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Lab 11

Redistribution of Routing Protocols (OSPF, EIGRP, RIP)

Objectives:

1. Configure OSPF, RIP and EIGRP routing protocols in separate domains
2. Implement route redistribution between OSPF and EIGRP, EIGRP and RIP
3. Verify connectivity across both routing domains

Description:

Route redistribution is the process of sharing routing information between different routing protocols. It's essential in networks where multiple routing protocols coexist, often due to:

- Company mergers
- Departmental preferences
- Network migration
- Technical requirements

Key Concepts:

1. Redistribution Points
 - A router running both protocols acts as a redistribution point
 - This router is called an Autonomous System Boundary Router (ASBR)
 - It translates routes between protocols

Configuration for Redistribution of OSPF and EIGRP:

Draw the network topology in cisco packet tracer as shown in figure given below

Press RETURN to get started!

```
Router>
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 10
Router(config-router)#network 10.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 10.0.0.1 (Serial0/3/0) is up: new adjacency

Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

Router 01

```
Router>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/8 is directly connected, Serial0/3/0
L       10.0.0.2/32 is directly connected, Serial0/3/0
    11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       11.0.0.0/8 is directly connected, Serial0/1/0
L       11.0.0.1/32 is directly connected, Serial0/1/0
D       192.168.10.0/24 [90/20514560] via 10.0.0.1, 00:20:33, Serial0/3/0

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 11.0.0.0 0.255.255.255
% Incomplete command.
Router(config-router)#network 11.0.0.0 0.255.255.255 area 0
Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Router 02

Press RETURN to get started!

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 11.0.0.0 0.255.255.255 area 0
Router(config-router)#network 1 area 0
01:28:07: %OSPF-5-ADJCHG: Process 1, Nbr 11.0.0.1 on Serial0/3/0 from LOADING to FULL, Loading Do
^
% Invalid input detected at '^' marker.

Router(config-router)#network 192.168.30.0 0.0.0.255 area 0
Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

Router 01

```
Router#
Router#
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 10
Router(config-router)#red
Router(config-router)#redistribute ospf 1 ?
  match Redistribution of OSPF routes
  metric Metric for redistributed routes
<cr>
Router(config-router)#redistribute ospf 1 metric ?
  <1-4294967295> Bandwidth metric in Kbits per second
Router(config-router)#redistribute ospf 1 metric 10 ?
  <0-4294967295> EIGRP delay metric, in 10 microsecond units
Router(config-router)#redistribute ospf 1 metric 10 10 ?
  <0-255> EIGRP reliability metric where 255 is 100% reliable
Router(config-router)#redistribute ospf 1 metric 10 10 255 255 ?
  <1-65535> EIGRP MTU of the path
Router(config-router)#redistribute ospf 1 metric 10 10 255 255 1
Router(config-router)#ex
Router(config)#router ospf 1
Router(config-router)#red
Router(config-router)#redistribute eigrp 10 sub
Router(config-router)#redistribute eigrp 10 subnets
Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

After doing the above configurations for the redistribution of various routing protocols then the devices from one network should be able to communicate with the device from the other network.

TASKS:

1. For the given topology in figure 01, Perform the redistribution of OSPF and EIGRP routing protocol on Router 01 and verify the connectivity of different networks. (5 marks)

Ans: Checking whether OSPF and EIGRP are configured or not:

```
Router#show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
192.168.30.1	0	FULL/ -	00:00:31	11.0.0.2	Serial0/1/0

```
Router#
```

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

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L       10.0.0.2/32 is directly connected, Serial0/3/0
    11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       11.0.0.0/8 is directly connected, Serial0/1/0
L       11.0.0.1/32 is directly connected, Serial0/1/0
D       192.168.10.0/24 [90/20514560] via 10.0.0.1, 00:08:31, Serial0/3/0
O       192.168.30.0/24 [110/65] via 11.0.0.2, 00:13:26, Serial0/1/0
```

The following ping confirms that OSPF and EIGRP routes are successfully redistributed by ping 192.168.10.2 from PC4.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time=33ms TTL=125
Reply from 192.168.10.2: bytes=32 time=2ms TTL=125
Reply from 192.168.10.2: bytes=32 time=12ms TTL=125
Reply from 192.168.10.2: bytes=32 time=11ms TTL=125

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 33ms, Average = 14ms

C:\>
```

2. For the given topology in figure 01, Perform the redistribution of RIP and EIGRP routing protocol on Router 01 and verify the connectivity of different networks. (5 marks)

Ans: Redistribution of RIP and EIGRP routing protocol on router 01:

```

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#redistribute eigrp 100 metric 1
Router(config-router)#exit
Router(config)#router eigrp 100
Router(config-router)#redistribute rip metric 10000 100 255 1 1500
Router(config-router)#exit

```

ping 192.168.30.2 from PC0 to verify conection:

```

C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

Reply from 192.168.30.2: bytes=32 time=2ms TTL=125
Reply from 192.168.30.2: bytes=32 time=13ms TTL=125
Reply from 192.168.30.2: bytes=32 time=11ms TTL=125
Reply from 192.168.30.2: bytes=32 time=11ms TTL=125

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 13ms, Average = 9ms

```

And this is the topology:

