

ZEBRA BGP commands

BGP router

First of all you must configure BGP router with `router bgp` command. To configure BGP router, you need AS number. AS number is an identification of autonomous system. BGP protocol uses the AS number for detecting whether the BGP connection is internal one or external one.

router bgp *asn* Command

Enable a BGP protocol process with the specified *asn*. After this statement you can input any BGP Commands. You can not create different BGP process under different *asn* without specifying multiple-instance (see [Multiple instance](#)).

no router bgp *asn* Command

Destroy a BGP protocol process with the specified *asn*.

bgp router-id *A.B.C.D* BGP

This command specifies the router-ID. If bgpd connects to zebra it gets interface and address information. In that case default router ID value is selected as the largest IP Address of the interfaces. When router zebra is not enabled bgpd can't get interface information so router-id is set to 0.0.0.0. So please set router-id by hand.

BGP route

network *A.B.C.D/M* BGP

This command adds the announcement network.

```
router bgp 1
network 10.0.0.0/8
```

This configuration example says that network 10.0.0.0/8 will be announced to all neighbors. Some vendors' routers don't advertise routes if they aren't present in their IGP routing tables; bgp doesn't care about IGP routes when announcing its routes.

Route Aggregation

aggregate-address *A.B.C.D/M* BGP

This command specifies an aggregate address.

aggregate-address *A.B.C.D/M* as-set BGP

This command specifies an aggregate address. Resulting routes include AS set.

aggregate-address *A.B.C.D/M* summary-only BGP

This command specifies an aggregate address. Aggregated routes will not be announce.

Redistribute to BGP

redistribute kernel BGP

Redistribute kernel route to BGP process.

redistribute static BGP

Redistribute static route to BGP process.

redistribute connected	BGP
Redistribute connected route to BGP process.	
redistribute rip	BGP
Redistribute RIP route to BGP process.	
redistribute ospf	BGP
Redistribute OSPF route to BGP process.	

Defining Peer

neighbor peer remote-as asn	BGP
Creates a new neighbor whose remote-as is <i>asn</i> . <i>peer</i> can be an IPv4 address or an IPv6 address.	
<pre>router bgp 1 neighbor 10.0.0.1 remote-as 2</pre>	

In this case my router, in AS-1, is trying to peer with AS-2 at 10.0.0.1.

This command must be the first command used when configuring a neighbor. If the remote-as is not specified, bgpd will complain like this:

```
can't find neighbor 10.0.0.1
```

BGP Peer commands

In a router bgp clause there are neighbor specific configurations required.

neighbor peer shutdown	BGP
no neighbor peer shutdown	BGP
Shutdown the peer. We can delete the neighbor's configuration by <code>no neighbor peer remote-as as-number</code> but all configuration of the neighbor will be deleted. When you want to preserve the configuration, but want to drop the BGP peer, use this syntax.	
neighbor peer ebgp-multihop	BGP
no neighbor peer ebgp-multihop	BGP
neighbor peer description ...	BGP
no neighbor peer description ...	BGP
Set description of the peer.	
neighbor peer version version	BGP
Set up the neighbor's BGP version. <i>version</i> can be <i>4</i> , <i>4+</i> or <i>4-</i> . BGP version <i>4</i> is the default value used for BGP peering. BGP version <i>4+</i> means that the neighbor supports Multiprotocol Extensions for BGP-4. BGP version <i>4-</i> is similar but the neighbor speaks the old Internet-Draft revision 00's Multiprotocol Extensions for BGP-4. Some routing software is still using this version.	
neighbor peer interface ifname	BGP
no neighbor peer interface ifname	BGP
When you connect to a BGP peer over an IPv6 link-local address, you have to specify the <i>ifname</i> of the interface used for the connection.	
neighbor peer next-hop-self	BGP
no neighbor peer next-hop-self	BGP

This command specifies an announced route's nexthop as being equivalent to the address of the bgp router.

neighbor peer update-source BGP
no neighbor peer update-source BGP

neighbor peer default-originate BGP
no neighbor peer default-originate BGP

bgpd's default is to not announce the default route (0.0.0.0/0) even it is in routing table. When you want to announce default routes to the peer, use this command.

neighbor peer port port BGP
neighbor peer port port BGP
neighbor peer send-community BGP
neighbor peer send-community BGP
neighbor peer weight weight BGP
no neighbor peer weight weight BGP

This command specifies a default *weight* value for the neighbor's routes.

neighbor peer maximum-prefix number BGP
no neighbor peer maximum-prefix number BGP

Peer filtering

neighbor peer distribute-list name [in|out] BGP

This command specifies a distribute-list for the peer. *direct* is in or out.

neighbor peer prefix-list name [in|out] BGP command
neighbor peer filter-list name [in|out] BGP command
neighbor peer route-map name [in|out] BGP

Apply a route-map on the neighbor. *direct* must be in or out.

Show IP BGP

show ip bgp Command
show ip bgp A.B.C.D Command
show ip bgp X:X::X:X Command

This command displays BGP routes. When no route is specified it display all of IPv4 BGP routes.

```
BGP table version is 0, local router ID is 10.1.1.1
  Status codes: s suppressed, d damped, h history, * valid, >
best, i - internal
  Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
      Network          Next Hop          Metric LocPrf Weight
Path
  *> 1.1.1.1/32        0.0.0.0              0           32768 i
```

Total number of prefixes

More Show IP BGP

show ip bgp regexp *line* Command

This command display BGP routes using AS path regular expression (see [Display BGP Routes by AS Path](#)).

show ip bgp community *community* Command

show ip bgp community *community* exact-match Command

This command display BGP routes using *community* (see [Display BGP Routes by Community](#)).

show ip bgp community-list *word* Command

show ip bgp community-list *word* exact-match Command

This command display BGP routes using community list (see [Display BGP Routes by Community](#)).

show ip bgp summary Command

show ip bgp neighbor [*peer*] Command

clear ip bgp *peer* Command

Clear peers which have addresses of X.X.X.X

clear ip bgp *peer* soft in Command

Clear peer using soft reconfiguration.

show debug Command

debug event Command

debug update Command

debug keepalive Command

no debug event Command

no debug update Command

no debug keepalive

IP Access List

access-list *name* permit *ipv4-network* Command

access-list *name* deny *ipv4-network* Command

Basic filtering is done by access-list as shown in the following example.

```
access-list filter deny 10.0.0.0/9
access-list filter permit 10.0.0.0/8
```

IP Prefix List

ip prefix-list provides the most powerful prefix based filtering mechanism. In addition to access-list functionality, ip prefix-list has prefix length range specification and sequential number specification. You can add or delete prefix based filters to arbitrary points of prefix-list using sequential number specification.

If no ip prefix-list is specified, it acts as permit. If ip prefix-list is defined, and no match is found, default deny is applied.

ip prefix-list name (permit|deny) prefix [le len] [ge len] Command

ip prefix-list name seq number (permit|deny) prefix [le len] [ge len] Command

You can create ip prefix-list using above commands.

seq

seq *number* can be set either automatically or manually. In the case that sequential numbers are set manually, the user may pick any number less than 4294967295. In the case that sequential numbers are set automatically, the sequential number will increase by a unit of five (5) per list. If a list with no specified sequential number is created after a list with a specified sequential number, the list will automatically pick the next multiple of five (5) as the list number. For example, if a list with number 2 already exists and a new list with no specified number is created, the next list will be numbered 5. If lists 2 and 7 already exist and a new list with no specified number is created, the new list will be numbered 10.

le

le command specifies prefix length. The prefix list will be applied if the prefix length is less than or equal to the le prefix length.

ge

ge command specifies prefix length. The prefix list will be applied if the prefix length is greater than or equal to the ge prefix length.

Less than or equal to prefix numbers and greater than or equal to prefix numbers can be used together. The order of the le and ge commands does not matter.

If a prefix list with a different sequential number but with the exact same rules as a previous list is created, an error will result. However, in the case that the sequential number and the rules are exactly similar, no error will result.

If a list with the same sequential number as a previous list is created, the new list will overwrite the old list.

Matching of IP Prefix is performed from the smaller sequential number to the larger. The matching will stop once any rule has been applied.

In the case of no le or ge command,

Version 0.85: the matching rule will apply to all prefix lengths that matched the prefix list.

Version 0.86 or later: In the case of no le or ge command, the prefix length must match exactly the length specified in the prefix list.

no ip prefix-list name Command

ip prefix-list description

ip prefix-list name description desc Command

Descriptions may be added to prefix lists. This command adds a description to the prefix list.

no ip prefix-list name description [desc] Command

Deletes the description from a prefix list. It is possible to use the command without the full description.

ip prefix-list sequential number control

ip prefix-list sequence-number Command

With this command, the IP prefix list sequential number is displayed. This is the default behavior.

no ip prefix-list sequence-number Command

With this command, the IP prefix list sequential number is not displayed.

Showing ip prefix-list

show ip prefix-list Command

Display all IP prefix lists.

show ip prefix-list name Command

Show IP prefix list can be used with a prefix list name.

show ip prefix-list name seq num Command

Show IP prefix list can be used with a prefix list name and sequential number.

show ip prefix-list name a.b.c.d/m Command

If the command longer is used, all prefix lists with prefix lengths equal to or longer than the specified length will be displayed. If the command first match is used, the first prefix length match will be displayed.

show ip prefix-list name a.b.c.d/m longer Command

show ip prefix-list name a.b.c.d/m first-match Command

show ip prefix-list summary Command

show ip prefix-list summary name Command

show ip prefix-list detail Command

show ip prefix-list detail name Command

Clear counter of ip prefix-list

clear ip prefix-list Command

Clears the counters of all IP prefix lists. Clear IP Prefix List can be used with a specified name and prefix.

clear ip prefix-list name Command

clear ip prefix-list name a.b.c.d/m Command

Route Map

Route map is a very useful function in zebra. There is a match and set statement permitted in a route map.

```
route-map test permit 10
  match ip address 10
  set local-preference 200
```

This means that if a route matches ip access-list number 10 it's local-preference value is set to 200.

Route Map Command

route-map *route-map-name* **permit** *priority*

Command

Route Map Match Command

match ip address *access_list*

Route-map Command

Matches the specified *access_list*

match ip next-hop *ipv4_addr*

Route-map Command

Matches the specified *ipv4_addr*.

match aspath *as_path*

Route-map Command

Matches the specified *as_path*.

match metric *metric*

Route-map Command

Matches the specified *metric*.

match community *community_list*

Route-map Command

Matches the specified *community_list*

Route Map Set Command

set ip next-hop *ipv4_address*

Route-map Command

Set the BGP nexthop address.

set local-preference *local_pref*

Route-map Command

Set the BGP local preference.

set weight *weight*

Route-map Command

Set the route's weight.

set metric *metric*

Route-map Command

Set the BGP attribute MED.

set as-path prepend *as_path*

Route-map Command

Set the BGP AS path to prepend.

set community *community*

Route-map Command

Set the BGP community attribute.

set ipv6 next-hop global *ipv6_address*

Route-map Command

Set the BGP-4+ global IPv6 nexthop address.

set ipv6 next-hop local *ipv6_address*

Route-map Command

Set the BGP-4+ link local IPv6 nexthop address.