# Dynamic Routing EIGRP Protocol

**🎯 Objective:**

Set up and verify **EIGRP** on a 3-router topology so that all routers can dynamically learn about remote networks using EIGRP AS 100.

**🖧 Network Topology:**

A diagram of a diagram

AI-generated content may be incorrect.

**📋 IP Addressing Table:**

| **Router** | **Interface** | **IP Address** | **Subnet Mask** | **Connected Network** |
| --- | --- | --- | --- | --- |
| R1 | F0/0 | 192.168.12.1 | 255.255.255.0 | 192.168.12.0/24 |
| R2 | F0/0 | 192.168.12.2 | 255.255.255.0 | 192.168.12.0/24 |
| R2 | F0/1 | 192.168.23.1 | 255.255.255.0 | 192.168.23.0/24 |
| R3 | F0/1 | 192.168.23.2 | 255.255.255.0 | 192.168.23.0/24 |

**🔧 Router Configuration**

**🔹 CLI on Router1 (R1):**

R1> enable

R1# configure terminal

R1(config)# interface F0/0

R1(config-if)# ip address 192.168.12.1 255.255.255.0

R1(config-if)# no shutdown

R1(config-if)# exit

R1(config)# router eigrp 100

R1(config-router)# network 192.168.12.0 0.0.0.255

R1(config-router)# no auto-summary

R1(config-router)# exit

R1(config)# exit

R1# write memory

**🔹 CLI on Router2 (R2):**

R2> enable

R2# configure terminal

R2(config)# interface F0/0

R2(config-if)# ip address 192.168.12.2 255.255.255.0

R2(config-if)# no shutdown

R2(config-if)# exit

R2(config)# interface F0/1

R2(config-if)# ip address 192.168.23.1 255.255.255.0

R2(config-if)# no shutdown

R2(config-if)# exit

R2(config)# router eigrp 100

R2(config-router)# network 192.168.12.0 0.0.0.255

R2(config-router)# network 192.168.23.0 0.0.0.255

R2(config-router)# no auto-summary

R2(config-router)# exit

R2(config)# exit

R2# write memory

**🔹 CLI on Router3 (R3):**

R3> enable

R3# configure terminal

R3(config)# interface F0/1

R3(config-if)# ip address 192.168.23.2 255.255.255.0

R3(config-if)# no shutdown

R3(config-if)# exit

R3(config)# router eigrp 100

R3(config-router)# network 192.168.23.0 0.0.0.255

R3(config-router)# no auto-summary

R3(config-router)# exit

R3(config)# exit

R3# write memory

**🔎 Verification Commands & Sample Output**

**✅ 1. Check EIGRP Neighbors**

R2# show ip eigrp neighbors

**Sample Output:**

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

0 192.168.12.1 F0/0 14 00:06:08 40 1000 0 4

1 192.168.23.2 F0/1 10 00:03:56 50 1200 0 7

**✅ 2. Check Routing Table**

R1# show ip route

**Sample Output:**

D 192.168.23.0/24 [90/30720] via 192.168.12.2, 00:04:50, FastEthernet0/0

C 192.168.12.0/24 is directly connected, FastEthernet0/0

**✅ 3. Check EIGRP Protocol Info**

R3# show ip protocols

**Sample Output:**

Routing Protocol is "eigrp 100 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 100

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

192.168.23.0

Routing Information Sources:

Gateway Distance Last Update

192.168.23.1 90 665483

Distance: internal 90 external 170

**🛠️ Troubleshooting Tips**

|  |  |  |
| --- | --- | --- |
| Problem | Possible Cause | Solution |
| No neighbor adjacency | Wrong AS number | Make sure all routers use the same EIGRP AS (e.g., 100) |
| No routes learned | Incorrect network command | Double-check IP ranges and wildcard masks |
| Interfaces down | Interface shutdown | Use no shutdown on interfaces |
| No EIGRP routes | Auto-summary issues | Always use no auto-summary |
| Routing loop | Overlapping networks | Ensure subnets do not overlap and masks are accurate |