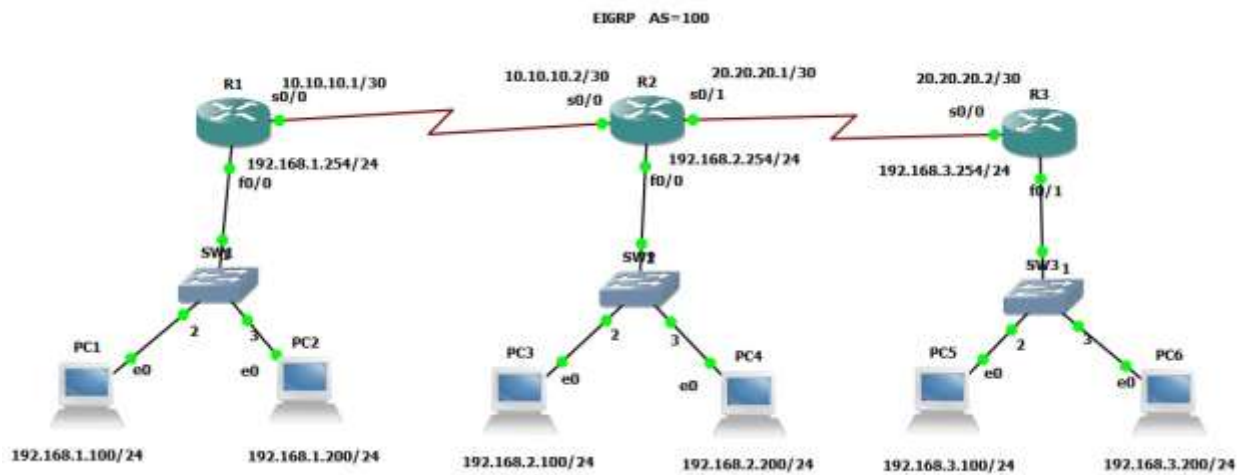




Lab 1 – Basic EIGRP Configuration



Task 1

Configure EIGRP on 3 routers in AS 100. Disable Auto-summary.

Router R1

```
R1(config)#router eigrp 100
```

```
R1(config-router)#no auto-summary
```

```
R1(config-router)#network 192.168.1.0
```

```
R1(config-router)#network 10.0.0.0
```

Router R2

```
R2(config)#router eigrp 100
```

```
R2(config-router)#no auto-summary
```

```
R2(config-router)#network 10.0.0.0
```

```
R2(config-router)#network 20.0.0.0
```

```
R2(config-router)#network 192.168.2.0
```

Router R3

```
R3(config)#router eigrp 100
```

```
R3(config-router)#no auto-summary
```

```
R3(config-router)#network 20.0.0.0
```

```
R3(config-router)#network 192.168.3.0
```

```
R1#show ip route
```

```
20.0.0.0/30 is subnetted, 1 subnets
```

```
D 20.20.20.0 [90/6023936] via 10.10.10.2, 00:12:07, Serial0/0
```

```
10.0.0.0/30 is subnetted, 1 subnets
```

```
C 10.10.10.0 is directly connected, Serial0/0
```

```
C 192.168.1.0/24 is directly connected, FastEthernet0/0
```

```
D 192.168.2.0/24 [90/5537536] via 10.10.10.2, 00:12:00, Serial0/0
```

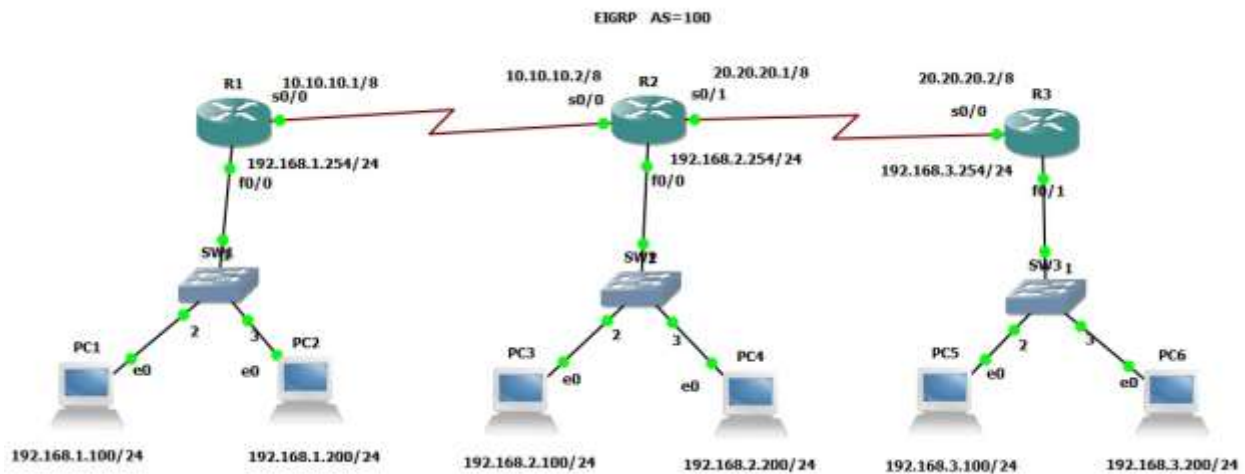
```
D 192.168.3.0/24 [90/6049536] via 10.10.10.2, 00:06:01, Serial0/0
```

```
R2#show ip eigrp neighbors
```

```
IP-EIGRP neighbors for process 100
```

H	Address	Interface	Hold Uptime (sec)	SRTT (ms)	RTO	Q Cnt	Seq Num
1	20.20.20.2	Se0/1	11 00:07:25	1026	5000	0	5
0	10.10.10.1	Se0/0	11 00:13:23	21	200	0	3

Lab 2 - Configuring ip default-network Command



Task 1

Configure EIGRP. Do not advertise network 192.168.3.0 in EIGRP process. Use the Ip default-network command to accomplish this task. Also disable auto-summary.

Router R2

```
R2(config)#ip default-network 20.0.0.0
```

```
R2(config)#ip route 192.168.3.0 255.255.255.0 20.20.20.2
```

Router R3

```
R3(config)#router eigrp 100
```

```
R3(config-router)#no auto-summary
```

```
R3(config-router)#network 20.0.0.0
```

Gateway of last resort is 10.10.10.2 to network 20.0.0.0

```
D* 20.0.0.0/8 [90/6023936] via 10.10.10.2, 00:11:32, Serial0/0
```

```
C 10.0.0.0/8 is directly connected, Serial0/0
```

```
C 192.168.1.0/24 is directly connected, FastEthernet0/0
```

```
D 192.168.2.0/24 [90/5537536] via 10.10.10.2, 00:11:45, Serial0/0
```

```
R1#ping 192.168.3.254
```

!!!!

Lab 3 - EIGRP-Passive interface

(Network Diagram Based On Lab 2)

Task 1

Configure EIGRP. Use the passive-interface command to accomplish this task. Configure passive-interface on Router R1

```
R1#debug eigrp packets
EIGRP Packets debugging is on
  (UPDATE, REQUEST, QUERY, REPLY, HELLO, IPXSAP, PROBE, ACK, STUB,
  SIAQUERY, SIAREPLY)
R1#
*Mar 1 00:27:00.527: EIGRP: Received HELLO on Serial0/0 nbr 10.10.10.2
*Mar 1 00:27:00.531: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/0
R1#
*Mar 1 00:27:03.791: EIGRP: Sending HELLO on Serial0/0
*Mar 1 00:27:03.791: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0
*Mar 1 00:27:04.311: EIGRP: Sending HELLO on FastEthernet0/0
*Mar 1 00:27:04.311: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0
R1#
*Mar 1 00:27:05.227: EIGRP: Received HELLO on Serial0/0 nbr 10.10.10.2
*Mar 1 00:27:05.231: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/0
```

```
R1(config)#router eigrp 100
```

```
R1(config-router)#passive-interface f0/0
```

```
R1(config-router)#passive-interface s0/0
```

```
R1#show ip route
```

```
C 10.0.0.0/8 is directly connected, Serial0/0
```

```
C 192.168.1.0/24 is directly connected, FastEthernet0/0
```

```
R1(config)#router eigrp 100
```

```
R1(config-router)#no passive-interface f0/0
```

```
R1(config-router)#no passive-interface s0/0
```

```
R1(config)#router eigrp 100
```

```
R1(config-router)#passive-interface default
```

```
R1(config-router)#no passive-interface s0/0
```

```
R1#debug eigrp packets
```

```
EIGRP Packets debugging is on
```

```
(UPDATE, REQUEST, QUERY, REPLY, HELLO, IPXSAP, PROBE, ACK, STUB, SIAQUERY, SIAREPLY)
```

```
R1#
```

```
*Mar 1 01:26:03.119: EIGRP: Received HELLO on Serial0/0 nbr 10.10.10.2
```

```
*Mar 1 01:26:03.123: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/0
```

```
*Mar 1 01:26:04.819: EIGRP: Sending HELLO on Serial0/0
```

```
*Mar 1 01:26:04.819: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0
```

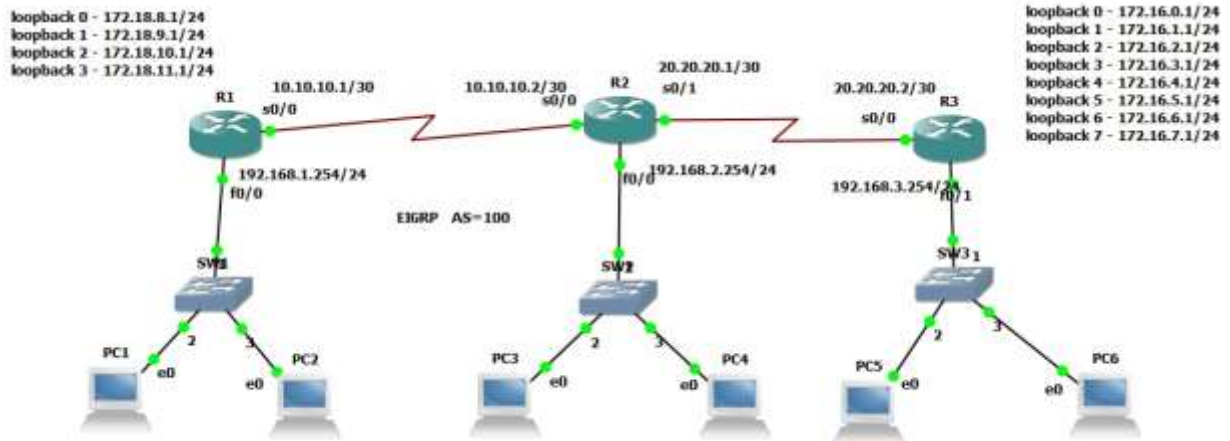
```
*Mar 1 01:26:07.667: EIGRP: Received HELLO on Serial0/0 nbr 10.10.10.2
```

```
*Mar 1 01:26:07.667: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/0
```

```
*Mar 1 01:26:09.591: EIGRP: Sending HELLO on Serial0/0
```

```
*Mar 1 01:26:09.591: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iibQ un/rely 0/0
```

Lab 4 - EIGRP-Summary-address



Task 1

Configure the following Loopback Interfaces on Router R1 and advertise them under EIGRP:

Loopback 0 : 172.18.8.1/24
Loopback 1 : 172.18.9.1/24
Loopback 2 : 172.18.10.1/24
Loopback 3 : 172.18.11.1/24

Configure the following Loopback Interfaces on Router R3 and advertise them under EIGRP:

Loopback 0 : 172.16.0.1/24
Loopback 1 : 172.16.1.1/24
Loopback 2 : 172.16.2.1/24
Loopback 3 : 172.16.3.1/24
Loopback 4 : 172.16.4.1/24
Loopback 5 : 172.16.5.1/24
Loopback 6 : 172.16.6.1/24
Loopback 7 : 172.16.7.1/24

Router R1

```
R1(config)#interface loopback 0  
R1(config-if)#ip address 172.18.8.1 255.255.255.0  
R1(config)#interface loopback 1  
R1(config-if)#ip address 172.18.9.1 255.255.255.0
```

```
R1(config)#interface loopback 2
R1(config-if)#ip address 172.18.10.1 255.255.255.0
R1(config)#interface loopback 3
R1(config-if)#ip address 172.18.11.1 255.255.255.0
```

Router R3

```
R3(config)#interface loopback 0
R3(config-if)#ip address 172.16.0.1 255.255.255.0
R3(config)#interface loopback 1
R3(config-if)#ip address 172.16.1.1 255.255.255.0
R3(config)#interface loopback 2
R3(config-if)#ip address 172.16.2.1 255.255.255.0
R3(config)#interface loopback 3
R3(config-if)#ip address 172.16.3.1 255.255.255.0
```

```
R2#show ip route eigrp
```

```
172.16.0.0/24 is subnetted, 8 subnets
```

```
D 172.16.4.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.5.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.6.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.7.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.0.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.1.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.2.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
D 172.16.3.0 [90/2297856] via 20.20.20.2, 00:00:12, Serial0/1
```

172.18.0.0/16 is variably subnetted, 5 subnets, 2 masks

- D 172.18.10.0/24 [90/2297856] via 10.10.10.1, 00:30:58, Serial0/0
- D 172.18.11.0/24 [90/2297856] via 10.10.10.1, 00:30:58, Serial0/0
- D 172.18.8.0/24 [90/2297856] via 10.10.10.1, 00:30:58, Serial0/0
- D 172.18.8.0/22 is a summary, 00:30:58, Null0
- D 172.18.9.0/24 [90/2297856] via 10.10.10.1, 00:30:58, Serial0/0
- D 192.168.1.0/24 [90/2195456] via 10.10.10.1, 00:30:58, Serial0/0
- D 192.168.3.0/24 [90/2195456] via 20.20.20.2, 00:30:58, Serial0/1

Task 2

Configure EIGRP and route summarization on Router R3 and Router R1 so that only one summary route is advertised to Router

```
R3(config)#interface s0/0
```

```
R3(config-if)#ip summary-address eigrp 100 172.16.0.0 255.255.248.0
```

```
R1(config)#interface s0/0
```

```
R1(config-if)#ip summary-address eigrp 100 172.18.8.0 255.255.252.0
```

```
R2#show ip route eigrp
```

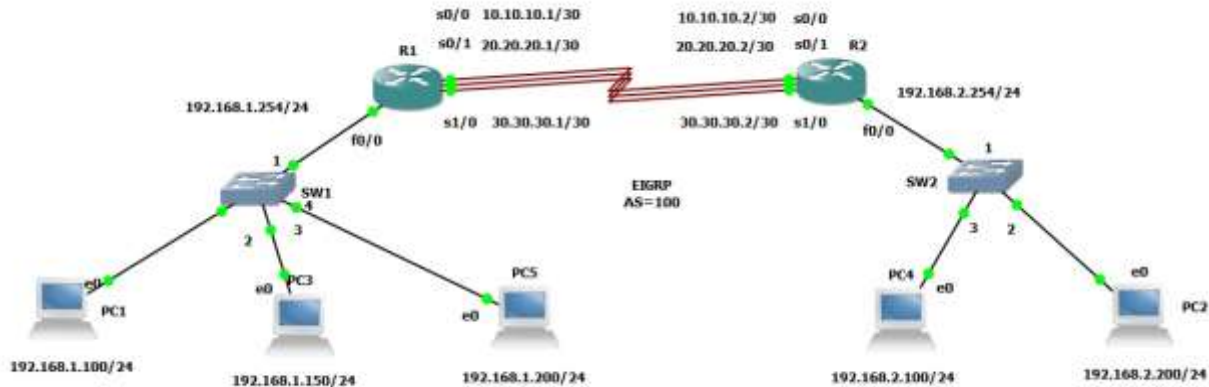
172.16.0.0/21 is subnetted, 1 subnets

- D 172.16.0.0 [90/2297856] via 20.20.20.2, 00:05:22, Serial0/1

172.18.0.0/22 is subnetted, 1 subnets

- D 172.18.8.0 [90/2297856] via 10.10.10.1, 00:01:06, Serial0/0
- D 192.168.1.0/24 [90/2195456] via 10.10.10.1, 00:39:26, Serial0/0
- D 192.168.3.0/24 [90/2195456] via 20.20.20.2, 00:39:25, Serial0/1

Lab 5 - EIGRP-Unequal Cost Path Load Balancing (Variance)



Task 1

Configure EIGRP and make the links unequal cost paths using the bandwidth command in interface mode and verify load balancing. Use the variance command to gain load balancing

```
R1#show ip route eigrp
```

```
D 192.168.2.0/24 [90/2195456] via 30.30.30.2, 00:01:53, Serial1/0
    [90/2195456] via 20.20.20.2, 00:01:53, Serial0/1
    [90/2195456] via 10.10.10.2, 00:01:53, Serial0/0
```

```
R1(config)#interface s0/1
```

```
R1(config-if)#bandwidth 800
```

```
R1(config-if)#exit
```

```
R1(config)#interface s1/0
```

```
R1(config-if)#bandwidth 1024
```

```
R1#show ip eigrp topology
```

```
IP-EIGRP Topology Table for AS(100)/ID(192.168.1.254)
```

```
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
```

```
       r - reply Status, s - sia Status
```

```
P 192.168.2.0/24, 1 successors, FD is 2172416
```

```
   via 10.10.10.2 (2195456/281600), Serial0/0
```

```
   via 30.30.30.2 (3037440/281600), Serial1/0
```

```
   via 20.20.20.2 (3737600/281600), Serial0/1
```

```
R1#show ip route eigrp
```

```
D 192.168.2.0/24 [90/2195456] via 10.10.10.2, 00:02:32, Serial0/0
```

```
R1(config)#router eigrp 100
```

```
R1(config-router)#variance 2
```

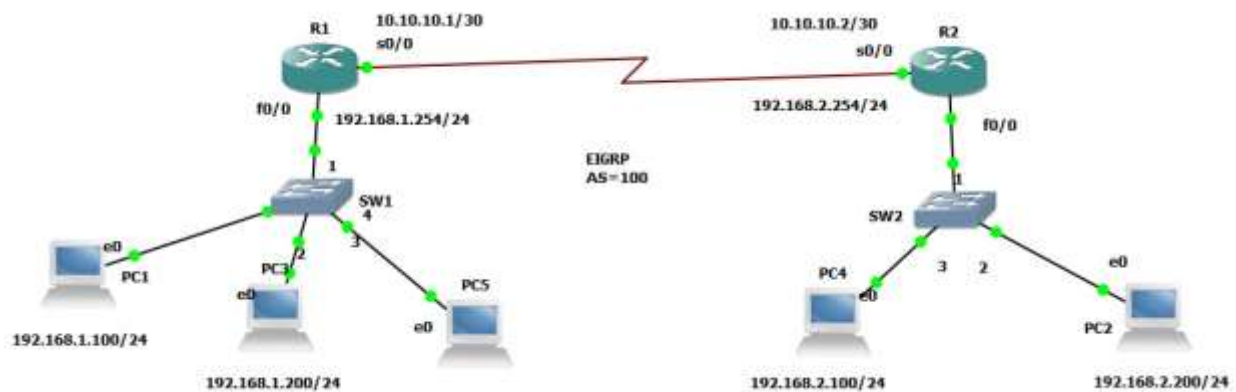
```
R1#show ip route eigrp
```

```
D 192.168.2.0/24 [90/3037440] via 30.30.30.2, 00:00:32, Serial1/0
```

```
          [90/3737600] via 20.20.20.2, 00:00:32, Serial0/1
```

```
          [90/2195456] via 10.10.10.2, 00:00:32, Serial0/0
```

Lab 6 - EIGRP-Authentication



Task 1

Configure MD5 authentication for the links. Use Jodoi1234 as the key-string with a key-id of 1.

```
R1(config)#interface s0/0
R1(config-if)#ip authentication mode eigrp 100 md5
R1(config-if)#ip authentication key-chain eigrp 100 jodoi-chain1
```

```
R1(config)#key chain jodoi-chain1
```

```
R1(config-keychain)#key 1
```

```
R1(config-keychain-key)#key-string Jodoi1234
```

```
R1#debug eigrp packets
```

EIGRP Packets debugging is on

(UPDATE, REQUEST, QUERY, REPLY, HELLO, IPXSAP, PROBE, ACK, STUB, SIAQUERY, SIAREPLY)

```
R1#
```

```
*Mar 1 00:31:46.531: EIGRP: Sending HELLO on FastEthernet0/0
```

```
*Mar 1 00:31:46.531: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iidbQ un/rely 0/0
```

```
*Mar 1 00:31:47.335: EIGRP: pkt key id = 1, authentication mismatch
```

```
*Mar 1 00:31:47.335: EIGRP: Serial0/0: ignored packet from 10.10.10.2, opcode = 5 (invalid authentication)
```

```
*Mar 1 00:31:48.995: EIGRP: Sending HELLO on Serial0/0
*Mar 1 00:31:48.995: AS 100, Flags 0x0, Seq 0/0 idbQ 0/0 iidbQ un/rely 0/0
```

```
R2(config)#interface s0/0
R2(config-if)#ip authentication mode eigrp 100 md5
R2(config-if)#ip authentication key-chain eigrp 100 jodoi-chain2
```

```
R2(config)#key chain jodoi-chain2
R2(config-keychain)#key 1
R2(config-keychain-key)#key-string Jodoi1234
```

```
R1#show ip route eigrp
D 192.168.2.0/24 [90/2195456] via 10.10.10.2, 00:00:59, Serial0/0
```

```
R1#show ip eigrp neighbors
```

```
IP-EIGRP neighbors for process 100
```

H	Address	Interface	Hold Uptime	SRTT	RTO	Q	Seq
			(sec)	(ms)			Cnt Num
0	10.10.10.2	Se0/0	14 00:02:00	29	200	0	14



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