0/1
    2001:DB8:CAFE:2::/64 [120/2]
R
    via FE80::FE99:47FF:FE71:78A0, Serial0/0/1
    2001:DB8:CAFE:3::/64 [0/0]
    via GigabitEthernet0/0, directly connected
    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.