

Lab 7: Configuring RIP Version 1 (RIPv1) on Cisco Packet Tracer

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Objective:

To configure RIPv1 on two routers (R1 and R2) connected to separate local area networks (LANs) using switches and PCs. The goal is to enable communication between devices on LAN1 (192.168.5.0/24) and LAN2 (192.168.10.0/24) through RIPv1 routing.

Network Topology Setup:

- **Devices:**
 - 2 Routers: Cisco Router 1941 (R1 and R2)
 - 2 Switches: Cisco Switch 2960 (SW1 and SW2)
 - 4 PCs: PC1 and PC2 connected to SW1, PC3 and PC4 connected to SW2
- **Cabling:**
 - Connect the routers (R1 and R2) via a **Serial DCE-DTE cable** on Serial0/1/0 (R1) to Serial0/1/1 (R2).
 - Connect the **GigabitEthernet ports** of R1 and R2 to their respective switches (SW1 and SW2) using **straight-through cables**.
 - Connect PCs to switches:
 - PC1 and PC2 to SW1 (connected to R1)
 - PC3 and PC4 to SW2 (connected to R2)

Configuring IP Addresses on R1 and R2

Router R1:

1. **Configuring Serial0/1/0 on R1:** R1#conf t
2. **R1(config)#interface serial 0/1/0**
3. **R1(config-if)#ip address 10.1.1.1 255.255.255.0**
4. **R1(config-if)#no shutdown**
5. **Configuring GigabitEthernet 0/1 on R1:** R1#conf t
6. **R1(config)#interface gigabitethernet 0/1**

7. **R1(config-if)#ip address 192.168.5.1 255.255.255.0**
8. **R1(config-if)#no shutdown****Router R2:**
9. **Configuring Serial0/1/1 on R2: R2#conf t**
10. **R2(config)#interface serial 0/1/1**
11. **R2(config-if)#ip address 10.1.1.2 255.255.255.0**
12. **R2(config-if)#no shutdown**
13. **Configuring GigabitEthernet 0/1 on R2: R2#conf t**
14. **R2(config)#interface gigabitethernet 0/1**
15. **R2(config-if)#ip address 192.168.10.1 255.255.255.0**
16. **R2(config-if)#no shutdown**

Step 2: Testing IP Connectivity Before RIP Configuration

After assigning IP addresses to the interfaces on R1 and R2:

- **Ping from PC1 to R1's GigabitEthernet and Serial IPs** should work, as PC1 and PC2 are on the same network as Router R1.
- **Ping from PC1 to R2's interfaces** will fail at this stage, as R1 and R2 are not yet sharing routing information.

Step 3: Configuring RIP Version 1 (RIPv1) on Routers

Router R1:

1. **Enable RIP and Add Networks: R1#conf t**
2. **R1(config)#router rip**
3. **R1(config-router)#network 192.168.5.0**
4. **R1(config-router)#network 10.1.1.0**
5. **R1(config-router)#exit**
6. **R1(config)#wr**

Router R2:

1. **Enable RIP and Add Networks: R2#conf t**
2. **R2(config)#router rip**
3. **R2(config-router)#network 192.168.10.0**
4. **R2(config-router)#network 10.1.1.0**
5. **R2(config-router)#exit**
6. **R2(config)#wr**

Step 4: Verifying RIP Configuration

After configuring RIP, routers R1 and R2 should now be able to exchange routing information. The following commands help verify RIP's functionality.

1. Ping Test

- **Test the Connection:** Now, attempt to ping devices across LANs.
 - Ping from **PC1 (192.168.5.2)** to **PC3 (192.168.10.2)** and **PC4 (192.168.10.3)**.
 - If the RIP configuration is correct, the ping should succeed, indicating successful communication between LAN1 and LAN2.

2. Show Commands for RIP Verification

1. Check Routing Table with show ip route:

R1#show ip route

Explanation:

- The entry for RIPv1 will be marked with an "R."
- You should see the network **192.168.10.0/24** (LAN2) learned via RIP.

2. Check RIP Routes with show ip rip database:

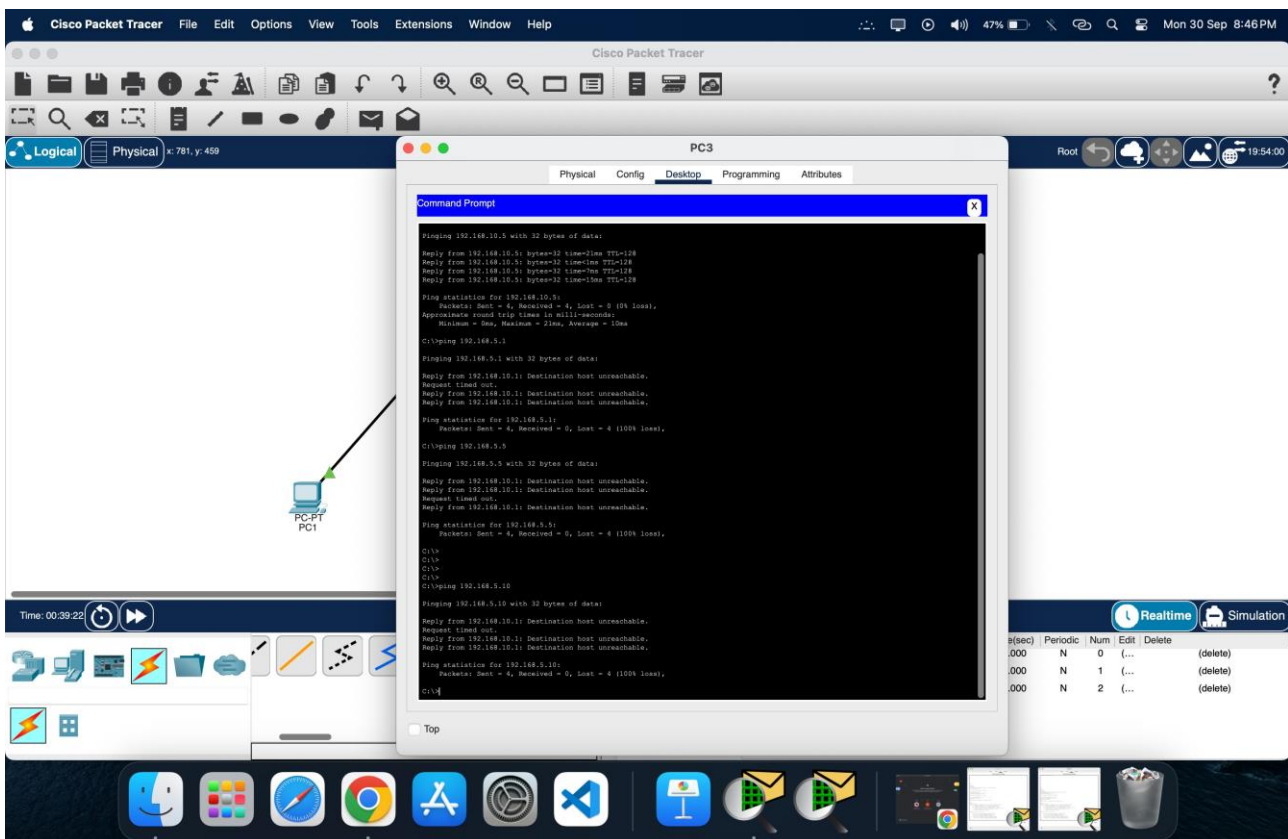
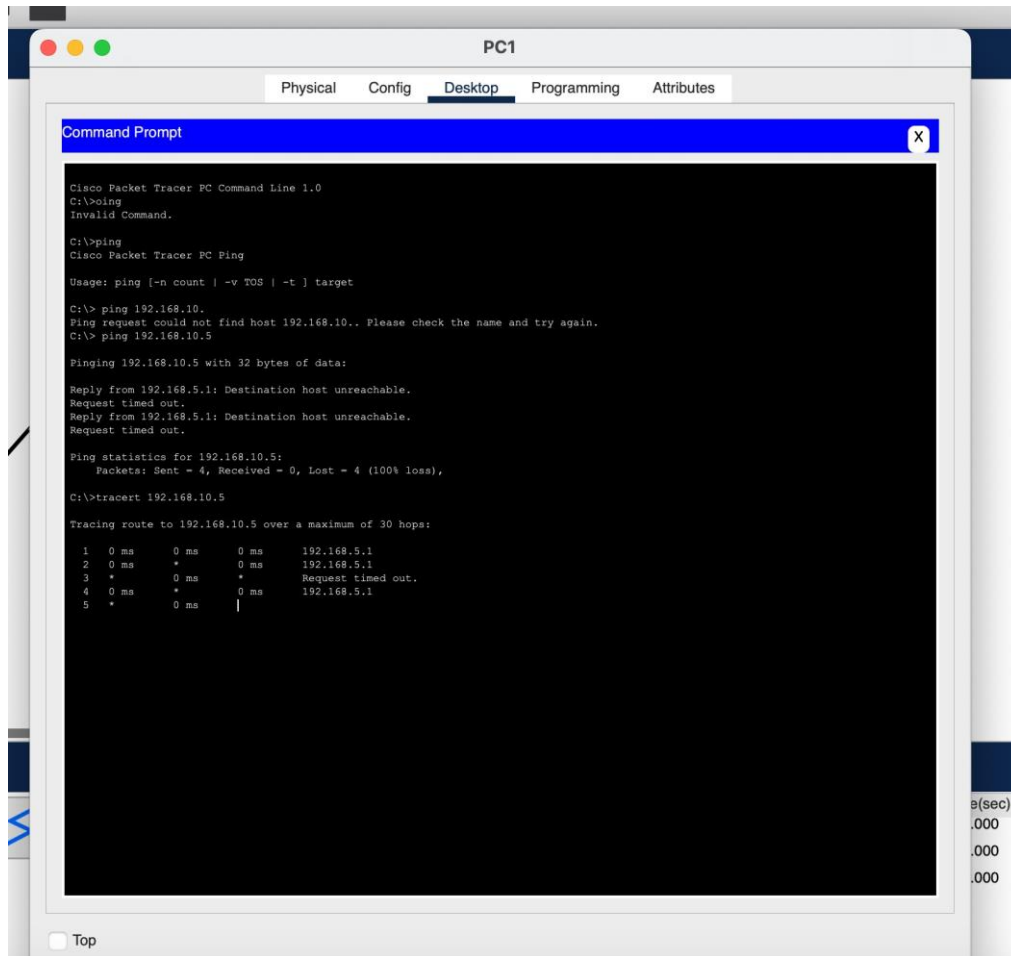
R1#show ip rip database

Explanation: This command provides detailed RIP routes, showing the learned routes via RIP.

Observation Summary:

- **IP Address Configuration:** Successfully assigned IPs to the GigabitEthernet and Serial interfaces of R1 and R2.
- **Connectivity Before RIP:** Pings between PCs on the same LAN worked, but inter-LAN communication (PC1 to PC3) failed as routing was not yet enabled.
- **RIP Configuration:** After enabling RIPv1 on both routers and adding the respective networks (192.168.5.0, 192.168.10.0, and 10.1.1.0), the routers began exchanging routing information.
- **Connectivity After RIP:** Once RIP was configured, inter-LAN pings succeeded, demonstrating that the routers shared their routes correctly.
- **Verification:** The show ip route, show ip protocols, and show running-config commands confirmed that RIP was functioning properly, with routes being dynamically learned via RIPv1.

Screenshots :



Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Cisco Packet Tracer

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Logical Physical

x: 438, y: 349

Root

20:27:00

```
graph TD; R0[Router0] --- S0[2950-24TT Switch]; R1[Router1] --- S1[2950-24TT Switch]; S0 --- PC1[PC-PT PC1]; S0 --- PC2[PC-PT PC2]; S1 --- PC3[PC-PT PC3]; S1 --- PC4[PC-PT PC4]; R0 --- R1
```

Time: 00:40:27

Realtime Simulation

Scenario 0

New Delete

Toggle PDU List Window

| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit | Delete |
|------|-------------|--------|-------------|-------|-------|-----------|----------|-----|-------|----------|
| | Successful | PC1 | Router0 | IC... | | 0.000 | N | 0 | (...) | (delete) |
| | Successful | PC3 | Router1 | IC... | | 0.000 | N | 1 | (...) | (delete) |
| | Failed | PC1 | Router1 | IC... | | 0.000 | N | 2 | (...) | (delete) |

Serial DCE