REPORT LAB 8 :

Configuring RIP Version 2 (RIPv2) on Cisco Packet Tracer

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Objective:

To configure RIPv2 on two routers (R1 and R2) to allow communication between devices on different networks using RIPv2. The networks will be divided into two segments, connected via a serial connection between the routers, with RIP facilitating dynamic routing.

Network Topology Setup:

1. **Routers:** Cisco Router 1941 (R1 and R2)
2. **PCs:** Two PCs connected to each router (PC1 and PC2 to R1, PC3 and PC4 to R2) 3. **Connections:**
   - Serial connection between R1 (Serial0/1/0) and R2 (Serial0/1/1) using IP block 10.1.1.0/30
   - GigabitEthernet connections from R1 and R2 to their respective local networks **Step-by-Step Configuration:**

Step 1: Configure IP Addresses on Router R1

1. Assign IP address to **GigabitEthernet0/0** (R1):
   bashR1
   #config

2. R1(config)#hostname R1
3. R1(config)#interface gigabitethernet 0/0
4. R1(config-if)#ip address 192.168.5.1 255.255.255.128
5. R1(config-if)#no shutdown
6. R1(config-if)#ip address 10.1.1.1 255.255.255.252
7. R1(config-if)#no shutdown

Step 2: Configure IP Addresses on Router R2

1. Assign IP address to **GigabitEthernet0/1** (R2):
   bash R2

#config

2. R2(config)#hostname R2
3. R2(config)#interface gigabitethernet 0/1
4. R2(config-if)#ip address 192.168.5.129 255.255.255.128
5. R2(config-if)#no shutdown

6. Assign IP address to **Serial0/1/1** (R2): bash
   R2(config)#interface serial 0/1/1

7. R2(config-if)#ip address 10.1.1.2 255.255.255.252
8. R2(config-if)#no shutdown

Step 3: Test Connectivity Before RIP Configuration

- **Ping between devices on the same LAN:**
  Test the connection by pinging from PC1 (connected to R1) to PC2 (also connected to R1). This should succeed.
- **Ping between different LANs:**
  Ping from PC1 to the Serial and GigabitEthernet interfaces of R2. This will fail because no routing protocol is yet configured.

Step 4: Activate RIPv2 on Routers

1. Enable RIP and configure networks on **R1**:
   bash R1

   #config

2. R1(config)#router rip
3. R1(config-router)#version 2
4. R1(config-router)#network 10.1.1.0
5. R1(config-router)#network 192.168.5.0
6. R1(config-router)#end

7. Enable RIP and configure networks on **R2**:
   bash R2

   #config

8. R2(config)#router rip
9. R2(config-router)#version 2

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10. R2(config-router)#network 10.1.1.0
11. R2(config-router)#network 192.168.5.128
12. R2(config-router)#end
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Step 5: Test Connectivity After RIP Configuration

- **Ping Test Between Different LANs:**
  After enabling RIPv2, ping from PC1 (192.168.5.2) to PC3 (192.168.5.130). The ping should succeed, indicating that R1 and R2 are exchanging routing information through RIPv2.

Step 6: Verify RIP Configuration

1. **Check Routing Table:**
   Use the show ip route command to view the routing table on both routers. Entries should now appear for the other network.
   bash
   R1#show ip route

2. **Check Routing Protocol:**
   Use the show ip protocols command to verify RIP status on both routers.
   bash
   R1#show ip protocol

3. **Check RIP Updates:**
   Use the debug ip rip command to monitor RIP updates. bash

Observation Summary:

- **Initial Configuration:**
  IP addresses were correctly configured on the GigabitEthernet and Serial interfaces of both routers. Local LAN devices were able to communicate, but inter-LAN communication failed before RIP configuration.

- **RIPv2 Configuration:**
  RIPv2 was enabled on both routers, and appropriate network segments (192.168.5.0 and 10.1.1.0) were added to RIP routing tables. The routers exchanged routing information using multicast addresses, which allowed for inter-LAN communication.

- **Post-RIP Connectivity:**
  After configuring RIPv2, pings between devices on different networks succeeded. This showed that the routers were dynamically learning and sharing routes.

- **Verification Commands:**

The show ip route, show ip protocols, and debug ip rip commands confirmed the correct functioning of RIP and the routers' ability to share routes via RIPv2.