Practical 6: To configure and demonstrate RIP (Routing Information Protocol) in Cisco Packet Tracer.

Objectives

1. To understand the concept of dynamic routing using RIP.
2. To configure RIP on routers to enable communication between multiple, non-directly connected networks.
3. To verify and troubleshoot network connectivity using essential networking commands such as `ping`, `tracert`, and `show ip route`.
4. To observe RIP updates exchanged between routers before convergence.

Lab Task

1. Build the Network Topology As shown below

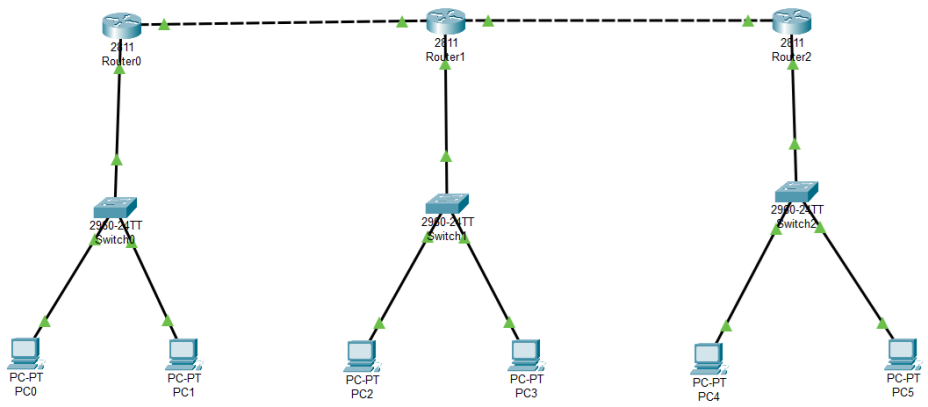

Figure 1: Network Topology

2. Configure All Devices

- **PC Configuration:** Assign a static IP address, subnet mask, and default gateway to each PC.
- **Router Configuration:**
  - Configure interfaces with the specified IP addresses and subnet masks.
  - Configure RIP (version 2) on all routers.

3. Verify and Test Connectivity

- **View Routing Tables:** On each router, use the `show ip route` command to confirm that RIP-learned routes (indicated with `R`) are present and correct.
- **Ping Test:** From a PC in one LAN, use the `ping` command to test connectivity to PCs and router interfaces in other networks. Perform at least two ping tests from one PC to PCs in two other networks.

- **Traceroute Test:** Use the `tracert` command from a PC to trace the path of packets to a destination in a different network. The output should show the sequence of hops through intermediate routers.

4. Observe RIP Updates

- Run **Simulation** mode in Packet Tracer.
- In the Event List, filter/select **RIP**.
- Observe RIP update packets exchanged between routers until all routes are learned (convergence).

Report Submission Requirements

Your report must include the following sections.

1. Network Topology Diagram

- Provide a clear screenshot of the network diagram created in Packet Tracer.

2. Configuration of All Devices

- **PC Configurations:** Provide screenshots of the `IP Configuration` window for all PCs, showing the assigned IP address, subnet mask, and default gateway.
- **Router Configurations:** Provide the CLI configuration output for each router (Router0, Router1, and Router2). The configurations should show interface settings and RIP configuration.

3. Routing Tables

- Provide screenshots of the `show ip route` command output for each of the three routers, showing entries learned via RIP (marked `R`).

4. Connectivity Testing

- **Ping Results:** Provide screenshots of successful `ping` commands from one PC to at least two different destinations in different networks.
- **Traceroute Results:** Provide a screenshot of the `tracert` command output from a PC in one network to a PC in another; the output must show the sequence of hops through the intermediate routers.

5. RIP Updates Observation

- Provide a screenshot from Simulation mode showing RIP update packets exchanged during convergence.