BIG-IP® Advanced Routing™
Network Services Manager
Command Line Interface Reference Guide

Version 7.10.2

Publication Date

This document was published on October 13, 2016.

Legal Notices

Copyright

F5 Networks, Inc. (F5) believes the information it furnishes to be accurate and reliable. However, F5 assumes no responsibility for the use of this information, nor any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent, copyright, or other intellectual property right of F5 except as specifically described by applicable user licenses. F5 reserves the right to change specifications at any time without notice.

Trademarks

AAM, Access Policy Manager, Advanced Client Authentication, Advanced Firewall Manager, Advanced Routing, AFM, Alive With F5, APM, Application Acceleration Manager, Application Security Manager, ARX, AskF5, ASM, BIG-IP, BIG-IQ, Cloud Extender, CloudFucious, Cloud Manager, Clustered Multiprocessing, CMP, COHESION, Data Manager, DevCentral, DevCentral [DESIGN], DNS Express, DSC, DSI, Edge Client, Edge Gateway, Edge Portal, ELEVATE, EM, Enterprise Manager, ENGAGE, F5, F5 [DESIGN], F5 Certified [DESIGN], F5 Networks, Fast Application Proxy, Fast Cache, FirePass, Global Traffic Manager, GTM, GUARDIAN, iApps, IBR, Intelligent Browser Referencing, Intelligent Compression, IPv6 Gateway, iControl, iHealth, iQuery, iRules, iRules OnDemand, iSession, L7 Rate Shaping, LC, Link Controller, Local Traffic Manager, LTM, LineRate, LineRate Systems [DESIGN], LROS, Message Security Manager, MSM, OneConnect, Packet Velocity, PEM, Policy Enforcement Manager, Protocol Security Manager, PSM, Real Traffic Policy Builder, ScaleN, Signalling Delivery Controller, SDC, SSL Acceleration, StrongBox, SuperVIP, SYN Check, TCP Express, TDR, TMOS, Traffic Management Operating System, Traffix Systems, Traffix Systems (DESIGN), Transparent Data Reduction, UNITY, VAULT, VIPRION, vCMP, VE F5 [DESIGN], Virtual Clustered Multiprocessing, WA, WAN Optimization Manager, WebAccelerator, WOM, and ZoneRunner, are trademarks or service marks of F5 Networks, Inc., in the U.S. and other countries, and may not be used without F5's express written consent.

All other product and company names herein may be trademarks of their respective owners.

F5 Networks, Inc. (F5) believes the information it furnishes to be accurate and reliable. However, F5 assumes no responsibility for the use of this information, nor any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent, copyright, or other intellectual property right of F5 except as specifically described by applicable user licenses. F5 reserves the right to change specifications at any time without notice.

All other product and company names herein may be trademarks of their respective owners.

Table of Contents

CHAPTER 1 ZebOS Command Line Interface

This section provides basic information about the ZebOS® Command Line Interface, including in how to access and how to use the CLI features. The ZebOS CLI is a text-based command interface. Each command is usually associated with a specific task. In addition, users can use commands in scripts to automate configuration tasks.

Starting the Command Line Interface

Users can enter commands either from a console of a device running ZebOS or remotely from a terminal emulator. Before accessing specific protocol module CLI commands, start each daemon by performing the following:

1. Start a terminal emulator and connect to a device running ZebOS. Alternatively, launch a console of a device running ZebOS.
2. Navigate to the directory where the ZebOS executable files are installed. In most cases, these files are located in the `/sbin` directory.
3. Start the Network Services Manager (NSM):
   ```
   # ./nsm -d
   ```
4. Start the protocol module daemons that your organization uses, such as `mstpd`, `ospf6d`, or `ripd`:
   ```
   # ./mstpd –d
   ```
5. Start the Integrated Management Interface (IMI) daemon:
   ```
   # ./imi -d
   ```
6. If configuring Layer 2 interfaces, install the layer 2 kernel module:
   ```
   # insmod layer2_module.ko
   ```
7. Start the IMI shell.
   ```
   # ./imish
   ```
   Note: Some ZebOS builds do not include the IMI shell (IMISH). In this case, connect to the listening port of the protocol daemon to use the CLI commands. For more information, refer to the ZebOS Network Platform Installation Guide.

Command Line Interface Help

To access CLI help, enter a full or partial command string and a question mark. The CLI displays the CLI keywords or parameters along with a short description. For example, for a list and description of the “show” command, type:

```
ZebOS>show ?
  application-priority          Application Priority
  arp                           Internet Protocol (IP)
  bfd                           Bidirectional Forwarding Detection (BFD)
  bgp                           Border Gateway Protocol (BGP)
  bi-lsp                        Bi-directional lsp status and configuration
  bridge                        Bridge group commands
  ce-vlan                       COS Preservation for Customer Edge VLAN
  class-map                     Class map entry
  cli                           Show CLI tree of current mode
```

```
  clns                          Connectionless-Mode Network Service (CLNS)
  control-adjacency             Control Adjacency status and configuration
  control-channel               Control Channel status and configuration
  cspf                          CSPF Information
  customer                      Display Customer spanning-tree
  cvlan                         Display CVLAN information
  debugging                     Debugging functions (see also 'undebug')
  dot1x                         IEEE 802.1X Port-Based Access Control
  etherchannel                  LACP etherchannel
  ethernet                      Layer-2
...
```

If a question mark is typed in the middle of a keyword, the CLI displays help for that keyword only. For example:

```
ZebOS>show de?
  debugging  Debugging functions (see also 'undebug')
```

If a question mark is typed in the middle of a keyword, but the keyword matches several other keywords, ZebOS displays help for all matching keywords. For example:

```
ZebOS>show i?
  interface  Interface status and configuration
  ip         IP information
  isis       ISIS information
```

Command Completion

The CLI completes the spelling of a command or a parameter when a user presses the [Tab] key. For example:

```
ZebOS>sh [tab]
ZebOS>show
```

If the command or parameter spelling is ambiguous, the CLI displays the choices that match the abbreviation. For example, type `show i` and press the [Tab] key, and the CLI displays:

```
ZebOS>show i
interface  ip         ipv6       isis
ZebOS>show i
```

In addition, type n to select `interface` and press the [Tab] key and the CLI displays:

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

Command Abbreviations

The CLI accepts abbreviations that uniquely identify a keyword in commands. The following example is an abbreviation for the `show interface` command:

```
ZebOS>sh in eth0
```

Command Line Errors

An unknown spelling variation will cause the CLI to display the `Unrecognized command` error in response to a question mark. The CLI displays the command again as last entered.

```
ZebOS>show dd?
% Unrecognized command
ZebOS>show dd
```

When you press the [Enter] key after typing an invalid command, the CLI displays:

```
TSUP171>show meed
              ^
% Invalid input detected at '^' marker.
```

A caret (^) symbol in the error message will point to the character that caused the error.

The CLI displays an `Incomplete command` error message if a command is incomplete. For example:

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

Some commands are too long for the display line, so they will wrap in mid-parameter or mid-keyword. For example:

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

Command Negation

For some configuration commands, users can enter the prefix keyword “no” to cancel the effect of a command or reset the configuration to its default value. For example:

```
ZebOS>enable
ZebOS#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
ZebOS(config)#access-list new deny any
ZebOS(config)#no access-list new deny any
ZebOS(config)#
```

Typographic Conventions

The following table describes the typographic conventions used in this guide:

Convention	Description	Example
`Monospaced font`	Command strings entered on a command line	`show ip ospf`
`lowercase`	Keywords entered exactly as shown in the command syntax.	`show ip ospf`
`UPPERCASE`	See Variable Placeholders	`IFNAME`
`()`	Indicates optional parameters. In this example, users must select one. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>)`
`()`	Indicates optional parameters. In this example, users must select one or none. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>|)`
`()`	Indicates optional parameters. In this example, users must either enter the parameter or omit it from the command. Do not enter the parentheses or vertical bar as part of the command.	`(IFNAME|)`

Convention	Description	Example
{}	Indicates optional parameters. Users must select one or more of the displayed options. Vertical bars delimit the selections. Do not enter the braces or vertical bars as part of the command.	{intra-area <1-255>|inter-area <1-255>|external <1-255>}
[]	Indicates optional parameters. Users can select none or specify some values. Vertical bars delimit the selections. Do not enter the brackets or vertical bars as part of the command. A question mark before a parameter limits it to one occurrence in the command string.	[<1-65535>|AA:NN|internet |local-AS| no-advertise|no-export]
.	Indicates a repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	set as-path prepend .<1-65535>

Variable Placeholders

Some command syntaxes will use tokens to represent a command line variable that a user must supply with a value. The following table describes the variable placeholders used in this guide:

Token	Description
WORD	Indicates a contiguous text string (excluding spaces). For example, IFNAME indicates the name of an interface.
LINE	Indicates a text string (including spaces). Typically, no other parameter follows this parameter.
A.B.C.D	Indicates an IPv4 address.
A.B.C.D/M	Indicates an IPv4 address and mask/prefix.
X:X::X:X	Indicates an IPv6 address.
X:X::X:X/M	Indicates an IPv6 address and mask/prefix.
HH:MM:SS	Indicates a time format.
AA:NN	Indicates a BGP community value.
XX:XX:XX:XX:XX:XX	Indicates a MAC address.
<1-5> <1-65535> <0-2147483647>	Indicates a numeric range.

Command Description Format

The following table describes the sections used to describe each command in this guide.

Section	Description
Command Name	Describes the command, including what the command does and when it should be used.
Command Syntax	Displays the syntax of a command.
Parameters	Lists the parameters of each command.
Default	Displays the status command before it is executed.
Command Mode	Indicates the name of a mode in which to use a command.
Example	Displays an example of an executed command.

Keyboard Operations

The following table describes the keyboard operations that be performed when using the ZebOS CLI.

Key combination	Operation
Left arrow or [Ctrl]+[b]	Moves one character to the left of the display. When a command extends beyond a single line, press left arrow or [Ctrl]+[b] repeatedly to scroll toward the beginning of the line.
Right arrow or [Ctrl]+[f]	Moves one character to the right of the display. When a command extends beyond a single line, press the right arrow or [Ctrl]+[f] repeatedly to scroll toward the end of the line.
Up Arrow or [Ctrl]+[p]	Scrolls backward through command history.
Down Arrow or [Ctrl]+[n]	Scrolls forward through command history.
[Alt]+[d]	Deletes the current word.
[Esc]+[b]	Moves back one word.
[Esc]+[f]	Moves forward one word.
[Ctrl]+[e]	Moves to end of the line.
[Ctrl]+[a]	Moves to the beginning of the line.
[Ctrl]+[u]	Deletes the line.
[Ctrl]+[w]	Deletes from the cursor to the previous whitespace.
[Ctrl]+[k]	Deletes from the cursor to the end of line.
[Ctrl]+[y]	Pastes text previously deleted with Ctrl+k, Alt+d, Ctrl+w, or Ctrl+u at the cursor.
[Ctrl]+[c]	Ignores the current line and redisplays the command prompt.

Key combination	Operation
[Ctrl]+[z]	Ends configuration mode and returns to exec mode.
[Ctrl]+[l]	Clears the screen.

Show Command Tokens

The show command tokens help modify the output of each show command. Enter a question mark after a completed show command to display the following two tokens:

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

Output Modifiers

Type a vertical bar (|) to use output modifiers. For example:

```
ZebOS>show rsvp | ?
  begin     Begin with the line that matches
  exclude   Exclude lines that match
  include   Include lines that match
  redirect  Redirect output
```

Begin Modifier

The begin modifier displays an output that starts with the first line of an input string. That is, everything typed after the begin keyword. For example:

```
ZebOS# show run | begin eth1
...skipping
interface eth1
 ipv6 address fe80::204:75ff:fee6:5393/64
!
line con 0
 login
!
end
```

A regular expression can be given after the `begin` keyword, so that the output can start at one of two lines. The following example starts at a line with either “eth3” or “eth4”:

```
ZebOS#show run | begin eth[3-4]

...skipping
interface eth3
 shutdown
!
interface eth4
 shutdown
!
interface svlan0.1
```

```
 no shutdown
!
route-map myroute permit 3
!
line con 0
 login
line vty 0 4
 login
!
end
```

Include Modifier

The include modifier includes only those lines of output that contain the input string. In the following output, 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
```

A regular expression can be given after the `include` keyword, so that the output can start at one of two lines. The following example starts at a line with either “input” or “output”:

```
ZebOS#show int eth0 | include (in|out)put
    input packets 597058, bytes 338081476, dropped 0, multicast packets 0
    input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 0, missed 0
    output packets 613147, bytes 126055987, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
```

Exclude Modifier

The `exclude` modifier excludes all lines of output that contain the input string. In the following output example, all lines containing the word “input” 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
  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
```

A regular expression can be given after the `include` keyword, so that the output can start at one of two lines. The following example starts at a line with either “input” or “output”:

```
ZebOS#show interface eth0 | exclude (in|out)put
Interface eth0
  Scope: both
  Hardware is Ethernet  Current HW addr: 001b.2139.6c4a
  Physical:001b.2139.6c4a  Logical:(not set)
```

```
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 3000
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Bandwidth 100m
  DHCP client is disabled.
  inet 10.1.2.173/24 broadcast 10.1.2.255
  VRRP Master of :  VRRP is not configured on this interface.
  inet6 fe80::21b:21ff:fe39:6c4a/64
    collisions 0
```

Redirect Modifier

The `redirect` modifier writes the output into a file. The output is not displayed.

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

The output redirection token (>) does the same thing:

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

Common Command Modes

Commands are grouped into modes arranged in a hierarchy. Each mode has its own set of commands. The following table lists the command modes common to all protocols.

Name	Description
Exec Mode	This is the first mode to appear after logging in to the CLI. It is a base mode from where users can perform basic commands, such as `show`, `exit`, `quit`, `help`, `list`, and `enable`. It is also known as the `View` mode.
Privileged Exec Mode	This mode allows users to run additional basic commands, such as `debug`, `write`, and `show`. It is also known as `Enable` mode.
Configure Mode	This mode allows users to run configuration commands and to serve as a gateway into the `Interface`, `Router`, `Line`, `Route Map`, `Key Chain`, and `Address Family` modes. It is also known as the `Configure Terminal` mode.
Interface Mode	This 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	This mode is used to make the `access-class` commands available.

Common Command Mode Tree

The diagram displays the common command mode tree.

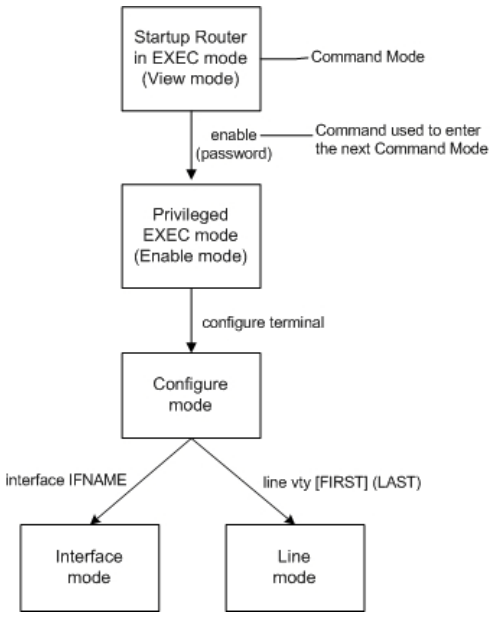

Figure 1: Common Command Mode Tree

See the *ZebOS Network Platform NSM Command Line Interface Reference Guide* for information about command modes.

Note: Each protocol can have modes in addition to the common command modes. See the command reference for the respective protocol for details.

CHAPTER 2 Common Exec Mode Commands

This chapter provides an alphabetized reference for both Exec and Privileged mode commands. All commands are common to multiple NSM protocols. This chapter includes the following commands:

configure terminal

Use the `configure terminal` command to enter the `Configure` command mode.

Command Syntax

```
configure terminal
```

Parameters

None

Command Mode

Privileged Exec mode

Example

The following example shows the use of the `configure terminal` command to enter the `Configure` command mode (note the change in the command prompt).

```
ZebOS#configure terminal
ZebOS(config)#
```

copy running-config startup-config

Use this command to a write configuration to the file to be used at startup. This is the same as the `write` command (see write on page 64 for more information).

Command Syntax

```
copy running-config startup-config
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS#copy running-config startup-config
Building configuration...
[OK]
ZebOS#
```

debug nsm all

Use this command to specify enable all debugging for NSM.

Use the no parameter with this command or the undebug command to disable all NSM debugging.

Command Syntax

```
debug nsm (all|)
no debug nsm (all|)
undebug nsm (all|)
```

Parameters

None

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
ZebOS#debug nsm all
ZebOS#
```

debug nsm bfd

Use this command to enabling debugging of BFD (bidirectional forwarding detection) events.

Use the no parameter with this command or the undebug command to disable BFD debugging.

Command Syntax

```
debug nsm bfd
no debug nsm bfd
undebug nsm bfd
```

Parameters

None

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
ZebOS#debug nsm bfd
ZebOS#
```

debug nsm events

Use this command to enable debugging of NSM events.

Use the no parameter with this command or the undebug command to disable event debugging.

Command Syntax

```
debug nsm events
no debug nsm events
undebug nsm events
```

Parameters

None

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
ZebOS#debug nsm events
ZebOS#
```

debug nsm kernel

Use this command to enable debugging of NSM kernel events.

Use the no parameter with this command or the undebug command to disable kernel debugging.

Command Syntax

```
debug nsm kernel
no debug nsm kernel
undebug nsm kernel
```

Parameters

None

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
ZebOS#debug nsm kernel
ZebOS#
```

debug nsm packet

Use this command to enable debugging of NSM packet events.

Use the no parameter with this command or the undebug command to disable packet debugging.

Command Syntax

```
debug nsm packet (recv|send|) (detail|)
no debug nsm packet (recv|send|) (detail|)
undebug nsm packet (recv|send|) (detail|)
```

Parameters

recv	Specify the debug option-set for receive packet.
send	Specify the debug option-set for send packet.
detail	Sets the debug option to provide detailed information.

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
ZebOS#debug nsm packet
ZebOS#debug nsm packet recv detail
ZebOS#
```

disable

Use this command from to exit the Privileged Exec mode and return to the Exec mode. This is the only command that allows a user to go back to the Exec mode. Using the `exit` or `quit` command from the Privileged Exec mode ends the session; they do not go back to the Exec mode.

Command Syntax

```
disable
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS#disable
ZebOS>
```

enable

Use this command to enter the Privileged Exec command mode.

Command Syntax

```
enable
```

Parameters

None

Command Mode

Exec mode

Example

The following example shows the use of the `enable` command to enter the Privileged Exec mode (note the change in the command prompt).

```
ZebOS>enable
ZebOS#
```

end

Use the `end` command to return to the Privileged Exec command mode from any other advanced command mode.

Command Syntax

```
end
```

Parameters

None

Command Mode

All command modes

Example

The following example shows the use of the `end` command to return to the Privileged Exec mode directly from Interface mode.

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#end
ZebOS#
```

exit

Use the exit command to exit the current mode and return to the previous level. When used in Exec mode or Privilege Exec mode, this command terminates the session.

Command Syntax

```
exit
```

Parameters

None

Command Mode

All command modes

Examples

The following example shows the use of `exit` command to exit Interface mode, and return to Configure mode.

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#exit
ZebOS(config)#
```

hardware

Use the `hardware` command to get or set the value to the register.

Command Syntax

```
hardware register get ADDR
hardware register set ADDR VALUE
```

Parameters

`register`	Specify to get or set the value from the register.
`get`	Specify the register address in 0xhhhh format.
`set`	Specify the register address in 0xhhhh format.

Command Mode

Exec mode and Privilege Exec mode

Example

This is the sample output from the `hardware` command:

```
ZebOS#hardware register set 1.1.1.1 new
ZebOS#hardware register get 1.1.1.1
```

help

Use the `help` command to display a description of the ZebOS help system.

Command Syntax

```
help
```

Parameters

None

Command Mode

All command modes

Example

This is the sample output from the `help` command:

```
ZebOS#help
ZebOS CLI provides advanced help feature. When you need help,
anytime at the command line please press '?'.

If nothing matches, the help list will be empty and you must backup
until entering a '?' shows the available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show ve?'.)
```

hostname

Use this command to set or change the network server name. ZebOS daemons use this name in system prompts and default configuration filenames. This command provides a hostname for login purposes, only. A hostname could be added for each remote system with which the local router communicates and from which it requires authentication. The other router must have a hostname entry for the local router. This entry must have the same password as the local router.

This command is useful for defining host names for special privileges. For example, a hostname `all` requiring no password could be created allowing the users to connect to general information without a password. Setting a hostname using this command takes precedence over setting a hostname in the kernel. If you set the hostname using the CLI, and then set the hostname in the kernel, the hostname set using the CLI remains.

Note: When using the `hostname` command through IMISH, you must write to memory using the `write memory` or `write file` command. If you have not written to memory, the change made by this command (the new hostname) is not available when you log into IMISH the next time.

Use the `no` parameter to disable this function.

Command Syntax

```
hostname WORD
no hostname (WORD|)
```

Parameter

`WORD`	This network name for a system.

Command Mode

All command modes

Example

The following example sets the hostname to IPI, and shows the change in the prompt:

```
ZebOS#configure terminal
ZebOS(config)#hostname IPI
IPI(config)#
```

logout

Use this command to exit from the IMI shell from any of the exec modes.

Command Syntax

```
logout
```

Parameters

None

Command Mode

Exec mode and Privilege Exec mode

Examples

The following examples show the use of `logout` command.

```
ZebOS>logout
[root@TSUP-123 sbin]#

ZebOS>enable
ZebOS#logout
[root@TSUP-123 sbin]#
```

quit

Use the `quit` command to exit the configuration, router or interface modes down to previous mode. When this command is executed in one of the Exec modes, it closes the IMI shell and logs the user out.

Command Syntax

```
quit
```

Parameters

None

Command Mode

All modes

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth1
ZebOS(config-if)#quit
ZebOS(config)#

ZebOS>enable
ZebOS#quit
[root@TSUP-123 sbin]#
```

show access-list

Use this command to display a list of IP access lists.

Command Syntax

```
show access-list
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS#show access-list

Standard IP access list 13
    permit any
Standard IP access list 67
    deny 1.1.1.0, wildcard bits 0.0.0.255
Extended IP access list 134
    deny ip 1.1.1.0 0.0.0.255 any
ZebOS IP access list 1111
    deny 1.1.1.1/1 exact-match
Standard IP access list 1340
    deny 1.1.1.0, wildcard bits 0.0.0.255
Extended IP access list 2001
    deny ip 1.1.1.0 0.0.0.255 any
ZebOS extended IP access list TK
    deny   tcp 2.2.2.3/24 eq 14 3.3.3.4/24 lt 12 log
ZebOS IP access list mylist
    deny   10.10.0.72/24 exact-match
    permit any
ZebOS extended IP access list new
    deny   icmp any any
ZebOS extended IP access list tk
    deny   tcp 2.2.2.3/24 eq 14 3.3.3.4/24 lt 12 log
ZebOS#
```

show cli

Use this command to display the CLI tree of the current mode.

Command Syntax

```
show cli
```

Parameters

None

Command Mode

All command modes

Example

This is a section of the sample output of the `show cli` command executed at the `Exec` mode.

```
ZebOS#show cli
Exec mode:
+-clear
  +-arp-cache [clear arp-cache]
  +-ethernet
    +-cfm
      +-errors
        +-domain
          +-DOMAIN_NAME [clear ethernet cfm errors (domain DOMAIN_NAME|level
LEV
EL_ID) (bridge <1-32>|)]
            +-bridge
              +-<1-32> [clear ethernet cfm errors (domain DOMAIN_NAME|level
LEVE
L_ID) (bridge <1-32>|)]
        +-level
          +-LEVEL_ID [clear ethernet cfm errors (domain DOMAIN_NAME|level
LEVEL_
ID) (bridge <1-32>|)]
            +-bridge
              +-<1-32> [clear ethernet cfm errors (domain DOMAIN_NAME|level
LEVE
L_ID) (bridge <1-32>|)]
      +-maintenance-points
        +-remote
          +-domain
            +-DOMAIN_NAME [clear ethernet cfm maintenance-points remote(domain
D
--More--
```

show debugging nsm

Use this command to display debugging information for the ZebOS routing manager.

Command Syntax

```
show debugging nsm
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Examples

The following is a sample output of the `show debugging nsm` command displaying the NSM debugging status.

```
ZebOS#show debugging nsm
NSM debugging status:
  NSM event debugging is on
  NSM packet debugging is on
  NSM kernel debugging is on
ZebOS#
```

show dot1X

Use this command to display IEEE 802.1x port-based access control information.

Command Syntax

```
show dot1x
show dot1x all
show dot1x diagnostics interface IFNAME
show dot1x interface IFNAME
show dot1x sessionstatistics interface IFNAME
show dot1x statistics interface IFNAME
```

Parameters

`all`	Displays all IEEE 802.1x port-based access control information.
`diagnostics`	Displays diagnostics information.
`interface`	Indicates the interface parameter.
`IFNAME`	Displays the actual interface name.
`sessionstatistics`	Display the statistics for a session.
`statistics`	Display the statistics.

Command Mode

Exec mode and Privileged Exec mode

Example

```
ZebOS#show dot1x all
802.1X Port-Based Authentication Disabled
  RADIUS client address: not configured
ZebOS#
```

show history

Use the `show history` command to list the commands entered in the current session. The history buffer is cleared automatically upon reboot.

Command Syntax

```
show history
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Examples

Two sample results from the `show history` command:

```
ZebOS#show history
   1 en
   2 show ru
   3 con t
   4 route-map er deny 3
   5 exit
   6 ex
   7 di
```

Though some modes do not have the show history command, commands entered in those modes are listed from the Privileged mode. All command line entries are listed, even erroneous commands.

```
ZebOS#show history
  1 show ip protocols
  2 show ip protocols rip
  3 show history
  4 enable
  5 config terminal
  6 show his
  7 interface eth0
  8 show history
  9 router rip
  10 end
  11 list
  12 con t
  13 router rip
  14 show history
  15 show history
  16 end
```

show ip rpf

Use this command to display reverse path forwarding (RPF) information for the specified source address.

Command Syntax

```
show ip rpf A.B.C.D
```

Parameters

A.B.C.D	IP address of multicast source.

Command Mode

Exec and Privileged Exec mode

Example

```
ZebOS#show ip rpf 10.10.10.50

RPF information for 10.10.10.50
  RPF interface: eth0
  RPF neighbor: 10.1.2.1
  RPF route: 0.0.0.0/0
  RPF type: unicast (kernel)
  RPF recursion count: 0
  Doing distance-preferred lookups across tables
  Distance: 0
  Metric: 0
ZebOS#
```

show ipv6 rpf

Use this command to display RPF information for the specified source address.

Command Syntax

```
show ipv6 rpf X:X::X:X
```

Parameters

X:X::X:X	IP address of multicast source.

Command Mode

Exec and Privileged Exec mode

Example

```
ZebOS#show ipv6 rpf 10:10::10:50

RPF information for 10.10.10.50
  RPF interface: eth0
  RPF neighbor: 10.1.2.1
  RPF route: 0.0.0.0/0
  RPF type: unicast (kernel)
  RPF recursion count: 0
  Doing distance-preferred lookups across tables
  Distance: 0
  Metric: 0
ZebOS#
```

show list

Use this command to display a list of all the commands relevant to the current mode.

Command Syntax

```
show list
```

Parameters

None

Command Mode

All command modes.

Example

This is a section of the sample output of the `show list` command executed at the `Exec` mode.

```
ZebOS>show list
 clear arp-cache
  clear bgp *
  clear bgp * in
  clear bgp * in prefix-filter
  clear bgp * out
  clear bgp * soft
  clear bgp * soft in
  clear bgp * soft out
  clear bgp <1-4294967295>
  clear bgp <1-4294967295> in
  clear bgp <1-4294967295> in prefix-filter
  clear bgp <1-4294967295> out
  clear bgp <1-4294967295> soft
  clear bgp <1-4294967295> soft in
  clear bgp <1-4294967295> soft out
  clear bgp (A.B.C.D|X:X::X:X)
  clear bgp (A.B.C.D|X:X::X:X) in
  clear bgp (A.B.C.D|X:X::X:X) in prefix-filter
  clear bgp (A.B.C.D|X:X::X:X) out
  clear bgp (A.B.C.D|X:X::X:X) soft
  clear bgp (A.B.C.D|X:X::X:X) soft in
  clear bgp X:X::X:X soft out

--more--
```

show memory

Use this command to display a variety of memory statistics about protocols and the ZebOS.

Note: This command is available only if `--enable-memmgr` configuration option is enabled in the configure script.

Command Syntax

```
show memory (all|)
show memory (all|lib|)
show memory free
show memory LINE
show memory summary
```

Parameters

`all`	Display all memory information.
`free`	Display free memory pool information.
`lib`	Display library information.
`LINE`	Display specific module memory statistics.

Command Mode

Exec mode and Privileged Exec mode

Examples

The following example displays memory statistics output for all protocols:

```
Zebos#show memory all
Memory type                          Alloc cells   Alloc bytes
==================================== ============= ===============
Temporary memory                   :       17759         1732336
Hash                               :          16            1280
Hash index                         :          16           58368
Hash bucket                        :          61            4880
Thread master                      :           8            8576
Thread                             :          71            7952
Link list                          :         148           11840
...
Buffer data                        :           3            3216
Prefix                             :           4             320
...
Host config password               :           7             560
VTY master                         :           8             640
VTY                                :           4           17600
VTY history                        :          16            1280
VTY if                             :          49           14896
VTY connected                      :         112            8960
...
Patricia tree node                 :          22            1760
Message entry                      :           7             560
Message handler                    :           8             896
Host                               :           8            1408
```

```
Log information                   :          16            1280
Context                           :          16            3072
--------------------------------- ------------ ---------------
NSM Client Handler                :           7          229712
NSM Client                        :           7           14672
NSM server entry                  :           7          229712
NSM server client                 :           7             560
NSM server                        :           1            2096
NSM Route table                   :          12             960
NSM Route node                    :          15            1680
NSM Master                        :           1             112
NSM RIB                           :          15            1200
...
IGMP interface info               :           1             176
NSM IPv6 Mcast entry              :           1             560
NSM IPv6 Mcast Client entry       :           2             160
NSM IPv6 Mcast Stat block entry   :           2            8288
MLD Top                           :           1             176
MLD interface                     :           6            1056
--------------------------------- ------------ ---------------
--------------------------------- ------------ ---------------
OSPFv3 structure                  :           1             304
OSPFv3 area                       :           1             176
OSPFv3 interface                  :           1             304
OSPFv3 neighbor                   :           3             912
OSPFv3 vertex                     :           1              80
...
OSPFv3 prefix map                 :           1              80
OSPFv3 packet                     :         681          105328
OSPFv3 FIFO                       :           1              80
OSPFv3 if params                  :           2             224
OSPFv3 description                :           4             320
--------------------------------- ------------ ---------------
BGP structure                     :           1            1072
BGP VR structure                  :           1             112
BGP global structure              :           1             112
BGP peer                          :           1            2096
BGP as list master                :           1              80
Community list handler            :           1              80
BGP Damp Reuse List Array         :           1            2096
BGP table                         :          37            2960
--------------------------------- ------------ ---------------
PIM-DM Global                     :           1             176
PIM-DM VR                         :           1              80
PIM-DM VRF                        :           1             176
Zebos#
```

show nsm client

Use this command to display NSM client information.

Command Syntax

```
show nsm client
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

This command displays the details of currently connected NSM clients, including the services requested by the protocols, statistics and the connection time.

```
ZebOS#show nsm client
NSM client ID: 1

NSM client ID: 19
 IMI, socket 23
  Service: Interface Service, Router ID Service, VRF Service
  Messsage received 1, sent 58
  Connection time: Thu Jul 22 11:03:12 2010
  Last message read: Service Request
  Last message write: Link Up
NSM client ID: 25
 ONMD, socket 24
  Service: Interface Service, Bridge service, VLAN service
  Messsage received 2, sent 74
  Connection time: Thu Jul 22 11:03:15 2010
  Last message read: OAM  LLDP msg
  Last message write: Link Up
ZebOS#
```

show privilege

Use the `show privilege` command to display the current privilege level.

Command Syntax

```
show privilege
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output of the `show privilege` command displaying the configuration at startup.

```
ZebOS#show privilege
Current privilege level is 16
ZebOS#
```

show process

Use the `show process` command to display a process ID, the name of the process, how long the process has been running and any faults detected on the process.

Command Syntax

```
show process
```

Parameters

None

Command Mode

Privileged Exec mode

Example

The following is a sample output of the `show privilege` command displaying the configuration at startup.

```
ZebOS#show process
 PID NAME            TIME FD
   1 nsm         01:49:24 6

ZebOS#
```

show running-config router

Use this command to show the running system router configuration.

Command Syntax

```
show running-config router bgp
show running-config router ipv6 ospf
show running-config router ipv6 rip
show running-config router ipv6 vrrp
show running-config router isis
show running-config router ldp
show running-config router ospf
show running-config router rip
show running-config router rsvp
show running-config router vrrp
```

Parameters

`bgp`	Display Border Gateway Protocol (BGP) information.
`ipv6`	Display Internet Protocol version 6 (IPv6) information.
`ospf`	Display Open Shortest Path First (OSPF) information for an IPv6 interface.
`rip`	Display Routing Information Protocol (RIP) information for an IPv6 interface.
`vrrp`	Display Virtual Router Redundancy Protocol (VRRP) information for an IPv6 interface.
`isis`	Display Intermediate System to Intermediate System (IS-IS) information.
`ldp`	Display Label Distribution Protocol (LDP) information.
`ospf`	Display Open Shortest Path First (OSPF) information.
`rip`	Display Routing Information Protocol (RIP) information.
`rsvp`	Display Resource Reservation Protocol (RSVP) information.
`vrrp`	Display Virtual Router Redundancy Protocol (VRRP) information.

Command Mode

Privileged Exec mode, Configure mode, Router-map mode

Example

```
ZebOS>enable
ZebOS#show running-config router vrrp
!
router-id 3.3.3.3
!
```

show running-config switch

Use this command to show the running system status and configuration details for a given switch.

Command Syntax

```
show running-config switch bridge
show running-config switch dot1x
show running-config switch gmrp
show running-config switch gvrp
show running-config switch lacp
show running-config switch lmi
show running-config switch mstp
show running-config switch radius-server
show running-config switch rpsvt+
show running-config switch rstp
show running-config switch ptp
show running-config switch stp
show running-config switch te_msti
show running-config switch vlan
```

Parameters

`bridge`	Display Bridge group information.
`dot1x`	Display 802.1x port-based authentication information.
`gmrp`	Display GARP Multicast Registration Protocol (GMRP) information.
`gvrp`	Display GARP VLAN Registration Protocol (GVRP) information.
`lacp`	Display Link Aggregation Control Protocol (LACP) information.
`lmi`	Display Ethernet Local Management Interface Protocol (LMI) information.
`mstp`	Display Multiple Spanning Tree Protocol (MSTP) information.
`radius-server`	Display RADIUS server information.
`rpvst+`	Display Rapid Per-VLAN Spanning Tree (rpvst+) information.
`rstp`	Display Rapid Spanning Tree Protocol (RSTP) information.
`ptp`	Display Precision time Protocol (PTP)
`stp`	Display Spanning Tree Protocol (STP) information.
`te_msti`	Display Traffic Engineering Multiple Spanning Tree Instance (TE-MSTI) information.
`vlan`	Display values associated with a single VLAN.

Command Mode

Privileged Exec mode, Configure mode, Router-map mode

Example

```
ZebOS(config)#show running-config switch stp
!
bridge 6 ageing-time 45
bridge 6 priority 4096
bridge 6 max-age 7
```

show startup-config

Use the `show startup-config` command to display the startup configuration.

Command Syntax

```
show startup-config
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output of the show startup-config command displaying the configuration at startup.

```
ZebOS#show startup-config
! ZebOS configuration saved from vty
!   2001/04/21 11:38:52
!
hostname ripd
password zebra
log stdout
!
debug rip events
debug rip packet
!
interface lo
!
interface eth0
 ip rip send version 1 2
 ip rip receive version 1 2
!
interface eth1
 ip rip send version 1 2
 ip rip receive version 1 2
!
router rip
 redistribute connected
 network 10.10.10.0/24
 network 10.10.11.0/24
!
line vty
 exec-timeout 0 0
```

show static-channel-group load-balance

Use this command to display the types of load-balancing port selection criteria (PSC) used on all configured static aggregators.

Command Syntax

```
show static-channel-group load-balance
```

Parameters

None

Command Mode

Privileged Exec mode

Examples

The following is an example of the output of this command:

```
ZebOS# show static-channel-group load-balance
% Static Aggregator: sa200
Source and Destination Mac address
% Static Aggregator: sa201
Destination IP address
```

show users

Use this command to display information about terminal lines.

Command Syntax

```
show users
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

This is a sample output of the `show users` command:

```
ZebOS#show users

Line       User       Host(s)              Idle       Location
130 vty 0             idle                 00:45:44   2
ZebOS#
```

show user-priority

Use this command to display the default user priority associated with the layer2 interface

Command Syntax

```
show user-priority interface IFNAME
```

Parameters

`interface`	Indicates the interface parameter.
`IFNAME`	Indicates the actual interface name.

Command Mode

Exec mode and Privileged Exec mode

Example

This is a sample output of the `show users` command:

```
ZebOS#show user-priority interface eth1
ZebOS#
```

show user-priority-regen-table

Use this command to display the user priority that is used to regenerate user-priority mapping, which is associated with a layer 2 interface.

Command Syntax

```
show user-priority-regen-table interface IFNAME
```

Parameters

`interface`	Indicates the interface parameter.
`IFNAME`	Indicates the actual interface name.

Command Mode

Exec mode and Privileged Exec mode

Example

This is a sample output of the `show users` command:

```
ZebOS#show user-priority-regen-table interface eth1
```

show version

Use the `show version` command to display the version of ZebOS currently running.

Command Syntax

```
show version
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

The following is an output from the `show version` command.

```
ZebOS#show version
ZebOS SRS 6.1 (i686-pc-linux-gnu) 12172003

NET-SNMP SNMP agent software
(c) 1989, 1991, 1992 by Carnegie Mellon University;
(c) 1996, 1998-6.10 The Regents of the University of California.
All Rights Reserved;
(c) 6.11, Networks Associates Technology, Inc. All rights reserved;
(c) 6.11, Cambridge Broadband Ltd. All rights reserved.
 RSA Data Security, Inc. MD5 Message-Digest Algorithm
(c) 1991-2, RSA Data Security, Inc. Created 1991. All rights reserved.
Libedit Library
(c) 1992, 1993 The Regents of the University of California. All rights
reserved.
OpenSSL Library
Copyright (C) 1998-6.12 The OpenSSL Project. All rights reserved.
Original SSLeay License
Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)
```

terminal length

Use the `terminal length` command to set number of lines displayed on a terminal.

Command Syntax

```
terminal length <0-512>
```

Parameters

`<0-512>`	The number of lines on a terminal. The default length is 25 lines.

Command Mode

Exec mode and Privileged Exec mode

Examples

The following example sets the terminal length to 30 lines.

```
ZebOS#terminal length 30
```

terminal monitor

Use this command to enable viewing debug messages on the terminal. When the command is used without either of the optional parameters, it may be used by a PVR user or non-PVR user and enables debug output on the terminal for the current VR context. When used with either parameter, it may be used only by a PVR user.

Command Syntax

```
terminal monitor (all|WORD|)
```

Parameters

`WORD`	Used in the PVR context, and contains the VR name to be included in the debugging session.
`all`	Used the PVR context to include all VR in a PVR debugging session.

Command Mode

Exec mode and Privileged Exec mode

Example

```
ZebOS#terminal monitor
```

who

Use the who command to display all other VTY connections.

Note: This command is unavailable to ZebOS Network Platform customers using the IMISH for CLI management. In addition, it is only available on the Linux platform.

Command Syntax

```
who
```

Parameters

None

Command Mode

Privileged Exec mode

Example

The following is an output from the who command displaying all other VTY connections. The entry "*" marks the connection with the configuration rights.

```
ZebOS#who
 vty[8] connected from 127.0.0.1.
*vty[9] connected from 127.0.0.1.
 vty[10] connected from 10.10.0.74
```

write

Use this command to write configuration data to a file.

Command Syntax

```
write file
write memory
```

Parameters

`file`	Specify to write the configuration to a file.
`memory`	Specify to write the configuration write to non-volatile (NV) memory.

Command Mode

Privileged Exec mode

Example

The following is an output from the `write terminal` command displaying current configuration on the terminal.

```
ZebOS#write file
Building configuration...
ZebOS#
Use the write memory command to write configuration data to a file.
```

The following is an output from the `write terminal` command displaying current configuration on the terminal.

```
ZebOS#write memory
Building configuration...
[OK]
```

write terminal

Use the `write terminal` command to display current configurations to the VTY terminal.

Command Syntax

```
write terminal
```

Parameters

None

Command Mode

Privileged Exec mode

Example

The following is an output from the `write terminal` command displaying current configuration on the terminal.

```
ZebOS#write terminal

Current configuration:
!
hostname ripd
password zebra
log stdout
!
debug rip events
debug rip packet
!
interface lo
!
interface eth0
 ip rip send version 1 2
 ip rip receive version 1 2
!
interface eth1
 ip rip send version 1 2
 ip rip receive version 1 2
!
!
router rip
 network 10.10.10.0/24
 network 10.10.11.0/24
 redistribute connected
!
line vty
 exec-timeout 0 0
```

CHAPTER 3 Common Configure Mode Commands

This chapter provides an alphabetized reference for the Configure mode commands. Commands are common to multiple NSM protocols. This chapter includes the following commands:

access-list WORD

Use this command to configure an access-list (ACL) to filter packets. This command controls the transmission of packets on an interface and restrict contents of routing updates. The switch stops checking the access list after a match occurs. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Note: When using this command from a Telnet session, be sure to telnet to the specific protocol daemon (for example, isisd). Unpredictable results may occur if this command is used in a telnet session with the NSM daemon.

Command Syntax

```
access-list WORD (deny|permit) A.B.C.D/M
access-list WORD (deny|permit) A.B.C.D/M exact-match
access-list WORD (deny|permit) any
no access-list WORD (deny|permit) A.B.C.D/M
no access-list WORD (deny|permit) A.B.C.D/M exact-match
no access-list WORD (deny|permit) any
```

Parameters

WORD	IP ZebOS access-list name.
deny	Specify route to reject.
permit	Specify route to permit.
A.B.C.D/M	An IP address and mask specifying which part of the IP address will be ignored.
any	Allows any IP address or prefix to match.
exact-match	Specify an exact matching of prefixes.
remark	Access list entry comment.
LINE	Multi-line, access-list entry comment up to 100 characters.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#access-list mylist deny 10.10.0.72/24 exact-match
ZebOS(config)#access-list mylist permit any
```

access-list (Extended Range)

Use this command to configure an access-list (ACL) to filter packets in an extended range. This command controls the transmission of packets on an interface and restrict contents of routing updates. The switch stops checking the access list after a match occurs. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Note: When using this command from a Telnet session, be sure to telnet to the specific protocol daemon (for example, isisd). Unpredictable results may occur if this command is used in a telnet session with the NSM daemon.

Command Syntax

```
access-list (<100-199>|<2000-2699>) (deny|permit) ip A.B.C.D A.B.C.D A.B.C.D
  A.B.C.D
access-list (<100-199>|<2000-2699>) (deny|permit) ip A.B.C.D A.B.C.D any
access-list (<100-199>|<2000-2699>) (deny|permit) ip any A.B.C.D A.B.C.D
access-list (<100-199>|<2000-2699>) (deny|permit) ip any any
access-list (<100-199>|<2000-2699>) (deny|permit) ip A.B.C.D A.B.C.D host A.B.C.D
access-list (<100-199>|<2000-2699>) (deny|permit) ip host A.B.C.D A.B.C.D A.B.C.D
access-list (<100-199>|<2000-2699>) (deny|permit) ip host A.B.C.D host A.B.C.D
access-list (<100-199>|<2000-2699>) (deny|permit) ip any host A.B.C.D
access-list (<100-199>|<2000-2699>) (deny|permit) ip host A.B.C.D any
no access-list (100-199>|<2000-2699>|WORD) remark LINE
no access-list (<100-199>|<2000-2699>) (deny|permit) ip A.B.C.D A.B.C.D A.B.C.D
  A.B.C.D
no access-list (<100-199>|<2000-2699>) (deny|permit) ip A.B.C.D A.B.C.D any
no access-list (<100-199>|<2000-2699>) (deny|permit) ip any A.B.C.D A.B.C.D
no access-list (<100-199>|<2000-2699>) (deny|permit) ip any any
no access-list (<100-199>|<2000-2699>) (deny|permit) ip A.B.C.D A.B.C.D host
  A.B.C.D
no access-list (<100-199>|<2000-2699>) (deny|permit) ip host A.B.C.D A.B.C.D
  A.B.C.D
no access-list (<100-199>|<2000-2699>) (deny|permit) ip host A.B.C.D host A.B.C.D
no access-list (<100-199>|<2000-2699>) (deny|permit) ip any host A.B.C.D
no access-list (<100-199>|<2000-2699>) (deny|permit) ip host A.B.C.D any
no access-list (100-199>|<2000-2699>|WORD) remark LINE
```

Parameters

`<100-199>`	IP extended access list.
`<2000-2699>`	IP extended access list (expanded range).
`deny`	Specify route to reject.
`permit`	Specify route to permit.
`ip`	Specify any Internet Protocol.
`A.B.C.D`	An IP address and mask specifying which part of the IP address will be ignored.
`any`	Allows any IP address or prefix to match.
`host`	Specify a single source host.
`remark`	Access list entry comment.
`LINE`	Multi-line, access-list entry comment up to 100 characters.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#access-list 134 deny ip 1.1.1.0 0.0.0.255 any

ZebOS(config)#access-list 1340 deny 1.1.1.0 0.0.0.255
```

access-list (Standard Range)

Use this command to configure an access-list (ACL) to filter packets in an standard range. This command controls the transmission of packets on an interface and restrict contents of routing updates. The switch stops checking the access list after a match occurs. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Note: When using this command from a Telnet session, be sure to telnet to the specific protocol daemon (for example, isisd). Unpredictable results may occur if this command is used in a telnet session with the NSM daemon.

Command Syntax

```
access-list (<1-99>|<1300-1999>) (deny|permit) A.B.C.D
access-list (<1-99>|<1300-1999>) (deny|permit) A.B.C.D A.B.C.D
access-list (<1-99>|<1300-1999>) (deny|permit) any
access-list (<1-99>|<1300-1999>|WORD) remark LINE
no access-list (<1-99>|<1300-1999>) (deny|permit) A.B.C.D A.B.C.D
no access-list (<1-99>|<1300-1999>) (deny|permit) A.B.C.D
no access-list (<1-99>|<1300-1999>) (deny|permit) any
```

Parameters

<1-99>	IP standard access list
<1300-1999>	IP standard access list (expanded range).
deny	Specify route to reject.
permit	Specify route to permit.
A.B.C.D	An IP address and mask specifying which part of the IP address will be ignored.
any	Allows any IP address or prefix to match.
remark	Access list entry comment.
LINE	Multi-line, access-list entry comment up to 100 characters.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#access-list 67 deny 1.1.1.0 0.0.0.255
ZebOS(config)#access-list 13 permit any
```

access-list zebos

Use this command to configure an access-list (ACL) to filter packets. This command controls the transmission of packets on an interface and restrict contents of routing updates. The switch stops checking the access list after a match occurs. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Note: When using this command from a Telnet session, be sure to telnet to the specific protocol daemon (for example, isisd). Unpredictable results may occur if this command is used in a telnet session with the NSM daemon.

Command Syntax

```
access-list zebos WORD (deny|permit) (ip|gre|igmp|pim|rsvp|ospf|vrrp|ipcomp|any|<0-
  255>) (A.B.C.D/M|A.B.C.D A.B.C.D|any) (A.B.C.D/M|A.B.C.D A.B.C.D|any) ({label <1-
  65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
```

Parameters

WORD	ZebOS access-list name.
deny	Specify route to deny.
permit	Specify route to permit.
<0-255>	Specify a number to identify a protocol, instead of a named protocol (as listed below).
any	Specify any protocol packet.
gre	Specify Generic Routing Encapsulation packet.
igmp	Specify Internet Group Management Protocol packet.
ip	Specify IP packet.
ipcomp	Specify IP payload compression packet.
ospf	Specify Open Shortest Path First packet.
pim	Specify Protocol Independent Multicast packet.
rsvp	Specify Resource Reservation Protocol packet.
vrrp	Specify Virtual Router Redundancy Protocol packet.
A.B.C.D	Source IP address.
A.B.C.D/M	Source IP address and mask.
any	Source any local address.
A.B.C.D	Destination IP address.
A.B.C.D/M	Destination IP address and mask.
any	Destination any local address.

`fragments`	Indicate the `fragments` keyword. An ACL applies to the non-initial fragment of packet.
`interface`	Indicate the `interface` keyword, which is the name of the input or output interface.
`in`	Specify the actual input interface.
`out`	Specify the actual output interface.
`IFNAME`	Specify the actual interface name.
`label`	Indicate the `label` keyword, which is used to identify an application.
`<1-65535>`	Specify the actual label value.
`log`	Log the results.
`pkt-size`	Indicate the `packet` keyword, which is used to identify packet size.
`gt`	Packet size less than or greater than specified value.
`lt`	Packet size less than or greater than specified value.
`range`	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
`<0-65535>`	Specify the actual range of values for packet size from <0-65535>.
`precedence`	Indicate the `precedence` keyword, which is used to identify a packet filter precedence level.
`<0-7>`	Specify the precedence value.
`tos`	Type of service (ToS) value; also used to filter packets.
`<0-255>`	Specify the actual value for ToS.
`range`	Indicate the `range` keyword.
`<0-255>`	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#access-list zebos tk permit any any any fragments interface in
eth1
```

access-list zebos icmp

Use this command to configure an access-list (ACL) to filter packets specific to the ICMP protocol. This command controls the transmission of packets on an interface and restrict contents of routing updates. The switch stops checking the access list after a match occurs. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Note: When using this command from telnet, be sure to telnet to the specific protocol daemon (for example, isisd). Unpredictable results may occur if this command is used in a telnet session with the NSM daemon.

Command Syntax

```
access-list zebos WORD (deny|permit) (icmp) (A.B.C.D/M|A.B.C.D A.B.C.D|any)
  (A.B.C.D/M|A.B.C.D A.B.C.D|any) ({icmp-type ICMP-TYPE|label <1-65535>|precedence
  <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt) <0-65535>|range <0-
  65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
no access-list zebos WORD (deny|permit) (icmp) (A.B.C.D/M|A.B.C.D A.B.C.D|any)
  (A.B.C.D/M|A.B.C.D A.B.C.D|any) ({icmp-type ICMP-TYPE|label <1-65535>|precedence
  <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt) <0-65535>|range <0-
  65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
```

Parameters

WORD	ZebOS access-list name.
deny	Specify route to deny.
permit	Specify route to permit.
icmp	Specify Internet Control Message Protocol packet.
A.B.C.D	Source IP address.
A.B.C.D/M	Source IP address and mask.
any	Source any local address.
A.B.C.D	Destination IP address.
A.B.C.D/M	Destination IP address and mask.
any	Destination any local address.
fragments	Indicate the fragments keyword. An ACL applies to the non-initial fragment of packet.
icmp-type	Indicate the icmp-type keyword, which is used to specify the ICMP type.
ICMP-TYPE	Specify the actual ICMP value.
interface	Indicate the interface keyword, which is the name of the input or output interface.
in	Specify the actual input interface.
out	Specify the actual output interface.

IFNAME	Specify the actual interface name.
label	Indicate the label keyword, which is used to identify an application.
<1-65535>	Specify the actual label value.
log	Log the results.
pkt-size	Indicate the packet keyword, which is used to identify packet size.
gt	Packet size less than or greater than specified value.
lt	Packet size less than or greater than specified value.
range	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
<0-65535>	Specify the actual range of values for packet size from <0-65535>.
precedence	Indicate the precedence keyword, which is used to identify a packet filter precedence level.
<0-7>	Specify the precedence value.
tos	Type of service (ToS) value; also used to filter packets.
<0-255>	Specify the actual value for ToS.
range	Indicate the range keyword.
<0-255>	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#access-list zebos tk deny icmp any any icmp-type new-ICMP
fragments log
```

access-list zebos tcp

Use this command to configure an access-list (ACL) to filter packets specific to the TCP protocol. This command controls the transmission of packets on an interface and restrict contents of routing updates. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Note: When using this command from telnet, be sure to telnet to the specific protocol daemon (for example, isisd). Unpredictable results may occur if this command is used in a telnet session with the NSM daemon.

Command Syntax

```
access-list zebos WORD (deny|permit) (tcp) (A.B.C.D/M|A.B.C.D A.B.C.D|any)
  ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) (A.B.C.D/M|A.B.C.D A.B.C.D
  |any) ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) ({established |label
  <1-65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
no access-list zebos WORD (deny|permit) (tcp) (A.B.C.D/M|A.B.C.D A.B.C.D|any)
  ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) (A.B.C.D/M|A.B.C.D A.B.C.D
  |any) ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) ({established|label
  <1-65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
```

Parameters

WORD	ZebOS access-list name.
deny	Specify route to deny.
permit	Specify route to permit.
tcp	Specify Transmission Control Protocol packet.
A.B.C.D	Source IP address.
A.B.C.D/M	Source IP address and mask.
any	Source any local address.
A.B.C.D	Destination IP address.
A.B.C.D/M	Destination IP address and mask.
any	Destination any local address.
eq	Indicate the eq keyword, which specifies a destination port as equal to a given value.
<0-65535>	Specify the actual equal than value.
established	Indicate the established keyword, which is used to specify that an address is an established connection.
fragments	Indicate the fragments keyword. An ACL applies to the non-initial fragment of packet.
gt	Indicate the gt keyword, which specifies a destination port as greater than a given value.

<0-65535>	Specify the actual greater than value.
interface	Indicate the interface keyword, which is the name of the input or output interface.
in	Specify the actual input interface.
out	Specify the actual output interface.
IFNAME	Specify the actual interface name.
label	Indicate the label keyword, which is used to identify an application.
<1-65535>	Specify the actual label value.
lt	Indicate the lt keyword, which specifies a destination port as less than a given value.
<0-65535>	Specify the actual less than value.
log	Log the results.
ne	Indicate the ne keyword, which specifies a destination port as not equal to a given value.
<0-65535>	Specify the actual not equal than value.
pkt-size	Indicate the packet keyword, which is used to identify packet size.
gt	Packet size less than or greater than specified value.
lt	Packet size less than or greater than specified value.
range	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
<0-65535>	Specify the actual range of values for packet size from <0-65535>.
precedence	Indicate the precedence keyword, which is used to identify a packet filter precedence level.
<0-7>	Specify the precedence value.
tos	Type of service (ToS) value; also used to filter packets.
<0-255>	Specify the actual value for ToS.
range	Indicate the range keyword.
<0-255>	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#access-list zebos tk deny tcp 2.2.2.3/24 eq 14 3.3.3.4/24 lt 12
log
```

access-list zebos udp

Use this command to configure an access-list (ACL) to filter packets specific to the UDP protocol. This command controls the transmission of packets on an interface and restrict contents of routing updates. The switch stops checking the access list after a match occurs. The priority of an ACL is based on the order in which the access-list command was configured. For example:

- If the user configures the ACL as “deny,” the label does not advertise to any peer.
- If the user configures the ACL as “no-match,” then it applies the next advert-list and is interpreted as continue.
- If the user configures the ACL as “permit” and there is a peer ACL, then the label advertises to all peers permitted by the peer ACL.
- If the user configures the ACL as “permit,” but the peer prefix is “none,” then the label advertises to all peers.

Use the no parameter to remove a specified access-list.

Command Syntax

```
access-list zebos WORD (deny|permit) (udp) (A.B.C.D/M|A.B.C.D A.B.C.D|any)
  ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) (A.B.C.D/M|A.B.C.D
  A.B.C.D|any) ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) ({label <1-
  65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
no access-list zebos WORD (deny|permit) (udp) (A.B.C.D/M|A.B.C.D A.B.C.D|any)
  ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) (A.B.C.D/M|A.B.C.D
  A.B.C.D|any) ((eq|lt|gt|ne) <0-65535> |range <0-65535> <0-65535>|) ({label <1-
  65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
```

Parameters

WORD	ZebOS access-list name.
deny	Specify route to deny.
permit	Specify route to permit.
udp	Specify User Datagram Protocol packet.
A.B.C.D	Source IP address.
A.B.C.D/M	Source IP address and mask.
any	Source any local address.
A.B.C.D	Destination IP address.
A.B.C.D/M	Destination IP address and mask.
any	Destination any local address.
eq	Indicate the eq keyword, which specifies a source port as equal to a given value.
<0-65535>	Specify the actual equal to value.
gt	Indicate the gt keyword, which specifies a source port as greater than a given value.
<0-65535>	Specify the actual greater than value.
lt	Indicate the lt keyword, which specifies a source port as less than a given value.
<0-65535>	Specify the actual less than value.
ne	Indicate the gt keyword, which specifies a source port as not equal to a given value.

<0-65535>	Specify the actual not equal to value.
range	Indicate the range keyword, which is used to specify the range of a source port.
<0-255>	Specify the actual range of the source port from <0 to 255>.
eq	Indicate the eq keyword, which specifies a destination port as equal to a given value.
<0-65535>	Specify the actual equal to value.
fragments	Indicate the fragments keyword. An ACL applies to the non-initial fragment of packet.
gt	Indicate the gt keyword, which specifies a destination port as greater than a given value.
<0-65535>	Specify the actual greater than value.
interface	Indicate the interface keyword, which is the name of the input or output interface.
in	Specify the actual input interface.
out	Specify the actual output interface.
IFNAME	Specify the actual interface name.
label	Indicate the label keyword, which is used to identify an application.
<1-65535>	Specify the actual label value.
log	Log the results.
lt	Indicate the lt keyword, which specifies a destination port as less than a given value.
<0-65535>	Specify the actual less than value.
ne	Indicate the ne keyword, which specifies a destination port as less than a given value.
<0-65535>	Specify the actual not equal than value.
pkt-size	Indicate the packet keyword, which is used to identify packet size.
gt	Packet size less than or greater than specified value.
lt	Packet size less than or greater than specified value.
range	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
<0-65535>	Specify the actual range of values for packet size from <0-65535>.
precedence	Indicate the precedence keyword, which identifies a packet filter precedence level.
<0-7>	Specify the precedence value.
range	Indicate the range keyword, which is used to specify the range of a destination port.
<0-255>	Specify the actual range of the destination port from <0 to 255>.
tos	Type of service (ToS) value; also used to filter packets.
<0-255>	Specify the actual value for ToS.
range	Indicate the range keyword.
<0-255>	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS(config)#access-list zebos tk deny udp 2.2.2.3/24 eq 14 3.3.3.4/24 lt 12
```

arp

Use this command to create a static group ARP entry.

Use the no parameter to remove the static group ARP entry.

Command Syntax

```
arp A.B.C.D MAC (alias|)
no arp A.B.C.D
```

Parameters

A.B.C.D	Specify the IP address of the ARP entry.
MAC	Specify the MAC (hardware) address of the ARP entry in HHHH.HHHH.HHHH format.
alias	Specify the response to ARP requests for the IP address.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#arp 10.10.10.10 0010.2355.4566 alias

ZebOS(config)#no arp 10.10.10.10
```

enable password

Use the `enable password` command to modify or create a password to be used when entering the `Enable` mode. There are three methods to enable a password:

Plain Password

The plain password is a clear text string that appears in the configuration file as configured.

Encrypted Password

An encrypted password encrypts a password. First, use the enable password command to create a password. Then, use the `service encrypted-password` command to encrypt the specified string. An encrypted password does not display in the configuration file; instead, it displays the encrypted string.

Note: See service password-encryption on page 106 for more information on hidden passwords

Hidden Password

A hidden password also encrypts a password; however, you do not need the `service password-encryption` command for this method. Use this method if you know the encrypted string of the plain text string that you want to use as a password. The output in the configuration file displays only the encrypted string and not the text string

Note: When using the `enable password` command through IMISH, you must write to memory using the `write memory` or `write file` command. If you have not written to memory, the change made by this command (the new password) is not available when you log into IMISH the next time.

Use the `no` parameter to disable the password.

Command Syntax

```
enable password (8|) LINE
no enable password
no enable password LINE
```

Parameters

`8`	Specify that a hidden password will follow.
`line`	Specify the hidden enable password string.

Note: Password can be an alpha-numeric string up to 80-characters, including spaces. The string cannot begin with a number.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#enable password mypasswd

ZebOS#configure terminal
ZebOS(config)#enable password 8 fU7zHzuutY2SA
```

fib retain

Use this command to modify the retain time for stale routes in the Forwarding Information Base (FIB) during NSM restart. NSM reads the Forwarding Information Base (FIB) and treats previously self-installed routes as stale routes. You can display stale routes by running the `show ip route database` command (see show ipv6 route on page 208). All routes preceded by the symbol p are stale routes. When protocol modules restart, NSM overrides these stale routes with routes reinstalled by protocol modules. The behavior of NSM routes when NSM is killed is as follows:

- `no fib retain` (default) Cleans up NSM routes from the FIB, but retains stale routes for 60 seconds when restarted.
- `fib retain` Does not clear routes from the FIB and retains stale routes for 60 seconds when restarted.
- `fib retain forever` Does not clear routes and retains stale routes forever.
- `fib retain time <1-65535>` Does not clear routes and retains stale routes for the specified seconds.

You can remove stale routes at any time by using the `clear ip route kernel` command (see clear ip route kernel on page 159).

Use the `no` parameter with this command to revert to default; that is, it does not retain NSM routes in the FIB when NSM is killed.

Note: NSM still retains the stale routes for 60 seconds when it restarts.

Command Syntax

```
fib retain (forever|time <1-65535>|)
no fib retain (forever|time <1-65535>|)
```

Parameters

`forever`	Specify an infinite retain time for stale routes.
`time`	Retain time for stale routes.
`<1-65535>.`	Specify the retain time. Default is 60 seconds.

Default

NSM routes are cleared from the FIB when NSM is killed. However, when NSM restarts, stale routes are retained for 60 seconds.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#fib retain time 180
```

ip mroute

Use this command to create a multicast static route. Use the no form of this command to clear the route. Multicast static routes are unicast routes which allow multicast and unicast topologies to be incongruous. These routes are used by multicast routing protocols to perform reverse-path forwarding (RPF) checks.

Use the no form of this command to clear the route.

Command Syntax

```
ip mroute A.B.C.D/M (static|rip|ospf|bgp|isis|) (A.B.C.D|INTERFACE)
ip mroute A.B.C.D/M (static|rip|ospf|bgp|isis|) (A.B.C.D|INTERFACE) <1-255>
no ip mroute A.B.C.D/M (static|rip|ospf|bgp|isis|)
```

Parameters

A.B.C.D/M	Specify multicast source IP address and mask
A.B.C.D	RPF address for the multicast route. Host IP address can be a directly connected system or a remote system. For remote systems, a recursive lookup is done from the unicast routing table to find a directly connected system. Recursive lookup is done up to one level.
INTERFACE	Incoming interface name. Can only be specified for non-broadcast interfaces.
bgp	Specify the border gateway protocol (BGP).
isis	Specify the Intermediate system to intermediate system (IS-IS) protocol.
ospf	Specify the open shortest patch first (OSPF) protocol.
rip	Specify the routing information protocol (RIP) protocol.
static	Specify a static route.
A.B.C.D	Specify reverse path forwarding (RPF) neighbor address or route.
INTERFACE	Specify reverse path forwarding (RPF) interface or pseudo interface.
<1-255>	Specify whether a unicast route or multicast static route is used for the RPF lookup. Lower distances have preference. If the multicast static route has the same distance as the other RPF sources, the multicast static route takes precedence. Default is 0.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ip mroute 10.10.10.50/1 255.255.255.0 1
```

ipv6 access-list

Use this command to configure an access list for filtering frames.

Use access lists to control the transmission of packets on an interface, and restrict contents of routing updates. The switch stops checking the access list after a match occurs.

Use the no parameter to remove a specified access-list.

Note: This command is unavailable to ZebOS network platform customers using the IMISH for CLI management. To control access from the network/ hosts, IMISH administrators are required to change system files, such as `/etc/host.allow` and `/etc/hosts.deny`.

Command Syntax

```
ipv6 access-list WORD (deny|permit) X:X::X:X/M
ipv6 access-list WORD (deny|permit) X:X::X:X/M exact-match
ipv6 access-list WORD (deny|permit) any
ipv6 access-list WORD remark LINE
no ipv6 access-list WORD (deny|permit) X:X::X:X/M
no ipv6 access-list WORD (deny|permit) X:X::X:X/M exact-match
no ipv6 access-list WORD (deny|permit) any
no ipv6 access-list WORD
no ipv6 access-list WORD remark
```

Parameters

WORD	IP ZebOS access-list name
DENY	Specify route to reject.
PERMIT	Specify route to permit.
X:X::X:X/M	An IP address and mask specifying which part of the IP address will be ignored.
any	Allows any IP address or prefix to match.
exact-match	Specify an exact matching of prefixes.
REMARK	Access list entry comment.
LINE	Multi-line, access-list entry comment up to 100 characters.

Command Mode

Configure mode and Line mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ipv6 access-list mylist deny 3ffe:506::/32 exact-match
ZebOS(config)#ipv6 access-list mylist permit any

ZebOS#configure terminal
ZebOS(config)#line vty 12 77
ZebOS(config-line)#ipv6 access-class mylist1
```

ipv6 access-list zebos

Use this command to configure an access list for filtering frames that permit or deny multiple IANA protocols. An access list controls the transmission of packets on an interface, and restrict the content of routing updates. The switch stops checking the access list when a match is encountered.

Some protocols are identified by name, such as IP, GRE, or TCP packets. Other are identified by a number in the range of <0-255>. Use mask to specify a subset of addresses. Use `any` to allow all packets.

Use the `no` option with any of the `access-list zebos` command variants to remove a specified access-list.

Command Syntax

```
ipv6 access-list zebos WORD (deny|permit)
  (ip|gre|igmp|pim|rsvp|ospf|vrrp|ipcomp|any|<0-255>) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) (X:X::X:X/M|X:X::X:X X:X::X:X|any) ({label <1-65535>|precedence <0-
  7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt) <0-65535>|range <0-
  65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
no ipv6 access-list zebos WORD ((deny|permit)
  (ip|gre|igmp|pim|rsvp|ospf|vrrp|ipcomp|any|<0-255>) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) (X:X::X:X/M|X:X::X:X X:X::X:X|any) ({label <1-65535>|precedence <0-
  7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt) <0-65535>|range <0-
  65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)|)
```

Parameters

`WORD`	ZebOS access-list name.
`deny`	Specify route to deny.
`permit`	Specify route to permit.
`<0-255>`	Specify a number to identify a protocol, instead of a named protocol (as listed below).
`any`	Specify any protocol packet.
`gre`	Specify Generic Routing Encapsulation packet.
`igmp`	Specify Internet Group Management Protocol packet.
`ip`	Specify IP packet.
`ipcomp`	Specify IP payload compression packet.
`ospf`	Specify Open Shortest Path First packet.
`pim`	Specify Protocol Independent Multicast packet.
`rsvp`	Specify Resource Reservation Protocol packet.
`vrrp`	Specify Virtual Router Redundancy Protocol packet.
`X:X::X:X`	Source IPv6 address.
`X:X::X:X/M`	Source IPv6 address and mask.
`any`	Source any local address.
`X:X::X:X`	Destination IPv6 address.
`X:X::X:X/M`	Destination IPv6 address and mask.
`any`	Destination any local address.
`fragments`	Indicate the `fragments` keyword. An ACL applies to the non-initial fragment of packet.

`interface`	Indicate the `interface` keyword, which is the name of the input or output interface.
`in`	Specify the actual input interface.
`out`	Specify the actual output interface.
`IFNAME`	Specify the actual interface name.
`label`	Indicate the `label` keyword, which is used to identify an application.
`<1-65535>`	Specify the actual label value.
`log`	Log the results.
`pkt-size`	Indicate the `packet` keyword, which is used to identify packet size.
`gt`	Packet size less than or greater than specified value.
`lt`	Packet size less than or greater than specified value.
`range`	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
`<0-65535>`	Specify the actual range of values for packet size from <0-65535>.
`precedence`	Indicate the `precedence` keyword, which is used to identify a packet filter precedence level.
`<0-7>`	Specify the precedence value.
`tos`	Type of service (ToS) value; also used to filter packets.
`<0-255>`	Specify the actual value for ToS.
`range`	Indicate the `range` keyword.
`<0-255>`	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#ipv6 access-list zebos TK deny any any any fragments interface
out eth1 log
```

ipv6 access-list zebos icmp

Use this command to configure an access list for filtering frames that permit or deny multiple IANA protocols. An access list controls the transmission of packets on an interface, and restrict the content of routing updates. The switch stops checking the access list when a match is encountered.

Some protocols are identified by name, such as IP, GRE, or TCP packets. Other are identified by a number in the range of <0-255>. Use mask to specify a subset of addresses. Use `any` to allow all packets.

Use the `no` option with any of the `access-list zebos` command variants to remove a specified access-list.

Command Syntax

```
ipv6 access-list zebos WORD (deny|permit) (icmp) (X:X::X:X/M|X:X::X:X X:X::X:X|any)
  (X:X::X:X/M|X:X::X:X X:X::X:X|any) ({icmp-type ICMP-TYPE|label <1-
  65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
no ipv6 access-list zebos WORD (deny|permit) (icmp) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) (X:X::X:X/M|X:X::X:X X:X::X:X|any) ({icmp-type ICMP-TYPE|label <1-
  65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
```

Parameters

`WORD`	ZebOS access-list name.
`deny`	Specify route to deny.
`permit`	Specify route to permit.
`icmp`	Specify Internet Control Message Protocol packet.
`X:X::X:X`	Source IP address.
`X:X::X:X/M`	Source IP address and mask.
`any`	Source any local address.
`X:X::X:X`	Destination IP address.
`X:X::X:X/M`	Destination IP address and mask.
`any`	Destination any local address.
`fragments`	Indicate the `fragments` keyword. An ACL applies to the non-initial fragment of packet.
`icmp-type`	Indicate the `icmp-type` keyword, which is used to specify the ICMP type.
`ICMP-TYPE`	Specify the actual ICMP value.
`interface`	Indicate the `interface` keyword, which is the name of the input or output interface.
`in`	Specify the actual input interface.
`out`	Specify the actual output interface.
`IFNAME`	Specify the actual interface name.
`label`	Indicate the `label` keyword, which is used to identify an application.
`<1-65535>`	Specify the actual label value.
`log`	Log the results.
`pkt-size`	Indicate the `packet` keyword, which is used to identify packet size.
`gt`	Packet size less than or greater than specified value.

`lt`	Packet size less than or greater than specified value.
`range`	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
`<0-65535>`	Specify the actual range of values for packet size from <0-65535>.
`precedence`	Indicate the `precedence` keyword, which is used to identify a packet filter precedence level.
`<0-7>`	Specify the precedence value.
`tos`	Type of service (ToS) value; also used to filter packets.
`<0-255>`	Specify the actual value for ToS.
`range`	Indicate the `range` keyword.
`<0-255>`	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#ipv6 access-list zebos TK deny icmp 2::2/64 any icmp-type
new_icmp log
```

ipv6 access-list zebos tcp

Use this command to configure an access list for filtering frames that permit or deny multiple IANA protocols. An access list controls the transmission of packets on an interface, and restrict the content of routing updates. The switch stops checking the access list when a match is encountered.

Some protocols are identified by name, such as IP, GRE, or TCP packets. Other are identified by a number in the range of <0-255>. Use mask to specify a subset of addresses. Use `any` to allow all packets.

Use the `no` option with any of the `access-list zebos` command variants to remove a specified access-list.

Command Syntax

```
ipv6 access-list zebos WORD (deny|permit) (tcp) (X:X::X:X/M|X:X::X:X X:X::X:X|any)
  ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|)
  ({established|label <1-65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-
  255>)|pkt-size ((lt|gt) <0-65535>|range <0-65535> <0-
  65535>)|fragments|log|interface (in|out) IFNAME}|)
no ipv6 access-list zebos WORD (deny|permit) (tcp) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|) (X:X::X:X/
  M|X:X::X:X X:X::X:X|any) ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|)
  ({established|label <1-65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-
  255>)|pkt-size ((lt|gt) <0-65535>|range <0-65535> <0-
  65535>)|fragments|log|interface (in|out) IFNAME}|)
```

Parameters

`WORD`	ZebOS access-list name.
`deny`	Specify route to deny.
`permit`	Specify route to permit.
`tcp`	Specify Transmission Control Protocol packet.
`X:X::X:X`	Source IP address.
`X:X::X:X/M`	Source IP address and mask.
`any`	Source any local address.
`X:X::X:X`	Destination IP address.
`X:X::X:X/M`	Destination IP address and mask.
`any`	Destination any local address.
`eq`	Indicate the `eq` keyword, which specifies a destination port as equal to a given value.
`<0-65535>`	Specify the actual equal than value.
`established`	Indicate the `established` keyword, which is used to specify that an address is an established connection.
`fragments`	Indicate the `fragments` keyword. An ACL applies to the non-initial fragment of packet.
`gt`	Indicate the `gt` keyword, which specifies a destination port as greater than a given value.
`<0-65535>`	Specify the actual greater than value.
`interface`	Indicate the `interface` keyword, which is the name of the input or output interface.
`in`	Specify the actual input interface.

out	Specify the actual output interface.
IFNAME	Specify the actual interface name.
label	Indicate the label keyword, which is used to identify an application.
<1-65535>	Specify the actual label value.
lt	Indicate the lt keyword, which specifies a destination port as less than a given value.
<0-65535>	Specify the actual less than value.
log	Log the results.
ne	Indicate the ne keyword, which specifies a destination port as not equal to a given value.
<0-65535>	Specify the actual not equal than value.
pkt-size	Indicate the packet keyword, which is used to identify packet size.
gt	Packet size less than or greater than specified value.
lt	Packet size less than or greater than specified value.
range	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
<0-65535>	Specify the actual range of values for packet size from <0-65535>.
precedence	Indicate the precedence keyword, which is used to identify a packet filter precedence level.
<0-7>	Specify the precedence value.
tos	Type of service (ToS) value; also used to filter packets.
<0-255>	Specify the actual value for ToS.
range	Indicate the range keyword.
<0-255>	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#ipv6 access-list zebos TK deny tcp 2::2/64 eq 14 3::4/64 lt 12
log
```

ipv6 access-list zebos udp

Use this command to configure an access list for filtering frames that permit or deny multiple IANA protocols. An access list controls the transmission of packets on an interface, and restrict the content of routing updates. The switch stops checking the access list when a match is encountered.

Some protocols are identified by name, such as IP, GRE, or TCP packets. Other are identified by a number in the range of <0-255>. Use mask to specify a subset of addresses. Use `any` to allow all packets.

Use the `no` option with any of the `access-list zebos` command variants to remove a specified access-list.

Command Syntax

```
ipv6 access-list zebos WORD (deny|permit) (udp) (X:X::X:X/M|X:X::X:X X:X::X:X|any)
  ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|) ({label <1-
  65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size ((lt|gt)
  <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out) IFNAME}|)
no ipv6 access-list zebos WORD (deny|permit) (udp) (X:X::X:X/M|X:X::X:X
  X:X::X:X|any) ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|) (X:X::X:X/
  M|X:X::X:X X:X::X:X|any) ((eq|lt|gt|ne) <0-65535> | range <0-65535> <0-65535>|)
  ({label <1-65535>|precedence <0-7>|tos (<0-255>| range <0-255> <0-255>)|pkt-size
  ((lt|gt) <0-65535>|range <0-65535> <0-65535>)|fragments|log|interface (in|out)
  IFNAME}|)
```

Parameters

`WORD`	ZebOS access-list name.
`deny`	Specify route to deny.
`permit`	Specify route to permit.
`udp`	Specify User Datagram Protocol packet.
`X:X::X:X`	Source IP address.
`X:X::X:X/M`	Source IP address and mask.
`any`	Source any local address.
`X:X::X:X`	Destination IP address.
`X:X::X:X/M`	Destination IP address and mask.
`any`	Destination any local address.
`eq`	Indicate the `eq` keyword, which specifies a source port as equal to a given value.
`<0-65535>`	Specify the actual equal to value.
`gt`	Indicate the `gt` keyword, which specifies a source port as greater than a given value.
`<0-65535>`	Specify the actual greater than value.
`lt`	Indicate the `lt` keyword, which specifies a source port as less than a given value.
`<0-65535>`	Specify the actual less than value.
`ne`	Indicate the `gt` keyword, which specifies a source port as not equal to a given value.
`<0-65535>`	Specify the actual not equal to value.
`range`	Indicate the `range` keyword, which is used to specify the range of a source port.
`<0-255>`	Specify the actual range of the source port from <0 to 255>.

`eq`	Indicate the `eq` keyword, which specifies a destination port as equal to a given value.
`<0-65535>`	Specify the actual equal to value.
`fragments`	Indicate the `fragments` keyword. An ACL applies to the non-initial fragment of packet.
`gt`	Indicate the `gt` keyword, which specifies a destination port as greater than a given value.
`<0-65535>`	Specify the actual greater than value.
`interface`	Indicate the `interface` keyword, which is the name of the input or output interface.
`in`	Specify the actual input interface.
`out`	Specify the actual output interface.
`IFNAME`	Specify the actual interface name.
`label`	Indicate the `label` keyword, which is used to identify an application.
`<1-65535>`	Specify the actual label value.
`log`	Log the results.
`lt`	Indicate the `lt` keyword, which specifies a destination port as less than a given value.
`<0-65535>`	Specify the actual less than value.
`ne`	Indicate the `ne` keyword, which specifies a destination port as less than a given value.
`<0-65535>`	Specify the actual not equal than value.
`pkt-size`	Indicate the `packet` keyword, which is used to identify packet size.
`gt`	Packet size less than or greater than specified value.
`lt`	Packet size less than or greater than specified value.
`range`	A range of type of service values. The first value is the beginning of the range and the second value is the end of the range.
`<0-65535>`	Specify the actual range of values for packet size from <0-65535>.
`precedence`	Indicate the `precedence` keyword, which identifies a packet filter precedence level.
`<0-7>`	Specify the precedence value.
`range`	Indicate the `range` keyword, which is used to specify the range of a destination port.
`<0-255>`	Specify the actual range of the destination port from <0 to 255>.
`tos`	Type of service (ToS) value; also used to filter packets.
`<0-255>`	Specify the actual value for ToS.
`range`	Indicate the `range` keyword.
`<0-255>`	Specify the actual range of values for ToS from <0 to 255>.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#ipv6 access-list zebos TK deny udp 2::2/64 eq 14 3::4/64 lt 12
log
```

ipv6 mroute

Use this command to create a multicast static route. Multicast static routes are unicast routes that allow multicast and unicast topologies to be incongruous. These routes are used by multicast routing protocols to perform RPF checks. Use the no form of this command to clear the route.

Command Syntax

```
ipv6 mroute X:X::X:X/M (static|rip|ospf|bgp|isis|) X:X::X:X INTERFACE
ipv6 mroute X:X::X:X/M (static|rip|ospf|bgp|isis|) (X:X::X:X|INTERFACE)
ipv6 mroute X:X::X:X/M (static|rip|ospf|bgp|isis|) X:X::X:X INTERFACE <1-255>
ipv6 mroute X:X::X:X/M (static|rip|ospf|bgp|isis|) (X:X::X:X|INTERFACE) <1-255>
no ipv6 mroute X:X::X:X/M static|rip|ospf|bgp|isis|)
```

Parameters

X:X::X:X/M	Specify multicast source IP address and mask
X:X::X:X	RPF address for the multicast route. Host IP address can be a directly connected system or a remote system. For remote systems, a recursive lookup is done from the unicast routing table to find a directly connected system. Recursive lookup is done up one level.
INTERFACE	Incoming interface name. Can only be specified for non-broadcast interfaces.
bgp	Specify the border gateway protocol (BGP).
isis	Specify the Intermediate system to intermediate system (IS-IS) protocol.
ospf	Specify the open shortest patch first (OSPF) protocol.
rip	Specify the routing information protocol (RIP) protocol.
static	Specify Static routes.
X:X::X:X	Specify Reverse path forwarding (RPF) neighbor address or route.
INTERFACE	Specify Reverse path forwarding (RPF) interface or pseudo interface.
<1-255>	Specify whether a unicast route or multicast static route is used for the RPF lookup. Lower distances have preference. If the multicast static route has the same distance as the other RPF sources, the multicast static route takes precedence. Default is 0.

Command Mode

Configure mode

Example

```
ZebOS(config)#ipv6 mroute 10:10::10:50/1 255.255.255.0 1
```

log file

Use this command to specify the log file controls and where to save the logs in a configuration file. This command enables writing of debug output to the disk file. If not specified, the system uses a default filename. The default directory for all VR log files is /var/local/zebos/log/<vr-name>. Log output can also be written to default log file, which is usually usr/local/sbin.

Use option no to cancel writing to a specific log file.

Command Syntax

```
log file (FILENAME|)
no log file (FILENAME|)
```

Parameter

FILENAME	Specify the name of the log file.

Command Mode

Configure mode

Examples

This command is used to log the debug messages of a particular protocol daemon to the specified file.

```
Router#configure terminal
Router(config)#log file /usr/local/sbin/bgpd.log
Router(config)#log file /var/local/zebos/log/vrname
```

log record-priority

Use the `log record-priority` command to include the priority of the message within the entry in the log file.

Use the `no` parameter to exclude the priority from the entry.

Command Syntax

```
log record-priority
no log record-priority
```

Parameters

None

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#log record-priority
```

log stdout

Use the `log stdout` command to begin the logging of information to a standard output device, and set the level to debug. Use the `trap` parameter and its sub-parameters to set the logging to a different level.

Use the `no` parameter to disable logging to the `stdout`.

Command Syntax

```
log stdout
no log stdout
```

Parameters

None

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#log stdout
```

log syslog

Use this command to begin logging of information to the system log and set the level to debug.

Syslog enables centrally logging and analyzing of configuration events and system error messages. This helps monitor interface status, security alerts, and CPU process overloads. It also allows real-time capturing of client debug sessions. The command instructs the `VLOGD` daemon to forward all PVR debug output from all active `terminal monitor` sessions to the syslog file.

Use the `no` parameter to disable logging to the system log.

Command Syntax

```
log syslog
no log syslog
```

Parameters

None

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#log syslog
```

log trap

Use the `log trap` command with the log file to specify system message logging levels.

Use the no parameter to include all levels of logging.

Command Syntax

```
log trap (emergencies|alerts|critical|errors|warnings|notifications|informational|
  debugging)
no log trap
```

Parameters

`emergencies`	Turns on logging of only the most severe messages.
`alerts`	Turns on logging of the above plus this level.
`critical`	Turns on logging of the above plus this level.
`errors`	Turns on logging of the above plus this level.
`warnings`	Turns on logging of the above plus this level.
`notifications`	Turns on logging of the above plus this level.
`informational`	Turns on logging of the above plus this level.
`debugging`	Turns on logging of the above plus this level. This level of logging is the most comprehensive.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#log trap alerts
ZebOS(config)#log trap critical
ZebOS(config)#log trap informational
```

mac

Use the mac command to configure a MAC access list.

Use the no parameter to remove this configuration.

Command Syntax

```
mac acl <2000-2699> (deny|permit) MAC MASK MAC MASK <1-8>
mac acl <2000-2699> (deny|permit) MAC MASK any <1-8>
mac acl <2000-2699> (deny|permit) any MAC MASK <1-8>
no mac acl <2000-2699> (deny|permit) MAC MASK MAC MASK <1-8>
no mac acl <2000-2699> (deny|permit) MAC MASK any <1-8>
no mac acl <2000-2699> (deny|permit) any MAC MASK <1-8>
```

Parameters

<2000-2699>	Specify an extended MAC ACL.
deny	Specify packets to reject.
permit	Specify packets to permit.
MAC	Specify a source MAC address in HHHH.HHHH.HHHH format for a host.
MASK	Specify a source wildcard in HHHH.HHHH.HHHH format.
any	Specify a source as any.
MAC	Specify a destination MAC address in HHHH.HHHH.HHHH format for a host.
MASK	Specify a destination wildcard in HHHH.HHHH.HHHH format.
<1-8>	Specify the format for a packet (for example, 1:Ethernet II/ 2:802.3/ 4:SNMP/ 8:LLC).

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#mac acl 2000 deny any 1111.1111.1111 1 1
```

max-fib-routes

Use this command to configure the maximum number of FIB (forwarding information base) routes. This type of configuration excludes kernel, connect and static routes.

Use the no parameter to remove this configuration.

Command Syntax

```
max-fib-routes <1-4294967294>
no max-fib-routes
```

Parameters

`<1-4294967294>` Specify an allowed number of FIB routes, excluding kernel, connect and static routes.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#max-fib-routes 12345

ZebOS(config)#no max-fib-routes
```

max-static-routes

Use this command to set the maximum number of static routes.

Use the no parameter to disable this command.

Command Syntax

```
max-static-routes <1-4294967294>
no max-static-routes
```

Parameters

`<1-4294967294>` Specify the maximum number of static routes.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#max-static-routes 123

ZebOS(config)#no max-static-routes
```

maximum-access-list

Use this command to set the maximum number of access-list entries.

Use the no parameter to disable this command.

Command Syntax

```
maximum-access-list <1-4294967294>
no maximum-access-list
```

Parameters

`<1-4294967294>` Specify the maximum number of access lists.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#maximum-access-list 123

ZebOS(config)#no maximum-access-list
```

maximum-paths

Use this command to enable multipath support on ZebOS, and to set the maximum number of paths to be installed in the FIB (Forward Information Base).

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

Note: This command is available on Linux systems only.

Command Syntax

```
maximum-paths <1-64>
no maximum-paths <1-64>
no maximum-paths
```

Parameter

<1-64>	Specify the maximum number of paths to be installed in the FIB.

Default

By default, the maximum number of paths is set to 4.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#maximum-paths 5
```

password

Use the `password` command to specify a network password.

Note: This command is unavailable to ZebOS Network Platform customers using the IMISH for CLI management.

Command Syntax

```
password (8|) LINE
no password
```

Parameters

8	Specify that hidden password will follow.
LINE	Specify a password. Password can be an alpha-numeric string up to 80-characters, including spaces. The string cannot begin with a number.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#password 8 hiddenpassword
ZebOS(config)#password plainpassword
```

router-id

Use this command to add a router identifier for this system.

Use the no form of this command to disable this function.

Command Syntax

```
router-id A.B.C.D
no router-id (A.B.C.D|)
```

Parameters

A.B.C.D	Specifies the router identifier in IP address format for this system.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#router-id 123.12.3.123
ZebOS(config)#
```

service password-encryption

Use this command to specify encryption of passwords. Encryption helps prevent observers from reading passwords.

Note: When using the `service password-encryption` command through IMISH, you must write to memory using the `write memory` or `write file` command. If you have not written to memory, the change made by this command (encryption) is not available when you log into IMISH the next time. See write on page 64 for more information.

Use the no parameter to disable this feature.

Note: Password can be an alpha-numeric string up to 80-characters, including spaces. The string cannot begin with a number.

Command Syntax

```
service password-encryption
no service password-encryption
```

Parameters

None

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#enable password mypasswd
ZebOS(config)#service password-encryption
```

service terminal-length

Use this command to set the terminal length for VTY sessions.

Use the no parameter to disable this feature.

Command Syntax

```
service terminal-length <0-512>
no service terminal-length (<0-512>|)
```

Parameters

<0-512>	Number of lines of VTY (0 means no line control).

Command Mode

Configure mode

Example

In the following configuration, the terminal length for VTY sessions will be set to 60, making 60 the number of terminal lines for any telnet session.

```
ZebOS#configure terminal
ZebOS(config)#service terminal-length 60
```

show arp

Use this command to display ARP (address resolution protocol) information for an interface.

Command Syntax

```
show arp
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

```
ZebOS#show arp
Address           HWaddress             Interface      Type
10.1.2.1          a8:b1:d4:33:41:40      eth0          Dynamic
```

show router-id

Use this command to display the Router ID of the current system.

Command Syntax

```
show router-id
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

```
ZebOS#show router-id
Router ID: 10.55.0.2 (automatic)
```

show running-config router-id

Use this command to show the running system global router ID configuration.

Command Syntax

```
show running-config router-id
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS>enable
ZebOS#show running-config router-id
!
router-id 3.3.3.3
!
```

snmp community

Use this command to set an SNMP community.

Command Syntax

```
snmp community WORD
```

Parameters

WORD	Indicate the community name command.

Command Mode

Configure mode

Example

The following example shows the use of the do command when starting a Telnet session:

```
ZebOS#configure terminal
ZebOS(config)#snmp community new
```

CHAPTER 4 Common Router-map Mode Commands

This chapter provides an alphabetized reference for all Router-map mode commands. Commands are common to multiple NSM protocols. Unlike the Router mode, the Route-map mode is a general configuration mode and not specific to a particular protocol module.

This chapter includes the following commands:

match as-path

Use this command to match an autonomous system path access list. This command specifies the autonomous system path to be matched. If there is a match for the specified AS path, and `permit` is specified, the route is redistributed or controlled, as specified by the set action. If the match criteria are met, and `deny` is specified, the route is not redistributed or controlled. If the match criteria are `not` met then the route is neither accepted nor forwarded, irrespective of `permit` or `deny` specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes, depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Note: This command is valid only for BGP.

Use the `no` parameter with this command to remove a path list entry.

Command Syntax

```
match as-path WORD
no match as-path (WORD|)
```

Parameter

`WORD`	Specify an autonomous system path access list name.

Default

Enabled

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute deny 34
ZebOS(config-route-map)#match as-path myaccesslist
```

match community

Use this command to specify the community to be matched.

Communities are used to group and filter routes. They are designed to provide the ability to apply policies to large numbers of routes by using match and set commands. Community lists are used to identify and filter routes by their common attributes. This command allows the matching based on community lists.

The values set by the `match community` command overrides the global values. The route that does not match at least one match clause is ignored.

Note: This command is valid only for BGP.

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

Command Syntax

```
match community (<1-99>|<100-199>|WORD) (exact-match|)
no match community (<1-99>|<100-199>|WORD|) (exact-match|)
```

Parameters

`<1-99>`	Specify the community-list number (standard).
`<100-199>`	Specify the community-list number (expanded).
`WORD`	Specify the community-list name.
`exact-match`	Do exact matching of communities.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute permit 3
ZebOS(config-route-map)#match community mylist
```

match extcommunity

Use this command to match BGP external community list

Communities are used to group and filter routes. They are designed to provide the ability to apply policies to large numbers of routes by using match and set commands. Community lists are used to identify and filter routes by their common attributes. This command allows the matching based on community lists.

The values set by this command overrides the global values. The route that does not match at least one match clause is ignored.

Note: This command is valid only for BGP.

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

Command Syntax

```
match extcommunity (<1-99>|<100-199>|WORD) (exact-match|)
no match extcommunity (<1-99>|<100-199>|WORD|) (exact-match|)
```

Parameters

<1-99>	Specify the community-list number (standard).
<100-199>	Specify the community-list number (expanded).
WORD	Name of the community-list.
exact-match	Do exact matching of communities.

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute permit 3
ZebOS(config-route-map)#match extcommunity mylist
```

match interface

Use this command to define the interface match criterion. This command specifies the next-hop interface name of a route to be matched.

Use the no parameter with this command to remove the specified match criterion.

Command Syntax

```
match interface IFNAME
no match interface (IFNAME|)
```

Parameter

IFNAME	A string that specifies the interface for matching.

Default

Disabled

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap1 permit 10
ZebOS(config-route-map)#match interface eth0
```

match ip address

Use this command to specify the match address of route. If there is a match for the specified IP address, and `permit` is specified, the route is redistributed or controlled, as specified by the set action. If the match criteria are met, and `deny` is specified then the route is `not` redistributed or controlled. If the match criteria are `not` met, the route is neither accepted nor forwarded, irrespective of `permit` or `deny` specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes, depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Use the `no` parameter with this command to remove the `match ip address` entry.

Command Syntax

```
match ip address (<1-199>|<1300-2699>|WORD)
no match ip address (<1-199>|<1300-2699>|WORD|)
```

Parameters

`WORD`	Specify the IP access-list name.
`<1-199>`	Specify the IP access-list number (standard range).
`<1300-2699>`	Specify the IP access-list number (expanded range).

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute permit 3
ZebOS(config-route-map)#match ip address List1
```

match ip address prefix-list

Use this command to match entries of a prefix-list. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Use the no parameter with this command too disable this function

Command Syntax

```
match ip address prefix-list WORD
no match ip address prefix-list (WORD|)
```

Parameter

WORD	Specify the IP prefix list name.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#match ip address prefix-list mylist
```

match ip next-hop

Use this command to specify a next-hop address to be matched in a route-map. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

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

Command Syntax

```
match ip next-hop (<1-199>|<1300-2699>|WORD)
no match ip next-hop (<1-199>|<1300-2699>|WORD|)
```

Parameters

WORD	Specify the IP access-list name.
<1-199>	Specify the IP access-list number (standard range).
<1300-2699>	Specify the IP access-list number (expanded range).

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#match ip next-hop mylist
```

match ip next-hop prefix-list

Use this command to specify the next-hop IP address match criterion using the prefix-list. This command matches the next-hop IP address of a route.

Use the no parameter with this command to remove the specified match criterion.

Command Syntax

```
match ip next-hop prefix-list WORD
no match ip next-hop prefix-list (WORD|)
```

Parameter

WORD	A string specifying the prefix-list name.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap permit 3
ZebOS(config-route-map)#match ip next-hop prefix-list list1
```

match ip peer

Use this command to specify the match peer IPv4 address of a route.

Use the no parameter with this command to remove the specified match criterion.

Command Syntax

```
match ip peer (<1-199>|<1300-2699>|WORD)
no match ip peer (<1-199>|<1300-2699>|WORD|)
```

Parameter

WORD	Specify the IP access-list name.
<1-199>	Specify the IP access-list number (standard range).
<1300-2699>	Specify the IP access-list number (expanded range).

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap permit 3
ZebOS(config-route-map)#match ip peer 123

ZebOS(config-route-map)#no match ip peer 123
```

match ipv6 address

Use this command to specify the match address of route. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Use the `no` parameter with this command to remove the `match ip address` entry.

Note: This command is valid for BGP, OSPFv3, and RIPng only.

Command Syntax

```
match ipv6 address WORD
no match ipv6 address (WORD|)
```

Parameter

`WORD`	Specify the IPv6 access list name.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map ipi deny 1
ZebOS(config-route-map)#match ipv6 address ipi
```

match ipv6 address prefix-list

Use this command to match entries of a prefix-list. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes, depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Note: This command is valid for BGP, OSPFv3, and RIPng only.

Use the no parameter with this command to disable this function

Command Syntax

```
match ipv6 address prefix-list WORD
no match ipv6 address prefix-list (WORD|)
```

Parameter

WORD	Specify the IPv6 access list name.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#match ipv6 address prefix-list mylist
```

match ipv6 next-hop

Use this command to specify the next-hop address to be matched. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Note: This command is valid for BGP and IS-IS, only.

Use the no parameter with this command to disable this function

Command Syntax

```
match ipv6 next-hop (X:X::X:X|WORD)
no match ipv6 next-hop (X:X::X:X|WORD|)
```

Parameters

X:X::X:X	Specify the IPv6 address of the next-hop.
WORD	Specify the IPv6 access list name.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#match ipv6 next-hop 3ffe::1
```

match ipv6 next-hop prefix-list

Use this command to match entries of a prefix-list. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Note: This command is valid for BGP and IS-IS, only.

Use the no parameter with this command to disable this function

Command Syntax

```
match ipv6 next-hop prefix-list WORD
no match ipv6 next-hop prefix-list WORD
```

Parameters

WORD	Specify the IPv6 access list name.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#match ipv6 next-hop prefix-list new
```

match ipv6 peer

Use this command to specify the match peer IPv6 address of a route.

Use the no parameter with this command to remove the specified match criterion.

Command Syntax

```
match ipv6 peer (<1-199>|<1300-2699>|WORD)
no match ipv6 peer (<1-199>|<1300-2699>|WORD|)
```

Parameter

WORD	Specify the IP access-list name.
<1-199>	Specify the IP access-list number (standard range).
<1300-2699>	Specify the IP access-list number (expanded range).

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap permit 3
ZebOS(config-route-map)#match ipv6 peer 123

ZebOS(config-route-map)#no match ipv6 peer 123
```

match metric

Use this command to match a metric of a route. The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Note: This command is valid for BGP, OSPF, RIP, and IS-IS only.

Use the no parameter with this command to disable this function

Command Syntax

```
match metric <0-4294967295>
no match metric (<0-4294967295>|)
```

Parameters

`<0-4261412864>` Specify the metric value.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute permit 3
ZebOS(config-route-map)#match metric 888999
```

match origin

Use this command to match origin code. The origin attribute defines the origin of the path information. The `egp` parameter is indicated as an `e` in the routing table, and it indicates that the origin of the information is learned via EGP (Exterior Gateway Protocol). The `igp` parameter is indicated as an `i` in the routing table, and it indicates the origin of the path information is interior to the originating AS. The `incomplete` parameter is indicated as a `?` in the routing table, and indicates that the origin of the path information is unknown or learned through other means. If a static route is redistributed into BGP, the origin of the route is incomplete.

This command specifies the origin to be matched. If there is a match for the specified origin, and `permit` is specified when you created the route-map, the route is redistributed or controlled as specified by the set action. If the match criteria are met, and `deny` is specified, the route is not redistributed or controlled. If the match criteria are not met, the route is neither accepted nor forwarded, irrespective of `permit` or `deny` specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

Note: This command is valid only for BGP.

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

Command Syntax

```
match origin (egp|igp|incomplete)
no match origin (egp|igp|incomplete|)
```

Parameters

`egp`	Remote exterior gateway protocol.
`igp`	Local internal gateway protocol.
`incomplete`	Unknown heritage.

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute deny 34
ZebOS(config-route-map)#match origin egp
```

match route-type

Use this command to match specified external route type. AS-external LSA is either Type-1 or Type-2. External type-1 matches only Type 1 external routes and external type-2 matches only Type 2 external routes.

Use the no parameter with this command to turn off the matching.

Command Syntax

```
match route-type external (type-1|type-2)
no match route-type external (type-1|type-2|)
```

Parameters

type-1	Match OSPF External Type 1 metric.
type-2	Match OSPF External Type 2 metric.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap1 permit 10
ZebOS(config-route-map)#match route-type external type-1
```

match tag

Use this command to match the specified tag value.

Use the no parameter with this command to turn off the declaration.

Command Syntax

```
match tag <0-4294967295>
no match tag (<0-4294967295>|)
```

Parameters

`<0-4294967295>` Tag value.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap1 permit 10
ZebOS(config-route-map)#match tag 100
```

route-map

Use this command to enter the route-map mode and to permit or deny match/set operations.

This command controls and modifies routing information to allow redistribution of routes. It has a list of `match` and `set` commands associated with it. The `match` commands specify the conditions under which redistribution is allowed, and the `set` commands specify the particular redistribution actions to be performed if the criteria enforced by match commands are met. Route maps are used for detailed control over route distribution between routing processes.

Route maps also allow policy routing, and might route packets to a different route than the obvious shortest path.

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

Note: Password can be an alpha-numeric string up to 80-characters, including spaces. The string cannot begin with a number.

Command Syntax

```
route-map WORD (deny|permit) <1-65535>
no route-map WORD ((deny|permit) <1-65535>|)
```

Parameters

`WORD`	Identify the route.
`deny`	Route map denies set operations. If the `deny` parameter is specified, and the match criteria are met, the route is not redistributed, and any other route maps with the same map tag are not examined.
`permit`	Route map permits set operations. If the `permit` parameter is specified, and the match criteria are met, the route is redistributed as specified by set actions. If the `match` criteria are not met, the next route map with the same tag is tested.
`<1-65535>`	Sequence to insert to or delete from an existing route-map entry.

Command Mode

Configure mode

Example

The following example shows the use of the `route-map` command to enter the `route-map` mode (note the change in the prompt), and the use of this mode in match and set commands.

```
ZebOS#configure terminal
ZebOS(config)#route-map route1 permit 1
ZebOS(config-route-map)#
```

set aggregator

Use this command to set the AS number for the route map and router ID. An Autonomous System (AS) is a collection of networks under a common administration sharing a common routing strategy. It is subdivided by areas, and is assigned a unique 16-bit number. Use the `set aggregator` command to assign an AS number for the aggregator.

To use the `set aggregator` command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

Use the no parameter with this command to disable this function

Command Syntax

```
set aggregator as <1-65535> A.B.C.D
no set aggregator as (<1-65535> A.B.C.D|)
```

Parameters

`as`	AS number of aggregator.
`<1-65535>`	Specify the AS number of aggregator.
`A.B.C.D`	Specify the IP address of aggregator.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute permit 3
ZebOS(config-route-map)#set aggregator as 43 10.10.0.3
```

set as-path

Use this command to modify an autonomous system path for a route. By specifying the length of the AS-Path, the router influences the best path selection by a neighbor. Use the `prepend` parameter with this command to prepend an AS path string to routes increasing the AS path length.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

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

Command Syntax

```
set as-path prepend .<1-65535>
set as-path prepend .<1-4294967295>
no set as-path prepend (.<1-65535>|)
no set as-path prepend (.<1-4294967295>|)
```

Parameters

`prepend`	Prepends the autonomous system path.
`<1-65535>`	ZebOS prepends this number to the AS path.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map myroute permit 3
ZebOS(config-route-map)#set as-path prepend 8 24
```

set atomic-aggregate

Use this command to set an atomic aggregate attribute.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

Use the no parameter with this command to disable this function

Command Syntax

```
set atomic-aggregate
no set atomic-aggregate
```

Parameters

None

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set atomic-aggregate
```

set comm-list

Use this command to delete the matched communities from the community attribute of an inbound or outbound update when applying route-map.

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

Command Syntax

```
set comm-list (<1-99>|<100-199>|WORD) delete
no set comm-list (<1-99>|<100-199>|WORD) delete
```

Parameters

<1-99>	Standard community-list number.
<100-199>	Expanded community-list number.
WORD	Name of the community-list.
delete	Delete the community-list.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map ipi permit 3
ZebOS(config-route-map)#set comm-list 34 delete
```

set community

Use this command to set the communities attribute. and group destinations in a certain community, as well as apply routing decisions according to those communities.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

Use the no parameter with this command to delete the entry.

Command Syntax

```
set community [<1-65535>|AA:NN|internet|local-AS|no-advertise|no-export]
  (additive|)
no set community [AA:NN|internet|local-AS|no-advertise|no-export] (additive|)
```

Parameters

`<1-65535>`	Community number
`AA:NN`	The community number in aa:nn format.
`internet`	Specify the Internet.
`local-AS`	Specify no sending outside the local AS (well-known community).
`no-advertise`	Specify no advertisement of this route to eBGP peers
`no-export`	Specify no advertisement of this route to any peer.
`none`	Removes the community attribute from the prefixes that pass the route-map.
`additive`	Adds to the existing community.

Command Mode

Route-map mode

Examples

The following examples show the use of the `set community` command with different parameters.

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set community no-export no-advertise

ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set community no-advertise

ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set community 10:01 23:34 12:14 no-export
```

set dampening

Use this command to enable route-flap dampening and set parameters. Set the unreachability half-life time to be equal to, or greater than, reachability half-life time. The suppress-limit value must be greater than or equal to the reuse limit value.

Use the no parameter with this command to delete the entry.

Command Syntax

```
set dampening <1-45> <1-20000> <1-20000> <1-255> (<1-45>|)
no set dampening <1-45> <1-20000> <1-20000> <1-255> (<1-45>|)
```

Parameters

<1-45>	Specify 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.
<1-20000>	Specify 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.
<1-20000>	Specify the suppress-limit value. When the penalty for a route exceeds the suppress value, the route is suppressed. The default suppress limit is 2000.
<1-255>	Specify 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).
<1-45>	Specify the unreachability half-life time for penalty, in minutes. The default value is 15 minutes.

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map R1 permit 24
ZebOS(config-route-map)#set dampening 20 333 534 30
```

set extcommunity

Use this command to set an extended community attribute.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process

Use the no parameter with this command to disable this function

Command Syntax

```
set extcommunity rt .AA:NN
set extcommunity soo .AA:NN
no set extcommunity rt (.AA:NN|)
no set extcommunity soo (.AA:NN|)
```

Parameters

`rt`	Specify the route target of the extended community.
`soo`	Specify the site-of-origin of the extended community.
`ASN:NN`	VPN extended community

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set extcommunity rt 06:01

ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set extcommunity rt 0.0.0.6:01

ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set extcommunity soo 06:01

ZebOS#configure terminal
ZebOS(config-route-map)#route-map rmap1 permit 3
ZebOS(config-route-map)#set extcommunity soo 0.0.0.6:01
```

set ip next-hop

Use this command to set the specified next-hop value.

Use the no parameter with this command to turn off the setting.

Note: This command is valid for BGP, OSPF, and RIP only.

Command Syntax

```
set ip next-hop A.B.C.D (interface IFNAME|) (primary|secondary |)
no set ip next-hop (A.B.C.D|) (interface IFNAME|) (primary|secondary |)
```

Parameter

A.B.C.D	Specify the IP address of the next-hop.
Interface	Specify the interface name
primary	Specify the nexthop as primary.
secondary	Specify the nexthop as secondary.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map mymap permit 3
ZebOS(config-route-map)#set ip next-hop 10.10.0.67
```

set ipv6 next-hop

Use this command to set a next hop-address.

Use the no parameter with this command to delete an entry.

Note: This command is valid for BGP and OSPFv3 only.

Command Syntax

```
set ipv6 next-hop X:X::X:X
set ipv6 next-hop local X:X::X:X
set ipv6 next-hop global X:X::X:X
no set ipv6 next-hop (X:X::X:X|)
no set ipv6 next-hop local (X:X::X:X|)
no set ipv6 next-hop global (X:X::X:X|)
```

Parameters

`X:X::X:X`	Specify the global IPv6 address of nexthop.
`local`	Specify the IPv6 local address.
`global`	Specify the IPv6 global address.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set ipv6 next-hop local fe80::203:47ff:fe97:66dc
```

set level

Use this command to set the IS-IS level to export a route.

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

Command Syntax

```
set level (level-1|level-2|level-1-2)
no set level (level-1|level-2|level-1-2|)
```

Parameters

level-1	Export into a level-1 area.
level-2	Export into a level-2 sub-domain.
level-1-2	Export into level-1 and level-2.

Default

Disabled

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set level level-1
```

set local-preference

Use this command to set the BGP local preference path attribute.

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

Command Syntax

```
set local-preference <0-4294967295>
no set local-preference (<0-4294967295>|)
```

Parameters

`<0-4294967295>` Specify the tag value for destination routing protocol.

Default

Disabled

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set local-preference 12
```

set metric

Use this command to set a metric value for a route and influence external neighbors about the preferred path into an Autonomous System (AS). The preferred path is the one with a lower metric value. A router compares metrics for paths from neighbors in the same ASs. To compare metrics from neighbors coming from different ASs, use the `bgp always-compare-med` command.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

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

Command Syntax

```
set metric (<0-4294967295>|<+/-metric>)
no set metric (<0-4294967295>|<+/-metric>|)
```

Parameters

`<0-4294967295>`	Specify a metric value.
`<+/-metric>`	Adds or subtracts a metric.

Command Mode

Route-map mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set metric 600
```

set metric-type

Use this command to set the metric type for the destination routing protocol. Select a type to be either Type-1 or Type-2 in the AS-external-LSA when the route-map matches the condition.

Note: This command is for OSPF, OSPFv3, or IS-IS only.

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

Command Syntax

```
set metric-type (internal|external)
set metric-type (type-1|type-2)
no set metric-type (internal|external|)
no set metric-type (type-1|type-2|)
```

Parameters

`external`	Specify an IS-IS external metric type.
`internal`	Specify an IS-IS internal metric type.
`type-1`	Specify an OSPF external type 1 metric.
`type-2`	Specify an OSPF external type 2 metric

Command Mode

Route-map mode

Example

In this example the metric type of the destination protocol is set to OSPF external Type 1.

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set metric-type 1
```

set origin

Use this command to set the BGP origin code. The origin attribute defines the origin of the path information. The three parameters with this command indicate three different values. IGP is interior to the originating AS. This happens if IGP is redistributed into the BGP. EGP is learned through an Exterior Gateway Protocol. Incomplete is unknown or learned through some other means. This happens when static route is redistributed in BGP and the origin of the route is incomplete.

To use this command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

Use the no parameter with this command to delete an entry.

Command Syntax

```
set origin (egp|igp|incomplete)
no set origin (egp|igp|incomplete|)
```

Parameters

egp	Specify a remote EGP (Exterior Gateway Protocol) system.
igp	Specify a local IGP (Internal Gateway Protocol) system.
incomplete	Specify a system of unknown heritage.

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set origin egp
```

set originator-id

Use this command to set the originator ID attribute.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

Use the no parameter with this command to disable this function

Command Syntax

```
set originator-id A.B.C.D
no set originator-id (A.B.C.D|)
```

Parameter

`A.B.C.D`	Specify the IP address of originator.

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set originator-id 1.1.1.1
```

set tag

Use this command to set a specified tag value. The Tag parameter is the route tag that is labeled by another routing protocol (BGP or other IGP when redistributing), because AS-external-LSA has a route-tag field in its LSAs. In addition, when using route-map, ZebOS can tag the LSAs with the appropriate tag value. Sometimes the tag matches with using route-map, and sometimes, the value may be used by another application.

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

Command Syntax

```
set tag <0-4294967295>
no set tag (<0-4294967295>|)
```

Parameter

`<0-4294967295>` Specify the tag value for destination routing protocol.

Command Mode

Route-map mode

Example

In the following example the tag value of the destination routing protocol is set to 6:

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set tag 6
```

set vpnv4 next-hop

Use this command to set a VPNv4 next-hop address.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

Note: This command is valid for BGP, only

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

Command Syntax

```
set vpnv4 next-hop A.B.C.D
no set vpnv4 next-hop (A.B.C.D|)
```

Parameter

`A.B.C.D`	Specifies the IP address of originator.

Command Mode

Route-map mode

Example

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#set vpnv4 next-hop 6.6.6.6
```

set weight

Use this command to set weights for the routing table.

The weight value is used to assist in best path selection. It is assigned locally to a router. When there are several routes with a common destination, the routes with a higher weight value are preferred.

To use this command, you must first have a match clause. `Match` and `set` commands set the conditions for redistributing routes from one routing protocol to another. The `match` command specifies the match criteria under which redistribution is allowed for the current route-map. The `set` command specifies the set redistribution actions to be performed, if the match criteria are met.

Note: This command is valid only for BGP.

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

Command Syntax

```
set weight <0-4294967295>
no set weight (<0-4294967295>|)
```

Parameter

`<0-4294967295>` Specify the weight value.

Command Mode

Route-map mode

Examples

In the following configuration, all routes that apply to access-list 10 will have the weight set at 400. If the packets do not match any of the defined criteria, they are routed through the normal routing process.

```
ZebOS#configure terminal
ZebOS(config)#route-map rmap1 permit 3
ZebOS(config-route-map)#match as-path 10
ZebOS(config-route-map)#set weight 400
```

show route-map

Use this command to display user readable route-map information.

Command Syntax

```
show route-map (|WORD)
```

Parameters

WORD	Displays route-map information.

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output of the `show route-map` command.

```
ZebOS#show route-map
route-map ipi, permit, sequence 1
  Match clauses:
    metric 200
  Set clauses:
    metric 60
ZebOS#
```

show running-config route-map

Use this command to show the running system status and configuration details for route-map.

Command Syntax

```
show running-config route-map
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS>enable
ZebOS#show running-config route-map
!
route-map abc deny 2
 match community 2
!
route-map abc permit 3
 match route-type external type-2
 set metric-type type-1
!
```

CHAPTER 5 Interface Commands

This chapter provides an alphabetized reference for each of the interface CLI commands. It includes the following commands:

admin-group

Use this command to create an administrative group to be used for links. Each link can be a member of one or more, or no administrative groups.

When used in the interface mode, this command adds a link between an interface and a group. The name is the name of the group previously configured. There can be multiple groups per interface. The group is created in the Configure mode, then interfaces are added to the group in the Interface mode.

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

Note: This command is unavailable to ZebOS Network Platform customers using the IMISH for CLI management.

Command Syntax

```
admin-group NAME
no admin-group NAME
```

Parameters

NAME	Specify the name of the admin group to be added.

Command Mode

Interface mode

Example

In the following example, the interface eth0 is added to the group ipi:

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#admin-group ipi
```

bandwidth

Use this command to specify the maximum bandwidth to be used for each interface. The bandwidth value is in bits, and can also accept units.

Use the no parameter to remove the maximum bandwidth.

Command Syntax

```
bandwidth BANDWIDTH
no bandwidth
```

Parameter

BANDWIDTH	Specify either k or m for 1 to 999 kilobits or megabits. Specify g for 1 to 10 gigabits.

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#bandwidth 100m
```

clear ip prefix-list

Use this command to reset the hit count to zero in the prefix-list entries for an IPv4 interface.

Command Syntax

```
clear ip prefix-list
clear ip prefix-list WORD
clear ip prefix-list WORD A.B.C.D/M
```

Parameters

WORD	Specify the name of the prefix-list.
A.B.C.D/M	IP prefix and length.

Command Mode

Configure mode

Example

```
ZebOS#clear ip prefix-list List1
```

clear ip route kernel

Use this command to clear IPv4 stale kernel routes from NSM RIB and FIB.

Command Syntax

```
clear ip route kernel
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS#clear ip route kernel
```

clear ipv6 neighbors

Use this command to clear all dynamic IPv6 neighbor entries.

Command Syntax

```
clear ipv6 neighbors
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS#clear ipv6 neighbors
```

clear ipv6 prefix-list

Use this command to reset the hit count to zero in the prefix-list entries for an IPv6 interface.

Command Syntax

```
clear ipv6 prefix-list
clear ipv6 prefix-list WORD
clear ipv6 prefix-list WORD X:X::X:X/M
```

Parameters

WORD	Specify the name of the prefix-list.
X:X::X:X/M	IP prefix and length.

Command Mode

Configure mode

Example

```
ZebOS#clear ipv6 prefix-list List1
```

clear ipv6 route kernel

Use this command to clear IPv6 stale kernel routes from NSM RIB and FIB.

Command Syntax

```
clear ipv6 route kernel
```

Parameters

None

Command Mode

Privileged Exec mode

Example

```
ZebOS#clear ipv6 route kernel
```

description

Use this command to provide an interface-specific description.

Use the no parameter to disable this function.

Command Syntax

```
description LINE
no description
```

Parameter

LINE	Characters describing the specific interface.

Command Mode

Interface mode

Examples

The following example provides information about the connecting router for interface eth1.

```
Router#configure terminal
Router(config)#interface eth1
Router(config-if)#description Connected to Zenith's fas2/0
```

duplex

Use this command to set the duplex mode for each interface.

Use the no parameter to remove the duplex mode.

Command Syntax

```
duplex (half|full|auto)
no duplex
```

Parameter

`half`	Set the interface to half-duplex.
`full`	Set the interface to full-duplex.
`auto`	Set the interface to auto-negotiate.

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#duplex auto

ZebOS(config-if)#no duplex
```

if-arbiter

Use this command to discover new interfaces recently added to the kernel and add them to the ZebOS database.

This command starts the arbiter to check interface information periodically. ZebOS dynamically finds any new interfaces added to the kernel. If an interface is loaded dynamically into the kernel when ZebOS is already running, this command polls and updates the kernel information periodically.

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

Command syntax

```
if-arbiter (interval <1-65535>|)
no if-arbiter
```

Parameter

`interval`	Specify the interval (in seconds) after which NSM sends query to kernel <1-65535>.

Default

By default, `if-arbiter` is disabled. When interface-related operations are performed outside of ZebOS (for example, when using OS ifconfig), enable `if-arbiter` for a transient time to complete synchronization. When synchronization is complete, disable it using the `if-arbiter` CLI.

Command Mode

Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#if-arbiter interval 5
```

interface

Use this command to select an interface to configure, and to enter the `Interface` command mode.

Use the no parameter with this command to remove this configuration.

Command Syntax

```
interface IFNAME
no interface IFNAME
```

Parameter

`IFNAME`	Specify the name of the interface.

Command Mode

Configure mode

Example

This example shows the use of this command to enter the `Interface` mode (note the change in the prompt).

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#
```

ip access-group

Use this command to set the access-group for an interface. This command configures an access list to filter incoming, outgoing, or forwarded packets.

Use the no parameter with this command to disable the IP access group.

Command Syntax

```
ip access-group WORD (in|out|forward)
no ip access-group WORD (in|out|forward)
```

Parameters

WORD	Specify an access list name.
in	Specify to filter incoming packets.
out	Specify to filter outgoing packets.
forward	Specify to filter forwarded packets.

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#access-list 1 permit 225.2.2.2 0.0.0.0
ZebOS(config)#interface 0
ZebOS(config-if)#ip access-group 1 forward

ZebOS(config)#interface 0
ZebOS(config-if)#no ip access-group 1 forward
```

ip address A.B.C.D/M

Use this command to specify that an IP address and prefix length will be used by this interface. If the `secondary` parameter is not specified, this command overwrites the primary IP address. If the `secondary` parameter is specified, this command adds a new IP address to the interface. The secondary address cannot be configured in the absence of a primary IP address. The primary address cannot be removed when a secondary address is present.

Use the no parameter with this command to remove the IP address from an interface.

Command Syntax

```
ip address A.B.C.D/M (label) LINE
ip address A.B.C.D/M (secondary|)
ip address A.B.C.D/M (secondary) (label) LINE
no ip address A.B.C.D/M label LINE
no ip address A.B.C.D/M secondary label LINE
no ip address (A.B.C.D/M (secondary|)|)
```

Parameters

`label`	Specify the label of this address.
`LINE`	Specify the actual label.
`secondary`	Specify the IP address as secondary.

Command Mode

Interface mode

Examples

```
ZebOS(config)#interface eth0
ZebOS(config-if)#ip address 10.10.10.50/24
ZebOS(config-if)#ip address 10.10.11.50/24 secondary
```

ip address DHCP

Use this command to specify that a DHCP client will be used to obtain an IP address for an interface.

Use the no parameter with this command to remove the IP address from an interface.

Command Syntax

```
ip address dhcp
ip address dhcp client-id IFNAME
ip address dhcp hostname WORD
no ip address dhcp
no ip address dhcp client-id IFNAME
no ip address dhcp client-id IFNAME hostname WORD
no ip address dhcp hostname WORD
```

Parameters

client-id	Specify the client identifier (IFNAME) for DHCP.
IFNAME	Specify the actual interface name for DHCP.
hostname	Specify the hostname only for DHCP.
WORD	Specify the actual hostname for DHCP.

Command Mode

Interface mode

Examples

```
ZebOS(config)#interface eth0
ZebOS(config-if)#ip address 10.10.10.50/24
ZebOS(config-if)#ip address 10.10.11.50/24 secondary
ZebOS(config-if)#ip address dhcp client-id eht1 hostname new
```

ip forwarding

Use this command to turn on IP forwarding.

Use the no parameter with this command to turn off IP forwarding.

Command Syntax

```
ip forwarding
no ip forwarding
```

Parameters

None

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ip forwarding
```

ip policy route-map

Use this command to enable PBR on an interface for a given route-map

Use no parameter with this command to disable PBR on an interface for a given route map.

Command Syntax

```
ip policy route-map WORD
no ip policy route-map WORD
```

Parameter

WORD	Specifies name of the route-map.

Command Mode

Interface mode

Example

In the following configuration example is used to forward packets to different routes based on the source IP address:

```
ZebOS(config)#interface eth0
ZebOS(config-if)#ip address 172.1.2.1.255.255.255.0
ZebOS(config-if)#exit
ZebOS(config)#interface eth1
ZebOS(config-if)#ip address 172.1.1.1.255.255.255.0
ZebOS(config-if)#ip policy route-map policy_1
ZebOS(config-if)#exit
ZebOS(config)#access-list 10 permit ip host 172.1.1.10 any
ZebOS(config)#access-list 11 permit ip host 172.1.1.11 any
ZebOS(config)#route-map policy_1 permit 10
ZebOS(config-route-map)#match ip address 10
ZebOS(config-route-map)#set ip next-hop 172.1.2.10
ZebOS(config-route-map)#exit
ZebOS(config)#route-map policy_1 permit 11
ZebOS(config-route-map)#match ip address 11
ZebOS(config-route-map)#set ip next-hop 172.1.2.11
```

ip prefix-list

Use this command to create an entry for a prefix list.

A router starts to match prefixes from the top of the prefix list and stops whenever a match or deny occurs. To promote efficiency, use the `seq` parameter and place common matches or denials towards the top of the list. The sequence values are generated in the sequence of 5. Use the parameters `GE` and `LE` specify the range of the prefix length to be matched. When setting these parameters, set `LE` to be less than 32 and `GE` to be less than `LE` value.

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

Command Syntax

```
ip prefix-list WORD (deny|permit) (A.B.C.D/M|any)
ip prefix-list WORD (deny|permit) A.B.C.D/M ge <0-32>
ip prefix-list WORD (deny|permit) A.B.C.D/M ge <0-32> le <0-32>
ip prefix-list WORD (deny|permit) A.B.C.D/M le <0-32>
ip prefix-list WORD (deny|permit) A.B.C.D/M le <0-32> ge <0-32>
ip prefix-list WORD seq <1-4294967295> (deny|permit) (A.B.C.D/M|any)
ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M ge <0-32>
ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M ge <0-32> le <0-32>
ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M le <0-32>
ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M le <0-32> ge <0-32>
no ip prefix-list WORD
no ip prefix-list WORD (deny|permit) (A.B.C.D/M|any)
no ip prefix-list WORD (deny|permit) A.B.C.D/M ge <0-32>
no ip prefix-list WORD (deny|permit) A.B.C.D/M ge <0-32> le <0-32>
no ip prefix-list WORD (deny|permit) A.B.C.D/M le <0-32>
no ip prefix-list WORD (deny|permit) A.B.C.D/M le <0-32> ge <0-32>
no ip prefix-list WORD seq <1-4294967295> (deny|permit) (A.B.C.D/M|any)
no ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M ge <0-32>
no ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M ge <0-32> le <0-
  32>
no ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M le <0-32>
no ip prefix-list WORD seq <1-4294967295> (deny|permit) A.B.C.D/M le <0-32> ge <0-
  32>
ip prefix-list sequence-number
no ip prefix-list sequence-number
ip prefix-list WORD description LINE
no ip prefix-list WORD description LINE
no ip prefix-list WORD description
```

Parameters

`WORD`	Specify the name of a prefix list.
`deny`	Specify that packets are to be rejected.
`description`	Prefix-list specific description.
`LINE`	Up to 80 characters describing this prefix-list
`permit`	Specify that packets are to be accepted.
`A.B.C.D/M`	The IP address mask and length of the prefix list mask (A.B.C.D/M).
`le`	Maximum prefix length to be matched <0-32>.
`ge`	Minimum prefix length to be matched <0-32>.
`seq`	The sequence number of the prefix list <1-429496725>.
`any`	Takes all packets of any length. This parameter is the same as using 0.0.0.0/0 le 32 for IPPREFIX.

`sequence-number` Include and exclude sequence numbers in nonvolatile generation (NVGEN).

Command Mode

Configure mode

Examples

In this configuration, the `ip prefix-list` command matches all, but denies the IP address range, 76.2.2.0.

```
ZebOS#router bgp 100
ZebOS(config-router)#network 172.1.1.0
ZebOS(config-router)#network 172.1.2.0
ZebOS(config-router)#ZebOS(config-router)#
ZebOS(config-router)#neighbor 10.6.5.3 remote-as 300
ZebOS(config-router)#neighbor 10.6.5.3 prefix-list mylist out
ZebOS(config-router)#exit
ZebOS(config)#ip prefix-list mylist seq 5 deny 76.2.2.0/24
ZebOS(config)#ip prefix-list mylist seq 10 permit 0.0.0.0/0
```

ip proxy-arp

Use this command to enable the proxy ARP feature on an interface.

Use the no parameter to disable the proxy ARP feature on an interface.

Command Syntax

```
ip proxy-arp
no ip proxy-arp
```

Parameters

None

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ip proxy-arp
```

ip remote-address

Use this command to set the remote address (far end) on a point-to-point non multi-access link. This command can be used only on unnumbered interfaces. When a new remote-address is configured, the old address gets overwritten.

Use the no parameter to disable this function.

Command Syntax

```
ip remote-address A.B.C.D/M
no ip remote-address
```

Parameter

A.B.C.D/M	IP address and prefix length of the link remote address.

Command Mode

Interface mode

Example

```
ZebOS(config)#interface ppp0
ZebOS(config-if)#ip unnumbered eth1
ZebOS(config-if)#ip remote-address 1.1.1.1/32
```

ip route

Use this command to establish the distance for IPv4 routes of a subnet mask.

Use the no form of this command to disable the distance for static routes of a subnet mask.

Command Syntax

```
ip route A.B.C.D/M (A.B.C.D|INTERFACE)
ip route A.B.C.D A.B.C.D (A.B.C.D|INTERFACE)
ip route A.B.C.D/M (A.B.C.D|INTERFACE){<1-255>|tag <1-4294967295>|description WORD}
ip route A.B.C.D A.B.C.D (A.B.C.D|INTERFACE){<1-255>|tag <1-4294967295>|description
  WORD}
ip route A.B.C.D/M (A.B.C.D|INTERFACE) {<1-255>|tag <1-4294967295>|description
  WORD}
ip route A.B.C.D A.B.C.D (A.B.C.D|INTERFACE){<1-255>|tag <1-4294967295>|description
  WORD}
no ip route A.B.C.D/M (A.B.C.D|INTERFACE|)
no ip route A.B.C.D A.B.C.D (A.B.C.D|INTERFACE|)
no ip route A.B.C.D/M (A.B.C.D|INTERFACE){<1-255>|tag <1-4294967295>|description
  WORD}
no ip route A.B.C.D A.B.C.D (A.B.C.D|INTERFACE){<1-255>|tag <1-
  4294967295>|description WORD}
```

Parameters

A.B.C.D	Specify the IP destination prefix.
A.B.C.D/M	Specify the IP destination prefix and a mask length.
A.B.C.D	Specify the IP destination prefix mask.
A.B.C.D	Specify the IP gateway address.
<1-255>	Specify the distance value for the route.
INTERFACE	Specify the name of the interface.
description	Specify a description of the static route.
tag	Specify a tag for this route <1-4294967295>.

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ip route 192.168.3.0 255.255.255.0 2.2.2.2 128
ZebOS(config)#ip route 1.1.1.0/24 eth0 32
```

ip unnumbered

Use this command to enable IP processing without an explicit address on a point-to-point non multi-access link. Moreover, this command lets an interface borrow the IP address of a specified interface to enable IP processing on a point-to-point interface without assigning it an explicit IP address. In this way, the IP unnumbered interface can borrow the IP address of another interface already configured on the router to conserve network and address space.

Use the no parameter with this command to unconfigure this feature on an interface.

Command Syntax

```
ip unnumbered IFNAME
no ip unnumbered
```

Parameter

IFNAME	A string that specifies the interface.

Command Mode

Interface mode

Examples

The following example creates a tunnel on Router 1 (eth1).

On Router 1

```
ZebOS(config)#interface lo
ZebOS(config-if)#ip address 127.0.0.1/8
ZebOS(config-if)#ip address 33.33.33.33/32 secondary
ZebOS(config-if)#exit
ZebOS(config)#interface eth1
ZebOS(config-if)#ip address 10.10.10.145/24
ZebOS(config-if)#exit
ZebOS(config)#interface Tunnel0
ZebOS(config-if)#tunnel source 10.70.0.145
ZebOS(config-if)#tunnel destination 10.70.0.77
ZebOS(config-if)#tunnel ttl 255
ZebOS(config-if)#tunnel path-mtu-discovery
ZebOS(config-if)#tunnel mode gre
ZebOS(config-if)#ip unnumbered eth1
ZebOS(config-if)#exit
ZebOS(config)#router ospf
ZebOS(config-router)#network 10.10.10.0/24 area 0
```

ipv6 address

Use this command to set the IPv6 address of an interface.

Use the no form of this command to disable this function.

Command Syntax

```
ipv6 address X:X::X:X/M
ipv6 address X:X::X:X/M anycast
no ipv6 address X:X::X:X/M
```

Parameters

`X:X::X:X/M`	Specify the IP destination prefix and a mask length <0-128>.
`anycast`	Specify the anycast flag.

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 address 3ffe:506::1/64
```

ipv6 forwarding

Use this command to turn on IPv6 forwarding.

Use the no parameter with this command to turn off IPv6 forwarding.

Command Syntax

```
ipv6 forwarding
no ipv6 forwarding
```

Parameters

None

Command Mode

Command mode

Example

```
ZebOS#configure terminal
ZebOS(config)#ipv6 forwarding
```

ipv6 nd current-hoplimit

Use this command to set an ND (Neighbor Discovery) advertised hop limit for an interface.

Use the no option with the command to remove the current hop limit.

Command Syntax

```
ipv6 nd current-hoplimit <0-255>
no ipv6 nd current-hoplimit (<0-255>|)
```

Parameter

<0-255>	Set a hop limit within this range.

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd current-hoplimit 10
ZebOS(config-if)#no ipv6 nd current-hoplimit
```

ipv6 nd link-mtu

Use this command to set an advertised MTU option.

Use the no option with the command to reset the MTU option to the default statute.

Command Syntax

```
ipv6 nd link-mtu
no ipv6 nd link-mtu (default|)
```

Parameters

default	Reset the MTU option to the default state.

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd link-mtu
ZebOS(config-if)#no ipv6 nd link-mtu
```

ipv6 nd managed-config-flag

Use this command to set the managed address configuration flag in the Router Advertisement to be used for the IPv6 address auto-configuration.

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

Command Syntax

```
ipv6 nd managed-config-flag
no ipv6 nd managed-config-flag
```

Parameters

None

Default

Unset

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd managed-config-flag
ZebOS(config-if)#no ipv6 nd suppress-ra
```

ipv6 nd minimum-ra-interval

Use this command to set a minimum Router Advertisement (RA) interval for the interface.

Use the no option with the command to remove the minimum RA interval.

Command Syntax

```
ipv6 nd minimum-ra-interval <3-1350>
no ipv6 nd minimum-ra-interval (<3-1350>|)
```

Parameter

<3-1350>	Minimum router advertisement interval (in seconds).

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd minimum-ra-interval 500
ZebOS(config-if)#no ipv6 nd minimum-ra-interval
```

ipv6 nd other-config-flag

Use this command to set the other stateful configuration flag in Router Advertisement to be used for IPv6 address auto-configuration.

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

Command Syntax

```
ipv6 nd other-config-flag
no ipv6 nd other-config-flag
```

Parameters

None

Default

Unset

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd other-config-flag
ZebOS(config-if)#no ipv6 nd suppress-ra
```

ipv6 nd prefix

Use this command to specify the IPv6 prefix information that is advertised by the Router Advertisement for IPv6 address auto-configuration.

Use no parameter with this command to reset the IPv6 prefix.

Command Syntax

```
ipv6 nd prefix X:X::X:X/M <0-4294967295> <0-4294967295> (off-link|) (no-
  autoconfig|)
ipv6 nd prefix X:X::X:X/M
ipv6 nd prefix valid-lifetime <0-4294967295>
ipv6 nd prefix preferred-lifetime <0-4294967295>
ipv6 nd prefix offlink
ipv6 nd prefix no-autoconf
no ipv6 nd prefix X:X::X:X/M
no ipv6 nd prefix valid-lifetime (<0-4294967295>|)
no ipv6 nd prefix preferred-lifetime (<0-4294967295>|)
no ipv6 nd prefix offlink
no ipv6 nd prefix no-autoconf
```

Parameters

X:X::X:X/M	Specify the IPv6 prefix.
<0-4294967295>	Range of values for valid lifetime in seconds.
no-autoconfig	Specify the IPv6 prefix no autoconfiguration flag.
off-link	Specify the IPv6 prefix off-link flag.
preferred-lifetime	Specify the IPv6 prefix preferred lifetime.
<0-4294967295>	Range of values for preferred lifetime in seconds.
valid-lifetime	Specify theIPv6 prefix valid lifetime <0-4294967295>.
<0-4294967295>	Range of values for valid lifetime in seconds.

Command Mode

Interface mode

Examples

```
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd prefix 2001:ffff::/64

ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd prefix no-autoconf

ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd prefix preferred-lifetime 55000000
```

ipv6 nd ra-interval

Use this command to specify the interval between IPv6 Router Advertisements (RA).

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

Command Syntax

```
ipv6 nd ra-interval <4-1800>
no ipv6 nd ra-interval
```

Parameter

<4-1800>	The RA interval in milliseconds.

Default

600 seconds

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd ra-interval 60
ZebOS(config-if)#ipv6 nd prefix 3ffe:ffff:ffff::/64

ZebOS(config-if)#no ipv6 nd ra-interval
```

ipv6 nd ra-lifetime

Use this command to specify the Router Advertisement (RA) lifetime of this router enabling it to act as a default gateway for the network.

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

Command Syntax

```
ipv6 nd ra-lifetime <0-9000>
no ipv6 nd ra-lifetime
```

Parameter

<0-9000>	The RA lifetime duration in milliseconds.

Default

1800 seconds

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd ra-lifetime 9000
ZebOS(config-if)#no ipv6 nd suppress-ra
```

ipv6 nd reachable-time

Use this command to specify the reachable time in the Router Advertisement to be used for detecting unreachability of the IPv6 neighbor.

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

Command Syntax

```
ipv6 nd reachable-time <0-3600000>
no ipv6 nd reachable-time
```

Parameter

<0-3600000>	The reachable time in milliseconds.

Default

Zero (0) milliseconds

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd reachable-time 1800000
ZebOS(config-if)#no ipv6 nd suppress-ra
```

ipv6 nd retransmission-time

Use this command to establish an IPv6 advertised retransmission time for the current interface.

Use the no form of the command to remove the retransmission time.

Command Syntax

```
ipv6 nd retransmission-time <1000-3600000>
no ipv6 nd retransmission-time (<1000-3600000>|)
```

Parameter

`<1000-3600000>` The retransmission time in milliseconds

Command Mode

Interface mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd retransmission-time 1200
ZebOS(config-if)#no ipv6 nd retransmission-time
```

ipv6 nd suppress-ra

Use this command to suppress IPv6 Router Advertisement (RA) transmission for the current interface. Router Advertisement is used for IPv6 stateless auto-configuration.

Use no parameter with this command to enable Router Advertisement transmission.

Command Syntax

```
ipv6 nd suppress-ra
no ipv6 nd suppress-ra
```

Parameters

None

Default

Suppressed

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#ipv6 nd suppress-ra
```

ipv6 neighbor

Use this command to add an IPv6 neighbor entry.

Use the no form of this command to an IPv6 neighbor entry.

Command Syntax

```
ipv6 neighbor X:X::X:X IFNAME MAC
no ipv6 neighbor X:X::X:X IFNAME
```

Parameters

X:X::X:X	Specify the neighbor's IPv6 address.
IFNAME	Specify the name of the interface.
MAC	Specify the MAC hardware address <HHHH.HHHH.HHHH>.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ipv6 neighbor 1:1::1:1 eth1 1111.1111.1111
ZebOS(config)#no ipv6 neighbor 1:1::1:1 eth1
```

ipv6 prefix-list

Use this command to create an entry for an ipv6 prefix-list.

Router starts to match prefixes from the top of the prefix list, and stops whenever a match or deny occurs. To promote efficiency, use the `seq` parameter and place common matches or denials towards the top of the list. The sequence values are generated in the sequence of 5.

The parameters `GE` and `LE` specify the range of the prefix length to be matched.

Use the no parameter with this command to delete the prefix-list entry.

Command Syntax

```
ipv6 prefix-list WORD (deny|permit) (X:X::X:X/M|any)
ipv6 prefix-list WORD (deny|permit) X:X::X:X/M ge <0-128>
ipv6 prefix-list WORD (deny|permit) X:X::X:X/M ge <0-128> le <0-128>
ipv6 prefix-list WORD (deny|permit) X:X::X:X/M le <0-128>
ipv6 prefix-list WORD (deny|permit) X:X::X:X/M le <0-128> ge <0-128>
ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) (X:X::X:X/M|any)
ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M ge <0-128>
ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M ge <0-128> le <0-
  128>
ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M le <0-128>
ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M le <0-128> ge <0-
  128>
no ipv6 prefix-list WORD
no ipv6 prefix-list WORD (deny|permit) (X:X::X:X/M|any)
no ipv6 prefix-list WORD (deny|permit) X:X::X:X/M ge <0-128>
no ipv6 prefix-list WORD (deny|permit) X:X::X:X/M ge <0-128> le <0-128>
no ipv6 prefix-list WORD (deny|permit) X:X::X:X/M le <0-128>
no ipv6 prefix-list WORD (deny|permit) X:X::X:X/M le <0-128> ge <0-128>
no ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) (X:X::X:X/M|any)
no ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M ge <0-128>
no ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M ge <0-128> le
  <0-128>
no ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M le <0-128>
no ipv6 prefix-list WORD seq <1-4294967295> (deny|permit) X:X::X:X/M le <0-128> ge
  <0-128>
ipv6 prefix-list sequence-number
no ipv6 prefix-list sequence-number
ipv6 prefix-list WORD description LINE
no ipv6 prefix-list WORD description
```

Parameters

`seq`	The sequence number of the prefix list <1-429496725>.
`WORD`	Specify the name of a prefix list.
`description`	Prefix-list specific description.
`LINE`	Up to 80 characters describing this prefix-list
`deny`	Specify that packets are to be rejected.
`permit`	Specify that packets are to be accepted.
`IPPREFIX`	The IP address mask and length of the prefix list mask (X:X::X:X/M).
`le`	Maximum prefix length to be matched <0-128>.
`ge`	Minimum prefix length to be matched <0-128>.
`any`	Takes all packets of any length. This parameter is the same as using 0.0.0.0/0 le 32 for IPPREFIX.
`sequence-number`	Include and exclude sequence numbers in nonvolatile generation (NVGEN).

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ipv6 prefix-list mylist seq 12345 deny 3ffe:345::/16 le 22 ge 14
```

ipv6 route

Use this command to establish static routes for a subnet mask.

Use the no form of this command to disable the distance for static routes of a subnet mask.

Command Syntax

```
ipv6 route X:X::X:X/M (X:X::X:X|INTERFACE)
ipv6 route X:X::X:X/M X:X::X:X INTERFACE
ipv6 route X:X::X:X/M (X:X::X:X|INTERFACE) <1-255>
ipv6 route X:X::X:X/M X:X::X:X INTERFACE <1-255>
no ipv6 route X:X::X:X/M
no ipv6 route X:X::X:X/M (X:X::X:X|INTERFACE)
no ipv6 route X:X::X:X/M X:X::X:X INTERFACE
no ipv6 route X:X::X:X/M (X:X::X:X|INTERFACE) <1-255>
no ipv6 route X:X::X:X/M X:X::X:X INTERFACE <1-255>
```

Parameters

`X:X::X:X/M`	Specify the IP destination prefix and a mask length <0-128>.
`X:X::X:X`	Specify the IPv6 gateway address.
`INTERFACE`	Specify the name of the interface.
`<1-255>`	Specify the distance value for the route.

Command Mode

Configure mode

Examples

```
ZebOS#configure terminal
ZebOS(config)#ipv6 route 3ffe:506::1 128
ZebOS(config)#ipv6 route 3ffe:506::1/128 myintname 32
```

ipv6 unnumbered

Use this command to enable IPv6 processing without an explicit address, on a point-to-point non multi-access link.

This command lets an interface borrow the IPv6 address of a specified interface to enable IPv6 processing on a point-to-point interface without assigning it an explicit IPv6 address. In this way, the IPv6 unnumbered interface can borrow the IPv6 address of another interface already configured on the router to conserve network and address space.

Use the no parameter with this command to unconfigure this feature on an interface.

Command Syntax

```
ipv6 unnumbered IFNAME
no ipv6 unnumbered
```

Parameter

IFNAME	A string that specifies the interface.

Command Mode

Interface mode

Example

The following example creates a tunnel on Router 1 (eth1):

On Router 1

```
ZebOS#configure terminal
ZebOS(config)#interface lo
ZebOS(config-if)#ipv6 address::1/128
ZebOS(config-if)#exit
ZebOS(config)#interface eth1
ZebOS(config-if)#ipv6 address fe80::20e:cff:fe6e:56dd/64
ZebOS(config-if)#exit
ZebOS(config)#interface Tunnel0
ZebOS(config-if)#tunnel source 10.70.0.145
ZebOS(config-if)#tunnel destination 10.70.0.77
ZebOS(config-if)#tunnel ttl 255
ZebOS(config-if)#tunnel path-mtu-discovery
ZebOS(config-if)#tunnel mode gre
ZebOS(config-if)#ipv6 unnumbered eth1
ZebOS(config-if)#ipv6 router ospf area 0 tag 1
ZebOS(config-if)#exit
ZebOS(config)#router ipv6 ospf 1
ZebOS(config-router)#router-id 10.70.0.145
```

mtu

Use this command to set the Maximum Transmission Unit (MTU) size of an interface.

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

Command Syntax

```
mtu <68-9216>
no mtu
```

Parameter

<68-12288>	Specify the size of MTU in bytes.

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#mtu 120
```

multicast

Use this command to set the multicast flag to an interface.

Use the no form of this command to disable this function.

Command Syntax

```
multicast
no multicast
```

Parameters

None

Command Mode

Interface mode

Example

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#multicast
```

show interface

Use this command to display interface configuration and status.

Command Syntax

```
show interface (IFNAME|)
```

Parameter

IFNAME	Displays the name of a specific interface for which status and configuration data is desired.

Command Mode

Exec mode and Privileged Exec mode

Example

The following is what this command displays when the interface is added:

```
ZebOS#show interface eth0
Interface eth0
  Scope: both
  Hardware is Ethernet  Current HW addr: 000e.0c83.3727
  Physical:000e.0c83.3727  Logical:(not set)
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 25
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Label switching is disabled
  No Virtual Circuit configured
  Administrative Group(s): None
  Bandwidth 100m
  DSTE Bandwidth Constraint Mode is MAM
  DHCP client is disabled.
  inet 10.1.2.40/24 broadcast 10.1.2.255
  VRRP Master of :  VRRP is not configured on this interface.
  inet6 fe80::20e:cff:fe83:3727/64
    input packets 793985, bytes 331458888, dropped 0, multicast packets 0
    input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 0, missed 0
    output packets 1286681, bytes 144320654, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
    collisions 0
ZebOS#
```

show ip access-list

Use this command to display a IP access lists.

Command Syntax

```
show ip access-list (<1-99>|<100-199>|<1300-1999>|<2000-2699>|WORD)
```

Parameters

`<1-99>`	Display an IP standard access list.
`<100-199>`	Display an IP extended access list.
`<1300-1999>`	Display an IP standard access list (expanded range).
`<2000-2699>`	Display an IP extended access list (expanded range).
`WORD`	Display an IP ZebOS access-list name.

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output of the `show ip access-list` command showing the IP access-list entries.

```
ZebOS#show ip access-list
Standard IP access list 13
    permit any
Standard IP access list 67
    deny 1.1.1.0, wildcard bits 0.0.0.255
Extended IP access list 134
    deny ip 1.1.1.0 0.0.0.255 any
ZebOS IP access list 1111
    deny 1.1.1.1/1 exact-match
Standard IP access list 1340
    deny 1.1.1.0, wildcard bits 0.0.0.255
Extended IP access list 2001
    deny ip 1.1.1.0 0.0.0.255 any
ZebOS extended IP access list TK
    deny   tcp 2.2.2.3/24 eq 14 3.3.3.4/24 lt 12 log
ZebOS IP access list mylist
    deny   10.10.0.72/24 exact-match
    permit any
ZebOS extended IP access list new
    deny   icmp any any
ZebOS extended IP access list tk
    deny   tcp 2.2.2.3/24 eq 14 3.3.3.4/24 lt 12 log
ZebOS#
```

show ip forwarding

Use this command to display the IP forwarding status.

Command Syntax

```
show ip forwarding
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output of the `show ip forwarding` command displaying the IP forwarding status.

```
ZebOS#show ip forwarding
IP forwarding is on
ZebOS#
```

show ip interface

Use this command to display brief information about interfaces and the IP addresses assigned to them. To display information about a specific interface, specify the interface name with the command.

Command Syntax

```
show ip interface brief
show ip interface IFNAME brief
```

Parameters

`IFNAME`	Display the name of the interface.
`brief`	Brief summary of IP status and configuration.

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output from the `show ip interface brief` command:

```
ZebOS#show ip interface brief
Interface             IP-Address      Status                  Protocol
lo                    127.0.0.1       up                      up
gre0                  unassigned      administratively down   down
eth0                  10.10.0.142     up                      up
eth1                  10.10.11.123    up                      up
eth2                  unassigned      administratively down   down
eth3                  unassigned      administratively down   down
sit0                  unassigned      administratively down   down
tun24                 unassigned      administratively down   down
tunl0                 unassigned      administratively down   down
```

show ip route

Use this command to display the IP routing table for a protocol or from a particular table.

Command Syntax

```
show ip route A.B.C.D
show ip route A.B.C.D/M
show ip route (database|)
show ip route (database|) (bgp|connected|isis|kernel|ospf|rip|static)
show ip route summary
```

Parameters

`A.B.C.D`	Display network in the IP routing table.
`A.B.C.D/M`	Display IP prefix <network>/<length>, for example, 35.0.0.0/8.
`bgp`	Display Border Gateway Protocol (BGP) information.
`connected`	Display connected information.
`database`	Display IPv6 routing table database information.
`isis`	Display ISO IS-IS information.
`kernel`	Display kernel information.
`ospf`	Display Open Shortest Path First (OSPF) information.
`rip`	Display Routing Information Protocol (RIP) information.
`static`	Display static routes.
`summary`	Display a summary of all routes

Command Mode

Exec mode and Privileged Exec mode

Examples

When multiple entries are available for the same prefix, NSM uses an internal route selection mechanism based on protocol administrative distance and metric values to choose the best route. All best routes are entered into the FIB and can be viewed using this command. To display all routes (selected and not selected), use the `show ip route database` command. The following show output for the best routes.

```
ZebOS#show ip route
Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
       * - candidate default

O       1.1.1.0/24 [110/20] via 2.2.2.1, eth2, 00:00:10
C       2.2.2.0/24 is directly connected, eth2
C       3.3.3.0/24 is directly connected, eth1
O IA    4.4.4.0/24 [110/21] via 2.2.2.1, eth2, 00:00:10
```

```
K       10.10.0.0/24 via 10.70.0.1, eth0
C       10.70.0.0/24 is directly connected, eth0
C       33.33.33.33/32 is directly connected, lo
C       127.0.0.0/8 is directly connected, lo
K       169.254.0.0/16 is directly connected, eth0
ZebOS
```

The following is the output of this command with the `ospf` parameter, which displays only the selected OPSF routes learned by NSM:

```
ZebOS#show ip route ospf
O       1.1.1.0/24 [110/20] via 2.2.2.1, eth2, 00:00:44
O IA    4.4.4.0/24 [110/21] via 2.2.2.1, eth2, 00:00:44
ZebOS#
```

The following is the output of this command with the `summary` parameter.

```
ZebOS#show ip route summary
IP routing table name is Default-IP-Routing-Table(0)
IP routing table maximum-paths is 4
RouteSourceNetworks
kernel1
connected5
ospf2
Total8
FIB2
```

The following is an output of this command displaying the database routes learned by NSM. This output shows selected as well as non elected routes.

```
ZebOS#show ip route database
Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
       > - selected route, * - FIB route, p - stale info
K    *> 0.0.0.0/0 via 10.1.2.1, eth0
C    *> 4.4.4.40/32 is directly connected, lo
C    *> 10.1.2.0/24 is directly connected, eth0
C    *> 23.0.0.0/8 is directly connected, eth4
C    *> 34.0.0.0/24 is directly connected, eth2
C    *> 80.0.0.0/24 is directly connected, eth2
C    *> 127.0.0.0/8 is directly connected, lo
K    *> 169.254.0.0/16 is directly connected, eth0
C    *> 192.168.23.0/24 is directly connected, eth4
```

show ip prefix-list

Use this command to display the prefix list entries for IPv4 interfaces.

Syntax Description

```
show ip prefix-list
show ip prefix-list WORD
show ip prefix-list WORD seq <1-4294967295>
show ip prefix-list WORD A.B.C.D/M
show ip prefix-list WORD A.B.C.D/M longer
show ip prefix-list WORD A.B.C.D/M first-match
show ip prefix-list summary
show ip prefix-list summary WORD
show ip prefix-list detail
show ip prefix-list detail WORD
```

Parameters

`WORD`	Name of a prefix list.
`A.B.C.D/M`	IP prefix <network>/<length> (for example, 35.0.0.0/8).
`first-match`	First matched prefix.
`longer`	Lookup longer prefix.
`seq`	Sequence number of an entry.
`<1-4294967295>`	Actual sequence number.
`detail`	Detail of prefix lists.
`summary`	Summary of prefix lists.

Command Mode

Privileged Exec mode

Example

The following is a sample output of the `show ip prefix-list` command showing prefix-list entries.

```
ZebOS#show ip prefix-list
ip prefix-list ipi1: 3 entries
   seq      5 permit 172.1.1.0/16
   seq     10 permit 173.1.1.0/16
   seq     15 permit 174.1.1.0/16
```

show ipv6 forwarding

Use this command to display IPv6 forwarding status.

Command Syntax

```
show ipv6 forwarding
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output of the `show ipv6 forwarding` command displaying the IPv6 forwarding status.

```
ZebOS#show ipv6 forwarding
ipv6 forwarding is on
ZebOS#
```

show ipv6 interface

Use this command to display brief information about interfaces and the IPv6 address assigned to them. To display information about a specific interface, specify the interface name with the command.

Command Syntax

```
show ipv6 interface IFNAME brief
```

Parameters

`IFNAME`	Display the name of the interface.
`brief`	Brief summary of IPv6 status and configuration.

Command Mode

Exec mode and Privileged Exec mode

Example

The following is a sample output from the `show ipv6 interface brief` command:

```
ZebOS#show ipv6 interface brief
lo                        [up/up]
    ::1
gre0                      [administratively down/down]    unassigned
eth0                      [up/up]
    3ffe:abcd:104::1
    3ffe:abcd:103::1
    fe80::2e0:29ff:fe6f:cf0
eth1                      [up/up]
    fe80::260:97ff:fe20:f257
eth2                      [administratively down/down]    unassigned
eth3                      [administratively down/down]    unassigned
sit0                      [administratively down/down]    unassigned
tun24                     [administratively down/down]    unassigned
tunl0                     [administratively down/down]    unassigned
```

show ipv6 neighbors

Use this command to display all IPv6 neighbors.

Command Syntax

```
show ipv6 neighbors
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

```
ZebOS#show ipv6 neighbors
 IPv6 Address                              MAC Address     Interface  Type
ZebOS#
```

show ipv6 route

Use this command to display the IP routing table for a protocol or from a particular table, including database entries known by NSM. When multiple entries are available for the same prefix, NSM uses an internal route selection mechanism based on protocol administrative distance and metric values to choose the best route. The best routes are in the FIB and can be viewed by using `show ipv6 route` (see show ipv6 route on page 208 for more information).

Command Syntax

```
show ipv6 route (database|)
show ipv6 route (database|) (bgp|connected|isis|kernel|ospf|rip|static)
show ipv6 route X:X::X:X
show ipv6 route X:X::X:X/M
show ipv6 route summary
```

Parameters

`X:X::X:X`	Display network in the IP routing table.
`X:X::X:X/M`	Display IP prefix <network>/<length>, e.g., 35.0.0.0/8.
`bgp`	Display Border Gateway Protocol (BGP) information.
`connected`	Display connected information.
`database`	Display IPv6 routing table database information.
`isis`	Display ISO IS-IS information.
`kernel`	Display kernel information.
`ospf`	Display Open Shortest Path First (OSPF) information.
`rip`	Display Routing Information Protocol (RIP) information.
`static`	Display static routes.
`summary`	Display a summary of all routes

Command Mode

Exec mode and Privileged Exec mode

Examples

The following is a sample output of the `show ipv6 route` command displaying the IPv6 routing table.

```
ZebOS#show ipv6 route
Codes: K - kernel route, C - connected, S - static, R - RIPng, O - OSPFv3,
       I - IS-IS, B - BGP, > - selected route, * - FIB route, p - stale info.
C> * ::1/128 is directly connected, lo
C> * 3ffe:1::/48 is directly connected, eth1
C> * 3ffe:2:2::/48 is directly connected, eth2
ZebOS#
```

show ipv6 prefix-list

Use this command to display the prefix list entries for IPv6 interfaces.

Syntax Description

```
show ipv6 prefix-list
show ipv6 prefix-list WORD
show ipv6 prefix-list WORD seq <1-4294967295>
show ipv6 prefix-list WORD X:X::X:X/M
show ipv6 prefix-list WORD X:X::X:X/M longer
show ipv6 prefix-list WORD X:X::X:X/M first-match
show ipv6 prefix-list summary
show ipv6 prefix-list summary WORD
show ipv6 prefix-list detail
show ipv6 prefix-list detail WORD
```

Parameters

`WORD`	Name of a prefix list.
`X:X::X:X/M`	IP prefix <network>/<length> (for example, 35.0.0.0/8).
`first-match`	First matched prefix.
`longer`	Lookup longer prefix.
`seq`	Sequence number of an entry.
`<1-4294967295>`	Actual sequence number.
`detail`	Detail of prefix lists.
`summary`	Summary of prefix lists.

Command Mode

Privileged Exec mode

Example

The following is a sample output of the `show ip prefix-list` command showing prefix-list entries.

```
ZebOS#show ip prefix-list
ip prefix-list ipi1: 3 entries
   seq      5 permit 172.1.1.0/16
   seq     10 permit 173.1.1.0/16
   seq     15 permit 174.1.1.0/16
```

show hosts

Use this command to display the IP domain-name, lookup style and any name server.

Command Syntax

```
show hosts
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

```
ZebOS#show hosts
```

show running-config interface

Use this command to show the running system status and configuration for a specified interface, or a specified interface for a specified protocol.

Command Syntax

```
show running-config interface IFNAME
show running-config interface IFNAME bridge
show running-config interface IFNAME dot1x
show running-config interface IFNAME elmi
show running-config interface IFNAME ip dvmrp
show running-config interface IFNAME ip igmp
show running-config interface IFNAME ip multicast
show running-config interface IFNAME ip pim
show running-config interface IFNAME ipv6 ospf
show running-config interface IFNAME ipv6 rip
show running-config interface IFNAME ipv6 pim
show running-config interface IFNAME isis
show running-config interface IFNAME lacp
show running-config interface IFNAME ldp
show running-config interface IFNAME lmi
show running-config interface IFNAME mpls
show running-config interface IFNAME mstp
show running-config interface IFNAME ospf
show running-config interface IFNAME ptp
show running-config interface IFNAME rip
show running-config interface IFNAME rpvst+
show running-config interface IFNAME rstp
show running-config interface IFNAME rsvp
show running-config interface IFNAME stp
show running-config interface IFNAME trill
```

Parameters

`bridge`	Display bridge information.
`dot1x`	Display IEEE 802.1X port-based access control.
`elmi`	Display ELMI information.
`ip`	Display Internet Protocol version 4 (IPv4) (see also show running-config interface ip on page 213) information.
`ipv6`	Display Internet Protocol version 6 (IPv6) information (see also show running-config interface ipv6 on page 214) information.

`isis`	Display Intermediate System to Intermediate System (IS-IS) information.
`lacp`	Display Link Aggregation Control Protocol (LACP) information.
`ldp`	Display Label Distribution Protocol (LDP) information.
`lmi`	Display Local Management Interface (LMI) information.
`mpls`	Display Multiple Spanning Tree Protocol (MSTP) information.
`mstp`	Display Multiple Spanning Tree Protocol (MSTP) information.
`ospf`	Display Open Shortest Path First (OSPF) information.
`ptp`	Display Precision Time Protocol (PTP) information.
`rip`	Display Routing Information Protocol (RIP) information.
`rpvst+`	Display Rapid Per VLAN Spanning Tree Protocol (RPVST) information.
`rstp`	Display Rapid Spanning Tree Protocol (RSTP) information.
`rsvp`	Display Resource Reservation Protocol (RSVP) information.
`stp`	Display Spanning Tree Protocol (STP) information.
`trill`	Display TRILL information.

Command Mode

Privileged Exec mode and Config Mode

Example

```
ZebOS#show running-config interface eth1 bridge
!
interface eth1
 switchport
 bridge-group 1
 switchport mode access
 user-priority 3
 traffic-class-table user-priority 2 num-traffic-classes 3 value 3 traffic-
class-table user-priority 7 num-traffic-classes 1 value 2 traffic-class-table
user-priority 7 num-traffic-classes 2 value 0 traffic-class-table user-
priority 7 num-traffic-classes 3 value 0 traffic-class-table user-priority 7
num-traffic-classes 4 value 0 traffic-class-table user-priority 7 num-traffic-
classes 5 value 0 traffic-class-table user-priority 7 num-traffic-classes 6
```

show running-config interface ip

Use this command to show the running system status and configuration for a specified IP.

Command Syntax

```
show running-config interface IFNAME ip dvmrp
show running-config interface IFNAME ip igmp
show running-config interface IFNAME ip multicast
show running-config interface IFNAME ip pim
```

Parameters

`dvmrp`	Display Distance Vector Multicast Routing Protocol (DVMRP)
`igmp`	Display Internet Group Management Protocol (IGMP)
`multicast`	Display global IP multicast commands information.
`pim`	Display Protocol Independent Multicast (PIM) information.

Command Mode

Privileged Exec mode

Example

```
ZebOS#show running-config interface eth1 ip dvmrp
!
interface eth1
 switchport
```

show running-config interface ipv6

Use this command to show the running system status and configuration for a specified IPv6 protocol.

Command Syntax

```
show running-config interface IFNAME ipv6 ospf
show running-config interface IFNAME ipv6 pim
show running-config interface IFNAME ipv6 rip
```

Parameters

`ospf`	Display Open Shortest Path First (OSPF) for IPv6 information.
`pim`	Display Protocol Independent Multicast (PIM) for IPv6 information.
`rip`	Display Routing Information Protocol (RIP) for IPv6 information.

Command Mode

Privileged Exec mode

Example

```
ZebOS#show running-config interface eth1 ipv6 ospf
!
interface eth1
 switchport
```

show running-config ip

Use this command to show the running system of IP configurations.

Command Syntax

```
show running-config ip route
show running-config ip mroute
show running-config ip igmp
show running-config ip igmp snooping
show running-config ip pim
show running-config ip multicast
show running-config ip static bfd
```

Parameters

`igmp`	Display Internet Group Management Protocol (IGMP)
`snooping`	Layer 2 Snooping
`mroute`	Display static IP multicast route information.
`multicast`	Display global IP multicast information.
`pim`	Display Protocol Independent Multicast (PIM) information.
`route`	Display static IP route information.
`static bfd`	Display static BFD information.

Command Mode

Privileged Exec mode

Example

```
ZebOS#show running-config interface eth1 ip multicast
!
ip multicast-routing
ip multicast route-limit 23
!

ZebOS#show running-config ip pim sparse-mode
!
ip pim spt-threshold
ip pim accept-register list 1
!
ZebOS>enable
ZebOS#show running-config ip route
!
ip route 3.3.3.3/32 eth3
ip route 3.3.3.3/32 eth2
ip route 200.0.0.0/16 lo
!
```

show running-config ipv6

Use this command to show the running system status and configuration for IPv6.

Command Syntax

```
show running-config ipv6 access-list
show running-config ipv6 route
show running-config ipv6 mroute
show running-config ipv6 pim
show running-config ipv6 prefix-list
```

Parameters

`access-list`	Display access-list information.
`mroute`	Display static IP multicast route information.
`pim`	Display Independent Multicast (PIM) information.
`prefix-list`	Display prefix-list information.
`route`	Display static IP route information.

Command Mode

Privileged Exec mode

Example

```
ZebOS>enable
ZebOS#show running-config ipv6 access-list
!
ipv6 access-list abc permit any
!
ZebOS#show running-config ipv6 prefix-list
!
ipv6 prefix-list sde seq 5 permit any
!
ZebOS#show running-config ipv6 route
!
ipv6 route 3e11::/64 lo
ipv6 route 3e11::/64 eth2
ipv6 route fe80::/64 eth2
!
```

shutdown

Use this command to shut down the selected interface.

Use the `no` form of this command to disable this function.

Command Syntax

```
shutdown
no shutdown
```

Parameters

None

Command Mode

Interface mode

Examples

The following example shows the use of the `shutdown` command to shut down the interface called `eth0`.

```
ZebOS#configure terminal
ZebOS(config)#interface eth0
ZebOS(config-if)#shutdown
```

CHAPTER 6 IGMP Commands

This chapter lists the CLI commands related to Internet Group Management Protocol (IGMP).

This chapter includes the following commands:

debug igmp

Use this command to enable debugging of all IGMP, or a specific component of IGMP. This command applies to interfaces configured for IGMP Proxy.

Use the no parameter with this command to disable all IGMP debugging, or select a specific IGMP component.

Command Syntax

```
debug igmp all
debug igmp decode
debug igmp encode
debug igmp events
debug igmp fsm
debug igmp tib
no debug igmp all
no debug igmp decode
no debug igmp encode
no debug igmp events
no debug igmp fsm
no debug igmp tib
```

Parameters

`all`	Debug all IGMP.
`decode`	Debug IGMP decoding.
`encode`	Debug IGMP encoding.
`events`	Debug IGMP events.
`fsm`	Debug IGMP Finite State Machine (FSM).
`tib`	Debug IGMP Tree Information Base (TIB).

Command Mode

Privileged Exec mode and Configure mode

Example

```
ZebOS#configure terminal
ZebOS(config)#debug igmp all
```

show debugging igmp

Use this command to display the status of the debugging of the IGMP system, or a specific VRF in the IGMP system.

Command Syntax

```
show debugging igmp
```

Command Mode

Exec and Privileged Exec mode

Examples

```
ZebOS#show debugging igmp

  IGMP Decoder debugging is on
  IGMP Encoder debugging is on
  IGMP Events debugging is on
  IGMP FSM debugging is on
  IGMP Tree-Info-Base (TIB) debugging is on
ZebOS#
```

Index

Symbols

A

B

C

N

O

P

R

S

T

V

W

Z