ipinfusion™

ZebOS®
Advanced Routing Suite
Version 5.4

RIP Command Reference

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CHAPTER 1 ZebOS Command Line Interface Environment

About This Command Reference

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

This Reference contains the following information:

*   An overview of the ZebOS Command Line Interface.
*   The complete command reference for ZebOS Routing Information Protocol (RIP).

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

Command Line Interface Primer

The ZebOS® Command Line Interface (CLI) is a text based facility similar to industry standards. Many of the commands may be used in scripts to automate many configuration tasks. Each command CLI is usually associated with a specific function or a common function performing a specific task. Multiple users can telnet and issue commands using the Exec mode and the Priviledged Exec mode. However, only one user is allowed to use the Configure mode at a time, to avoid multiple users from issuing configuration commands simultaneously.

The VTY shell, described in the ZebOS VTY Shell Developer Guide, gives users and administrators the ability to issue commands to several daemons from a single telnet session.

Command Line Help

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

For example, at the CLI command prompt, type `show` ? (the CLI does not display the question mark).
The CLI displays this keyword list with short descriptions for each keyword:

```
bgpd# show
   debugging       Debugging functions (see also 'undebug')
   history         Display the session command history
   ip              IP information
   memory          Memory statistics
   route-map       route-map information
   running-config  running configuration
   startup-config  Contents of startup configuration
   version         Displays ZebOS version
```

Syntax Help

The ZebOS CLI can complete the spelling of command or parameter keywords. Begin typing the command or parameter then press TAB. At the CLI command prompt type `sh`:

```
Router> sh
```
Press TAB. The CLI shows:

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

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

```
Router> show in
Router> show interface
```
Type ? and the CLI shows the list of parameters for the `show interface` command.

```
  [IFNAME]  Interface name
Router> show interface
```
This command has but one positional parameter, an interface name. Supply a value for the `IFNAME` parameter.

Command Abbreviations

The ZebOS CLI accepts abbreviations for commands. For example,

```
sh in 7
```
is the abbreviation for the `show interface` command.

Command line errors

If the router does not recognize the command after ENTER is pressed, it displays this message:

```
% Unknown command.
```
If a command is incomplete it displays this message:

```
% Command incomplete.
```
Some commands are too long for the display line and can wrap in mid-parameter or mid-keyword if necessary:

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

Command Reference Primer

Conventions for the syntax, procedures describing how to enter commands and how information is displayed by daemons in response to commands on the console are given in the following table.

Convention	Description
command	This monospaced font represents command strings entered on a command line and sample source code.
UPPERCASE	A variable parameter. Enter a value according to the descriptions that follow.
lowercase	A keyword parameter. Enter lowercase values exactly as shown
|	The vertical bar. Delimits choices; select one from the list.
()	Parentheses. Encloses options. Do not enter parentheses as part of any command.

Convention	Description
[]	Square brackets: groups parameters and keywords into a single unit. Take all parts within these brackets. Do not enter brackets as part of any command.
< >	Angle brackets: enclose a numeric range. Do not enter angle brackets as part of any command.
description	Proportional font gives specific details about a parameter.
=	Equal sign: separates the command syntax from explanatory text.
.	A dot. Repeats the element that immediately follows an unspecified number of times. For example: .AA:NN can be expanded to: 1:01 1:02 1:03. Do not enter the period as part of the command.
A.B.C.D	An IPv4-style address for example, 10.0.11.123.
X:X::X:X	An IPv6-style address, for example, 3ffe:506::1, where the :: represents all 0s for those address components not explicitly given.

Note: Unless otherwise stated, press Enter after each command entry.

sample command name

Description of the command: what it does, when to use it and so on.

Command Syntax

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

Default

Disabled | Enabled Whether the command is default enabled or disabled before it is executed.

Command Mode

Exec, Privilege Exec, Configure mode and so on.

Usage

Describes the interactions between and among parameters and how this command is used. This, in conjunction with the Example, gives detailed information about the command usage. This section includes appropriate sample displays.

Example

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

Related Commands

Not every one but only those that are "next of kin".

Equivalent Commands

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

Validation Commands

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

Command Negation

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

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

In this example negation is for the base command; the negated form does not take any parameters.

```
default-metric <1-16777214>
```

```
no default-metric
```

Variable Parameter expansion

For the `area virtual-link` command,

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

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

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

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

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

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

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

with `MD5_KEY` replaced by a 1-16 character string.

Common Command Modes

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

Note: Multiple users can telnet and issue commands using the Exec mode and the Priviledged Exec mode. However, only one user is allowed to use the Configure mode at a time, to avoid multiple users from issuing configuration commands simultaneously.

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

Priviledged Exec This mode, also called the Enable mode, allows users to perform debugging commands, the write commands (for saving and viewing the configuration), show commands, and so on. All ZebOS daemons have this mode.

Configure Sometimes referred to as Configure Terminal, this mode serves as a gateway into the Interface, Router, Line, Route Map, Key Chain and Address Family modes. All ZebOS daemons have this mode.

Interface 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 This mode makes available access-class commands.

This diagram shows the common command mode tree.
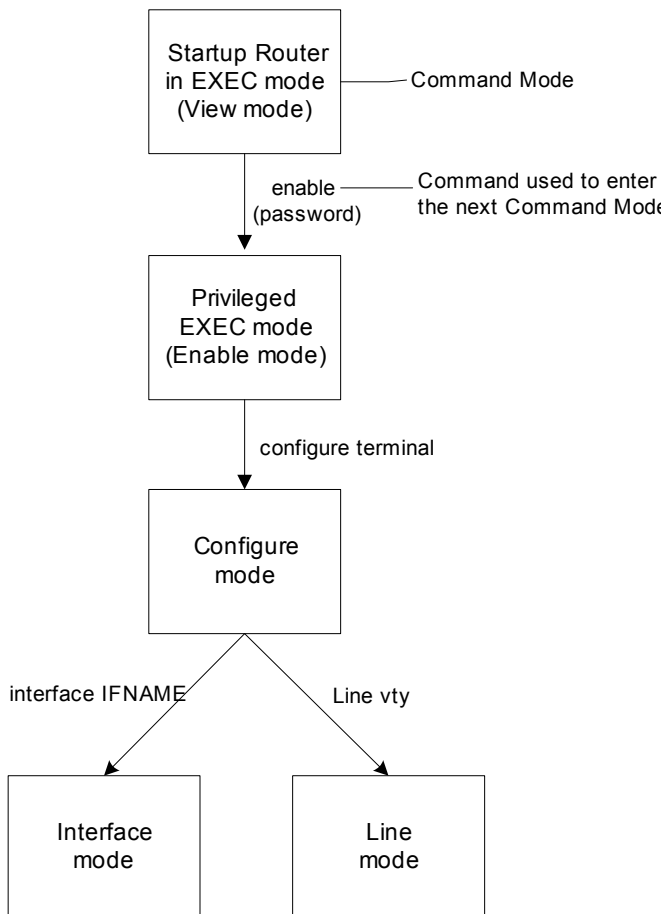
RIP Daemon Command Modes

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

Route Map This mode, available for the BGP, OSPF, and RIP protocols only, makes available commands that set route metric and other route-length and cost data.

Key Chain This mode, available for the RIP protocol only, manages the key chain.

The following diagram shows the complete RIP daemon command mode tree. For information about Exec, Privileged Exec, Configure and Interface modes please refer to the ZebOS daemon command modes mentioned earlier in this chapter.
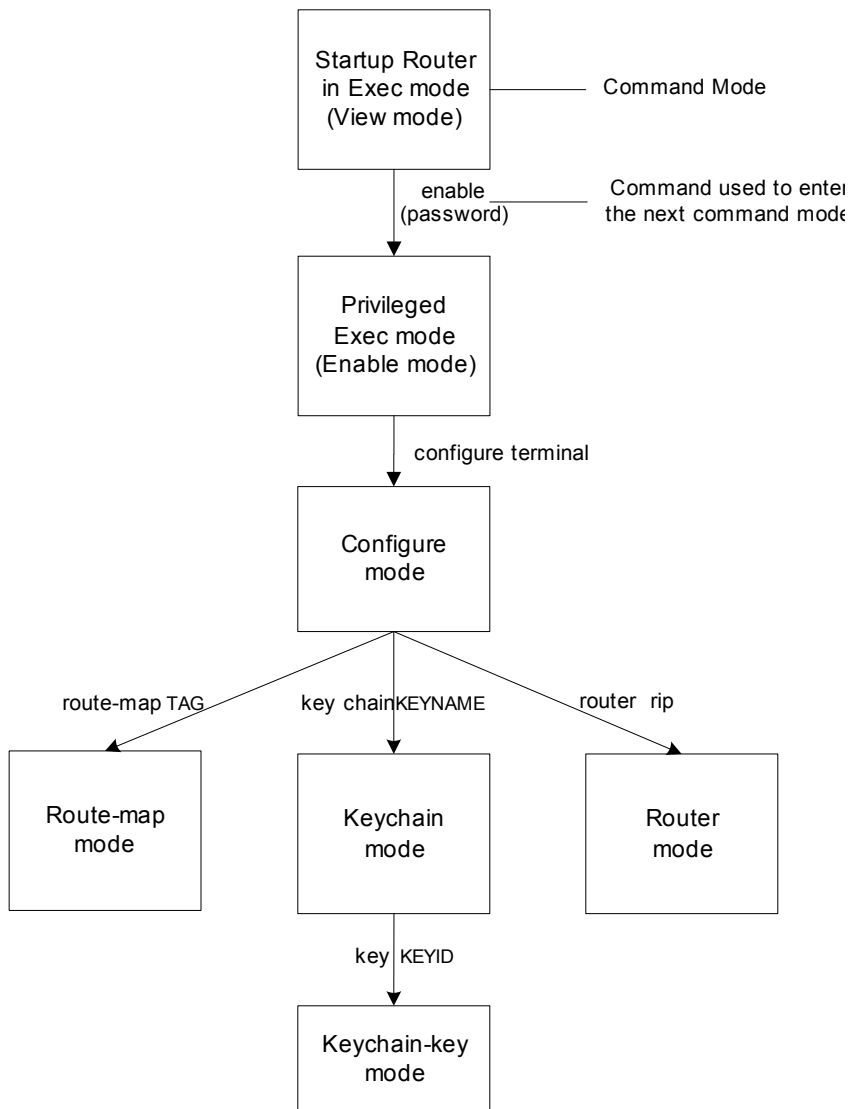
Following is a description of the parameters used in the above mentioned commands.

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

    deny Route-map denies set operations

    permit Route-map permits set operations

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

`KEYNAME` Specify the name of the key chain to manage

`KEYID` = `<0-2147483647>` Key identifier number

Commands Common to Multiple Protocols

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

Command Name	Use this command to:
access-class	filter a connection based on an IP access list, for IPv4 networks
banner	toggle the displaying of the banner text.
configure terminal	enter the configure terminal mode.
copy running-config startup-config	replace the current config with the startup config
description	provide interface-specific information
disable	exit priviledged exec mode
enable	enter the priviledge exec command mode
enable password	change the password for the enable command
end	leave the current mode
exec-timeout	set command interpreter wait interval
exit	leave the current mode, or logout of the session
help	display online text assistance
hostname	set or change network server name
ip prefix-list	create an entry for a prefix list.
ipv6 access-class	filter connection based on an IP access list for IPv6 networks
ipv6 prefix-list	create an entry for an IPv6 prefix list.
line vty	enter vty mode
list	list all commands for a mode
log file	specify the file that collects logging information
log record-priority	specify the logging of the priority of a message
log stderr	begin logging information to the standard error log
log stdout	begin logging information to the standard output
log syslog	begin logging information to the system log
log trap	limit logging to a specified level or type
log vty	begin logging information to the VTY
login	set a password prompt and enable password checking
match as-path	match an autonomous system path access list
match community	specify the community to be matched
match interface	define the interface match criterion
match ip address	specify the match address of route
match ip next-hop	specify a next-hop address to be matched in a route-map
match ip next-hop prefix-list	specify the next-hop IP address match criterion, using the prefix-list
match ipv6 address	specify the match IPv6 address of route
match ipv6 address prefix-list	match entries of IPv6 prefix-lists
match ipv6 next-hop	specify a next-hop IPv6 address to be matched by the route-map
match metric	match a metric of a route
match origin	match origin code

Command Name	Use this command to:
match route-type	match specified external route type.
match tag	match the specified tag value.
memory maximum	specify maximum limit of memory usage.
memory warning	specify the memory usage warning threshold.
password	specify a network password.
quit	leave the current mode.
route-map	enter the route-map mode and to permit or deny match/set operations.
service advanced-vty	set the VTY session to Privileged Exec mode instead of the Exec mode (which is the default).
service password-encryption	specify encription of passwords.
service terminal-length	set the terminal length for VTY sessions.
set aggregator	set the AS number for the route map and router ID.
set as-path	modify an autonomous system path for a route.
set atomic-aggregate	set an atomic aggregate attribute.
set comm-list delete	delete matching communities from inbound or outbound updates.
set community	set the communities attribute.
set community-additive	add a community to the already existing communities.
set extcommunity	set an extended community attribute.
set ip next-hop	set the specified next-hop value.
set ipv6 next-hop	set a next hop-address.
set metric	set a metric value for a route.
set metric-type	set the metric type for the destination routing protocol.
set next-hop	specify the next-hop address.
set origin	set the origin code.
set originator-id	set the originator ID attribute.
set tag	set specified tag value.
set vpnv4 next-hop	set a VPNv4 next-hop address.
set weight	set weights for the routing table.
show history	display all commands used in a session.
show ip prefix-list	display the prefix list entries.
show memory	display the memory usage for the current session.
show memory all	display the memory reports for all protocols.
show memory detail	display a detailed cell list for the specified cell type.
show memory lib	display the memory report for the NSM library.
show memory stats	display statistics and counters for the specified Memory Cell Type.
show memory summary	display the summary of memory subsystem statistics.
show route-map	display user readable route-map information.
show running-config	display the current configuration.
show startup-config	display the startup configuration (from storage).
show version	display the current ZebOS version.

Command Name	Use this command to:
terminal length	set the number of lines in a terminal display.
terminal monitor	display debugging on a monitor.
who	display other VTY connections.
write file and write memory	write the current configuration file.
write terminal	display current configurations to the VTY terminal.

CHAPTER 2 RIP Commands

This chapter provides an alphabetized reference for each of the RIP Commands.

accept-lifetime

Use this command to specify the time period during which the authentication key on a key chain is received as valid.

Command Syntax

```
accept-lifetime START END
```

    `START HH:MM:SS DAY MONTH YEAR`

        `HH:MM:SS` Time of the day when accept-lifetime starts, in hours, minutes and seconds.

        `DAY <1-31>` Specifies the day of the month to start.

        `MONTH` Specifies the month of the year to start (the first three letters of the month, for example, `Jan`).

        `YEAR <1993-2035>` Specifies the year to start.

    `END [HH:MM:SS DAY MONTH YEAR]|duration|infinite`

        `HH:MM:SS` Time of the day when lifetime expires, in hours, minutes and seconds.

        `DAY <1-31>` Specifies the day of the month to expire.

        `MONTH` Specifies the month of the year to expire (the first three letters of the month, for example, `Feb`).

        `YEAR <1993-2035>` Specifies the year to expire.

        `duration <1-2147483646>` Duration of the key in seconds.

        `infinite` Never expires.

Command Mode

Keychain-key mode

Usage

Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

The following example shows the setting of accept-lifetime for `key1` on the key chain named `mychain`.

```
ZebOS# configure terminal
ZebOS(config)# key chain mychain
ZebOS(config-keychain)# key 1
ZebOS(config-keychain-key)# accept-lifetime 03:03:01 Dec 3 2004 04:04:02 Oct 6
2006
```

Related Commands

key, key-string, key chain, send-lifetime

clear ip rip route

Use this command to clear specific data from the RIP routing table.

Command Syntax

> `clear ip rip route A.B.C.D/M|kernel|static|connected|rip|ospf|isis|bgp|all`
>
> > `A.B.C.D/M` removes entries which exactly match this destination address from RIP routing table.
> >
> > `kernel` removes kernel entries from the RIP routing table.
> >
> > `static` removes static entries from the RIP routing table.
> >
> > `connected` removes entries for connected routes from the RIP routing table.
> >
> > `rip` removes only RIP routes from the RIP routing table.
> >
> > `ospf` removes only OSPF routes from the RIP routing table.
> >
> > isis removes only IS-IS routes from the RIP routing table
> >
> > `bgp` removes only BGP routes from the RIP routing table.
> >
> > `all` clears the entire RIP routing table.

Command Mode

Privileged Exec mode

Usage

Using this command with the `all` parameter, clears the RIP table of all the routes. If you do not want that your RIP network to be deleted, use the `redistrubute connected` command and make the RIP network a connected route. Now, to delete the RIP routes learned from neighbor and also keep the RIP network intact, use the `rip` (`clear ip rip route rip`) parameter with this command.

Examples

> ```
> ZebOS# clear ip rip route 10.0.0.0/8
> ZebOS# clear ip rip route ospf
> ```

Related Commands

debug rip

Use this command to specify the options for the displayed debugging information for RIP events, RIP packets and RIP NSM.

Use the `no` parameter with this command to disable all debugging.

Command Syntax

> `debug rip events|nsm|PACKET`
>
> `no debug rip events|nsm|PACKET`
>
> > `events` = RIP events debug information is displayed.
> >
> > `nsm` = RIP and NSM communication is displayed
> >
> > `PACKET = packet (recv|send) (detail)` Specifies RIP packets only
> >
> > > `recv` Specifies that information for received packets be displayed.
> > >
> > > `send` Specifies that information for sent packets be displayed.
> > >
> > > `detail` Displays detailed information for the sent or received packet.

Default

Disabled

Command Mode

Privileged Exec mode and Configure mode

Usage

Examples

The following example displays information about the rip packets that are received and sent out from the connected router.

```
ZebOS# debug rip packet
```

Related Commands

log file

default-information originate

Use this command to generate a default route into the Routing Information Protocol (RIP)

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

Command Syntax

```
(no) default-information originate
```

Default

Disabled

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# default-information originate
```

Related Commands

default-metric

Use this command to specify the metrics to be assigned to redistributed routers.

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

Command Syntax

```
(no) default-metric METRIC
 no default-metric
```

`METRIC`= <1-16> Specifies the default metric.

Default

By default, the metric value is set to 1.

Command Mode

Router mode

Usage

This command is used with the redistribute command to make the routing protocol use the specified metric value for all redistributed routes. Default metric is useful in redistributing routes with incompatible metrics. Every protocol has different metrics and can not be compared directly. Default metric provides the standard to compare. All routes that are redistributed will use the default metric

Examples

This example assigns the cost of 30 to the OSPF routes which are redistributed into RIP.

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# redistribute ospf
ZebOS(config-router)# default-metric 10
```

Related Commands

distance

Use this command to set the administrative distance.

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

Command Syntax

```
(no) distance DISTANCE (A.B.C.D/M (ACCESSLIST))
```

> `DISTANCE`=<1-255> Specifies the administrative distance value.
>
> `A.B.C.D/M` Specifies the network prefix and length.
>
> `ACCESSLIST` Specifies the access-list name.

Default

By default, the distance is 120

Command Mode

Router mode

Usage

Administrative distance is a feature used by the routers to select the path when there are two or more different routes to the same destination from two different routing protocols. A smaller administrative distance indicating a more reliable protocol.

Examples

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

```
ZebOS(config-router)# distance 8 10.0.0.0/8 mylist
```

Related Commands

distribute-list

Use this command to filter incoming or outgoing route updates using the access-list or the prefix-list.

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

Command Syntax

```
(no) distribute-list [ACCESSLIST|prefix PREFIXLIST] [in|out] (IFNAME)
```
    `ACCESSLIST` Specifies the IPv4 access-list number or name to use

    `PREFIXLIST` Specifies the name of the IPv4 prefix-list to use

    `IFNAME` Specifies the name of the interface on which distribute-list applies

    `in` Filter incoming routing updates

    `out` Filter outgoing routing updates

    `prefix` Filter prefixes in routing updates

Default

Disabled

Command Mode

Router mode

Usage

Filter out incoming or outgoing route updates using access-list or prefix-list. If you do not specify the name of the interface, the filter will be applied to all the interfaces.

Example

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# distribute-list prefix myfilter in eth0
```

Related Commands

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

ip rip authentication key-chain

Use this command to enable RIPv2 authentication on an interface and specify the name of the key chain to be used.

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

Command Syntax

```
    ip rip authentication key-chain CHAINNAME
no ip rip authentication key-chain (CHAINNAME)
```
    `CHAINNAME` Specify the name of the key chain.

Command Mode

Interface mode

Usage

Use this command to perform authentication on the interface. Not configuring the key chain results in no authentication at all. Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

In the following example, interface eth0 is configured key-chain authentication and the name is specified as `mykey`. This name is used to enter the key-chain mode to specify the password. See the key command.

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ip rip authentication key-chain mykey
```

Related Commands

key, key chain

ip rip authentication mode

Use this command to specify the type of authentication mode used for RIP v2 packets.

Use the `no` parameter with this command to restore clear text authentication.

Note: Refer to the *Installation Guide* for information on prerequisites for MD5 authentication.

Command Syntax

```
      ip rip authentication mode md5|text
  (no) ip rip authentication mode (md5|text)
```
> `md5` Uses the keyed MD5 authentication algorithm.
> `text` Specifies the clear text or simple password authentication.

Default

Text authentication is enabled

Command Mode

Interface mode

Usage

Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

The following example shows `md5` authentication configured on the `eth1` interface ensuring authentication of rip packets received on this interface.

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# ip rip authentication mode md5
```

Related Commands

ip rip authentication key-chain

ip rip authentication string

Use this command to specify the authentication string or password used by a key.

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

Command Syntax

```
(no)ip rip authentication string LINE
 no ip rip authentication string
```
     `LINE` the authentication string or password used by a key.

Command Mode

Interface mode

Usage

The ZebOS implementation provides the choice of configuring authentication for single key or multiple keys at different times. Use this command to specify password for a single key on an interface. Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

In the following example, the interface `eth1` is configured to have an authentication string as `guest`, any receiving RIP packet in that interface should have the same string as password.

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# ip rip authentication string guest
```

Related commands

ip rip authentication mode

ip rip receive-packet

Use this command to configure the interface to enable the reception of RIP packets.

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

Command Syntax

```
    ip rip receive-packet
no ip rip receive-packet
```

Default

Receive-packet is enabled

Command Mode

Interface mode

Usage

Example

This example shows packet receiving being turned on for interface `eth0`.

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ip rip receive-packet
```

Related Commands

ip rip send-packet

ip rip receive version

Use this command to receive specified version of RIP packets on an interface basis using version control, and override the setting of the version command.

Use the `no` form of this command to use the setting established by the version command.

Command Syntax

```
    ip rip receive version 1|2|[1 2]

no ip rip receive version (1|2)
```

> 1 Specifies acceptance of RIP version 1 packets on the interface.
>
> 2 Specifies acceptance of RIP version 2 packets on the interface.
>
> 1 2 Specifies acceptance of RIP version 1 and version 2 packets on the interface.

Default

Version 2

Command Mode

Interface mode

Usage

This command applies to a specific interface and overrides any the version specified by the `version` command.

Examples

In the following example, interface eth1 in configured to receive both RIP version 1 and 2 packets.

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# ip rip receive version 1 2
```

Related Commands

version

ip rip send-packet

Use this command to enable sending RIP packets through the current interface.

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

Command Syntax

```
(no) ip rip send-packet
```

Default

Send packet is enabled

Command Mode

Interface mode

Usage

Example

This example shows packet sending being turned on for interface `eth0`.

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ip rip send-packet
```

Related Commands

ip rip receive-packet

ip rip send version

Use this command to send RIP packets on an interface using version control.

Use the `no` parameter with this command to use the global RIP version control rules.

Command Syntax

```
ip rip send version 1|2|[1 2]

no ip rip send version (1|2)
```

> 1 Specifies sending of RIP version 1 packets out of an interface.
>
> 2 Specifies sending of RIP version 2 packets out of an interface.
>
> 1 2 Permits sending of both RIP version 1and 2 packets out of an interface.

Default

Version 2

Command Mode

Interface mode

Usage

This command applies to a specific interface and overrides any the version specified by the `version` command.

Examples

In the following example, interface eth1 is configured to send both RIP version 1 and 2 packets.

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# ip rip send version 1 2
```

Related Commands

ip rip send version 1-compatible

Use this command to send RIP version 1 compatible packets from a version 2 RIP interface to other RIP interfaces. This mechanism causes version 2 RIP to broadcast the packets instead of multicasting them.

Use the `no` parameter with this command to use the global RIP version control rules.

Command Syntax

```
ip rip send version 1-compatible
```

Default

Disabled

Command Mode

Interface mode

Usage

For testing this case, the configuration must be:

```
!
interface XXXX
ip rip send version 1-compatible
!
router rip
version 2
```

> Note: The default version for ripd is version 2. Use the `version` command to explicitly specify a different version.

Examples

In the following example, interface eth1 is configured to send RIP version 1-compatible packets; so it broadcasts both RIP version 1 and 2 packets.

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# ip rip send version 1-compatible
```

Related Commands

ip rip split-horizon

Use this command to perform the split-horizon action on the interface. The default is split-horizon poisoned.

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

Command Syntax

```
ip rip split-horizon (poisoned)
```

      `poisoned` Performs split-horizon with poisoned reverse.

```
no ip rip split-horizon
```

Default

Split horizon poisoned

Command Mode

Interface mode

Usage

Use this command to avoid including routes in updates sent to the same gateway from which they were learned. Using the `split horizon` command omits routes learned from one neighbor, in updates sent to that neighbor. Using the `poisoned` parameter with this command includes such routes in updates, but sets their metrics to infinity. Thus, advertising that these routes are not reachable.

Examples

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ip rip split-horizon poisoned
```

Related Commands

key

Use this command to manage, add and delete authentication keys in a key-chain.

Command Syntax

```
key KEYID
```

      `KEYID` = `<0-2147483647>` Key identifier number

Command Mode

Keychain mode

Usage

This command allows you to enter the keychain-key mode where a password can be set for the key. Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

The following example configures a key number `1` and shows the change into a `keychain-key` command mode prompt.

```
ZebOS# configure terminal
ZebOS(config)# key chain mychain
ZebOS(config-keychain)# key 1
ZebOS(config-keychain-key)#
```

Related Commands

key chain, key-string, accept-lifetime, send-lifetime

key chain

Use this command to enter the key chain management mode and to configure a key chain with a key chain name.

Command Syntax

```
key chain KEYNAME
```

> KEYNAME Specify the name of the key chain to manage.

Command Mode

Configure mode

Usage

This command allows you to enter the keychain mode where you can specify keys on this key chain. Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

The following example shows the creation of a key chain named `mychain` and the change into `keychain` mode prompt.

```
ZebOS# configure terminal
ZebOS(config)# key chain mychain
ZebOS(config-keychain)#
```

Related Commands

key, key-string, accept-lifetime, send-lifetime

key-string

Use this command to define the password to be used by a key.

Command Syntax

```
key-string LINE
```

> LINE A string of characters to be used as a password by the key.

Command Mode

Keychain-key mode

Usage

Use this command to specify passwords for different keys. Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

In the following example, the password for `key1` in the key chain named `mychain` is set to password `prime`.

```
ZebOS# configure terminal
ZebOS(config)# key chain mychain
ZebOS(config-keychain)# key 1
ZebOS(config-keychain-key)# key-string prime
```

Related Commands

key, key chain, accept-lifetime, send-lifetime

maximum-prefix

Use this command to configure the maximum prefix.

Use the `no` parameter with this command to disable the limiting of the number of RIP routes in the routing table.

Command Syntax

```
maximum-prefix MAXPREFIX (THRESHOLD)
```

```
no maximum-prefix MAXPREFIX
```

```
no maximum-prefix
```

MAXPREFIX = <1-65535> The maximum number of RIP routes allowed.

THRESHOLD = <1-100> Percentage of maximum routes to generate a warning. The default threshold is 75%.

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# maximum-prefix 150
```

Related Commands

neighbor

Use this command to specify a neighbor router. It is used for each connected point-to-point link.

Use the `no` parameter with this command to disable the specific router.

Command Syntax

```
(no) neighbor A.B.C.D
```

A.B.C.D is an IP address of a neighboring router with which the routing information will be exchanged.

Default

Disabled

Command Mode

Router mode

Usage

Use this command to exchange nonbroadcast routing information. It can be used multiple times for additional neighbors.

`Passive-interface` command disables sending routing updates on an interface. Use the `neighbor` command in conjunction with the `passive-interface` command to send routing updates to specific neighbors.

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# neighbor 1.1.1.1
```

Related Commands

passive-interface

network

Use this command to specify a network as one that runs Routing Information Protocol (RIP).

Use the `no` parameter with this command to remove the specified network as one that runs RIP.

Command Syntax

```
(no) network A.B.C.D|IFNAME
```

A.B.C.D/M Specifies the IP address prefix and length of this IP network.

IFNAME Alphanumeric string specifies the interface name.

Default

Disabled

Command Mode

Router mode

Usage

Use this command to specify networks to which routing updates will be sent and received. If a network is not specified, the interfaces in that network will not be advertised in any RIP update.

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# network 10.0.0.0/8
ZebOS(config-router)# network eth0
```

Related Commands

show ip rip, clear ip rip

offset-list

Use this command to add an offset to in and out metrics to routes learned through RIP.

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

Command Syntax

```
(no) offset-list ACCESSLIST in|out OFFSET (IFNAME)
```

ACCESSLIST Specifies the access-list number or names to apply.

in Indicates the access list will be used for metrics of incoming advertised routes.

out Indicates the access list will be used for metrics of outgoing advertised routes.

OFFSET = <0-16> Specifies that the offset is used for metrics of networks matching the access list.

IFNAME An alphanumeric string that specifies the interface to match.

Default

The default `offset value` is the interface metric value which is defined by the operating system.

Command Mode

Router mode

Usage

Use this command to specify the offset value that is added to the routing metric. When the networks match the access list the offset is applied to the metrics. No change occurs if the offset value is zero.

Examples

In this example the router examines the RIP updates being sent out from interface eth0 and adds 5 hops to the routes matching the ip addresses specified in the access list 1.

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# offset-list 1 in 5 eth0
```

Related Commands

access-list

passive-interface

Use this command to block RIP broadcast on the interface.

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

Command Syntax

```
(no) passive-interface IFNAME
```

IFNAME Specifies the interface name.

Default

Disabled

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# passive-interface eth0
```

Related Commands

show ip rip

recv-buffer-size

Use this command to run-time configure the RIP UDP receive-buffer size.

Use the `no` parameter with this command to unset the configured RIP UDP receive-buffer size and set it back to the system default value.

Command Syntax

```
recv-buffer-size <8196-2147483647>
no recv-buffer-size
```

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# recv-buffer-size 23456789
```

Related Commands

redistribute

Use this command to redistribute information from other routing protocols.

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

Command Syntax

```
(no) redistribute (kernel|connected|static|ospf|isis|bgp)(METRIC)(ROUTEMAP)
```

    `METRIC` metric `<0-16>` Specifies metric value to be used in redistributing information

        `<0-16>` Metric value

    `ROUTEMAP` route-map `WORD` Specifies route-map to be used to redistributes information

        `WORD` A pointer to route-map entries

    `kernel` redistribute from kernel routes

    `connected` redistribute from connected routes

    `isis` redistribute from IS-IS

    `static` redistribute from static routes

    `ospf` redistribute from Open Shortest Path First (OSPF)

    `bgp` redistribute from Border Gateway Protocol (BGP)

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# redistribute kernel route-map ipi
```

Related Commands

rip graceful-restart time

Use this command to enable the graceful restart feature and to set the graceful restart time.

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

Note: This command is available only if you have selected the `--enable restart` configuration option when compiling ZebOS.

Command Syntax

```
(no) rip graceful-restart time <1-65535>
```

> `time` RIP graceful restart timer

> `<1-65535>` graceful restart time value in seconds.

Command Mode

Configure mode

Usage

Use this command to set the Graceful Restart time. Graceful Restart is enabled only when this time is set. Setting graceful restart time ensures that NSM will preserve RIP information until the restart-time expires. After RIP is re-launched, RIP exchanges routing information with neighboring routers and then updates the NSM. The stale routes are removed after restart time expires.

Examples

```
ZebOS# configure terminal
ZebOS(config)# rip graceful-restart time 345
```

Related Commands

route

Use this command to configure static RIP routes.

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

Command Syntax

```
(no) route A.B.C.D/M
```

> `A.B.C.D(/M)` Specifies the IP address prefix and length

Default

No route is added.

Command Mode

Router mode

Usage

Use this command to add a static rip route. This command is mostly used for debugging purposes and does not show up in the kernel routing table. After adding the rip route, the route can be checked in the rip routing table.

```
router rip
...
 version 1
 network 10.10.10.0/24
 network 10.10.11.0/24
 neighbor 10.10.10.10
...

ZebOS(config-router)# route 10.10.10.0/24
router rip
...
 version 1
 network 10.10.10.0/24
 network 10.10.11.0/24
 route 10.10.10.0/24
```

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# route 1.2.3.4/8
```

Related Commands

show ip rip, clear ip rip

router rip

Use this global command to enable a RIP routing process.

Use the `no` parameter with this command to disable the RIP routing process.

Command Syntax

```
(no) router rip
```

Command Mode

Configure mode

Usage

This command is used to begin the rip routing process

```
router rip
 version 1
 network 10.10.10.0/24
 network 10.10.11.0/24
 neighbor 10.10.10.10
```

Examples

The following example shows the use of the `interface` command and the changing of the prompt as the mode changes

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)#
```

Related Commands

network, version

---

send-lifetime

Use this command to specify the time period during which the authentication key on a key chain can be sent.

Command Syntax

```
send-lifetime START END
```

> START HH:MM:SS DAY MONTH YEAR
>> `HH:MM:SS` Time of the day when lifetime starts, in hours, minutes and seconds.
>> `DAY <1-31>` Specifies the day of the month to start.
>> `MONTH` Specifies the month of the year to start (the first three letters of the month, for example, `Feb`).
>> `YEAR <1993-2035>` Specifies the year to start.
> END [HH:MM:SS DAY MONTH YEAR]|duration|infinite
>> `HH:MM:SS` Time of the day when lifetime expires, in hours, minutes and seconds.
>> `DAY <1-31>` Specifies the day of the month to expire.
>> `MONTH` Specifies the month of the year to expire (the first three letters of the month, for example, `Mar`).
>> `YEAR <1993-2035>` Specifies the year to expire.
>> `duration <1-2147483646>` Duration of the key in seconds
>> `infinite` Never expires.

Command Mode

Keychain-key mode

Usage

Refer to the *Appendix A* to see how this command is related to the other authentication commands.

Examples

The following example shows the setting of send-lifetime for `key1` on the key chain named `mychain`.

```
ZebOS# configure terminal
ZebOS(config)# key chain mychain
ZebOS(config-keychain)# key 1
ZebOS(config-keychain-key)# send-lifetime 03:03:01 Jan 3 2004 04:04:02 Dec 6 2006
```

Related Commands

key, key-string, key chain, accept-lifetime

show debugging rip

Use this command to display the RIP debugging status for these debugging options: nsm debugging, RIP event debugging, RIP packet debugging and RIP nsm debugging.

Command Syntax

```
show debugging rip
```

Command Mode

Exec mode and Privileged Exec mode

Usage

Use this command to display th4e debug status of RIP.

Examples

```
ZebOS# show debugging rip
```

Related Commands

show ip protocols rip

Use this command to display RIP process parameters and statistics.

Command Syntax

```
show ip protocols rip
```

Command Mode

Privileged Exec mode and Exec mode

Usage

This is an example of the output from the `show ip protocols` command:

```
ZebOS# show ip protocols rip
Routing Protocol is "rip"
Sending updates every 30 seconds with +/-50%, next due in 12 seconds
Timeout after 180 seconds, garbage collect after 120 seconds
Outgoing update filter list for all interface is not set
Incoming update filter list for all interface is not set
Default redistribution metric is 1
Redistributing: connected static
Default version control: send version 2, receive version 2
Interface        Send   Recv   Key-chain
   eth0                  2      2
Routing for Networks:
  10.10.0.0/24
Routing Information Sources:
  Gateway          BadPackets BadRoutes  Distance Last Update
Distance: (default is 120
```

Examples

```
ZebOS# show ip protocols rip
```

Related Commands

show ip rip

Use this command to show RIP routes.

Command Syntax

```
show ip rip
```

Command Mode

Exec mode and Privileged Exec mode

Usage

The following output displays the RIP routing table with the destination network, nexthop and metric to reach it.

```
ZebOS# show ip rip
Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS,
B - BGP
Network Next Hop Metric From If Time
K 0.0.0.0/0 10.0.1.1 16 eth1 01:58
C 10.0.1.0/24 1 eth1
S 10.10.10.0/24 1 eth0
C 10.10.11.0/24 1 eth0
S 192.168.101.0/24 1 eth0
R 192.192.192.0/24 1 --
```

Examples

```
ZebOS# show ip rip
```

Related Commands

route, network, clear ip rip

Equivalent Commands

show ip rip database

show ip rip database

Use this command to display information about the RIP database.

Command Syntax

```
show ip rip database
```

Command Mode

Exec mode and Privileged Exec mode

Usage

The following output displays the RIP database information.

```
ZebOS# show ip rip database
Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS,
B - BGP
Network Next Hop Metric From If Time
K 0.0.0.0/0 10.0.1.1 16 eth1 01:58
C 10.0.1.0/24 1 eth1
S 10.10.10.0/24 1 eth0
C 10.10.11.0/24 1 eth0
S 192.168.101.0/24 1 eth0
R 192.192.192.0/24 1 --
```

Examples

```
     ZebOS# show ip rip database
```

Equivalent Commands

show ip rip

show ip rip interface

Use this command to display information about the RIP interfaces. You can specify an interface name to display information about a specific interface.

Command Syntax

```
     show ip rip interface (IFNAME)
          IFNAME = Name of the interface for which information is to be displayed.
```

Command Mode

Exec mode and Privileged Exec mode

Usage

The following output displays the RIP routing table with the destination network, nexthop and metric to reach it.

```
ZebOS# show ip rip interface
lo is up, line protocol is up
RIP is not enabled on this interface
eth0 is up, line protocol is up
RIP is not enabled on this interface
eth1 is down, line protocol is down
RIP is not enabled on this interface
eth2 is up, line protocol is up
Routing Protocol: RIP
Receive RIP packets
Send RIPv1 Compatible
Passive interface: Disabled
Split horizon: Enabled with Poisoned Reversed
IP interface address:
10.10.1.1/24
```

```
10.10.2.1/24
```

Examples

```
ZebOS# show ip rip interface eth0
```

Related Commands

---

show memory rip

Use this command to display memory statistics for RIP.

Command Syntax

```
show memory rip
```

Command Mode

Privileged Exec mode and Exec mode

Usage

The following is a sample output of the show memory rip command showing RIP memory statistics.

```
ZebOS# show memory rip
Memory type                     : Alloc count    Alloc memory
=============================================================
RIP structure                   :          1             248
RIP route info                  :          0               0
RIP interface                   :          3             276
RIP peer                        :          0               0
RIP offset list                 :          0               0
RIP distance                    :          0               0
RIP route map data              :          0               0
Key chain                       :          0               0
Key chain's key                 :          0               0
```

Examples

```
ZebOS# show memory rip
```

Related Commands

---

timers

Use this command to adjust routing network timers.

Use the `no` parameter with this command to restore the defaults.

Command Syntax

```
timers basic UPDATE TIMEOUT GARBAGE
no timers basic
```

    UPDATE = <5-2147483647> Specifies the routing table update timer in seconds. The default is 30 seconds.

      `TIMEOUT = <5-2147483647>` Specifies the routing information timeout timer in seconds. The default is 180 seconds. After this interval has elapsed and no updates for a route are received, the route is declared invalid.

      `GARBAGE = <5-2147483647>` Specifies the routing garbage collection timer in seconds. The default is 120 seconds.

Default

Enabled

Command Mode

Router mode

Usage

This command adjusts the RIP timing parameters. Every 30 seconds, an update is send out containing the complete routing table to every neighboring router. When the time specified by the timeout parameter expires the route is no longer valid. However, it is retained in the routing table for a short time so that neighbors are notified that the route has been dropped. When the time specified by the garbage parameter expires the route is finally removed from the routing table. Until the garbage time expires, the route is included in all updates sent by the router.

All the routers in the network must have the same timers to allow RIP to execute a distributed and asynchronous routing algorithm. The timers should not be synchronized as it might lead to unnecessary collisions on the network.

Examples

```
ZebOS# configure terminal
ZebOS(config)# router rip
ZebOS(config-router)# timers basic 30 180 120
```

Related Commands

version

Use this command to specify a RIP version used globally by the router.

Use the `no` parameter with this command to restore the default version.

Command Syntax

      `version <1|2>`

`no version`

      `<1|2>` Specifies the version of RIP processing. Default is RIP v2.

Default

Version 2

Command Mode

Router mode

Usage

RIP can be run in version 1 as well as version 2 mode. Version 2 has more features than version 1 especilly authentication. Once the rip version is set, rip packets of that version will be received and sent on all the rip-enabled interfaces.

The `ip rip receive version` command and the `ip rip send version` command override the value set by this command.

```
ZebOS# show run
...
router rip
 network 10.10.10.0/24
 network 10.10.11.0/24
ZebOS(config-router)# version 1
router rip
...
 version 1
 network 10.10.10.0/24
 network 10.10.11.0/24
```

Examples

```
    ZebOSZebOS# configure terminal
    ZebOS(config)# router rip
    ZebOS(config-router)# version 1
```

Related Commands

ip rip receive version, ip rip send version

CHAPTER 3   RIPng Commands

This chapter provides an alphabetized reference for each of the RIPng Commands.

aggregate-address

Use this command to aggregate RIPng routes.

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

Command Syntax

```
(no) aggregate-address X:X::X:X/P
```

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)#aggregate-address 3ffe:8088::/32
```

Related Commands

clear ipv6 rip route

Use this command to clear specific data from the RIPng routing table.

Command Syntax

```
clear ipv6 rip route X:X::X:X/M|kernel|static|connected|rip|ospf|isis|bgp|all
```

      `X:X::X:X/M` Removes entries which exactly match this destination address from the RIPng routing table.

      `kernel` Removes redistributed kernel entries from the RIPng routing table.

      `connected` Removes redistributed connected entries from RIPng routing table.

      `static` Removes redistributed static entries from the RIPng routing table.

      `rip` Removes RIPng routes from the RIPng routing table.

      `ospf` Removes redistributed OSPFv3 routes from the RIPng routing table

      `bgp` Removes redistributed BGP4+ routes from the RIPng routing table

      `all` Clears the entire RIPng routing table.

Command Mode

Privileged Exec mode

Usage

Example

```
ZebOS# clear ipv6 rip route isis
ZebOS# clear ipv6 rip route 3ffe:ffff::/16
```

Related Commands

debug ipv6 rip

Use this command to specify debugging options of RIPng events, RIPng packets and RIPng NSM communication.

Command Syntax

```
debug ipv6 rip (events|nsm|PACKET)
```

       `events` = RIP events debug information is displayed.

       `nsm` = RIP and NSM communication is displayed

       `PACKET = packet (recv|send (detail))` Specifies RIP packets only

          `recv` Specifies that information for received packets be displayed.

          `send` Specifies that information for sent packets be displayed.

          `detail` Displays detailed information for the sent or received packet.

    `no debug rip`

Default

Disabled

Command Mode

Privileged Exec mode and Configure mode

Usage

Examples

```
ZebOS# debug ipv6 rip events
ZebOS# debug ipv6 rip packet send detail
ZebOS# debug ipv6 rip nsm
```

Related Commands

log file

default-information originate

Use this command to add default routes to the RIPng updates.

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

Command Syntax

```
(no) default-information originate
```

Default

Disabled

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# default-information originate
```

Related Commands

default-metric

Use this command to specify the metrics to be assigned to redistributed routes.

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

Command Syntax

```
(no) default-metric <1-16>
```

      `<1-16>` Metric value. The default metric value is 1.

```
no default-metric
```

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# default-metric 8
```

Related Commands

distribute-list

Use this command to filter incoming or outgoing route updates using the access-list or the prefix-list.

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

Command Syntax

```
(no) distribute-list [ACCESSLIST|prefix PREFIXLIST] [in|out] (IFNAME)
```

      `ACCESSLIST` Specifies the IPv6 access-list number or name to use

      `PREFIXLIST` Specifies the name of the IPv6 prefix-list to use

      `IFNAME` Specifies the name of the interface for which distribute-list applies

in Filter incoming routing updates
out Filter outgoing routing updates
prefix Filter prefixes in routing updates

Default

Disabled

Command Mode

Router mode

Usage

Filter out incoming or outgoing route updates using the access-list or the prefix-list. If you do not specify the name of the interface, the filter is applied to all the interfaces.

Example

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# distribute-list prefix myfilter in eth0
```

Related Commands

ipv6 access-list, ipv6 prefix-list

ipv6 rip split-horizon

Use this command to perform the split-horizon action on the interface.

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

Command Syntax

```
ipv6 rip split-horizon (poisoned)
```

poisoned Performs split-horizon with poisoned reversed

Default

Split-horizon poisoned is the default.

Command Mode

Interface mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ipv6 rip split-horizon
```

Related Commands

neighbor

Use this command to specify a neighbor router.

Use the `no` parameter with this command to disable the specific router.

Command Syntax

```
(no) neighbor X:X::X:X IFNAME
```

> `X:X::X:X` is a link-local IP address of a neighboring router with which the routing information is exchanged.
>
> `IFNAME` Name of the interface

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# neighbor te80::1 eth0
```

Related Commands

network

Use this command to specify a network as one that runs the Routing Information Protocol for IPv6 (RIPng).

Use the `no` parameter with this command to remove the specified network as one that runs RIPng.

Command Syntax

```
(no) network (X:X::X:X/M|IFNAME)
```

> `X:X::X:X/M` Specifies the IPv6 address prefix and length of the network
>
> `IFNAME` Alphanumeric string specifying the interface name.

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# network 3ffe::/16
ZebOS(config-router)# network eth0
```

offset-list

Use this command to add an offset to in and out metrics to routes learned through RIPng.

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

Command Syntax

```
(no) offset-list ACCESSLIST DIRECTION OFFSET (IFNAME)
```
   `ACCESSLIST` Specifies the access-list number or name to apply

   `DIRECTION` in|out

      `in` Indicates the access-list will be used for metrics of incoming advertised routes

      `out` Indicates the access-list will be used for metrics of outgoing advertised routes

   `OFFSET <0-16>` Specifies that the offset is used for metrics of networks matching the access-list

   `IFNAME` An alphanumeric string specifying the interface to match

Default

The default offset value is the metric value of the interface which is defined by the operating system.

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# offset-list mylist in 8 eth0
```

Related Commands

passive-interface

Use this command to enable suppression of routing updates on an interface.

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

Command Syntax

```
(no) passive interface IFNAME
```
   `IFNAME` Specifies the name of the interface

Default

Disabled

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# passive-interface eth0
```

Related Commands

redistribute

Use this command to redistribute information from other routing protocols.

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

Command Syntax

```
(no) redistribute (kernel|connected|static|ospf|bgp|isis)(METRIC)(ROUTEMAP)
```

    `METRIC` metric `<0-16>` Specifies metric value to be used in redistributing information

        `<0-16>` Metric value

    `ROUTEMAP` route-map `WORD` Specifies route-map to be used to redistributes information

        `WORD` A pointer to route-map entries

    `kernel` redistribute from kernel routes

    `connected` redistribute from connected routes

    `static` redistribute from static routes

    `ospf` redistribute from Open Shortest Path First (OSPF)

    `bgp` redistribute from Border Gateway Protocol (BGP)

    `isis` redistribute from Intermediate System to Intermediate System (ISIS)

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# redistribute kernel route-map mymap
ZebOS(config-router)# redistribute kernel metric 8
```

Related Commands

route

Use this command to configure static RIPng routes.

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

Command Syntax

```
(no) route X:X::X:X/M
```

X:X::X:X/M Specifies the IPv6 address prefix and length

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# route 3ffe:1234:5678::1/64
```

Related Commands

router ipv6 rip

Use this global command to enable a RIPng routing process.

Use the no parameter with this command to disable the RIPng routing process..

Command Syntax

```
(no) router ipv6 rip
```

Command Mode

Configure mode

Usage

```
router ipv6 rip
network 3ffe::/16
network eth0
neighbor fe80::1 eth1
```

Examples

```
ZebOS# configure terminal
ZebOS(configure)# router ipv6 rip
```

Related Commands

show debugging ipv6 rip

Use this command to display the RIPng debugging status for RIPng NSM, RIPng events and RIPng packets.

Command Syntax

```
show debugging ipv6 rip
```

Command Mode

Privileged Exec mode and Exec mode

Usage

Examples

```
    ZebOS# show debugging ipv6 rip
```

Related Commands

---

show ipv6 protocols rip

Use this command to display RIPng process parameters and statistics.

Command Syntax

```
    show ipv6 protocols rip
```

Command Mode

Privileged Exec mode and Exec mode

Usage

The following is a sample output from the show ipv6 protocols rip command.

```
ZebOS# show ipv6 protocols rip
Routing Protocol is "ripng"
  Sending updates every 30 seconds with +/-50%, next due in 10 seconds
  Timeout after 180 seconds, garbage collect after 120 seconds
  Outgoing update filter list for all interface is not set
  Incoming update filter list for all interface is not set
  Default redistribute metric is 1
  Redistributing: connected
  Routing for Networks:
    3ffe:1::/64
```

Examples

```
    ZebOS# show ipv6 protocols rip
```

Related Commands

---

show ipv6 rip

Use this command to show RIPng routes.

Command Syntax

```
    show ipv6 rip
```

Command Mode

Privileged Exec mode and Exec mode

Usage

The following is a sample output from the show ipv6 rip command.

```
ZebOS# show ipv6 rip
```

```
Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS,
B - BGP, a - aggregate, s - suppressed
Network Next Hop If Met Tag Time
R 3ffe:1234:5678::/64 fe80::3 eth1 3 0 02:28
C 3ffe:ffff:1::/64 :: eth0 1 0
Ra 3ffe:ffff:2::/48 -- 1 0
Rs 3ffe:ffff:2::/48 fe80::3 eth1 3 0 02:32
Cs 3ffe:ffff:2::/64 :: eth1 1 0
R 3ffe:ffff:ffff:ffff::/64 fe80::3 eth1 3 0 02:28
```

Example

```
ZebOS# show ipv6 rip
```

Equivalent Commands

show ipv6 rip database

show ipv6 rip database

Use this command to display information about the RIPng database.

Command Syntax

```
show ipv6 rip database
```

Command Mode

Privileged Exec mode and Exec mode

Usage

The following is a sample output from the show ipv6 rip database command.

```
ZebOS# show ipv6 rip database
Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS,
B - BGP, a - aggregate, s - suppressed
Network Next Hop If Met Tag Time
R 3ffe:1234:5678::/64 fe80::3 eth1 3 0 02:28
C 3ffe:ffff:1::/64 :: eth0 1 0
Ra 3ffe:ffff:2::/48 -- 1 0
Rs 3ffe:ffff:2::/48 fe80::3 eth1 3 0 02:32
Cs 3ffe:ffff:2::/64 :: eth1 1 0
R 3ffe:ffff:ffff:ffff::/64 fe80::3 eth1 3 0 02:28
```

Example

```
ZebOS# show ipv6 rip database
```

Equivalent Commands

show ipv6 rip

show ipv6 rip interface

Use this command to display information about the RIPng interfaces. You can specify an interface name to display information about a specific interface.

Command Syntax

```
show ipv6 rip interface (IFNAME)
```

   IFNAME = Name of the interface for which information has to be displayed.

Command Mode

Privileged Exec mode and Exec mode

Usage

The following is a sample output from the show ipv6 rip interface command.

```
ZebOS# show ipv6 rip interface
lo is up, line protocol is up
RIPng is not enabled on this interface
eth0 is up, line protocol is up
RIPng is not enabled on this interface
eth1 is down, line protocol is down
RIPng is not enabled on this interface
eth2 is up, line protocol is up
Routing Protocol: RIPng
Passive interface: Disabled
Split horizon: Enabled with Poisoned Reversed
IP interface address:
3ffe:ffff::1/64
3ffe:fffe::1/64
```

Example

  ZebOS# show ipv6 rip

Related Commands

show memory ipv6 rip

Use this command to display memory statistics for RIPng.

Command Syntax

  show memory ipv6 rip

Command Mode

Privileged Exec mode and Exec mode

Usage

The following is a sample output from the show memory ipv6 rip command displaying RIPng memory statistics.

```
ZebOS# show memory ipv6 rip
Memory type                  : Alloc count    Alloc memory
```

```
============================================================
RIPng structure              :            0              0
RIPng route info             :            0              0
RIPng aggregate info         :            0              0
RIPng interface              :            0              0
RIPng i/f name               :            0              0
RIPng neighbor               :            0              0
RIPng neighbor i/f name      :            0              0
RIPng passive i/f name       :            0              0
RIPng offset list            :            0              0
RIPng offset i/f name        :            0              0
RIPng offset alist name      :            0              0
RIPng route map data         :            0              0
RIPng route map name         :            0              0
```

Examples

```
ZebOS# show memory ipv6 rip
```

Related Commands

show memory all, show memory lib, show memory rip

timers

Use this command to adjust routing network timers.

Use the `no` parameter with this command to restore the defaults.

Command Syntax

```
timers basic UPDATE TIMEOUT GARBAGE
```

```
no timers basic
```

> UPDATE = <0-4294967295> Specifies the routing table update timer in seconds. The default is 30
> seconds.
>
> TIMEOUT = <0-4294967295> Specifies the routing information timeout timer in seconds. The default is
> 180 seconds. After this interval has elapsed and no updates for a route are received, the route is declared
> invalid.
>
> GARBAGE = <0-4294967295> Specifies the routing garbage collection timer in seconds. The default is
> 120 seconds.

Command Mode

Router mode

Usage

Examples

```
ZebOS# configure terminal
ZebOS(config)# router ipv6 rip
ZebOS(config-router)# timers basic 30 180 120
```

Related Commands

Appendix A   RIP Authentication

To support RIPv2 message authentication the ZebOS implementation provides the choice of `plain text` or `MD5` authentication, and the option for single key or multiple keys in different modes and stages.

Single key authentication

Use the following steps to configure route to enable RIPv2 authentication using a single key or password:

1. Define the authentication string or password

   In the Interface mode, specify the authentication string or password used by the key, using the following command:

   ```
   ip rip authentication string LINE
   ```

   where `LINE` is the authentication string or password

2. Specify mode of authentication for the interface

   In the Interface mode, specify if the interface will use text or MD5 authentication, using the following command:

   ```
   ip rip authentication mode md5|text
   ```

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ip rip authentication string mykey
ZebOS(config-if)# ip rip authentication mode md5
```

Multiple keys authentication

Use the following steps to configure route to enable RIPv2 authentication using multiple keys at different times:

1. Define a key chain

   In the Configure mode, identify a key chain with a key chain name using the following command:

   ```
   key chain KEYNAME
   ```

   where `KEYNAME` is the name of the chain to manage.

2. Define the key(s)

   In the Keychain mode, specify a key on this key chain using the following command:

   ```
   key KEYID
   ```

   where `KEYID` = `<1-2147483647>` Key Identifier number

3. Define the authentication string or password

   In the Keychain-key mode, define the password used by a key, using the following command:

   ```
   key-string LINE
   ```

   where `LINE` is a string of characters to be used as a password by the key.

4. Set key management options

This step can be performed at this stage or later when multiple keys are used. The options are configured in the `keychain-key` command mode.

- Set the time period during which the authentication key on a key chain is received as valid, using the following command:

    ```
    accept-lifetime START END
    ```

where `START` and `END` are the beginning and end of the time period.

- Set the time period during which the authentication key on a key chain can be sent, using the following command:

    ```
    send-lifetime START END
    ```

where `START` and `END` are the beginning and end of the time period.

5. Enable authentication on an interface

    In the Interface mode, enable authentication on an interface and specify the key chain to be used, using the following command:

    ```
    ip rip authentication key-chain CHAINNAME
    ```

    where `CHAINNAME` is a set of valid authentication keys

6. Specify mode of authentication for the interface

    In the Interface mode, specify if the interface will use text or MD5 authentication, using the following command:

    ```
    ip rip authentication mode md5|text
    ```

Example

In the following example, a password `toyota` is set for a `key 1` in a key chain `cars`. On Interface `eth0` authentcation is enabled and the authentication mode is set as `MD5`.

```
ZebOS# configure terminal
ZebOS(config)# key chain cars
ZebOS(config-keychain)# key 1
ZebOS(config-keychain-key)# keystring toyota
ZebOS(config-keychain-key)# accept-lifetime 10:00:00 Oct 08 2002 duration 43200
ZebOS(config-keychain-key)# send-lifetime 10:00:00 Oct 8 2002 duration 43200
ZebOS(config-keychain-key)# exit
ZebOS(config-keychain)# exit
ZebOS(config)# interface eth0
ZebOS(config-if)# ip rip authentication key-chain cars
ZebOS(config-if)# ip rip authentication mode md5
ZebOS(config-if)# exit
```

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