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Configuring EIGRP Manual Summary Routes for IPv4 and IPv6

Отчет по лабораторной работе № 4
по дисциплине «Компьютерные сети»
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Device	Interface	IPv4 Address	Subnet Mask
		IPv6 Address/Prefix	
HQ-IPv4	S0/0/1	10.10.10.1	255.255.255.0
IPv4-Edge	S0/0/0	172.31.6.1	255.255.255.0
	S0/0/1	172.31.7.1	255.255.255.0
	S0/1/0	10.10.10.2	255.255.255.0
Branch-1	S0/0/0	172.31.6.2	255.255.255.0
Branch-2	S0/0/1	172.31.7.2	255.255.255.0
HQ-IPv6	S0/0/1	2001:DB8:1:A001::1/64	
IPv6-Edge	S0/0/0	2001:DB8:1:7::1/64	
	S0/0/1	2001:DB8:1:6::1/64	
	S0/1/0	2001:DB8:1:A001::2/164	
Branch-3	S0/0/0	2001:DB8:1:7::2/64	
Branch-4	S0/0/1	2001:DB8:1:6::2/64	

Part 1: Configure EIGRP Manual Summary Routes for IPv4

Step 1: Verify EIGRP configuration on each IPv4 enabled router.

Display the routing table on each IPv4 enabled router and verify that all IPv4 routes are visible. Ping the loopback interfaces from HQ-IPv4 to verify connectivity.

HQ-IPv4

```
HQ-IPv4>ena
HQ-IPv4#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/24 is directly connected, Serial0/0/1
L       10.10.10.1/32 is directly connected, Serial0/0/1
    172.31.0.0/16 is variably subnetted, 10 subnets, 2 masks
D       172.31.6.0/24 [90/2681856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.7.0/24 [90/2681856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.8.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.9.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.10.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.11.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.12.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.13.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.14.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
D       172.31.15.1/32 [90/2809856] via 10.10.10.2, 01:02:23, Serial0/0/1
```

IPv4-EDGE

```

IPv4-Edge>ena
IPv4-Edge#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/24 is directly connected, Serial0/1/0
L       10.10.10.2/32 is directly connected, Serial0/1/0
    172.31.0.0/16 is variably subnetted, 12 subnets, 2 masks
C       172.31.6.0/24 is directly connected, Serial0/0/0
L       172.31.6.1/32 is directly connected, Serial0/0/0
C       172.31.7.0/24 is directly connected, Serial0/0/1
L       172.31.7.1/32 is directly connected, Serial0/0/1
D       172.31.8.1/32 [90/2297856] via 172.31.6.2, 01:03:02, Serial0/0/0
D       172.31.9.1/32 [90/2297856] via 172.31.6.2, 01:03:02, Serial0/0/0
D       172.31.10.1/32 [90/2297856] via 172.31.6.2, 01:03:02, Serial0/0/0
D       172.31.11.1/32 [90/2297856] via 172.31.6.2, 01:03:02, Serial0/0/0
D       172.31.12.1/32 [90/2297856] via 172.31.7.2, 01:03:01, Serial0/0/1
D       172.31.13.1/32 [90/2297856] via 172.31.7.2, 01:03:01, Serial0/0/1
D       172.31.14.1/32 [90/2297856] via 172.31.7.2, 01:03:01, Serial0/0/1
D       172.31.15.1/32 [90/2297856] via 172.31.7.2, 01:03:01, Serial0/0/1

```

BRANCH-1

```

Branch-1>ena
Branch-1#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/24 is subnetted, 1 subnets
D       10.10.10.0/24 [90/2681856] via 172.31.6.1, 01:03:30, Serial0/0/0
    172.31.0.0/16 is variably subnetted, 11 subnets, 2 masks
C       172.31.6.0/24 is directly connected, Serial0/0/0
L       172.31.6.2/32 is directly connected, Serial0/0/0
D       172.31.7.0/24 [90/2681856] via 172.31.6.1, 01:03:34, Serial0/0/0
C       172.31.8.1/32 is directly connected, Loopback8
C       172.31.9.1/32 is directly connected, Loopback9
C       172.31.10.1/32 is directly connected, Loopback10
C       172.31.11.1/32 is directly connected, Loopback11
D       172.31.12.1/32 [90/2809856] via 172.31.6.1, 01:03:33, Serial0/0/0
D       172.31.13.1/32 [90/2809856] via 172.31.6.1, 01:03:33, Serial0/0/0
D       172.31.14.1/32 [90/2809856] via 172.31.6.1, 01:03:33, Serial0/0/0
D       172.31.15.1/32 [90/2809856] via 172.31.6.1, 01:03:33, Serial0/0/0

```

BRANCH-2

```
Branch-2>ena
Branch-2#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route
```

Gateway of last resort is not set

```

      10.0.0.0/24 is subnetted, 1 subnets
D       10.10.10.0/24 [90/2681856] via 172.31.7.1, 01:03:56, Serial0/0/1
      172.31.0.0/16 is variably subnetted, 11 subnets, 2 masks
D       172.31.6.0/24 [90/2681856] via 172.31.7.1, 01:03:59, Serial0/0/1
C       172.31.7.0/24 is directly connected, Serial0/0/1
L       172.31.7.2/32 is directly connected, Serial0/0/1
D       172.31.8.1/32 [90/2809856] via 172.31.7.1, 01:03:59, Serial0/0/1
D       172.31.9.1/32 [90/2809856] via 172.31.7.1, 01:03:59, Serial0/0/1
D       172.31.10.1/32 [90/2809856] via 172.31.7.1, 01:03:59, Serial0/0/1
D       172.31.11.1/32 [90/2809856] via 172.31.7.1, 01:03:59, Serial0/0/1
C       172.31.12.1/32 is directly connected, Loopback12
C       172.31.13.1/32 is directly connected, Loopback13
C       172.31.14.1/32 is directly connected, Loopback14
C       172.31.15.1/32 is directly connected, Loopback15
```

HQ-IPv4#ping 172.31.8.1

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.8.1, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/30/37 ms
```

HQ-IPv4#ping 172.31.9.1

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.9.1, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/24/39 ms
```

HQ-IPv4#ping 172.31.10.1

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.10.1, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 15/25/37 ms
```

HQ-IPv4#ping 172.31.11.1

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.11.1, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/27/37 ms
```

```

HQ-IPv4#ping 172.31.12.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.12.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 21/32/38 ms

HQ-IPv4#ping 172.31.13.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.13.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 27/33/36 ms

HQ-IPv4#ping 172.31.14.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.14.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 27/30/34 ms

HQ-IPv4#ping 172.31.15.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.15.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 25/32/38 ms

```

Step 2: Calculate, configure and verify a summary route on Branch-1.

By looking at the routing table on IPv4-Edge, verify that Branch-1 is advertising all four networks represented by the loopback interfaces.

- Calculate a summary address for the four loopback interfaces on Branch-1.
- Configure Branch-1 to advertise an EIGRP summary route to IPv4-Edge.
- Verify that IPv4-Edge now only has one summary route for all four loopback networks on Branch-1.

a. 254

b.

```

Branch-1>ena
Branch-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Branch-1(config)#router eigrp 1
Branch-1(config-router)#no auto-summary
Branch-1(config-router)#
Branch-1#
%SYS-5-CONFIG_I: Configured from console by console

Branch-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Branch-1(config)#int s0/0/0
Branch-1(config-if)#ip summary-address eigrp 1 172.31.8.0 255.255.252.0 5
Branch-1(config-if)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 172.31.6.1 (Serial0/0/0) is up: new adjacency

```

c.

```

10.0.0.0/24 is subnetted, 1 subnets
D    10.10.10.0/24 [90/2681856] via 172.31.6.1, 00:00:23, Serial0/0/0
172.31.0.0/16 is variably subnetted, 12 subnets, 3 masks
C    172.31.6.0/24 is directly connected, Serial0/0/0
L    172.31.6.2/32 is directly connected, Serial0/0/0
D    172.31.7.0/24 [90/2681856] via 172.31.6.1, 00:00:23, Serial0/0/0
D    172.31.8.0/22 is a summary, 00:00:23, Null0
C    172.31.8.1/32 is directly connected, Loopback8
C    172.31.9.1/32 is directly connected, Loopback9
C    172.31.10.1/32 is directly connected, Loopback10
C    172.31.11.1/32 is directly connected, Loopback11
D    172.31.12.1/32 [90/2809856] via 172.31.6.1, 00:00:23, Serial0/0/0
D    172.31.13.1/32 [90/2809856] via 172.31.6.1, 00:00:23, Serial0/0/0
D    172.31.14.1/32 [90/2809856] via 172.31.6.1, 00:00:23, Serial0/0/0
D    172.31.15.1/32 [90/2809856] via 172.31.6.1, 00:00:23, Serial0/0/0

```

Step 3: Calculate, configure and verify a summary route on Branch-2.

By looking at the routing table on IPv4-Edge, verify that Branch-2 is advertising all four networks represented by the loopback interfaces.

- Calculate a summary address for the four loopback interfaces on Branch-2.
- Configure Branch-2 to advertise an EIGRP summary route to IPv4-Edge.
- Verify that IPv4-Edge now only has one summary route for all four loopback networks on Branch-2.

a.

b.

```

Branch-2(config-router)#router eigrp 1
Branch-2(config-router)#no auto-summary
Branch-2(config-router)#exit
Branch-2(config)#int s0/0/1
Branch-2(config-if)#ip summary-address eigrp 1 172.31.12.0 255.255.252.0 5
Branch-2(config-if)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 172.31.7.1 (Serial0/0/1) is up: new adjacency

```

c.

```

10.0.0.0/24 is subnetted, 1 subnets
D    10.10.10.0/24 [90/2681856] via 172.31.7.1, 00:00:08, Serial0/0/1
172.31.0.0/16 is variably subnetted, 9 subnets, 3 masks
D    172.31.6.0/24 [90/2681856] via 172.31.7.1, 00:00:08, Serial0/0/1
C    172.31.7.0/24 is directly connected, Serial0/0/1
L    172.31.7.2/32 is directly connected, Serial0/0/1
D    172.31.8.0/22 [90/2809856] via 172.31.7.1, 00:00:08, Serial0/0/1
D    172.31.12.0/22 is a summary, 00:00:10, Null0
C    172.31.12.1/32 is directly connected, Loopback12
C    172.31.13.1/32 is directly connected, Loopback13
C    172.31.14.1/32 is directly connected, Loopback14
C    172.31.15.1/32 is directly connected, Loopback15

```


Step 4: Calculate, configure and verify a summary route on IPv4-Edge.

Although HQ-IPv4 has two routes that represent the eight loopback networks, these two routes can be summarized into one route.

- Calculate a summary address for the two summary routes in IPv4-Edge's routing table.
- Configure IPv4-Edge to advertise an EIGRP summary route to HQ-IPv4.
- Verify that HQ-IPv4 now has only one summary route representing the eight loopback networks on Branch-1 and Branch-2.

Note: It may be necessary to reset the interface linking HQ-IPv4 to IPv4-Edge.

- You should be able to ping all the IPv4 loopback interfaces from HQ-IPv4.

a.

b.

```
IPv4-Edge>ena
IPv4-Edge#conf t
Enter configuration commands, one per line. End with CNTL/Z.
IPv4-Edge(config)#router eigrp 1
IPv4-Edge(config-router)#exit
IPv4-Edge(config)#int s0/1/0
IPv4-Edge(config-if)#ip summary-address eigrp 1 172.31.8.0 255.255.248.0 5
IPv4-Edge(config-if)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 172.31.6.2 (Serial0/0/0) is up: new adjacency
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 10.10.10.1 (Serial0/1/0) is up: new adjacency
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 172.31.7.2 (Serial0/0/1) is up: new adjacency
```

c.

```
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    10.10.10.0/24 is directly connected, Serial0/0/1
L    10.10.10.1/32 is directly connected, Serial0/0/1
172.31.0.0/16 is variably subnetted, 3 subnets, 2 masks
D    172.31.6.0/24 [90/2681856] via 10.10.10.2, 00:04:23, Serial0/0/1
D    172.31.7.0/24 [90/2681856] via 10.10.10.2, 00:04:23, Serial0/0/1
D    172.31.8.0/21 [90/2681856] via 10.10.10.2, 00:04:23, Serial0/0/1
... ..
```


Part 2: Configure EIGRP Manual Summary Routes for IPv6

Step 1: Verify EIGRP configuration on each IPv6 enabled router.

Display the routing table on each IPv6 enabled router and verify that all IPv6 routes are visible. Ping the loopback interfaces from HQ-IPv6 to verify connectivity.

```
Branch-3(config-if)#do sh ipv6 route
IPv6 Routing Table - 17 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
       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
       D - EIGRP, EX - EIGRP external
D  2001:DB8:1:6::/64 [90/2681856]
   via FE80::2, Serial0/0/0
C  2001:DB8:1:7::/64 [0/0]
   via Serial0/0/0, directly connected
L  2001:DB8:1:7::2/128 [0/0]
   via Serial0/0/0, receive
C  2001:DB8:1:8::/64 [0/0]
   via Loopback8, directly connected
L  2001:DB8:1:8::1/128 [0/0]
   via Loopback8, receive
C  2001:DB8:1:9::/64 [0/0]
   via Loopback9, directly connected
L  2001:DB8:1:9::1/128 [0/0]
   via Loopback9, receive
C  2001:DB8:1:A::/64 [0/0]
   via Loopback10, directly connected
L  2001:DB8:1:A::1/128 [0/0]
   via Loopback10, receive
C  2001:DB8:1:B::/64 [0/0]
   via Loopback11, directly connected
L  2001:DB8:1:B::1/128 [0/0]
   via Loopback11, receive
D  2001:DB8:1:C::/64 [90/2809856]
   via FE80::2, Serial0/0/0
D  2001:DB8:1:D::/64 [90/2809856]
   via FE80::2, Serial0/0/0
D  2001:DB8:1:E::/64 [90/2809856]
   via FE80::2, Serial0/0/0
D  2001:DB8:1:F::/64 [90/2809856]
   via FE80::2, Serial0/0/0
D  2001:DB8:1:A001::/64 [90/2681856]
   via FE80::2, Serial0/0/0
L  FF00::/8 [0/0]
   via Null0, receive
```

```

Branch-4(config-if)#do sh ipv6 route
IPv6 Routing Table - 17 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        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
        D - EIGRP, EX - EIGRP external
C   2001:DB8:1:6::/64 [0/0]
    via Serial0/0/1, directly connected
L   2001:DB8:1:6::2/128 [0/0]
    via Serial0/0/1, receive
D   2001:DB8:1:7::/64 [90/2681856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:8::/64 [90/2809856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:9::/64 [90/2809856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:A::/64 [90/2809856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:B::/64 [90/2809856]
    via FE80::2, Serial0/0/1
C   2001:DB8:1:C::/64 [0/0]
    via Loopback12, directly connected
L   2001:DB8:1:C::1/128 [0/0]
    via Loopback12, receive
C   2001:DB8:1:D::/64 [0/0]
    via Loopback13, directly connected
L   2001:DB8:1:D::1/128 [0/0]
    via Loopback13, receive
C   2001:DB8:1:E::/64 [0/0]
    via Loopback14, directly connected
L   2001:DB8:1:E::1/128 [0/0]
    via Loopback14, receive
C   2001:DB8:1:F::/64 [0/0]
    via Loopback15, directly connected
L   2001:DB8:1:F::1/128 [0/0]
    via Loopback15, receive
D   2001:DB8:1:A001::/64 [90/2681856]
    via FE80::2, Serial0/0/1
L   FF00::/8 [0/0]
    via Null0, receive

```

```

      2001:DB8:1:6::/64 [0/0]
      via Serial0/0/1, directly connected
L    2001:DB8:1:6::1/128 [0/0]
      via Serial0/0/1, receive
C    2001:DB8:1:7::/64 [0/0]
      via Serial0/0/0, directly connected
L    2001:DB8:1:7::1/128 [0/0]
      via Serial0/0/0, receive
D    2001:DB8:1:8::/64 [90/2297856]
      via FE80::3, Serial0/0/0
D    2001:DB8:1:9::/64 [90/2297856]
      via FE80::3, Serial0/0/0
D    2001:DB8:1:A::/64 [90/2297856]
      via FE80::3, Serial0/0/0
D    2001:DB8:1:B::/64 [90/2297856]
      via FE80::3, Serial0/0/0
D    2001:DB8:1:C::/64 [90/2297856]
      via FE80::4, Serial0/0/1
D    2001:DB8:1:D::/64 [90/2297856]
      via FE80::4, Serial0/0/1
D    2001:DB8:1:E::/64 [90/2297856]
      via FE80::4, Serial0/0/1
D    2001:DB8:1:F::/64 [90/2297856]
      via FE80::4, Serial0/0/1
C    2001:DB8:1:A001::/64 [0/0]
      via Serial0/1/0, directly connected
L    2001:DB8:1:A001::2/128 [0/0]
      via Serial0/1/0, receive
L    FF00::/8 [0/0]
      via Null0, receive

```

Step 2: Calculate, configure and verify a summary route on Branch-3.

By looking at the routing table on IPv6-Edge, verify that Branch-3 is advertising all four networks represented by the loopback interfaces.

- Calculate a summary address for the four loopback interfaces on Branch-3.
- Configure Branch-3 to advertise an EIGRP summary route to IPv6-Edge.
- Verify that IPv6-Edge now only has one summary route for all four loopback networks on Branch-3.

Note: Packet Tracer does not currently grade EIGRP for IPv6 summary routes. However, the IPv6-Edge router should now only have five EIGRP routes, one of which is the summary you configured on Branch-3.

```
Branch-3(config-if)#ipv6 summary-address eigrp 1 2001:DB8:1:8::1/64
Branch-3(config-if)#
```

```

      D - EIGRP, EX - EIGRP external
D   2001:DB8:1:6::/64 [90/2681856]
    via FE80::2, Serial0/0/0
C   2001:DB8:1:7::/64 [0/0]
    via Serial0/0/0, directly connected
L   2001:DB8:1:7::2/128 [0/0]
    via Serial0/0/0, receive
C   2001:DB8:1:8::/64 [0/0]
    via Loopback8, directly connected
L   2001:DB8:1:8::1/128 [0/0]
    via Loopback8, receive
C   2001:DB8:1:9::/64 [0/0]
    via Loopback9, directly connected
L   2001:DB8:1:9::1/128 [0/0]
    via Loopback9, receive
C   2001:DB8:1:A::/64 [0/0]
    via Loopback10, directly connected
L   2001:DB8:1:A::1/128 [0/0]
    via Loopback10, receive
C   2001:DB8:1:B::/64 [0/0]
    via Loopback11, directly connected
L   2001:DB8:1:B::1/128 [0/0]
    via Loopback11, receive
D   2001:DB8:1:C::/64 [90/2809856]
    via FE80::2, Serial0/0/0
D   2001:DB8:1:D::/64 [90/2809856]
    via FE80::2, Serial0/0/0
D   2001:DB8:1:E::/64 [90/2809856]
    via FE80::2, Serial0/0/0
D   2001:DB8:1:F::/64 [90/2809856]
    via FE80::2, Serial0/0/0
D   2001:DB8:1:A001::/64 [90/2681856]
    via FE80::2, Serial0/0/0
L   FF00::/8 [0/0]
    via Null0, connected
```

Step 3: Calculate, configure and verify a summary route on Branch-4.

By looking at the routing table on IPv6-Edge, verify that Branch-4 is advertising all four networks represented by the loopback interfaces.

- Calculate a summary address for the four loopback interfaces on Branch-4.
- Configure Branch-4 to advertise an EIGRP summary route to IPv6-Edge.
- Verify that IPv6-Edge now only has one summary route for all four loopback networks on Branch-4.

Note: Packet Tracer does not currently grade EIGRP for IPv6 summary routes. However, the IPv6-Edge router should now only have two EIGRP routes, one summary route from each of the IPv6 branch routers.

```
Branch-4(config-if)#ipv6 summary-address eigrp 1 2001:DB8:1:C::1/64
Branch-4(config-if)#
%DUAL-5-NBRCHANGE: IPv6-EIGRP 1: Neighbor FE80::2 (Serial0/0/1) is up: new adjacency
```

```

      D - EIGRP, EX - EIGRP External
C   2001:DB8:1:6::/64 [0/0]
    via Serial0/0/1, directly connected
L   2001:DB8:1:6::2/128 [0/0]
    via Serial0/0/1, receive
D   2001:DB8:1:7::/64 [90/2681856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:8::/64 [90/2809856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:9::/64 [90/2809856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:A::/64 [90/2809856]
    via FE80::2, Serial0/0/1
D   2001:DB8:1:B::/64 [90/2809856]
    via FE80::2, Serial0/0/1
C   2001:DB8:1:C::/64 [0/0]
    via Loopback12, directly connected
L   2001:DB8:1:C::1/128 [0/0]
    via Loopback12, receive
C   2001:DB8:1:D::/64 [0/0]
    via Loopback13, directly connected
L   2001:DB8:1:D::1/128 [0/0]
    via Loopback13, receive
C   2001:DB8:1:E::/64 [0/0]
    via Loopback14, directly connected
L   2001:DB8:1:E::1/128 [0/0]
    via Loopback14, receive
C   2001:DB8:1:F::/64 [0/0]
    via Loopback15, directly connected
L   2001:DB8:1:F::1/128 [0/0]
    via Loopback15, receive
D   2001:DB8:1:A001::/64 [90/2681856]
    via FE80::2, Serial0/0/1
L   FF00::/8 [0/0]
```

Step 4: Calculate, configure and verify a summary route on IPv6-Edge.

Although HQ-IPv6 has two routes that represent the eight loopback networks, these two routes can be summarized into one route.

- Calculate a summary address for the two summary routes in IPv6-Edge's routing table.
- Configure IPv6-Edge to advertise an EIGRP summary route to HQ-IPv6.
- Verify that HQ-IPv6 now only has one summary route representing the eight loopback networks on Branch-3 and Branch-4..

Note: It may be necessary to reset the interface linking HQ-IPv6 to IPv6-Edge.

- You should be able to ping all the IPv6 loopback interfaces from HQ-IPv6.

```
via Null0, receive
IPv6-Edge(config-if)#ipv6 summary-address eigrp 1 2001:DB8:1:8::1/64
IPv6-Edge(config-if)#
%DUAL-5-NBRCHANGE: IPv6-EIGRP 1: Neighbor FE80::1 (Serial0/1/0) is up: new adjacency
%DUAL-5-NBRCHANGE: IPv6-EIGRP 1: Neighbor FE80::4 (Serial0/0/1) is up: new adjacency
%DUAL-5-NBRCHANGE: IPv6-EIGRP 1: Neighbor FE80::3 (Serial0/0/0) is up: new adjacency
```

```

D - EIGRP, EX - EIGRP external
C 2001:DB8:1:6::/64 [0/0]
   via Serial0/0/1, directly connected
L 2001:DB8:1:6::1/128 [0/0]
   via Serial0/0/1, receive
C 2001:DB8:1:7::/64 [0/0]
   via Serial0/0/0, directly connected
L 2001:DB8:1:7::1/128 [0/0]
   via Serial0/0/0, receive
D 2001:DB8:1:8::/64 [5/2169856]
   via ::, Null0
D 2001:DB8:1:9::/64 [90/2297856]
   via FE80::3, Serial0/0/0
D 2001:DB8:1:A::/64 [90/2297856]
   via FE80::3, Serial0/0/0
D 2001:DB8:1:B::/64 [90/2297856]
   via FE80::3, Serial0/0/0
D 2001:DB8:1:C::/64 [90/2297856]
   via FE80::4, Serial0/0/1
D 2001:DB8:1:D::/64 [90/2297856]
   via FE80::4, Serial0/0/1
D 2001:DB8:1:E::/64 [90/2297856]
   via FE80::4, Serial0/0/1
D 2001:DB8:1:F::/64 [90/2297856]
   via FE80::4, Serial0/0/1
C 2001:DB8:1:A001::/64 [0/0]
   via Serial0/1/0, directly connected
L 2001:DB8:1:A001::2/128 [0/0]
   via Serial0/1/0, receive
L FF00::/8 [0/0]
```