



BASIC BGP - BGP Peer Group

BGP peer groups are used to simplify both router management and configuration. Peers that share common policies are made members of a BGP peer group. The major benefit you achieve when you specify a BGP peer group is that a BGP peer group reduces the amount of system resources (CPU and memory) necessary in an update generation. In addition, a BGP peer group also simplifies the BGP configuration. A BGP peer group reduces the load on system resources by allowing the routing table to be checked only once, and updates to be replicated to all peer group members instead of being done individually for each peer in the peer group. Based on the number of peer group members, the number of prefixes in the table, and the number of prefixes advertised, this can significantly reduce the load and increase performance. It is therefore recommended that you group together peers with identical outbound announcement policies.

Configuration

When you define the peers, you can assign quite a few attributes to them, such as route-maps for inbound and outbound traffic, prefix-lists for inbound and outbound advertisements, version, communities, their Autonomous System number, etc. This can be a little tedious and present an opportunity for mistakes, so IOS has a very useful method for assigning all of these values to a group of peers, which are appropriately named "peer-groups".

Peers are normally grouped by Autonomous System number, but you can be more granular. For instance, if your company has two BGP routers, and they talk to a partner company which has two BGP routers and also to an internet provider which has two more routers, then on one of your routers, you'd configure a peer group for your company, a second peer group for the partner, and a third peer group for the ISP. Then, you assign all the attributes to each peer group and add routers to the peer groups, instead of assigning all the attributes to each peer individually.

Peer Group

```
NetStepByStep-R6(config-router)# neighbor peer-group-name peer-group
```

- Use this command to create a BGP or multiprotocol BGP peer group.

- Use this command in address family or router configuration mode.
- To remove the peer group and all of its members, use the **no** form of this command.
- Once a peer group is created with the **neighbor peer-group** command, it can be configured with the **neighbor** commands.
- By default, members of the peer group inherit all the configuration options of the peer group. Members also can be configured to override the options that do not affect outbound updates.
- Peer group members will always inherit the following configuration options: remote-as (if configured), version, update-source, out-route-map, out-filter-list, out-dist-list, minimum-advertisement-interval, and next-hop-self. All the peer group members will inherit changes made to the peer group.

Verification

```
show ip bgp summary
```

- Use to display the status of all Border Gateway Protocol (BGP) connections. In other words, this command is used to display BGP path, prefix, and attribute information for all connections to BGP neighbors.
- Use this command in EXEC mode.
- This command has no arguments or keywords.
- A prefix is an IP address and network mask. It can represent an entire network, a subset of a network, or a single host route. A path is a route to a given destination.
- By default, BGP will install only a single path for each destination. If multipath routes are configured, BGP will install a path entry for each multipath route, and only one multipath route will be marked as the bestpath.

```
NetStepByStep-R2# show ip bgp summary
```

```
BGP router identifier 2.2.2.2, local AS number 1
BGP table version is 151, main routing table version 151
15 network entries using 1755 bytes of memory
15 path entries using 780 bytes of memory
9/7 BGP path/bestpath attribute entries using 1116 bytes of memory
3 BGP rrinfo entries using 72 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
BGP using 3795 total bytes of memory
BGP activity 35/20 prefixes, 112/97 paths, scan interval 60 secs
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
4.4.4.4	4	1	1479	1440	151	0	0	00:02:39	11
12.12.12.1	4	2	10	12	151	0	0	00:00:40	3

Troubleshoot

```
debug ip bgp events
```

- Use to display information related to events of the Border Gateway Protocol (BGP).
- Use this command in privileged EXEC mode.
- To disable debugging output, use the no form of this command.

Video Cheat Sheet

R4

```
router bgp 1
 neighbor RRC peer-group
 neighbor RRC remote-as 1
 neighbor RRC description PEER WITH ROUTE REFLECTOR CLIENTS
 neighbor RRC update-source Loopback0
 neighbor RRC route-reflector-client
 neighbor RRC soft-reconfiguration inbound

no neighbor 2.2.2.2 remote-as 1
no neighbor 3.3.3.3 remote-as 1
no neighbor 5.5.5.5 remote-as 1
no neighbor 6.6.6.6 remote-as 1

 neighbor 2.2.2.2 peer-group RRC
 neighbor 2.2.2.2 description PEER WITH ROUTE REFLECTOR CLIENTS - ROUTER 2

 neighbor 3.3.3.3 peer-group RRC
 neighbor 3.3.3.3 description PEER WITH ROUTE REFLECTOR CLIENTS - ROUTER 3

 neighbor 5.5.5.5 peer-group RRC
 neighbor 5.5.5.5 description PEER WITH ROUTE REFLECTOR CLIENTS - ROUTER 5

 neighbor 6.6.6.6 peer-group RRC
 neighbor 6.6.6.6 description PEER WITH ROUTE REFLECTOR CLIENTS - ROUTER 6
```

R2

```
router bgp 1
 neighbor AS2 peer-group
 neighbor AS2 remote-as 2
 neighbor AS2 description PEER WITH AS 2 - ROUTER 1
 neighbor AS2 soft-reconfiguration inbound

no neighbor 12.12.12.1 remote-as 2

 neighbor 12.12.12.1 peer-group AS2
 neighbor 12.12.12.1 description AS 2 - ROUTER 1
```