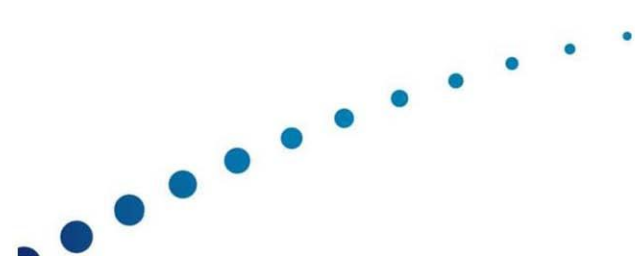




# Citrix® NetScaler® Routing

## BGP Command Reference



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## About This Command Reference

Network administrators and application developers who install and configure ZebOS® IP routing software should use this Command Reference.

This Reference contains the following information:

- An overview of the ZebOS Command Line Interface.
- The complete command reference for ZebOS Border Gateway Protocol (BGP).

Users can use a telnet session to log onto the BGP daemon and use the CLI described in this Command Reference to issue commands to configure and to get information about the BGP daemon.

---

## Command Line Interface Primer

The ZebOS® Command Line Interface (CLI) is a text-based facility conforming to industry standards. Many of the commands may be used in scripts to automate configuration tasks. Each CLI command is usually associated with a specific function or a common function performing a specific task. Multiple users can telnet and issue commands using the Exec mode and the Privileged Exec mode. For ZebOS versions prior to 7.4, only one user is allowed to use the Configure mode at a time. For ZebOS versions 7.4 and later, multiple users are allowed to simultaneously use the Configure mode.

The IMI (Integrated Management Interface) Shell gives users and administrators the ability to issue commands to several daemons from a single telnet session.

---

## Definitions

token	A non-character, non-numeric symbol: {}, {}, (), <>,  , ?, >, .., =
parameter	An UPPERCASE term for which the user substitutes input.
keyword	A lowercase term that the user types exactly as shown.

---

## Command Line Interface Help

The ZebOS CLI contains a text-based help facility. Access this help by typing in a full or partial command string then typing a question mark "?". The ZebOS CLI displays the command keywords or parameters along with a short description.

For example, at the CLI command prompt, type

```
ZebOS> show ? (the CLI does not display the question mark).
```

The CLI displays this keyword list with short descriptions for each keyword:

```
ZebOS# show
  debugging      Debugging functions (see also 'undebug')
  history        Display the session command history
  ip             IP information
```

memory	Memory statistics
route-map	route-map information
running-config	running configuration
startup-config	Contents of startup configuration
version	Displays ZebOS version

If the ? is typed in the middle of a keyword, ZebOS CLI displays help for that keyword only.

```
ZebOS> show de? (the CLI does not display the question mark).
debugging Debugging functions (see also 'undebug')
```

If the ? is typed in the middle of a keyword but the incomplete keyword matches several other keywords, ZebOS displays help for all matching keywords.

```
ZebOS> show i? (the CLI does not display the question mark).
interface Interface status and configuration
ip IP information
isis ISIS information
```

---

## Syntax Help

### Command Completion

The ZebOS CLI can complete the spelling of a command or a parameter. Begin typing the command or parameter and then press TAB. For example, at the CLI command prompt type `sh`:

```
ZebOS> sh
```

Press TAB. The CLI shows:

```
ZebOS> show
```

If the command or parameter partial spelling is ambiguous, the ZebOS CLI displays the choices that match the abbreviation. Type `show i` and press TAB. The CLI shows:

```
ZebOS> show i
interface ip isis
ZebOS> show i
```

The CLI displays the `interface` and `ip` keywords. Type `n` to select `interface` and press TAB. The CLI shows:

```
ZebOS> show in
ZebOS> show interface
```

Type `?` and the CLI displays the list of parameters for the `show interface` command.

```
ZebOS> show interface
IFNAME Interface name
| Output modifiers
> Output redirection
<cr>
```

The CLI displays the only parameter associated with this command, the `IFNAME` parameter. For more information on the output modifiers and output redirection, see the *Special Tokens for Show Commands* section.

### Command Abbreviations

The ZebOS CLI accepts abbreviations for commands. For example,

```
sh in eth0
```

is an abbreviation for the `show interface` command.

## Command Line Errors

Any unknown spelling variation causes the command line parser to display in response to the ?, the error `Unrecognized command`. The parser re-displays the command as last entered. When the user presses the enter key after typing an invalid command, the parser displays:

```
ZebOS(config)#router ospf here
                        ^
% Invalid input detected at '^' marker.
```

where the ^ points to the first character in error in the command.

If a command is incomplete it displays this message:

```
ZebOS> show
% Incomplete command.
```

Some commands are too long for the display line and can wrap in mid-parameter or mid-keyword:

```
area 10.10.0.18 virtual-link 10.10.0.19 authent
ication-key 57393
```

---

## Command Reference Primer

---

### Typographic Conventions

The following table lists typographic conventions for command syntax descriptions.

Convention	Name	Description	Example
Monospaced font	Command	Represents command strings entered on a command line and sample source code.	<code>show ip ospf</code>
Proportional font	Description	Gives specific details about a parameter.	<code>advertise</code> <b>Advertises this range</b>
UPPERCASE	Variable parameter	Indicates user input. Values to be entered according to the descriptions that follow. Each uppercased token expands into one or more other tokens.	<code>area</code> <b>AREAID</b> <code>range</code> <b>ADDRESS</b>
lowercase	Keyword parameter	Indicates keywords. Values to be entered exactly as shown in the command description.	<code>show ip ospf</code>
	Vertical bar	Delimits choices; One to be selected from the list. Not to be entered as part of the command.	<code>A.B.C.D &lt;0-4294967295&gt;</code>
( )	Parentheses	Encloses optional parameters. None or only one to be chosen. Not to be entered as part of the command.	<code>(A.B.C.D &lt;0-4294967295&gt;)</code>
{ }	Braces	Encloses optional parameters. None, one or more than one to be chosen. Not to be entered as part of the command.	<code>{priority &lt;0-255 poll-interval &lt;1-65535&gt;}</code>
[ ]	Square brackets	Encloses optional parameters. Choose one. Not to be entered as part of the command.	<code>[parm2 parm2 parm3]</code>
?	Question mark	Used with the square brackets to limit the immediately following token to one occurrence. Not to be entered as part of the command.	<code>[parm1 parm2]?parm3</code> expands to <code>parm1 parm3 parm1 parm2</code> (with <code>parm3</code> occurring once)
< >	Angle brackets	Enclose a numeric range, endpoints inclusive. Not to be entered as part of the command.	<code>&lt;0-65535&gt;</code>
=	Equal sign	Separates the variable from explanatory text. Not to be entered as part of the command.	<code>PROCESSID = &lt;0-65535&gt;</code>
.	Dot (period)	Allows the repetition of the element that immediately follows it multiple times. Not to be entered as part of the command.	<b>.AA:NN</b> can be expanded to: <code>1:01 1:02 1:03</code> .
A.B.C.D	IP address	An IPv4-style address.	<code>10.0.11.123</code>
X:X::X:X	IP address	An IPv6-style address.	<b>3ffe:506::1</b> , where the <code>::</code> represents all 0s for those address components not explicitly given.
LINE	End-of-line input token	Indicates user input of any string, including spaces. No other parameters may be entered after input for this token.	<code>string of words</code>

<b>Convention</b>	<b>Name</b>	<b>Description</b>	<b>Example</b>
WORD	Single token	Indicates user input of any contiguous string (excluding spaces).	<code>singlewordnospaces</code>
IFNAME	Single token	Indicates the name of an interface.	<code>eth0</code>

---

## Format used for Command Description

---

### command name

Description of the command. What the command does and when should it be used.

### Command Syntax

```
sample command name mandatory-parameters (OPTIONAL-PARAMETERS)
```

### Default

The status of the command before it is executed. Is it enabled or disabled by default.

### Command Mode

Name of the command mode in which this command is to be used. Such as, Exec, Privilege Exec, Configure mode and so on.

### Usage

This section is optional. It describes the usage of a specific command and the interactions between parameters. It also includes appropriate sample outputs for `show` commands.

### Example

Used if needed to show the complexities of the command syntax.

### Related Commands

This section is optional and lists those commands that are of immediate importance.

### Equivalent Commands

This section is optional and lists commands that accomplish the same function.

### Validation Commands

This section is optional and lists commands that can be used to validate the effects of other commands.

---

## Command Negation

Some commands can be negated by using a `no` keyword.

In the following area virtual-link command, the `no` keyword is optional, This means that the entire syntax can be negated. Depending on the command or the parameters, command negation can mean the disabling of one entire feature for the router or the disabling of that feature for a specific ID, interface or address.

```
(no) area AREAADDRESSID virtual-link ROUTERID (AUTHENTICATE|MSGD|INTERVAL)
```

In the following example, negation is for the base command only. The negated form does not take any parameter.

```
default-metric <1-16777214>
no default-metric
```

---

## Variable Parameter expansion

For the area virtual-link command,

```
(no) area AREAADDRESSID virtual-link ROUTERID (AUTHENTICATE|MSGD|INTERVAL)
```

the AREAADDRESSID parameter is replaced by either an IP address or a number in the given range:

```
AREAADDRESSID=A.B.C.D|<0-4294967295>
```

and ROUTERID by an IP address. The minimum command then is:

```
area 10.10.0.11 virtual-link 10.10.0.12
```

The parameters in the string (AUTHENTICATE|MSGD|INTERVAL) are optional, and only one may be chosen. Each one can be replaced by more keywords and parameters. One of these parameters, MD5, is replaced by the following string:

```
MD5= [message-digest-key <1-255> md5 MD5_KEY]
```

with MD5\_KEY replaced by a 1-16 character string.

---

## Other Conventions



This warning symbol indicates that you must be cautious as you might risk losing data or damaging your hardware.

---

## Show Command Tokens

Two tokens modify the output of the show commands. Use the ? after typing the command to display:

```
ZebOS# show users
  | Output modifiers
  > Output redirection
```

Note: These tokens are available only through the IMI shell; they are unavailable to users who telnet to daemons.

### Output Modifiers

Type the | (vertical bar) to use Output modifiers.

```
begin      Begin with the line that matches
exclude    Exclude lines that match
include    Include lines that match
redirect   Redirect output
```

#### Begin

The begin parameter displays the output beginning with the first line containing a token matching the input string (everything typed after the begin token).

```
ZebOS# show run | begin eth1

...skipping
interface eth1
  ipv6 address fe80::204:75ff:fee6:5393/64
!
interface eth2
  ipv6 address fe80::20d:56ff:fe96:725a/64
!
line con 0
  login
line vty 0 4
  login
!
end
```

#### Exclude

The exclude parameter excludes all lines of output that contain the input string. In the following output all lines containing the word “include” are excluded:

```
ZebOS# show interface eth1 | exclude input
Interface eth1
  Scope: both
  Hardware is Ethernet, address is 0004.75e6.5393
  index 3 metric 1 mtu 1500 <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Label switching is disabled
  No Virtual Circuit configured
  Administrative Group(s): None
  DSTE Bandwidth Constraint Mode is MAM
  inet6 fe80::204:75ff:fee6:5393/64
```



```
output packets 4438, bytes 394940, dropped 0
output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
collisions 0
```

**Include**

The include parameter includes only those lines of output that contain the input string. In the output below, all lines containing the word "input" are included:

```
ZebOS# show interface eth1 | include input
input packets 80434552, bytes 2147483647, dropped 0, multicast packets 0
input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 1, missed 0
```

**Redirect**

The redirect parameter puts the lines of output into the indicated file.

```
ZebOS# show history | redirect /var/frame.txt
```

**Output Redirection**

The output redirection token > allows the user to specify a target file for the lines of output.

```
ZebOS# show history > /var/frame.txt
```

---

## Common Command Modes

The commands available for each protocol are separated into several modes (nodes) arranged in a hierarchy; The Exec mode is the lowest. Each mode has its own special commands; in some modes, commands from a lower level are available.

**Note:** Multiple users can telnet and issue commands using the Exec mode and the Privileged Exec mode. For ZebOS versions earlier than 7.4, only one user is allowed to use the Configure mode at a time. For ZebOS versions 7.4 and later, multiple users are allowed to simultaneously use the Configure mode.

**Exec Mode** Also called the `View` mode, is the base mode from where users can perform basic commands like `show`, `exit`, `quit`, `help`, `list`, and `enable`. All ZebOS daemons have this mode.

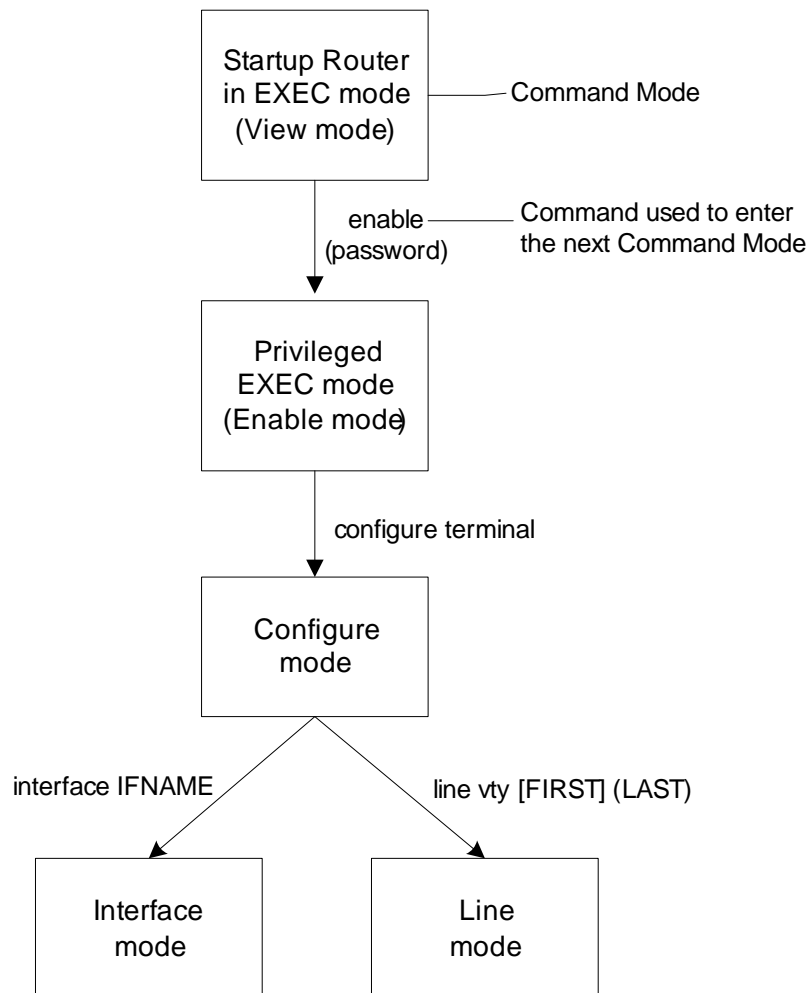
**Privileged Exec Mode** Also called the `Enable` mode, allows users to run `debug`, `write` (for saving and viewing the configuration) and `show` commands.

**Configure Mode** Also called `Configure Terminal` mode, this mode serves as a gateway into the `Interface`, `Router`, `Line`, `Route Map`, `Key Chain` and `Address Family` modes.

**Interface Mode** Is used to configure protocol-specific settings for a particular interface. Any attribute configured in this mode overrides an attribute configured in the `Router` mode.

**Line Mode** Makes the `access-class` commands available.

This diagram displays the common command mode tree.



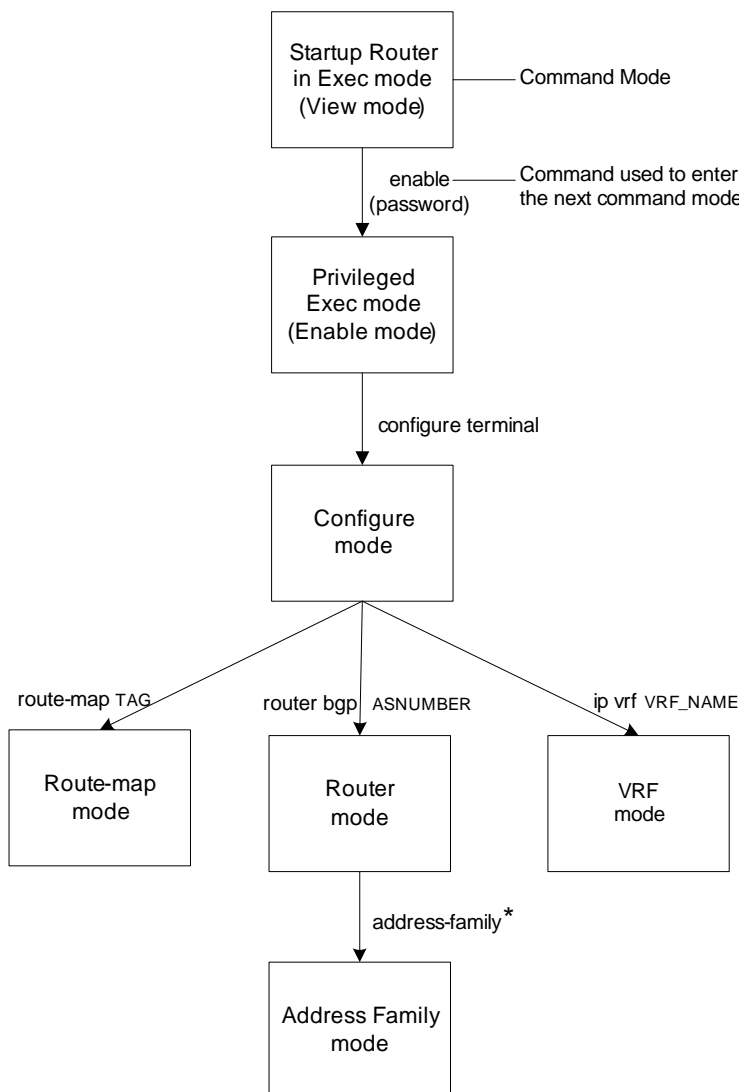
## BGP Daemon Command Modes

**Router** Sometimes referred to as `configure router` mode, this mode is available for the MPLS, BGP, OSPF, and RIP protocols only and makes available router and routing commands.

**Route-map** This mode is used to set route metric, route-length and cost data. It is available for the BGP, OSPF, and RIP protocols only.

**Address Family** This mode allows support for multiprotocol BGP extension. It includes address family-specific commands that are used to modify the behavior of BGP for a specific address family. For details on this mode, see "Address Family Mode" on page 6.

The following diagram shows the complete BGP daemon command mode tree. For information about Exec, Privileged Exec, Configure and Interface modes please refer to the ZebOS daemon command modes mentioned earlier in this chapter.



Following is a description of the parameters used in the above mentioned commands.

ASNUMBER = <1-65535>

TAG = WORD (deny|permit) <1-65535>

WORD

`deny` Route-map denies set operations

`permit` Route-map permits set operations

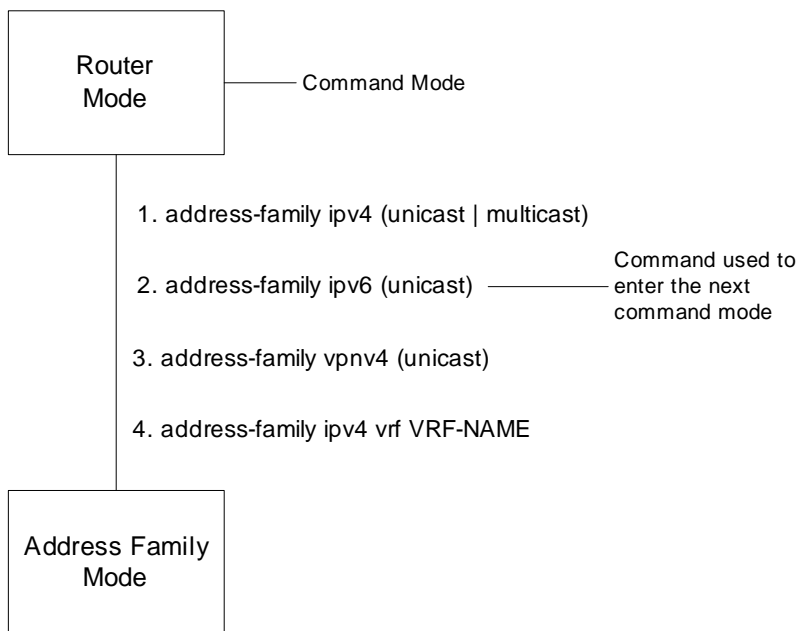
`<1-65535>` Sequence to insert to / delete from existing route-map entry.

`VRF_NAME` = A name used to identify a VRF.

\* The Address Family mode is described in the following section.

## Address Family Mode

The following commands support BGP-4 extensions (refer to RFC 2283) and enable carrying of routing information for multiple Network Layer protocols. .



The following is a description of the parameters used in the above mentioned commands:

`ipv4` Specifies IPv4 Address Family

`ipv6` Specifies IPv6 Address Family

`vpnv4` Specifies VPNv4 Address Family

`vrf VRF_NAME` Specifies the name of the virtual routing and forwarding (VRF) instance

`unicast` Specifies unicast address prefixes

`multicast` Specifies multicast address prefixes

---

## Commands Common to Multiple Protocols

See the *ZebOS NSM Command Reference* for information about using these commands in multiple protocol daemons.

Command Name	Use this command to
access-class	filter a connection based on an IP access list, for IPv4 networks
access-list	configure an access-list for filtering packets.
access-list extended	configure an extended access-list for filtering packets.
access-list standard	configure a standard access-list for filtering packets.
banner	toggle the displaying of the banner text.
clear ip prefix-list	clear the IP prefix-list.
configure terminal	enter the <code>Configure Terminal</code> mode.
copy running-config startup-config	copy the current running configuration to the startup configuration file.
description	provide interface-specific information.
disable	exit <code>Privileged Exec</code> mode.
enable	enter the <code>Privileged Exec</code> mode.
enable password	change the password for the <code>enable</code> command.
end	leave the current mode.
exec-timeout	set command interpreter wait interval.
exit	leave the current mode, or logout of the session.
help	display online text assistance.
hostname	set or change network server name.
ip prefix-list	create an entry for a prefix list.
ipv6 access-class	filter connection based on an IP access list for IPv6 networks.
ipv6 access-list	configure an access-list for filtering frames.
ipv6 prefix-list	create an entry for an IPv6 prefix list.
line vty	enter <code>Line</code> mode.
list	list all commands for a mode.
log file	specify the file that collects logging information.
log record-priority	specify the logging of the priority of a message.
log stdout	begin logging information to the standard output.

<b>Command Name</b>	<b>Use this command to</b>
log syslog	begin logging information to the system log.
log trap	limit logging to a specified level or type.
login	set a password prompt and enable password checking.
match as-path	match an autonomous system path access list.
match community	specify the community to be matched.
match extcommunity	specify the extended community to be matched.
match interface	define the interface match criterion.
match ip address	specify the match address of route.
match ip address prefix-list	specify to match entries of prefix-lists.
match ip next-hop	specify a next-hop address to be matched in a route-map.
match ip next-hop prefix-list	specify the next-hop IP address match criterion, using the prefix-list.
match ipv6 address	specify the match IPv6 address of route.
match ipv6 address prefix-list	match entries of IPv6 prefix-lists.
match ipv6 next-hop	specify a next-hop IPv6 address to be matched by the route-map.
match metric	match a metric of a route.
match origin	match origin code.
match route-type	match specified external route type.
match tag	match the specified tag value.
password	specify a network password.
quit	leave the current mode.
route-map	enter the route-map mode and to permit or deny match/set operations.
service advanced-vty	set the VTY session to <code>Privileged Exec</code> mode instead of the <code>Exec</code> mode (which is the default).
service password-encryption	specify encryption of passwords.
service terminal-length	set the terminal length for VTY sessions.
set aggregator	set the AS number for the route map and router ID.
set as-path	modify an autonomous system path for a route.
set atomic-aggregate	set an atomic aggregate attribute.
set comm-list delete	delete matching communities from inbound or outbound updates.
set community	set the communities attribute.

<b>Command Name</b>	<b>Use this command to</b>
set community-additive	add a community to the already existing communities.
set dampening	set route-flap dampening parameters.
set extcommunity	set an extended community attribute.
set ip next-hop	set the specified next-hop value.
set ipv6 next-hop	set a next hop-address.
set metric	set a metric value for a route.
set metric-type	set the metric type for the destination routing protocol.
set next-hop	specify the next-hop address.
set origin	set the origin code.
set originator-id	set the originator ID attribute.
set tag	set specified tag value.
set vpnv4 next-hop	set a VPNv4 next-hop address.
set weight	set weights for the routing table.
show access-list	display the list of IP access lists.
show cli	display the CLI tree of the current mode.
show list	display a list of all commands in the current mode.
show history	display all commands used in a session.
show ip prefix-list	display the prefix list entries.
show memory all	display the memory reports for all protocols.
show memory free	display the statistics of free memory for all protocol.
show memory summary	display the summary of memory subsystem statistics.
show route-map	display user readable route-map information.
show running-config	display the current configuration.
show startup-config	display the startup configuration (from storage).
show version	display the current ZebOS version.
terminal length	set the number of lines in a terminal display.
terminal monitor	display debugging on a monitor.
who	display other VTY connections.
write file and write memory	write the current configuration file.
write terminal	display current configurations to the VTY terminal.





## CHAPTER 2 BGP Commands

---

This chapter provides an alphabetized reference for each of the BGP commands.

---

### address-family

Use this command to enter the IPv4, IPv6 or VPNv4 address-family command mode.

#### Command Syntax

```
address-family ipv4 (multicast|unicast|vrf)
```

```
address-family ipv6 (unicast)
```

```
address-family vpnv4 (unicast)
```

`vpn4` Configures sessions for VPN-IPv4 prefixes. This parameter takes an IPv4 style address:  
A.B.C.D.

`ipv6` Configures sessions for VPN-IPv6 prefixes. This parameter takes an IPv6 style address:  
X:X::X:X.

`multicast` Specifies multicast prefixes.

`unicast` Specifies unicast prefixes.

`vrf` VPN routing/forwarding instance

#### Command Mode

Router mode

#### Usage

Use the address family command to enter the address family mode allowing configuration of address-family specific parameters. To leave the address family mode and return to the Configure mode use the `exit-address-family` command.

#### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 7657
ZebOS(config-router) neighbor 3ffe:506::1 remote-as 7657
ZebOS(config-router) neighbor 3ffe:506::1 interface eth1
!
ZebOS# configure terminal
ZebOS(config) router bgp 7657
ZebOS(config-router)address-family ipv6
ZebOS(config-router-af)neighbor 3ffe:506::1 activate
ZebOS(config-router-af)exit-address-family
```

#### Related Commands

`exit`, `exit-address-family`

## aggregate-address

Use this command to configure BGP aggregate entries.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) aggregate-address IPADDRESS {summary-only|as-set}
      IPADDRESS = A.B.C.D/M Specifies the aggregate prefix.
      summary-only Filters more specific routes from updates.
      as-set Generates AS set path information
```

### Default

Disabled

### Command Mode

Router mode

### Usage

Aggregates are used to minimize the size of routing tables. Aggregation combines the characteristics of several different routes and advertises a single route. The `aggregate-address` command creates an aggregate entry in the BGP routing table if any more-specific BGP routes are available in the specified range. Using the `summary-only` parameter advertises the prefix only, suppressing the more-specific routes to all neighbors. In the following example Router1 will propagate network 172.0.0.0 and suppresses the more specific route 172.10.0.0.

```
Router1#
aggregate-address 172.0.0.0/ 8 summary-only
```

The `as-set` parameter creates an aggregate entry advertising the path for this route, consisting of all elements contained in all paths being summarized. Use the `as-set` parameter to reduce the size of path information by listing the AS number only once, even if it was included in multiple paths that were aggregated. The `as-set` parameter is useful when aggregation of information results in an incomplete path information. In the following configuration Router1 has set the `as-set` parameter. When sending aggregate information to Router2 this indicates that 172.0.0.0 belongs to a set 100 and 200. Without the `as-set` parameter Router2 would receive path information indicating that the information was originating from AS 300 and have no knowledge that it was coming from two different autonomous systems. This might create loops.

```
Router1#
router bgp 300
neighbor 2.2.2.2 remote-as 100
neighbor 3.3.3.3 remote-as 200
aggregate-address 172.0.0.0/8 summary-only as-set
```

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# aggregate-address 10.0.0.0/8 as-set summary-only
```

### Related Commands

`match as-path`

---

## auto-summary

Use this command to enable sending summarized routes by a BGP speaker to its peers in the router configuration mode or in the address-family configuration mode.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) auto-summary
```

### Default

Disabled.

### Command Mode

Router mode

Address Family IPv4 mode

### Usage

Auto-summary is used by a BGP router to advertise summarized routes to its peers. Auto-summary can be enabled if certain routes have already been advertised: in this case, configuring auto-summary advertises the summarized routes first, then corresponding non-summarized routes are withdrawn. If certain routes have already been advertised, and auto-summary is disabled, non-summarized routes are first advertised, then the corresponding summarized routes are withdrawn from all the connected peers.

### Examples

The following example enables auto-summary in Router mode.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config-router)# auto-summary
```

The following example enables auto-summary in the IPv4 address family.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 1
ZebOS(config)# address-family ipv4
ZebOS(config-af)# auto-summary
```

---

## bgp aggregate-next-hop-check

Use this command to set the BGP option to perform aggregation only when next-hop matches the specified IP address.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no)bgp aggregate-next-hop-check
```

### Default

Disabled

## Command Mode

Configure mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# bgp aggregate-nexthop-check
```

---

## bgp always-compare-med

Use this command to compare the Multi Exit Discriminator (MED) for paths from neighbors in different autonomous systems.

Use the `no` parameter with this command to disallow the comparison.

## Command Syntax

```
(no) bgp always-compare-med
```

## Default

Disabled

## Command Mode

Router mode

## Usage

Multi Exit Discriminator (MED) is used in best path selection by BGP. MED is compared after BGP attributes weight, local preference, AS-path and origin have been compared and are equal.

MED comparison is done only among paths from the same autonomous system (AS). Use `bgp always-compare-med` command to allow comparison of MEDs from different ASs. The MED parameter is used to select the best path. A path with lower MED is preferred. If the bgp table shows the following and the `always-compare-med` is enabled:

```
Route1: as-path 400, med 300
Route2: as-path 200, med 200
Route3: as-path 400, med 250
```

Route1 is compared to Route2. Route2 is best of the two (lower MED). Next, Route2 is compared to Route3 and Route2 is chosen best path again (lower MED). If `always-compare-med` was disabled, MED is not taken into account when Route1 and Route2 are compared, because of different ASs and MED is compared for only Route1 and Route3. In this case, Route3 would be the best path. The selected route is also affected by the `bgp deterministic-med` command. Please see `bgp deterministic-med` command for details.

If this command is used to compare MEDs for all paths, it should be configured on every BGP router in the AS.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# bgp always-compare-med
```

## Related Commands

`bgp bestpath med`, `bgp bestpath as-path ignore`, `bgp bestpath compare-routerid`, `bgp deterministic-med`

---

## bgp bestpath as-path ignore

Use this command to prevent the router from considering as-path as a factor in the algorithm for choosing a route.

Use the `no` parameter with this command to allow the router to consider as-path in choosing a route.

### Command Syntax

```
(no) bgp bestpath as-path ignore
```

### Command Mode

Router mode

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp bestpath as-path ignore
```

### Related Commands

bgp always-compare-med, bgp bestpath med, bgp bestpath compare-routerid

---

## bgp bestpath compare-confed-aspath

Use this command to allow comparing of the confederation AS path length.

Use the `no` parameter with this command to revert the selection and ignore AS confederation path length in the BGP best path selection.

### Command Syntax

```
(no) bgp bestpath compare-confed-aspath
```

### Default

BGP receives routes with identical eBGP paths from eBGP peers and selects the first route received as the best path.

### Command Mode

Router mode

### Usage

This command specifies that the AS confederation path length must be used, when available, in the BGP best path decision process. It is effective only when `bgp bestpath as-path ignore` command has not been specified.

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp bestpath compare-confed-aspath
```

### Related Commands

bgp bestpath as-path ignore

## bgp bestpath compare-routerid

Use this command to compare router-id for identical eBGP paths.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) bgp bestpath compare-routerid
```

### Default

BGP receives routes with identical eBGP paths from eBGP peers and selects the first route received as the best path.

### Command Mode

Router mode

### Usage

When comparing similar routes from peers the BGP router does not consider router ID of the routes. By default, it selects the first received route. Use this command to include router ID in the selection process; similar routes are compared and the route with lowest router ID is selected. The router-id is the highest IP address on the router, with preference given to loopback addresses. Router-id can be manually set by using the `bgp router-id` command.

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp bestpath compare-routerid
```

### Related Commands

`show ip bgp`, `show ip bgp neighbors`

---

## bgp bestpath med

Use this command to specify Multi Exit Discriminator (MED) attribute comparison.

Use the `no` parameter with this command to prevent BGP from considering the MED attribute in comparing paths.

### Command Syntax

```
bgp bestpath med confed|missing-as-worst
bgp bestpath med missing-as-worst confed
    confed Compares MED among confederation paths
    missing-as-worst Treats missing MED as the least preferred one
```

### Command Mode

Router mode

### Default

MED value is zero.

---

## Usage

Use this command to specify two MED attributes--`confed` and `missing-as-worst`. The `confed` attribute enables MED comparison among paths learned from confederation peers. The MEDs are compared only if there is no external autonomous system (an AS not within the confederation) in the path. If there is an external autonomous system in the path, the MED comparison is not made. For example in the following paths, the MED is not compared with Route3 as it is not in the confederation. MED is compared for Route1 and Route2 only.

```
Path1 = 32000 32004, med=4
Path2 = 32001 32004, med=2
Path3 = 32003 1, med=1
```

The `missing-as-worst` attribute to consider a missing MED attribute in a path as having a value of infinity, making the path without a MED value the least desirable path. If `missing-as-worst` is disabled, the missing MED is assigned the value of 0, making the path with the missing MED attribute the best path.

## Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp bestpath med missing-as-worst
```

## Related Commands

`bgp-always-compare-med`, `bgp bestpath as-path ignore`, `bgp deterministic-med`

---

## bgp bestpath med remove-recv-med

Use this command to set the `remove-received-med` option, which removes Multi-Exit Discriminators (MEDs) of all incoming routes.

Use the `no` parameter with this command to disable the `remove-received-med` option.

## Command Syntax

```
(no) bgp bestpath med remove-recv-med
```

## Command Mode

Router mode

## Usage

This command makes the local BGP speaker not consider the MED in the received UPDATE message for the decision and route-selection process. The execution of the `no` form of this command makes the BGP speaker consider the MED in the received UPDATE message for the decision and route-selection process.

However, the execution of this command alone lets the local BGP speaker send MED in the UPDATE messages to its peers.

When the peer receives routes from neighbors with the following routes, the peer does not consider MEDs for the decision and reroute-selection process:

```
Route1: as-path 200, med 300
Route2: as-path 400, med 200
Route3: as-path 400, med 250
```

## Examples

```
ZebOS# configure terminal
```

```
ZebOS(config) router bgp 100
ZebOS(config-router)#bgp bestpath med remove-recv-med
ZebOS(config-router)#no bgp bestpath med remove-recv-med
```

---

### bgp bestpath med remove-send-med

Use this command to set the remove-send-med option. This command removes MEDs of all outgoing routes.

Use the `no` parameter with this command to disable the remove-send-med option.

#### Command Syntax

```
(no) bgp bestpath med remove-send-med
```

#### Command Mode

Router mode

#### Usage

This command enables the local BGP speaker to remove the MED attribute from the UPDATE message to be sent to its peers. However, execution of this command alone lets the local BGP speaker consider the MED received from other peers during the decision and route-selection process.

When the peer receives routes with following MEDs, all outgoing routes' MEDs get removed and forwarded to the neighbors.

Route1: as-path 200, med 300

Route2: as-path 400, med 200

Route3: as-path 400, med 250

#### Examples

```
ZebOS# configure terminal
ZebOS(config)#router bgp 100
ZebOS(config-router)#bgp bestpath med remove-send-med
ZebOS(config-router)#no bgp bestpath med remove-send-med
```

---

### bgp client-to-client reflection

Use this command to restore route reflection from a BGP route reflector to clients.

Use the `no` parameter with this command to turn off client-to-client reflection.

#### Command Syntax

```
(no) bgp client-to-client reflection
reflection Allows reflection of routes
```

#### Default

When a router is configured as a route reflector, client-to-client reflection is enabled by default.

#### Command Mode

Router mode



## Usage

The `bgp client-to-client reflection` command is used to configure routers as route reflectors. Route reflectors are used when all Interior Border Gateway Protocol (iBGP) speakers are not fully meshed. If the clients are fully meshed the route reflector is not required, use `no bgp client-to-client reflection` command to disable the client-to-client route reflection.

## Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) no bgp client-to-client reflection
```

## Related Commands

`bgp cluster-id`, `neighbor route-reflector-client`, `show ip bgp`

---

## bgp cluster-id

Use this command to configure the cluster ID if the BGP cluster has more than one route reflector.

Use the `no` parameter with this command (without any arguments) to remove the cluster ID.

## Command Syntax

```
bgp cluster-id CLUSTERID
    CLUSTERID = A.B.C.D|<1-4294967295> Specifies the cluster ID of this router acting as a route
    reflector, either as IP address or as a maximum of 4 bytes.
    A.B.C.D Route Reflector Cluster-id in IP address format
    <1-4294967295> Route Reflector cluster-id as a 32 bit quantity
no bgp cluster-id
```

## Command Mode

Router mode

## Usage

A cluster includes route reflectors and its clients. Usually, each cluster is identified by the router ID of its single route reflector but to increase redundancy sometimes a cluster may have more than one route reflector. All route reflectors in such a cluster are then identified by a cluster ID. The `bgp cluster-id` command is used to configure the 4 byte cluster ID for clusters with more than one route reflectors.

The following configuration creates a cluster-id 5 including two route-reflector-clients.

```
Router1#
router bgp 200
neighbor 2.2.2.2 remote-as 200
neighbor 3.3.3.3 remote-as 200
neighbor 3.3.3.3 route-reflector-client
neighbor 5.5.5.5 remote-as 200
neighbor 5.5.5.5 route-reflector-client
neighbor 6.6.6.6 remote-as 200
bgp cluster-id 5
```

## Examples

```
ZebOS# configure terminal
```

```
ZebOS(config) router bgp 100
ZebOS(config-router) bgp cluster-id 1.1.1.1
```

### Related Commands

bgp client-to-client reflection, neighbor route-reflector-client, show ip bgp

---

## bgp confederation identifier

Use this command to specify a BGP confederation identifier.

Use the `no` parameter with this command to remove the BGP confederation identifier.

### Command Syntax

```
bgp confederation identifier ID
    ID = <1-65535> Set routing domain confederation AS number
no bgp confederation identifier
```

### Command Mode

Router mode

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp confederation identifier 1
```

### Related Commands

bgp confederation peers

---

## bgp confederation peers

Use this command to configure the Autonomous Systems (AS) that belong to the confederation.

Use the `no` parameter with this command to remove an autonomous system from the confederation.

### Command Syntax

```
(no) bgp confederation peers .ASN
    ASN <1-65535> AS numbers of eBGP peers that are under same confederation but in a different sub-AS
```

### Command Mode

Router mode

### Usage

A confederation allows an AS to be divided into several ASs. The AS is given a confederation identifier. External routers view only the whole confederation as one AS. Each AS is fully meshed within itself and is visible internally to the confederation. Use the `bgp confederation peer` command to define the list of confederation peers.

In the following configuration of Router1 the neighbor 172.210.30.2 and 172.210.20.1 have iBGP connection within AS 100, neighbor 173.213.30.1 is a BGP connection with a confederation peer 200 and neighbor 6.6.6.6 has an eBGP connection to external AS 300. In the configuration of Router2 neighbor 5.5.5.4 has an eBGP connection to confederation 300.

Router2 does not know about the ASs 100 and 200, it knows about only confederation 300. BGP confederation thus reduces the iBGP mesh inside an AS.

```
Router1#
router bgp 100
bgp confederation identifier 300
bgp confederation peer 200
neighbor 172.210.30.2 remote-as 100
neighbor 172.210.20.1 remote-as 100
neighbor 173.213.30.1 remote-as 200
neighbor 6.6.6.6 remote-as 300
!
```

```
Router2#
router bgp 500
neighbor 5.5.5.4 remote-as 300
```

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp confederation peers 1234 21345
```

### Related Commands

bgp confederation identifier

---

## bgp config-type

Use this command to set the BGP configuration type.

### Command Syntax

```
bgp config-type standard|zebos
        standard Specifies the Industry standard style configuration.
        zebos Specifies the ZebOS style configuration.
```

### Default

The default configuration type is: `bgp config-type zebos`

### Command Mode

Configure mode

### Usage

Use this command to set the BGP configuration to the `standard` type. After setting the configuration to be the `standard` type, make sure to use the `neighbor send-community` command to send out BGP community attributes.

The `zebos` configuration type is the default and requires no specific configuration for sending out BGP standard community and extended community attributes.

For the `standard` type, the `no synchronization` command is always shown in the configuration, whereas, for the `zebos` type this command is the default.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# bgp config-type standard
```

## Related Commands

neighbor send-community

---

## bgp dampening

Use this command to set bgp dampening parameters.

Use the `no` parameter with this command to unset the bgp dampening parameters.

## Command Syntax

```
(no) bgp dampening REACHTIME
(no) bgp dampening REACHTIME REUSE
(no) bgp dampening REACHTIME REUSE SUPPRESS MAXSUPPRESS (UNREACHTIME)
(no) bgp dampening ROUTEMAP
```

**REACHTIME** <1-45> Specifies the reachability half-life time in minutes. The time for the penalty to decrease to one-half of its current value. The default is 15 minutes.

**REUSE** <1-20000> Specifies the reuse limit value. When the penalty for a suppressed route decays below the reuse value, the routes become unsuppressed. The default reuse limit is 750

**SUPPRESS** <1-20000> Specifies the suppress limit value. When the penalty for a route exceeds the suppress value, the route is suppressed. The default suppress limit is 2000.

**MAXSUPPRESS** <1-255> Specifies the max-suppress-time. Maximum time that a dampened route is suppressed. The default max-suppress value is 4 times the half-life time (60 minutes).

**UNREACHTIME** <1-45> Specifies the un-reachability half-life time for penalty, in minutes.

**ROUTEMAP** = `route-map WORD` Route-map to specify criteria for dampening.

**WORD** Specify the name of the route-map.

## Command Mode

Router mode

## Usage

Route dampening minimizes the instability caused by route flapping. A penalty is added for every flap in a flapping route. As soon as the total penalty reaches the `suppress` limit the advertisement of the route is suppressed. This penalty is decayed according to the configured `half time` value. Once the penalty is lower than the `reuse` limit, the route advertisement is un-suppressed.

The dampening information is purged from the router once the penalty becomes less than half of the `reuse` limit.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config-router)# bgp dampening 20 800 2500 80 25
```

---

## bgp default ipv4-unicast

Use this command to configure BGP defaults and activate ipv4-unicast for a peer by default. This affects the BGP global configuration

Use the `no` parameter with this command to disable this function

### Command Syntax

```
(no) bgp default ipv4-unicast
```

### Default

The `bgp default ipv4 unicast` is the default behavior.

### Command Mode

Router mode

### Usage

The `no bgp default ipv4-unicast` command is used to disable the default behavior of the BGP routing process of exchanging IPv4 addressing information with BGP neighbor routers.

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp default ipv4-unicast
```

---

## bgp default local-preference

Use this command to change the default local preference value.

Use the `no` parameter with this command to revert to the default setting.

### Command Syntax

```
(no) bgp default local-preference PREF_VALUE
      PREF_VALUE = <0-4294967295> Configure default local preference value.
      The default local preference value is 100.
```

### Command Mode

Router mode

### Usage

Local preference indicates the preferred path when there are multiple paths to the same destination. The path having a higher preference is preferred. Use `bgp default local-preference` command to define preference of a particular path. The preference is sent to all routers and access servers in the local autonomous system.

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp default local-preference 2345555
```

## Related Commands

set local-preference

---

## bgp deterministic med

Use this command to have ZebOS software compare the Multi Exit Discriminator (MED) variable when choosing among routes advertised by different peers in the same autonomous system.

Use the `no` parameter with this command to disallow this setting.

### Command Syntax

```
(no) bgp deterministic-med
```

### Default

Disabled

### Command Mode

Router mode

### Usage

Multi Exit Discriminator (MED) is used in best path selection by BGP. MED is compared after BGP attributes weight, local preference, AS-path and origin have been compared and are equal.

Enable `bgp deterministic med` command on all routers in the local AS, for a correct comparison result. After enabling this command, all paths for the same prefix are grouped together and arranged according to their MED value. Based on this comparison, the best path is then chosen.

This command compares MED variable when choosing routes advertised by different peers in the same AS, to compare MED, when choosing routes from neighbors in different ASs use the `bgp always-compare-med` command.

When the `bgp deterministic-med` command is enabled, routes from the same AS are grouped together, and the best routes of each group are compared. If the BGP table showed:

```
Route1: as-path 200, med 300, internal
Route2: as-path 400, med 200, internal
Route3: as-path 400, med 250, external
```

BGP would have a group of Route1 and a second group of Route2 and Route3 (the same ASs). The best of each group is compared. Route1 is the best of its group because it is the only route from AS 200. Route1 is compared to the Route2, the best of group AS 400 (the lower MED). Since the two routes are not from the same AS, the MED is not considered in the comparison. The external BGP route is preferred over the internal BGP route, making Route3 the best route; the preferred route would be different if `always-compare-med` command is enabled (See `always-compare-med` command).

### Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp deterministic-med
```

### Related Commands

show ip bgp, show ip bgp neighbors

---

## bgp enforce-first-as

Use this command to enforce the first AS for the eBGP routes.

Use the `no` parameter with this command to disable this feature.

### Command Syntax

```
(no) bgp enforce-first-as
```

### Command Mode

Router mode

### Usage

This command specifies that any updates received from an external neighbor that do not have the neighbor's configured Autonomous System (AS) at the beginning of the AS\_PATH in the received update must be denied. Enabling this feature adds to the security of the BGP network by not allowing traffic from unauthorized systems.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# bgp enforce-first-as
```

---

## bgp extended-asn-cap

Use this command to configure a BGP router to send 4-octet ASN capabilities.

Use the `no` parameter with this command prevent a BGP router from sending 4-octet ASN capabilities.

### Command Syntax

```
(no) bgp extended-asn-cap
```

### Default

Disabled

### Command Mode

Configure mode

### Usage

If attempting to change the AS capability from 2 to 4 or 4 to 2, a prompt occurs to remove the VRF configuration (if it exists), and reconfiguration is required, because the route distinguisher (RD) configuration would have been created with the current (2 octet or 4 octet) capability, and must be reconfigured before attempting to change the capability.

While loading from a saved configuration with AS4 capability and BGP VRF configuration, the capability will not be changed because of the above described reason.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# bgp extended-asn-cap
```

## bgp fast-external-failover

Use this command to reset a BGP session immediately, if the interface used for BGP connection goes down.

Use the `no` parameter with this command to disable this feature.

### Command Syntax

```
(no) bgp fast-external-failover
```

### Default

Enabled

### Command Mode

Router mode

### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# bgp fast-external-failover
```

---

## bgp graceful-restart

Use this command to enable BGP graceful-restart capabilities.

Use the `no` parameter with this command to restore the router to its default state.

### Command Syntax

```
[no] bgp graceful-restart (RESTART_TIME|STALEPATH_TIME)
```

```
RESTART_TIME = restart-time <1-3600> Maximum time needed for neighbors to restart, in
seconds. Default value is 120 seconds.
```

```
STALEPATH_TIME = stalepath-time <1-3600> Maximum time to retain stale paths from restarting
neighbors, in seconds. Default value is 360 seconds.
```

### Default

The default restart time is 120 seconds and the default stalepath-time is 360 seconds.

### Command Mode

Router mode

### Usage

The `restart-time` parameter is used for setting the maximum time that a graceful-restart neighbor waits to come back up after a restart. This value is applied to all neighbors unless you explicitly override it by configuring the corresponding value on the neighbor.

The `stalepath-time` parameter is used to set the maximum time to preserve stale paths from a gracefully restarted neighbor. All stalepaths, unless reinstated by the neighbor after a re-establishment, will be deleted at the expiration of this timer.

### Example

```
ZebOS# configure terminal
```



```
ZebOS(config)# router bgp 10
ZebOS(config-router)#  bgp graceful-restart restart-time 150
```

---

## bgp graceful-restart graceful-reset

Use this command to enable BGP graceful-restart when a configuration change forces a peer restart.

**Note:** The `bgp graceful-restart` command must be enabled before the `bgp graceful restart graceful-reset` command is enabled. All events that cause BGP peer reset, including all session reset commands, can trigger graceful restart. The supporting configuration change commands that cause a peer reset (all session reset) and invoke graceful restart are `(no) router-id A, B, C, D` and `(no) bgp extended-asn-cap`.

Use the `no` parameter with this command to restore the router to its default state.

### Command Syntax

```
[no] bgp graceful-restart graceful-reset
```

### Default

Disabled

### Command Mode

Router mode

### Usage

This feature provides a graceful restart mechanism for a BGP session reset, in which the BGP daemon is not restarted, so that any changes in network configurations that cause BGP reset will not affect packet forwarding..

### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# bgp graceful-restart restart-time 150
ZebOS(config-router)# bgp graceful-restart graceful-reset
```

---

## bgp log-neighbor-changes

Use this command to enable logging of status change messages without turning on `debug bgp` commands.

Use the `no` parameter with this command to disable this feature.

### Command Syntax

```
bgp log-neighbor-changes
```

### Default

Disabled

### Command Mode

Router mode

### Usage

ZebOS implementation provides other kinds of logging services for neighbor status, for example, `debug bgp fsm`, `debug bgp events`, etc. However, these commands create a significant hit in the logging performance. If you need to log neighbor status changes only, IPI recommends turning off all the `debug` commands and using the `bgp log-neighbor-changes` command.

A sample output of this log is:

```
%Protocol-Severity-Events: Message-text
```

A sample output of the log for an interface down event is:

```
%BGP-5-ADJCHANGE: neighbor 10.10.0.24 Down Interface flap
```

The `bgp log-neighbor-changes` command, logs the following events:

- BGP Notification Received
- Erroneous BGP Update Received
- User reset request
- Peer time-out
- Peer Closing down the session
- Interface flap
- Router ID changed
- Neighbor deleted
- Member added to peer group
- Administrative shutdown
- Remote AS changed
- RR client configuration modification
- Soft reconfiguration modification

### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# bgp log-neighbor-changes
```

---

## bgp multiple-instance

Use this command to enable or disable the BGP multiple instance support.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
bgp multiple-instance (allow-same-peer)
```

```
no bgp multiple-instance
```

`allow-same-peer` Allows the same peer to be activated in multiple views.

Note: The `no bgp multiple-instance` command is not valid if there are any BGP instances present.

### Default

No multiple-instance support

---

## Command Mode

Configure mode

## Usage

The following example shows the use of the `bgp multiple-instance` command allowing the configuration of two instances.

```
ZebOS(config)# bgp multiple-instance
ZebOS(config)# quit
ZebOS# show run
```

Current configuration:

```
!
hostname ZebOS
password zebra
log stdout
!
debug bgp
debug bgp events
debug bgp updates
debug bgp fsm
!
bgp multiple-instance
!
router bgp 11
  bgp router-id 10.10.10.50
  neighbor 10.10.10.51 remote-as 11
!
line vty
  exec-timeout 0 0
!
end
```

2.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10 view I2
ZebOS(config-router)# bgp router-id 10.10.10.50
ZebOS(config-router)# neighbor 10.10.10.51 remote-as 10
ZebOS(config-router)# end
ZebOS# show run
```

Current configuration:

```
!
hostname ZebOS
password zebra
log stdout
!
debug bgp
debug bgp events
debug bgp updates
debug bgp fsm
!
```

---

```
bgp multiple-instance allow-same-peer
!
router bgp 11
  bgp router-id 10.10.10.50
  neighbor 10.10.10.51 remote-as 11
!
router bgp 10 view I2
  bgp router-id 10.10.10.50
  neighbor 10.10.10.51 remote-as 11
!
line vty
  exec-timeout 0 0
!
end
```

### Example

```
ZebOS# configure terminal
ZebOS(config)# bgp multiple-instance
```

---

## bgp nexthop trigger delay

Use this command to set the delay time for nexthop address tracking.

Use the `no` parameter with this command to reset the timer value to the default value.

### Command Syntax

```
(no) bgp nexthop trigger delay <1-100>
      <1-100> Delay time in seconds
```

### Default

The default nexthop delay time is 5 seconds.

### Command Mode

Configure mode

### Usage

The `bgp nexthop trigger delay` command configures the delay interval, after which BGP does a routing table scan on receiving a nexthop change trigger from NSM.

The time period determines how long BGP waits before it walks the full BGP table to determine which prefixes are affected by the nexthop changes, after it receives the trigger from NSM about one or more nexthop changes.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# bgp nexthop trigger delay 6
```

---

## bgp nexthop trigger enable

Use this command to enable nexthop address tracking.

Use the `no` parameter with this command to disable this feature.

---

## Command Syntax

```
(no) bgp nexthop trigger enable
```

## Default

Nexthop tracking is disabled by default, however, when nexthop tracking is enabled, and the delay time interval is not configured, the default nexthop delay time-interval is taken, which is 5 seconds.

## Command Mode

Configure mode

## Usage

Nexthop address tracking is an event-driven notification system that monitors the status of routes installed in the Routing Information Base (RIB) and reports nexthop changes that affect internal BGP (iBGP) or external BGP (eBGP) prefixes directly to the BGP process. This improves the overall BGP convergence time, by allowing BGP to respond rapidly to nexthop changes for routes installed in the RIB.

If nexthop tracking is enabled after certain routes are learned, the registration of all of the nexthops of selected BGP routes are done immediately after the nexthop tracking feature is enabled.

If nexthop tracking is disabled, and if there are still some selected BGP routes, BGP deregisters the nexthops of all of the selected BGP routes from NSM.

If the `no` form of the `bgp nexthop trigger enable` command is given when nexthop tracking is in the process of execution, an error appears, and nexthop tracking is not disabled. However, if the nexthop tracking timer is running at the time of negation, the nexthop tracking timer is stopped, and nexthop tracking is disabled.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# bgp nexthop trigger enable
```

---

## bgp rfc1771-path-select

Use this command to set RFC1771 compatible path selection mechanism.

Use the `no` parameter with this command to revert this setting.

## Command Syntax

```
(no)bgp rfc1771-path-select
```

## Default

Industry standard compatible path selection mechanism.

## Command Mode

Configure mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# bgp rfc1771-path-select
```

## **bgp rfc1771-strict**

Use this command to set the Strict RFC1771 setting.

Use the `no` parameter with this command to revert this setting.

### **Command Syntax**

```
(no)bgp rfc1771-strict
```

### **Default**

Disabled

### **Command Mode**

Configure mode

### **Examples**

```
ZebOS# configure terminal
ZebOS(config)# bgp rfc1771-strict
```

---

## **bgp router-id**

Use this command to configure the router identifier.

Use the `no` parameter with this command to disable this function

### **Command Syntax**

```
(no) bgp router-id ROUTERID
ROUTERID = A.B.C.D Manually configured router ID.
```

### **Default**

In case the loopback interface is configured the router-id is set to the IP address of a loopback interface. If not, the highest IP address is the router-id.

### **Command Mode**

Router mode

### **Usage**

Use `bgp router-id` command to manually configure a fixed router ID as a BGP router identifier.

### **Examples**

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp router-id 1.1.2.3
```

---

## **bgp scan-time**

Use this command to set the interval for BGP route next-hop scanning.

Use the `no` parameter with this command to disable this function.

---

## Command Syntax

```
(no) bgp scan-time TIME
```

TIME= <0-60> Scanning interval in seconds. The default scanning interval is 60 seconds.

## Command Mode

Router mode

## Usage

Use this command to configure scanning intervals of BGP routers. This interval is the period after which router checks the validity of the routes in its database.

To disable BGP scanning, set the scan time interval to 0 seconds.

## Examples

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) bgp scan-time 10
```

---

## bgp update-delay

Use this command to specify the update-delay value for a graceful-restart capable router.

Use the `no` parameter with this command to revert to the default update-delay value.

## Command Syntax

```
[no] bgp update-delay <1-3600>
```

## Command Mode

Router mode

## Default

The default update-delay value is 120 seconds.

## Usage

The update-delay value is the maximum time a graceful-restart capable router, which is restarting, will defer route-selection and advertisements to all its graceful-restart capable neighbors. This maximum time starts from the instance the first neighbor attains established state after restart. The restarting router prematurely terminates this timer when end-of-rib markers are received from all its graceful-restart capable neighbors.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# bgp update-delay 345
```

---

## clear bgp \*

Use this command to reset the BGP connection for all peers.

## Command Syntax

```
clear bgp * (IN|out|SOFT)
clear bgp ipv6 * (IN|out|SOFT)
  * = Clears all bgp peers
  IN = in (prefix-filter)
    in = Indicates that incoming advertised routes will be cleared.
    prefix-filters = Pushes out prefix-list ORF and does inbound soft reconfiguration.
  out = Indicates that outgoing advertised routes will be cleared.
  SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared.
```

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# clear bgp * soft in
ZebOS# clear bgp ipv6 * in prefix-filter
```

---

## clear bgp A.B.C.D|X:X::X:X

Use this command to reset the BGP connection for specified peers.

## Command Syntax

```
clear bgp A.B.C.D|X:X::X:X (IN|out|SOFT)
clear bgp ipv6 (A.B.C.D|X:X::X:X) (IN|out|SOFT)
  A.B.C.D Specifies the IPv4 address of the BGP route to be cleared.
  X:X::X:X Specifies the IPv6 address of the BGP route to be cleared.
  IN = in (prefix-filter)
    in = Indicates that incoming advertised routes will be cleared.
    prefix-filters = Pushes out prefix-list ORF and does inbound soft reconfiguration.
  out = Indicates that outgoing advertised routes will be cleared
  SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared
```

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# clear bgp 3.3.3.3 soft in prefix-filter
ZebOS# clear bgp ipv6 2.2.2.2 out
```

---

## clear bgp ASN

Use this command to reset the BGP connection for peers in the specified Autonomous System.

## Command Syntax

```
clear bgp ASN (IN|out|SOFT)
clear bgp ipv6 ASN (IN|out|SOFT)
```

---



ASN = <1-4294967295> The AS number for which all routes will be cleared  
 IN = in (prefix-filter)  
   in = Indicates that incoming advertised routes will be cleared.  
   prefix-filters = Pushes out prefix-list ORF and does inbound soft reconfiguration.  
 out = Indicates that outgoing advertised routes will be cleared  
 SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# clear bgp 300 soft in prefix-filter
ZebOS# clear bgp ipv6 500 soft out
ZebOS# clear bgp 300 soft in
ZebOS# clear bgp 1 in prefix-filter
```

---

## clear bgp external

Use this command to reset the BGP connection for all external peers.

### Command Syntax

```
clear bgp external (IN|out|SOFT)
clear bgp ipv6 external (IN|out|SOFT)
external = clears all external peers
IN = in (prefix-filter)
  in = Indicates that incoming advertised routes will be cleared.
  prefix-filters = Pushes out prefix-list ORF and does inbound soft reconfiguration.
out = Indicates that outgoing advertised routes will be cleared
SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# clear bgp external soft in
ZebOS# clear bgp external in prefix-filter
ZebOS# clear bgp ipv6 external in prefix-filter
```

---

## clear bgp peer-group

Use this command to reset the BGP connection for all members of a peer group.

### Command Syntax

```
clear bgp peer-group WORD (IN|out|SOFT)
clear bgp ipv6 peer-group WORD (IN|out|SOFT)
peer-group = clears all members of a peer group
IN = in (prefix-filter)
```

`in` = Indicates that incoming advertised routes will be cleared.  
`prefix-filters` = Pushes out prefix-list ORF and does inbound soft reconfiguration.  
`out` = indicates that outgoing advertised routes will be cleared  
`SOFT = soft (in|out)` indicates that both incoming and outgoing routes will be cleared

### Command Mode

Privileged Exec mode

### Usage

### Examples

```
ZebOS# clear bgp peer-group P1 soft in
ZebOS# clear bgp ipv6 peer-group P2 in
```

---

## clear bgp view

Use this command to reset all BGP connections.

### Command Syntax

```
clear bgp view WORD * soft(in|out)
WORD Name of the instance
* Clears all bgp peers
soft Indicates that both incoming and outgoing routes will be cleared
in Indicates that incoming advertised routes will be cleared
out Indicates that outgoing advertised routes will be cleared.
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# clear bgp view instancel * soft in
```

---

## clear ip bgp \*

Use this command to reset a BGP connection for all peers.

### Command Syntax

```
clear ip bgp * (IN|out|SOFT|)
clear ip bgp * ipv4 PREFIX ROUTES
clear ip bgp * vpnv4 unicast ROUTES
clear ip bgp * vrf
* = clears all bgp peers
ipv4 = clears all IPv4 address family peers
vpnv4 = clears all VPNv4 address family peers
ROUTES = IN|out|soft
IN = in (prefix-filter)
```

`in` = Indicates that incoming advertised routes will be cleared  
`prefix-filter` = Pushes out prefix-list ORF and does inbound soft reconfiguration  
`out` = Indicates that outgoing advertised routes will be cleared.  
`SOFT` = `soft (in|out)` Indicates that both incoming and outgoing routes will be cleared  
`PREFIX` = `unicast|multicast`  
`unicast` = address family modifier  
`multicast` = address family modifier  
`vrf` VPN routing/forwarding instance

## Command Mode

Privileged Exec mode

## Examples

```

ZebOS# clear ip bgp *
ZebOS# clear ip bgp * ipv4 unicast in prefix-filter
ZebOS# clear ip bgp * vpnv4 unicast in
  
```

---

## clear ip bgp A.B.C.D|X:X::X:X

Use this command to reset a IPv4 BGP connection for a specific IP address.

## Command Syntax

```

clear ip bgp A.B.C.D|X:X::X:X (IN|out|SOFT)
clear ip bgp A.B.C.D|X:X::X:X ipv4 PREFIX ROUTES
clear ip bgp A.B.C.D|X:X::X:X vpnv4 unicast ROUTES
  
```

`A.B.C.D` Specifies the IPv4 address of the BGP route to be cleared  
`X:X::X:X` Specifies the IPv6 address of the BGP route to be cleared  
`ipv4` = clears all IPv4 address family peers  
`vpnv4` = clears all VPNv4 address family peers  
`ROUTES` = `IN|out|soft`  
`IN` = `in (prefix-filter)`  
`in` = Indicates that incoming advertised routes will be cleared  
`prefix-filter` = Pushes out prefix-list ORF and does inbound soft reconfiguration  
`out` = Indicates that outgoing advertised routes will be cleared.  
`SOFT` = `soft (in|out)` Indicates that both incoming and outgoing routes will be cleared  
`PREFIX` = `unicast|multicast`  
`unicast` = address family modifier  
`multicast` = address family modifier

## Command Mode

Privileged Exec mode

## Examples

```

ZebOS# clear ip bgp 10.10.0.12 soft
ZebOS# clear ip bgp 10.10.0.10 vpnv4 unicast out
ZebOS# clear ip bgp 3ffe::8
  
```

## clear ip bgp ASN

Use this command to reset a BGP connection for all peers in a specified Autonomous System.

### Command Syntax

```
clear ip bgp ASN (IN|out|SOFT|)
clear ip bgp ASN ipv4 PREFIX ROUTES
clear ip bgp ASN vpv4 unicast ROUTES
clear ip bgp ASN vpv6 unicast ROUTES
```

ASN <1-4294967295>= Specifies the AS Number for which all routes will be cleared  
ipv4 = clears all IPv4 address family peers  
vpv4 = clears all VPNv4 address family peers  
ROUTES = IN|out|soft  
IN = in (prefix-filter)  
in = Indicates that incoming advertised routes will be cleared  
prefix-filter = Pushes out prefix-list ORF and does inbound soft reconfiguration  
out = Indicates that outgoing advertised routes will be cleared.  
SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared  
PREFIX = unicast|multicast  
unicast = address family modifier  
multicast = address family modifier

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# clear ip bgp 100
ZebOS# clear ip bgp 200 ipv4 unicast in prefix-filter
ZebOS# clear ip bgp 500 vpv4 unicast in
ZebOS# clear ip bgp 500 vpv6 unicast in
```

---

## clear ip bgp dampening

Use this command to reset all dampened BGP routes under the specified address family.

### Command Syntax

```
clear ip bgp dampening (A.B.C.D|A.B.C.D/M)
clear ip bgp ipv4 PREFIX dampening (A.B.C.D|A.B.C.D/M)
```

A.B.C.D Specifies the IPv4 address for which BGP dampening is to be cleared.  
A.B.C.D/M Specifies the IPv4 address with mask for which BGP dampening is to be cleared.  
ipv4 = clears all IPv4 address family peers  
PREFIX = unicast|multicast  
unicast = address family modifier  
multicast = address family modifier

**Command Mode**

Privileged Exec mode

**Examples**

```
ZebOS# clear ip bgp dampening 10.10.0.121
ZebOS# clear ip bgp ipv4 unicast dampening
```

---

**clear ip bgp flap-statistics**

Use this command to clear the flap count and history duration for all the prefixes under the specified address family.

**Command Syntax**

```
clear ip bgp flap-statistics (A.B.C.D|A.B.C.D/M)
clear ip bgp ipv4 PREFIX flap-statistics (A.B.C.D|A.B.C.D/M)
  A.B.C.D Specifies the IPv4 address for which BGP dampening is to be cleared.
  A.B.C.D/M Specifies the IPv4 address with mask for which BGP dampening is to be cleared.
  ipv4 = clears all IPv4 address family peers
  PREFIX = unicast|multicast
          unicast = address family modifier
          multicast = address family modifier
```

**Command Mode**

Privileged Exec mode

**Examples**

```
ZebOS# clear ip bgp flap-statistics 10.10.0.121
ZebOS# clear ip bgp ipv4 unicast flap-statistics
```

---

**clear ip bgp external**

Use this command to reset a BGP connection for all external peers.

**Command Syntax**

```
clear ip bgp external (IN|out|SOFT|)
clear ip bgp external ipv4 PREFIX ROUTES
  external Clears all external peers
  ipv4 = clears all IPv4 address family peers
  ROUTES = IN|out|soft
          IN = in (prefix-filter)
              in = Indicates that incoming advertised routes will be cleared
              prefix-filter = Pushes out prefix-list ORF and does inbound soft reconfiguration
          out = Indicates that outgoing advertised routes will be cleared.
          SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared
  PREFIX = unicast|multicast
          unicast = address family modifier
          multicast = address family modifier
```

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# clear ip bgp external out
ZebOS# clear ip bgp external ipv4 unicast in prefix-filter
```

---

## clear ip bgp peer-group

Use this command to reset a BGP connection for all members of a peer group.

## Command Syntax

```
clear ip bgp peer-group WORD(IN|out|SOFT|)
clear ip bgp peer-group WORD ipv4 PREFIX ROUTES
```

**peer-group** Clears all members of a peer group

**WORD** = Specifies the name of the peer group for which all members will be cleared.

**ipv4** = clears all IPv4 address family peers

**ROUTES** = IN|out|soft

**IN** = in (prefix-filter)

**in** = Indicates that incoming advertised routes will be cleared

**prefix-filter** = Pushes out prefix-list ORF and does inbound soft reconfiguration

**out** = Indicates that outgoing advertised routes will be cleared.

**SOFT** = soft (in|out) Indicates that both incoming and outgoing routes will be cleared

**PREFIX** = unicast|multicast

**unicast** = address family modifier

**multicast** = address family modifier

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# clear ip bgp peer-group Peer1 out
ZebOS# clear ip bgp peer-group mypeer ipv4 unicast in prefix-filter
```

---

## clear ip bgp view

Use this command to reset a BGP IPv4 connection, as well as, to reset the bgp instance for a specified view (WORD); use the `clear ip bgp` command to reset the default instance.

## Command Syntax

```
clear ip bgp view WORD * (IN|SOFT|)
clear ip bgp view WORD * ipv4 PREFIX ROUTES
```

**view** Specifies BGP view

**WORD** Specifies the name of the view for which all routes will be cleared

**\*** = Clears all peers

**ipv4** = clears all IPv4 address family peers

```

ROUTES = IN|out|soft
  IN = in (prefix-filter)
    in = Indicates that incoming advertised routes will be cleared
    prefix-filter = Pushes out prefix-list ORF and does inbound soft reconfiguration
  out = Indicates that outgoing advertised routes will be cleared.
  SOFT = soft (in|out) Indicates that both incoming and outgoing routes will be cleared
PREFIX = unicast|multicast
  unicast = address family modifier
  multicast = address family modifier

```

**Command Mode**

Privileged Exec mode

**Examples**

```

ZebOS# clear ip bgp view I4 * in prefix-filter
ZebOS# clear ip bgp view I2 ipv4 unicast soft in

```

---

**clear ip bgp vrf**

Use this command to reset the specified VPN Routing /Forwarding Instance for BGP connections.

**Command Syntax**

```

clear ip bgp (A.B.C.D)|* vrf WORD (out|in|SOFT)
  WORD Specifies the name of the VRF
  A.B.C.D Specifies the IPv4 address of the BGP route to be cleared
  * Clears all peers
  in Performs soft reconfiguration in
  out Performs soft reconfiguration out
  SOFT = soft in|soft out|soft
    soft in Performs soft reconfiguration in
    soft out Performs soft reconfiguration out
    soft Performs soft reconfiguration in and out

```

**Command Mode**

Privileged Exec mode

**Usage**

If the neighbor address is specified with this command it clears the specified connection. If no address is specified this command clears all the BGP routes.

**Example**

```

ZebOS# clear ip bgp 3.3.3.3 vrf VRF1 soft in

```

---

**debug bgp**

Use this command to enable all BGP troubleshooting functions.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
debug bgp (all|dampening|events|filters|fsm|keepalives|mpls|nsm|UPDATES)
no debug all bgp
no debug bgp (all|dampening|events|filters|fsm|keepalives|mpls|nsm|UPDATES)
```

`all` Used with the `no` form exclusively; turns off all debugging for BGP

`dampening` Specifies debugging for BGP dampening.

`events` Specifies debugging for BGP events.

`filters` Specifies debugging for BGP filters.

`fsm` Specifies debugging for BGP Finite State Machine (FSM).

`mpls` Specifies debuggin for BGP Multiprotocol Label Switching.

`keepalives` Specifies debugging for BGP keepalives.

`nsm` Specifies debugging for NSM messages.

`UPDATES = updates (in|out)` Specifies debugging for BGP updates.

- `in` Inbound updates
- `out` Outbound updates

### Command Mode

Privileged Exec mode

### Usage

This command without any parameters turns on normal bgp debug information.

### Examples

```
ZebOS# debug bgp
ZebOS# debug bgp events
```

---

## distance

Use this command to define an administrative distance.

Use the `no` parameter with this command to remove an administrative distance.

### Command Syntax

```
(no) distance ADMINDISTANCE | BGPDISTANCE
```

`ADMINDISTANCE= <1-255> A.B.C.D/M (LISTNAME)` Specifies the administrative distance.

- `1-255` the administrative distance
- `A.B.C.D/m` the IP source prefix
- `LISTNAME` the name of the access list to be applied to the administrative distance to selected routes.

`BGPDISTANCE = bgp EXT INT LOCAL` Specifies the IP address and subnet mask.

- `EXT = <1-255>` Specifies the administrative distance for BGP external routes. The default distance for external routes is 20.
- `INT = <1-255>` Specifies the administrative distance for BGP internal routes. The default distance for internal routes in 200.
- `LOCAL = <1-255>` Specifies the administrative distance for BGP local routes. The default distance for local routes is 200.



---

## Command Mode

Router mode

Address Family IPv4 mode

Address Family IPv6 mode

## Usage

Use this command to set the administrative distance for BGP. This distance is a rating of trustworthiness of a router. The higher the distance the lower the trust rating.

The administrative distance can be set for external, internal and local routes. External paths are routes learned from a neighbor out of the AS. The internal routes are routes learned from another router within the same AS. Local routes are for the router that is being redistributed from another process.

If the administrative distance is changed, it could create inconsistency in the routing table and obstruct routing.

Use this command in Router mode to set the administrative distance for all address families. Use this command in Address Family mode to set the administrative distance per an IPv4 or IPv6 family.

## Examples

The following examples show setting the administrative distance for BGP for all address families:

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) distance 34 10.10.0.0/24 mylist
```

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) distance bgp 34 23 15
```

The following example shows how to set the administrative distance for BGP for the IPv6 address family.

```
ZebOS# configure terminal
ZebOS(config) router bgp 100
ZebOS(config-router) address-family ipv6
ZebOS(config-router-af) distance bgp 34 23 14
```

---

## exit-address-family

Use this command to exit the address family mode.

## Command Syntax

```
exit-address-family
```

## Command Mode

Address Family mode

## Examples

The following example shows the use of `exit-address-family` command and the change in the prompt after using this command.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family ipv4 multicast
ZebOS(config-router-af)# exit-address-family
```

```
ZebOS(config-router)#
```

## Related Commands

address family

---

## ip as-path access-list

Use this command to define a BGP Autonomous System (AS) path access list.

Use the `no` parameter with this command to disable use of the access list.

### Command Syntax

```
(no) ip as-path access-list LISTNAME (deny|permit) .LINE
```

`LISTNAME` Specifies the name of the access list.

`deny` (Optional) Denies access to matching conditions.

`permit` (Optional) Permits access to matching conditions.

`.LINE` Specifies a regular expression to match the BGP AS paths. Refer to the appendix "Regular Expressions" for further details.

### Command Mode

Configure mode

### Usage

Named community list is a filter based on regular expressions. If the regular expression matches the specified string representing the AS path of the route, then the permit or deny condition applies. Use this command to define the BGP access list globally, use the neighbor router configuration command to apply a specific access list.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# ip as-path access-list mylist deny ^65535$
```

---

## ip community-list

Use this command to add a community list entry.

Use the `no` parameter with this command to delete the community list entry.

### Command Syntax

```
(no) ip community-list LISTNAME deny|permit .COMMUNITY
```

`LISTNAME` Specifies the community listname.

`deny` Specifies the community to reject.

`permit` Specifies the community to accept.

`COMMUNITY = AS:VAL|internet|local-AS|no-advertise|no-export`

`AS:VAL` Specifies the valid value for the community number. This format represents the 32 bit communities value, where `AS` is the high order 16 bits and `VAL` is the low order 16 bits in digit format.

`internet` Specifies routes not to be advertised to the Internet.

`local-AS` Specifies routes not to be advertised to external BGP peers.

`no-advertise` Specifies routes not to be advertised to other BGP peers.

`no-export` Specifies routes not to be advertised outside of Autonomous System boundary.

## Command Mode

Configure mode

## Usage

Use the community-lists to specify BGP community attributes. The community attribute is used for implementing policy routing. It is an optional, transitive attribute and facilitates transfer of local policies through different autonomous systems. It includes community values that are 32 bits long.

There are two kinds of community-lists: the expanded and standard. The `standard community-list` defines the community attributes in a specified format and not with regular expressions. The `expanded community-list` defines the communities attributes with regular expressions.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# ip community-list mylist permit 7675:80 7675:90
```

## Related Commands

`ip community-list standard`, `ip community-list expanded`

---

## ip community-list expanded

Use this command to add a community list entry.

Use the `no` parameter with this command to delete the community list entry.

## Command Syntax

```
(no) ip community-list EXPANDED deny|permit .LINE
```

`EXPANDED` = <100-199>|(expanded WORD)

<100-199> Expanded community list number.

`expanded` Specifies an expanded community list.

`WORD` Expanded community list number

`deny` Specifies community to reject.

`permit` Specifies community to accept.

`LINE` Specifies community attributes with regular expression. Refer to the appendix "Regular Expressions" for further details.

## Command Mode

Configure mode

## Usage

Use the community-lists to specify BGP community attributes. The community attribute is used for implementing policy routing. It is an optional, transitive attribute and facilitates transfer of local policies through different autonomous systems. It includes community values that are 32 bits long.

There are two kinds of community-lists--the expanded and standard. The standard community-list defines the community attributes in a specified format and not with regular expressions. The expanded community-list defines the communities attributes with regular expressions.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# ip community-list 125 permit 6789906
ZebOS(config)# ip community-list expanded CLIST permit .*
```

## Related Commands

ip community-list, ip community-list standard

---

## ip community-list standard

Use this command to add a standard community-list entry.

Use the `no` parameter with this command to delete the standard community-list entry.

## Command Syntax

```
(no) ip community-list STANDARD deny|permit .COMMUNITY
STANDARD = <1-99>|(standard WORD) Specifies the community listname.
  <1-99> Standard community list number.
  standard Specifies a standard community list.
  WORD Standard community list number
deny Specifies community to reject.
permit Specifies community to accept.
COMMUNITY = AS:VAL|internet|local-AS|no-advertise|no-export
AS:VAL Specifies the valid value for the community number. This format represents the 32 bit
communities value, where AS is the high order 16 bits and VAL is the low order 16 bits in digit
format.
internet Specifies routes not to be advertised to the Internet.
local-AS Specifies routes not to be advertised to external BGP peers.
no-advertise Specifies routes not to be advertised to other BGP peers.
no-export Specifies routes not to be advertised outside of the Autonomous System boundary.
```

## Command Mode

Configure mode

## Usage

Use the community-lists to specify BGP community attributes. The community attribute is used for implementing policy routing. It is an optional, transitive attribute and facilitates transfer of local policies through different autonomous systems. It includes community values that are 32 bits long.

There are two kinds of community-lists--the expanded and standard. The standard community-list defines the community attributes in a specified format without regular expressions. The expanded community-list defines the communities attributes with regular expressions.

Use the `ip community-list standard` command to add a standard community-list entry. The standard community-list is compiled into binary format and is directly compared with the BGP communities attribute in the BGP updates. The comparison is faster than the expanded community-list. Any community value that does not match the standard community value is automatically treated as expanded.

## Examples

```
ZebOS# configure terminal
```

---

```
ZebOS(config)# ip community-list standard CLIST permit 7675:80 7675:90 no-export
ZebOS(config)# ip community-list 34 permit 5675:50 no-advertise
```

## Related Commands

ip community-list, ip community-list expanded

---

## ip extcommunity-list expanded

Use this command to create or delete an expanded extended community list.

Use the `no` parameter with this command to delete the extended community-list entry.

### Command Syntax

```
(no) ip extcommunity-list EXPANDED deny|permit .LINE
no ip extcommunity-list <100-199>
no ip extcommunity-list expanded WORD
    EXPANDED = <100-199>|(standard WORD)
    <100-199> Expanded extcommunity list number
    expanded Specifies an expanded extcommunity list
    WORD Expanded extcommunity list name
    deny Specifies the extcommunity to reject
    permit Specifies the extcommunity to accept
    LINE Specifies extcommunity attributes with regular expression. Refer to the appendix "Regular Expressions" for further details.
```

### Command Mode

Configure mode

### Examples

```
ZebOS# configure terminal
ZebOS(config)# ip extcommunity-list 125 permit 4567335
ZebOS(config)# ip extcommunity-list expanded CLIST permit .*
```

## Related Commands

ip extcommunity-list standard

---

## ip extcommunity-list standard

Use this command to create and delete a standard extended community list.

Use the `no` parameter with this command to delete the extended community-list entry.

### Command Syntax

```
(no) ip extcommunity-list STANDARD deny|permit rt|soo AS:VAL
no ip extcommunity-list <1-99>
no ip extcommunity-list standard WORD
    STANDARD = <1-99>|(standard WORD)
```

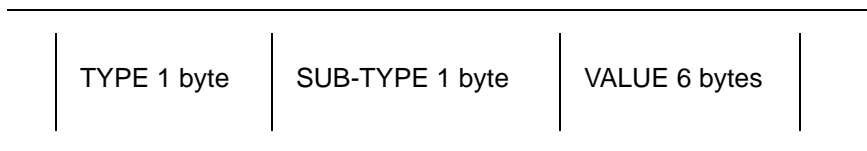
- <1-99> Standard extended community list number
- standard Specifies a standard extended community list
- WORD Standard extended community list name
- deny Specifies the extended community to reject
- permit Specifies the extended community to accept
- rt Specifies the route target of the extended community.
- soo Specifies the site of origin of the extended community.
- AS:VAL Specifies the valid value for an extended community number. Can be one of two formats:
  - ASN:NN: Among 6 bytes of ASN:NN, the higher-order 4 bytes are used to represent ASN, and the lower 2 bytes are used to represent the NN assigned value.
    - Of the higher-order 4 bytes:
      - When extended ASN capability is enabled, all 4 bytes are used.
      - In the other case, only the lower 2 bytes are used, and the remaining 2 bytes are zeroes.
  - IP:NN: The higher-order 4 bytes are used to represent the IP address (IP). The NN assigned value is represented in low-order 2 bytes.

## Command Mode

Configure mode

## Usage

The extended community attribute is 8 bytes in 2 formats. The 8 bytes are represented as:



The sub-type can be route target (rt) or site of origin (soo). Thus, the sub-type of each community must be specified when creating the extended community list.

Regarding the formats, an extended community is based on the 6 byte value; these 6 bytes are represented in 4bytes:2bytes format:

- Format 1, ASN:NN: The 16 bit value of the AS number is represented in higher-order 4 bytes. If the extended ASN capability is enabled, the AS number is represented using higher-order 4 bytes. The NN assigned value is represented in low-order 2 bytes in both cases.
- Format 2, IP:NN: In this format, the higher-order 4 bytes are used to represent the IP address, and the low-order 2 bytes are used to represent the assigned value.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# ip extcommunity-list 36 permit rt 5675:50
ZebOS(config)# ip extcommunity-list standard CLIST permit soo 7645:70
```

## Related Commands

ip extcommunity-list expanded, show ip extcommunity-list

---

## match ip peer

Use this command to apply policies based on the route source of which the BGP TCP/IP session is formed using the IPv4 address, unlike the nexthop in the update message.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) match ip peer <1-199>|<1300-2699>|WORD
      <1-199> access-list number
      <1300-2699> expanded range access-list number
      WORD access-list name
```

### Command Mode

Configure mode

### Examples

```
ZebOS# configure terminal
ZebOS(config)#route-map in-A permit 10
ZebOS(route-map)#match ip peer 1
```

---

## mpls-resolution

Use this command to allow BGP to query the NSM for preexisting LSPs (from RSVP or LDP), enabling BGP to map prefixes to these LSPs.

Use the `no` parameter with this command to reset all peer information in BGP.

### Command Syntax

```
(no) mpls-resolution
```

### Command Mode

Router mode

### Usage

For example, BGP peer (5.5.5.5/32) advertises a prefix 10.10.10.10/32 to the current BGP daemon. If `mpls-resolution` is enabled, BGP queries NSM to confirm if there is an LSP from current router to 5.5.5.5/32. If yes, BGP installs this IP route into the NSM, and also creates an FTN entry in the NSM. NSM subsequently installs this in the MPLS Forwarder and uses the `outgoing label`, `ifindex` and `nexthop` data of the LSP. This allows IP packets destined for 10.10.10.10/32 to be mapped onto a preexisting MPLS LSP.

If the LSP is already up, the mapping is done while BGP is installing IP routes to the NSM. If the LSP is removed after BGP has already mapped a prefix to an LSP, the mapping is withdrawn from the NSM.

The `no mpls-resolution` resets all peer information in BGP, and BGP needs to set up connections with its peers again. Since the `mpls-resolution` flag is not set, no mapping takes place.

### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# mpls-resolution
```

## neighbor activate

Use this command to enable the exchange of the specified AF routes with a neighboring router.

Use the `no` parameter with this command to disable exchange of information with a neighbor.

### Command Syntax

```
(no) neighbor NEIGHBORID activate
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Address Family mode and Router mode

### Usage

After the TCP connection is opened with the neighbor, this command is used to enable or disable the exchange of the specified AF information with a neighboring router.

To enable the exchange of multicast and VPNv4 address prefix types, neighbors are activated using the `neighbor activate` command in address family mode.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 1.2.3.4 activate
```

### Related Commands

`neighbor remote-as`

---

## neighbor advertisement-interval

Use this command to set the minimum interval between sending the BGP routing updates.

Use the `no` parameter with this command to set the interval time to default.

### Command Syntax

```
neighbor NEIGHBORID advertisement-interval TIME
```

```
no neighbor NEIGHBORID advertisement-interval (TIME)
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

TIME <0-600> Advertise -interval value in seconds



## Command Mode

Router mode

## Usage

Use this command to set the minimum interval between the sending of BGP routing updates. To reduce the flapping of routes to internet, a minimum advertisement interval is set, so that the BGP routing updates are sent only per interval seconds. BGP dampening can also be used to control the effects of flapping routes.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.3 advertisement-interval 45
```

---

## neighbor attribute-unchanged

Use this command to advertise unchanged BGP attributes to the specified neighbor.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
(no) neighbor NEIGHBORID attribute-unchanged {as-path|next-hop|med}
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

as-path AS path attribute

next-hop Next hop attribute

med Multi Exit Discriminator

## Command Mode

Router mode and Address Family mode

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.75 attribute-unchanged as-path med
```

---

## neighbor capability dynamic

Use this command to enable the dynamic capability for a specific peer.

Use the `no` parameter with this command to disable the dynamic capability.

## Command Syntax

```
(no) neighbor NEIGHBORID capability dynamic
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

`X:X::X:X` Specifies the address of the BGP neighbor in IPv6 format.

`TAG` Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Default

Disabled

### Command Mode

Router mode

### Usage

This command allows a BGP speaker to advertise or withdraw an address family capability to a peer in a non-disruptive manner.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.10.1 capability dynamic
```

---

## neighbor capability graceful-restart

Use this command to configure the router to advertise the Graceful Restart Capability to the neighbors.

Use the `no` parameter with this command to configure router so it does not advertise the Graceful Restart Capability to its neighbor.

Note: This command is available only when configuration option `--enable-restart` is enabled when compiling ZebOS.

### Command Syntax

```
(no) neighbor NEIGHBORID capability graceful-restart
```

`NEIGHBORID` = `A.B.C.D|X:X::X:X|TAG`

`A.B.C.D` Specifies the address of the BGP neighbor in IPv4 format.

`X:X::X:X` Specifies the address of the BGP neighbor in IPv6 format.

`TAG` Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Default

Disabled

### Command Mode

Router mode and Address Family mode

### Usage

This configuration only indicates BGP speaker has the ability to preserve its forwarding state for some address family when BGP restarts.

Use the `neighbor capability graceful-restart` command to advertise to the neighbor routers the capability of graceful restart. First specify neighbors `remote-as` identification number assigned by the neighbor router.

Note: The graceful restart capability is advertised only when the graceful restart capability has been enabled using the `bgp graceful-restart` command.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.10.50 capability graceful-restart
```

### Related Commands

`bgp graceful-restart`

---

## neighbor capability orf prefix-list

Use this command to enable Outbound Router Filtering (ORF), and advertise the ORF capability to its neighbors.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) neighbor NEIGHBORID capability orf prefix-list (both|receive|send)
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

`orf` Advertises ORF capability to its neighbors

`both` Indicates that the local router can send ORF entries to its peer, as well as receive ORF entries from its peer.

`receive` Indicates that the local router is willing to receive ORF entries from its peer

`send` Indicates that the local router is willing to send ORF entries to its peer

### Command Mode

Router mode and Address Family (IPv4 unicast, IPv4 multicast, IPv6) mode

### Usage

Outbound Route Filters (ORFs) send and receive capabilities to lessen the number of updates exchanged between neighbors. By filtering updates, this option minimizes generating and processing of updates.

The local router advertises the ORF capability in `send` mode, and the remote router receives the ORF capability in `receive` mode applying the filter as outbound policy. The two routers exchange updates to maintain the ORF for each router. Only an individual router or a peer group can be configured to be in `receive` or `send` mode. A peer-group member cannot be configured to be in `receive` or `send` mode.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.5 capability orf prefix-list both
ZebOS(config-router)# neighbor effe:2897::0003:3ed5 capability orf prefix-list
receive
```

## neighbor capability route-refresh

Use this command to advertise route-refresh capability to the specified neighbors.

Use the `no` parameter with this command to disable this function

### Command Syntax

```
(no) neighbor NEIGHBORID capability route-refresh
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Usage

Use this command to advertise to peer about route refresh capability support. If route refresh capability is supported, then router can dynamically request that the peer readvertises its Adj-RIB-Out.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.10.1 capability route-refresh
```

---

## neighbor collide-established

Use this command to specify including a neighbor, already in an 'established' state, for conflict resolution when a TCP connection collision is detected.

### Command Syntax

```
[no] neighbor NEIGHBORID collide-established
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Usage

This command must be used only when specially required. It is not required in most network deployments.

Note: The associated functionality of including an 'established' neighbor into TCP connection collision conflict resolution is automatically enabled when neighbor is configured for BGP graceful-restart.

**Example**

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 3.3.3.3 collide-established
```

---

**neighbor connection-retry-time**

Use this command to set the connection retry time for a specific BGP neighbor.

Use the `no` parameter with this command to clear the connection retry time for a specific BGP neighbor.

**Command Syntax**

```
neighbor NEIGHBORID connection-retry-time <1-65535>
no neighbor NEIGHBORID connection-retry-time
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

- A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.
- X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.
- TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.
- connection-retry-time <1-65535> Specifies the connection retry time in seconds. Default is 120 seconds.

**Command Mode**

Router mode

**Examples**

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 connection-retry-time 125
```

---

**neighbor default-originate**

Use this command to allow a BGP local router to send the default route 0.0.0.0 to a neighbor.

Use the `no` parameter with this command to send no route as a default.

**Command Syntax**

```
(no) neighbor NEIGHBORID default-originate (ROTEMAP)
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

- A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.
- X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.
- TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

ROTEMAP = route-map WORD

- route-map The route-map to specify criteria to originate default routes
- WORD Route-map name

## Command Mode

Router mode and Address Family (IPv4 unicast, IPv4 multicast, IPv6) mode

## Usage

The neighbor default-originate command can be used with standard or extended access lists.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.10.1 default-originate route-map myroute
```

---

## neighbor description

Use this command to associate a description with a neighbor.

Use the `no` parameter with this command to remove the description.

## Command Syntax

```
neighbor NEIGHBORID description LINE
no neighbor NEIGHBORID description (LINE)
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

LINE = Up to 80 characters of text describing the neighbor.

## Command Mode

Router mode and Address Family ipv4 vrf mode (if BGP/VPN is supported)

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 1.2.3.4 description Backup router for sales
```

---

## neighbor disallow-infinite-holdtime

Use this command to disallow configuration of infinite hold-time.

Use the `no` parameter with this command to allow configuration of infinite hold-time.

## Command Syntax

```
(no) neighbor IPADDRESS disallow-infinite-holdtime
IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
A.B.C.D Specifies an IPv4 address
X:X::X:X Specifies an IPv6 address
```

## Command Mode

Router mode

## Usage

This command enables the local BGP speaker to reject hold-time “0” seconds from the peer (during exchange of OPEN messages) or the user (during configuration).

The `no` form of this command allows the BGP speaker to accept “0” hold-time from the peer or during configuration.

## Examples

```
ZebOS(config-router)# neighbor 10.11.4.26 disallow-infinite-holdtime
ZebOS(config-router)# neighbor 3ffe::45 disallow-infinite-holdtime
```

---

## neighbor distribute-list

Use this command to filter route update from a particular BGP neighbor.

Use the `no` parameter with this command to remove an entry.

## Command Syntax

```
(no) neighbor NEIGHBORID distribute-list ACCESSLISTID in|out
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

```
ACCESSLISTID = WORD|<1-199>|<1300-2699>
```

WORD The name of IP access-list

<1-199> The IP access-list number

<1300-2699> The IP access-list number (expanded range)

`in` Indicates that incoming advertised routes will be filtered.

`out` Indicates that outgoing advertised routes will be filtered.

## Command Mode

Router mode and Address Family mode

## Usage

Use only one distribute-list per BGP neighbor.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 1.2.3.4 distribute-list mylist out
```

---

## neighbor dont-capability-negotiate

Use this command to disable capability negotiation.

Use the `no` parameter with this command to enable capability negotiation.

### Command Syntax

```
(no) neighbor NEIGHBORID dont-capability-negotiate
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Usage

The capability negotiation is performed by default. This command is used to allow compatibility with older BGP versions that have no capability parameters used in open messages between peers.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.34 dont-capability-negotiate
```

---

## neighbor ebgp-multihop

Use this command to accept and attempt BGP connections to external peers on indirectly connected networks.

Use the `no` parameter with this command to return to the default.

### Command Syntax

```
(no) neighbor NEIGHBORID ebgp-multihop (COUNT)
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

COUNT = <1-255> Maximum hop count. If the maximum hop count is not set the hop count is 255.

### Command Mode

Router mode

### Usage

Multihop is not established if the only route to the multihop peer is a default route. This avoids loop formation.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.10.34 remote-as 20
```



---

```
ZebOS(config-router)# neighbor 10.10.10.34 ebgp-multihop 5
```

---

## neighbor enforce-multihop

Use this command to turn on the enforcement of eBGP neighbors perform multihop.

Use the `no` parameter with this command to turn off this feature.

### Command Syntax

```
(no) neighbor NEIGHBORID enforce-multihop
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.34 remote-as 20
ZebOS(config-router)# neighbor 10.10.0.34 enforce-multihop
```

---

## neighbor filter-list

Use this command to set up a BGP filter.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) neighbor NEIGHBORID filter-list LISTNAME in|out
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

LISTNAME The name of an autonomous system path access list.

in Indicates that incoming advertised routes will be filtered.

out Indicates that outgoing advertised routes will be filtered.

### Command Mode

Router mode and Address Family mode

## Usage

This command specifies an access list filter on updates based on the BGP autonomous system paths. Each filter is an access list based on regular expressions.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.34 filter-list out
```

---

## neighbor interface

Use this command to configure the interface name of a BGP-speaking neighbor.

Use the `no` parameter with this command to disable this function

## Command Syntax

```
(no) neighbor IPADDRESS interface IFNAME
      IPADDRESS=A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6 format.
      IFNAME Specifies the interface name of BGP neighbor.
```

## Command Mode

Router mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 interface myinterface
```

---

## neighbor maximum-prefix

Use this command to control the number of prefixes that can be received from a neighbor.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
neighbor NEIGHBORID maximum-prefix MAXIMUM
no neighbor NEIGHBORID maximum-prefix (MAXIMUM)
      NEIGHBORID = A.B.C.D|X:X::X:X|TAG
      A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.
      X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.
      TAG Name of an existing peer-group. For information on how to create peer groups, refer to the
           neighbor peer-group and neighbor remote-as commands. When this parameter is used
           with a command, the command applies on all peers in the specified group.
      MAXIMUM = MAXPREFIX (THRESHOLD) (warning-only)
      MAXPREFIX <1-4294967295> Specifies the maximum number of prefixes permitted.
      THRESHOLD <1-100> Specifies the threshold value, 1 to 100 percent.
      warning-only Only gives a warning message when the limit is exceeded.
```

## Command Mode

Router mode and Address Family mode

## Usage

The `neighbor maximum-prefix` command allows the configuration of a specified number of prefixes that a BGP router is allowed to receive from a neighbor. When the `warning-only` option is not used, if any extra prefixes are received, the router ends the peering. A terminated peer, stays down until the `clear ip bgp` command is used.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 maximum-prefix 1244 warning-only
```

---

## neighbor next-hop-self

Use this command to configure the router as the next hop for a BGP-speaking neighbor or peer group.

Use the `no` parameter with this command to disable this feature.

## Command Syntax

```
(no) neighbor NEIGHBORID next-hop-self
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

## Command Mode

Router mode and Address Family mode

## Usage

This command allows a BGP router to change the nexthop information that is sent to the iBGP peer. The nexthop information is set to the IP address of the interface used to communicate with the neighbor.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 remote-as 100
ZebOS(config-router)# neighbor 10.10.0.72 next-hop-self
```

---

## neighbor override-capability

Use this command to override a capability negotiation result.

Use the `no` parameter with this command to disable this function

## Command Syntax

```
(no) neighbor NEIGHBORID override-capability
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 override-capability
```

---

## neighbor passive

Use this command to set a BGP neighbor as passive.

Use the `no` parameter with this command to disable this function

### Command Syntax

```
(no) neighbor NEIGHBORID passive
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 passive
```

---

## neighbor password

Use this command to enable MD5 authentication on a TCP connection between BGP neighbors.

Use the `no` parameter with this command to disable this function.

Note: To enable MD5 authentication on TCP/IP, a kernel patch and a few libraries are required. For detailed information on these libraries and on how to apply the patch, refer to the *ZebOS Installation Guide*.

### Command Syntax

```
(no) neighbor NEIGHBORID password <0-7> LINE
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

**TAG** Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

**<0-7>** Specify the encryption type. Where 0 is for disabling encryption and 7 for proprietary encryption type.

**LINE** An alphanumeric string of characters to be used as password.

## Command Mode

Router mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 1
ZebOS(config-router)# neighbor 1.1.1.1 password 3 ipi
```

---

## neighbor peer-group (adding a neighbor)

Use this command to add a neighbor to an existing peer-group.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
(no)neighbor IPADDRESS peer-group TAG
      IPADDRESS=A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6 format.
      TAG Name of the peer-group
```

## Command Mode

Router mode

## Usage

Use this command to Neighbors with the same update policies are grouped into peer groups. This facilitates the updates of various policies, such as, distribute and filter lists. The peer-group is then configured easily with any of the neighbor commands. Any changes made to the peer group affect all members.

To create a peer-group use the `neighbor peer-group create` command and then use this command to add neighbors to the group.

## Example

This example shows a new peer-group `group1` and the adding of a neighbor `10.10.0.63` to the group.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor group1 peer-group
ZebOS(config-router)# neighbor 10.10.0.63 peer-group group1
```

---

## neighbor peer-group (creating a peer-group)

Use this command to create a peer-group.

Use the `no` parameter with this command to disable this function

## Command Syntax

```
(no)neighbor TAG peer-group
      TAG Name of the peer-group
```

## Command Mode

Router mode

## Usage

Neighbors with the same update policies are grouped into peer groups. This facilitates the updates of various policies, such as, distribute and filter lists. The peer-group is then configured easily with any of the neighbor commands. Any changes made to the peer group affect all members. Use this command to create a peer-group.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor group1 peer-group
```

---

## neighbor port

Use this command to specify the BGP port of a neighbor.

Use the `no` parameter with this command to disable this function

## Command Syntax

```
neighbor NEIGHBORID port PORTNUM
no neighbor NEIGHBORID port (PORTNUM)
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

PORTNUM= <0-65535> Specifies the TCP port number.

## Command Mode

Router mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 port 643
```

---

## neighbor prefix-list

Use this command to distribute BGP neighbor information as specified in a prefix list.

Use the `no` parameter with this command to remove an entry.

## Command Syntax

```
(no) neighbor NEIGHBORID prefix-list LISTNAME in|out
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

LISTNAME The number of an AS-path access list.

in Specifies that the access list applies to incoming advertisements.

out Specifies that the access list applies to outgoing advertisements.

## Command Mode

Router mode and Address Family mode

## Usage

Use this command to specify a prefix list for filtering BGP advertisements. Filtering by prefix list matches the prefixes of routes with those listed in the prefix list. If there is a match, the route is used. An empty prefix list permits all prefixes. If a given prefix does not match any entries of a prefix list, the route is denied access. When multiple entries of a prefix list match a prefix, the entry with the smallest sequence number is considered to be a real match.

The router begins the search at the top of the prefix list, with the sequence number 1. Once a match or deny occurs, the router does not need to go through the rest of the prefix list. For efficiency the most common matches or denies are listed at the top.

The `neighbor distribute-list` command is an alternative to the `neighbor prefix-list` command and only one of them can be used for filtering to the same neighbor in any direction.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# ip prefix-list list1 deny 30.0.0.0/24
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 prefix-list list1 in
```

## Related Commands

ip prefix-list (refer to the *NSM Command Reference*)

---

## neighbor remote-as

Use this command to configure an internal or external BGP (iBGP or eBGP) TCP session with another router.

## Command Syntax

```
neighbor NEIGHBORID remote-as ASNUM
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

ASNUM <1-4294967295> Neighbor's autonomous system number

Note: ASNUM 23456 is a reserved 2-octet AS number. An old BGP speaker (2-byte implementation) should be configured with 23456 as its remote AS number while peering with a non-mappable new BGP speaker (4-byte implementation).

## Command Mode

Router mode

## Usage

This command is used to configure iBGP and eBGP sessions with other neighbors. A peer-group support of this command is configured only after creating a specific peer-group.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config-router)# neighbor 10.10.0.73 remote-as 345
ZebOS(config-router)# neighbor 11.11.0.74 remote-as 23456
```

The last command in the above example should be given when the local speaker is OBGp and the neighbor is NBGP with 4-octet ASN.

---

## neighbor remove-private-AS

Use this command to remove the private Autonomous System (AS) number from outbound updates.

Use the `no` parameter with this command too revert to default.

## Command Syntax

```
(no)neighbor NEIGHBORID remove-private-AS
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

## Default

Disabled

## Command Mode

Router mode and Address Family (ipv4 unicast | ipv4 multicast | ipv6 | vpnv4 unicast) mode

## Usage

The private AS numbers range from <64512-65535>. Private AS numbers are not advertised to the Internet. This command is used with external BGP peers only. The router removes the AS numbers only if the update includes private AS numbers. If the update includes both private and public AS numbers, the system treats it as an error.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.63 remove-private-AS
```



---

## neighbor restart-time

Use this command to set a different restart-time other than the global restart-time configured using the `bgp graceful-restart` command.

Use the `no` parameter with this command to restore the router to its default state.

### Command Syntax

```
[no] neighbor NEIGHBORID restart-time <1-3600>
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Usage

This command takes precedence over the restart-time value specified using the `bgp graceful-restart` command.

The restart-time value is the maximum time that a graceful-restart neighbor waits to come back up after a restart. The default value is 120 seconds.

Make sure that the restart time specified using this command does not exceed the `stalepath-time` specified in the Router mode.

### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 3.3.3.3 restart-time 45
```

### Related Commands

`bgp graceful-restart`

---

## neighbor route-map

Use this command to apply a route map to incoming or outgoing routes.

Use the `no` parameter with this command to a route map.

### Command Syntax

```
(no) neighbor NEIGHBORID route-map MAPNAME in|out
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

MAPNAME Specifies name of the route-map.

`in` Specifies that the access list applies to incoming advertisements.

`out` Specifies that the access list applies to outgoing advertisements.

### Command Mode

Router mode and Address Family mode

### Usage

Use `neighbor route map` command to filter updates and modify attributes. A route map is applied to inbound or outbound updates. Only the routes that pass the route map are sent or accepted in updates.

### Examples

The following example shows the configuration of the route-map name `rmap2` and then the use of this map name in the `neighbor route-map` command.

```
ZebOS# configure terminal
ZebOS(config)# route-map rmap2 permit 6
ZebOS(config-route-map)# match origin incomplete
ZebOS(config-route-map)# set metric 100
ZebOS(config-route-map)#exit
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 route-map rmap2 in
```

---

## neighbor route-reflector-client

Use this command to configure the router as a BGP route reflector and configure the specified neighbor as its client.

Use the `no` parameter with this command to indicate that the neighbor is not a client.

### Command Syntax

```
(no) neighbor NEIGHBORID route-reflector-client
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode and Address Family mode

### Usage

Route reflectors are a solution for the explosion of iBGP peering within an autonomous system. By route reflection the number of iBGP peers within an AS is reduced. Use the `neighbor route-reflector-client` command to configure the local router as the route reflector and specify neighbors as its client.

An AS can have more than one route reflector. One route reflector treats the other route reflector as another iBGP speaker.

In the following configuration, Router1 is the route reflector for clients 3.3.3.3 and 2.2.2.2; it also has a non-client peer 6.6.6.6.

```
Router1#
```

```

router bgp 200
neighbor 3.3.3.3 remote-as 200
neighbor 3.3.3.3 route-reflector-client
neighbor 2.2.2.2 remote-as 200
neighbor 2.2.2.2 route-reflector-client
neighbor 6.6.6.6 remote-as 200

```

### Examples

```

ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 route-reflector-client

```

---

## neighbor send-community

Use this command to specify that a community attribute should be sent to a BGP neighbor.

Use the `no` parameter with this command to remove the entry. Use the `extended` and `no` parameters to remove extended communities. Specifying no other parameter with `no` removes standard communities only.

### Command Syntax

```
(no) neighbor NEIGHBORID send-community (both|extended|standard)
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

`A.B.C.D` Specifies the address of the BGP neighbor in IPv4 format.

`X:X::X:X` Specifies the address of the BGP neighbor in IPv6 format.

`TAG` Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

`both` = Sends Standard and Extended Community attributes

`extended` = Sends Extended Community attributes

`standard` = Sends Standard Community attributes

### Default

Both `standard` and `extended` community attributes are sent to a neighbor.

### Command Mode

Router mode and Address Family mode

### Usage

This command is used to specify a community attribute to be sent to a neighbor. The community attribute groups destinations in a certain community and applies routing decisions according to those communities. On receiving community attributes the router reannounces them to the neighbor. Only when the `no` parameter is used with this command the community attributes are not reannounced to the neighbor.

By default, both `standard` and `extended` community attributes are sent to a neighbor. To explicitly send only the `standard` or `extended` community attribute, run the `bgp config-type` command with the `standard` parameter, before running this command.

### Examples

```

ZebOS# configure terminal
ZebOS(config)# bgp config-type standard
ZebOS(config)# router bgp 10

```

```
ZebOS(config-router)# neighbor 10.10.0.72 send-community extended
```

## Related Commands

bgp config-type

---

## neighbor shutdown

Use this command to disable a neighbor.

Use the `no` parameter with this command to re-enable the neighbor.

### Command Syntax

```
(no) neighbor NEIGHBORID shutdown
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Usage

This command shuts down any active session for the specified neighbor and clears all related routing data.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 shutdown
```

---

## neighbor soft-reconfiguration inbound

Use this command to configure the ZebOS software to start storing updates, without any consideration of the applied route policy.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) neighbor NEIGHBORID soft-reconfiguration inbound
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode and Address Family (IPv4 unicast, IPv4 multicast, IPv6) mode

---

## Usage

Use this command to store updates for inbound soft reconfiguration. Soft-reconfiguration may be used in lieu of BGP route refresh capability. Using this command enables local storage of all the received routes and their attributes. This requires additional memory. When a soft reset (inbound) is done on this neighbor, the locally stored routes are re-processed according to the inbound policy. The BGP neighbor connection is not affected.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 soft-reconfiguration inbound
```

---

## neighbor strict-capability-match

Use this command to close the BGP connection if capability value does not completely match to remote peer.

Use the `no` parameter with this command to disable this function

## Command Syntax

```
(no) neighbor NEIGHBORID strict-capability-match
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

## Command Mode

Router mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 strict-capability-match
```

---

## neighbor timers

Use this command to set the timers for a specific BGP neighbor.

Use the `no` parameter with this command to clear the timers for a specific BGP neighbor

## Command Syntax

```
neighbor NEIGHBORID timers KEEPALIVE|CONNECT
```

```
no neighbor NEIGHBORID timers (KEEPALIVE|CONNECT)
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

**KEEPALIVE=** <0-65535> holdtime Frequency (in seconds) at which a router sends keepalive messages to its neighbor. The default is 60 seconds.

**holdtime=** <0-65535> Interval (in seconds) after which, on not receiving a keepalive message, the router declares a neighbor dead. The default is 180 seconds.

**CONNECT=** connect <0-65535> Specifies the connect timer in seconds.

### Command Mode

Router mode

### Usage

Keepalive messages are sent by a router to inform another router that the BGP connection between the two is still active. The keepalive interval is the period of time between each keepalive message sent by the router. The holdtime interval is the time the router waits to receive a keepalive message and if it does not receive a message for this period it declares the neighbor dead.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 timers 60 120
ZebOS(config-router)# neighbor 10.10.10.10 timers connect 10
```

---

## neighbor transparent-as

Use this command to specify not to append your AS path number even if the peer is an eBGP peer.

### Command Syntax

```
neighbor NEIGHBORID transparent-as
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 transparent-as
```

---

## neighbor transparent-nexthop

Use this command to keep the nexthop value of the route even if the peer is an eBGP peer.

### Command Syntax

```
neighbor NEIGHBORID transparent-nexthop
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

- A.B.C.D** Specifies the address of the BGP neighbor in IPv4 format.
- X:X::X:X** Specifies the address of the BGP neighbor in IPv6 format.
- TAG** Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

## Command Mode

Router mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 transparent-nextthop
```

---

## neighbor unsuppress-map

Use this command to selectively leak more-specific routes to a particular neighbor.

## Command Syntax

```
(no)neighbor NEIGHBORID unsuppress-map WORD
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

**A.B.C.D** Specifies the address of the BGP neighbor in IPv4 format.

**X:X::X:X** Specifies the address of the BGP neighbor in IPv6 format.

**TAG** Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

**WORD** The name of the route-map used to select routes to be unsuppressed.

## Command Mode

Router mode and Address Family (`ipv4 unicast` | `ipv4 multicast` | `ipv6`) mode

## Usage

When the `aggregate-address` command is used with the `summary-only` option, the more-specific routes of the aggregate are suppressed to all neighbors. Use the `unsuppress-map` command to selectively leak more-specific routes to a particular neighbor.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router) neighbor 10.10.0.73 unsuppress-map mymap

ZebOS#configure terminal
ZebOS(config)#router bgp 10
ZebOS(config-router)address-family ipv4 unicast
ZebOS(config-router-af)neighbor 10.10.0.70 unsuppress-map mymap
```

---

## neighbor update-source

Use this command to allow internal BGP sessions to use any operational interface for TCP connections.

Use the `no` parameter with this command to restore the interface assignment to the closest interface.

## Command Syntax

```
(no) neighbor NEIGHBORID update-source IFNAME
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

IFNAME= Specifies the loopback interface.

## Command Mode

Router mode

## Usage

Use this command in conjunction with any specified interface on the router. The loopback interface is the interface that is most commonly used with this command. The use of loopback interface eliminates a dependency and BGP does not have to rely on the availability of a particular interface for making TCP connections.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 update-source myif
```

---

## neighbor version

Use this command to configure the ZebOS software to accept only a particular BGP version.

Use the `no` parameter with this command to use the default version level of a neighbor.

## Command Syntax

```
(no) neighbor NEIGHBORID version VERSION
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

VERSION= 4 | 4- Specifies the BGP version number.

4 Border Gateway Protocol 4

## Command Mode

Router mode

## Usage

By default, the system uses BGP version 4 and on request dynamically negotiates down to version 2. Using this command disables the router's version-negotiation capability and forces the router to use only a specified version with the neighbor.



## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 version 4
```

---

## neighbor weight

Use this command to set the weight, for all address families or per a specific address family, for routes from this neighbor.

Use the `no` parameter with this command to remove a weight assignment.

### Command Syntax

```
(no) neighbor NEIGHBORID weight WEIGHT
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

WEIGHT = <0-65535> Specifies the weight this command assigns to the route.

### Command Mode

Router mode

Address-Family mode

### Usage

Use this command to specify a weight value, per address-family, to all routes learned from a neighbor. The route with the highest weight gets preference when the same prefix is learned from more than one peer.

Unlike the local-preference attribute, the weight attribute is relevant only to the local router.

The weights assigned using the `set weight` command override the weights assigned using this command.

Use this command in Router mode to specify a weight value for all address families. Use this command in Address Family mode to specify a weight value per IPv4/IPv6/VPNv4/6PE address family.

When the weight is set for a peer group, all members of the peer group will have the same weight. The command can also be used to assign a different weight to a particular peer-group member.

When a separately configured weight of the peer-group member is unconfigured, its weight will be reset to its peer group's weight.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 weight 60
```

```
ZebOS# configure terminal
ZebOS (config)# router bgp 12
ZebOS (config-router)# address-family ipv4
ZebOS (config-router-af)# neighbor 10, 10, 10, 10 weight 60
```

## network

Use this command to specify the networks to be advertised by the BGP routing process. A unicast network address without a mask is accepted if it falls into the natural boundary of its class. A class-boundary mask is derived if the address matches its natural class-boundary.

Use the `no` form of this command to remove a network route entry.

### Command Syntax

```
[no] network A.B.C.D
      A.B.C.D IP prefix <network>, e.g., 35.0.0.0
[no] network A.B.C.D route-map WORD
      A.B.C.D IP prefix <network>, e.g., 35.0.0.0
      WORD Name of the route map
```

### Command Mode

Router mode and IPv4-Unicast Address-family mode

### Examples

The following example illustrates a Class-A address configured as a network route. The natural Class-A network prefix mask length of 8 will be internally derived, that is, 2.0.0.0/8.

```
ZebOS(config)#router bgp 1
ZebOS(config-router)#network 2.0.0.0
ZebOS#show run
!
router bgp 1
  no synchronization
  network 1.0.0.0
!
```

The following example illustrates a network address which does not fall into its natural class boundary, and hence, is perceived as a host route, that is, 1.2.3.0/32.

```
ZebOS(config)#router bgp 1
ZebOS(config-router)#network 1.2.3.0
ZebOS#show run
!
router bgp 1
  no synchronization
  network 1.2.3.0 mask 255.255.255.255
!
```

---

## network synchronization

Use this command to ensure the exact same static network prefix, specified through any of the `network <prefix>` commands, is local or has IGP reachability (in the NSM RIB) before being introduced into the BGP RIB.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) network synchronization
```

## Default

Network synchronization is disabled by default.

## Command Mode

Router mode

Address Family mode

ipv4 unicast

ipv4 multicast

ipv6 unicast

ipv6 multicast

## Examples

The following example enables IGP synchronization of BGP static network routes in the router configuration mode.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config-router)# network synchronization
```

The following example enables IGP synchronization of BGP static network routes in the IPv6-Unicast address family.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config)# address-family ipv6 unicast
ZebOS(config-af)# network synchronization
```

---

## redistribute route-map

Use this command to inject routes from one routing process into another.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
redistribute ROUTES(MAPNAME)
no redistribute ROUTES

  ROUTES = ospf|rip|connected|static|kernel|isis
  connected Specifies the redistribution of connected routes.
  kernel Specifies the redistribution of Kernel routes
  ospf Specifies the redistribution of OSFP information.
  rip Specifies the redistribution of RIP.
  static Specifies the redistribution of Static routes.
  isis Specifies the redistribution of ISIS routes.
  MAPNAME = route-map WORD Route map reference
  WORD Pointer to route-map entries.
```

## Command Mode

Router mode and Address Family IPv6 mode

## Usage

Redistribution is used by routing protocols to advertise routes that are learned by some other means, such as by another routing protocol or by static routes. Since all internal routes are dumped into BGP, careful filtering is applied to make sure that only routes to be advertised reach the internet, not everything. This command allows redistribution by injecting prefixes from one routing protocol into another routing protocol.

## Examples

The following example shows the configuration of the route-map name `rmap1` and then the use of this map name in the `redistribute route-map` command.

```
ZebOS# configure terminal
ZebOS(config)# route-map rmap1 permit 1
ZebOS(config-route-map)# match origin incomplete
ZebOS(config-route-map)# set metric 100
ZebOS(config-route-map)#exit
ZebOS(config)# router bgp 12
ZebOS(config-router)# redistribute ospf route-map rmap1
```

---

## restart bgp graceful

Use this command to enable BGP-speaker router for graceful restart.

Note: This command is available only when configuration option `--enable-restart` is enabled when compiling ZebOS.

## Command Syntax

```
restart bgp graceful
```

## Command Mode

Privileged Exec mode

## Usage

This command stops the whole BGP process and makes ZebOS retain the BGP routes and mark them as stale. Receiving BGP speakers, retain and mark as stale all BGP routes received from the restarting speaker for all the address families received in the Graceful Restart Capability exchange.

## Examples

```
ZebOS# restart bgp graceful
```

## Related Commands

`neighbor capability graceful-restart`

---

## router bgp

Use this command to configure a BGP routing process.

Use the `no` parameter with this command to disable a routing process.

## Command Syntax

```
(no) router bgp ASN
ASN <1-4294967295> Specifies the Autonomous System (AS) number.
```

---

## Command Mode

Configure mode

## Usage

The `router bgp` command enables a BGP routing process.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)#
```

## Related Commands

`router bgp view`

---

## router bgp view

Use this command to configure a BGP routing view.

Use the `no` parameter with this command to disable a routing view.

## Command Syntax

```
(no) router bgp ASN view NAME
ASN <1-4294967295> Specifies the Autonomous System (AS) number.
NAME Specifies the BGP view name.
```

## Command Mode

Configure mode

## Usage

The `router bgp` command enables a BGP routing view.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12 view 1
ZebOS(config-router)#
```

## Related Commands

`router bgp`

---

## set-overload-bit

Use this command to set the overload-bit in self-LSPs. Use the `no` parameter to clear the overload-bit from self-LSPs.

## Command Syntax

```
set-overload-bit (STARTUP) (SUPPRESS)
STARTUP = on-startup <5-86400> | wait-for-bgp
<5-86400> interval in seconds after which the overload state is exited.
wait-for-bgp BGP determines when to unset the overload bit
```

```
SUPPRESS = suppress {external|interlevel}
    external  suppress to redistribute external reachability (to prevent the IP prefixes learned from other
               protocols from being advertised)
    interlevel suppress to redistribute interlevel reachability
no set-overload-bit
```

### Default

If this command is not used, no overload-bit is set.

### Command Mode

Router mode

### Usage

If the overload-bit is set in LSPs, the router is not used as a transit router during SPF calculation. This command causes a router to update its own LSP with the overload bit set and causes the other routers not to use this router as a transit or forwarding router. The router continues to receive LSPs when the overload bit is set.

If the `on-startup` option is specified using the time-out (5-86400), the router sets the overload bit only at startup, then clears the bit after the specified interval has elapsed. If the `on-startup` option is specified using the `wait-for-bgp` option, the overload bit set is set up at startup, then the bit is cleared after the BGP router signals it has finished converging, or if the BGP router does not signal it has finished converging in 10 minutes. If there is no BGP process running, the overload bit is cleared immediately.

If the BGP process is started later than the overload bit is set in LSPs, the bit is cleared after the BGP router signals it has finished converging, or if the BGP router does not signal it has finished converging in 10 minutes.

If the `suppress` option is specified, the router suppresses the redistribution of specified types of reachability information during overload state. The `suppress` option can be used with the `external` or `interlevel` parameters, or both parameters simultaneously.

### Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# set-overload-bit on-startup wait-for-bgp suppress
interlevel external
```

This example does the following:

- sets the overload bit upon startup
- does not unset the overload bit until BGP has converged
- suppresses redistribution between IS-IS levels
- suppresses redistribution from external routing protocols while the overload bit is set

### Related Commands

None

---

## show debugging bgp

Use this command to display the BGP debugging option set.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show debugging bgp
```

## Command Mode

Privileged Exec mode

## Usage

This is a sample output from the `show debugging bgp` command.

```
ZebOS# show debugging bgp
BGP debugging status:
  BGP debugging is on
  BGP events debugging is on
  BGP updates debugging is on
  BGP fsm debugging is on
```

## Examples

```
ZebOS# show debugging bgp
```

---

## show ip bgp

Use this command to display BGP network information.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp(IPADDRESS)
show ip bgp ipv4 PREFIX (IPADDRESS)
  IPADDRESS = A.B.C.D|A.B.C.D/M Specifies the address and length.
  ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.
  PREFIX = multicast|unicast
    unicast Specifies a IPv4 unicast address family. This is the default option.
    multicast Specifies a IPv4 multicast address family.
```

## Command Mode

Privileged Exec mode and Exec mode

## Usage

This is a sample output from the `show ip bgp` command displaying BGP network information.

```
ZebOS# show ip bgp
BGP table version is 7, local router ID is 80.80.80.80
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
Network          Next Hop          Metric LocPrf Weight Path
```

```
S>i10.70.0.0/24      192.10.23.67      0    100    0 ?
S>i30.30.30.30/32   192.10.23.67      0    100    0 ?
S>i63.63.63.1/32   192.10.23.67      0    100    0 ?
S>i67.67.67.67/32  192.10.23.67      0    100    0 ?
S>i172.22.10.0/24  192.10.23.67      0    100    0 ?
S>i192.10.21.0     192.10.23.67      0    100    0 ?
S>i192.10.23.0     192.10.23.67      0    100    0 ?
```

Total number of prefixes 7

### Examples

```
ZebOS# show ip bgp 10.10.1.34/24
```

---

## show ip bgp attribute-info

Use this command to show internal attribute hash information.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp attribute-info
```

### Command Mode

Privileged Exec mode and Exec mode

### Usage

This is a sample output from the `show ip bgp attribute-info` command displaying internal attribute information.

```
ZebOS# show ip bgp attribute-info
attr[1] nexthop 0.0.0.0
attr[1] nexthop 10.10.10.10
attr[1] nexthop 10.10.10.50
```

### Examples

```
ZebOS# show ip bgp attribute-info
```

---

## show ip bgp cidr-only

Use this command to display routes with non-natural network masks.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp cidr-only
```

```
show ip bgp ipv4 PREFIX cidr-only
```

ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = multicast|unicast



`unicast` Specifies a IPv4 unicast address family. This is the default option.

`multicast` Specifies a IPv4 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Usage

This is a sample output from the `show ip bgp cidr-only` command.

```
ZebOS# show ip bgp cidr-only
BGP table version is 0, local router ID is 10.10.10.50
Status codes: s suppressed, d damped, h history, p stale, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 3.3.3.0/24       10.10.10.10              0 11 i
*> 6.6.6.0/24       0.0.0.0                32768 i
```

Total number of prefixes 2

## Examples

```
ZebOS# show ip bgp cidr-only
```

---

## show ip bgp community

Use this command to display routes matching the communities.

To modify the lines displayed, use the `|` (output modifier token); to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp community TYPE (exact-match)
```

```
show ip bgp community ipv4 PREFIX TYPE (exact-match)
```

TYPE = AA:NN|local-AS|no-advertise|no-export

AA:NN Specifies a valid value for a community number.

local-AS Do not send outside local AS (well-known community).

no-advertise Do not advertise to any peer (well-known community).

no-export Do not export to next AS (well-known community).

exact-match Specifies that ZebOS display the exact match of the communities.

ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = multicast|unicast

unicast Specifies a IPv4 unicast address family. This is the default option.

multicast Specifies a IPv4 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show ip bgp community 10:23 exact-match
ZebOS# show ip bgp ipv4 multicast community 10:23 exact-match
```

---

## show ip bgp community-info

Use this command to list all BGP community information.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp community-info
```

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show ip bgp community-info
```

---

## show ip bgp community-list

Use this command to display routes that match the community-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp community-list LISTNAME (exact-match)
show ip bgp ipv4 PREFIX community-list LISTNAME (exact-match)

LISTNAME Specifies the community list name.
exact-match Displays only routes that have exactly the same specified communities.
ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.
PREFIX = multicast|unicast
unicast Specifies a IPv4 unicast address family. This is the default option.
multicast Specifies a IPv4 multicast address family.
```

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show ip bgp community-list mylist exact-match
ZebOS# show ip bgp ipv4 unicast community-list mylist
```

---

## show ip bgp dampening

Use this command to display detailed information about dampening.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp dampening dampened-paths|flap-statistics|parameters
show ip bgp ipv4 PREFIX dampening dampened-paths|flap-statistics|parameters
```

dampened-paths Display paths suppressed due to dampening.  
 flap-statistics Display flap statistics of routes.  
 parameters Display details of configured dampening parameters.  
 ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.  
 PREFIX = multicast|unicast  
     unicast Specifies a IPv4 unicast address family. This is the default option.  
     multicast Specifies a IPv4 multicast address family.

## Command Mode

Exec mode and Privileged Exec mode

## Usage

Enable BGP dampening to maintain dampened-path information in memory.

The following is a sample output displaying all the dampening parameters:

```
ZebOS# show ip bgp dampening parameters
```

```
dampening 15 750 2000 60 15
Reachability Half-Life time      : 15 min
Reuse penalty                    : 750
Suppress penalty                 : 2000
Max suppress time                : 60 min
Un-reachability Half-Life time  : 15 min
Max penalty (ceil)               : 11999
Min penalty (floor)              : 375
```

The following sample output is showing that the internal route (i), has flapped 3 times and is now categorized as history (h).

```
ZebOS# show ip bgp dampening flap-statistics
```

```
BGP table version is 1, local router ID is 30.30.30.77
```

```
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               S Stale
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

Network	From	Flaps	Duration	Reuse	Path
hi1.1.1.0/24	10.100.0.62	3	00:01:20		i

The following sample output is showing a dampened route in the 1.1.1.0/24 network.

```
ZebOS# show ip bgp dampening dampened-paths
```

```
BGP table version is 1, local router ID is 30.30.30.77
```

```
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               S Stale
```

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	From	Reuse	Path
di 1.1.1.0/24	10.100.0.62	00:35:10	i

Total number of prefixes 1

### Examples

```
ZebOS# show ip bgp dampening dampened-paths
```

---

## show ip bgp filter-list

Use this command to display routes conforming to the filter-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp filter-list LISTNAME
```

```
show ip bgp ipv4 PREFIX filter-list LISTNAME
```

LISTNAME Specifies the regular-expression access list name.

ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = multicast|unicast

unicast Specifies a IPv4 unicast address family. This is the default option.

multicast Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show ip bgp filter-list mylist
```

```
ZebOS# show ip bgp ipv4 unicast filter-list IPI
```

### Related Commands

---

## show ip bgp inconsistent-as

Use this command to display routes with inconsistent AS Paths.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp inconsistent-as
```

```
show ip bgp ipv4 PREFIX inconsistent-as
```

ipv4 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = multicast|unicast

---

`unicast` Specifies a IPv4 unicast address family. This is the default option.  
`multicast` Specifies a IPv4 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show ip bgp inconsistent-as
ZebOS# show ip bgp ipv4 unicast inconsistent-as
```

---

## show ip bgp neighbors

Use this command to display detailed information on TCP and BGP neighbor connections.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp neighbors (IPADDRESS (advertised-routes|RECEIVED|received-
  routes|routes))
show ip bgp ipv4 PREFIX neighbors (IPADDRESS (advertised-routes|RECEIVED|received-
  routes|routes))
```

`IPADDRESS=A.B.C.D|X:X::X:X` Specifies the IP address.  
`A.B.C.D` Specifies an IPv4 address.  
`X:X::X:X` Specifies an IPv6 address

`advertised-routes` Displays the routes advertised to a BGP neighbor.  
`RECEIVED = received prefix-filter` Displays all received routes, both accepted and rejected.  
`prefix-filter` Displays the prefix-list filter.  
`received-routes` Displays the received routes from neighbor. To display all the received routes from the neighbor, configure the BGP soft reconfigure first.  
`routes` Displays all accepted routes learned from neighbors.  
`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.  
`PREFIX = multicast|unicast`  
`unicast` Specifies a IPv4 unicast address family. This is the default option.  
`multicast` Specifies a IPv4 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Usage

This is a sample output from the `show ip bgp neighbors` command displaying information about the specified neighbor.

```
ZebOS# show ip bgp neighbors
BGP neighbor is 192.10.23.67, remote AS 1, local AS 1, internal link
  BGP version 4, remote router ID 172.22.10.10
  BGP state = Established, up for 00:00:22
  Last read 00:00:22, hold time is 240, keepalive interval is 60 seconds
```

```
Neighbor capabilities:
  Route refresh: advertised and received (old and new)
  Address family IPv4 Unicast: advertised and received
Received 3 messages, 0 notifications, 0 in queue
Sent 3 messages, 0 notifications, 0 in queue
Route refresh request: received 0, sent 0
Minimum time between advertisement runs is 5 seconds
```

```
For address family: IPv4 Unicast
BGP table version 1, neighbor version 1
Index 1, Offset 0, Mask 0x2
AF-dependant capabilities:
  Graceful restart: advertised, received
```

```
Community attribute sent to this neighbor (both)
0 accepted prefixes
0 announced prefixes
```

```
Connections established 1; dropped 0
Graceful-restart Status:
  Remote restart-time is 120 sec
```

```
Local host: 192.10.23.80, Local port: 33837
Foreign host: 192.10.23.67, Foreign port: 179
Nextthop: 192.10.23.80
Nextthop global: 1111::80
Nextthop local: fe80::203:47ff:fe97:bb79
BGP connection: non shared network
```

### Examples

```
ZebOS# show ip bgp neighbors 1.2.3.4 received-routes
ZebOS# show ip bgp ipv4 unicast neighbors 7.67.7.0 received prefix-filter
```

---

## show ip bgp neighbors connection-retrytime

Use this command to display the configured connection-retry-time value of the peer at the session establishment time with the neighbor.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp neighbors IPADDRESS connection-retrytime
IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address.
  A.B.C.D Specifies an IPv4 address.
  X:X::X:X Specifies an IPv6 address
```

### Command Mode

Privileged Exec mode

---

## Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 connection-retrytime
ZebOS# show ip bgp neighbors 3ffe::5 connection-retrytime
```

---

## show ip bgp neighbors hold-time

Use this command to display the configured hold-time value of the peer at the session establishment time with the neighbor.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp neighbors IPADDRESS hold-time
      IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
      A.B.C.D Specifies an IPv4 address
      X:X::X:X Specifies an IPv6 address
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 hold-time
ZebOS# show ip bgp neighbors 3ffe::5/64 hold-time
```

---

## show ip bgp neighbors keepalive

Use this command to display the number of keepalive messages sent to the neighbor from the peer throughout the session.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp neighbors IPADDRESS keepalive
      IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
      A.B.C.D Specifies an IPv4 address
      X:X::X:X Specifies an IPv6 address
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 keepalive
ZebOS# show ip bgp neighbors 3ffe::5 keepalive
```

---

## show ip bgp neighbors keepalive-interval

Use this command to display the configured keepalive-interval value of the peer at the session establishment time with the neighbor.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp neighbors IPADDRESS keepalive-interval
IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
A.B.C.D Specifies an IPv4 address
X:X::X:X Specifies an IPv6 address
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 keepalive-interval
ZebOS# show ip bgp neighbors 3ffe::5/64 keepalive-interval
```

---

## show ip bgp neighbors notification

Use this command to display the number of notification messages sent to the neighbor from the peer throughout the session.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp neighbors IPADDRESS notification
IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
A.B.C.D Specifies an IPv4 address
X:X::X:X Specifies an IPv6 address
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 notification
ZebOS# show ip bgp neighbors 3ffe::5 notification
```

---

## show ip bgp neighbors open

Use this command to display the number of open messages sent to the neighbor from the peer throughout the session.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.



---

## Command Syntax

```
show ip bgp neighbors IPADDRESS open
      IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
      A.B.C.D Specifies an IPv4 address
      X:X::X:X Specifies an IPv6 address
```

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 open
ZebOS# show ip bgp neighbors 3ffe::5 open
```

---

## show ip bgp neighbors rcvd-msgs

Use this command to display the number of messages received by the neighbor from the peer throughout the session. To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp neighbors IPADDRESS rcvd-msgs
      IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
      A.B.C.D Specifies an IPv4 address
      X:X::X:X Specifies an IPv6 address
```

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 rcvd-msgs
ZebOS# show ip bgp neighbors 3ffe::5 rcvd-msgs
```

---

## show ip bgp neighbors sent-msgs

Use this command to display the number of messages sent to the neighbor from the peer throughout the session. To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp neighbors IPADDRESS sent-msgs
      IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
      A.B.C.D Specifies an IPv4 address
      X:X::X:X Specifies an IPv6 address
```

## Command Mode

Privileged Exec mode

---

## Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 sent-msgs
ZebOS# show ip bgp neighbors 3ffe::5 sent-msgs
```

---

## show ip bgp neighbors update

Use this command to display the number of update messages sent to the neighbor from the peer throughout the session.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp neighbors IPADDRESS update
IPADDRESS=A.B.C.D|X:X::X:X BGP neighbor IP address
A.B.C.D Specifies an IPv4 address
X:X::X:X Specifies an IPv6 address
```

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# show ip bgp neighbors 10.11.4.26 update
ZebOS# show ip bgp neighbors 3ffe::5 update
```

---

## show ip bgp nexthop-tracking

Use this command to display the status of nexthop address tracking.

To modify the lines displayed, use the | (output modifier token); to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp nexthop-tracking
```

### Command Mode

Exec mode and Privileged Exec mode

### Examples

```
ZebOS# show ip bgp nexthop-tracking
```

---

## show ip bgp paths

Use this command to display BGP path information.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp paths
```

---

```
show ip bgp ipv4 PREFIX paths
```

`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.

`PREFIX = multicast|unicast`

`unicast` Specifies a IPv4 unicast address family. This is the default option.

`multicast` Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show ip bgp paths
```

---

## show ip bgp prefix-list

Use this command to display routes matching the prefix-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp prefix-list LIST
```

```
show ip bgp ipv4 PREFIX prefix-list LIST
```

`LIST` Specifies the name of the IP prefix list.

`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.

`PREFIX = multicast|unicast`

`unicast` Specifies a IPv4 unicast address family. This is the default option.

`multicast` Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show ip bgp prefix-list mylist
```

---

## show ip bgp quote-regexp

Use this command to display routes matching the AS path regular expression in quotes.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp quote-regexp WORD
```

```
show ip bgp ipv4 PREFIX regexp WORD
```

`WORD` Specifies a regular-expression to match the BGP AS paths

`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.

`PREFIX = multicast|unicast`

`unicast` Specifies a IPv4 unicast address family. This is the default option.

`multicast` Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show ip bgp quote-regexp "IPI"
```

---

## show ip bgp regexp

Use this command to display routes matching the AS path regular expression.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp regexp .LINE
```

```
show ip bgp ipv4 PREFIX regexp .LINE
```

`regexp` Displays routes matching the AS path regular expression.

`LINE` Specifies a regular-expression to match the BGP AS paths. Refer to the appendix "Regular Expressions" for further details.

`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.

`PREFIX = multicast|unicast`

`unicast` Specifies a IPv4 unicast address family. This is the default option.

`multicast` Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show ip bgp regexp myexpression
```

---

## show ip bgp route-map

Use this command to display routes that match the specified route-map.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp route-map WORD
```

```
show ip bgp ipv4 PREFIX route-map WORD
```

`WORD` Specifies a route-map that is matched.

`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.

`PREFIX = multicast|unicast`

`unicast` Specifies a IPv4 unicast address family. This is the default option.

`multicast` Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show ip bgp route-map IPI
```

```
ZebOS# show ip bgp ipv4 unicast route-map IPI
```

---

## show ip bgp scan

Use this command to display BGP scan status.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp scan
```

### Command Mode

Privileged Exec mode and Exec mode

### Usage

```
BGP scan is running
```

```
BGP scan interval is 60
```

```
BGP instance : AS is 11,DEFAULT
```

```
Current BGP nexthop cache:
```

```
BGP connected route:
```

```
10.10.10.0/24
```

```
10.10.11.0/24
```

### Examples

```
ZebOS# show ip bgp scan
```

---

## show ip bgp summary

Use this command to display a summary of BGP neighbor status.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp summary
```

```
show ip bgp ipv4 PREFIX summary
```

`ipv4` Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = multicast|unicast

unicast Specifies a IPv4 unicast address family. This is the default option.

multicast Specifies a IPv4 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Usage

This is a sample output from the `show ip bgp summary` command displaying a summary of BGP neighbor status.

```
ZebOS# show ip bgp summary
```

```
BGP router identifier 10.10.15.50, local AS number 65000
```

```
1 BGP AS-PATH entries
```

```
0 BGP community entries
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/	
PfxRcd10.10.9.50		4	65000	460	595	0	0	0 00:17:48		3
10.10.14.51	4	100	93	120	0	0	0	00:42:16		0

```
Total number of neighbors 2
```

### Examples

```
ZebOS# show ip bgp summary
```

---

## show ip bgp view

Use this command to view the neighbors of the given instance.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp view WORD (A.B.C.D(/M))
```

WORD the name of the instance to display data for.

A.B.C.D IPv4 or IPv6 address

/M The mask

### Command Mode

Privileged Exec mode and Exec mode

### Usage

```
ZebOS# show ip bgp view I2
```

```
BGP table version is 0, local router ID is 10.10.10.50
```

```
Status codes: s suppressed, d damped, h history, p stale, * valid, > best, i - internal
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*>i100.156.70.0/24	10.10.10.52		0	0	i
*>i100.156.71.0/24	10.10.10.52		0	0	i
*>i100.156.72.0/24	10.10.10.52		0	0	i

```
*>i100.156.73.0/24 10.10.10.52 0 0 i
*>i100.156.74.0/24 10.10.10.52 0 0 i
```

Total number of prefixes 5

## Examples

```
ZebOS# show ip bgp 128 view instance1 10.10.10.0/24
```

## Related Commands

show ip bgp neighbors

---

## show ip bgp view neighbors

Use this command to view the neighbors of the given instance.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp view WORD neighbors
show ip bgp view WORD neighbors (A.B.C.D|X:X::X:X)
WORD the name of the instance to display data for.
A.B.C.D|X:X::X:X The IPv4 and IPv6 address of the neighbor
```

## Command Mode

Privileged Exec mode and Exec mode

## Usage

```
ZebOS# show ip bgp view I2 neighbors
BGP neighbor is 10.10.10.52, remote AS 10, local AS 10, internal link
BGP version 4, remote router ID 10.10.10.52
BGP state = Established, up for 00:03:22
Last read 00:00:13, hold time is 90, keepalive interval is 30 seconds
Neighbor capabilities:
  Route refresh: advertised
  Address family IPv4 Unicast: advertised
Received 8 messages, 0 notifications, 0 in queue
Sent 8 messages, 0 notifications, 0 in queue
Route refresh request: received 0, sent 0
Minimum time between advertisement runs is 5 seconds

For address family: IPv4 Unicast
Community attribute sent to this neighbor (both)
5 accepted prefixes
0 announced prefixes

Connections established 1; dropped 0
Local host: 10.10.10.50, Local port: 179
Foreign host: 10.10.10.52, Foreign port: 36950
```

```
NextHop: 10.10.10.50
NextHop global: fe80::280:c8ff:feb9:d268
NextHop local: ::
BGP connection: non shared network
Read thread: on Write thread: off
```

### Examples

```
ZebOS# show ip bgp 128 view instance1 neighbors 10.10.10.5
```

### Related Commands

```
show ip bgp neighbors
```

---

## show ip bgp view summary

Use this command to view the summary data of neighbors of the given instance.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp view WORD summary
show ip bgp view WORD ipv4 (unicast|multicast) summary
WORD the name of the instance to display data for.
unicast Specifies unicast prefixes.
multicast Specifies multicast prefixes.
```

### Command Mode

Privileged Exec mode and Exec mode

### Usage

The following example shows the summary data of instance named I2.

```
ZebOS# show ip bgp view I2 summary
BGP router identifier 10.10.10.50, local AS number 10
1 BGP AS-PATH entries
0 BGP community entries
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.10.10.52	4	10	1	2	0	0	0	00:00:07	5

```
Total number of neighbors 1
```

### Examples

```
ZebOS# show ip bgp 128 view instance1 neighbor 10.10.10.5
```

### Related Commands

```
show ip bgp neighbors
```



---

## show ip bgp vpnv4

Use this command to display VPNv4 NLRI specific information.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp vpnv4 all TYPE
all Displays information about all VPNv4 NLRIs
TYPE = network|neighbors|summary|tags
neighbors Displays information about all VPNv4 NLRIs.
tags BGP Specifies tags for prefixes.
summary Displays summary of the BGP neighbor status.
network Network for which information will be displayed in the BGP routing table.
```

### Command Mode

Privileged Exec mode and Exec mode

### Usage

This is a sample output from the `show ip bgp vpnv4` command displaying VPNv4 specific information

```
ZebOS# show ip bgp vpnv4 all
Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 100:1 (VRF1)
* i 10.10.9.0/24  10.10.0.1         0      141      0 65000 ?
*> 10.10.9.0/24   10.10.14.50      0              0 65000 ?
*> 10.10.10.0/24  10.10.14.50      0              0 65000 ?
* i 10.10.10.0/24  10.10.0.1         0      141      0 65000 ?
*> 10.10.11.0/24  10.10.14.50      0              0 65000 ?
* i 10.10.11.0/24  10.10.0.1         0      141      0 65000 ?
* i 10.10.14.0/24  10.10.0.1         0      141      0 65000 ?
*> 10.10.14.0/24  10.10.14.50      0              0 65000 ?
* i 10.10.15.0/24  10.10.0.1         0      141      0 65000 ?
*> 10.10.15.0/24  10.10.14.50      0              0 65000 ?
```

### Examples

```
ZebOS# show ip bgp vpnv4 all summary
```

---

## show ip extcommunity-list

Use this command to display a configured extcommunity-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip extcommunity-list (<1-199>|WORD)
<1-199> Extcommunity-list number
```

WORD Extcommunity-list name

## Command Mode

Exec mode and Privileged Exec mode

## Examples

```
ZebOS# show ip extcommunity-list 33
```

---

## show ip protocols

Use this command to display BGP process parameters and statistics.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip protocols
```

## Command Mode

Privileged Exec mode and Exec mode

## Usage

This is an example of the output from the show ip protocols command:

```
ZebOS# show ip protocols
Routing Protocol is "bgp 100"
Sending updates every 30 seconds with +/-50%, next due in 12 seconds
Timeout after 180 seconds, garbage collect after 120 seconds
Outgoing update filter list for all interface is not set
Incoming update filter list for all interface is not set
Default redistribution metric is 1
Redistributing: connected static
Default version control: send version 2, receive version 2
Interface          Send  Recv  Key-chain
  eth0              2    2
Routing for Networks:
  10.10.0.0/24
Routing Information Sources:
  Gateway          BadPackets BadRoutes  Distance Last Update
Distance: (default is 120)
```

## Examples

```
ZebOS# show ip protocols
```

---

## synchronization

Use this command to enable IGP synchronization of Internal BGP (iBGP) learned routes with the Internal Gateway Protocol (IGP) system in the router configuration mode or in the address-family configuration mode.

Use the no parameter with this command to disable this function.

---

## Command Syntax

```
(no) synchronization
```

## Default

IGP synchronization is disabled.

## Command Mode

Router mode

Address Family mode

```
ipv4 unicast
```

```
ipv4 multicast
```

```
ipv6 unicast
```

```
ipv6 multicast
```

## Usage

Synchronization is used when a BGP router should not advertise routes learned from iBGP neighbors, unless those routes are also present in an IGP (for example, OSPF). Synchronization may be enabled when all the routers in an autonomous system do not speak BGP, and the autonomous system is a transit for other autonomous systems. The `no synchronization` command is used when BGP router can advertise routes learned from its iBGP neighbors without waiting for the IGP reachability to be present.

## Examples

The following example enables IGP synchronization of iBGP routes in Router mode.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config-router)# synchronization
```

The following example enables IGP synchronization of iBGP routes in the IPv6-Unicast address family.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 11
ZebOS(config)# address-family ipv6 unicast
ZebOS(config-af)# synchronization
```

---

## timers

Use this command sets the BGP keepalive timer and holdtime timer values.

Use the `no` parameter with this command to reset timers to default value.

## Command Syntax

```
timers bgp KEEPALIVE HOLDTIME
```

```
no timers bgp
```

**KEEPALIVE** <0-65535> The frequency with which the keepalive messages are sent to the neighbors.  
The default value is 30 seconds.

**HOLDTIME** <0-65535> The interval after which the neighbor is considered dead if keepalive messages are not received. The default holdtime value is 90 seconds.

## Command Mode

Router mode

## Usage

This command is used globally to set or unset the keepalive and holdtime values for all the neighbors.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# timers bgp 40 120
```

---

## undebg bgp

Use this command to disable BGP debugging functions.

## Command Syntax

```
undebg bgp (all|dampening|events|filters|fsm|keepalives|mpls|nsm|updates)
```

```
undebg all bgp
```

`all` Disable all debugging for BGP

`dampening` Disable debugging for BGP dampening.

`events` Disable debugging for BGP events.

`filters` Disable debugging for BGP filters.

`fsm` Disable debugging for BGP Finite State Machine (FSM).

`keepalives` Disable debugging for BGP keepalives.

`nsm` Disable debugging for NSM messages.

`updates` Disable debugging for BGP updates.

`mpls` BGP MPLS

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# undebg bgp events
```

## CHAPTER 3 BGP4+ Commands

---

---

### address-family ipv6 labeled-unicast

Use this command to enter the IPv6 Provider Edge (6PE) Address Family mode.

When a `neighbor activate` command is given inside this Address Family mode, the router will be 6PE capable.

#### Command Syntax

```
address-family ipv6 labeled-unicast
```

`ipv6` Configures sessions between the dual-stack PE routers with IPv6 prefixes. This parameter takes an IPv4 style address (A.B.C.D).

#### Command Mode

Router mode

#### Usage

Use this command to enable the exchanging of labeled routes information among ISP PE-routers and switches in Address-Family IPv6 Labeled-Unicast mode.

#### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# neighbor 30.30.30.2 remote-as 100

ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family ipv6 labeled-unicast
ZebOS(config-router)# neighbor 30.30.30.2 activate
```

#### Related Commands

`exit-address-family`, `neighbor active`

---

### aggregate-address

Use this command to configure BGP aggregate entries.

Use the `no` parameter with this command to disable this function.

#### Command Syntax

```
(no) aggregate-address IPADDRESS (as-set)(summary-only)
```

`IPADDRESS` = X:X::X:X/M Specifies the aggregate IPv6 prefix.

`summary-only` Filters more specific routes from updates.

`as-set` Generates AS set path information.

## Default

Disabled

## Command Mode

Address Family mode

## Usage

Aggregates are used to minimize the size of routing tables. Aggregation combines the characteristics of several different routes and advertises a single route. The `aggregate-address` command creates an aggregate entry in the BGP routing table if any more-specific BGP routes are available in the specified range. Using the `summary-only` parameter advertises the prefix only, suppressing the more-specific routes to all neighbors. In the following example Router1 will propagate network 172.0.0.0 and suppresses the more specific route 172.10.0.0.

```
Router1#  
aggregate-address 172.0.0.0/ 8 summary-only
```

The `as-set` parameter creates an aggregate entry advertising the path for this route, consisting of all elements contained in all paths being summarized. Use the `as-set` parameter to reduce the size of path information by listing the AS number only once, even if it was included in multiple paths that were aggregated. The `as-set` parameter is useful when aggregation of information results in an incomplete path information. In the following configuration Router1 has set the `as-set` parameter. When sending aggregate information to Router2 this indicates that 172.0.0.0 belongs to a set 100 and 200. Without the `as-set` parameter Router2 would receive path information indicating that the information was originating from AS 300 and have no knowledge that it was coming from two different autonomous systems. This might create loops.

```
Router1#  
  router bgp 300  
  neighbor 2.2.2.2 remote-as 100  
  neighbor 3.3.3.3 remote-as 200  
  aggregate-address 172.0.0.0/8 summary-only as-set
```

## Examples

```
ZebOS# configure terminal  
ZebOS(config)# router bgp 100  
ZebOS(config-router)# address family ipv6  
ZebOS(config-router-af)# aggregate-address 3ffe::/32 as-set summary-only
```

---

## clear bgp ipv6 dampening

Use this command to reset all dampened BGP routes under the specified address family.

## Command Syntax

```
clear bgp ipv6 unicast dampening (X:X::X:X|X:X::X:X/M)  
clear bgp ipv4 PREFIX dampening (A.B.C.D|A.B.C.D/M)
```

A.B.C.D Specifies the IPv4 address for which BGP dampening is to be cleared.

A.B.C.D/M Specifies the IPv4 address with mask for which BGP dampening is to be cleared.

ipv4 = clears all IPv4 address family peers

PREFIX = unicast|multicast

unicast = address family modifier

multicast = address family modifier

**Command Mode**

Privileged Exec mode

**Examples**

```
ZebOS# clear bgp ipv6 unicast dampening 3ffe::3:34
ZebOS# clear bgp ipv4 multicast dampening 3.3.3.3
```

---

**clear bgp ipv6 flap-statistics**

Use this command to clear the flap count and history duration for all the prefixes under the specified address family.

**Command Syntax**

```
clear bgp ipv6 unicast flap-statistics (X:X::X:X|X:X::X:X/M)
```

```
clear bgp ipv4 PREFIX flap-statistics (A.B.C.D|A.B.C.D/M)
```

A.B.C.D Specifies the IPv4 address for which BGP flap-statistics is to be cleared.

A.B.C.D/M Specifies the IPv4 address with mask for which BGP flap-statistics is to be cleared.

ipv4 = clears all IPv4 address family peers

PREFIX = unicast|multicast

unicast = address family modifier

multicast = address family modifier

**Command Mode**

Privileged Exec mode

**Examples**

```
ZebOS# clear bgp ipv6 unicast flap-statistics 3ffe::3:34
ZebOS# clear bgp ipv4 multicast flap-statistics 3.3.3.3
```

---

**clear ip bgp ipv6 dampening**

Use this command to reset all dampened BGP routes under the specified address family.

**Command Syntax**

```
clear ip bgp ipv6 unicast dampening (X:X::X:X|X:X::X:X/M)
```

A.B.C.D Specifies the IPv4 address for which BGP dampening is to be cleared.

A.B.C.D/M Specifies the IPv4 address with mask for which BGP dampening is to be cleared.

unicast An address family modifier

**Command Mode**

Privileged Exec mode

**Examples**

```
ZebOS# clear ip bgp ipv6 unicast dampening 3ffe::3:3
```

---

**clear ip bgp ipv6 flap-statistics**

Use this command to clear the flap count and history duration for all the prefixes under the specified address family.

## Command Syntax

```
clear ip bgp ipv6 unicast flap-statistics (X:X::X:X|X:X::X:X/M)
  A.B.C.D Specifies the IPv4 address for which BGP flap-statistics is to be cleared.
  A.B.C.D/M Specifies the IPv4 address with mask for which BGP flap-statistics is to be cleared.
  unicast An address family modifier
```

## Command Mode

Privileged Exec mode

## Examples

```
ZebOS# clear ip bgp ipv6 unicast flap-statistics 3ffe::3:3
```

---

## match ipv6 peer

Use this command to apply policies based on the route source of which the BGP TCP/IP session is formed using the IPv6 address, unlike the nexthop in the update message.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
(no) match ipv6 peer <1-199>|<1300-2699>|WORD
  <1-199> access-list number
  <1300-2699> expanded range access-list number
  WORD access-list name
```

## Command Mode

Configure mode

## Examples

```
ZebOS# configure terminal
ZebOS(config)#route-map in-A permit 10
ZebOS(route-map)#match ipv6 peer 1
```

---

## neighbor activate

Use this command to enable the exchange of the specified AF routes with a neighboring router.

Use the `no` parameter with this command to disable exchange of information with a neighbor.

## Command Syntax

```
(no) neighbor NEIGHBORID activate
  NEIGHBORID = A.B.C.D|X:X::X:X|TAG
  A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.
  X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.
  TAG Name of an existing peer-group. For information on how to create peer groups, refer to the
  neighbor peer-group and neighbor remote-as commands. When this parameter is used
  with a command, the command applies on all peers in the specified group.
```



## Command Mode

Address Family mode and Router mode

## Usage

After the TCP connection is opened with the neighbor, this command is used to enable or disable the exchange of the specified AF information with a neighboring router.

To enable the exchange of multicast and VPNv4 address prefix types, neighbors are activated using the `neighbor activate` command in address family mode.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 1.2.3.4 activate
```

## Related Commands

`neighbor remote-as`, `neighbor peer-group`

---

## neighbor attribute-unchanged

Use this command to advertise unchanged BGP attributes to the specified neighbor.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
(no) neighbor NEIGHBORID attribute-unchanged {as-path|next-hop|med}
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

as-path AS path attribute

next-hop Next hop attribute

med Multi Exit Discriminator

## Command Mode

Router mode and Address Family mode

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.75 attribute-unchanged as-path med
```

---

## neighbor capability orf prefix-list

Use this command to advertise ORF capability to neighbors.

## Command Syntax

```
(no) neighbor NEIGHBORID capability orf prefix-list (both|receive|send)
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.
X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.
TAG Name of an existing peer-group. For information on how to create peer groups, refer to the
neighbor peer-group and neighbor remote-as commands. When this parameter is used
with a command, the command applies on all peers in the specified group.
orf Advertises ORF capability to its neighbors
Both Indicates that the local router can send ORF entries to its peer as well as receive ORF entries from
its peer.
Receive Indicates that the local router is willing to receive ORF entries from its peer
Send Indicates that the local router is willing to send ORF entries to its peer
```

## Command Mode

Router mode and Address Family mode

## Usage

Outbound Route Filters (ORFs) send and receive capabilities to lessen the number of updates exchanged between neighbors. By filtering updates, this option minimizes generating and processing of updates.

The local router advertises the ORF capability in `send` mode and the remote router receives the ORF capability in `receive` mode applying the filter as outbound policy. The two routers exchange updates to maintain the ORF for each router. Only an individual router or a peer-group can be configured to be in `receive` or `send` mode. A peer-group member cannot be configured to be in `receive` or `send` mode.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.5 capability orf prefix-list both
ZebOS(config-router)# neighbor effe:2897::0003:3ed5 capability orf prefix-list
receive
```

---

## neighbor default-originate

Use this command to allow a BGP local router to send the default route 0.0.0.0 to a neighbor for use as a default route.

Use the `no` parameter with this command to send no route as a default.

## Command Syntax

```
(no) neighbor NEIGHBORID default-originate (ROUITEMAP)
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.
X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.
TAG Name of an existing peer-group. For information on how to create peer groups, refer to the
neighbor peer-group and neighbor remote-as commands. When this parameter is used
with a command, the command applies on all peers in the specified group.
ROUITEMAP = route-map WORD
route-map The route-map to specify criteria to originate default routes
WORD Route-map name
```

## Command Mode

Router mode and Address Family mode

## Usage

The neighbor default-originate command can be used with standard or extended access lists.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.10.1 default-originate route-map myroute
```

---

## neighbor distribute-list

Use this command to filter route update from a particular BGP neighbor.

Use the `no` parameter with this command to remove an entry.

## Command Syntax

```
(no) neighbor NEIGHBORID distribute-list ACCESSLISTID in|out
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

```
ACCESSLISTID = WORD|<1-199>|<1300-2699>
```

WORD The name of IP access-list

<1-199> The IP access-list number

<1300-2699> The IP access-list number (expanded range)

in Indicates that incoming advertised routes will be filtered.

out Indicates that outgoing advertised routes will be filtered.

## Command Mode

Router mode and Address Family mode

## Usage

Use only one distribute-list per BGP neighbor.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 1.2.3.4 distribute-list mylist out
```

---

## neighbor filter-list

Use this command to set up a BGP filter.

Use the `no` parameter with this command to disable this function.

## Command Syntax

(no) neighbor NEIGHBORID filter-list LISTNAME in|out

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

LISTNAME The name of an autonomous system path access list.

in Indicates that incoming advertised routes will be filtered.

out Indicates that outgoing advertised routes will be filtered.

## Command Mode

Router mode and Address Family mode

## Usage

This command specifies an access list filter on updates based on the BGP autonomous system paths. Each filter is an access list based on regular expressions.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.34 filter-list out
```

---

## neighbor maximum-prefix

Use this command to control the number of prefixes that can be received from a neighbor.

Use the `no` parameter with this command to disable this function.

## Command Syntax

(no) neighbor NEIGHBORID maximum-prefix MAXIMUM

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

MAXIMUM = <1-4294967295> (warning-only)

<1-4294967295> Specifies the maximum number of prefixes permitted.

warning-only Only gives a warning message when the limit is exceeded.

## Command Mode

Router mode and Address Family mode

## Usage

The `neighbor maximum-prefix` command allows the configuration of a specified number of prefixes that a BGP router is allowed to receive from a neighbor. When the `warning-only` option is not used, if any extra prefixes are received, the router ends the peering. A terminated peer, stays down until the `clear ip bgp` command is used.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 maximum-prefix 1244 warning-only
```

## Related Commands

`neighbor remote-as`, `neighbor peer-group`

---

## neighbor next-hop-self

Use this command to configure the router as the next hop for a BGP-speaking neighbor or peer group.

Use the `no` parameter with this command to disable this feature.

## Command Syntax

```
(no) neighbor NEIGHBORID next-hop-self
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

## Command Mode

Router mode and Address Family mode

## Usage

This command allows a BGP router to change the nexthop information that is sent to the iBGP peer. The nexthop information is set to the IP address of the interface used to communicate with the neighbor.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 remote-as 100
ZebOS(config-router)# neighbor 10.10.0.72 next-hop-self
```

---

## neighbor peer-group

Use this command to add a neighbor to an existing peer-group.

Use the `no` parameter with this command to disable this function.

## Command Syntax

```
(no)neighbor IPADDRESS peer-group TAG
```

IPADDRESS=A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6 format.

TAG Name of the peer-group

## Command Mode

Router mode

## Usage

Use this command to Neighbors with the same update policies are grouped into peer groups. This facilitates the updates of various policies, such as, distribute and filter lists. The peer-group is then configured easily with any of the neighbor commands. Any changes made to the peer group affect all members.

To create a peer-group use the neighbor peer-group create command and then use this command to add neighbors to the group.

## Example

This example shows a new peer-group `group1` and the adding of a neighbor `10.10.0.63` to the group.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor group1 peer-group
ZebOS(config-router)# neighbor 10.10.0.63 peer-group group1
```

---

## neighbor prefix-list

Use this command to distribute BGP neighbor information as specified in a prefix list.

Use the `no` parameter with this command to remove an entry.

## Command Syntax

```
(no) neighbor NEIGHBORID prefix-list LISTNAME in|out
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

LISTNAME The number of an AS-path access list.

in Specifies that the access list applies to incoming advertisements.

out Specifies that the access list applies to outgoing advertisements.

## Command Mode

Router mode and Address Family mode

## Usage

Use this command to specify a prefix list for filtering BGP advertisements. Filtering by prefix list matches the prefixes of routes with those listed in the prefix list. If there is a match, the route is used. An empty prefix list permits all prefixes. If a given prefix does not match any entries of a prefix list, the route is denied access. When multiple entries of a prefix list match a prefix, the entry with the smallest sequence number is considered to be a real match.

The router begins the search at the top of the prefix list, with the sequence number 1. Once a match or deny occurs, the router does not need to go through the rest of the prefix list. For efficiency the most common matches or denials are listed at the top.

The `neighbor distribute-list` command is an alternative to the `neighbor prefix-list` command and only one of them can be used for filtering to the same neighbor in any direction.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# ip prefix-list list1 deny 30.0.0.0/24
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 prefix-list list1 in
```

### Related Commands

`ip prefix-list` (refer to the *NSM Command Reference*)

---

## neighbor remove-private-AS

Use this command to remove the private Autonomous System (AS) number from outbound updates.

Use the `no` parameter with this command to revert to default.

### Command Syntax

```
(no)neighbor NEIGHBORID remove-private-AS
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Default

Disabled

### Command Mode

Router mode and Address Family (`ipv4 unicast` | `ipv4 multicast` | `ipv6` | `vpn4 unicast`) mode

### Usage

The private AS numbers range from <64512-65535>. Private AS numbers are not advertised to the Internet. This command is used with external BGP peers only. The router removes the AS numbers only if the update includes private AS numbers. If the update includes both private and public AS numbers, the system treats it as an error.

### Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.63 remove-private-AS
```

---

## neighbor route-map

Use this command to apply a route map to incoming or outgoing routes.

Use the `no` parameter with this command to a route map.

## Command Syntax

```
(no) neighbor NEIGHBORID route-map MAPNAME in|out
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

MAPNAME Specifies name of the route-map.

in Specifies that the access list applies to incoming advertisements.

out Specifies that the access list applies to outgoing advertisements.

## Command Mode

Router mode and Address Family mode

## Usage

Use `neighbor route map` command to filter updates and modify attributes. A route map is applied to inbound or outbound updates. Only the routes that pass the route map are sent or accepted in updates.

## Examples

The following example shows the configuration of the route-map name `rmap2` and then the use of this map name in the `neighbor route-map` command.

```
ZebOS# configure terminal
ZebOS(config)# route-map rmap2 permit 6
ZebOS(config-route-map)# match origin incomplete
ZebOS(config-route-map)# set metric 100
ZebOS(config-route-map)#exit
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 route-map rmap2 in
```

---

## neighbor route-reflector-client

Use this command to configure the router as a BGP route reflector and configure the specified neighbor as its client.

Use the `no` parameter with this command to indicate that the neighbor is not a client.

## Command Syntax

```
(no) neighbor NEIGHBORID route-reflector-client
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

## Command Mode

Router mode and Address Family mode

---



## Usage

Route reflectors are a solution for the explosion of iBGP peering within an autonomous system. By route reflection the number of iBGP peers within an AS is reduced. Use the `neighbor route-reflector-client` command to configure the local router as the route reflector and specify neighbors as its client.

An AS can have more than one route reflector. One route reflector treats the other route reflector as another iBGP speaker.

In the following configuration, Router1 is the route reflector for clients 3.3.3.3 and 2.2.2.2; it also has a non-client peer 6.6.6.6.

```
Router1#
router bgp 200
neighbor 3.3.3.3 remote-as 200
neighbor 3.3.3.3 route-reflector-client
neighbor 2.2.2.2 remote-as 200
neighbor 2.2.2.2 route-reflector-client
neighbor 6.6.6.6 remote-as 200
```

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 route-reflector-client
```

---

## neighbor send-community

Use this command to specify that a community attribute should be sent to a BGP neighbor.

Use the `no` parameter with this command to remove the entry.

## Command Syntax

```
(no) neighbor NEIGHBORID send-community (both|extended|standard)
```

NEIGHBORID = A.B.C.D|X:X::X:X|TAG

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

`both` = Sends Standard and Extended Community attributes

`extended` = Sends Extended Community attributes

`standard` = Sends Standard Community attributes

## Default

Send-community is the default behavior.

## Command Mode

Router mode and Address Family mode

## Usage

This command is used to specify a community attribute to be sent to a neighbor. The community attribute groups destinations in a certain community and applies routing decisions according to those communities.

By default, on receiving the communities attribute the router reannounces them to the neighbor. Only when the `no` parameter is used with this command the community attributes are not reannounced to the neighbor.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router)# neighbor 10.10.0.72 send-community extended
```

---

## neighbor soft-reconfiguration inbound

Use this command to configure the ZebOS software to start storing updates.

Use the `no` parameter with this command too disable this function.

### Command Syntax

```
(no) neighbor NEIGHBORID soft-reconfiguration inbound
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

### Command Mode

Router mode and Address Family mode

### Usage

Use this command to store updates for inbound soft reconfiguration. Soft-reconfiguration may be used in lieu of BGP route refresh capability. Using this command enables local storage of all the received routes and their attributes. This requires additional memory. When a soft reset (inbound) is done on this neighbor, the locally stored routes are re-processed according to the inbound policy. The BGP neighbor connection is not affected.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)# neighbor 10.10.10.10 soft-reconfiguration inbound
```

---

## neighbor unsuppress-map

Use this command to selectively leak more-specific routes to a particular neighbor.

### Command Syntax

```
(no)neighbor NEIGHBORID unsuppress-map WORD
```

```
NEIGHBORID = A.B.C.D|X:X::X:X|TAG
```

A.B.C.D Specifies the address of the BGP neighbor in IPv4 format.

X:X::X:X Specifies the address of the BGP neighbor in IPv6 format.

TAG Name of an existing peer-group. For information on how to create peer groups, refer to the `neighbor peer-group` and `neighbor remote-as` commands. When this parameter is used with a command, the command applies on all peers in the specified group.

WORD The name of the route-map used to select routes to be unsuppressed.

## Command Mode

Router mode and Address Family (ipv4 unicast | ipv4 multicast | ipv6) mode

## Usage

When the `aggregate-address` command is used with the `summary-only` option, the more-specific routes of the aggregate are suppressed to all neighbors. Use the `unsuppress-map` command to selectively leak more-specific routes to a particular neighbor.

## Example

```
ZebOS# configure terminal
ZebOS(config)# router bgp 10
ZebOS(config-router) neighbor 10.10.0.73 unsuppress-map mymap

ZebOS#configure terminal
ZebOS(config)#router bgp 10
ZebOS(config-router)address-family ipv4 unicast
ZebOS(config-router-af)neighbor 10.10.0.70 unsuppress-map mymap
```

---

## network and network backdoor

Use this command to specify the networks to be advertised by the BGP routing process. Use the `backdoor` parameter to specify a backdoor route to a BGP border router that will provide better information about the network.

Use the `no` parameter with this command to remove an entry.

## Command Syntax

```
(no) network A.B.C.D/M
(no) network IPADDRESS/M (backdoor)

IPADDRESS=A.B.C.D|X:X::X:X Specifies the IPv4 or IPv6 address of network being advertised.
/M Specifies the address mask.
backdoor Specify a BGP backdoor route.
```

## Command Mode

Router mode and Address Family mode

## Usage

For data to be advertised by BGP, its routing table must include a route to the specified network. This command specifies the networks to be advertised. The `network` command works if the network being advertised is known to the router. In the following configuration Router1 will generate a network entry for 172.26.0.0/ 16.

```
Router1#
network 172.26.0.0/16
```

The `backdoor` parameter enables a route to be the preferred route even if it has a greater distance. A network that is specified as a backdoor network is not sourced by the local router but is learned from the external routers. In the following example, 172.10.0.0 is treated as a local entry but is advertised differently. If Router1 receives updates from 172.10.0.0 via two routing protocols RIP (distance 120) and eBGP (distance 20). Router1 will chose the route with a shorter distance. Using the `backdoor` parameter will allow Router1 to learn about 172.10.0.0 via RIP.

```
Router1#
router rip
network 172.10.0.0
```

```
router bgp 200
neighbor 3.3.3.3 remote-as 500
network 172.10.0.0 backdoor
```

The backdoor parameter applies to IPv4 unicast and IPv6 unicast address family only.

### Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)#network 3.3.3.0/24
```

```
ZebOS# configure terminal
ZebOS(config)# router bgp 12
ZebOS(config-router)#network 3.3.3.0/24 backdoor
```

---

## network route-map

Use this command to modify the BGP attributes of a network. Use the backdoor parameter to specify a BGP backdoor route.

Use the no parameter with this command to remove this entry.

### Command syntax

```
(no) network A.B.C.D/M route-map WORD
(no) network A.B.C.D/M route-map WORD backdoor
WORD Specifies a name identifying the route.
```

### Command mode

Router mode

### Usage

```
ZebOS# configure terminal
ZebOS(config)# route-map ipi permit 10
ZebOS(config-route-map)# set metric 100
ZebOS(config-route-map)# exit
ZebOS(config)# router bgp 11
ZebOS(config-router)# network 172.16.1.0/24 route-map ipi
ZebOS(config-router)# end
```

### Related commands

neighbor route-map

---

## redistribute route-map

Use this command to inject routes from one routing process into another.

Use the no parameter with this command to disable this function.

### Command Syntax

```
redistribute ROUTES (MAPNAME)
no redistribute ROUTES
```

---

```

ROUTES = ospf|rip|connected|static|kernel|isis
connected Specifies the redistribution of connected routes.
kernel Specifies the redistribution of Kernel routes
ospf Specifies the redistribution of OSPF information.
rip Specifies the redistribution of RIP.
static Specifies the redistribution of Static routes.
isis Specifies the redistribution of ISIS routes.
MAPNAME = route-map WORD Route map reference
WORD Pointer to route-map entries.

```

## Command Mode

Router mode and Address Family IPv6 mode

## Usage

Redistribution is used by routing protocols to advertise routes that are learned by some other means, such as by another routing protocol or by static routes. Since all internal routes are dumped into BGP, careful filtering is applied to make sure that only routes to be advertised reach the internet, not everything. This command allows redistribution by injecting prefixes from one routing protocol into another routing protocol.

## Examples

The following example shows the configuration of the route-map name `rmap1` and then the use of this map name in the `redistribute route-map` command.

```

ZebOS# configure terminal
ZebOS(config)# route-map rmap1 permit 1
ZebOS(config-route-map)# match origin incomplete
ZebOS(config-route-map)# set metric 100
ZebOS(config-route-map)#exit
ZebOS(config)# router bgp 12
ZebOS(config-router)# redistribute ospf route-map rmap1

```

---

## show bgp

Use this command to display BGP network information.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```

show bgp(IPADDRESS)
show bgp AFI PREFIX (IPADDRESS)

```

IPADDRESS = X:X::X:X Specifies the address and length.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show bgp ipv6 multicast 3ffe::8/8
```

---

## show bgp community

Use this command to display routes matching the communities.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp community TYPE (exact-match)
```

```
show bgp AFI PREFIX community TYPE (exact-match)
```

TYPE = AA:NN|local-AS|no-advertise|no-export

AA:NN Specifies a valid value for a community number.

local-AS Do not send outside local AS (well-known community).

no-advertise Do not advertise to any peer (well-known community).

no-export Do not export to next AS (well-known community).

exact-match Specifies that ZebOS display the exact match of the communities.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
show bgp ipv6 community local-AS
```

---

## show bgp community-list

Use this command to display routes matching the community-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp community-list LISTNAME (exact-match)
```

```
show bgp AFI PREFIX community-list LISTNAME (exact-match)
```

LISTNAME Specifies the community list name.

exact-match Displays only routes that have exactly the same specified communities.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

---

PREFIX = unicast|multicast  
unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.  
multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
show bgp ipv6 community-list mylist exact-match
```

---

## show bgp filter-list

Use this command to display routes conforming to the filter-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp filter-list LISTNAME  
show bgp AFI PREFIX filter-list LISTNAME
```

LISTNAME Specifies the regular-expression access list name.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast  
unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.  
multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show bgp ipv6 filter-list mylist
```

---

## show bgp inconsistent-as

Use this command to display routes with inconsistent AS Paths.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp inconsistent-as  
show bgp AFI PREFIX inconsistent-as
```

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast  
unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.  
multicast Specifies a IPv4/IPv6 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show bgp ipv6 inconsistent-as
```

---

## show bgp ipv4 dampening

Use this command to display detailed information about dampening in IPV4 environments.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp ipv4 PREFIX dampening dampened-paths|flap-statistics|parameters
    dampened-paths Display paths suppressed due to dampening.
    flap-statistics Display flap statistics of routes.
    parameters Display details of configured dampening parameters.
    PREFIX = unicast|multicast
        unicast Specifies a unicast address family. Unicast is the default option.
        multicast Specifies a multicast address family.
```

## Command Mode

Exec mode and Privileged Exec mode

## Usage

Enable BGP IPV4 dampening to maintain dampened-path information in memory.

## Examples

```
ZebOS# show bgp ipv4 dampening dampened-paths
ZebOS# show bgp ipv4 multicast dampening dampened-paths
```

---

## show bgp ipv6 dampening

Use this command to display detailed information about dampening in IPV6 environments.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp ipv6 dampening dampened-paths|flap-statistics|parameters
    dampened-paths Display paths suppressed due to dampening.
    flap-statistics Display flap statistics of routes.
    parameters Display details of configured dampening parameters.
```

## Command Mode

Exec mode and Privileged Exec mode

---



## Usage

Enable BGP IPv6 dampening to maintain dampened-path information in memory.

## Examples

```
ZebOS# show bgp ipv6 dampening dampened-paths
```

---

## show bgp ipv6 labeled

Use this command to display the labeled IPv6 routes received from the ingress 6PE to the egress 6PE, along with the label value.

To modify the lines displayed, use the | (output modifier token); to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp ipv6 labeled (IPADDRESS)
```

`ipv6` Specifies the address family. The type of address family determines the routing table displayed.

`IPADDRESS = X:X::X:X/M` IPv6 prefix <network>/<length>, for example, `3ffe:a::/64`

## Command Mode

Exec mode

## Usage

To display the labeled IPv6 route in the 6PE case.

## Example

```
ZebOS# show bgp ipv6 labeled 3ffe:a::/64
      BGP routing table entry for 3ffe:a::/64
      Paths: (1 available, best #1, table Default-IP-Routing-Table)
      Not advertised to any peer
      Local
      ::ffff:114:1414 from 20.20.20.1 (92.92.92.92)
      Origin incomplete metric 0, localpref 100, label    5420,
      valid, internal, best
      Last update: Mon May 26 17:48:18 2008
```

---

## show bgp longer-prefixes

Use this command to display the route of the local BGP routing table for a specific prefix with a specific mask or for any prefix having a longer mask than the one specified.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp x:x::x:x/M longer-prefixes
```

```
show bgp AFI PREFIX x:x::x:x/M longer-prefixes
```

`X:X::X:X/M` Neighbor's IP address.

`AFI = ipv4|ipv6` Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show bgp ipv6 3ffe::8/8 longer-prefixes
```

---

## show bgp neighbors

Use this command to display detailed information on TCP and BGP neighbor connections.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp neighbors (IPADDRESS (advertised-routes|RECEIVED|received-routes|routes))
```

```
show bgp AFI PREFIX neighbors (IPADDRESS (advertised-routes|RECEIVED|received-  
routes|routes))
```

IPADDRESS=A.B.C.D|X:X::X:X Specifies the IP address of the neighbor for which information is displayed.

A.B.C.D Specifies an IPv4 address.

X:X::X:X Specifies an IPv6 address

advertised-routes Displays the routes advertised to a BGP neighbor.

RECEIVED = received prefix-filter Displays all received routes, both accepted and rejected.

prefix-filter Displays the prefix-list filter.

received-routes Displays the received routes from neighbor. To display all the received routes from the neighbor, configure the BGP soft reconfigure first.

routes Displays all accepted routes learned from neighbors.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Usage

The following is an output from the show bgp ipv6 neighbors command displaying detailed information about the neighbor.

```
ZebOS# show bgp ipv6 neighbors
```

```
BGP neighbor is fe80::203:47ff:feb0:d72b, remote AS 10, local AS 10, internal link
```

```
  BGP version 4, remote router ID 10.10.10.50
```

```
  BGP state = Established, up for 00:02:01
```

```
  Last read 00:00:01, hold time is 180, keepalive interval is 60 seconds
```

```
Neighbor capabilities:
  Route refresh: advertised and received (old and new)
  Address family IPv4 Unicast: advertised and received
  Address family IPv6 Unicast: advertised and received
Received 3 messages, 0 notifications, 0 in queue
Sent 5 messages, 0 notifications, 0 in queue
Route refresh request: received 0, sent 0
Minimum time between advertisement runs is 5 seconds
```

```
For address family: IPv4 Unicast
  Community attribute sent to this neighbor (both)
  0 accepted prefixes
  0 announced prefixes
```

```
For address family: IPv6 Unicast
  Community attribute sent to this neighbor (both)
  0 accepted prefixes
  0 announced prefixes
```

```
Connections established 1; dropped 0
Local host: fe80::280:c8ff:feb9:d267, Local port: 179
Foreign host: fe80::203:47ff:feb0:d72b, Foreign port: 2346
Nexthop: 10.10.10.10
Nexthop global: fe80::280:c8ff:feb9:d267
Nexthop local: ::
BGP connection: shared network
Read thread: on Write thread: off
```

## Examples

```
show bgp neighbors 3ffe::1
```

---

## show bgp paths

Use this command to display BGP path information.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show bgp paths
```

```
show bgp AFI PREFIX paths
```

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

## Command Mode

Privileged Exec mode and Exec mode

## Examples

```
ZebOS# show bgp ipv6 paths
```

---

## show bgp prefix-list

Use this command to display routes matching the prefix-list.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp prefix-list LIST
```

```
show bgp AFI PREFIX prefix-list LIST
```

LIST Specifies the name of the IP prefix list.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
show bgp ipv6 prefix-list mylist
```

---

## show bgp quote-regexp

Use this command to display routes matching the AS path regular expression in quotes.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp quote-regexp WORD
```

```
show bgp AFI PREFIX quote-regexp WORD
```

WORD Specifies a regular-expression to match the BGP AS paths

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show bgp ipv6 quote-regexp "IPI"
```

---

## show bgp regexp

Use this command to display routes matching the AS path regular expression.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp regexp .LINE
```

```
show bgp AFI PREFIX regexp .LINE
```

LINE Specifies a regular-expression to match the BGP AS paths.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
show bgp ipv6 regexp myexpression
```

---

## show bgp route-map

Use this command to display routes that match the specified route-map.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp route-map WORD
```

```
show bgp AFI PREFIX route-map WORD
```

WORD Specifies a route-map that is matched.

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
ZebOS# show bgp ipv6 route-map IPI
```

## show bgp summary

Use this command to display a summary of BGP neighbor status.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show bgp summary
```

```
show bgp AFI PREFIX summary
```

AFI = ipv4|ipv6 Specifies the address family. The type of address family determines the routing table that is displayed.

PREFIX = unicast|multicast

unicast Specifies a IPv4/IPv6 unicast address family. Unicast is the default option.

multicast Specifies a IPv4/IPv6 multicast address family.

### Command Mode

Privileged Exec mode and Exec mode

### Examples

```
show bgp ipv6 summary
```

## CHAPTER 4 BGP VPN Commands

---

This chapter provides an alphabetized reference for each of the BGP VPN Commands.

---

### address-family ipv4 vrf

Use this command to enable the exchanging of VRF routing information and switches command mode to address family-vrf mode.

#### Command Syntax

```
address-family ipv4 (multicast|unicast|VRF)
    multicast Address Family modifier
    unicast Address Family modifier
    VRF vrf VRF-NAME For MPLS-VPN
        VRF-NAME A name used to identify a VRF
```

#### Command Mode

Router mode

#### Usage

Use address-family ipv4 vrf command to configure routing exchange between Provider Edge (PE) and Customer Edge (CE) devices. The BGP sessions between PE routers can carry different types of routes (VPN-IPv4, IPv4, VPN-IPv4 and IPv4 routes). Address families are used to control the type of BGP session. Configure a BGP address family for each VRF configured on the PE router and a separate address family to carry VPN-IPv4 routes between PE routers. All non VPN BGP neighbors are defined using the Router mode. All VPN BGP neighbors are defined under its associated Address Family mode. The BGP process with no address-family specified, is the default address-family where any sessions are configured that either are not associated with a VRF or are used to carry IPv4 routes.

#### Examples

The following example places the router in address family configuration mode and specifies vrf1 as the name of the VRF instance to associate with subsequent IP Version 4 address family configuration mode commands:

```
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family ipv4 vrf IPI
ZebOS(config-router-af)#
```

#### Related Commands

address-family vpnv4 unicast

---

### address-family ipv6 vrf

Use this command to enable the exchanging of IPv6 VRF routing information and switches command mode to address family-vrf mode.

#### Command Syntax

```
address-family ipv6 (multicast|unicast|VRF)
```

---

```
multicast Address Family modifier
unicast Address Family modifier
VRF vrf VRF-NAME For MPLS-VPN
    VRF-NAME A name used to identify a VRF
```

### Command Mode

Router mode

### Usage

Use the `address-family ipv6 vrf` command to configure IPv6 routing exchange between Provider Edge (PE) and Customer Edge (CE) devices. The BGP sessions between PE routers can carry different types of routes (VPN-IPv4, IPv4, VPN-IPv6 and IPv6 routes). Address families are used to control the type of BGP session. Configure a BGP address family for each VRF configured on the PE router and a separate address family to carry VPN-IPv6 routes between PE routers. All non VPN BGP neighbors are defined using the `Router` mode. All VPN BGP neighbors are defined under its associated `Address Family` mode. The BGP process with no address-family specified, is the default address-family where any sessions are configured that either are not associated with a VRF or are used to carry IPv6 routes.

### Examples

The following example places the router in address family configuration mode and specifies `vrf1` as the name of the VRF instance to associate with subsequent IP Version 6 address family configuration mode commands:

```
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family ipv6 vrf IPI
ZebOS(config-router-af)#
```

### Related Commands

`address-family vpnv6 unicast`

---

## address-family vpnv4

Use this command to enable the exchanging of VPNv4 routing information among ISP PE-routers and switches command mode to address-family-vpnv4 mode.

### Command Syntax

```
address-family vpnv4 unicast
    unicast Address Family modifier
```

### Default

Disabled

### Command Mode

Router mode

### Usage

Use this `command` to enter the address family configuration mode. The address family mode allows the configuration of routing sessions that use VPN version 4 address prefixes. Use the `exit-address-family` command to go back to `router` mode.



## Examples

In the following example note that the prompt changed to `config-router-af` after using the `address-family` command.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family vpnv4 unicast
```

## Related Commands

`address-family ipv4 vrf`, `exit-address-family`, `neighbor active`

---

## address-family vpnv6

Use this command to enable the exchanging of VPNv6 routing information among ISP PE-routers and switches command mode to `address-family-vpnv6` mode.

## Command Syntax

```
address-family vpnv6 unicast
```

## Default

Disabled

## Command Mode

Router mode

## Usage

Use this command to enter the address family configuration mode. The address family mode allows the configuration of routing sessions that use VPN version 6 address prefixes. Use the `exit-address-family` command to go back to `router` mode.

## Examples

In the following example, note that the prompt changed to `config-router-af` after using the `address-family vpnv6 unicast` command.

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family vpnv6 unicast
```

## Related Commands

`address-family ipv6 vrf`, `exit-address-family`, `neighbor active`

---

## bgp inbound-route-filter

Use this command to control the installation of routing information into the BGP table.

Use the `no` parameter with this command to install all of the routing information into the BGP table.

## Command Syntax

```
(no) bgp inbound-route-filter
```

## Default

Enabled, the router performs the routing distinguisher value check, by default.

## Command Mode

Router mode

## Usage

When a router runs MPLS VPN/BGP PE, it exchanges routing information with a routing distinguisher. By default, ZebOS does not install routing information that does not match the configured routing distinguisher value. When the local box has two VRFs where for example, each routing distinguisher value is 10:100 and 20:200, routing information with routing distinguisher 10:200 is not installed into BGP table.

BGP inbound-route-filter command can control this behavior. When no `bgp inbound-route-filter` is configured, all of routing information is installed into the BGP table.

## Examples

```
ZebOS# configure terminal
ZebOS(config)# router bgp 100
ZebOS(config-router)# bgp inbound-route-filter
```

---

## clear ip bgp \* vpnv6 unicast

Use this command to reset a VPNv6 BGP connection for all peers.

## Command Syntax

```
clear ip bgp * vpnv6 unicast(in|out|SOFT|)
  * = clears all BGP VPNv6 peers
  in = Clears incoming BGP VPNv6 peers
  out = Clears outgoing BGP VPNv6 peers
  SOFT = soft in|soft out|soft
    soft in Performs soft reconfiguration in incoming BGP VPNv6 peers
    soft out Performs soft reconfiguration in outgoing BGP VPNv6 peers
    soft Performs soft reconfiguration in both incoming and outgoing BGP VPNv6 peers
```

## Command Mode

Privileged Exec mode

## Usage

The `clear ip bgp vpnv6 unicast` command clears the BGP connection and dynamically resets the inbound routing table: this frees up additional memory required for storing updates to generate new updates.

## Examples

The following example shows clearing all BGP VPNv6 peers.

```
ZebOS# clear ip bgp * vpnv6 unicast
```

The following example shows clearing all incoming BGP VPNv6 peers.

```
ZebOS# clear ip bgp * vpnv6 unicast in
```

The following example shows performing soft configuration in all incoming BGP VPNv6 peers.

---

```
ZebOS# clear ip bgp * vpnv6 unicast soft in
```

---

## clear ip bgp ASN vpnv6 unicast

Use this command to reset a VPNv6 BGP connection for all peers in a specified Autonomous System.

### Command Syntax

```
clear ip bgp ASN vpnv6 unicast (in|out|SOFT)
```

ASN <1-4294967295>= Specifies the AS Number for which all VPNv6 BGP routes will be cleared

in = Clears incoming BGP VPNv6 route

out = Clears outgoing BGP VPNv6 route

SOFT = soft in|soft out|soft

soft in Performs soft reconfiguration in incoming BGP VPNv6 route

soft out Performs soft reconfiguration in outgoing BGP VPNv6 route

soft Performs soft reconfiguration in both incoming and outgoing BGP VPNv6 route

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# clear ip bgp 100 vpnv6 unicast
ZebOS# clear ip bgp 100 vpnv6 unicast in
ZebOS# clear ip bgp 100 vpnv6 unicast soft in
```

---

## clear ip bgp X:X::X:X vpnv6 unicast

Use this command to reset a VPNv6 BGP connection for a specific address.

### Command Syntax

```
clear ip bgp X:X::X:X vpnv6 unicast (in|out|SOFT)
```

X:X::X:X Specifies the VPNv6 address of the BGP route to be cleared

in = Clears incoming BGP VPNv6 route

out = Clears outgoing BGP VPNv6 route

SOFT = soft in|soft out|soft

soft in Performs soft reconfiguration in incoming BGP VPNv6 route

soft out Performs soft reconfiguration in outgoing BGP VPNv6 route

soft Performs soft reconfiguration in both incoming and outgoing BGP VPNv6 route

### Command Mode

Privileged Exec mode

### Examples

```
ZebOS# clear ip bgp 3ffe::8 vpnv6 unicast
ZebOS# clear ip bgp 3ffe::8 vpnv6 unicast soft
ZebOS# clear ip bgp 3ffe::8 vpnv6 unicast out
```

## clear ipv6 bgp vrf

Use this command to reset the specified VPNv6 Routing/Forwarding (VRF) instance for BGP connections.

### Command Syntax

```
clear ipv6 bgp (X:X::X:X|*) vrf WORD (out|in|SOFT)
WORD Specifies the name of the VRF
X:X::X:X Specifies the IPv6 address of the BGP route to be cleared
* Clears all peers
in Performs soft reconfiguration in incoming VRF instance
out Performs soft reconfiguration in outgoing VRF instance
SOFT = soft in|soft out|soft
    soft in Performs soft reconfiguration in incoming VRF instance
    soft out Performs soft reconfiguration in outgoing VRF instance
    soft Performs soft reconfiguration both incoming and outgoing VRF instance
```

### Command Mode

Privileged Exec mode

### Usage

If the neighbor address is specified with this command, it clears the specified connection. If no address is specified, this command clears all the BGP routes.

### Example

```
ZebOS# clear ip bgp 3ffe::8 vrf VRF1 soft in
```

---

## debug bgp mpls

Use this command to enable the display of MPLS related information.

Use the `no` parameter with this command to disable this function.

Note: This command is available only when `vrf` option is enabled.

### Command Syntax

```
(no) debug bgp mpls
```

### Default

Disabled

### Command Mode

Privileged Exec mode

### Examples

```
debug bgp mpls
```

---

## exit-address-family

Use this command to exit Address-Family-vrf, Address-Family-vpnv4, or Address-Family-vpnv6 mode.

### Command Syntax

```
exit-address-family
```

### Command Mode

Address Family-vrf, Address Family-vpnv4 and Address Family-vpnv6 mode.

### Examples

The following example shows the change in prompt after using the `exit-address-family` command to exit the `address-family` mode.

```
ZebOS(config)# router bgp 100
ZebOS(config-router)# address-family vpnv4 unicast
ZebOS(config-router-af)# exit-address-family
ZebOS(config-router)#
```

### Related Commands

`address-family vpnv4 unicast`, `address-family vpnv6 unicast`

---

## import map

Use this command to assign a route-map to the VRF. This map is applied for routing information imported from another PE or VRF.

### Command Syntax

```
import map WORD
no import map
WORD A pointer to route-map entries.
```

### Command Mode

VRF mode

### Usage

Use `import map` command when an application requires finer control over the routes imported into a VRF than provided by the `import` and `export` extended communities. This command associates a route-map with the specified VRF. You can filter routes that are eligible for import into a VRF through the use of a route-map. The route-map might deny access to selected routes from a community that is on the import list.

### Examples

```
ZebOS(config)# ip vrf IPI
ZebOS(config-vrf)# import map set-pref
```

### Related Commands

`route-map`, `ip vrf`

## neighbor activate

Use this command to enable the exchange of routing information with a peer router.

Use the `no` parameter with this command to disable this function.

### Command Syntax

```
(no) neighbor NEIGHBORADDRESS activate
```

NEIGHBORADDRESS = A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6 format.

### Default

Neighbor activation is enabled only under address-family ipv4/ipv6.

### Command Mode

Address Family-vpn4 and Address Family-vpn6 mode

### Usage

A neighbor under address-family ipv4/ipv6 is activated by default. For all other address-families, use this command to enable a neighbor to exchange routing information of a specific address-family with a neighbor.

### Examples

```
ZebOS(config)# router bgp 100
ZebOS(config-router)# neighbor 10.10.20.1 remote-as 100
ZebOS(config-router)# address-family vpnv4 unicast
ZebOS(config-router-af)# neighbor 10.10.20.1 activate
```

```
ZebOS(config)# router bgp 100
ZebOS(config)# bgp router-id 13.13.13.13
ZebOS(config-router)# neighbor 3ffe:15:15:15:15::0 remote-as 100
ZebOS(config-router)# address-family vpnv6 unicast
ZebOS(config-router-af)# neighbor 3ffe:15:15:15:15::0 activate
```

### Related Commands

address-family

---

## neighbor allow-ebgp-vpn

Use this command to allow an eBGP neighbor to be a VPN peer.

Use the `no` parameter with this command to remove the configuration.

### Command Syntax

```
(no) neighbor IPADDRESS allow-ebgp-vpn
```

IPADDRESS = A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6 format.

### Command Mode

Address Family-vpn4 mode and Address Family-vpn6 mode

## Usage

By default, BGP VPN functionality is allowed only for iBGP peers. Using the `neighbor allow-ebgp-vpn` command allows the VPN connection to be established to an eBGP peer.

## Examples

```
ZebOS(config)# router bgp 200
ZebOS(config-router)# neighbor 66.66.66.66 remote-as 100
ZebOS(config-router)# neighbor 66.66.66.66 update-source lo
ZebOS(config-router)# address-family vpnv4 unicast
ZebOS(config-router-af)# neighbor 66.66.66.66 allow-ebgp-vpn
ZebOS(config-router-af)# neighbor 66.66.66.66 activate
ZebOS(config-router-af)# exit-address-family
```

## Related Commands

`neighbor activate`

---

## neighbor allowas-in

Use this command to configure PE routers to allow re-advertisement of all prefixes containing duplicate Autonomous System Numbers (ASNs).

Use the `no` parameter with this command to disable the re-advertisement of a PE router's ASN.

## Command Syntax

```
neighbor NEIGHBORADDRESS allowas-in (NUMBER)
(no) neighbor NEIGHBORADDRESS allowas-in
    NEIGHBORADDRESS = A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6
    format.
    NUMBER <1-10> Number of occurrences of AS number
```

## Default

Disabled

## Command Mode

Router mode and Address Family mode

## Usage

In a hub and spoke configuration, a PE router re-advertises all prefixes containing duplicate ASNs. Use the `neighbor allowas-in` command to configure two VRFs on each PE router to receive and re-advertise prefixes. One of the VRFs receives prefixes with ASNs from all PE routers and then advertises them to neighboring PE routers. The other VRF receives prefixes with ASNs from the CE router and re-advertises them to all PE routers in the hub and spoke configuration.

Control the number of times an ASN is advertised, by specifying a number from 1 to 10.

## Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# neighbor 10.10.0.1 allowas-in 3

ZebOS(config-router)# address-family ipv6 vrf VRF_A
ZebOS(config-router-af)# neighbor 3ffe:15:15:15:15::0 allowas-in 3
```

## neighbor as-origination-interval

Use this command to adjust the interval of sending AS origination routing updates.

Use the `no` parameter with this command to disable this feature.

### Command Syntax

```
neighbor NEIGHBORADDRESS as-origination-interval TIME
(no) neighbor NEIGHBORADDRESS as-origination-interval
    NEIGHBORADDRESS neighbor IP address. Use A.B.C.D form.
    TIME <1-600> time in seconds
```

### Default

Disabled

### Command Mode

Router mode and Address Family mode

### Usage

This command is used to change the minimum interval between sending AS-origination routing updates. The interval can be from 1 to 600 seconds.

### Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# neighbor 10.10.0.1 as-origination-interval 10
```

### Related Commands

address-family ipv4 vrf

---

## neighbor as-override

Use this command to configure a PE router to override the Autonomous System Number (ASN) of a site with the ASN of a provider.

Use the `no` parameter with this command to remove VPN IPv4 or VPN IPv6 prefixes from a specified router.

### Command Syntax

```
(no) neighbor NEIGHBORADDRESS as-override
    NEIGHBORADDRESS = A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6
    format.
```

### Default

Disabled

### Command Mode

Address Family-vrf mode



## Usage

BGP normally ignores the routes from the same AS. This command is used to override the customer's ASN in BGP, so that the customer CE accepts and installs routes from the same AS.

Typically, this command is used when Customer Edge (CE) routers have the same ASN in some or all sites. As per BGP requirement, a BGP speaker rejects a route that has the same ASN as itself, in the `AS_PATH` attribute. Thus the CE routers having the same ASN do not accept routes from each other. Configuring the `neighbor as-override` command on the PE router removes the CE neighbor's ASN from the `AS_PATH` attribute allowing CE routers with the same ASN to accept routes from each other.

## Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# neighbor 10.10.0.1 as-override

ZebOS(config-router)# address-family ipv6 vrf VRF_A
ZebOS(config-router-af)# neighbor 3ffe:15:15:15:15::0 as-override
```

## Related Commands

address family ipv4 vrf, address family ipv6 vrf, neighbor remote-as

---

## neighbor description

Use this command to associate a description with a neighbor.

Use the `no` parameter with this command to remove the description.

## Command Syntax

```
(no) neighbor IPADDRESS description .LINE
      IPADDRESS = A.B.C.D|X:X::X:X Specifies the address of the BGP neighbor in IPv4 or IPv6 format.
      LINE = 80-character text that describes the neighbor.
```

## Command Mode

Router mode and Address Family-vrf mode

## Usage

This command helps in identifying a neighbor quickly. It is useful for an ISP that has multiple neighbor relationships

## Examples

```
ZebOS(config)#router bgp 100
ZebOS(config-router)#address-family ipv4 vrf VRF_A
ZebOS(config-router-af)#neighbor 10.10.0.1 description Bank of America

ZebOS(config)#router bgp 100
ZebOS(config-router)#address-family ipv6 vrf VRF_A
ZebOS(config-router-af)#neighbor 3ffe:15:15:15:15::0 description Bank of America
```

## Related Commands

address-family, neighbor remote-as

## neighbor remote-as

Use this command to establish BGP peering with a customer edge router.

Use the `no` parameter with this command to delete this peering.

### Command Syntax

```
(no) neighbor NEIGHBORADDRESS remote-as ASN
      NEIGHBORADDRESS = A.B.C.D|X:X::X:X Neighbor address in IPv4 or IPv6 format.
      ASN <1-65535> AS number of the customer's site
```

### Command Mode

Address Family-vrf mode

### Usage

Use this command to specify a neighbor's autonomous system number. If the specified ASN matches the ASN number specified in the router `bgp global` configuration, the neighbor is identified as internal, if not (ASN does not match) then external, to the local AS. The specified neighbor exchanges only unicast address prefixes, unless the neighbor is also activated using the `neighbor activate` command which allows the exchange of other routing information.

### Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# neighbor 10.10.0.1 remote-as 65000

ZebOS(config-router)# address-family ipv6 vrf VRF_A
ZebOS(config-router-af)# neighbor 3ffe:15:15:15:15::0 remote-as 65000
```

### Related Commands

`address-family ipv4 vrf`, `address-family ipv6 vrf`

---

## neighbor send-community

Use this command to send the extended-community attribute to a customer edge router.

### Command Syntax

```
(no) neighbor NEIGHBORADDRESS send-community (both|extended|standard)
      NEIGHBORADDRESS = A.B.C.D|X:X::X:X Neighbor address in IPv4 or IPv6 format.
      both Sends both extended and standard community attributes
      extended Sends extended community attributes
      standard Sends standard community attributes
```

### Default

Disabled. No extended-community attribute is sent to a customer router.

### Command Mode

Router mode and Address Family mode

## Usage

In VPN, route-distinguisher and route-target are encoded in BGP extended-community. This command enables sending of bgp routes with extended community to a neighbor.

## Examples

```
ZebOS(config)#router bgp 100
ZebOS(config-router)#address-family ipv4 vrf VRF_A
ZebOS(config-router-af)#neighbor 10.10.0.1 send-community extended

ZebOS(config)#router bgp 100
ZebOS(config-router)#address-family ipv6 vrf VRF_A
ZebOS(config-router-af)#neighbor 3ffe:15:15:15:15::0 send-community extended
```

---

## neighbor shutdown

Use this command to disable a neighbor administratively.

Use the `no` parameter with this command to re-enable a neighbor.

## Command Syntax

```
(no) neighbor NEIGHBORADDRESS shutdown
      NEIGHBORADDRESS = A.B.C.D|X:X::X:X Neighbor address in IPv4 or IPv6 format.
```

## Command Mode

Address Family-vrf mode

## Usage

Use this command to terminate any active session for a specified neighbor and clear all related routing information. In case a peer group is specified for shutdown, a large number of peering sessions could be terminated. The `show ip bgp summary` command displays the summary of BGP neighbors and their connections.

## Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# neighbor 10.10.0.1 shutdown

ZebOS(config-router)# address-family ipv6 vrf VRF_A
ZebOS(config-router-af)# neighbor 3ffe:15:15:15:15::0 shutdown
```

## Related Commands

address-family ipv4 vrf, address-family ipv6 vrf, neighbor remote-as

---

## neighbor soo

Use this command to enable site-of-origin feature.

Use the `no` parameter with this command to disable this feature.

## Command Syntax

```
neighbor NEIGHBORADDRESS soo SOO-VAL
no neighbor NEIGHBORADDRESS soo
```

NEIGHBORADDRESS neighbor IP address. Use A.B.C.D form.

SOO-VAL = ASN|IPID

ASN = AS Number:NN Specifies a 16-bit AS number and an arbitrary number (for example 100:1)

IPID = A.B.C.D|NN Specifies a 32-bit IP address and an arbitrary number (for example 192.34.23.1:1)

### Command Mode

Address Family-vrf mode

### Usage

If the customer AS is multi-homed to ISP, this command ensures that PE does not advertise the routes back to same AS.

### Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# neighbor 10.10.0.1 soo 100:1
```

### Related Commands

address-family ipv4 vrf, neighbor remote-as

---

## redistribute

Use this command to redistribute routes between routing domains.

### Command Syntax

```
(no) redistribute static|connected|rip|ospf (route-map WORD)
static redistribute static routes in the VRF
connected redistribute connected routes in the VRF
rip Redistribute RIP routes in the VRF.
ospf Redistribute OSPFv2 or OSPFv3 routes in the VRF.
WORD A pointer to route-map entries.
```

### Command Mode

Address Family-vrf mode

### Examples

```
ZebOS(config-router)# address-family ipv4 vrf VRF_A
ZebOS(config-router-af)# redistribute static

ZebOS(config-router)# address-family ipv6 vrf VRF_A
ZebOS(config-router-af)# redistribute static
```

---

## route distinguisher

Use this command to assign a route distinguisher (RD) for the VRF. The route distinguisher value must be a unique value on the router.

## Command Syntax

```
rd RD-VALUE
```

```
RD-VALUE = ASN|IPID
```

ASN = ASN:NN 16-bit Specifies a AS number and an arbitrary number (for example- 100:1)

IPID = A.B.C.D|NN Specifies a 32-bit IP address and an arbitrary number (for example- 192.16.10.1:1)

## Command Mode

VRF mode

## Usage

Use the `route distinguisher` command to create routing and forwarding tables and to specify the default RD for a VPN. The RD is added to the customer's IPv4 prefixes, changing them into globally unique VPN-IPv4 prefixes.

## Examples

```
ZebOS(config)# ip vrf VRF_A
ZebOS(config-vrf)# rd 100:1
```

## Related Commands

ip vrf, route-target

---

## route-target

Use this command to add a list of import and export route-target extended communities to the VRF.

Use the `no` parameter with this command to delete a route target.

## Command Syntax

```
(no) route-target TYPE RT-VALUE
```

```
TYPE = export|import|both
```

`export` add route-target to the exporting routing information from the VRF.

`import` import routing information which have this route-target.

`both` Specify both import and export.

```
RT-VALUE = ASN|IPID
```

```
RT-VALUE = ASN|IPID
```

ASN = ASN:NN 16-bit Specifies a AS number and an arbitrary number (for example- 100:1).

IPID = A.B.C.D|NN Specifies a 32-bit IP address and an arbitrary number (for example- 192.16.10.1:1)

## Command Mode

VRF mode

## Usage

The `route-target` command creates lists of import and export route-target extended communities for the VRF. It specifies a target VPN extended community. Execute the command once for each community. All routes with the specific route-target extended community are imported into all VRFs with the same extended community as an import route-target.

## Examples

```
ZebOS(config)# ip vrf VRF_A
ZebOS(config-vrf)# route-target both 100:10

ZebOS(config)# ip vrf VRF_A
ZebOS(config-vrf)# route-target import 100:20
```

## Related Commands

ip vrf, route distinguisher

---

## set vpnv4 next-hop

Use this command to set the IP address of the VPNv4 next hop router.

Use the `no` parameter with this command to disable this feature.

## Command Syntax

```
(no) set vpnv4 next-hop A.B.C.D
no set vpnv4 next-hop (A.B.C.D)
    A.B.C.D The address of the next hop.
```

## Command Mode

Route-map mode

## Examples

```
ZebOS(config)#route-map vpn1 permit 10
ZebOS(config-route-map)#set vpn4 nexthop 10.10.0.5
```

## Related Commands

route-map

---

## show ip bgp vpnv4

Use this command to display all VPNv4 routing data for a VRF or a route-distinguisher.

To modify the lines displayed, use the `|` (output modifier token) ; to save the output to a file use the `>` output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp vpnv4 all TYPE
show ip bgp vpnv4 vrf VRFNAME (network)|(tags)
show ip bgp vpnv4 rd RDVALUE TYPE
    TYPE = network|neighbors|summary|tags
    network A.B.C.D Network for which information will be displayed in the BGP routing table.
    tag Shows label information for the route
    neighbor Shows neighbor information for the route
    summary Shows summary information for the route
    VRFNAME a name used to identify a VRF.
```

RDVALUE = route-distinguisher either ASN: 16bits-number or A.B.C.D: 32bits-number form

## Command Mode

Privileged Exec mode

## Usage

```
ZebOS@vpcl1# show ip bgp vpnv4 all
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 100:1 (VRF_A)					
*>i 10.20.1.0/24	10.20.0.1	0	100	0	?
*> 10.10.1.0/24	10.10.0.1	0		0	65000 ?

```
ZebOS@vpcl1# show ip bgp vpnv4 all tags
```

Network	Next Hop	In tag/Out tag
Route Distinguisher: 100:1 (VRF_A)		
*>i 10.20.1.0/24	10.20.0.1	notag/16
*> 10.10.1.0/24	10.10.0.1	16(eth1)/aggregate(VRF_A)

## Related Commands

show ip route vrf

---

## show ip bgp vpnv4 view

Use this command to display VPNv4 NLRl specific information or information about all VPNv4 NLRIs.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp vpnv4 view WORD all
WORD Specifies BGP view name
all Displays all VPN routes
```

## Command Mode

Privileged Exec mode and Exec mode

## Examples

The following command displays all IPv4 VPN routes learned in this view.

```
ZebOS# show ip bgp vpnv4 view myview all
```

---

## show ip bgp vpnv6 view

Use this command to display VPNv6 NLRl specific information or information about all VPNv6 NLRIs.

To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

## Command Syntax

```
show ip bgp vpnv6 view WORD all
```

WORD Specifies BGP view name

all Displays all VPNv6 routes

### Command Mode

Privileged Exec mode and Exec mode

### Examples

The following command displays all IPv6 VPN routes learned in this view.

```
ZebOS# show ip bgp vpnv6 view myview all
```

---

## show ip bgp vpnv6

Use this command to display all VPNv6 routing data for a VRF or a route-distinguisher.

To modify the lines displayed, use the | (output modifier token); to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip bgp vpnv6 all TYPE
```

```
show ip bgp vpnv6 vrf VRFNAME (network)|(tags)
```

```
show ip bgp vpnv6 rd RDVALUE TYPE
```

TYPE = network|neighbors|summary|tags

network A.B.C.D Network for which information will be displayed in the BGP routing table.

tag Shows label information for the route

neighbor Shows neighbor information for the route

summary Shows summary information for the route

VRFNAME a name used to identify a VRF.

RDVALUE = route-distinguisher either ASN: 16bits-number or A.B.C.D: 32bits-number form

### Command Mode

Privileged Exec mode

### Usage

```
ZebOS@vpcl# show ip bgp vpnv6 all
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 1:100 (Default for VRF VRF_A)					
*> 3ffe:100::100/128				32768	?
*> 3ffe:200::200/128				32768	?

### Related Commands

```
show ip route vrf
```

---

## show ip vrf

Use this command to display the routing information of the VRF.



To modify the lines displayed, use the | (output modifier token) ; to save the output to a file use the > output redirection token. For more information, see the *ZebOS Command Line Interface Environment* chapter.

### Command Syntax

```
show ip vrf (VRF-NAME)
```

VRF-NAME a name used to identify a VRF.

### Command Mode

Privileged Exec mode and Exec mode

### Usage

This command shows VRF related information, such as interface, Route Distinguisher, Route-target, etc.

### Examples

```
ZebOS# show ip vrf VRF_A  
VRF VRF_A; (table=1)
```

### Related Commands

show ip route vrf



## Appendix A Regular Expressions

This appendix describes regular expression special characters. Used in commands such as `ip as-path access-list` and `ip community-list expanded`. You can use these characters in combination to build complex regular expressions.

Symbol	Character	Meaning
^	Caret	Used to match the beginning of the input string. When used at the beginning of a string of characters, it negates a pattern match.
\$	Dollar sign	Used to match the end of the input string.
.	Period	Used to match a single character (white spaces included).
*	Asterix	Used to match none or more sequences of a pattern.
+	Plus sign	Used to match one or more sequences of a pattern.
?	Question mark	Used to match none or one occurrence of a pattern.
_	Underscore	Used to match spaces, commas, braces, parenthesis, or the beginning and end of an input string.
[ ]	Brackets	Specifies a range of single-characters.
-	Hyphen	Separates the end points of a range.



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---

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