# 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:

R1(config)#router eigrp 50

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)#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#

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14. Lab finishe.
Hope to helpful for you!