Citrix®NetScaler®Routing

IS-IS 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® Network Platform IP routing software utilizing the Intermediate System to Intermediate System (IS-IS) features should use this Command Reference.

This Guide contains the following information:

- An brief overview of the ZebOS command line interface architecture.
- The complete command line interface reference for ZebOS IS-IS.

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

Command Line Interface Primer

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

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

Definitions

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

Command Line Interface Help

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

For example, at the CLI command prompt, type

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

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

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

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

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

```
  debugging  Debugging functions (see also 'undebug')
```

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

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

```
  interface  Interface status and configuration
  ip         IP information
  isis       ISIS information
```

Syntax Help

Command Completion

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

```
ZebOS> sh
```

Press TAB. The CLI shows:

```
ZebOS> show
```

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

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

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

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

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

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

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

Command Abbreviations

The ZebOS CLI accepts abbreviations for commands. For example,

```
sh in eth0
```

is an abbreviation for the `show interface` command.

Command Line Errors

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

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

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

If a command is incomplete it displays this message:

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

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

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

Command Reference Primer

Typographic Conventions

The following table lists typographic conventions for command syntax descriptions.

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

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

Format used for Command Description

command name

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

Command Syntax

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

Default

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

Command Mode

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

Usage

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

Example

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

Related Commands

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

Equivalent Commands

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

Validation Commands

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

Command Negation

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

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

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

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

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

Variable Parameter expansion

For the `area virtual-link` command,

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

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

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

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

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

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

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

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

Other Conventions

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

Show Command Tokens

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

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

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

Output Modifiers

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

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

Begin

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

```
ZebOS# show run | begin eth1

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

Exclude

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

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

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

Include

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

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

Redirect

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

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

Output Redirection

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

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

Common Command Modes

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

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

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

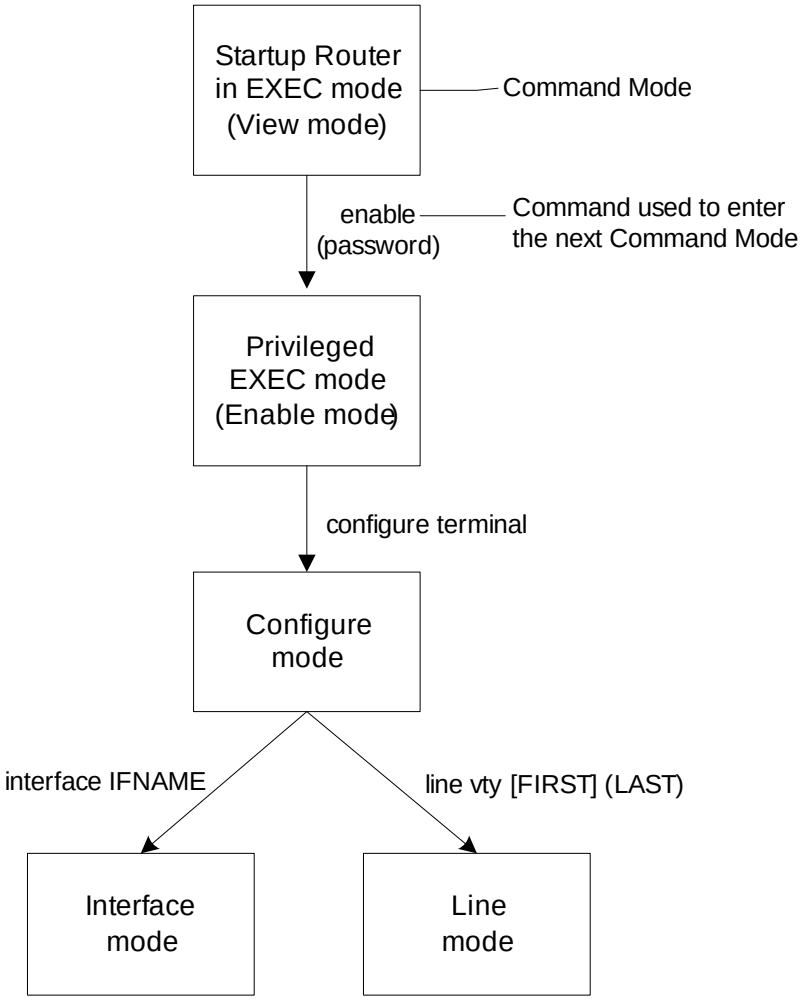
Privileged Exec Mode Also called the `Enable` mode, allows users to run `debug`, `write` (for saving and viewing the configuration) and `show` commands.

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

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

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

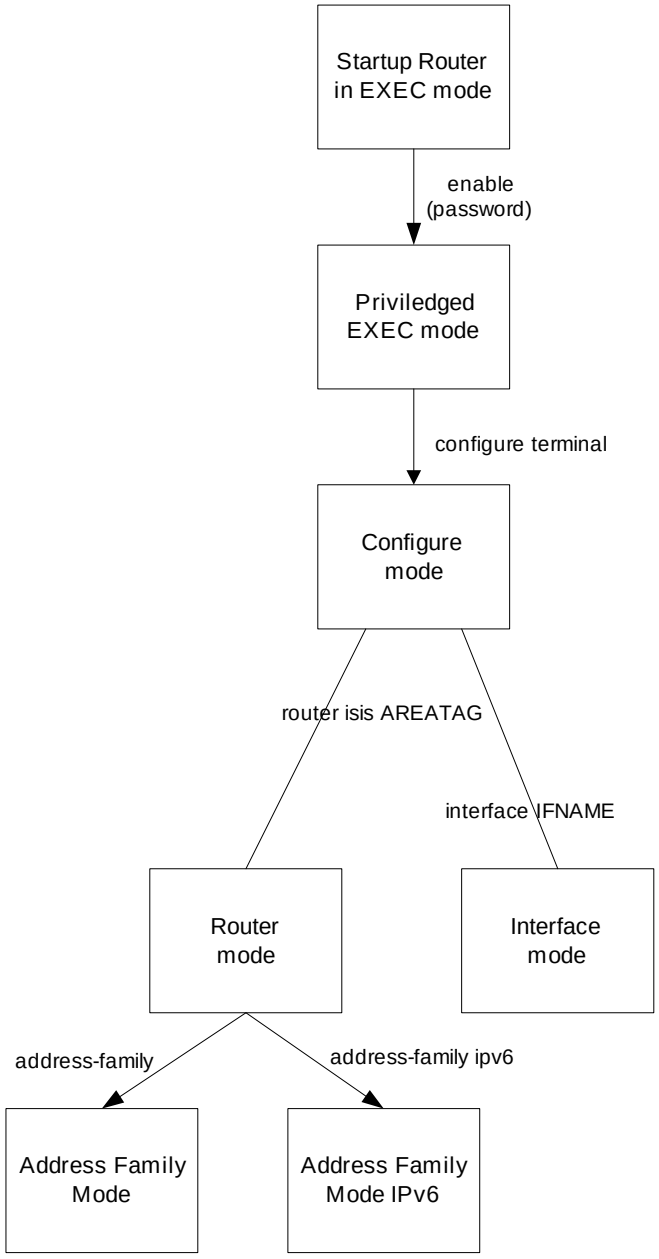
This diagram displays the common command mode tree.



IS-IS Daemon Command Modes

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

This diagram show the complete IS-IS daemon command tree.



Commands Common to Multiple Protocols

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

Command Name	Use this command to
access-class	filter a connection based on an IP access list, for IPv4 networks
access-list	configure an access-list for filtering packets.
access-list extended	configure an extended access-list for filtering packets.
access-list standard	configure a standard access-list for filtering packets.
banner	toggle the displaying of the banner text.
clear ip prefix-list	clear the IP prefix-list.
configure terminal	enter the `Configure Terminal` mode.
copy running-config startup-config	copy the current running configuration to the startup configuration file.
description	provide interface-specific information.
disable	exit `Privileged Exec` mode.
enable	enter the `Privileged Exec` 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 access-list	configure an access-list for filtering frames.
ipv6 prefix-list	create an entry for an IPv6 prefix list.
line vty	enter `Line` mode.
list	list all commands for a mode.
log file	specify the file that collects logging information.
log record-priority	specify the logging of the priority of a message.
log stdout	begin logging information to the standard output.

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

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

CHAPTER 2 IS-IS Commands

address-family ipv6

Use this command to enter 'address-family ipv6' mode. Use the no parameter with this command to remove all configuration under 'address-family ipv6'.

Command Syntax

```
    address-family ipv6 (unicast)
no address-family ipv6 (unicast)
```

`unicast` IPv6 unicast routing.

Default

If this command is not used, no unicast routing is configured.

Command Mode

Router mode

Usage

Use this command to configure the IPv6 routing specific configuration.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# address-family ipv6 unicast
ZebOS(config-router-af)#
```

Related Commands

end, exit

adjacency-check

Use this command to configure the policy of adjacency based on the protocol related TLVs in the IS-IS Hello packet. Use the no parameter with this command to disable the adjacency check.

Command Syntax

```
(no) adjacency-check
```

Default

If this command is not used, IS-IS do the adjacency check with protocol related TLVs.

Command Mode

Router mode, Address-family IPv6

Usage

IS-IS checks adjacency with protocol related TLVs including Protocols Supported TLV or IP Interface Address TLV by default. The command with no parameter disables this check.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# address-family ipv6 unicast
ZebOS(config-router-af)# no adjacency-check
```

Related Commands

multi-topology

area-password

Use this command to set the authentication password for the Level-1 area, and optionally, the authentication on Level-1 SNP PDUs. Use the no parameter with this command to clear the area password.

Command Syntax

`area-password WORD (authenticate snp send-only|validate)`

`authenticate snp` Optional. Inserts the password into Level-1 SNP PDUs.

`send-only` Only inserts the password into the Level-1 SNP PDUs, but does not check the password in SNP PDUs that it receives. Use this keyword during a software upgrade to ease the transition.

`validate` Inserts the password into the Level-1 SNP PDUs, and checks the password in SNP PDUs that it receives.

`no area-password`

`WORD` The password string.

Default

If this command is not used, the area password is not configured.

Command Mode

Router mode

Usage

Configuring this command to enable authentication when receiving and sending LSP and SNP PDU in Level-1 areas. Area password must be the same for all the IS-IS routers in the same area.

Examples

```
ZebOS(config)# router isis bb
ZebOS(config-router)# area-password ipi
ZebOS(config-router)# area-password mypasswd

ZebOS(config)# router isis bb
ZebOS(config-router)# area-password ipi authenticate snp send-only

ZebOS(config)# router isis bb
ZebOS(config-router)# area-password ipi authenticate snp validate
```

Related Commands

domain-password

authentication key-chain

Use this command to set the key chain to be used for authentication at the instance level.

Use the `no` parameter with this command to unset the key chain used for authentication.

Command Syntax

```
(no) authentication key-chain WORD (level-1|level-2)
```

`WORD` Chain name - valid authentication keys.

Command Mode

Router mode

Default

The key chain applies to the level(s) on which authentication mode is configured as MD5 if no level is specified.

Usage

Authentication mode must be set to `md5` to configure the key chain.

If no key chain is configured with the key-chain command, no key-chain authentication is performed. Key-chain authentication could apply to clear-text authentication or MD5 authentication. The mode is determined by the `authentication mode` command.

Only one authentication key-chain is applied to an IS-IS interface at a time. That is, issuing a second `isis authentication key-chain` command overrides the first `isis authentication key-chain` command.

If neither the `level-1` nor `level-2` keyword is configured, the chain applies to both levels.

You can specify authentication for an individual IS-IS interface by using the `isis authentication key-chain` command.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis 1
ZebOS(config-router)# authentication mode md5 level-1
ZebOS(config-router)# authentication key-chain ipi level-1
```

authentication mode md5

Use this command to set the MD5 authentication mode at the instance level.

Use the `no` parameter with this command to unset the MD5 authentication mode.

Command Syntax

```
(no) authentication mode md5 (level-1|level-2)
```

Command Mode

Router mode

Default

If this command is not used, this option is disabled.

The authentication mode will be set to MD5 for both levels if no level is specified.

Usage

You can specify the type of authentication and the level to which it applies for a single IS-IS interface, rather than per IS-IS instance, by using the `isis authentication mode` command.

If you had clear-text authentication configured by using the `area-password` or `domain-password` commands, the `authentication mode` command overrides both of those commands. If you use the `authentication mode` command, and subsequently try to use the `area-password` or `domain-password` commands, you will not be allowed to do so. To configure clear-text authentication using the `area-password` or `domain-password` commands, first use the `no authentication mode` command.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis 1
ZebOS(config-router)# authentication mode md5 level-1
```

Related Commands

authentication send-only, authentication key-chain

authentication send-only

Use this command to set the send-only option at the instance level.

Use the no parameter with this command to unset the send-only option.

Command Syntax

```
(no) authentication send-only (level-1|level-2)
```

Command Mode

Router mode

Default

If this command is not used, this option is disabled.

The send-only option applies to both levels if no level is specified.

Usage

Use this command before configuring the authentication mode and authentication key-chain, so that the implementation of authentication goes smoothly. That is, the routers will have more time for the keys to be configured on each router if authentication is inserted only on the packets being sent, not checked on packets being received. After all routers that must communicate are configured with this command, enable the authentication mode and key chain on each router. Then, specify the `no authentication send-only` command to disable the send-only feature.

If neither the `level-1` nor `level-1` keyword is configured, the send-only feature applies to both levels.

Example

```
ZebOS# configure terminal
```

```
ZebOS(config)# router isis 1
ZebOS(config-router)# authentication send-only level-1
```

Related Commands

authentication mode, authentication key-chain

capability cspf

Use this command to enable the constrained shortest path first (CSPF) feature in the IS-IS module. Use the no parameter with this command to disable CSPF functionality for an IS-IS instance.

Command Syntax

```
(no) capability cspf
```

Default

If this command is not used, the CSPF feature is disabled.

Command Mode

Router mode

Usage

CSPF calculates optimum explicit route (ER), using Traffic Engineering Database and (TED) and pre-existing Label Switched Path (LSP). The resulting ER is used by a signaling protocol (RSVP-TE) to set up LSPs.

Example

```
#router isis
#interface eth0
isis# capability cspf
```

Related Commands

show isis cspf lsp

enable-cspf

See `capability cspf`.

debug isis

Use this command to turn on debugging for specified criteria. Use the no parameter to turn off debugging for specified criteria.

Command syntax

```
(no) debug isis ifsm|nsm|events|pdu|lsp|spf|zebos
```

`ifsm` Debugging for Interface Finite State Machine

`nfsm` Debugging for Neighbor Finite State Machine

`events` Debugging for internal events

`pdu` Debugging for IS-IS PDU

`lsp`	Debugging for LSP
`spf`	Debugging for route calculation
`nsm`	Debugging for NSM messages

Default

If this command is not used, all options are turned off.

Command Mode

Privileged Exec mode and configure mode

Usage

Debug commands enable to show some debugging information about specified criteria into file or terminal.

Example

```
ZebOS# configure terminal
ZebOS(config)# debug isis pdu
ZebOS# configure terminal
ZebOS(config)# debug isis nsm
```

Related Commands

show debugging isis

default-information originate

Use this command to originate reachability information to Default destination into LSP. Use the no parameter with this command to withdraw reachability information to default destination from LSP.

Command Syntax

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

Default

If this command is not used, default information is not originated.

Command Mode

Router mode, Address-family ipv6 mode

Usage

There is no default information in Level-2 domain by default, while Level-1 router calculates default to L1L2 route during SPF calculation.

This command enables to originate default route into Level-2 domain.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# default-information originate
ZebOS(config-router)# address-family ipv6
ZebOS(config-router-af)# default-information originate
```

Related Commands

None

distance

Use this command to define an administrative distance for all routes or for a specific route source.

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

Command Syntax

```
distance <1-255> (SYSTEM_ID) (WORD)
no distance (SYSTEM_ID) (WORD)
```

`<1-255>` Distance range

`SYSTEM_ID` Source ID

`WORD` Access-list name

Command Mode

Router mode

Address Family IPv4 mode

Address Family IPv6 mode

Usage

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

Examples

The following example shows setting the administrative distance for all routes.

```
ZebOS# configure terminal
ZebOS(config) router isis
ZebOS(config-router) distance 10
```

The following example shows setting the administrative distance for a specific route source.

```
ZebOS# configure terminal
ZebOS(config) router isis
ZebOS(config-router) distance 40 0000.0000.0001
```

The following example shows setting the administrative distance for all routes for the IPv6 address family.

```
ZebOS# configure terminal
ZebOS(config) router isis
ZebOS(config-router) address-family ipv6
ZebOS(config-router-af) distance 20
```

domain-password

Use this command to set the authentication password for the Level-2 domain, and optionally, the authentication password on Level-2 SNP PDUs. Use the no parameter with this command to clear the domain password.

Command Syntax

```
domain-password WORD (authenticate snp send-only|validate)
```

`authenticate snp` Optional. Inserts the password into Level-2 SNP PDUs.

`send-only` Only inserts the password into the Level-2 SNP PDUs, but does not check the password in SNP PDUs that it receives. Use this keyword during a software upgrade to ease the transition.

`validate` Inserts the password into the Level-2 SNP PDUs, and checks the password in SNP PDUs that it receives.

`no domain-password`

`WORD` is the routing domain password string.

Default

If this command is not used, there is no domain password.

Command Mode

Router mode

Usage

Configuring this command to enable authentication when receiving and sending LSP and SNP PDU in Level-2 domain. Domain password must be the same in Level-2 domain.

Examples

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# domain-password mypasswd

ZebOS(config)# router isis bb
ZebOS(config-router)# domain-password ipi authenticate snp send-only

ZebOS(config)# router isis bb
ZebOS(config-router)# domain-password ipi authenticate snp validate
```

Related Commands

area-password

dynamic-hostname

Use this command to enable the dynamic hostname exchange mechanism (RFC2763) and system-ID-to-hostname translation. Use the `no` parameter to disable the Dynamic Hostname Exchange Mechanism (RFC2763).

Command Syntax

`dynamic-hostname (area-tag)`

`no dynamic-hostname`

`area-tag` = Use the routing area tag as the hostname, not the router's global hostname.

Command Mode

Router mode

Default

If this command is not used, the Dynamic Hostname Exchange Mechanism is disabled.

Usage

Using this command to enable Dynamic Hostname Exchange Mechanism and System-ID to hostname translation is performed for the result of 'show isis database' and some other CLI commands.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# dynamic-hostname area-tag
```

Related Commands

hostname dynamic

hostname dynamic

Use this command to enable the Dynamic Hostname Exchange Mechanism (RFC2763) and System-ID-to-hostname translation. Use the no parameter to disable the Dynamic Hostname Exchange Mechanism (RFC2763).

Command Syntax

```
(no) hostname dynamic
```

Default

If this command is not used, hostname dynamic is not enabled.

Command Mode

Router mode

Usage

Using this command to enable Dynamic Hostname Exchange Mechanism and System-ID to hostname translation is performed for the result of 'show isis database' and some other CLI commands.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# hostname dynamic
```

Related Commands

dynamic-hostname

ignore-lsp-errors

Use this command to ignore LSPs' checksum error. Use the no parameter to turn off this function.

Command Syntax

```
(no) ignore-lsp-errors
```

Default

If this command is not used, the LSP checksum is checked on receipt.

Command Mode

Router mode

Usage

By default, IS-IS validates checksum for LSP whenever it receives LSPs and if checksum has error, the LSP will be dropped. Configuring this command to ignore the LSP checksum error and treat it as if checksum is passed.

Example

In this sample, rtr1 does not drop LSP packets with bad checksum.

```
ZebOS# configure terminal
ZebOS(config) router isis bb
ZebOS(config-router)# ignore-lsp-errors
```

Related Commands

None

ip router isis

Use this command to enable IS-IS IPv4 routing on the interface. This command is mandatory to IS-IS configuration. Match the IS-IS instance tag to one of existing instance's tags, or a new instance with the tag name should be initiated, otherwise routing will not run on this interface. Use the `no` parameter with this command to disable IS-IS IPv4 routing on the interface. This action does not clear the IS-IS database. To clear the database, unconfigure the IS-IS routing instance.

Command Syntax

```
(no) ip router isis (TAG)
```

`TAG` IS-IS instance name

Default

If this command is not used, IPv4 routing is disabled on the router.

Command Mode

Interface mode

Usage

Configuring this command, the router sends IS-IS Hello with IP address TLV on this interface, and IP reachability information TLV in the LSP will be updated.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ip router isis bb
```

Related Commands

ipv6 router isis, router isis

ipv6 router isis

Use this command to enable IS-IS IPv6 routing on the interface. This command is mandatory to IPv6 IS-IS configuration. Match the IS-IS instance tag to one of existing instance's tags, or a new instance with the tag name should be initiated, otherwise routing will not run on this interface. Use the no parameter with this command to disable IS-IS IPv6 routing on the interface.

Command Syntax

```
(no) ipv6 router isis (TAG)
```

TAG IS-IS instance name

Default

If this command is not used, IPv6 routing is not enabled on the router.

Command Mode

Interface mode

Usage

Configuring this command, the router sends IS-IS Hello with IPv6 address TLV on this interface, and IPv6 reachability information TLV in the LSP will be updated.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# ipv6 router isis bb
```

Related Commands

ipv6 router isis, router isis

isis authentication key-chain

Use this command to set the key chain to be used for authentication on the interface-related packets.

Use the no parameter with this command to unset the key chain used for authentication on the interface-related packets.

Command Syntax

```
(no) isis authentication key-chain WORD (level-1|level-2)
```

WORD Chain name; valid authentication keys.

Command Mode

Interface mode

Default

If this command is not used, this option is disabled.

The key chain applies to the level(s) on which authentication mode is configured as MD5 if no level is specified.

Usage

Authentication mode must be set to `md5` to configure the key chain.

If no key chain is configured with the `key-chain` command, no key-chain authentication is performed.

Only one authentication key-chain is applied to an IS-IS interface at a time. That is, issuing a second `isis authentication key-chain` command overrides the first `isis authentication key-chain` command.

If neither the `level-1` nor `level-2` keyword is configured, the key chain applies to the level(s) on which the authentication mode is configured as `md5`.

You can specify authentication for an entire instance of IS-IS, instead of at the interface level, by using the `authentication key-chain` command.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# isis authentication mode md5 level-1
ZebOS(config-if)# isis authentication key-chain ipi level-1
```

Related Commands

isis authentication send-only, isis authentication mode

isis authentication mode md5

Use this command to set the MD5 authentication mode.

Use the `no` parameter with this command to unset the MD5 authentication mode.

Command Syntax

```
(no) isis authentication mode md5 (level-1|level-2)
```

Command Mode

Interface mode

Default

If this command is not used, this option is disabled.

The authentication mode will be set to MD5 for both levels if no level is specified.

Usage

If you had clear text authentication configured by using the `isis password` command, the `isis authentication mode` command overrides the `isis password` command. If you use the `isis authentication mode` command, then subsequently try to use the `isis password` command, you will not be allowed to do so.

To configure clear text authentication using the `isis password` command, first use the `no isis authentication mode` command.

You can specify the type of authentication, and level to which it applies, for the entire IS-IS instance, rather than per interface, by using the `authentication mode` command.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# isis authentication mode md5 level-1
```

Related Commands

isis authentication send-only, isis authentication key-chain

isis authentication send-only

Use this command to set the send-only option to the interface-related packets.

Use the no parameter with this command to unset the send-only option to the interface-related packets.

Command Syntax

```
(no) isis authentication send-only (level-1|level-2)
```

Command Mode

Interface mode

Default

If this command is not used, this option is disabled.

The send-only option applies to both levels if no level is specified.

Usage

Use this command before configuring the ISIS authentication mode and ISIS authentication key-chain, so that the implementation of authentication goes smoothly. That is, the routers will have more time for the keys to be configured on each router if authentication is inserted only on the packets being sent, not checked on packets being received. After all routers that must communicate are configured with this command, enable the authentication mode and key chain on each router. Then, specify the `no isis authentication send-only` command to disable the send-only feature.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth1
ZebOS(config-if)# isis authentication send-only level-1
```

Related Commands

isis authentication mode, isis authentication key-chain

isis circuit-type

Use this command to set the circuit type for the interface. Use the no parameter to reset circuit type to the default.

Command Syntax

```
      isis circuit-type level-1|level-1-2|level-2-only
no isis circuit-type
```

`level-1` Level-1 only adjacencies are formed

`level-1-2` Level-1-2 adjacencies are formed
`level-2-only` Level-2 only adjacencies are formed

Default

If this command is not used, the default circuit-type is level-1-2.

Command Mode

Interface mode

Usage

If level-1 or level-2-only is specified in this command, IS-IS sends only the specified level of PDUs. On the point-to-point interface, there is only one type of Hello packet, so in this case IS-IS Hello will be sent regardless of circuit-type.

If is-type is configured as level-1 or level-2 only, routing for this instance is performed for only the specified level. In this manner, only the particular level of PDU is sent on the interface.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis circuit-type level-2-only
```

Related Commands

is-type

isis csnp-interval

Use this command to set CSNP interval in seconds. Use the `no` parameter with this command to set CSNP interval the default.

Command Syntax

```
(no) isis csnp-interval <0-65535> (level-1|level-2)
```

`<0-65535>` CSNP interval in seconds.
`level-1` Specify interval for Level-1 CSNPs.
`level-2` Specify interval for Level-2 CSNPs.

Default

If this command is not used, IS-IS uses 10 seconds for the interval and the interval is applied to both level-1 and level-2.

Command Mode

Interface mode

Usage

Configuring this command changes the interval between two consecutive CSNP transmission.

By default, CSNP is sent every 10 seconds only by LAN DIS.

This parameter is only valid on broadcast interface, since periodic CSNP is only sent on broadcast interface, while CSNP on Point-to-Point interface is sent only when adjacency is initiated.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis csnp-interval 20
```

Related Commands

None

isis hello-interval

Use this command to set the Hello interval in seconds. The Hello-interval is set with the hello-multiplier (see `isis hello-multiplier` command). Use the `no` parameter to set the Hello interval to the default.

Command Syntax

```
(no) isis hello-interval INTERVAL (level-1|level-2)
     INTERVAL = <0-65535>|minimal
       <0-65535>  Hello interval in seconds.
       minimal    Set holding-time as 1 second.
     level-1    Specify interval for Level-1 Hello
     level-2    Specify interval for Level-2 Hello
```

Default

If this command is not used, IS-IS uses 10 seconds for the interval and the interval is applied to both level-1 and level-2.

Command Mode

Interface mode

Usage

Configuring this command changes the time interval between two consecutive Hello transmissions. If a device receives its own LSP with a maximum sequence number, then it suspends IS-IS for the hold interval.

DIS sends Hello transmissions at three times the rate than non-DIS. If IS-IS is elected as DIS on this interface, IS-IS sends Hello every 3.3 seconds.

If `minimal` keyword is specified, Holding timer in Hello PDU is set to 1 second and Hello interval is calculated by dividing by the hello-multiplier. For example, if the hello-multiplier is configured as 4 and `hello-interval minimal` is the command used, an Hello PDU is sent every 250 milliseconds.

Example

```
ZebOS# configure terminal
ZebOSZebOS(config)# interface eth0
ZebOS(config-if)# isis hello-interval 5 level-1
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis hello-interval minimal
```

Related Commands

isis hello-multiplier

isis hello-multiplier

Use this command to set multiplier for Hello holding time. Use the no parameter with this command to set multiplier to the default.

Command Syntax

```
(no) isis hello-multiplier <3-1000> (level-1|level-2)
```

`<3-1000>` Hello multiplier value

`level-1` Specify multiplier for Level-1 Hello

`level-2` Specify multiplier for Level-2 Hello

Default

If this command is not used, IS-IS uses 3 seconds for the multiplier value and the multiplier is applied to both level-1 and level-2.

Command Mode

Interface mode

Usage

Changes Holding Timer in Hello PDU. Holding timer is calculated by "Hello-Interval" multiplied by this value. If `minimal` keyword is specified with the Hello-Interval, the holding timer is set to 1 second and the hello-interval is calculated by dividing 1 by this value.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis hello-multiplier 4
```

Related Commands

isis hello-interval

isis hello padding

Use this command to configure the padding of the IS-IS Hello packet. Use the no parameter with this command to disable the padding.

Command Syntax

```
(no) isis hello padding
```

Default

If this command is not used, IS-IS pads the IS-IS Hello packet.

Command Mode

Interface mode

Usage

IS-IS pads the Hello packet by default to notice neighbors the supported MTU size.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# no isis hello padding
```

Related Commands

isis hello-interval

isis lsp-interval

Use this command to set the Link State Packet (LSP) transmission interval. Use the no parameter with this command to set LSP transmission interval to the default.

Command Syntax

```
   isis lsp-interval <1-4294967295>
no isis lsp-interval
```

<1-4294967295> The interval in milliseconds.

Default

If this command is not used, IS-IS uses 33 milliseconds for the interval.

Command Mode

Interface mode

Usage

Configuring this command changes the minimum interval between two consecutive LSP transmission.

When flooding or some event trigger LSP to transmit, LSP will be put on the interface queue and scheduled to transmit by this interval. Two consecutive LSP transmission is scheduled to have at least this interval.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis lsp-interval 100
```

Related Commands

isis retransmit-interval

isis mesh-group

Use this command to set Mesh Group ID on the current interface. Use the no parameter to unset mesh group on the current interface.

Command Syntax

```
     isis mesh-group GROUPID
(no) isis mesh-group
```

GROUPID = <1-4294967295> Mesh Group ID

Default

If this command is not used, mesh groups are not enabled on this interface.

Command Mode

Interface mode

Usage

This configuration sets the Mesh Group ID as 20 for the interface eth0.

```
ZebOS(config)# interface eth0
ZebOS(config-if)# isis mesh-group 20
```

isis mesh-group blocked

Use this command to block LSPs on the current the interface. Use the no parameter to unblock LSPs .

Command Syntax

```
isis mesh-group blocked
```

Default

If this command is not used, LSPs are not blocked.

Command Mode

interface

Usage

If an interface is configured as "mesh group blocked", the standard LSP database synchronization process is applied if the interface receives CSNP or PSNP.

isis metric

Use this command to set default metric for the interface. Use the no parameter with this command to set default metric to the default.

Command Syntax

```
(no) isis metric <1-63> (level-1|level-2)
```

`<1-63>` Default metric.

`level-1` Specify default metric for level-1 circuit.

`level-2` Specify default metric for level-2 circuit.

Default

If this command is not used, IS-IS uses 10 for the metric value and the value is applied to both level-1 and level-2.

Command Mode

Interface mode

Usage

The interface default metric is put into IP reachability information TLVs, IS reachability information TLVs and IPv6 reachability TLVs in LSPs.

The value is used for SPF calculation.

This value is applied when metric-style is configured as 'narrow'.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis metric 20
```

Related Commands

isis wide-metric, metric-style

isis network

Use this command to change a broadcast interface network type to a point-to-point network type.

Use the no parameter with this command to revert to the default setting of a broadcast interface network type.

Command Syntax

```
(no) isis network (broadcast|point-to-point)
```

`broadcast` Specify IS-IS broadcast multi-access network

`point-to-point` Specify IS-IS point-to-point network

Default

By default, the network is set to a broadcast multi-access network type.

Command Mode

Interface mode

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis network point-to-point
```

isis password

Use this command to set the authentication password of Hello PDU on the interface. Use the no parameter to clear the password.

Command Syntax

```
(no) isis password WORD (level-1|level-2)
```

`WORD` Password string

`level-1` Specify password for Level-1 Hello PDUs

`level-2` Specify password for Level-2 Hello PDUs

Default

If this command is not used, no password is configured, and this applies to both level-1 and level-2.

Command Mode

Interface mode

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis password mypassword level-1
```

Related Commands

area-password, domain-password

isis priority

Use this command to set the priority for LAN DIS election. Use the no parameter to set priority to the default.

Command Syntax

```
(no) isis priority <0-127> (level-1|level-2)
```

`<0-127>` Priority value

`level-1` Specify priority for level-1 LAN DIS election

`level-2` Specify priority for level-2 LAN DIS election

Default

If this command is not used, IS-IS uses 64 for the priority value, and the priority is applied to both level-1 and level-2.

Command Mode

Interface mode

Usage

Configuring this command to change priority value in LAN IS-IS Hello PDUs.

This command is not valid for Point-to-Point interface.

The lower priority value is less prefered in DIS election, and the higher priority value is more prefered.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis priority 127
```

Related Commands

None

isis restart grace-period

Use this command to configure the T3 timer, the time the restarting router will retain the forwarding table. Use the no parameter to use the default value.

Command Syntax

```
isis restart grace-period <1-65535>
no isis restart grace-period
```

<1-65535> the number of seconds in the period
`level-1` Specify hello-interval for level-1 IIHs
`level-2` Specify hello-interval for level-2 IIHs

Default

If this command is not used, IS-IS uses 65535 for the period value, and the value is applied to both level-1 and level-2.

Command Mode

Configure mode

Related Commands

restart-timer, isis restart grace-period

isis restart-hello-interval

Use this command to configure the T1 timer, interval of IS-IS Hello packet with Restart TLV. Use the `no` parameter to use the default value.

Command Syntax

```
isis restart-hello-interval <1-65535> (level-1|level-2)
no isis restart-hello-interval (level-1|level-2)
```

<1-65535> the number of seconds in the interval
`level-1` Specify hello-interval for level-1 IIHs
`level-2` Specify hello-interval for level-2 IIHs

Default

If this command is not used, IS-IS uses 3 seconds for the hello value, and the interval is applied to both level-1 and level-2.

Command Mode

Interface mode

Related Commands

restart-timer, isis restart grace-period

isis restart helper

Use this command to configure the router's helper mode capability. Use the `no` parameter to disable the helper mode for this router.

Command Syntax

```
(no) isis restart helper
```

Default

If this command is not used, the router is not a restart helper router.

Command Mode

Configure mode

Related Commands

restart-timer, isis restart grace-period

isis retransmit-interval

Use this command to set LSP retransmission interval. Use the no parameter to set the interval to the default.

Command Syntax

```
   isis retransmit-interval <0-65535>
no isis retransmit-interval
```

`<0-65535>` Interval between retransmission of the same LSP in seconds.

Default

If this command is not used, IS-IS uses an interval of 5 seconds.

Command Mode

Interface mode

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis retransmit-interval 10
```

Related Commands

isis lsp-interval

isis wide-metric

Use this command to set wide metric for the interface.

Use the no parameter to set wide metric to the default.

Command Syntax

```
(no) isis wide-metric <1-16777214> (level-1|level-2)
```

`<1-16777214>` wide metric

`level-1` Specify wide metric for level-1 circuit.

`level-2` Specify wide metric for level-2 circuit.

Default

If this command is not used, IS-IS uses 10 for the metric value and the metric is applied to both level-1 and level-2.

Command Mode

Interface mode

Usage

Interface wide-metric is put into Extended IP reachability TLVs, Extended IS reachability TLVs and IPv6 reachability TLVs in LSPs.

The value is used for SPF calculation.

This value is applied when metric-style is configured as 'wide'.

Example

```
ZebOS# configure terminal
ZebOS(config)# interface eth0
ZebOS(config-if)# isis wide-metric 100
```

Related Commands

isis metric, metric-style

is-type

Use this command to set the IS to the specified level of routing. Use the no parameter to set the IS to the default.

Command Syntax

```
   is-type (level-1|level-1-2|level-2-only)
no is-type
```

`level-1` Act as Level-1 only IS

`level-1-2` Act as Level-1-2 IS

`level-2-only` Act as Level-2 only IS

Default

If this command is not used, IS-IS:

- uses level-1-2 if there is no Level-2 instance nor a Level-1-2 instance.
- otherwise, it uses level-1.

Command Mode

Router mode

Usage

Changing is-type brings up and down particular level of routing.

There is a limitation, only one IS-IS instance can run Level-2 routing (either Level-2 only IS or Level-1-2 IS).

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# is-type level-1
```

Related Commands

isis circuit-type

lsp-gen-interval

Use this command to set minimum interval before regenerating the same LSP. Use the no parameter with this command to set the interval to the default.

Command Syntax

```
    lsp-gen-interval (level-1|level-2) <1-120>
no lsp-gen-interval
```

- `level-1` Set interval for Level-1 IS.
- `level-2` Set interval for Level-2 IS.
- `<1-120>` LSP generation interval in seconds.

Default

If this command is not used, IS-IS uses 30 seconds for the interval and the interval is applied to both level-1 and level-2.

Command Mode

Router mode

Usage

The smaller the interval the faster the convergence, but it might cause more frequent flooding.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# lsp-gen-interval 5
```

Related Commands

lsp-refresh-interval

lsp-refresh-interval

Use this command to set the LSP refresh interval. Use the no parameter to set the interval to the default value.

Command Syntax

```
    lsp-refresh-interval <1-65535>
no lsp-refresh-interval
```

- `<1-65535>` LSP refresh interval in seconds.

Default

If this command is not used, the interval is 900 seconds.

Command Mode

Router mode

Usage

Citrix recommends making the `lsp-refresh-interval` smaller than `max-lsp-lifetime` value.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# lsp-refresh-interval 600
```

Related Commands

lsp-gen-interval, max-lsp-lifetime

max-lsp-lifetime

Use this command to set the maximum LSP lifetime Use the `no` parameter to set the lifetime to the default.

Command Syntax

```
   max-lsp-lifetime <350-65535>
no max-lsp-lifetime
```

`<350-65535>` Maximum LSP lifetime in seconds.

Default

If this command is not used, IS-IS 1200 seconds for the lifetime.

Command Mode

Router mode

Usage

Citrix recommends setting the `max-lsp-lifetime` to be greater than the `lsp-refresh-interval`.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# max-lsp-lifetime 1500
```

Related Commands

lsp-refresh-interval

metric-style

Use this command to configure the IS-IS metric style. Use the no parameter to set the style to the default style, narrow.

Command Syntax

```
(no) metric-style (MSTYLE|transition) (LEVEL)
(no) metric-style MSTYLE transition (LEVEL)
```

`MSTYLE = (narrow|wide)` Metric style
`transition =` Metric style transition
`LEVEL =` (level-1|level-2|level-1-2)
`level-1` Change the level-1 metric style.
`level-2` Change the level-2 metric style.
`level-1-2` Change the level-1-2 metric style.
If `LEVEL` is omitted, change the level-1-2 metric style.

Default

If this command is not used, IS-IS uses narrow metric style for level 1 and 2.

Command Mode

Router mode

Usage

Use the metric-style command to change the way of TLV encoding and the SPF calculation decision.

metric-style command	Wide SPF	Wide TLV	Narrow SPF	Narrow TLV
narrow(default)	OFF	OFF	ON	ON
narrow transition	ON	OFF	ON	ON
wide	ON	ON	OFF	OFF
wide transition	ON	ON	ON	OFF
transition	ON	ON	ON	ON

Where:

`Wide SPF` Use wide TLVs for SPF calculation.

`Wide TLV` Encode wide TLVs in the LSP.

`Narrow SPF` Use narrow TLVs for SPF calculation.

`Narrow TLV` Encode narrow TLVs in the LSP.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# metric-style wide transition
```

Related Commands

multi-topology, mpls traffic-eng

mpls traffic-eng

Use this command to configure MPLS Traffic Engineering feature for IS-IS. Use the no parameter to turn off the feature.

Command Syntax

```
(no) mpls traffic-eng LEVEL
     LEVEL (level-1|level-2)
           level-1  Change the level-1 MPLS Traffic Engineering feature.
           level-2  Change the level-2 MPLS Traffic Engineering feature.
```

Default

If this command is not used, IS-IS doesn't encode the traffic engineering TLVs and Sub-TLVs.

Command Mode

Router mode

Usage

```
ZebOS(config)# router isis bb
ZebOS(config-router)# metric-style wide
ZebOS(config-router)# mpls traffic-eng level-1
```

Related Commands

metric-style

mpls traffic-eng router-id

Use this command to explicitly specify the MPLS Traffic Engineering router ID for IS-IS. Use the no parameter to use the default behavior.

Command Syntax

```
     mpls traffic-eng router-id A.B.C.D
(no) mpls traffic-eng router-id
     A.B.C.D traffic engineering router ID
```

Default

If this command is not used, by default isisd picks the router ID from the NSM. This command explicitly encodes a router ID (A.B.C.D) for each instance in the LSP.

Command Mode

Router mode

Usage

Configure mpls traffic-eng (level-1|level-2) command to encode the TE router ID TLV in the LSP.

```
ZebOS(config)# router isis bb
ZebOS(config-router)# mpls traffic-eng router-id 10.10.0.23
ZebOS(config-router)# metric-style wide
```

Related Commands

mpls traffic-eng level

multi-topology

Use this command to configure the IS-IS topology type. Use the no parameter with this command to set the topology type back to the default type, single.

Command Syntax

```
(no) multi-topology (LEVEL) (transition)
     LEVEL = level-1|level-2|level-1-2
        level-1 Enable multi-topology for level 1.
        level-2 Enable multi-topology for level 2.
        level-1-2 Enable multi-topology for levels 1 and 2.
     transition topology type transition
```

Default

If this command is not used, IS-IS uses single topoloogy type for level 1 and 2.

If the LEVEL parameter is not used with the command, the configuration applies to levels 1 and 2.

Command Mode

Address-family IPv6 mode

Usage

Use the multi-topology command to change the method of TLV encoding and the SPF calculation decision.

multi-topology command	Multi SPF	Multi TLV	Single SPF	Single TLV
no multi-topolgy(default)	OFF	OFF	ON	ON
multi-topology	ON	ON	OFF	OFF
multi-topology transition	ON	ON	ON	ON

Where:

`Multi SPF` Use Multi topology TLVs for SPF calculation.

`Multi TLV` Encode Multi topology TLVs in the LSP.

`Single SPF` Use Extended TLVs for SPF calculation.

`Single TLV` Encode Extended TLVs in the LSP.

Example

The following example configures the IS-IS multi-topology type as transition for levels 1 and 2.

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
```

```
ZebOS(config-router)# address-family ipv6 unicast
ZebOS(config-router-af)# multi-topology transition
```

The following example configures the IS-IS multi-topology type as transition for level 1, only.

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# address-family ipv6 unicast
ZebOS(config-router-af)# multi-topology level-1 transition
```

Related Commands

metric-style, mpls traffic-eng

net

Use this command to add a Network Entity Title (NET) for the instance. Use the no parameter to remove the NET.

Command Syntax

```
(no) net XX. .. .XXXX.YYYY.YYYY.YYYY.00
```

`XX. .. .XXXX` Area Address

`YYYY.YYYY.YYYY` System ID

Default

If this command is not used, IS-IS does not configure a NET is configured.

Command Mode

Router mode

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router) net 49.0000.0001.0002.0003.00
```

passive-interface

Use this command to suppress routing updates on all interfaces or on a specified interface.

Use the no parameter with this command to remove all interfaces, or a specified interface, from passive mode

Command Syntax

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

`IFNAME` Interface name

Command Mode

Router mode

Usage

This command puts the specified interface, or all interfaces, except the high-priority interface, into passive mode. (There should be at least one IS-IS enabled interface present.) Priority is based on the interface type and number. If the same type of interface is present, IS-IS checks for the highest interface number. For example, if there are 5 IS-IS

enabled interfaces, loopback 0, loopback 1, eth0, eth1, and eth2: if the `passive-interface` command is executed, all interfaces are put into passive mode, except loopback 1.

A passive interface only advertises its IP address in LSPs; it does not send or receive IS-IS packets. As such, there are no changes in packet handling.

If an IS-IS instance is disabled in Router mode, it removes both the passive interface and no passive interface lists, and the passive interface must be configured, once the IS-IS router is re-enabled.

Examples

The following suppresses routing updates on a specified interface.

```
ZebOS# configure terminal
ZebOS(config)# router isis 100
ZebOS(config-router)# passive-interface eth0
```

protocol-topology

Use this command to configure IS-IS Protocol Topology Support. Use the `no` parameter to enable standard IS-IS support.

Command Syntax

```
(no) protocol-topology
```

Default

If this command is not used, standard IS-IS support (according to ISO 10589 and RFC 1195) is used.

Command Mode

Router mode

Usage

```
ZebOS(config)# router isis bb
ZebOS(config-router)# metric-style wide
ZebOS(config-router)# protocol-topology
```

Related Commands

metric-style

redistribute

Use this command to redistribute reachability information from other routing protocols. Use the `no` parameter to stop redistribution.

Command Syntax

```
(no) redistribute PROTOCOLS (METRIC|METRICTYPE|LEVEL)
```

`PROTOCOLS` = kernel|connected|static|rip|ospf|bgp

- `kernel` Kernel routes
- `connected` Connected routes
- `static` Static routes
- `rip` RIP routes

`ospf` OSPF routes
`bgp` BGP routes
`METRIC` = metric <0-4261412864>
`<0-4261412864>` metric value
`METRICTYPE` = metric-type internal|external
`internal` internal metric
`external` external metric
`LEVEL` = level-1|level-1-2|level-2
`level-1` Redistribute routes into Level-1
`level-1-2` Redistribute routes into Level-1 and Level-2
`level-2` Redistribute routes into Level-2

Default

If this command is not used, no redistribution is configured.

If `metric` is not specified: `metric = 0`

If `metric type` is not specified `internal` metric type is used.

If `level` is not specified Routes are redistributed into level-2.

Command Mode

Router mode, Address-family IPv6

Usage

Redistributed IPv4 routes are attached into IP external reachability TLV in LSPs. When metric-style is configured as wide, redistributed routes are attached into Extended IP reachability TLV in LSPs.

Redistribute IPv6 routes are always attached into IPv6 reachability TLV.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# redistribute ospf metric 10 level-1
```

Related Commands

None

redistribute isis

Use this command to redistribute reachability information from one level to the other level. Use the `no` parameter with this command to stop redistribution.

Command Syntax

```
redistribute isis LEVELFROMTO (distribute-list WORD)
no redistribute isis LEVELFROMTO
```

`LEVELFROMTO` = `level-1 into level-2|level-2 into level-1`
`level-1` = Level-1 area
`level-2` = Level-2 domain

`WORD` = Access-list name

Default

If this command is not used, IS-IS redistributes selected L1 routes into L2.

Command Mode

Router mode

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# redistribute isis level-2 into level-1
```

Usage

If an access-list name is given with this command for an access list that does not exist, the routes are still redistributed.

Related Commands

None

restart isis graceful

Use this command to force to restart the IS-IS router.

Command Syntax

```
restart isis graceful (grace-period <1-65535>|)
```

`grace-period <1-65535>` The grace period in seconds.

Default

If this command is not used, the IS-IS router is not restarted gracefuly.

Command Mode

Privileged Exec mode

Example

```
ZebOS# restart isis graceful grace-period 60
```

Related Commands

restart-timer, isis restart grace-period

restart-timer

Use this command to configure the T2 timer, the maximum time that the system waits for the LSP database synchronization. Use the `no` parameter to use the default value.

Command Syntax

```
restart-timer <5-65535> (level-1|level-1-2|level-2)
no restart-timer (level-1|level-1-2|level-2)
```

<5-65535> the number of seconds in the interval

`level-1` sets value for the level 1

`level-2` sets value for the level 2

`level-1-2` sets value for the level 1 and level 2

Default

If this command is not used, ZebOS uses 60 seconds for the T2 value, and the value is applied to level-1 and level-2.

Command Mode

Interface mode

Related Commands

restart-timer, isis restart grace-period

router isis

Use this command to initiate an IS-IS routing instance. Use the `no` parameter with this command to remove an IS-IS routing instance.

Command Syntax

```
(no) router isis (TAG)
```

`TAG` ISO routing instance tag.

Default

If this command is not used, no IS-IS routing instances are configured.

Command Mode

Configure

Usage

Initiates IS-IS routing instance and enters router configuration mode.

Configure at least one NET to start routing. Also, enable particular interface with ip router isis command or ipv6 router isis command.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
```

Related Commands

ip router isis, ipv6 router isis, net

set-overload-bit

Use this command to set the overload-bit in self-LSPs. Use the `no` parameter to clear the overload-bit from self-LSPs.

Command Syntax

```
set-overload-bit (STARTUP) (SUPPRESS)
```

STARTUP = `on-startup <5-86400>|wait-for-bgp`

`<5-86400>` interval in seconds after which the overload state is exited.

`wait-for-bgp` BGP determines when to unset the overload bit

SUPPRESS = `suppress {external|interlevel}`

`external` suppress to redistribute external reachability (to prevent the IP prefixes learned from other protocols from being advertised)

`interlevel` suppress to redistribute interlevel reachability

`no set-overload-bit`

Default

If this command is not used, no overload-bit is set.

Command Mode

Router mode

Usage

If the overload-bit is set in LSPs, the router is not used as a transit router during SPF calculation. This command causes a router to update its own LSP with the overload bit set and causes the other routers not to use this router as a transit or forwarding router. The router continues to receive LSPs when the overload bit is set.

If the `on-startup` option is specified using the time-out (`5-86400`), the router sets the overload bit only at startup, then clears the bit after the specified interval has elapsed. If the `on-startup` option is specified using the `wait-for-bgp` option, the overload bit set is set up at startup, then the bit is cleared after the BGP router signals it has finished converging, or if the BGP router does not signal it has finished converging in 10 minutes. If there is no BGP process running, the overload bit is cleared immediately.

If the BGP process is started later than the overload bit is set in LSPs, the bit is cleared after the BGP router signals it has finished converging, or if the BGP router does not signal it has finished converging in 10 minutes.

If the `suppress` option is specified, the router suppresses the redistribution of specified types of reachability information during overload state. The `suppress` option can be used with the `external` or `interlevel` parameters, or both parameters simultaneously.

Example

The following example 1) sets the overload bit upon startup, 2) does not unset the overload bit until BGP has converged, 3) suppresses redistribution between IS-IS levels, and 4) suppresses redistribution from external routing protocols while the overload bit is set.

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# set-overload-bit on-startup wait-for-bgp suppress
interlevel external
```

Related Commands

None

show clns is-neighbors

Use this command to display all IS neighbor adjacencies.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show clns (TAG) is-neighbors (IFNAME|detail)
```

TAG show information for specified instance.

IFNAME show information about a single interface.

detail show detailed information for all interfaces.

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS% show clns is-neighbors detail

Area bb:
System Id      Interface   State  Type Priority  Circuit Id
0000.0000.0001 eth2        Up     L2   64        0000.0000.0099.02
  Area Address(es): 49.0000
  IP Address(es): 10.10.12.50
  Uptime: 00:09:14
0000.0000.0099 eth2        Up     L2   100       0000.0000.0099.02
  Area Address(es): 00.0001  4900.00
  IP Address(es): 10.10.12.99
  Uptime: 00:09:13
000F.0000.0002 eth2        Up     L1   64        000F.0000.0001.02
                           Up     L2   64        0000.0000.0099.02
  Area Address(es): 49.000f
  IP Address(es): 10.10.12.94
  Uptime: 00:05:12
```

Related Commands

show clns neighbor

show clns neighbors

Use this command to display IS neighbor adjacencies.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show clns (TAG) neighbors (IFNAME|detail)
```

TAG show information for specified instance.

IFNAME show information about a single interface.

detail show detailed information for all interfaces.

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS% show clns neighbors detail

Area bb:
System Id      Interface   SNPA            State  Holdtime  Type Protocol
0000.0000.0001 eth2        0000.0CFA.F002      Up     22        L2   IS-IS
  Area Address(es): 49.0000
  IP Address(es): 10.10.12.50
  Uptime: 00:10:17
0000.0000.0099 eth2        0003.4797.5E4C      Up     6         L2   IS-IS
  Area Address(es): 00.0001  4900.00
  IP Address(es): 10.10.12.99
  Uptime: 00:10:16
000F.0000.0002 eth2        0006.5B0E.D27D      Up     27        L1   IS-IS
                                               Up     27        L2   IS-IS
  Area Address(es): 49.000f
  IP Address(es): 10.10.12.94
  Uptime: 00:06:15
```

Related Commands

show clns is-neighbors

show debugging isis

Use this command to display the status of the debugging of the ISIS system.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show debugging isis
```

Command Mode

Exec and Privileged Exec mode

Examples

```
ZebOS# show debugging isis
```

show ip isis route

Use this command to display IS-IS routing table for IPv4.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show ip isis (TAG) route
```

TAG Display information for specified instance.

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS# show ip isis route
Codes: C - connected, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, D - discard, E - external metric
Area ipi:
     Destination         Metric      Next-Hop            Interface
C    10.10.0.0/24        10          --                  eth0
L1   10.10.11.0/24       20          10.10.0.43          eth0
L1   10.10.12.0/24       40          10.10.0.32          eth1
L1   172.16.10.0/24      35          10.10.0.99          eth1
L2   172.16.15.1/32      30          10.10.0.25          eth2
L2   172.16.12.2/32      10          10.10.0.101         eth3
```

Related Commands

show isis database, show isis topology

show ipv6 isis route

Use this command to display the IS-IS routing table for IPv6.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show ipv6 isis (TAG) route
```

`TAG` show information for specified instance

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS# sh ipv6 isis route
Codes: C - connected, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, D - discard, E - external metric
Area ipi:
C    3ffe:1234:1::/48 [10]
      via ::, eth0
C    3ffe:1234:2::/48 [10]
      via ::, eth0
C    3ffe:1234:3::/48 [10]
      via ::, eth0
L1   3ffe:5678:3::/48 [20]
      via fe80::203:47ff:fe4c:776e, eth0
L1   3ffe:5678:101::/48 [20]
      via fe80::203:47ff:fe4c:776e, eth0
```

show ipv6 isis topology

Use this command to display the IS-IS topology for IPv6.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show ipv6 isis (TAG) topology (l1|l2|level-1|level-2)
```

`TAG` show information for specified instance.
`l1` IS-IS level-1 SPF topology
`l2` IS-IS level-2 SPF topology
`level-1` IS-IS level-1 SPF topology
`level-2` IS-IS level-2 SPF topology

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS% show ipv6 isis topology

Area bb:
IS-IS paths to level-1 routers
System Id            Metric     Next-Hop             Interface   SNPA
000F.0000.0001       --
000F.0000.0002       10         000F.0000.0002       eth2        0006.5B0E.D27D

IS-IS paths to level-2 routers
System Id            Metric     Next-Hop             Interface   SNPA
0000.0000.0001       10         0000.0000.0001       eth2        0000.0CFA.F002
0000.0000.0099       10         0000.0000.0099       eth2        0003.4797.5E4C
0001.0002.0003       20         0000.0000.0099       eth2        0003.4797.5E4C
000F.0000.0001       --
000F.0000.0002       10         000F.0000.0002       eth2        0006.5B0E.D27D
```

Related Commands

show isis database, show isis topology

show isis database

Use this command to display detailed link state database information.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show isis database (FLAGS|LEVEL|LSPID)
```

`FLAGS` = `detail|verbose`
`detail` IS-IS Link State Database detailed information

`verbose` IS-IS Link State Database detailed information

`LEVEL` = l1|l2|level-1|level-2

`l1` IS-IS Level-1 Link State Database

`l2` IS-IS Level-2 Link State Database

`level-1` IS-IS Level-1 Link State Database

`level-2` IS-IS Level-2 Link State Database

`LSPID = XXXX.XXXX.XXXX.XX-XX`

`XXXX.XXXX.XXXX.XX-XX` LSP ID

Command Mode

Exec mode, Privileged Exec mode

Usage

```
ZebOS% show isis database detail
Area bb:
IS-IS Level-1 Link State Database:
LSPID                 LSP Seq Num  LSP Checksum  LSP Holdtime      ATT/P/OL
000F.0000.0001.00-00* 0x00000007   0xE15E        1188              1/0/0
  Area Address: 49.000F
  NLPID:        0xCC
  IP Address:   10.10.12.97
  Metric: 10         IP 10.10.12.0 255.255.255.0
  Metric: 10         IS 000F.0000.0001.02
000F.0000.0001.02-00* 0x00000003   0x3C66        1026              1/0/0
  Metric:  0         IS 000F.0000.0001.00
  Metric:  0         IS 000F.0000.0002.00
000F.0000.0002.00-00  0x00000003   0x8C4B        1025              1/0/0
  Area Address: 49.000F
  NLPID:        0xCC
  Hostname:     isisd@redhat
  IP Address:   10.10.12.94
  Metric: 10         IP 10.10.12.0 255.255.255.0
  Metric: 10         IS 000F.0000.0001.02

IS-IS Level-2 Link State Database:
LSPID                 LSP Seq Num  LSP Checksum  LSP Holdtime      ATT/P/OL
0000.0000.0001.00-00  0x0000034F   0x8B91        942               0/0/0
  Area Address: 49.0000
  Area Address: 00.0001
  NLPID:        0xCC
  Hostname:     cisco-4000
  IP Address:   10.10.12.50
  Metric:  5         IS 0000.0000.0099.02
  Metric: 16         IP 1.1.1.0 255.255.255.252
  Metric: 20         IP 192.168.10.0 255.255.255.0
  Metric:  6         IP 172.16.10.0 255.255.255.0
  Metric:  5         IP 10.10.12.0 255.255.255.0
0000.0000.0099.00-00  0x0000000F   0x9730        1085              0/0/0
  Area Address: 00.0001
```

```
  Area Address: 49.0000
  NLPID:        0xCC
  IP Address:   192.168.10.99
  Metric: 10         IP 192.168.10.0 255.255.255.0
  Metric: 10         IP 10.10.12.0 255.255.255.0
  Metric: 26         IP 1.1.1.0 255.255.255.252
  Metric: 16         IP 172.16.10.0 255.255.255.0
  Metric: 10         IS 0000.0000.0099.02
```

Related Commands

show ip isis route, show isis topology

show isis interface

Use this command to display detailed interface information.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show isis (TAG) interface (IFNAME)
```

`TAG` show information for specified instance

`IFNAME` The name of interface.

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS> show isis interface
VTYSH-68# show isis interface
lo is up, line protocol is up
  IS-IS not enabled on this interface
sdla0 is down, line protocol is down
  IS-IS not enabled on this interface
eth0 is up, line protocol is up
  IS-IS not enabled on this interface
eth1 is up, line protocol is up
  Routing Protocol: IS-IS (1)
    Circuit Type: level-1-2
    Local circuit ID 0x01
    IP interface address:
      10.10.10.10/24
    IPv6 interface address:
      fe80::204:76ff:fec8:28cc/10
    Level-1 Metric: 10/10, Priority: 64, Circuit ID: 0000.0000.0068.01
    Number of active level-1 adjacencies: 0
    Level-2 Metric: 10/10, Priority: 64, Circuit ID: 0000.0000.0068.01
    Number of active level-2 adjacencies: 0
    Next IS-IS LAN Level-1 Hello in 2 seconds
    Next IS-IS LAN Level-2 Hello in 2 seconds
```

```
eth2 is up, line protocol is up
  IS-IS not enabled on this interface
sit0 is down, line protocol is down
  IS-IS not enabled on this interface
```

show isis topology

Use this command to display data about IS-IS topology.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show isis topology (l1|level-1|l2|level-2)
```

`l1|level-1` IS-IS level-1 SPF topology.

`l2|level-2` IS-IS level-2 SPF topology.

Command Mode

Exec mode, Privileged exec mode

Usage

```
ZebOS% show isis topology

Area bb:
IS-IS paths to level-1 routers
System Id            Metric     Next-Hop             Interface   SNPA
000F.0000.0001       --
000F.0000.0002       10         000F.0000.0002       eth2        0006.5B0E.D27D

IS-IS paths to level-2 routers
System Id            Metric     Next-Hop             Interface   SNPA
0000.0000.0001       10         0000.0000.0001       eth2        0000.0CFA.F002
0000.0000.0099       10         0000.0000.0099       eth2        0003.4797.5E4C
0001.0002.0003       20         0000.0000.0099       eth2        0003.4797.5E4C
000F.0000.0001       --
000F.0000.0002       10         000F.0000.0002       eth2        0006.5B0E.D27D
```

Related Commands

show isis database, show ipv6 isis topology

show memory isis

Use this command to display the memory used by the IS-IS routing process.

To modify the lines displayed, use the | (output modifier token) and to save the output to a file use the > (output redirection token). For more information, see *ZebOS Command Line Interface Environment*.

Command Syntax

```
show memory isis
```

Command Mode

Configure mode

Usage

```
ZebOS> show memory isis
            MTYPEs for ISIS
Memory type                      Alloc cells
============================== ============
IS-IS instance                :            1
IS-IS area address            :            1
IS-IS interface               :            1
IS-IS interface name          :            1
IS-IS interface params        :            1
IS-IS neighbor                :            0
IS-IS TLV                     :            9
IS-IS TLV data                :            9
IS-IS sub TLV                 :            0
IS-IS sub TLV data            :            0
IS-IS LSP                     :            2
IS-IS LSP header              :            0
IS-IS packet                  :            0
IS-IS IP interface addr       :            0
IS-IS bitmap                  :            4
IS-IS bitmap bits             :            4
IS-IS SPF vertex              :            0
IS-IS SPF vertex nexthop      :            0
IS-IS route                   :            0
IS-IS path                    :            0
IS-IS nexthop                 :            0
IS-IS simple text password    :            0
IS-IS tag                     :            2
IS-IS hostname                :            0
IS-IS redistribution info     :            0
IS-IS redistribution map      :            0
IS-IS reachability info       :            0
IS-IS reachability map        :            0
IS-IS reachability source     :            0
IS-IS IS-reachability map     :            0
IS-IS IS-reachability info    :            0
IS-IS summary prefix          :            0
IS-IS restart interface       :            0
IS-IS CSPF                    :            0
IS-IS CSPF LSP                :            0
IS-IS CSPF constraint route   :            0
IS-IS CSPF vertex             :            0
IS-IS CSPF vertex nexthop     :            0
------------------------------ ------------
```

spf-interval-exp

Use this command to set the minimum and maximum hold intervals between Shortest Path First (SPF) calculations. Use the no parameter with this command to set the minimum and maximum hold intervals to the default.

Command Syntax

```
spf-interval-exp (level-1|level-2) MIN_INTERVAL MAX_INTERVAL
no spf-interval-exp
```

`level-1` Set interval for Level-1 IS.

`level-2` Set interval for Level-2 IS.

`MIN_INTERVAL` = <0-2147483647> Specifies the minimum delay between receiving a change to the SPF calculation in milliseconds. The default SPF minimum hold-time interval value is 500 milliseconds.

`MAX_INTERVAL` = <0-2147483647> Specifies the maximum delay between receiving a change to the SPF calculation in milliseconds. The default SPF maximum hold-time interval value is 50 seconds.

Default

If this command is not used, IS-IS uses 500 milliseconds and 50000 milliseconds for the minimum and maximum hold intervals, respectively.

The value is applied to both level-1 and level-2 if the `level` parameter is omitted.

Command Mode

Router mode

Usage

The `spf-interval-exp` command configures the minimum and maximum interval time between the receipt of a topology change and the calculation of the SPF.

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# spf-interval-exp level-1 600 60000
```

Related Commands

None

summary-address

Use this command to configure Summary Address to summarize IPv4 reachability information. Use the no parameter with this command to unconfigure the summary.

Command Syntax

```
(no) summary-address A.B.C.D/M (level-1|level-1-2|level-2)
```

`A.B.C.D/M` IPv4 prefix to be announced

`level-1` Summarize reachability information only for Level-1.

`level-1-2` Summarize reachability information for both Level-1 and Level-2.

`level-2` Summarize reachability information only for Level-2.

Default

If this command is not used, IS-IS does not configure the summary-address.

Summary-address is applied to Level-2 IS if level parameter is omitted.

Command Mode

Router mode

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# summary-address 10.10.0.0/16 level-1-2
```

Related Commands

summary-prefix

summary-prefix

Use this command to configure the Summary prefix to summarize IPv6 reachability information. Use the `no` parameter to unconfigure the summary.

Command Syntax

```
(no) summary-prefix X:X::X:X/M (level-1|level-1-2|level-2)
```

`X:X::X:X/M` IPv6 prefix to be announced

`level-1` Summarize reachability information only for Level-1.

`level-1-2` Summarize reachability information for both Level-1 and Level-2.

`level-2` Summarize reachability information only for Level-2.

Default

If this command is not used, IS-IS does not configure the summary-prefix.

Summary-prefix is applied to Level-2 IS if `level` parameter is omitted.

Command Mode

Router mode

Example

```
ZebOS# configure terminal
ZebOS(config)# router isis bb
ZebOS(config-router)# address-family ipv6
ZebOS(config-router-af)# summary-prefix 3ffe:1234::/32 level-1-2
```

Related Commands

summary-address

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