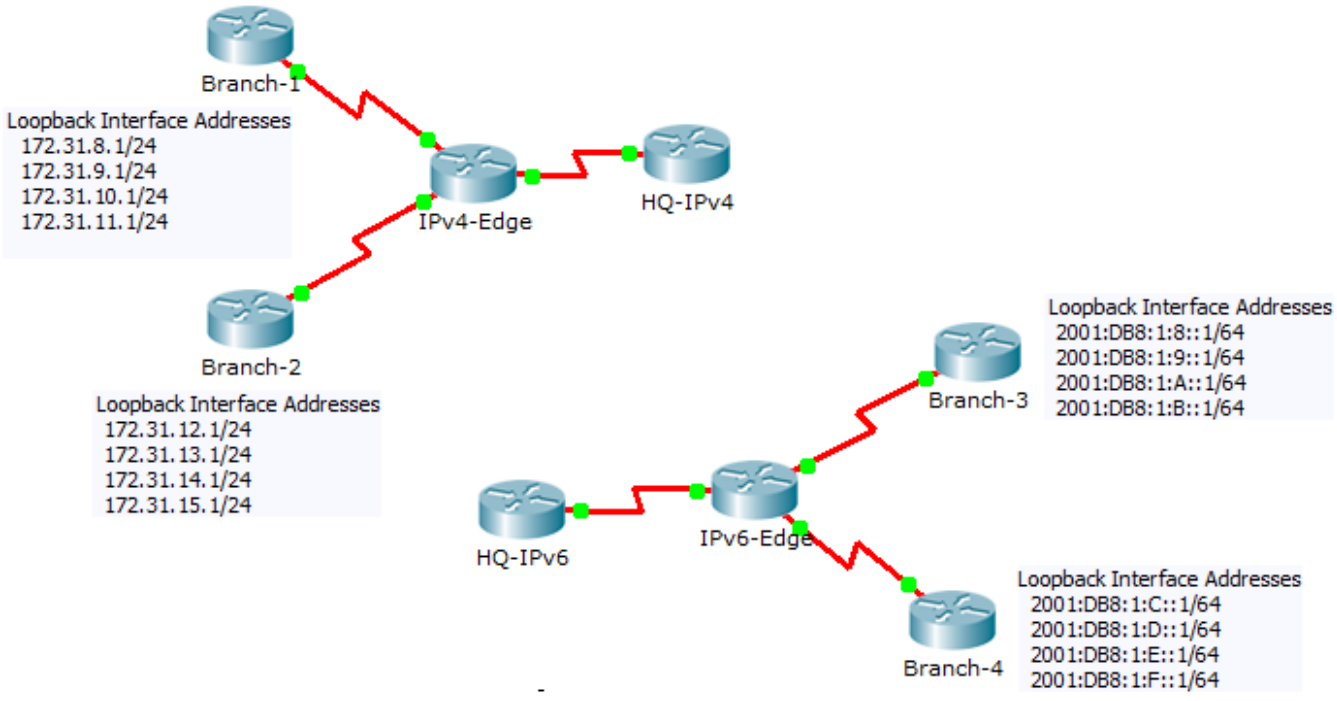
Packet Tracer – Configuring EIGRP Manual Summary Routes for IPv4 and IPv6

Topology



Addressing Table

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	

Objectives

Part 1: Configure EIGRP Manual Summary Routes for IPv4

Part 2: Configure EIGRP Manual Summary Routes for IPv6

Scenario

In this activity, you will calculate and configure summary routes for the IPv4 and IPv6 networks. EIGRP is already configured; however, you are required to configure IPv4 and IPv6 summary routes on the specified interfaces. EIGRP will replace the current routes with a more specific summary route thereby reducing the size of the routing tables.

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.

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.

a. Calculate a summary address for the four loopback interfaces on **Branch-1**.

b. Configure **Branch-1** to advertise an EIGRP summary route to **IPv4-Edge**.

c. Verify that **IPv4-Edge** now only has one summary route for all four loopback networks on **Branch-1**.

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.

a. Calculate a summary address for the four loopback interfaces on **Branch-2**.

b. Configure **Branch-2** to advertise an EIGRP summary route to **IPv4-Edge**.

c. Verify that **IPv4-Edge** now only has one summary route for all four loopback networks on **Branch-2**.

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.

a. Calculate a summary address for the two summary routes in **IPv4-Edge's** routing table.

b. Configure **IPv4-Edge** to advertise an EIGRP summary route to **HQ-IPv4**.

c. 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**.

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

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.

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.

a. Calculate a summary address for the four loopback interfaces on **Branch-3**.

b. Configure **Branch-3** to advertise an EIGRP summary route to **IPv6-Edge**.

c. 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**.

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.

a. Calculate a summary address for the four loopback interfaces on **Branch-4**.

b. Configure **Branch-4** to advertise an EIGRP summary route to **IPv6-Edge**.

c. 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.

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.

a. Calculate a summary address for the two summary routes in **IPv6-Edge's** routing table.

b. Configure **IPv6-Edge** to advertise an EIGRP summary route to **HQ-IPv6**.

c. 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**.

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

Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 2: Configure EIGRP Manual Summary Routes for IPv6	Step 2	20	
	Step 3	20	
	Step 4	10	
	Part 2 Total	**50**	
	Packet Tracer Score	**50**	
	Total Score	**100**	