Practical: Configuring RIP Version 1

Objective

To configure and verify the functioning of RIP Version 1 in a network environment using a simulator like Cisco Packet Tracer.

Theory

- **Routing Information Protocol (RIP)** is a distance-vector routing protocol.
- **RIP Version 1 (RIPv1)** is a classful protocol (does not support subnet masks or VLSM).
- Broadcasts routing updates every 30 seconds.
- Maximum hop count: 15 (infinite = 16).

Topology

Devices:

- 3 Routers (Router1, Router2, Router3)
- 3 PCs (PC1, PC2, PC3)
- Connections: Routers interconnected; PCs connected to routers.

```
PC1 --- Router1 --- Router2 --- Router3 --- PC2
           |                     |
           PC3                  PC4
```

IP Addressing

Device	Interface	IP Address	Subnet Mask
PC1	FastEthernet0	192.168.1.2	255.255.255.0
Router1	FastEthernet0/0	192.168.1.1	255.255.255.0
Router1	Serial0/0/0	10.0.0.1	255.0.0.0
Router2	Serial0/0/0	10.0.0.2	255.0.0.0
Router2	Serial0/0/1	11.0.0.1	255.0.0.0
Router3	Serial0/0/1	11.0.0.2	255.0.0.0
PC2	FastEthernet0	192.168.2.2	255.255.255.0
Router3	FastEthernet0/0	192.168.2.1	255.255.255.0

Steps to Configure RIP Version 1

Step 1: Configure IP Addresses

1. Assign IP addresses to PCs and router interfaces using the IP addressing table.
2. Test basic connectivity using the `ping` command.

Step 2: Enable RIP on Routers

1. Access the router CLI and go to global configuration mode:

```
Router> enable
Router# configure terminal
```

2. Enable RIP:

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

3. Advertise directly connected networks (classful addresses only):
   - On Router1:

```
Router(config-router)# network 192.168.1.0
Router(config-router)# network 10.0.0.0
```

   - On Router2:

```
Router(config-router)# network 10.0.0.0
Router(config-router)# network 11.0.0.0
```

   - On Router3:

```
Router(config-router)# network 11.0.0.0
Router(config-router)# network 192.168.2.0
```

4. Exit configuration:

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

Step 3: Verify Configuration

1. Check the routing table on each router:

```
Router# show ip route
```

2. Test end-to-end connectivity (e.g., PC1 to PC2).

Result

- The routers dynamically learn and share routes using RIPv1.
- PCs successfully communicate across the network.

Conclusion

RIP Version 1 simplifies routing in small networks by automatically sharing routing information. However, its classful nature and hop-count limitation make it less suitable for modern networks.