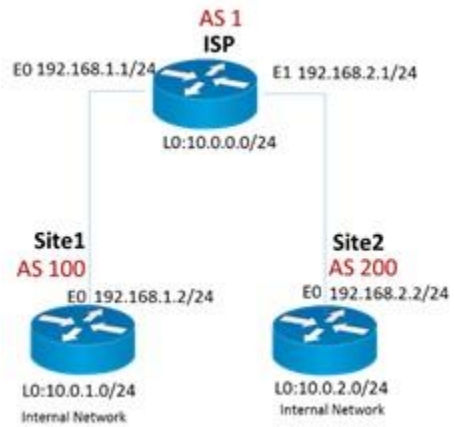
Configure EBGP

Objectives

In this project/lab the student will:

- Configure and verify EBGP



Assignment

Upload your completed Packet Tracer file for grading as well as a document answering the questions you find throughout the lab.

Equipment/Supplies Needed

- Cisco Packet Tracer

Procedure

Configure EBGP

1. Recreate the topology in Packet Tracer. Configure the ip addressing as shown in the diagram.
2. Add static routes on routers Site1 and Site2.

   Site1(config)# **ip route 192.168.2.0 255.255.255.0 192.168.1.1**
   Site2(config)# **ip route 192.168.1.0 255.255.255.0 192.168.2.1**

3. Ping to make sure there is connectivity between the routers (Site 1 to Site 2). Record the results.

   Site1:

```
Site1#ping 192.168.2.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms
```

Site2:

```
Site2#ping 192.168.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms
```

4. Set the loopback addresses on each router.

ISP(config)# **interface loopback0**
ISP(config-if)#**ip address 10.0.0.1 255.255.255.0**

Site1(config)# **interface loopback0**
Site1(config-if)#**ip address 10.0.1.1 255.255.255.0**
Site2(config)# **interface loopback0**
Site2(config-if)#**ip address 10.0.2.1 255.255.255.0**

5. Configure ISP Router for EGP

ISP(config)# **router bgp 1**
ISP(config-router)#**network 10.0.0.0 mask 255.255.255.0**
ISP(config-router)# **neighbor 192.168.1.2 remote-as 100**
ISP(config-router)# **neighbor 192.168.2.2 remote-as 200** Router(config-router)r#**exit**

6. Configure Site 1 Router for EGP

Site1(config)# **router bgp 100**
Site1(config-router)#**network 10.0.1.0 mask 255.255.255.0**
Site1(config-router)# **neighbor 192.168.1.1 remote-as 1**
Site1(config-router)# **neighbor 192.168.2.2 remote-as 200**
Site1(config-router)# **neighbor 192.168.2.2 ebgp-multihop**
Site1(config-router)# **neighbor 192.168.2.2 update-source loopback0**
Site1(config-router)r#**exit**

7. Configure site2 Router for EGP

Site2(config)# **router bgp 200**
Site2(config-router)#**network 10.0.2.0 mask 255.255.255.0**
Site2(config-router)# **neighbor 192.168.2.1 remote-as 1**

Site2(config-router)# **neighbor 192.168.1.2 remote-as 100** Site2(config-router)# **neighbor 192.168.1.2 ebgp-multihop**
Site2(config-router)# **neighbor 192.168.1.2 update-source loopback0**
Site2(config-router)r#**exit**

8. Verify BGP with the following commands:

   Show ip bgp
   Show ip bgp summary
   Show ip bgp neighbors
   Show ip routes

9. Record the output of each of the following commands, and answer any questions related to each:

   a. show ip route

```
ISP#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
C       10.0.0.0/24 is directly connected, Loopback0
L       10.0.0.1/32 is directly connected, Loopback0
B       10.0.1.0/24 [20/0] via 192.168.1.2, 00:00:00
B       10.0.2.0/24 [20/0] via 192.168.2.2, 00:00:00
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, GigabitEthernet0/1
L       192.168.2.1/32 is directly connected, GigabitEthernet0/1
```

   i. Which routes were learned via BGP?

   10.0.1.0/24 [20/0] via 192.168.1.2
   10.0.2.0/24 [20/0] via 192.168.2.2, 00:00:00
   192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks

   b. show ip bgp on ISP

```
ISP#show ip bgp
BGP table version is 6, local router ID is 10.0.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 10.0.0.0/24      0.0.0.0                  0      0 32768 i
*> 10.0.1.0/24      192.168.1.2              0      0      0 100 i
*                   192.168.2.2              0      0      0 200 100 i
*> 10.0.2.0/24      192.168.2.2              0      0      0 200 i
*                   192.168.1.2              0      0      0 100 200 i
```

i. Record the 3 networks shown

Network Next Hop Metric LocPrf Weight Path

*> 10.0.0.0/24

*> 10.0.1.0/24

*> 10.0.2.0/24

c. show ip bgp summary on ISP

```
ISP#show ip bgp summary
BGP router identifier 10.0.0.1, local AS number 1
BGP table version is 6, main routing table version 6
5 network entries using 660 bytes of memory
5 path entries using 260 bytes of memory
4/4 BGP path/bestpath attribute entries using 736 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1760 total bytes of memory
BGP activity 3/0 prefixes, 5/0 paths, scan interval 60 secs

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
192.168.1.2     4   100      22      19        6    0    0 00:17:33        4
192.168.2.2     4   200      14      11        6    0    0 00:09:23        4
```

i. Record the two neighbors shown.

192.168.1.2

192.168.2.2

d. show ip bgp neighbor

i.Record first line of each neighbor listed

```
ISP#show ip bgp neighbor
BGP neighbor is 192.168.1.2,  remote AS 100, external link
  BGP version 4, remote router ID 10.0.1.1
  BGP state = Established, up for 00:18:40

BGP neighbor is 192.168.2.2,  remote AS 200, external link
  BGP version 4, remote router ID 10.0.2.1
  BGP state = Established, up for 00:10:31
```

ii. What is the remote Router ID for the first one listed? 10.0.1.1

iii. What is its BGP state? Established

iv. How long has it been up? 00:18:40

v. What is the local host listed? Port number? 179

vi. What is the foreign host? Port number? 1025

Rubric

Checklist/Single Point Mastery

Concerns Working Towards Proficiency	Criteria Standards for This Competency	Accomplished Evidence of Mastering Competency
	Criteria #1: Site1 Router *show ip route* content (10 points)	
	Criteria #2: Site2 Router *show ip route* content (10 points)	
	Criteria #3: ISP Router *show ip route* content (10 points)	
	Criteria #4: Which routes were learned by BGP? (20 points)	
	Criteria #5: ISP Router *show ip BGP* content (10 points)	
	Criteria #6: ISP Router *show ip bgp summary* - which two neighbors are shown? (10 points)	
	Criteria #7: Site1 Router *show ip bgp neighbor* - Record first line of each neighbors listed (5 points)	
	Criteria #8: Site1 Router *show ip bgp neighbor* - What is the Router ID for the first one listed? (5 points)	
	Criteria #9: Site1 Router *show ip bgp neighbor* - What is the BGP State? (5 points)	

	Criteria #10: Site1 Router *show ip bgp neighbor* - How long has it been up? (5 point)	
	Criteria #11: Site1 Router *show ip bgp neighbor* - What is the local host listed? Port number? (5 point)	
	Criteria #12: Site1 Router *show ip bgp neighbor* - What is the foreign host listed? Port number? (5 point)	