

IT 307- Exploring the Networks

Lab 8: Dynamic Routing using RIP Protocol for IPv4 and IPv6

Objective:

This lab will guide you through configuring **RIP (Routing Information Protocol)** for both **IPv4** and **IPv6** in Cisco Packet Tracer. By the end of the lab, you will understand RIP basics, configure RIP for dynamic routing, and observe route propagation across the network.

1. Introduction to RIP

Routing Information Protocol (RIP) is a distance-vector routing protocol that uses **hop count** as the metric to determine the best path to a destination. It is suitable for smaller networks due to its limitations in hop count (maximum of 15 hops).

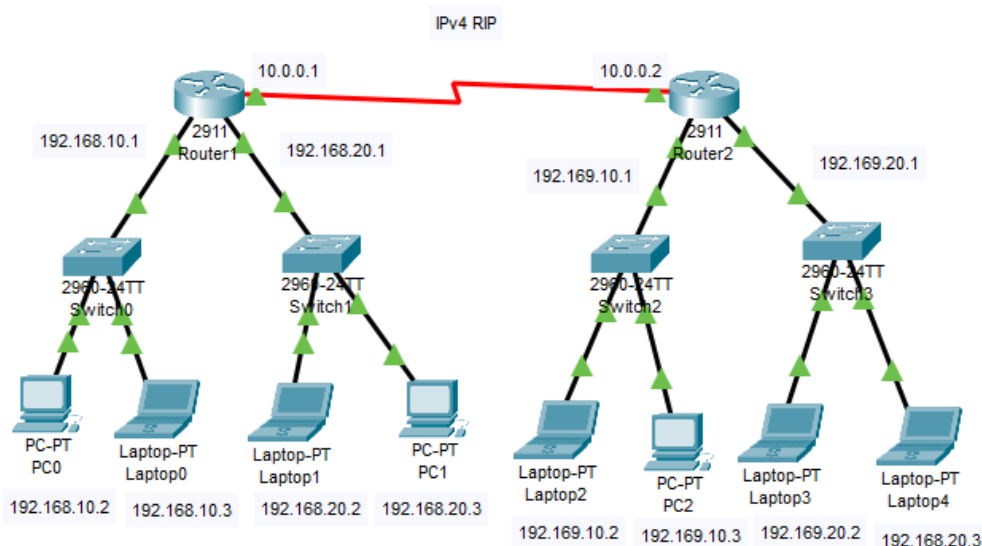
RIP operates by exchanging routing information at regular intervals with neighboring routers, helping each router build and update its routing table.

RIP Timers

RIP uses several timers to maintain network stability and manage routing information updates:

- **Update Timer:** Sends updates every **30 seconds**.
- **Invalid Timer:** Marks a route as invalid if no updates are received within **180 seconds**.
- **Holddown Timer:** Suppresses route changes for **180 seconds** after a route is marked invalid.
- **Flush Timer:** Removes routes from the routing table after **240 seconds** if no updates are received.

Configuring RIP for IPv4 in Packet Tracer



Step 1: Assign gateway and IP address to the systems

Step 2: On Router R1, assign IP address to the gig0/0 and the gig0/1 interface

Also, assign IP address on the se0/3/0 interface

On Router R2, assign IP address to the gig0/0 and the gig0/1 interface.

Also assign IP address on the se0/3/0 interface with clock rate 64000

RIP implementation

On router R1

```
Router(config)# router rip
```

```
Router(config-router)# version 2
```

```
Router(config-router)# network 10.0.0.0
```

```
Router(config-router)# network 192.168.10.0
```

```
Router(config-router)# network 192.168.20.0
```

```
Router(config-router)# exit
```

On router R2

```
Router(config)# router rip
```

```
Router(config-router)# version 2
```

```
Router(config-router)# network 10.0.0.0
```

```
Router(config-router)# network 192.169.10.0
```

```
Router(config-router)# network 192.169.20.0
```

```
Router(config-router)# exit
```

Check summary by

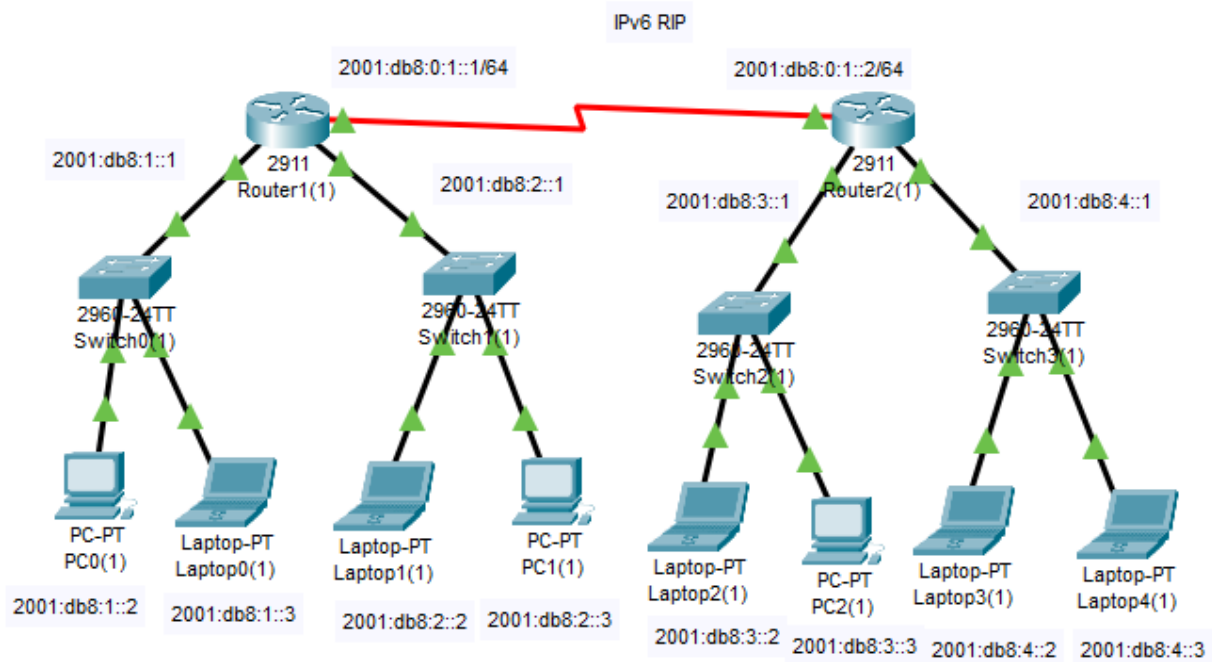
```
Router#sh ip route
```

```
Router#sh ip rip database
```

```
Router#sh ip protocols
```

```
Router#debug ip rip
```

Configuring RIP for IPv6 in Packet Tracer



Step 1: Assign gateway and IP address to the systems

Step 2: On Router R1, assign IP address to the gig0/0 and the gig0/1 interface

Also, assign IP address on the se0/3/0 interface

On Router R2, assign IP address to the gig0/0 and the gig0/1 interface.

Also assign IP address on the se0/3/0 interface with clock rate 64000

RIP for IPv6 implementation

On router R1,

```
Router(config)#int gig0/0
```

```
Router(config-if)#ipv6 rip RIPng enable
```

```
Router(config-if)#exit
```

```
Router(config)#int gig0/1
```

```
Router(config-if)#ipv6 rip RIPng enable
```

```
Router(config-if)#exit
```

```
Router(config)#int se0/3/0
```

```
Router(config-if)#ipv6 rip RIPng enable
```

On router R2,

```
Router(config)#int gig0/0
```

```
Router(config-if)#ipv6 rip RIPng enable
```

```
Router(config-if)#exit
```

```
Router(config)#int gig0/1
```

```
Router(config-if)#ipv6 rip RIPng enable
```

```
Router(config-if)#exit
```

```
Router(config)#int se0/3/0
```

```
Router(config-if)#ipv6 rip RIPng enable
```

Now check routes using

```
Router#sh ip route
```

```
Router#sh ip rip database
```

```
Router#sh ip protocols
```

```
Router#debug ip rip
```