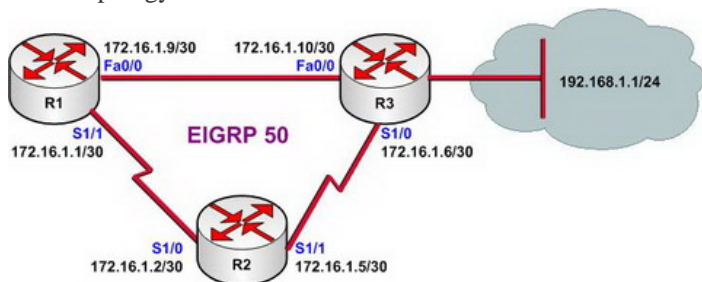


EIGRP Lab4 - Configuring EIGRP Unequal-Cost Paths

?Lab objectives?

1. Learn balance conditions of EIGRP unequal-cost
2. Learn how to change EIGRP metric value
3. Learn EIGRP AD, FD, FC, Successor, and FS

?Lab Topology?



?Lab steps?

1. Configure IP addresses of every router, and use ping command to confirm the direct interface connectivity of every router.
2. Configure on three routers EIGRP auto system number as 50
3. Observe the route for R1 to access 192.168.1.0/24 network of R3

R1#show ip route

```
172.16.0.0/30 is subnetted, 3 subnets
C 172.16.1.8 is directly connected, FastEthernet0/0
D 172.16.1.4 [90/2172416] via 172.16.1.10, 00:00:11, FastEthernet0/0
C 172.16.1.0 is directly connected, Serial1/1
D 192.168.1.0/24 [90/156160] via 172.16.1.10, 00:00:11, FastEthernet0/0
R1#
```

4. To improve network transmission, we have to use route with the next hop of 172.16.1.2, i.e. use another path with different metric value to balance load.
5. If another path is needed, we have to make sure that R1 becomes the feasible successor (FS) for R1 to access 192.168.1.0/24 network. To become FS, Feasible condition (FC) are required.
6. Check EIGRP topology on R1; R2 cannot be found in R1 topology.

```
R1#show ip eigrp 50 topology
???
```

P 192.168.1.0/24, 1 successors, FD is 156160
via 172.16.1.10 (156160/128256), FastEthernet0/0

```
P 172.16.1.8/30, 1 successors, FD is 28160
via Connected, FastEthernet0/0
???
```

7. Check the complete topology

```
R1#show ip eigrp 50 topology all-links
???
```

P 192.168.1.0/24, 1 successors, FD is 156160, serno 6
via 172.16.1.10 (156160/128256), FastEthernet0/0
via 172.16.1.2 (2809856/2297856), Serial1/1
???

8. Confirm FC (feasible condition) formula:

AD of secondary-best route < FD of best route (Successor) = Feasible Successor

From this instance we get this conclusion:

The Distance that R2 access 192.168.1.0 network < 156160

9. Configure EIGRP metric of R2, and make sure that R2 become FS of R1

```
R2#configure terminal
R2(config)#interface serial 1/1
R2(config-if)#bandwidth 10000000
R2(config-if)#delay 10
R2(config)#exit
```

10. Check R1 topology:

```
R1#show ip eigrp topology all-links
```

???
P 192.168.1.0/24, 1 successors, FD is 156160, serno 6
via 172.16.1.10 (156160/128256), FastEthernet0/0
via 172.16.1.2 (2300416/130816), Serial1/1
???

11. With the following formula, configure variance value of R1 EIGRP
FD of FS route < FD of best route (Successor) * Variance

With the formula we get:

$2300416 < 156160 * x$

$x > 14.73$

12. First configure the variance value as 14, then test and observe the routing table.

```
R1(config)#router eigrp 50
R1(config-router)#variance 14
R1(config-router)#exit
R1(config)#exit
R1#clear ip router *
R1#show ip route
???
```

C 172.16.1.0 is directly connected, Serial1/1
D 192.168.1.0/24 [90/156160] via 172.16.1.10, 00:00:00, FastEthernet0/0
???

R1#

13. Change the variance value to 15 and observe the routing table.

```
R1(config)#router eigrp 50
R1(config-router)#variance 15
R1(config-router)#exit
R1(config)#exit
R1#clear ip router *
R1#show ip route
???
```

C 172.16.1.0 is directly connected, Serial1/1
D 192.168.1.0/24 [90/156160] via 172.16.1.10, 00:00:01, FastEthernet0/0
[90/2300416] via 172.16.1.2, 00:00:01, Serial1/1
R1#

14. Lab finishe.

Hope to helpful for you!