ZebOS-XP®
Network Platform

Version 1.4
Extended Performance

Ethernet Local Management Interface
Command Reference

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IP Infusion Inc. Proprietary

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Preface

This document describes the ZebOS-XP commands for Ethernet Local Management Interface (ELMI).

Audience

This document is intended for network administrators and other engineering professionals who configure and manage ELMI.

Conventions

Table P-1 shows the conventions used in this guide.

Table P-1: Conventions

Convention	Description
Italics	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
`monospaced type`	Code elements such as commands, functions, parameters, files, and directories

Contents

This document contains these chapters:

- Chapter 1, *Command Line Interface*
- Chapter 2, *ELMI Commands*

Related Documents

The following guides are related to this document:

- *Ethernet Local Management Interface System Developer Guide*
- *Ethernet Local Management Interface System Configuration Guide*
- *Installation Guide*

Note: All ZebOS-XP technical manuals are available to licensed customers at http://www.ipinfusion.com/support/document_list.

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CHAPTER 1 Command Line Interface

This chapter introduces the ZebOS-XP Command Line Interface (CLI) and how to use its features.

Overview

You use the CLI to configure, monitor, and maintain ZebOS-XP devices. The CLI is text-based and each command is usually associated with a specific task.

You can give the commands described in this manual locally from the console of a device running ZebOS-XP or remotely from a terminal emulator such as `putty` or `xterm`. You can also use the commands in scripts to automate configuration tasks.

Starting the Command Line Interface

You must start daemons as described in this section before you can use the CLI. The general steps are listed below. For details about the ZebOS-XP daemons, see the *Installation Guide.*

1. Start your terminal emulator and connect to the device or go to the console of the device running ZebOS-XP.
2. Connect to the directory where you installed the ZebOS-XP executables.
3. Start the Network Services Module (NSM).
   ```
   # ./nsm -d
   ```
4. Start the protocol module daemons that your organization uses, such as `mstpd`, `ospf6d`, or `ripd`.
   ```
   # ./mstpd -d
   ```
5. Start the Integrated Management Interface (IMI) daemon.
   ```
   # ./imi -d
   ```
6. Start the IMI shell.
   ```
   # ./imish
   ```
   Note: Your organization may use a ZebOS-XP build that does not include `imish`. If that is the case, you must connect to a port on which a protocol daemon is listening. For details, see the *Installation Guide.*

You can now begin using the CLI.

Command Line Interface Help

You access the CLI help by entering a full or partial command string and a question mark “?”. The CLI displays the command keywords or parameters along with a short description. For example, at the CLI command prompt, type:

```
> show ?
```

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

```
show ?
  application-priority            Application Priority
```

```
  arp                             Internet Protocol (IP)
  bfd                             Bidirectional Forwarding Detection (BFD)
  bgp                             Border Gateway Protocol (BGP)
  bi-lsp                          Bi-directional lsp status and configuration
  bridge                          Bridge group commands
  ce-vlan                         COS Preservation for Customer Edge VLAN
  class-map                       Class map entry
  cli                             Show CLI tree of current mode
  clns                            Connectionless-Mode Network Service (CLNS)
  control-adjacency               Control Adjacency status and configuration
  control-channel                 Control Channel status and configuration
  cspf                            CSPF Information
  customer                        Display Customer spanning-tree
  cvlan                           Display CVLAN information
  debugging                       Debugging functions (see also 'undebug')
  dot1x                           IEEE 802.1X Port-Based Access Control
  etherchannel                    LACP etherchannel
  ethernet                        Layer-2
...
```

If you type the ? in the middle of a keyword, the CLI displays help for that keyword only.

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

If you type the ? in the middle of a keyword, but the incomplete keyword matches several other keywords, ZebOS-XP displays help for all matching keywords.

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

Command Completion

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

```
> sh
```

Press the tab key. The CLI displays:

```
> show
```

If the spelling of a command or parameter is ambiguous, the CLI displays the choices that match the abbreviation. Type `show i` and press the tab key. The CLI displays:

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

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

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

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

```
> show interface
  IFNAME  Interface name
  |       Output modifiers
```

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```
>       Output redirection
<cr>
```

The CLI displays the only parameter associated with this command, the `IFNAME` parameter.

Command Abbreviations

The CLI accepts abbreviations that uniquely identify a keyword in commands. For example:

```
> sh in eth0
```

is an abbreviation for:

```
> show interface eth0
```

Command Line Errors

Any unknown spelling causes the CLI to display the error `Unrecognized command` in response to the ?. The CLI displays the command again as last entered.

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

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

```
(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, the CLI displays the following message:

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

Some commands are too long for the display line and can wrap mid-parameter or mid-keyword, as shown below. This does *not* cause an error and the command performs as expected:

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

Command Negation

Many commands have a `no` form that resets a feature to its default value or disables the feature. For example:

- The `ip address` command assigns an IPv4 address to an interface
- The `no ip address` command removes an IPv4 address from an interface

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Syntax Conventions

Table 1-1 describes the conventions used to represent command syntax in this reference.

Table 1-1: Syntax conventions

Convention	Description	Example
`monospaced font`	Command strings entered on a command line	`show debugging elmi`
`lowercase`	Keywords that you enter exactly as shown in the command syntax.	`show debugging elmi`
`UPPERCASE`	See Variable Placeholders	`IFNAME`
`()`	Optional parameters, from which you must select one. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>)`
`()`	Optional parameters, from which you select one or none. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>|)`
`()`	Optional parameter which you can specify or omit. Do not enter the parentheses or vertical bar as part of the command.	`(IFNAME|)`
`{}`	Optional parameters, from which you must select one or more. Vertical bars delimit the selections. Do not enter the braces or vertical bars as part of the command.	`{intra-area <1-255>|inter-area <1-255>|external <1-255>}`
`[]`	Optional parameters, from which you select zero or more. Vertical bars delimit the selections. Do not enter the brackets or vertical bars as part of the command. A '?' before a parameter in square brackets limits that parameter to one occurrence in a command string.	`[<1-65535>|AA:NN|internet|local-AS|no-advertise|no-export]`
`.`	Repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	`set as-path prepend .<1-65535>`

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Variable Placeholders

Table 1-2 shows the tokens used in command syntax use to represent variables for which you supply a value.

Table 1-2: Variable placeholders

Token	Description
WORD	A contiguous text string (excluding spaces)
LINE	A text string, including spaces; no other parameters can follow this parameter
IFNAME	Interface name whose format varies depending on the platform; examples are: eth0, Ethernet0, ethernet0, xe0
A.B.C.D	IPv4 address
A.B.C.D/M	IPv4 address and mask/prefix
X:X::X:X	IPv6 address
X:X::X:X/M	IPv6 address and mask/prefix
HH:MM:SS	Time format
AA:NN	BGP community value
XX:XX:XX:XX:XX:XX	MAC address
<1-5> <1-65535> <0-2147483647> <0-4294967295>	Numeric range

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Command Description Format

Table 1-3 explains the sections used to describe each command in this reference.

Table 1-3: Command descriptions

Section	Description
Command Name	The name of the command, followed by what the command does and when should it be used
Command Syntax	The syntax of the command
Parameters	Parameters and options for the command
Default	The state before the command is executed
Command Mode	The mode in which the command runs; see Command Modes
Example	An example of the command being executed

Keyboard Operations

Table 1-4 lists the operations you can perform from the keyboard.

Table 1-4: Keyboard operations

Key combination	Operation
Left arrow or Ctrl+b	Moves one character to the left. When a command extends beyond a single line, you can press left arrow or Ctrl+b repeatedly to scroll toward the beginning of the line, or you can press Ctrl+a to go directly to the beginning of the line.
Right arrow or Ctrl-f	Moves one character to the right. When a command extends beyond a single line, you can press right arrow or Ctrl+f repeatedly to scroll toward the end of the line, or you can press Ctrl+e to go directly to the end of the line.
Esc, b	Moves back one word
Esc, f	Moves forward one word
Ctrl+e	Moves to end of the line
Ctrl+a	Moves to the beginning of the line
Ctrl+u	Deletes the line
Ctrl+w	Deletes from the cursor to the previous whitespace
Alt+d	Deletes the current word
Ctrl+k	Deletes from the cursor to the end of line
Ctrl+y	Pastes text previously deleted with Ctrl+k, Alt+d, Ctrl+w, or Ctrl+u at the cursor

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Table 1-4: Keyboard operations (Continued)

Key combination	Operation
Ctrl+t	Transposes the current character with the previous character
Ctrl+c	Ignores the current line and redisplays the command prompt
Ctrl+z	Ends configuration mode and returns to exec mode
Ctrl+l	Clears the screen
Up Arrow or Ctrl+p	Scroll backward through command history
Down Arrow or Ctrl+n	Scroll forward through command history

Show Command Modifiers

You can use two tokens to modify the output of a `show` command. Enter a question mark to display these tokens:

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

You can type the | (vertical bar character) to use output modifiers. For example:

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

Begin Modifier

The `begin` modifier displays the output beginning with the first line that contains the input string (everything typed after the `begin` keyword). For example:

```
# 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
!
end
```

You can specify a regular expression after the `begin` keyword, This example begins the output at a line with either “eth3” or “eth4”:

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

...skipping
interface eth3
```

```
 shutdown
!
interface eth4
 shutdown
!
interface svlan0.1
 no shutdown
!
route-map myroute permit 3
!
route-map mymap1 permit 10
!
route-map rmap1 permit 3
!
line con 0
 login
line vty 0 4
 login
!
end
```

Include Modifier

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

```
# 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
```

You can specify a regular expression after the `include` keyword. This examples includes all lines with “input” or “output”:

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

Exclude Modifier

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

```
# show interface eth1 | exclude input
Interface eth1
  Scope: both
  Hardware is Ethernet, address is 0004.75e6.5393
  index 3 metric 1 mtu 1500 <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Administrative Group(s): None
  DSTE Bandwidth Constraint Mode is MAM
  inet6 fe80::204:75ff:fee6:5393/64
    output packets 4438, bytes 394940, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
    collisions 0
```

You can specify a regular expression after the `exclude` keyword. This example excludes lines with “output” or “input”:

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```
# show interface eth0 | exclude (in|out)put
Interface eth0
  Scope: both
  Hardware is Ethernet  Current HW addr: 001b.2139.6c4a
  Physical:001b.2139.6c4a  Logical:(not set)
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 3000
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Bandwidth 100m
  DHCP client is disabled.
  inet 10.1.2.173/24 broadcast 10.1.2.255
  VRRP Master of :  VRRP is not configured on this interface.
  inet6 fe80::21b:21ff:fe39:6c4a/64
    collisions 0
```

Redirect Modifier

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

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

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

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

Command Modes

Commands are grouped into modes arranged in a hierarchy. Each mode has its own set of commands. Table 1-5 lists the command modes common to all protocols.

Table 1-5: Common command modes

Name	Description
Executive mode	Also called *view* mode, this is the first mode to appear after you start the CLI. It is a base mode from where you can perform basic commands such as `show`, `exit`, `quit`, `help`, `list`, and `enable`.
Privileged executive mode	Also called *enable* mode, in this mode you can run additional basic commands such as `debug`, `write`, and `show`.
Configure mode	Also called *configure terminal* mode, in this mode you can run configuration commands and go into other modes such as interface, router, route map, key chain, and address family.
Interface mode	In this mode you can configure protocol-specific settings for a particular interface. Any setting you configure in this mode overrides a setting configured in router mode.
Router mode	This mode is used to configure router-specific settings for a protocol such as RIP or OSPF.

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Command Mode Tree

The diagram below shows the common command mode hierarchy.

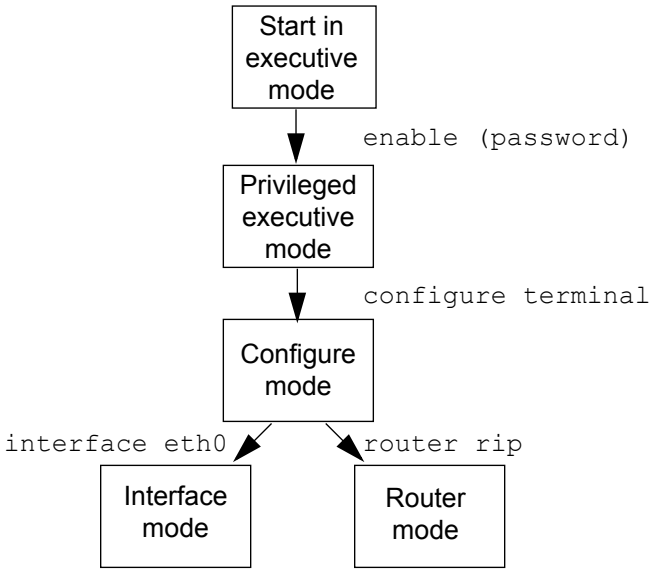

Figure 1-1: Common command modes

To change modes:

1. Enter privileged executive mode by entering `enable` in Executive mode.
2. Enter configure mode by entering `configure terminal` in Privileged Executive mode.

The example below shows starting `imish` and then moving from executive mode to privileged executive mode to configure mode and finally to router mode:

```
# ./imish
> enable mypassword
# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
(config)# router rip
(config-router)#
```

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

Debug Command

Whether the settings you make for a `debug` command persist between sessions depends on the mode where you make the settings:

- When you make settings for a `debug` command in executive mode, the configuration is valid for the current session only and is not saved in the `ZebOS.conf` file.
- When you make settings for a `debug` command in configuration mode, the configuration is retained and saved in `ZebOS.conf` and used even after the session restarts.

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CHAPTER 2 ELMI Commands

This chapter contains the Ethernet Local Management Interface (ELMI) commands.

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clear ethernet lmi statistics

Use this command to clear ELMI statistics of all bridge interfaces on which ELMI is enabled.

Command Syntax

```
clear ethernet lmi statistics (bridge <1-32>|)
clear ethernet lmi statistics interface IFNAME
```

Parameters

`bridge`	Use this parameter to enter the bridge-group ID used for bridging <1-32>.
`IFNAME`	Use this parameter as the interface name on an EVC (Ethernet Virtual Connection). For example, eth1 or eth2.

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#clear ethernet lmi statistics
#clear ethernet lmi statistics bridge 1
#clear ethernet lmi statistics interface eth1
```


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debug elmi

Use this command to enable debugging either for all information of the ELMI protocol or for a specific feature of ELMI, such as events and timers.

Use the `no` parameter along with this command to disable the debugging feature for ELMI.

Command Syntax

```
debug elmi all
debug elmi event
debug elmi packet rx
debug elmi packet tx
debug elmi protocol
debug elmi timer
no debug elmi all
no debug elmi event
no debug elmi packet tx
no debug elmi packet rx
no debug elmi protocol
no debug elmi timer
```

Parameters

`all`	Use this parameter to enable debugging for all information regarding ELMI.
`event`	Use this parameter to enable debugging for all ELMI events.
`packet`	Use this parameter to enable debugging for packets for ELMI.
`rx`	Use this parameter to enable debugging for the received packets
`tx`	Use this parameter to enable debugging for the transmitted packets
`protocol`	Use this parameter to enable protocol debugging for ELMI.
`timer`	Use this parameter to enable debugging for the timer of the ELMI.

Command Modes

Executive mode, Privileged Executive mode, and Configure mode

Examples

```
#debug elmi all
#
```

ethernet lmi async-msg-interval

Use this command to configure the minimum interval for the asynchronous message timer used by ELMI.

Use the no parameter to set the values of the timers to their default values.

Command Syntax

```
ethernet lmi async-msg-interval <1-3>
no ethernet lmi async-msg-interval
```

Parameters

<1-3>	Set the minimum interval value for asynchronous messages.

Command Mode

Interface mode

Default

ELMI is disabled by default on an interface.

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ethernet lmi async-msg-interval 1
```


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ethernet lmi interface

Use this command to enable Ethernet LMI on an interface.

Use the no parameter to disable Ethernet LMI on an interface.

Command Syntax

```
ethernet lmi interface
no ethernet lmi interface
```

Parameters

None

Command Mode

Interface mode

Default

ELMI is disabled by default on an interface.

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ethernet lmi interface
```

ethernet lmi global

Use this command to enable ELMI at the global-level on a bridge.

Note: This command is supported on default bridge. If the default bridge is not supported, then you must add the bridge ID before you issue this command.

Use the `no` parameter along with this command to disable ELMI.

Command Syntax

```
ethernet lmi global (bridge <1-32>|)
no ethernet lmi global (bridge <1-32>|)
```

Parameters

`bridge`	Use this parameter to indicate the bridge-group parameter.
`<1-32>`	Use this parameter to indicate the actual bridge-group ID used for bridging.

Command Mode

Configure mode

Default

ELMI is disabled by default.

Examples

This command is executed to enable ELMI globally on the default bridge.

```
#configure terminal
(config)#ethernet lmi global

(config)#ethernet lmi global bridge 1

(config)#no ethernet lmi global

(config)#no ethernet lmi global bridge 1
```


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ethernet lmi n391

Use this command to configure a status counter at the UNI-C.

Use the no parameter to set the value to its default values.

Note: A polling counter is applicable only for UNI-C, even though it is visible at UNI-N.

Command Syntax

```
ethernet lmi n391 <1-65000>
no ethernet lmi n391
```

Parameters

<1-65000>	This parameter configures a polling counter at the UNI-C.

Command Mode

Interface mode

Default

Default is 360.

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ethernet lmi n391 12345
```

ethernet lmi n393

Use this command to configure a status counter at both the UNI-C and the UNI-N (User Network Interface - Network-side).

Use the no parameter to set the value to its default values.

Note: A polling counter is applicable only for UNI-C, even though it is visible at UNI-N.

Command Syntax

```
ethernet lmi n393 <2-10>
no ethernet lmi n393
```

Parameters

<2-10>	This parameter configures the status counter at both the UNI-C and the UNI-N.

Command Mode

Interface mode

Default

Default is 4.

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ethernet lmi n393 4
```


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ethernet lmi t391

Use this command to configure the t391 polling time at a UNI-C (User Network Interface - Customer-side). The valid range is from 5 to 30 (seconds).

Use the no parameter to set the value to its default values.

Command Syntax

```
ethernet lmi t391 <5-30>
no ethernet lmi t391
```

Parameters

<5-30>	This parameter configures the polling time at a UNI-C.

Command Mode

Interface mode

Default

Default is 10 seconds.

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ethernet lmi t391 5
```

ethernet lmi t392

Use this command to configure the t392 polling time at a UNI-C (User Network Interface - Customer-side). The valid range is from 0 to 30 (seconds).

Use the no parameter to set the value to its default values.

Command Syntax

```
ethernet lmi t392 <0-30>
no ethernet lmi t392
```

Parameters

<0-30>	This parameter configures the t392 polling time at a UNI-C. The valid range is from 0 to 30 (seconds).

Command Mode

Interface mode

Default

Default is 15 seconds.

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ethernet lmi t392 5
```


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service ma-name

Use this command to configure the CFM (Connectivity Fault Management) interface to notify the Ethernet virtual connection (EVC) the status of a particular level for ELMI. Once configured, the CFM interface sends notifications only for the configured levels.

Command Syntax

```
service ma-name MA_NAME evc-status elmi (enable|disable)
```

Parameters

`MA_NAME`	Enter an integer as MA-name
`evc-status`	Enter the EVC status
`elmi`	Specify to inform ELMI
`disable`	Set feature to disable
`enable`	Set feature to enable

Command Mode

Ethernet Configure mode

Examples

```
#configure terminal
#(config)#ethernet cfm domain-name type character-string name test level 3
mip-creation default bridge 1
#(config-ether-cfm)#service ma-type integer ma-name 3 vlan 21 mip-creation
default
#(config-ether-cfm)#mep crosscheck mpid 52 vlan 21
#(config-ether-cfm)#service ma-name 3 evc-status elmi enable
```

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show debugging elmi

Use this command to display the ELMI debugging settings.

Command Syntax

```
show debugging elmi
```

Parameters

None

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show debugging elmi
ELMI debugging status:
  ELMI timer debugging is on
  ELMI protocol debugging is on
  ELMI transmiting packet debugging is on
  ELMI receiving packet debugging is on
  ELMI event debugging is on
```


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show ethernet lmi evc

Use this command to display bridge information for configured EVCs (Ethernet Virtual Connections).

Command Syntax

```
show ethernet lmi evc (bridge <1-32>|)
```

Parameters

bridge	Indicates the bridge-group ID parameter.
<1-32>	Displays the actual bridge-group ID that is used for bridging.

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show ethernet lmi evc bridge 12
St    EVC Id                                          Port
--- ----------------------------------------        ------

Key: St=Status, A=Active, P=Partially Active, I=Inactive, N_A=New and Active,
N_P=New and Partially Active, N_I=New and Not Active, ?=Link Down
```

show ethernet lmi evc detail evc-ref-id

Use this command to display detailed status for a configured EVC reference ID string. Typically, this command is executed on the UNI-C.

Command Syntax

```
show ethernet lmi evc detail evc-ref-id EVC_REF_ID
show ethernet lmi evc detail evc-ref-id EVC_REF_ID interface IFNAME
```

Parameters

`EVC_REF_ID`	Displays the actual EVC reference ID.
`interface`	Indicates the `interface` parameter.
`IFNAME`	Displays the actual interface information (for example, Eth1 or Eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show ethernet lmi evc detail evc-ref-id 21
#
```


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show ethernet lmi evc detail EVC ID

Use this command to display detailed status for a configured EVC ID string. Typically, this command is executed on the UNI-C.

Use this command to display detailed status for configured EVCs. This command is executed on the UNI-C.

Command Syntax

```
show ethernet lmi evc detail EVC_ID (bridge <1-32>)
show ethernet lmi evc detail EVC_ID interface IFNAME
```

Parameters

`bridge`	Indicates the `bridge` parameter.
`<1-32>`	Displays the actual bridge-group ID.
`interface`	Indicates the `interface` parameter.
`IFNAME`	Displays the actual interface information (for example, Eth1 or Eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show ethernet lmi evc detail 21 bridge 1
EVC Id: EVC_1
Interface: eth2
Time since Last Full Report: 00:05:05
Ether LMI Link Status: UP

UNI Status:  UP
UNI Id: ZebOS-XP_eth0
CE-VLAN/EVC Map Type: Bundling

EVC Reference Id(svid): 21
EVC Status: New and Active
EVC Type: point-point
Default EVC: FALSE
Untagged/Priority Tagged: FALSE
CE-VLAN to EVC membership:
   11

% Ingress Bandwidth Profile Set Per: EVC
 CIR     CBS     EIR     EBS     Coupling-flag   Color-mode
 ======= ======= ======= ======= =============== ============
 1000    1500     1000     1500    disable        color-blind
#
```

show ethernet lmi evc interface

Use this command to display interface information for configured EVCs.

Command Syntax

```
show ethernet lmi evc interface IFNAME
```

Parameters

IFNAME	Displays the actual interface information (for example, eth1 or eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

This command shows the output of this command:

```
#show ethernet lmi evc interface eth1
EVC Id: EVC_1
Interface: eth1
Time since Last Full Report: 00:01:24
Ether LMI Link Status: UP

UNI Status: UP
UNI Id: ZebOS-XP_eth0
CE-VLAN/EVC Map Type: Bundling

EVC Reference Id(svid): 21
EVC Status: New and Not Active
EVC Type: point-point
Default EVC: FALSE
Untagged/Priority Tagged: FALSE
CE-VLAN to EVC memership:
   11

% Ingress Bandwidth Profile Set Per: EVC
 CIR     CBS     EIR     EBS     Coupling-flag   Color-mode
 ======= ======= ======= ======= =============== ============
 1000     1500     0       0       disable         color-blind
```


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show ethernet lmi evc map

Use this command to display the CE-VLAN to EVC map information.

Command Syntax

```
show ethernet lmi evc map interface IFNAME
```

Parameters

`interface`	Indicates the interface parameter.
`IFNAME`	Displays the actual interface information (for example, eth1 or eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

This command shows the output of this show command using the map parameter:

```
#show ethernet lmi evc map interface eth1

UNI Id: Port-1
Ether LMI Link Status: UP
 St     Evc Id                                    CE-VLAN
 ---- ----------------------------------------   -------
 N_I       EVC-1                                   11

 Key: St=Status, A=Active, P=Partially Active, I=Inactive, N_A=New and Active,
 N_P=New and Partially Active, N_I=New and Not Active,?=Link Down
#
```

show ethernet lmi parameters

Use this command to display ELMI parameters for selected interface. This CLI can be executed at the UNI-C and the UNI-N.

Command Syntax

```
show ethernet lmi parameters interface IFNAME
```

Parameters

`interface`	Indicates the interface parameter.
`IFNAME`	Displays the actual interface information (for example, Eth1 or Eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show ethernet lmi parameters interface eth1

E-LMI Parameters for interface eth1
    Ether LMI Link Status Up
    Mode CE
    T391 10
    N391 360
    N393 4
#
```


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show ethernet lmi statistics

Use this command to display ELMI statistics of the bridge ports on which ELMI is enabled. This CLI can be executed at UNI-C and UNI-N.

Command Syntax

```
show ethernet lmi statistics interface IFNAME
show ethernet lmi statistics (bridge <1-32>|)
```

Parameters

bridge	Indicates the bridge-group ID parameter.
<1-32>	Displays the actual bridge-group ID that is used for bridging.
interface	Indicates the interface parameter.
IFNAME	Displays the actual interface information (for example, Eth1 or Eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show ethernet lmi statistics bridge 1
E-LMI Statistics for interface eth1
  Ether LMI Link Status Active
  UNI Status Up
  UNI Id switch-1

  Reliability Errors
    Status Timeouts               0  Invalid Sequence Number           0
    Invalid Status Response       0  Unsolicited Status Received       0

  Protocol Errors
    Invalid Protocol Version        0  Invalid EVC Reference Id           0
    Invalid Message Type            0 Out of Sequence IE                  0
    Duplicated IE                   0  Mandatory IE Missing               0
    Invalid Mandatory IE            0  Invalid non-Mandatory IE           0
    Unrecognized IE                 0  Unexpected IE                      0
    Short Message                   0

#show ethernet lmi statistics interface eth1

E-LMI Statistics for interface eth1
  Ether LMI Link Status Active
  UNI Status Up
  UNI Id switch-1

  Reliability Errors
    Status Timeouts               0  Invalid Sequence Number           0
    Invalid Status Response       0 Unsolicited Status Received       0
#
```

show ethernet lmi uni

Use this command to display detailed status of an Ethernet LMI UNI interface.

Command Syntax

```
show ethernet lmi uni interface IFNAME
```

Parameters

`interface`	Indicates the interface parameter.
`IFNAME`	Displays the actual interface information (for example, Eth1 or Eth2).

Command Modes

Executive Mode and Privileged Executive Mode

Examples

```
#show ethernet lmi uni interface eth2
 UNI Id:      Port-1
 CE-VLAN/EVC Map Type:    Bundling

 Bandwidth Profile Per UNI
 CIR     CBS     EIR     EBS     Coupling-flag   Color-mode
 ======= ======= ======= ======= =============== ============
 1000    1500    1000    1500    disable         color-blind

St    EVC Id                                      Port
--- ----------------------------------------      ----
N_I   EVC-1                                      eth2

 Key: St=Status, A=Active, P=Partially Active, I=Inactive, N_A=New and Active,
 N_P=New and Partially Active, N_I=New and Not Active,?=Link Down
#
```


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