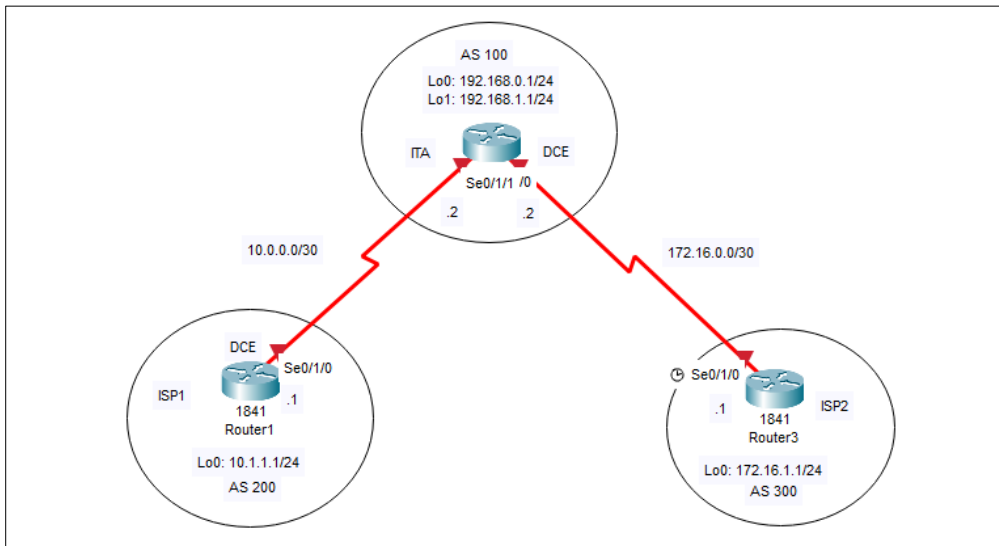


Practical 5 – Configuring BGP with Default Routing



```
R1(config)#int lo0
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R1(config-if)#ip add 10.1.1.1 255.255.255.0
R1(config-if)#int Se0/1/0
R1(config-if)#ip add 10.0.0.1 255.255.255.252
% Ambiguous command: "i add 10.0.0.1 255.255.255.252"
R1(config-if)#ip add 10.0.0.1 255.255.255.252
R1(config-if)#no shut
```

```
R2(config)#int lo0
R2(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R2(config-if)#ip add 192.168.0.1 255.255.255.0
R2(config-if)#int lo1
R2(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R2(config-if)#ip add 192.168.1.1 255.255.255.0
R2(config-if)#int Se0/1/0
R2(config-if)#ip add 10.0.0.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
R2(config-if)#int Se
% Invalid input detected at '^' marker.
R2(config-if)#int Se0/1/1
R2(config-if)#ip add 172.16.0.2 255.255.255.252
R2(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
R2(config-if)#
```

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int lo0
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R3(config-if)#ip add 172.16.1.1 255.255.255.0
R3(config-if)#int Se0/1/0
R3(config-if)#ip add 172.16.0.1 255.255.255.252
R3(config-if)#no shut
R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
```

Step 2 → Configure the hostname and interface addresses

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router bgp 200
R1(config-router)#neighbor 10.0.0.2 remote-as 100
R1(config-router)#network 10.1.1.0 mask 255.255.255.0
R1(config-router)#
```

```
R3(config-if)#router bgp 300
R3(config-router)#neighbor 172.16.0.2 remote-as 100
R3(config-router)#network 172.16.1.0 mask 255.255.255.0
R3(config-router)#
```

Step 3 → Configure BGP on the ITA boundary router

```

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router bgp 100
R2(config-router)#neighbor 10.0.0.1 remote-as 200
R2(config-router)#%BGP-5-ADJCHANGE: neighbor 10.0.0.1 Up
R2(config-router)#neighbor 172.16.0.1 remote-as 300
R2(config-router)#%BGP-5-ADJCHANGE: neighbor 172.16.0.1 Up
R2(config-router)#network 192.168.0.0
R2(config-router)#network 192.168.1.0
R2(config-router)#

```

```

R1#sh ip route
Codes: C - connected, S - static, I - IGRP, 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       10.0.0.0/30 is directly connected, Serial0/1/0
C       10.1.1.0/24 is directly connected, Loopback0
       172.16.0.0/24 is subnetted, 1 subnets
B       172.16.1.0 [20/0] via 10.0.0.2, 00:00:00
B       192.168.0.0/24 [20/0] via 10.0.0.2, 00:00:00
B       192.168.1.0/24 [20/0] via 10.0.0.2, 00:00:00

```

Step 4→ Verify BGP on routers

```

R2>en
R2#sh ip bgp
BGP table version is 5, local router ID is 192.168.1.1
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
*> 10.1.1.0/24      10.0.0.1              0      0   0 200 i
*> 172.16.1.0/24    172.16.0.1            0      0   0 300 i
*> 192.168.0.0/24   0.0.0.0                0      0 32768 i
*> 192.168.1.0/24   0.0.0.0                0      0 32768 i

```

```

R2#sh ip bgp neighbors
BGP neighbor is 10.0.0.1, remote AS 200, external link
  BGP version 4, remote router ID 10.1.1.1
  BGP state = Established, up for 00:06:57
  Last read 00:06:57, last write 00:06:57, hold time is 180, keepalive interval is 60
  seconds
  Neighbor capabilities:
    Route refresh: advertised and received(new)
    Address family IPv4 Unicast: advertised and received
  Message statistics:
    InQ depth is 0
    OutQ depth is 0

           Sent         Rcvd
Opens:           1           1
Notifications:    0           0
Updates:          3           1
Keepalives:       7           7
Route Refresh:    0           0
Total:           11           9
Default minimum time between advertisements runs is 30 seconds

```

Step 5→ Configure primary and backup routes using floating static routes

```

R2#sh ip route
Codes: C - connected, S - static, I - IGRP, 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       10.0.0.0/30 is directly connected, Serial0/1/0
B       10.1.1.0/24 [20/0] via 10.0.0.1, 00:00:00
       172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/30 is directly connected, Serial0/1/1
B       172.16.1.0/24 [20/0] via 172.16.0.1, 00:00:00
C       192.168.0.0/24 is directly connected, Loopback0
C       192.168.1.0/24 is directly connected, Loopback1

```

```

R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip route 0.0.0.0 0.0.0.0 10.0.0.1 210
R2(config)#ip route 0.0.0.0 0.0.0.0 172.16.0.1 220
R2(config)#

```

```

R2#sh ip route
Codes: C - connected, S - static, I - IGRP, 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 10.0.0.1 to network 0.0.0.0

   10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/30 is directly connected, Serial0/1/0
B       10.1.1.0/24 [20/0] via 10.0.0.1, 00:00:00
   172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/30 is directly connected, Serial0/1/1
B       172.16.1.0/24 [20/0] via 172.16.0.1, 00:00:00
C       192.168.0.0/24 is directly connected, Loopback0
C       192.168.1.0/24 is directly connected, Loopback1
S*     0.0.0.0/0 [210/0] via 10.0.0.1

```

Step 6→ Configure primary and backup routes using a default network and a static route.

```

R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#no ip route 0.0.0.0 0.0.0.0 10.0.0.1 210
R2(config)#no ip route 0.0.0.0 0.0.0.0 172.16.0.1 220
R2(config)#

```

```

R2#sh ip route
Codes: C - connected, S - static, I - IGRP, 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       10.0.0.0/30 is directly connected, Serial0/1/0
B       10.1.1.0/24 [20/0] via 10.0.0.1, 00:00:00
   172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/30 is directly connected, Serial0/1/1
B       172.16.1.0/24 [20/0] via 172.16.0.1, 00:00:00
C       192.168.0.0/24 is directly connected, Loopback0
C       192.168.1.0/24 is directly connected, Loopback1

```

```

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router bgp 200
R1(config-router)#network 192.168.100.0
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

```

```

R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip default-network 192.168.100.0
R2(config)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

```