Packet Tracer OSPF, EIGRP, and BGP Redistribution

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Purpose

The purpose of this lab was to configure OSPFv2 on two networks, BGP on two networks, and EIGRP on two networks and then redistribute between the routing protocols. Additionally, I learned how to setup BGP and redistribute the routing information between OSPF, BGP, and EIGRP. I also learned about autonomous systems numbers on BGP and how to configure it on specific networks and ports.

Background Information

BGP (Border Gateway Protocol) is an IETF (Internet Engineering Task Force) standardized gateway protocol made to exchange routing and reachability information between autonomous systems (AS) on the internet. This protocol can be used to connect any internet work of autonomous systems. BGP is usually preferred over static routes only when an advantage in traffic control is realized. If it is important to control your incoming traffic, using BGP is an efficient way to advertise routes to the provider which still advertising only a default route into your AS. The main advantage includes having multiple paths in the network. All BGP routers on the internet are constantly updating each other and the BGP router is constantly calculating the best path. Overall, BGP gives more control over what routes you advertise and accept from your neighbors and is very effective with traffic control.

Lab Summary

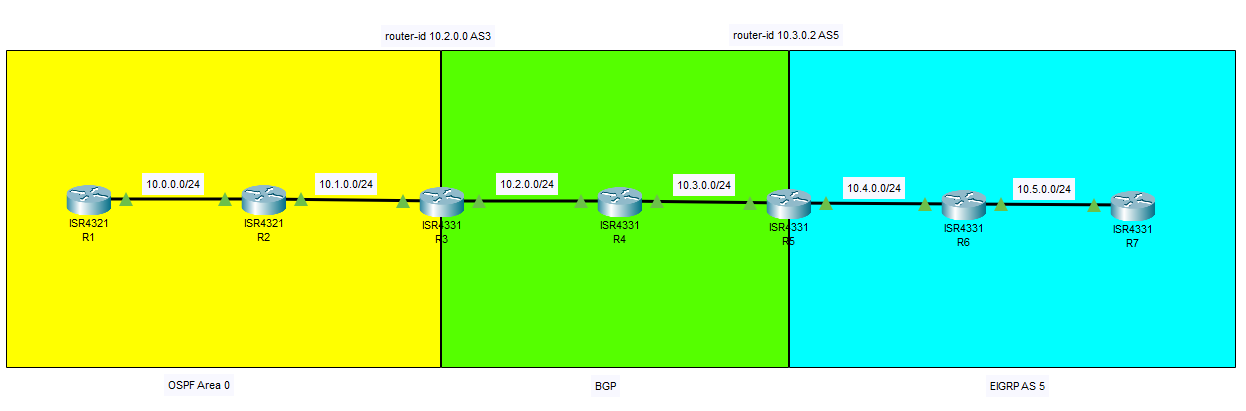
For this lab, I setup a topology with 7 routers interconnected on their ethernet interfaces. I setup OSPF on R1, R2, G0/0/1 on R3, BGP on G0/0/0 on R3, R4, and G0/0/0 on R5 and lastly, I setup EIGRP on G0/0/01 on R5, R6, and R7. In this lab, I setup redistribution of the routing protocols on R3 and R5.

Lab Commands

* Router OSPF: Indicates the beginning of the OSPF configuration on the router
* Router-id: Assigns the router an OSPF ID to advertise to neighbor networks
* Network area: Advertise the interfaces whose addresses fill in the specified network command
* Show ip ospf interface: Displays the OSPF configuration for the certain interface
* Show ip route: Displays the IPv4 configurations and routes between the interfaces and routers
* Interface: Allows you to configure a particular interface
* Clock rate: Synchronizing routers to connect to the same rate
* Area # stub: Changes that area to be a stubby area
* Area # stub no-summary: Changes the area to be a totally stubby area
* Area # nssa: Changes the area to be an NSSA area
* Redistribute OSPF: Redistributes OPSF to be used with other routing protocols
* Redistribute EIGRP: Redistributes EIGRP to be used with other routing protocols
* Redistribute BGP: Redistributes BGP to be used with other routing protocols
* Router BGP: Allows you to go into the BGP configuration on the router
* Router EIGRP: Allows you to go into the EIGRP configuration on the router

Network Diagram with IP’s

|  |  |  |  |
| --- | --- | --- | --- |
| R1 | G0/0/0 | 10.0.0.1/24 | Area 0 |
| R2 | G0/0/0 | 10.0.0.2/24 | Area 0 |
|  | G0/0/1 | 10.1.0.1/24 | Area 0 |
| R3 | G0/0/0 | 10.2.0.1/24 | BGP AS 3 |
|  | G0/0/1 | 10.1.0.2/24 | Area 0 |
| R4 | G0/0/0 | 10.2.0.2/24 | BGP AS 4 |
|  | G0/0/1 | 10.3.0.1/24 | BGP AS 4 |
| R5 | G0/0/0 | 10.4.0.1/24 | Autonomous System 5 |
|  | G0/0/1 | 10.3.0.2/24 | BGP AS 5 |
| R6 | G0/0/0 | 10.4.0.2/24 | Autonomous System 5 |
|  | G0/0/1 | 10.5.0.1/24 | Autonomous System 5 |
| R7 | G0/0/1 | 10.5.0.2/24 | Autonomous System 5 |



Configurations

Router 1

Show run

interface GigabitEthernet0/0/0

ip address 10.0.0.1 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/1

no ip address

duplex auto

speed auto

shutdown

interface Vlan1

no ip address

shutdown

router ospf 10

router-id 10.0.0.0

log-adjacency-changes

network 10.0.0.0 0.255.255.255 area 0

Show ip ospf interface

GigabitEthernet0/0/0 is up, line protocol is up

Internet address is 10.0.0.1/24, Area 0

Process ID 10, Router ID 10.0.0.0, Network Type BROADCAST, Cost: 1

Transmit Delay is 1 sec, State BDR, Priority 1

Designated Router (ID) 10.1.0.0, Interface address 10.0.0.2

Backup Designated Router (ID) 10.0.0.0, Interface address 10.0.0.1

Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5

Hello due in 00:00:00

Index 1/1, flood queue length 0

Next 0x0(0)/0x0(0)

Last flood scan length is 1, maximum is 1

Last flood scan time is 0 msec, maximum is 0 msec

Neighbor Count is 1, Adjacent neighbor count is 1

Adjacent with neighbor 10.1.0.0 (Designated Router)

Suppress hello for 0 neighbor(s)

Show ip ospf neighbor

Neighbor ID Pri State Dead Time Address Interface

10.1.0.0 1 FULL/DR 00:00:34 10.0.0.2 GigabitEthernet0/0/0

Show ip protocols

Routing Protocol is "ospf 10"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 10.0.0.0

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

10.0.0.0 0.255.255.255 area 0

Routing Information Sources:

Gateway Distance Last Update

10.0.0.0 110 00:27:09

10.1.0.0 110 00:27:04

10.2.0.0 110 00:27:04

Distance: (default is 110)

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, 7 subnets, 2 masks

C 10.0.0.0/24 is directly connected, GigabitEthernet0/0/0

L 10.0.0.1/32 is directly connected, GigabitEthernet0/0/0

O 10.1.0.0/24 [110/2] via 10.0.0.2, 00:53:42, GigabitEthernet0/0/0

O 10.2.0.0/24 [110/3] via 10.0.0.2, 00:53:42, GigabitEthernet0/0/0

O E2 10.3.0.0/24 [110/3] via 10.0.0.2, 00:53:42, GigabitEthernet0/0/0

O E2 10.4.0.0/24 [110/3] via 10.0.0.2, 00:53:42, GigabitEthernet0/0/0

O E2 10.5.0.0/24 [110/3] via 10.0.0.2, 00:53:42, GigabitEthernet0/0/0

Router 2

Show run

interface GigabitEthernet0/0/0

ip address 10.0.0.2 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/1

ip address 10.1.0.1 255.255.255.0

duplex auto

speed auto

interface Vlan1

no ip address

shutdown

router ospf 10

router-id 10.1.0.0

log-adjacency-changes

network 10.0.0.0 0.255.255.255 area 0

Show ip ospf interface

GigabitEthernet0/0/1 is up, line protocol is up

Internet address is 10.1.0.1/24, Area 0

Process ID 10, Router ID 10.1.0.0, Network Type BROADCAST, Cost: 1

Transmit Delay is 1 sec, State BDR, Priority 1

Designated Router (ID) 10.2.0.0, Interface address 10.1.0.2

Backup Designated Router (ID) 10.1.0.0, Interface address 10.1.0.1

Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5

Hello due in 00:00:00

Index 1/1, flood queue length 0

Next 0x0(0)/0x0(0)

Last flood scan length is 1, maximum is 1

Last flood scan time is 0 msec, maximum is 0 msec

Neighbor Count is 1, Adjacent neighbor count is 1

Adjacent with neighbor 10.2.0.0 (Designated Router)

Suppress hello for 0 neighbor(s)

GigabitEthernet0/0/0 is up, line protocol is up

Internet address is 10.0.0.2/24, Area 0

Process ID 10, Router ID 10.1.0.0, Network Type BROADCAST, Cost: 1

Transmit Delay is 1 sec, State DR, Priority 1

Designated Router (ID) 10.1.0.0, Interface address 10.0.0.2

Backup Designated Router (ID) 10.0.0.0, Interface address 10.0.0.1

Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5

Hello due in 00:00:00

Index 2/2, flood queue length 0

Next 0x0(0)/0x0(0)

Last flood scan length is 1, maximum is 1

Last flood scan time is 0 msec, maximum is 0 msec

Neighbor Count is 1, Adjacent neighbor count is 1

Adjacent with neighbor 10.0.0.0 (Backup Designated Router)

Suppress hello for 0 neighbor(s)

Show ip ospf neighbor

Neighbor ID Pri State Dead Time Address Interface

10.0.0.0 1 FULL/BDR 00:00:38 10.0.0.1 GigabitEthernet0/0/0

10.2.0.0 1 FULL/DR 00:00:38 10.1.0.2 GigabitEthernet0/0/1

Show ip protocols

Routing Protocol is "ospf 10"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 10.1.0.0

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

10.0.0.0 0.255.255.255 area 0

Routing Information Sources:

Gateway Distance Last Update

10.0.0.0 110 00:05:35

10.1.0.0 110 00:05:29

10.2.0.0 110 00:05:28

Distance: (default is 110)

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, 8 subnets, 2 masks

C 10.0.0.0/24 is directly connected, GigabitEthernet0/0/0

L 10.0.0.2/32 is directly connected, GigabitEthernet0/0/0

C 10.1.0.0/24 is directly connected, GigabitEthernet0/0/1

L 10.1.0.1/32 is directly connected, GigabitEthernet0/0/1

O 10.2.0.0/24 [110/2] via 10.1.0.2, 00:00:08, GigabitEthernet0/0/1

O E2 10.3.0.0/24 [110/3] via 10.1.0.2, 00:00:08, GigabitEthernet0/0/1

O E2 10.4.0.0/24 [110/3] via 10.1.0.2, 00:00:08, GigabitEthernet0/0/1

O E2 10.5.0.0/24 [110/3] via 10.1.0.2, 00:00:08, GigabitEthernet0/0/1

Router 3

Show run

interface GigabitEthernet0/0/0

ip address 10.2.0.1 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/1

ip address 10.1.0.2 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/2

no ip address

duplex auto

speed auto

shutdown

interface Vlan1

no ip address

shutdown

router ospf 10

router-id 10.2.0.0

log-adjacency-changes

redistribute bgp 3 metric 3 subnets

network 10.0.0.0 0.255.255.255 area 0

router bgp 3

bgp log-neighbor-changes

no synchronization

neighbor 10.2.0.2 remote-as 4

network 10.0.0.0

redistribute ospf 10

Show ip ospf interface

GigabitEthernet0/0/1 is up, line protocol is up

Internet address is 10.1.0.2/24, Area 0

Process ID 10, Router ID 10.2.0.0, Network Type BROADCAST, Cost: 1

Transmit Delay is 1 sec, State DR, Priority 1

Designated Router (ID) 10.2.0.0, Interface address 10.1.0.2

Backup Designated Router (ID) 10.1.0.0, Interface address 10.1.0.1

Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5

Hello due in 00:00:02

Index 1/1, flood queue length 0

Next 0x0(0)/0x0(0)

Last flood scan length is 1, maximum is 1

Last flood scan time is 0 msec, maximum is 0 msec

Neighbor Count is 1, Adjacent neighbor count is 1

Adjacent with neighbor 10.1.0.0 (Backup Designated Router)

Suppress hello for 0 neighbor(s)

GigabitEthernet0/0/0 is up, line protocol is up

Internet address is 10.2.0.1/24, Area 0

Process ID 10, Router ID 10.2.0.0, Network Type BROADCAST, Cost: 1

Transmit Delay is 1 sec, State DR, Priority 1

Designated Router (ID) 10.2.0.0, Interface address 10.2.0.1

No backup designated router on this network

Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5

Hello due in 00:00:02

Index 2/2, flood queue length 0

Next 0x0(0)/0x0(0)

Last flood scan length is 1, maximum is 1

Last flood scan time is 0 msec, maximum is 0 msec

Neighbor Count is 0, Adjacent neighbor count is 0

Suppress hello for 0 neighbor(s)

Show ip ospf neighbor

Neighbor ID Pri State Dead Time Address Interface

10.1.0.0 1 FULL/BDR 00:00:34 10.1.0.1 GigabitEthernet0/0/1

Show ip protocols

Routing Protocol is "bgp 3"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

IGP synchronization is disabled

Automatic route summarization is disabled

Neighbor(s):

Address FiltIn FiltOut DistIn DistOut Weight RouteMap

10.2.0.2

Maximum path: 1

Routing Information Sources:

Gateway Distance Last Update

10.2.0.2 20 00:00:00

Distance: external 20 internal 200 local 200

Routing Protocol is "ospf 10"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 10.2.0.0

It is an autonomous system boundary router

Redistributing External Routes from,

bgp 3

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

10.0.0.0 0.255.255.255 area 0

Routing Information Sources:

Gateway Distance Last Update

10.0.0.0 110 00:07:03

10.1.0.0 110 00:07:03

10.2.0.0 110 00:07:03

Distance: (default is 110)

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, 8 subnets, 2 masks

O 10.0.0.0/24 [110/2] via 10.1.0.1, 00:08:04, GigabitEthernet0/0/1

C 10.1.0.0/24 is directly connected, GigabitEthernet0/0/1

L 10.1.0.2/32 is directly connected, GigabitEthernet0/0/1

C 10.2.0.0/24 is directly connected, GigabitEthernet0/0/0

L 10.2.0.1/32 is directly connected, GigabitEthernet0/0/0

B 10.3.0.0/24 [20/0] via 10.2.0.2, 00:00:00

B 10.4.0.0/24 [20/0] via 10.2.0.2, 00:00:00

B 10.5.0.0/24 [20/0] via 10.2.0.2, 00:00:00

Router 4

Show run

interface GigabitEthernet0/0/0

ip address 10.2.0.2 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/1

ip address 10.3.0.1 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/2

no ip address

duplex auto

speed auto

shutdown

interface Vlan1

no ip address

shutdown

router bgp 4

bgp log-neighbor-changes

no synchronization

neighbor 10.2.0.1 remote-as 3

neighbor 10.3.0.2 remote-as 5

network 10.0.0.0

Show ip protocols

Routing Protocol is "bgp 4"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

IGP synchronization is disabled

Automatic route summarization is disabled

Neighbor(s):

Address FiltIn FiltOut DistIn DistOut Weight RouteMap

10.2.0.1

10.3.0.2

Maximum path: 1

Routing Information Sources:

Gateway Distance Last Update

10.2.0.1 20 00:00:00

10.3.0.2 20 00:00:00

Distance: external 20 internal 200 local 200

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, 8 subnets, 2 masks

B 10.0.0.0/24 [20/2] via 10.2.0.1, 00:00:00

B 10.1.0.0/24 [20/20] via 10.2.0.1, 00:00:00

C 10.2.0.0/24 is directly connected, GigabitEthernet0/0/0

L 10.2.0.2/32 is directly connected, GigabitEthernet0/0/0

C 10.3.0.0/24 is directly connected, GigabitEthernet0/0/1

L 10.3.0.1/32 is directly connected, GigabitEthernet0/0/1

B 10.4.0.0/24 [20/2816] via 10.3.0.2, 00:00:00

B 10.5.0.0/24 [20/3072] via 10.3.0.2, 00:00:00

Router 5

Show run

interface GigabitEthernet0/0/0

ip address 10.4.0.1 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/1

ip address 10.3.0.2 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/2

no ip address

duplex auto

speed auto

shutdown

interface Vlan1

no ip address

shutdown

router eigrp 5

redistribute bgp 5 metric 10000 100 55 1 150

network 10.0.0.0

router bgp 5

bgp log-neighbor-changes

no synchronization

neighbor 10.3.0.1 remote-as 4

network 10.0.0.0

redistribute eigrp 5

Show ip protocols

Routing Protocol is "eigrp 5 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 5, bpg 5

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

10.0.0.0

Routing Information Sources:

Gateway Distance Last Update

10.4.0.2 90 0

Distance: internal 90 external 170

Routing Protocol is "bgp 5"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

IGP synchronization is disabled

Automatic route summarization is disabled

Neighbor(s):

Address FiltIn FiltOut DistIn DistOut Weight RouteMap

10.3.0.1

Maximum path: 1

Routing Information Sources:

Gateway Distance Last Update

10.3.0.1 20 00:00:00

Distance: external 20 internal 200 local 200

Show ip route

Routing Protocol is "eigrp 5 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 5, bpg 5

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

10.0.0.0

Routing Information Sources:

Gateway Distance Last Update

10.4.0.2 90 0

Distance: internal 90 external 170

Routing Protocol is "bgp 5"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

IGP synchronization is disabled

Automatic route summarization is disabled

Neighbor(s):

Address FiltIn FiltOut DistIn DistOut Weight RouteMap

10.3.0.1

Maximum path: 1

Routing Information Sources:

Gateway Distance Last Update

10.3.0.1 20 00:00:00

Distance: external 20 internal 200 local 200

R5#sh 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, 8 subnets, 2 masks

B 10.0.0.0/24 [20/0] via 10.3.0.1, 00:00:00

B 10.1.0.0/24 [20/0] via 10.3.0.1, 00:00:00

B 10.2.0.0/24 [20/0] via 10.3.0.1, 00:00:00

C 10.3.0.0/24 is directly connected, GigabitEthernet0/0/1

L 10.3.0.2/32 is directly connected, GigabitEthernet0/0/1

C 10.4.0.0/24 is directly connected, GigabitEthernet0/0/0

L 10.4.0.1/32 is directly connected, GigabitEthernet0/0/0

D 10.5.0.0/24 [90/3072] via 10.4.0.2, 00:17:48, GigabitEthernet0/0/0

Show ip eigrp neighbor

IP-EIGRP neighbors for process 5

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 10.4.0.2 Gig0/0/0 14 00:24:13 40 1000 0 4

Router 6

Show run

interface GigabitEthernet0/0/0

ip address 10.4.0.2 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/1

ip address 10.5.0.1 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/2

no ip address

duplex auto

speed auto

shutdown

interface Vlan1

no ip address

shutdown

router eigrp 5

network 10.0.0.0

Show ip protocols

Routing Protocol is "eigrp 5 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 5

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

10.0.0.0

Routing Information Sources:

Gateway Distance Last Update

10.4.0.1 90 0

10.5.0.2 90 0

Distance: internal 90 external 170

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, 5 subnets, 2 masks

D 10.3.0.0/24 [90/3072] via 10.4.0.1, 00:23:10, GigabitEthernet0/0/0

C 10.4.0.0/24 is directly connected, GigabitEthernet0/0/0

L 10.4.0.2/32 is directly connected, GigabitEthernet0/0/0

C 10.5.0.0/24 is directly connected, GigabitEthernet0/0/1

L 10.5.0.1/32 is directly connected, GigabitEthernet0/0/1

Show ip eigrp neighbor

IP-EIGRP neighbors for process 5

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 10.4.0.1 Gig0/0/0 10 00:33:01 40 1000 0 3

1 10.5.0.2 Gig0/0/1 13 00:33:01 40 1000 0 5

Router 7

Show run

interface GigabitEthernet0/0/0

no ip address

duplex auto

speed auto

shutdown

interface GigabitEthernet0/0/1

ip address 10.5.0.2 255.255.255.0

duplex auto

speed auto

interface GigabitEthernet0/0/2

no ip address

duplex auto

speed auto

shutdown

interface Vlan1

no ip address

shutdown

router eigrp 5

network 10.0.0.0

Show ip protocols

Routing Protocol is "eigrp 5 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 5

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

10.0.0.0

Routing Information Sources:

Gateway Distance Last Update

10.5.0.1 90 0

Distance: internal 90 external 170

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, 4 subnets, 2 masks

D 10.3.0.0/24 [90/3328] via 10.5.0.1, 00:36:39, GigabitEthernet0/0/1

D 10.4.0.0/24 [90/3072] via 10.5.0.1, 00:36:39, GigabitEthernet0/0/1

C 10.5.0.0/24 is directly connected, GigabitEthernet0/0/1

L 10.5.0.2/32 is directly connected, GigabitEthernet0/0/1

Show ip eigrp neighbor

IP-EIGRP neighbors for process 5

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 10.5.0.1 Gig0/0/1 14 00:37:26 40 1000 0 3

Problems

An issue I encountered during this lab was configuring BGP on 3 routers instead of two routers for that network. I knew that each of the routers has different ASNs assigned and I had trouble assigning the networks on each of them. At the start, I had router 3 assigned as 3, 4 assigned as 4, and 5 assigned as 5 for the ASNs, but I put the incorrect networks on each of the routers. Instead of putting the ip addresses of the ports I put the network addresses. I realized that I was supposed to assign the port ip addresses and then fixed it on each of the BGP routers. I learned that I am supposed to assign the port addresses on the BGP networks.

Another issue that I came through included the redistribution of each of the networks and routing protocols. At the beginning I realized that I was supposed to redistribute in OSPF and EIGRP. I was wondering why I was unable to get the EIGRP and OSPF routes on my BGP routers. After I researched a bit, I found out that I also had to distribute BGP on the EIGRP and OSPF networks as well as distribute OSPF and EIGRP on the BGP networks. I remembered that from the previous lab that we had to distribute OSPF and EIGRP on certain networks, I learned that I should check what networks there are and based off that redistribute the routing protocol.

Conclusion

This lab was an important and essential review of setting up OSPF and EIGRP configurations. This lab also helped me learn how to setup BGP in addition to the review of OSPF and EIGRP. Additionally, this helped me remember all the important EIGRP and OSPF Cisco Networking commands that has been used frequently when configuring it and redistributing them. Most importantly, I learned how to configure BGP with OSPF and EIGRP networks. At the end of this lab, I was able to ping across all the networks and see different routes from the OSPF, BGP, and EIGRP networks. I did have a couple issues with the BGP configurations relating to the networks on there as well as the redistribution on the BGP networks. Overall, this lab was an important refresher of setting up OSPF and EIGRP as well as learning how to configure BGP networks.