# Dynamic Routing – RIP Protocol

**Lab Objectives**

* Understand and implement RIP v1/v2 dynamic routing.
* Configure RIP on Cisco routers using Cisco CLI.
* Verify RIP routing tables and path selection.
* Test connectivity across multiple networks.

**Network Topology**

A diagram of a computer network

AI-generated content may be incorrect.

**IP Addressing Plan**

| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Network** |
| --- | --- | --- | --- | --- |
| R1 | F0/0 | 192.168.1.1 | 255.255.255.0 | 192.168.1.0 |
| R1 | F0/1 | 10.0.0.1 | 255.255.255.252 | 10.0.0.0 |
| R2 | F0/0 | 10.0.0.2 | 255.255.255.252 | 10.0.0.0 |
| R2 | F0/1 | 10.0.0.5 | 255.255.255.252 | 10.0.0.4 |
| R3 | F0/0 | 10.0.0.6 | 255.255.255.252 | 10.0.0.4 |
| R3 | F0/1 | 192.168.3.1 | 255.255.255.0 | 192.168.3.0 |

**Router Configuration (CLI)**

**R1 Configuration**

R1> enable

R1# configure terminal

R1(config)# hostname R1

R1(config)# interface F0/0

R1(config-if)# ip address 192.168.1.1 255.255.255.0

R1(config-if)# no shutdown

R1(config)# interface F0/1

R1(config-if)# ip address 10.0.0.1 255.255.255.252

R1(config-if)# no shutdown

R1(config)# router rip

R1(config-router)# version 2

R1(config-router)# no auto-summary

R1(config-router)# network 192.168.1.0

R1(config-router)# network 10.0.0.0

**R2 Configuration**

R2> enable

R2# configure terminal

R2(config)# hostname R2

R2(config)# interface F0/0

R2(config-if)# ip address 10.0.0.2 255.255.255.252

R2(config-if)# no shutdown

R2(config)# interface F0/1

R2(config-if)# ip address 10.0.0.5 255.255.255.252

R2(config-if)# no shutdown

R2(config)# router rip

R2(config-router)# version 2

R2(config-router)# no auto-summary

R2(config-router)# network 10.0.0.0

**R3 Configuration**

R3> enable

R3# configure terminal

R3(config)# hostname R3

R3(config)# interface F0/1

R3(config-if)# ip address 192.168.3.1 255.255.255.0

R3(config-if)# no shutdown

R3(config)# interface F0/0

R3(config-if)# ip address 10.0.0.6 255.255.255.252

R3(config-if)# no shutdown

R3(config)# router rip

R3(config-router)# version 2

R3(config-router)# no auto-summary

R3(config-router)# network 192.168.3.0

R3(config-router)# network 10.0.0.0

**Verification Commands**

Run these on each router:

show ip route

show ip protocols

show running-config

ping <neighbor IP>

Example:

R1# show ip route

R2# ping 192.168.3.1

**Troubleshooting Tips**

* Use show ip interface brief to check interface status (up/up).
* Verify RIP version 2 is enabled.
* Check correct network statements under router rip.
* Ensure subnet masks match on all links.

**Notes**

* RIP v1 does not support CIDR; always use RIP v2.
* RIP supports max 15 hops – not ideal for large networks.
* RIP sends updates every 30 seconds (distance-vector).