Lab 10 Two Way Distribution Between OSPF and EIGRP

**Objective**

In this lab, you will learn how to perform two-way redistribution between OSPF and EIGRP.

**Equipment**

Four Cisco Routers with the interfaces configured as shown above. EIGRP configured on Router1 and Router2 to advertise network 10.0.0.0 in autonomous system 65000

OSPF configured on Router 3 and Router 4 to advertise all interfaces with addresses in 10.0.0.0/8. Make sure no access lists are applied.

**Background**

Two-way distribution increases the odds of a routing loop or another problem. It is possible for one routing domain to learn a route from another routing domain, and then redistribute it back to the routing domain that originally advertised it. As redistribution removes the metric and other information used by the protocol to avoid routing loops, a routing domain might use the redistributed route instead of its own route. A routing loop may result.

One technique used to minimize the potential for routing loops is to set a high seed metric. A seed metric is the default metric given to redistributed routes. Redistributed
routes with high metrics are not chosen over the original routes if redistributed back into a original routing protocol.

You can configure a default metric with either the **default metric** command or the **metric** keyword to the **redistribute** command. The **default-metric** command sets a default metric for all redistributed routes. The **metric** keyword to the **redistribute** command on the other hand, allows you to set a different default metric for multiple redistributed protocols.

Filtering routes is another technique used to prevent routing loops. By filtering the routes you redistribute form one routing protocol to the other, you can both tightly control the routes redistributed, and prevent routes from being reintroduced back into the rouging domain when they originated.

When redistributing OSPF routes into another protocol, you have the option of selecting the type of routes to redistribute. You can match internal routes or external routes. This is configured with the **match internal** or **match external** keywords for the redistribute command. You can also match external type 1 or external type 2 routers with the **match external 1** or **match external 2** keywords. The default is to match all OSPF routes.

**Activity**

On Router 1 enter global configuration mode and type:

```
Router1(config)#access-list 1 permit 10.10.4.0 0.0.0.3
Router1(config)#access-list 1 permit 10.10.200.0 0.0.1.255
```

Now you will configure an access list to filter the routes redistributed into OSPF. Enter:

```
Router1(config)#access-list 2 permit 10.10.1.0 0.0.0.255
Router1(config)#access-list 2 permit 10.10.100.0 0.0.1.255
Router1(config)#router eigrp 65000
Router1(config-router)# redistribute ospf 1 match internal
```

This redistributes routes from OSPF process 1 into EIGRP, matching only internal OSPF routes.

```
Router1(config-router)#default-metric 64 100 100 100 1500
```

This sets the default metric for routes redistributed into EIGRP

```
Router1(config-router)#distribute-list 1 out ospf 1
```

This applies access list 1 as a route filter to OSPF routes redistributed into EIGRP

```
Router1(config-router)# network 10.10.4.2 0.0.0.0 area 0
Router1(config-router)# redistribute eigrp 65000 metric 200 subnets
Router1(config-router)# distribute-list 2 out eigrp 65000
```
These command first activate OSPF on Router1 serial 0 interface, then redistributes routes (including subnets) from EIGRP AS 65000 with high seed metrics. Finally this applies access list 2 as a route filter to EIGRP route redistributed into OSPF process 1.

**Copy your routing table at the end of the file:**

On router 2 and 4 complete the following commands

Trace 10.10.3.1.
Trace 10.10.100.1
Trace 10.10.1.1
Trace 10.10.201.129

Now you will demonstrate that the route filters are only redistributing the desired routes.

On Router 4 enter global configuration mode and type:

```
Router4(config)# int loop 3
Router4(config-if)# ip address 172.16.1.1 255.255.255.0
Router4(config-if)# exit
Router4(config)# router ospf 1
Router4(config-router)# network 172.16.1.0 0.0.0.255 area 0
```

[Ctrl Z]

On router2 type `show ip route` and press enter. Do you see a route for 172.16.1.0/24 in the EIGRP routing domain?

Enter global configuration mode and type:

```
Router2(config)# int loop 0
Router2(config-if)# ip address 192.168.154.1 255.255.255.0
Router2(config-if)# exit
Router2(config)# router eigrp 65000
Router2(config-router)# network 192.168.154.0
```

[Ctrl Z]

Router2# sho ip route

Do you see a route for 192.168.154.0/24 in Router4 routing table?