Packet Tracer - Implement EIGRP for IPv4 and IPv6 (Instructor Version)

Answers: 5.2.3 Packet Tracer - Implement EIGRP for IPv4 and IPv6

IPv4 Addressing Table

Device	Interface	IPv4 Address	Subnet Mask
IPv4-Edge	S0/0/0	172.31.6.1	255.255.255.252
	S0/0/1	10.10.8.1	255.255.255.252
	S0/1/0	209.165.200.226	255.255.255.224
R1	S0/0/0	172.31.6.2	255.255.255.252
	Lo8	172.31.0.1	255.255.255.128
	Lo9	172.31.0.129	255.255.255.128
	Lo10	172.31.1.1	255.255.255.128
	Lo11	172.31.1.129	255.255.255.128
R2	S0/0/1	10.10.8.2	255.255.255.252
	Lo1	10.10.0.1	255.255.255.0
	Lo2	10.10.1.1	255.255.255.0
	Lo3	10.10.2.1	255.255.254.0
	Lo4	10.10.4.1	255.255.252.0
IPv4 Server	NIC	64.100.1.10	255.255.255.0

IPv6 Addressing Table

Device	Interface	IPv6 Address and Prefix Length
IPv6-Edge	S0/0/0	2001:DB8:A001:6::1/64
	S0/0/1	2001:DB8:A001:7::1/64
	S0/1/0	2001:DB8:CAFE:1::2/64
R3	S0/0/0	2001:DB8:A001:7::2/64
R4	S0/0/1	2001:DB8:A001:6::2/64
IPv6 Server	NIC	2001:DB8:CAFE:1000::A/64

Scenario

In this activity, you must implement EIGRP for IPv4 and IPv6 on two separate networks. Your task includes enabling EIGRP, assigning router IDs, changing the hello timers, and limiting EIGRP advertisements.

Instructions

Requirements

EIGRP for IPv4

- Implement EIGRP on IPv4-enabled routers using Autonomous System 1.

  - o Use a single classful network address to advertise the loopback interfaces.

  - o Use the wildcard mask to advertise the /30 networks between **R1**, **R2** and **IPv4-Edge**.

  - o Use the **default** passive interface method and only allow EIGRP updates out the active EIGRP serial interfaces.

```
R1(config)# router eigrp 1
R1(config-router)# passive-interface default
R1(config-router)# no passive-interface Serial0/0/0
R1(config-router)# network 172.31.0.0

R2(config)# router eigrp 1
R2(config-router)# passive-interface default
R2(config-router)# no passive-interface Serial0/0/1
R2(config-router)# network 10.0.0.0

IPv4-Edge(config)# router eigrp 1
IPv4-Edge(config-router)# passive-interface default
IPv4-Edge(config-router)# no passive-interface Serial0/0/0
IPv4-Edge(config-router)# no passive-interface Serial0/0/1
IPv4-Edge(config-router)# network 172.31.6.0 0.0.0.3
IPv4-Edge(config-router)# network 10.10.8.0 0.0.0.3
```

- Configure a directly attached default route on **IPv4-Edge** and propagate it in EIGRP updates.

```
IPv4-Edge(config)# ip route 0.0.0.0 0.0.0.0 Serial0/1/0
IPv4-Edge(config)# router eigrp 1
IPv4-Edge(config-router)# redistribute static
```

- Configure the serial interfaces between **R1**, **R2** and **IPv4-Edge** to send hellos every 10 seconds.

```
R1(config)# interface s0/0/0
R1(config-if)# ip hello-interval eigrp 1 10

R2(config)# interface s0/0/1
R2(config-if)# ip hello-interval eigrp 1 10

IPv4-Edge(config)# interface s0/0/0
IPv4-Edge(config-if)# ip hello-interval eigrp 1 10
IPv4-Edge(config-if)# interface s0/0/1
```

```
IPv4-Edge(config-if)# ip hello-interval eigrp 1 10
```

- **R1** and **R2** should have a default route in the routing table (D*EX).

- Verify **R1** and **R2** can ping the **IPv4 Server**. **IPv4 Server** should also be able to ping every loopback address on **R1** and **R2**.

EIGRP for IPv6

- Implement EIGRP for IPv6 on the IPv6-enabled routers using Autonomous System 1.

    o Assign **IPv6-Edge** with the router ID of 1.1.1.1

    o Assign **R3** with the router ID of 3.3.3.3

    o Assign **R4** with the router ID of 4.4.4.4

```
IPv6-Edge(config)# ipv6 unicast-routing
IPv6-Edge(config)# ipv6 router eigrp 1
IPv6-Edge(config-rtr)# eigrp router-id 1.1.1.1
IPv6-Edge(config-rtr)# no shutdown
IPv6-Edge(config-rtr)# interface Serial0/0/0
IPv6-Edge(config-if)# ipv6 eigrp 1
IPv6-Edge(config-if)# interface Serial0/0/1
IPv6-Edge(config-if)# ipv6 eigrp 1

R3(config)# ipv6 unicast-routing
R3(config)# ipv6 router eigrp 1
R3(config-rtr)# eigrp router-id 3.3.3.3
R3(config-rtr)# no shutdown
R3(config-rtr)# interface Loopback0
R3(config-if)# ipv6 eigrp 1
R3(config-if)# interface Loopback1
R3(config-if)# ipv6 eigrp 1
R3(config-if)# interface Loopback2
R3(config-if)# ipv6 eigrp 1
R3(config-if)# interface Loopback3
R3(config-if)# ipv6 eigrp 1
R3(config-if)# interface Serial0/0/0
R3(config-if)# ipv6 eigrp 1

R4(config)# ipv6 unicast-routing
R4(config)# ipv6 router eigrp 1
R4(config-rtr)# eigrp router-id 4.4.4.4
R4(config-rtr)# no shutdown
R4(config-rtr)# interface Loopback8
R4(config-if)# ipv6 eigrp 1
R4(config-if)# interface Loopback9
R4(config-if)# ipv6 eigrp 1
R4(config-if)# interface Loopback10
R4(config-if)# ipv6 eigrp 1
```

```
R4(config-if)# interface Loopback11
R4(config-if)# ipv6 eigrp 1
R4(config-if)# interface Serial0/0/1
R4(config-if)# ipv6 eigrp 1
```

- Configure a directly attached default route on **IPv6-Edge** and propagate it in EIGRP updates.

```
IPv6-Edge(config)# ipv6 route ::/0 Serial0/1/0
IPv6-Edge(config)# ipv6 router eigrp 1
IPv6-Edge(config-rtr)# redistribute static
```

- **R3** and **R4** should show a default external route in the routing table.

- Verify **R3** and **R4** can ping the **IPv6 Server**. **IPv6 Server** should also be able to ping every loopback address on **R3** and **R4**.

Answer Scripts

Router IPv4-Edge

```
enable
configure terminal
interface Serial0/0/0
ip hello-interval eigrp 1 10
interface Serial0/0/1
ip hello-interval eigrp 1 10
router eigrp 1
 redistribute static
 passive-interface default
 no passive-interface Serial0/0/0
 no passive-interface Serial0/0/1
 network 172.31.6.0 0.0.0.3
 network 10.10.8.0 0.0.0.3
ip route 0.0.0.0 0.0.0.0 Serial0/1/0
end
```

Router R1

```
enable
configure terminal
interface Serial0/0/0
ip hello-interval eigrp 1 10
router eigrp 1
 passive-interface default
 no passive-interface Serial0/0/0
 network 172.31.0.0
end
```

Router R2

```
enable
configure terminal
interface Serial0/0/1
```

```
ip hello-interval eigrp 1 10
router eigrp 1
 passive-interface default
 no passive-interface Serial0/0/1
 network 10.0.0.0
end
```

Router IPv6-Edge

```
enable
configure terminal
ipv6 unicast-routing
interface Serial0/0/0
ipv6 eigrp 1
interface Serial0/0/1
ipv6 eigrp 1
ipv6 router eigrp 1
eigrp router-id 1.1.1.1
no shutdown
redistribute static
ipv6 route ::/0 Serial0/1/0
end
```

Router R3

```
enable
configure terminal
ipv6 unicast-routing
interface Loopback0
ipv6 eigrp 1
interface Loopback1
ipv6 eigrp 1
interface Loopback2
ipv6 eigrp 1
interface Loopback3
ipv6 eigrp 1
interface Serial0/0/0
ipv6 eigrp 1
ipv6 router eigrp 1
 eigrp router-id 3.3.3.3
 no shutdown
end
```

Router R4

```
enable
configure terminal
ipv6 unicast-routing
interface Loopback8
ipv6 eigrp 1
interface Loopback9
```

```
ipv6 eigrp 1
interface Loopback10
ipv6 eigrp 1
interface Loopback11
ipv6 eigrp 1
interface Serial0/0/1
ipv6 eigrp 1
ipv6 router eigrp 1
 eigrp router-id 4.4.4.4
 no shutdown
end
```