So after forming BGP neighbor relationship we can verify by using the “show ip bgp summary” command on both routers:

R1#show ip bgp summary
BGP router identifier 1.1.1.1, local AS number 1
BGP table version is 1, main routing table version 1
Neighbor  V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
11.0.0.2  4  2  19  19  1 0 0 00:16:21 0

R2#show ip bgp summary
BGP router identifier 2.2.2.2, local AS number 2
BGP table version is 1, main routing table version 1
Neighbor  V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
11.0.0.1  4  1  20  20  1 0 0 00:17:13 0

Please pay attention to the “State/PfxRcd” column of the output. It indicates the number of prefixes that have been received from a neighbor. If this value is a number (including “0”, which means BGP neighbor does not advertise any route) then the BGP neighbor relationship is good. If this value is a word (including “Idle”, “Connect”, “Active”, “OpenSent”, “OpenConfirm”) then the BGP neighbor relationship is not good.

In the outputs above we see the BGP neighbor relationship between R1 & R2 is good with zero Prefix Received (PfxRcd) because they have not advertised any routes yet.

How about the BGP routing table? We can check with the “show ip bgp” command but currently this table is empty! This is because although they formed BGP neighbor relationship but they have not exchanged any routes. Let’s try advertising the loopback 0 interface on R1 to R2:

```
R1(config-router)#network 1.1.1.0 mask 255.255.255.0
```

As you see, unlike other routing protocols like OSPF or EIGRP, we have to use subnet mask (255.255.255.0 in this case), not wildcard mask, to advertise the routes in the “network” command.

Note: With BGP, you must advertise the correct network and subnet mask in the “network” command (in this case network 1.1.1.0/24). BGP is very strict in the routing advertisements. In other words, BGP only advertises the network which exists exactly in the routing table (in this case network 1.1.1.0/24 exists in the routing table as the loopback 0 interface). If you put the command “network 1.1.0.0 mask 255.255.0.0” or “network 1.0.0.0 mask 255.0.0.0” or “network 1.1.1.1 mask 255.255.255.255” then BGP will not advertise anything.

Now the BGP routing tables on these two routers contain this route:

```
R1#sh ip bgp
BGP table version is 4, local router ID is 11.0.0.1
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
*> 1.1.1.0/24 0.0.0.0 0  32768
```

```
R2#sh ip bgp
BGP table version is 2, local router ID is 11.0.0.2
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
*> 1.1.1.0/24 11.0.0.1 0  0
```

An asterisk (*) in the first column means that the route has a valid next hop. A greater-than sign (>) indicates the route has been selected as the best path to that network.
The “Metric” column here is not the usual metric like in OSPF or EIGRP. It is the Multi Exit Discriminator (MED) attribute of BGP. “Weight” is another BGP attribute. The default values of both MED and Weight are 0 (as you see at the outputs above).

The “Path” column shows the AS paths that prefix were sent to reach us. It would better to read the “Path” from right to left to understand which path this prefix travel to reach our router. Letter “i” is considered the starting point of the prefix and the next number is the originating AS where this prefix originated. Next numbers are the recorded paths it traveled. For example if a prefix had to travel from AS 1 -> 2 -> 3 -> 4 -> 5 (our AS) then we will see the path “4 3 2 1 i” on our router.

Note: A blank AS path (only letter “i” is shown) means that the route was originated in the local AS. In the R1 output above, network 1.1.1.0/24 is originated from R1 so we see the path only has one letter “i”.

One notice is on R1 the “Next Hop” is 0.0.0.0 which means this prefix is originated from the local router. On R2 the Next Hop is pointing toward the interface Fa0/0 of R1 (11.0.0.1) to which R2 will send traffic for the destination 1.1.1.0/24.

Now R1 advertised prefix 1.1.1.0/24 to R2 so we can re-check R2 with the “show ip bgp summary” command to see the “Prefix received” increased to 1:

```
R2#sh ip bgp summary
BGP router identifier 2.2.2.2, local AS number 2
BGP table version is 2, main routing table version 2
1 network entries using 117 bytes of memory
1 path entries using 52 bytes of memory
2/1 BGP path/bestpath attribute entries using 248 bytes of memory
1 BGP AS-PATH entries using 24 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
BGP using 441 total bytes of memory
BGP activity 1/0 prefixes, 1/0 paths, scan interval 60 secs
```

Neighbor  V  AS MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down   State/PfxRcd
11.0.0.1  4  1     5       4       2     0    0  00:01:36  1

Also in the routing table of R2 we will see this prefix, which is advertised with BGP from R1:

```
R2#show ip route
Codes:  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
 i - IS-IS,  su - IS-IS summary,  L1 - IS-IS level-1,  L2 - IS-IS level-2
    i - 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
B       1.1.1.0 [20/0] via 11.0.0.1, 00:00:20
2.0.0.0/24 is subnetted, 1 subnets
C       2.2.2.0 is directly connected, Loopback0
11.0.0.0/24 is subnetted, 1 subnets
C       11.0.0.0 is directly connected, FastEthernet0/0
```

This lab only mentioned about the most basic configuration of BGP and introduced two most important commands of BGP, which are “show ip bgp summary” and “show ip bgp”. In practical BGP is often much more complex with many attributes, routing policies, redistribution,… used.