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# **ZebOS-XP®**

## **Network Platform**

**Version 1.4**

**Extended Performance**

**Precision Time Protocol  
Command Reference**

**December 2015**

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# Preface

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This document describes the ZebOS-XP commands for Precision Time Protocol (PTP).

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## Audience

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

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## Conventions

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

**Table P-1: Conventions**

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

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## Contents

This document contains these chapters:

- [Chapter 1](#), *Command Line Interface*
- [Chapter 2](#), *Precision Time Protocol Commands*

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## Related Documents

The following guides are related to this document:

- *Precision Time Protocol Developer Guide*
- *Precision Time Protocol Configuration Guide*
- *Installation Guide*

Note: All ZebOS-XP technical manuals are available to licensed customers at [http://www.ipinfusion.com/support/document\\_list](http://www.ipinfusion.com/support/document_list).

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For support-related questions, contact [support@ipinfusion.com](mailto:support@ipinfusion.com).

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# CHAPTER 1 Command Line Interface

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

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## 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.

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## 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
```



```
>          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

## 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	<code>show ptp data default</code>
lowercase	Keywords that you enter exactly as shown in the command syntax.	<code>show ptp data default</code>
UPPERCASE	See <a href="#">Variable Placeholders</a>	<code>IFNAME</code>
( )	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.	<code>(A.B.C.D &lt;0-4294967295&gt;)</code>
( )	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.	<code>(A.B.C.D &lt;0-4294967295&gt; )</code>
( )	Optional parameter which you can specify or omit. Do not enter the parentheses or vertical bar as part of the command.	<code>(IFNAME )</code>
{ }	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.	<code>{intra-area &lt;1-255&gt; inter-area &lt;1-255&gt; external &lt;1-255&gt;}</code>
[ ]	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.	<code>[&lt;1-65535&gt; AA:NN internet local-AS no-advertise no-export]</code>
.	Repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	<code>set as-path prepend .&lt;1-65535&gt;</code>

---

## 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: <code>eth0</code> , <code>Ethernet0</code> , <code>ethernet0</code> , <code>xe0</code>
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

---

## Command Description Format

[Table 1-3](#) explains the sections used to describe each command in this reference.

**Table 1-3: Command descriptions**

Section	Description
<b>Command Name</b>	The name of the command, followed by what the command does and when should it be used
<b>Command Syntax</b>	The syntax of the command
<b>Parameters</b>	Parameters and options for the command
<b>Default</b>	The state before the command is executed
<b>Command Mode</b>	The mode in which the command runs; see <a href="#">Command Modes</a>
<b>Example</b>	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

**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 redisplay 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”:

```
# 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.

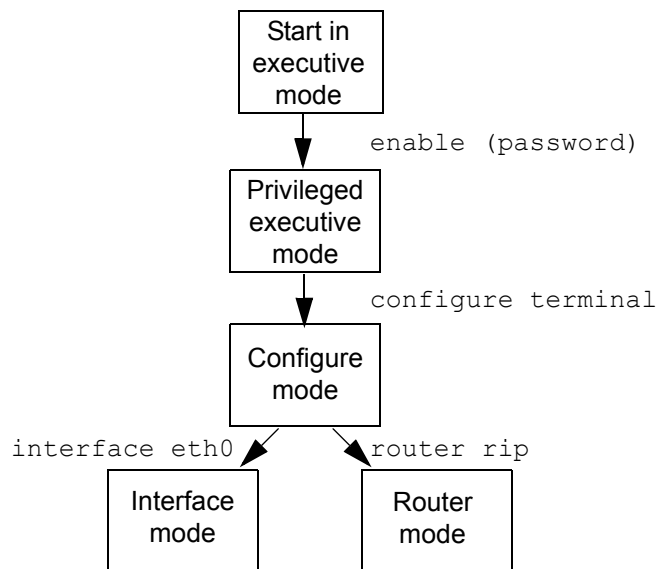
**Table 1-5: Common command modes**

Name	Description
Executive mode	Also called <i>view</i> 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 <code>show</code> , <code>exit</code> , <code>quit</code> , <code>help</code> , <code>list</code> , and <code>enable</code> .
Privileged executive mode	Also called <i>enable</i> mode, in this mode you can run additional basic commands such as <code>debug</code> , <code>write</code> , and <code>show</code> .
Configure mode	Also called <i>configure terminal</i> mode, in this mode you can run configuration commands and go into other modes such as <code>interface</code> , <code>router</code> , <code>route map</code> , <code>key chain</code> , and <code>address family</code> .
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.

---

## 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.



## CHAPTER 2 Precision Time Protocol Commands

---

This chapter contains the configuration commands used for Precision Time Protocol (PTP). It includes the following commands:

- [announce interval](#) on page 18
- [announce timeout-interval](#) on page 19
- [clock-port](#) on page 20
- [debug ptp all](#) on page 21
- [debug ptp event](#) on page 22
- [debug ptp packet rx](#) on page 23
- [debug ptp packet tx](#) on page 24
- [debug ptp protocol](#) on page 25
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- [slave-only](#) on page 42
- [sync interval](#) on page 43
- [syntonization](#) on page 44
- [unicast-neighbor](#) on page 45

---

## announce interval

Use this command to set the interval for announce messages with status and characterization information about the transmitting device. The receiver uses this information to determine the best master clock. This value is the logarithm to the base 2 of the mean time between successive announce messages.

Before you give this command, you must have previously created a clock with the [ptp-clk](#) command.

### Command Syntax

```
announce interval INTERVAL
```

### Parameters

INTERVAL	Announce message interval in seconds, log base 2 <0-4>.
----------	---

### Default

2 intervals.

### Command Mode

PTP clock port configure mode

### Examples

The following example sets the announce message interval to every 2<sup>2</sup> seconds (4 seconds).

```
>ena
#config term
Enter configuration commands, one per line.  End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#announce interval 2
```

---

## announce timeout-interval

Use this command to set the announce message timeout. This value is the number of announce intervals that can pass without receipt of an announce message before the clock assumes the role of master clock.

Before you give this command, you must have previously created a clock with the [ptp-clk](#) command.

### Command Syntax

```
announce timeout-interval INTERVAL
```

### Parameters

INTERVAL

The announce message timeout, a multiple of the value specified for the announce interval <2-10>.

### Default

6 timeouts.

### Command Mode

PTP clock port configure mode

### Examples

The following example sets the announce timeout interval to 2^2 seconds (4 seconds).

```
>ena
#config term
Enter configuration commands, one per line.  End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#announce timeout-interval 2
```

---

## clock-port

Use this command to enable PTP on an interface. This command also changes the command mode to PTP clock port configure mode.

**Note:** Before you give this command, you must have previously created a clock with the `ptp clock` command.

Use the `no ptp port` command to disable PTP on an interface.

### Command Syntax

```
clock-port (transport ((udp (v4|v6)) | ethernet))
no ptp port
```

### Parameters

transport	Transport type:
UDP	UDP:
v4	IPv4 addresses.
v6	IPv6 addresses.
ethernet	Ethernet.

### Command Mode

Interface mode

### Examples

The following example enables PTP for the `eth0` interface:

```
>ena
#conf term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#
```

The following example disables PTP for the interface.

```
(config-if)#no ptp port
```

---

## debug ptp all

Use this command to turn on PTP logging for:

- Events
- Timers
- Packet sending and receiving
- Protocol activity

Use the `no` form of this command to turn off all PTP logging.

For more about debugging and logging options, see the *Troubleshooting Guide*.

### Command Syntax

```
debug ptp all
no debug ptp all
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example turns on all PTP logging:

```
>debug ptp all
```

The following example turns off all PTP logging.

```
>no debug ptp all
```

---

## debug ptp event

Use this command to turn on PTP event logging.

Use the `no` form of this command to turn off PTP event logging.

For more about debugging and logging options, see the *Troubleshooting Guide*.

### Command Syntax

```
debug ptp event
no debug ptp event
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example turns on PTP event logging:

```
>debug ptp event
```

The following example turns off PTP event logging.

```
>no debug ptp event
```

---

## debug ptp packet rx

Use this command to turn on PTP packet reception logging.

Use the `no` form of this command to turn off PTP packet reception logging.

For more about debugging and logging options, see the *Troubleshooting Guide*.

### Command Syntax

```
debug ptp packet rx
no debug ptp packet rx
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example turns on PTP packet reception logging:

```
>debug ptp packet rx
```

The following example turns off PTP packet reception logging.

```
>no debug ptp packet rx
```

---

## debug ptp packet tx

Use this command to turn on PTP packet transmission logging.

Use the `no` form of this command to turn off PTP packet transmission logging.

For more about debugging and logging options, see the *Troubleshooting Guide*.

### Command Syntax

```
debug ptp packet tx
no debug ptp packet tx
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example turns on PTP packet transmission logging:

```
>debug ptp packet tx
```

The following example turns off PTP packet transmission logging.

```
>no debug ptp packet tx
```



---

## debug ptp protocol

Use this command to turn on PTP protocol logging.

Use the `no` form of this command to turn off PTP protocol logging.

For more about debugging and logging options, see the *Troubleshooting Guide*.

### Command Syntax

```
debug ptp protocol
no debug ptp protocol
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example turns on PTP protocol logging:

```
>debug ptp protocol
```

The following example turns off PTP protocol logging.

```
>no debug ptp protocol
```

---

## debug ptp timer

Use this command to turn on PTP timer logging.

Use the `no` form of this command to turn off PTP timer logging.

For more about debugging and logging options, see the *Troubleshooting Guide*.

### Command Syntax

```
debug ptp timer
no debug ptp timer
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example turns on PTP timer logging:

```
>debug ptp timer
```

The following example turns off PTP timer logging.

```
>no debug ptp timer
```

---

## delay-req-interval

Use this command to set the propagation delay measuring interval.

Depending on the delay mechanism, this command generates these type of messages after the specified interval:

- If the `delay-mechanism` parameter of the `ptp-clk` command is `e2e`, then the delay request-response mechanism is used with `Delay_Req` messages
- If the `delay-mechanism` parameter of the `ptp-clk` command is `p2p`, then the peer delay mechanism is used with `Pdelay_Req` messages

This value is the logarithm to the base 2 of the minimum permitted time in seconds between successive delay request messages.

This value is only relevant for transparent clocks.

Before you give this command, you must have previously created a clock with the `ptp-clk` command.

### Command Syntax

```
delay-req-interval INTERVAL
```

### Parameters

INTERVAL	The delay request interval in seconds, log base 2 <0-5>.
----------	--

### Default

1

### Command Mode

PTP clock port configure mode

### Examples

The following example sets the delay interval to 2<sup>0</sup> seconds (1 second):

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#delay-req-interval 0
```

---

## fault-recover

Use this command to change the port state from faulty to listening.

Before you give this command, you must have previously created a clock with the [ptp-clk](#) command.

### Command Syntax

```
fault-recover
```

### Parameters

None

### Command Mode

PTP clock port configure mode

### Examples

The following example changes the port state to listening:

```
>ena
#config term
Enter configuration commands, one per line.  End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#fault-recover
```

---

## priority1

Use this command to set the priority1 value of the clock. PTP uses the priority1 and priority2 values to determine the best master clock in a domain.

### Command Syntax

```
priority1 PRIORITY1
```

### Parameters

PRIORITY1      Priority1 value. Lower values take precedence <0-255>.

### Default

128

### Command Mode

PTP clock configure mode

### Examples

The following example sets the priority1 value to 5.

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#ptp-clk ordinary transport-type ethernet
(config-ptp-clk)#priority1 5
```

---

## priority2

Use this command set the priority value of the clock. PTP uses the priority1 and priority2 values to determine the best master clock in a domain.

### Command Syntax

```
priority2 PRIORITY2
```

### Parameters

PRIORITY2            Priority2 value. Lower values take precedence <0-255>.

### Default

128

### Command Mode

PTP clock configure mode

### Examples

The following example sets the priority2 value to 10.

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#ptp-clk ordinary transport-type ethernet
(config-ptp-clk)#priority2 10
```

---

## ptp global

Use this command to enable PTP for all ports on a bridge which are not currently enabled for PTP.

Use the no form of this command to disable PTP on a bridge.

### Command Syntax

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

### Parameters

<1-32>                      Bridge ID. The default value is zero (0).

### Command Mode

Config mode

### Examples

The following example enables PTP on bridge 1.

```
(config)#ptp global bridge 1
```

The following example disables PTP on bridge 0.

```
(config)#no ptp global
```

## ptp-clk

Use this command to create a clock and specify the clock states. This command also changes the command mode to PTP clock configure mode.

Use the `no` form of this command to delete a clock.

### Command Syntax

```
ptp-clk (ordinary|boundary|transparent) ((transport-type ((udp (v4|v6)) |
  ethernet))) ((delay-mechanism (e2e|p2p)))
no ptp clock
```

### Parameters

<code>ordinary</code>	This clock has a single PTP port and is a master or slave.
<code>boundary</code>	This clock has multiple ports from which it selects the best master clock. One port is a slave to that master clock while the other ports are masters to downstream slaves. A boundary clock provides a means to synchronize time among subnetworks.
<code>transparent</code>	This clock measures the time for a PTP event message to travel through the device and then provides this information to other clocks.
<code>transport-type</code>	Transport type:
<code>UDP</code>	UDP:
<code>v4</code>	IPv4 addresses.
<code>v6</code>	IPv6 addresses.
<code>ethernet</code>	Ethernet.
<code>delay-mechanism</code>	Propagation delay measuring option:
<code>e2e</code>	End to end: delay request-response mechanism (default).
<code>p2p</code>	Peer to peer: peer delay mechanism.

### Command Mode

Config mode

### Examples

The following example creates a master ordinary clock that will use Ethernet.

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#ptp-clk ordinary transport-type ethernet
(config-ptp-clk)#
```

The following example deletes a clock.

```
(config)#no ptp clock
```



---

## ptp-unicast

Use this command to enable or disable PTP unicast on an interface.

Before you give this command, you must have previously created a clock with the [ptp-clk](#) command.

### Command Syntax

```
ptp-unicast-enable (max-table-size SIZE |)
ptp-unicast-disable
```

### Parameters

max-table-size	Maximum size of the unicast neighbor table.
SIZE	Maximum size of the unicast neighbor table <5-50>. The default value is 1.

### Command Mode

PTP clock port configure mode

### Examples

```
>ena
#config term
Enter configuration commands, one per line.  End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#ptp-unicast-enable max-table-size 20
```

---

## qualification timer

Use this command to set the number of announce intervals that a clock spends in the PRE\_MASTER state allowing changes to propagate from possible masters visible from the port. See the IEEE 1588-2008 standard for more about the PRE\_MASTER state.

Before you give this command, you must have previously created a clock with the [ptp-clk](#) command.

### Command Syntax

```
qualification timer INTERVAL
```

### Parameters

INTERVAL	The number of announce intervals that a clock spends in the PRE_MASTER state, a multiple of announce intervals <1-10>.
----------	--

### Default

1 interval.

### Command Mode

PTP clock port configure mode

### Examples

The following example sets the interval to 2 announce intervals.

```
>ena
#config term
Enter configuration commands, one per line.  End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#qualification timer 2
```

---

## restore-clock-setting

Use this command to restore the default clock and port settings.

Before you give this command, you must have previously created a clock with the [ptp-clk](#) command.

### Command Syntax

```
restore-clock-setting
```

### Parameters

None

### Command Mode

PTP clock configure mode

### Examples

The following example restores the default settings of the PTP clock.

```
>enable
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#interface eth0
(config-if)#ptp-clk ordinary transport-type ethernet
(config-ptp-clk)...
(config-ptp-clk)#restore-clock-setting
```

### Default values

See the specific commands descriptions for the default values:

[announce interval](#) on page 18

[announce timeout-interval](#) on page 19

[delay-req-interval](#) on page 27

[priority1](#) on page 29

[priority2](#) on page 30

[qualification timer](#) on page 34

[sync interval](#) on page 43

---

## show debugging ptp

Use this command to display PTP debugging settings.

### Command Syntax

```
show debugging ptp
```

### Parameters

None

### Command Mode

Exec mode and Configure mode

### Examples

The following example displays PTP debugging settings.

```
#debug ptp all
#show debugging ptp
PTP debugging status:
  PTP timer debugging is on
  PTP protocol debugging is on
  PTP transmitting packet debugging is on
  PTP receiving packet debugging is on
  PTP event debugging is on
```

---

## show ptp data

Use this command to display PTP clock attributes.

### Command Syntax

```
show ptp data (default|current|parent|transparent)
```

### Parameters

default	Ordinary clock attributes.
current	Synchronization attributes.
parent	Parent clock and grandmaster clock attributes.
transparent	Transparent clock attributes.

### Command Mode

Exec mode

### Examples

The following example displays ordinary clock attributes.

```
#show ptp data default
CLOCK(Ordinary)
  Two Step Flag :Yes
  Clock Identity : 0:22:55:ff:ff:79:a4:c1
  Number Of Ports:0
  Priority1 :5
  Priority2:10
  Domain Number:0
  Slave Only:No
  Clock Quality:
  Class: 248
  Accuracy:254
  Offset (log variance):ffff
```

The following example displays clock synchronization attributes.

```
#show ptp data current
CLOCK(Ordinary Clock)
  Steps Removed:0
  Offset From Master: 0
  Mean Path Delay: 0
```

---

## show ptp foreign-master

Use this command to display the attributes of foreign master clocks. A foreign master is an ordinary or boundary clock that is sending announce messages to this clock but is not the current master recognized by this clock.

### Command Syntax

```
show ptp foreign-master
```

### Parameters

None

### Command Mode

Exec mode

### Examples

The following example shows the attributes of foreign master clocks.

```
>show ptp foreign-master
```

---

## show ptp port

Use this command display the attributes of the PTP port.

### Command Syntax

```
show ptp port
```

### Parameters

None

### Command Mode

Exec mode

### Examples

The following example shows the attributes of the PTP port.

```
#show ptp port
=====

PORT State [PTP_LISTENING]
Port Clock Identity: ff:fe:0:1b:21:39:6c:4a:
Port Number: 2
Min Delay Req Interval (log base 2): 0
Peer Mean Path Delay:0
Announce interval (log base 2): 2
Announce Receipt Timeout: 6
Sync Interval (log base 2):0
Delay Mechanism:0
Peer Delay Request Interval (log base 2): 1
PTP version: 2
```

---

## show ptp time-properties

Use this command to display the attributes of the PTP timescale.

### Command Syntax

```
show ptp time-properties
```

### Parameters

None

### Command Mode

Exec mode

### Examples

The following example shows the PTP timescale attributes.

```
>show ptp time-properties
CLOCK(Ordinary Clock,Domain 0)
Current UTC Offset Valid:False
Current UTC Offset: 33
Leap 59:False
Leap 61:False
Time Traceable:False
Frequency Traceable:False
PTP Timescale:False
Time Source:a0
```



---

## show ptp unicast-neighbors

Use this command to display PTP unicast neighbors.

### Command Syntax

```
show ptp unicast-neighbors
```

### Parameters

None

### Command Mode

Exec mode

### Examples

The following example shows the PTP timescale attributes.

```
>show ptp unicast-neighbors
=====
PTP Unicast: Enable
Configured Unicast Neighbors are :
fe80::21b:21ff:fe39:6c4a
fe80::21b:21ff:fe36:f342
=====
```

---

## slave-only

Use this command to enable or disable slave-only mode for a clock.

### Command Syntax

```
slave-only (enable|disable)
```

### Parameters

enable	This clock always synchronizes to another clock and is never considered a candidate for master clock by the best master clock algorithm.
disable	This clock is considered a candidate for master clock by the best master clock algorithm

### Command Mode

PTP clock configure mode

### Examples

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#ptp-clk ordinary transport-type ethernet
(config-ptp-clk)#slave-only enable
```

---

## sync interval

Use this command to set the mean time in seconds between clock synchronization messages. Master clocks transmit synchronization (sync) messages to their slaves. This value is the logarithm to the base 2 of the mean time in seconds between successive clock synchronization messages.

### Command Syntax

```
sync interval INTERVAL
```

### Parameters

INTERVAL	The mean time in seconds between clock synchronization messages, log base 2 <-1 to 1>.
----------	--

### Default

0 seconds.

### Command Mode

PTP clock port configure mode

### Examples

The following example sets the interval to 2<sup>0</sup> (1 second).

```
>ena
#config term
Enter configuration commands, one per line.  End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#sync interval 0
```

---

## syntonization

Use this command to syntonize the clock which adjusts the local clock's signal to match the frequency of the master clock. Two clocks are syntonized if the duration of the second is the same on both, which means the time as measured by each advances at the same rate.

### Command Syntax

```
syntonization ((enable sync-message-count <50-500>) | disable)
```

### Parameters

enable	Enable syntonization.
sync-message-count	How often to syntonize.
<50-500>	Number of synchronization (sync) messages after which syntonization is done.
disable	Disable syntonization.

### Default

Disabled

### Command Mode

PTP clock configure mode

### Examples

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#ptp-clk ordinary transport-type ethernet
(config-ptp-clk)#syntonization enable sync-message-count 400
```

---

## unicast-neighbor

Use this command to add or delete a unicast neighbor.

### Command Syntax

```
unicast-neighbor-add addr-type (udp-v4|udp-v6|ethernet) ADDR
unicast-neighbor-del (addr-type (udp-v4|udp-v6|ethernet) ADDR |)
```

### Parameters

addr-type	Type of neighbor address.
udp-v4	IPv4 address format: aaa.bbb.ccc.ddd.
udp-v6	IPv6 address format: a:b:c:d:e:f.
ethernet	MAC address format: aaaa.bbbb.cccc.
ADDR	Address.

### Command Mode

PTP clock port configure mode

### Examples

The following example sets the delay interval to 2<sup>0</sup> seconds (1 second):

```
>ena
#config term
Enter configuration commands, one per line. End with CNTL/Z.
(config)#interface eth0
(config-if)#clock-port
(config-clk-port)#unicast-neighbor-add addr-type udp-v4 10.1.1.10
```



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