



# Precision Time Protocol (PTP) Commands

This module describes the commands used to configure the Precision Time Protocol (PTP) in Cisco IOS XR software. PTP is a protocol that provides the ability to distribute time around the network and is based on the IEEE 1588-2008 standard.

For more information about manually setting the router clock, see *Cisco ASR 9000 Series Aggregation Services Router Getting Started Guide*.

For more information about configuring the router to use PTP see the Configuring PTP on *System Management Configuration Guide for Cisco ASR 9000 Series Routers*.

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# announce

To configure options for configuring PTP profile announcement messages, use the **announce** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
announce{frequency frequency | interval interval | timeout timeout}
no announce{frequency | interval | timeout}
```

Syntax Description	
<b>frequency</b> <i>frequency</i>	Use to specify multiple announce messages per second (2, 4, 8, 16, 32, 64, or 128). Frequency of 4 means that four messages are sent per second.
<b>interval</b> <i>interval</i>	Use to specify one or fewer announce messages per second (every 1, 2, 4, 8, or 16 seconds). Interval of 2 means that an announce message is sent every two seconds.
<b>timeout</b> <i>timeout</i>	Specifies the number of announce intervals that PTP ports will wait in the Listen state before transitioning to the Master state (2-10).

**Command Default** Defaults: interval 2, timeout 3.

**Command Modes** PTP profile configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **announce** command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the announce message settings for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following sets the announcement interval to 8 seconds in the PTP configuration profile.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# announce interval 8
```

# clock

To enter Precision Time Protocol (PTP) clock configuration mode and run PTP clock configuration command, use the **clock** command in PTP configuration mode.

**clock**  
**no clock**

**Syntax Description** This command has no keywords or arguments.

**Command Default** This command has no default values or behavior.

**Command Modes** Global PTP configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

PTP clock configuration commands can also be run from global configuration mode by preceding the command string with the **ptp clock** keywords. From PTP clock configuration mode, the various PTP clock settings can be configured.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example shows how to enter PTP clock configuration mode from global configuration mode.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)#
```

Related Commands	Command	Description
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode

# clock operation

To configure the type of PTP clock operation, use the **clock operation** command in PTP interface or profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

**clock operation** {**one-step** | **two-step**}  
**no clock operation**

<b>Syntax Description</b>	<p><b>one-step</b> Specifies that the timestamp for the time synchronization message is directly in the synchronization message itself.</p> <p><b>two-step</b> Specifies that the timestamp for the time synchronization message is sent in a message that follows the synchronization message.</p>				
<b>Command Default</b>	The default is two-step.				
<b>Command Modes</b>	PTP profile configuration Interface PTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.2.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.2.0	This command was introduced.
Release	Modification				
Release 4.2.0	This command was introduced.				
<b>Usage Guidelines</b>	<p>To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p> <p>The <b>clock operation</b> command can be used configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the clock operation for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.</p>				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>ethernet-services</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operation	ethernet-services	read, write
Task ID	Operation				
ethernet-services	read, write				

The following example sets PTP clock operation to two-step.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# clock operation two-step
```

# clock-advertisement telecom-profile

To specify that the clock-advertisement behavior (the parameters used in announce messages) will follow the Telecom Profile for frequency (ITU-T G.8265.1), use the **clock-advertisement telecom-profile** command in PTP configuration mode. To remove the setting, use the **no** form of this command.

**clock-advertisement telecom-profile**  
**no clock-advertisement**

**Syntax Description** This command has no keywords or arguments.

**Command Default** The default clock advertisement is compliant with the PTP 1588 standard.

**Command Modes** PTP configuration

Command History	Release	Modification
	Release 4.3.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The clock advertisement mode configuration controls the content of announce packets and the port numbers advertised by the router. Use this command to specify that clock advertisement is compliant with Telecom Profile mode instead of the PTP 1588 standard.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example shows how to set the clock advertisement profile.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock-advertisement telecom-profile
```

## Related Commands

Command	Description
<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

# clock-class

To configure the clock class to use when advertising a PTP clock, use the **clock-class** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

**clock-class** *class*  
**no clock-class**

<b>Syntax Description</b>	<i>class</i> Specifies the clock class to use when advertising this clock. Values can range from 0 to 255.
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<b>Command Default</b>	The default is that the clock class is derived from platform properties.
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<b>Command Modes</b>	PTP clock configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.3.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
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Use this command to override the platform value, if needed.

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example sets the clock class to 100.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# clock-class 100
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

# clock profile

To configure the ITU-T Telecom profile and clock type that can be used in all local PTP sessions, use the **clock profile** command in the PTP configuration mode. To remove the configuration, use the **no** form of this command.

```
clock profile {g.8265.1 | g.8275.1}{clock-type T-GM | T-BC | T-TSC}
no clock profile {g.8265.1 | g.8275.1}{clock-type T-GM | T-BC | T-TSC}
```

<b>Syntax Description</b>	<b>clock-type T-GM   T-BC   T-TSC</b> Indicates the clock type for G.8275.1 profile. G.8275.1 profile supports three clock types: <ul style="list-style-type: none"> <li>• T-GM: Telecom Grandmaster</li> <li>• T-BC: Telecom Boundary Clock</li> <li>• T-TSC: Telecom Time Slave Clock</li> </ul>
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<b>Command Default</b>	The default PTP profile defined in the IEEE-1588 standard is used if this configuration is not used.
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<b>Command Modes</b>	PTP configuration
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<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.1.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.1.2	This command was introduced.
Release	Modification				
Release 6.1.2	This command was introduced.				

<b>Usage Guidelines</b>	The <b>clock-type</b> can be configured only when G.8275.1 is selected as the PTP profile.
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<b>Note</b>	The <b>clock-selection telecom-profile</b> and <b>clock-advertisement telecom-profile</b> commands are deprecated from Release 6.1.2. They are replaced by the <b>clock profile</b> command.
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The following example shows configuring G.8265.1 profile:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock profile g.8265.1
```



<b>Note</b>	Configuring the G.8265.1 profile using <b>clock profile</b> command is equivalent to using <b>clock-selection telecom-profile</b> and <b>clock-advertisement telecom-profile</b> commands to configure the G.8265.1 profile in the earlier releases.
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The following example shows configuring G.8275.1 profile with T-BC clock type:

```
RP/0/RSP0/CPU0:router(config)# ptp
```



```
RP/0/RSP0/CPU0:router(config-ptp)# clock profile g.8275.1 T-BC
```

## clock-selection telecom-profile

To specify that clock-selection behavior (the best-master-clock-algorithm in use) follows the telecom profile for frequency (ITU-T G.8265.1), use the **clock-selection telecom-profile** command in PTP configuration mode. To remove the setting, use the **no** form of this command.

**clock-selection telecom-profile**  
**no clock-selection**

<b>Syntax Description</b>	This command has no keywords or arguments.				
<b>Command Default</b>	By default, the clock selection algorithm is compliant with the PTP 1588 standard.				
<b>Command Modes</b>	PTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.3.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.3.0	This command was introduced.
Release	Modification				
Release 4.3.0	This command was introduced.				

**Usage Guidelines**

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The clock selection mode configuration controls which best master clock algorithm is used. Use this command to specify that the algorithm is compliant with Telecom Profile mode.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example shows how to set the clock advertisement profile.

```
RP/0/RSP0/CPU0:router(config-ptp) # clock-selection telecom-profile
```

Related Commands	Command	Description
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

## COS

To specify the CoS value to use for Precision Time Protocol (PTP) packets sent by the router, use the **cos** command in PTP profile configuration mode or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
cos number
no cos
```

<b>Syntax Description</b>	<i>number</i> Specifies the CoS value to use (0-7).				
<b>Command Default</b>	The default CoS value is 6.				
<b>Command Modes</b>	PTP profile configuration Interface PTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.2.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.2.0	This command was introduced.
Release	Modification				
Release 4.2.0	This command was introduced.				
<b>Usage Guidelines</b>	<p>To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p> <p>The <b>cos</b> command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the CoS value for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.</p>				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>ethernet-services</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operation	ethernet-services	read, write
Task ID	Operation				
ethernet-services	read, write				

The following example sets the CoS value to 3 in the PTP configuration profile p1.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# cos 3
```

The following example overrides the CoS value in the profile and sets it to be 2 for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if) ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-if-ptp)# cos 2
```

# delay-request

To configure settings for the PTP delay request message, use the **delay-request** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

**delay-request** {*frequency number* | **interval** *number*}  
**no delay-request**

## Syntax Description

*frequency* Specifies multiple announce messages per second (2, 4, 8, 16, 32, 64, or 128). Frequency of 4 means that four messages are sent per second.

*interval* Specifies one or fewer announce messages per second (every 1, 2, 4, 8, or 16 seconds). Interval of 2 means that an announce message is sent every two seconds.

## Command Default

The default is one second between messages.

## Command Modes

PTP configuration mode

Interface PTP configuration

## Command History

Release	Modification
Release 4.2.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **delay-request** command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the delay-request message settings for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

## Task ID

Task ID	Operation
ethernet-services	read, write

The following example sets the delay request interval in the PTP configuration profile to 8 seconds.

```
RP/0/RSP0/CPU0:router (config) # ptp
RP/0/RSP0/CPU0:router (config-ptp) # profile p1
RP/0/RSP0/CPU0:router (config-ptp-profile) # delay-request interval 8
```

# domain(PTP)

To specify the domain number for the PTP clock, use the **domain** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

**domain** *number*  
**no domain**

<b>Syntax Description</b>	<i>number</i> Specifies the domain number to use for this clock (0-255).
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<b>Command Default</b>	Default is 0.
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<b>Command Modes</b>	PTP clock configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
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PTP uses the specified domain number in all its PTP messages and ignores all PTP messages received from a different domain.

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example sets the domain to 200.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# domain 200
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

# delay-response

To configure settings for the PTP delay response message, use the **delay-response** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

**delay-response** {**grant-duration** *duration* | **timeout** *value*}

**no delay-response** {**grant-duration** | **timeout**}

## Syntax Description

*duration* Specifies the announce grant duration (60-1000 seconds). If port is in slave state, this is the length of grant which is requested. If the port is in master state, this is the maximum grant which will be allowed.

*value* Specifies delay response message timeout value (100-10000 milliseconds). If delay-response messages are not received from a master clock for longer than this timeout, the master is no longer qualified for selection. This setting applies only applies if the clock-selection telecom-profile is specified.

## Command Default

Default is grant-duration 600, timeout 5000.

## Command Modes

PTP profile configuration

Interface PTP configuration

## Command History

Release	Modification
Release 4.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **delay-response** command can be used configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the delay response value for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

## Task ID

Task ID	Operation
ethernet-services	read, write

The following example sets the PTP delay response timeout to 200 milliseconds in the PTP configuration profile:

```
RP/0/RSP0/CPU0:router (config) # ptp
RP/0/RSP0/CPU0:router (config-ptp) # profile p1
RP/0/RSP0/CPU0:router (config-ptp-profile) # delay-response timeout 200
```

The following example overrides the delay response timeout value in the profile and sets it to be 150 milliseconds for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if) ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-if-ptp)# delay-response timeout 150
```

## dscp (PTP)

To set the DSCP value for use in Precision Time Protocol (PTP) packets sent by the router, use the **dscp** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
dscp number
no dscp
```

<b>Syntax Description</b>	<i>number</i>	Specifies the DSCP value to use (0-63).
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<b>Command Default</b>	The default DSCP value is 46.
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<b>Command Modes</b>	PTP profile configuration Interface PTP configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
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The **dscp** command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the DSCP value for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example sets the DSCP value to 20 for PTP operation.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# dscp 20
```

The following example overrides the DSCP value in the profile and sets it to be 42 for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if) ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-if-ptp)# dscp 42
```



# identity

To configure the PTP clock identity, use the **identity** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

```
identity {eui-64 number | mac-address address}
no identity {eui-64 number | mac-address address}
```

Syntax Description	Parameter	Description
	<b>eui-64</b> <i>number</i>	Specifies the full EUI-64 number to determine the clock identity.
	<b>mac-address</b> <i>address</i>	Specifies the router to determine the clock identity. Use one of the following addressing options to identify the router: <ul style="list-style-type: none"> <li>• <b>router</b>. Use the router's built-in MAC address as the clock identity</li> <li>• <b>address</b>. Enter a MAC address (H.H.H format).</li> </ul>

**Command Default** The router for clock identity is derived from the router MAC address.

**Command Modes** PTP clock configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

You can specify a MAC address or a complete EUI-64 value to derive the clock identity. If you do not use this command, the clock identify is derived from the router's MAC address.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example sets the clock identity to MAC address A.B.C.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# identity mac-address A.B.C
```

Related Commands	Command	Description
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

# local-priority

To configure priority for a port in the G.8275.1 profile, use the **local-priority** command in the PTP profile configuration mode or the Interface PTP configuration mode.

**local-priority** {*priority-value*}

## Syntax Description

*priority-value* Indicates the priority to be set for a port in the G.8275.1 profile. This priority value is used in the profile's alternate Best Master Clock Algorithm (BMCA).

**Note** Lower number indicates higher priority value.

## Command Default

The allowed range for the priority values are from 1 to 255. The default priority value is 128.

## Command Modes

PTP configuration

Interface PTP configuration

## Command History

Release	Modification
Release 6.1.2	This command was introduced.

## Usage Guidelines

The configured local priority value will be ignored if the G.8275.1 BMCA is not in use and a warning message will be displayed in the **show ptp configuration-errors** command.



**Note** The per-master priority value configured on a master clock overrides the per-port local priority value.

The following example shows configuring priority 1 for a port in the G.8275.1 profile:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# local-priority 1
```

# log best-master-clock changes

To enable logging of changes to the best master clock for Precision Time Protocol (PTP), use the **log best-master-clock changes** command in PTP configuration mode. To remove the setting, use the **no** form of this command.

**log best-master-clock changes**  
**no log best-master-clock changes**

**Syntax Description** This command has no keywords or arguments.

**Command Default** None

**Command Modes** PTP configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	logging	read, write

The following example sets up PTP to log the best master clock changes.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# log best-master-clock changes
```

Related Commands	Command	Description
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

## master (PTP)

To add a master to the list of acceptable Precision Time Protocol (PTP) masters for an interface or profile, use the **master** command in PTP profile configuration or Interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```

master {ipv4 address | ipv6 address} [{clock-class class | delay-symmetry number | multicast |
non-negotiated | priority number}]
no master {ipv4 address | ipv6 address} [{clock-class class | delay-symmetry number | multicast |
non-negotiated | priority number}]
  
```

### Syntax Description

<b>ipv4 address</b>	Specifies the IPv4 address of a master.
<b>ipv6 address</b>	Specifies the IPv6 address of a master.
<b>clock-class class</b>	Overrides the clock class received in announce messages from this master.
<b>delay-symmetry number</b>	Specifies the expected asymmetry.
<b>multicast</b>	Indicates that the master sends multicast message.
<b>non-negotiated</b>	Specifies non-negotiated unicast message.
<b>priority number</b>	Indicates the priority for selecting between multiple masters (lower numbers are high priority).
<b>clock-class class</b>	Overrides the clock class received in announce messages from this master.

### Command Default

This command has no default values or behavior.

### Command Modes

PTP profile configuration

### Command History

Release	Modification
Release 4.2.0	This command was introduced.
Release 6.2x	This command was modified. Support was extended to IPv6 addresses.

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The address type used to configure the master must match the PTP transport type configured on the interface. If multiple masters are configured, the router attempts to communicate with all configured masters and selects between the available ones based on priority.



**Note** IPv4 multicast for PTP is not supported on Cisco ASR 9000 Routers.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example assigns two masters to the profile and gives higher priority to the master with IPv4 address 10.10.4.5.

```
RP/0/RSP0/CPU0:router(config)# ptp  
RP/0/RSP0/CPU0:router(config-ptp)# profile p1  
RP/0/RSP0/CPU0:router(config-ptp-profile)# master ipv4 10.10.4.5 priority 1  
RP/0/RSP0/CPU0:router(config-ptp-profile)# master ipv4 10.10.4.7 priority 2
```

# min-clock-class

To configure minimum clock class accepted from a PTP master, use the **min-clock-class** command in the PTP configuration mode. To remove the configuration, use the **no** form of this command.

**min-clock-class** *class*

**no min-clock-class** *class*

## Syntax Description

*class* Indicates the minimum clock class accepted. The range is between 0 and 255.

## Command Default

The default clock class can be obtained from the platform properties.

## Command Modes

PTP configuration

## Command History

Release	Modification
Release 6.1.2	This command was introduced.

## Usage Guidelines

The clocks with clock-class number higher than the minimum clock class number will not be considered for a parent clock selection. This command is used to override the platform value (if needed).



**Note** clock-class values are not numerically ordered (lower value of clock-class has higher importance).

The following example configures the minimum clock class to 7:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# min-clock-class 7
```

# multicast

To allow PTP multicast messages to be sent, use the **multicast** command in PTP profile configuration mode or Interface PTP configuration mode. To remove the setting, use the **no** form of this command.

**multicast**

**no multicast**

This command has no keywords or arguments.

**Command Default** By default, multicast messaging is disabled for PTP.

**Command Modes** PTP profile configuration  
Interface PTP configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When multicast is configured, announce and sync messages are sent as multicast messages, but delay-response messages are sent as unicast messages.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example enables PTP multicast messages in the configuration profile:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# multicast
```

The following example overrides the multicast setting in the profile and removes it for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if) ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-if-ptp)# no multicast
```

# priority1

To specify the priority 1 number to use when advertising a PTP clock, use the **priority1** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

**priority1** *number*  
**no priority1**

<b>Syntax Description</b>	<i>number</i> Specifies the priority 1 number to use for this clock (0-255).
---------------------------	--

<b>Command Default</b>	Default is 128.
------------------------	-----------------

<b>Command Modes</b>	PTP clock configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example sets the priority 1 number to 50

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# priority1 50
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.
	<a href="#">priority2, on page 25</a>	Specifies the priority 2 number to use when advertising a PTP clock.



# priority2

To specify the priority 2 number to use when advertising a PTP clock, use the **priority2** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

**priority2** *number*  
**no priority2**

<b>Syntax Description</b>	<i>number</i> Specifies the priority 2 number to use for this clock (0-255).
---------------------------	--

<b>Command Default</b>	Default is 128.
------------------------	-----------------

<b>Command Modes</b>	PTP clock configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example sets the priority 2 number to 50

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# priority2 50
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode
	<a href="#">priority1, on page 24</a>	Specifies the priority 1 number to use when advertising a PTP clock.

## profile (interface)

To assign a Precision Time Protocol (PTP) configuration profile to an interface, use the **profile** command in interface PTP configuration mode. To remove the configuration profile from the interface, use the **no** form of this command.

**profile** *profile-name*  
**no profile** *profile-name*

<b>Syntax Description</b>	<i>profile-name</i> Name of profile to associate with the Interface.
---------------------------	--

<b>Command Default</b>	No configuration profile is associated with the interface.
------------------------	--

<b>Command Modes</b>	Interface PTP configuration
----------------------	-----------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

A PTP profile is a configuration template that can be applied to multiple interfaces. Define the profile using the **profile** command in PTP configuration mode.

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example shows how to assign a configuration profile to a specific interface.

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if)# ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile tp128
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">profile (PTP), on page 27</a>	Enters Precision Time Protocol (PTP) profile configuration mode.

## profile (PTP)

To enter Precision Time Protocol (PTP) profile configuration mode and run PTP profile configuration commands, use the **profile** command in PTP configuration mode or interface PTP configuration mode.

**profile** *name*

<b>Syntax Description</b>	<i>name</i> Enters PTP profile configuration mode for the specified profile name.
---------------------------	---

<b>Command Default</b>	No default behavior or values
------------------------	-------------------------------

<b>Command Modes</b>	PTP configuration
----------------------	-------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

A Precision Time Protocol ( PTP) profile is a configuration template that can be applied to multiple interfaces. From PTP profile configuration mode, the following PTP profile configuration commands are available:

```
RP/0/RSP0/CPU0:router(config-ptp-profile)# ?
```

```

announce      Announce message options
clear          Clear the uncommitted configuration
clock          PTP clock-operation to use
commit         Commit the configuration changes to running
cos            Specify the CoS-bits value to use
delay-request  Configure the sending of delay-request messages
delay-response Delay-Response message options
describe       Describe a command without taking real actions
do             Run an exec command
dscp           Specify the DSCP value to use
exit           Exit from this submode
master         Add a master to listen to on interfaces using this profile
multicast      Allow multicast messages to be sent
no             Negate a command or set its defaults
port           PTP port options
pwd            Commands used to reach current submode
root           Exit to the global configuration mode
show           Show contents of configuration
source         PTP source address options
sync           Configure how often Sync messages are sent
sync           Sync message options
transport      PTP transport type to use on this interface
unicast-grant  Unicast grant options

```

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example shows how to configure the profile tp128:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile tp128
RP/0/RSP0/CPU0:router(config-ptp-profile)#
```

Related Commands	Command	Description
	<a href="#">profile (interface), on page 26</a>	Assigns a PTP configuration profile to an interface.

## port state

To configure the state for a PTP port, use the **port state** command in the PTP profile configuration mode or the Interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
port state {slave-only}
no port state
```

---

### Syntax Description

**slave-only** Configures the port state to be a slave.

---

### Command Default

Dynamic port state changes are based on the peers with which the port communicates.

### Command Modes

PTP profile configuration  
Interface PTP configuration

---

### Command History

Release	Modification
Release 4.2.0	This command was introduced.

---

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

---

### Task ID

Task ID	Operation
ethernet-services	read, write

---

The following example configures the PTP port state to be slave-only:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp)# port state slave-only
```

## ptp

To enter Precision Time Protocol (PTP) configuration mode and run PTP configuration commands, use the **ptp** command. Using the command from global configuration mode enters PTP configuration mode. Using the command from interface configuration mode enters interface PTP configuration mode. To remove PTP settings, use the **no** form of this command.

**ptp**  
**no ptp**

---

### Syntax Description

This command has no keywords or arguments.

---

### Command Default

No default behavior or values.

---

### Command Modes

Global configuration  
Interface configuration

---

### Command History

Release	Modification
Release 4.3.1	Support was added for this command in Bundle Ethernet interface configuration mode.
Release 4.3.1	Support was added for this command in Bundle Ethernet interface configuration mode.

---

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

PTP configuration commands can also be run from global configuration mode by preceding the command string with the **ptp** keyword. From PTP configuration mode, the following PTP configuration commands are available:

```
RP/0/RSP0/CPU0:router(config-ptp)# ?
clear          Clear the uncommitted configuration
clock          PTP Clock Configuration
clock-advertisement Clock advertisement configuration
clock-selection Clock selection configuration
commit        Commit the configuration changes to running
describe      Describe a command without taking real actions
do            Run an exec command
exit          Exit from this submode
log           Precision Time Protocol logging configuration
no            Negate a command or set its defaults
profile       PTP Profile Configuration
pwd           Commands used to reach current submode
root          Exit to the global configuration mode
show         Show contents of configuration
time-of-day   Precision Time Protocol time-of-day configuration
```

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example shows how to enter PTP configuration mode from global configuration mode.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)#
```

The following example shows how to enter interface PTP configuration mode.

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if)# ptp
RP/0/RSP0/CPU0:router(config-if-ptp)#
```

#### Related Commands

Command	Description
<a href="#">profile (PTP), on page 27</a>	Enters PTP profile configuration mode.

# show ptp advertised-clock

To display properties of the clock that the system advertises over Precision Time Protocol (PTP), use the **show ptp advertised-clock** command in EXEC mode.

**show ptp advertised-clock**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read

## Example

The following shows information about the PTP advertised clock. The output displays the clock identity and the clock properties.

```
RP/0/RSP0/CPU0:router# show ptp advertised-clock

Fri Jan  9 04:54:33.345 PST
Clock ID: Local Clock (2651fffec41c26)
Clock properties:
  Priority1: 128, Priority2: 128, Class: 6, Accuracy: 0xfe
  Offset scaled log variance: 0xffff
  Domain: 0, Time Source: GPS, Timescale: PTP
  Frequency-traceable, Time-traceable
  Current UTC offset: 34 seconds
```



# show ptp foreign-masters

To display the Precision Time Protocol (PTP) foreign master clocks that are available to the router, use the **show ptp foreign-masters** command in EXEC mode.

```
show ptp foreign-masters [brief] {interface name | location node}
show ptp foreign-masters best
```

Syntax Description	
<i>brief</i>	Lists all foreign-masters known on the router, ordered by the interface on which they were discovered.  If this option is omitted, the output also includes detailed clock properties, unicast messages that are granted from the master, length of time the master has been qualified, and information about the clock peer.
<i>name</i>	Displays foreign masters that were discovered the specified interface. For more information, use the question mark ( ? ) online help function
<i>node</i>	Displays foreign masters that were discovered the specified node
<b>best</b>	Displays the state of the best foreign master found in the network

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	EXEC
----------------------	------

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command displays the state of foreign masters for the PTP processes. It is only relevant when running as a boundary clock; in grandmaster mode, no relevant output gets displayed.

The **show ptp foreign-masters** command with the **best** keyword collects grandmaster information from all RPs and filters out all but the grandmaster on the active timing card. If the active timing card does not support running as slave, no foreign masters are displayed and instead, it is indicated that slaving is not supported (refer examples section).

Task ID	Task ID	Operation
	ethernet-services	read

## Example

The following shows output with the brief option.

```
RP/0/RSP0/CPU0:router# show ptp foreign-masters brief
```

**show ptp foreign-masters**

M=Multicast,Q=Qualified,GM=Grandmaster

Interface	Transport	Address	Priority1	State
Gi0/2/0/0	IPv4	192.168.172.122	13	M,Q
	IPv4	192.168.172.123	17	M
Gi0/2/0/1	IPv6	fe80::2b0:4aff:fe6b:f4fc	1	Q,GM
	IPv6	fe80::2b0:4aff:fe6b:1234	18	Q
Gi0/3/0/0	Ethernet	00b0.4a6b.f4fc		

The example indicates if the foreign-master is multicast and the clock that is being used as the grandmaster.

The following example shows output for the location 0/2/CPU0, including the brief option.

```
RP/0/RSP0/CPU0:router# show ptp foreign-masters brief location 0/2/CPU0
```

M=Multicast,Q=Qualified,GM=Grandmaster

Interface	Transport	Address	Priority1	State
Gi0/2/0/0	IPv4	192.168.172.122	13	M,Q
	IPv4	192.168.172.123	17	M
Gi0/2/0/1	IPv6	fe80::2b0:4aff:fe6b:f4fc	1	Q,GM
	IPv6	fe80::2b0:4aff:fe6b:1234	18	Q

The following example shows output for the interface GigabitEthernet0/2/0/0, without the brief option.

```
RP/0/RSP0/CPU0:router# show ptp foreign-masters brief interface GigabitEthernet0/2/0/0
```

Interface GigabitEthernet0/2/0/3 (PTP port number 27):

```
IPv4, Address 172.108.11.25
Configured priority: None
Announce granted: every 2 seconds, 600 seconds
Sync granted: 16 per-second, 400 seconds
Delay-Resp granted: 16 per-second, 600 seconds
Qualified for 6 days, 2 hours, 11 minutes
Clock ID: ACDE48FFFE234567
Clock properties:
  Priority1: 1, Priority2: 83, Class: 6, Accuracy: 0x2B
  Offset scaled log variance: 0x27FF, Steps-removed: 5
  Domain: 0, Time Source: GPS, Timescale: PTP
  Frequency-traceable, Time-traceable
  Current UTC offset: 25 seconds
Parent properties:
  Clock-ID: BADE48FFFE234367
  Port number: 3, Steps Removed: 2

IPv4, Address 172.108.11.23, Multicast
Configured priority: 27
Announce granted: every 2 seconds, 600 seconds
Qualified for 5 days, 4 hours, 27 minutes
Clock ID: ACDE48FFFE234567
Clock properties:
  Priority1: 7, Priority2: 83, Class: 6, Accuracy: 0x2B
  Offset scaled log variance: 0x27FF, Steps-removed: 5
```

```
Domain: 0, Time Source: GPS, Timescale: PTP
Frequency-traceable, Time-traceable
Current UTC offset: 25 seconds
Parent properties:
Clock-ID: BADE48FFFE234367
Port number: 5, Steps Removed: 1

IPv4, Address 172.108.11.18, Multicast
Configured priority: 11
Not qualified
```

The following example shows state information for the best foreign master in the network.

```
RP/0/RSP0/CPU0:router# show ptp foreign-masters best

Used to set system frequency and time
IPv4, Address 1.2.3.4
Received on interface GigabitEthernet0/2/0/3 (port number 0x1007)
Clock ID: ACDE48FFFE234567
Best foreign-master for 5 days, 4 hours, 27 minutes
Advertised for 5 days, 4 hours, 20 minutes
Clock properties:
Priority1: 7, Priority2: 83, Class: 6, Accuracy: 0x2B
Offset scaled log variance: 0x27FF, Steps-removed: 5
Domain: 0, Time Source: GPS, Timescale: PTP
Frequency-traceable, Time-traceable
Current UTC offset: 25 seconds
Parent properties:
Clock-ID: BADE48FFFE234367
Port number: 0x0005
```

This example indicates the display when slaving is not supported on the active timing card.

```
RP/0/RSP0/CPU0:router # show ptp foreign-masters best
PTP slaving is not supported on the RSP.
```

## show ptp interfaces

To display a summary of the Precision Time Protocol (PTP) port state for the specified interface, use the **show ptp interfaces** command in EXEC mode.

```
show ptp interfaces [brief] {interface | all}
show ptp interfaces summary location node
```

Syntax Description	interface	Specifies the interface. For more information, use the question mark ( ? ) online help function.
	<b>all</b>	Displays information for all interfaces.
	<b>brief</b>	Displays a one-line summary of the functional state of the interface (or all interfaces).
	<b>location</b> <i>node</i>	Displays information for the specified node

**Command Default** None

**Command Modes** EXEC

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	ethernet-services	read

### Example

The following shows the output for GigabitEthernet0/2/0/3 interface in master state.

```
RP/0/RSP0/CPU0:router# show ptp interfaces GigabitEthernet0/2/0/3

GigabitEthernet0/2/0/3 is in MASTER state
  PTP port number: 1
  IPv4 transport: IPv4 address 1.2.3.4
  Linestate: Up

  Mechanism: Two-step delay-request-response
    Sync rate: every 2 seconds
    Announce rate: every 8 seconds, timeout 5
    Delay-Req rate: every 4 seconds
  CoS: 6, DSCP: 46
  Platform capabilities:
    Supported:      One-step, Ethernet
```

```

    Not-Supported: IPv6, Multicast, Slave
    Max-Sync-rate: 4 per second
    Master state only
    23 Unicast peers

```

### Example

The following shows that the GigabitEthernet0/1/0/3 interface is in the un-calibrated state.

```
RP/0/RSP0/CPU0:router# show ptp interfaces GigabitEthernet0/1/0/3
```

```

GigabitEthernet0/1/0/3 is in UNCALIBRATED state
  PTP port number: 4
  IPv4 transport: IPv4 address 5.4.3.2
  Linestate: Up
  Mechanism: Two-step delay-request-response, Slave-only
    Sync rate: 2 per second
    Announce rate: 2 per second, timeout 4
    Delay-Req interval: 4 per second
  CoS: 5, DSCP: 23
  Platform capabilities:
    Supported: One-step, Ethernet, Multicast, Slave
    Not-Supported: IPv6
    Max-Sync-rate: 2 per second
  Master table:
    (K = Known, Q = Qualified, GM = Grandmaster)
    IPv4 address 5.4.3.3: priority 5, multicast, K,Q,GM
    IPv4 address 5.4.3.4: priority not set
    MAC-address 12ab.7431.327c: priority 3, K
  Slave state only

```

### Example

The following shows output with the **brief** keyword specified.

```
RP/0/RSP0/CPU0:router# show ptp interfaces brief
```

Intf Name	Port Number	Port State	Line Transport	State	Mechanism
Gi0/2/0/0	1	MASTER	IPv4	Up	2-step DRRM
Gi0/2/0/1	5	PASSIVE	Ethernet	Up	1-step DRRM
Gi0/2/0/2	23	MASTER	Ethernet	Up	2-step DRRM
Gi0/2/0/0	6	INIT	IPv4	Down	2-step DRRM

### Example

The following shows summary output for the location 0/2/cpu0.

```
RP/0/RSP0/CPU0:router# show ptp interfaces summary location 0/2/cpu0
```

```

=====
Interface port states
=====
  INIT                11

```

**show ptp interfaces**

LISTENING	27
PASSIVE	12
PRE-MASTER	2
MASTER	50
UNCALIBRATED	0
SLAVE	1
FAULTY	0
-----	
Total	103

# show ptp local-clock

To display properties of the local Precision Time Protocol (PTP) clock, use the **show ptp local-clock** command in EXEC mode.

**show ptp local-clock**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read

## Example

The following shows information about the local PTP clock.

```
RP/0/RSP0/CPU0:router# show ptp local-clock

Sat Jul 28 14:15:54.357 UTC
Clock ID: 2651ffffec4496e
Clock properties:
  Priority1: 128, Priority2: 128, Class: 248, Accuracy: 0xfe
  Offset scaled log variance: 0xffff
  Domain: 0, Time Source: Internal, Timescale: ARB
  No frequency or time traceability
  Current UTC offset: 34 seconds
```

# show ptp packet-counters

To display counters for packets received and send by Precision Time Protocol (PTP), use the **show ptp packet-counters** command in EXEC mode.

```
show ptp packet-counters location node
show ptp packet-counters interface detail
show ptp packet-counters interface master {ipv4 ipv4-address | ethernet ethernet-address}
```

Syntax Description	location node	Displays information for the specified node
	interface	Specifies the interface.
	detail	Displays detailed information.
	master	Displays information regarding the PTP master.
	ipv4-address	Specifies an IPv4 address.
	ethernet-address	Specifies an Ethernet address.

**Command Default** None

**Command Modes** EXEC

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	ethernet-services	read

## Example

The following displays the packet counters for the GigabitEthernet0/2/0/1 interface.

```
RP/0/RSP0/CPU0:router# show ptp packet-counters GigabitEthernet0/2/0/1
```

Packets	Sent	Received	Dropped
Announce	3	83	11
Sync	0	32	5
Follow-Up	0	31	0
Delay-Req	22	0	0
Delay-Resp	0	21	7



Pdelay-Req	0	7	0
Pdelay-Resp	0	0	0
Pdelay-Resp-Follow-Up	0	0	0
Signaling	2	1	0
Management	0	0	0
Other	0	3	12
	-----	-----	-----
TOTAL	27	178	35

**Example**

The following displays the packet counters with additional details for the GigabitEthernet0/2/0/1 interface.

```
RP/0/RSP0/CPU0:router# show ptp packet-counters GigabitEthernet0/2/0/1 details
```

Packets	Sent	Received	Dropped
-----	-----	-----	-----
Announce	3	83	11
Sync	0	32	5
Follow-Up	0	31	0
Delay-Req	22	0	0
Delay-Resp	0	21	7
Pdelay-Req	0	7	0
Pdelay-Resp	0	0	0
Pdelay-Resp-Follow-Up	0	0	0
Signaling	2	1	0
Management	0	0	0
Other	0	3	12
	-----	-----	-----
TOTAL	27	178	35

```
Master IPv4 5.4.3.4:
```

Packets	Sent	Received	Dropped
-----	-----	-----	-----
Announce	1	40	1
Sync	0	23	4
Follow-Up	0	14	0
Delay-Req	12	0	0
Delay-Resp	0	10	7
Pdelay-Req	0	7	0
Pdelay-Resp	0	0	0
Pdelay-Resp-Follow-Up	0	0	0
Signaling	2	1	0
Management	0	0	0
Other	0	3	12
	-----	-----	-----
TOTAL	15	98	24

```
Master Ethernet 12ab.7431.327c:
```

Packets	Sent	Received	Dropped
-----	-----	-----	-----
Announce	2	43	10
Sync	0	9	1
Follow-Up	0	17	0
Delay-Req	10	0	0
Delay-Resp	0	11	0
Pdelay-Req	0	0	0
Pdelay-Resp	0	0	0
Pdelay-Resp-Follow-Up	0	0	0
Signaling	0	0	0

## show ptp packet-counters

Management	0	0	0
Other	0	0	0
	-----	-----	-----
TOTAL	12	80	11

**Example**

The following displays the packet counters for the master with IPv4 address 5.4.3.4 for the GigabitEthernet0/2/0/1 interface.

```
RP/0/RSP0/CPU0:router# show ptp packet-counters GigabitEthernet0/2/0/1 master ipv4 5.4.3.4
```

```
Master IPv4 5.4.3.4:
```

Packets	Sent	Received	Dropped
-----	-----	-----	-----
Announce	1	40	1
Sync	0	23	4
Follow-Up	0	14	0
Delay-Req	12	0	0
Delay-Resp	0	10	7
Pdelay-Req	0	7	0
Pdelay-Resp	0	0	0
Pdelay-Resp-Follow-Up	0	0	0
Signaling	2	1	0
Management	0	0	0
Other	0	3	12
	-----	-----	-----
TOTAL	15	98	24

**Example**

The following displays the packet counters for the location 0/2/cpu0 for the GigabitEthernet0/2/0/1 interface.

```
RP/0/RSP0/CPU0:router# show ptp packet-counters location 0/2/cpu0
```

Packets	Sent	Received	Dropped
-----	-----	-----	-----
Announce	1735	101	52
Sync	3753	32	5
Follow-Up	3751	32	7
Delay-Req	0	4073	108
Delay-Resp	4073	0	0
Pdelay-Req	0	7	0
Pdelay-Resp	0	0	0
Pdelay-Resp-Follow-Up	0	0	0
Signaling	73	18	0
Management	0	0	0
Other	0	3	218
	-----	-----	-----
TOTAL	13385	4266	390

  

Drop Reason	Drop Count
-----	-----
Not ready for packets	289
Wrong domain number	71
Packet too short	1
Local packet received, same port number	7

```
Local packet received, higher port number      11
Local packet received, lower port number       11
No timestamp received with packet              0
Zero timestamp received with packet            0
-----
TOTAL
```

## show ptp unicast-peers

To display information on the peers to which Precision Time Protocol (PTP) is sending unicast messages, use the **show ptp unicast-peers** command in EXEC mode.

**show ptp unicast-peers** *interface*

<b>Syntax Description</b>	<i>interface</i> Displays information for the specified interface.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read

The following example shows PTP unicast peer information for the GigabitEthernet0/2/0/1 interface.

```
RP/0/RSP0/CPU0:router# show ptp unicast-peers GigabitEthernet0/2/0/1

Interface GigabitEthernet0/2/0/1:
  IPv4-address 1.2.3.4
    Announce granted: every 2 seconds, 600 seconds
    Sync granted:     16 per second,    600 seconds
    Delay-Resp granted: 16 per second,  600 seconds
  IPv4-address 1.2.3.5
    Announce granted: every 1 second,   400 seconds
  IPv4-address 1.2.3.6
    Delay-Resp granted: 16 per second,   600 seconds
```

The following example shows PTP unicast peer information for all interfaces.

```
RP/0/RSP0/CPU0:router# show ptp unicast-peers

Interface GigabitEthernet0/2/0/1:
  IPv4-address 1.2.3.4
    Announce granted: every 2 seconds, 600 seconds
    Sync granted:     16 per second,   600 seconds
    Delay-Resp granted: 16 per second,  600 seconds
  IPv4-address 1.2.3.5
```

```
    Announce granted:  every 1 second,  400 seconds
IPv4-address 1.2.3.6
    Delay-Resp granted: 16 per second,   600 seconds

Interface GigabitEthernet0/3/0/2:
Mac-address 00b0.4a6b.f4fc
    Announce granted:  every 2 seconds,  600 seconds
    Sync granted:      16 per second,    600 seconds
    Delay-Resp granted: 16 per second,    600 seconds
Mac-address 00b0.4a6b.f4fd
    Announce granted:  every 1 second,   400 seconds

Interface GigabitEthernet0/3/0/3:
No known peers
```

## source ipv4 address

To specify the source IPv4 address to use when sending IPv4 packets, use the **source ipv4 address** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
source ipv4 address address
no source ipv4 address
```

<b>Syntax Description</b>	<i>address</i> Specifies an IPv4 address.
---------------------------	---

**Command Default** This command has no default values or behavior.

**Command Modes** PTP profile configuration  
Interface PTP configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **source ipv4 address** command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the source IPv4 address for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example specifies the source IPv4 address 10.10.10.4 for PTP packets.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# source ipv4 address 10.10.10.4
```

The following example overrides the source IPv4 address in the profile and sets it to be 10.10.10.6 for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if) ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-if-ptp)# source ipv4 address 10.10.10.6
```

# sync

To configure settings for PTP sync messages, use the **sync** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
sync {frequency frequency | interval interval }
no sync {frequency | interval}
```

Syntax Description	frequency <i>frequency</i>	Use to specify multiple sync messages per second (2, 4, 8, 16, 32, 64, or 128). Frequency of 4 means that four messages are sent per second.
	interval <i>interval</i>	Use to specify one or fewer sync messages per second (every 1, 2, 4, 8, or 16 seconds). Interval of 2 means that a sync message is sent every two seconds.

**Command Default** Defaults: interval 1, timeout 5000.

**Command Modes** PTP profile configuration  
Interface PTP configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **sync** command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the sync value for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example sets the PTP sync timeout to 2000 milliseconds.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# sync frequency 2000
```

The following example overrides the sync frequency value in the profile and sets it to be 1500 milliseconds for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10  
RP/0/RSP0/CPU0:router(config-if) ptp  
RP/0/RSP0/CPU0:router(config-if-ptp) # profile p1  
RP/0/RSP0/CPU0:router(config-if-ptp) # sync frequency 1500
```



# timescale

To set the time scale to use when advertising time for Precision Time Protocol (PTP), use the **timescale** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

**timescale** {ARB | PTP}  
**no timescale**

Syntax Description	ARB	Specifies ARB (arbitrary) time.
	PTP	Specifies PTP time.

**Command Default** The default value is derived from platform properties.

**Command Modes** PTP clock configuration

**Command History**

Release	Modification
Release 4.2.1	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use this command to override the platform value, if needed.

Task ID	Task ID	Operation
	ethernet-services	read, write

The following example sets the time scale to ARB.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# timescale ARB
```

Related Commands	Command	Description
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

## time-of-day

To set the priority used by Precision Time Protocol (PTP) when selecting between PTP and other sources for time-of-day on the router (for example GPS), use the **time-of-day** command in PTP configuration mode. To remove the setting, use the **no** form of this command.

**time-of-day** *priority number*  
**no time-of-day** **priority**

<b>Syntax Description</b>	<b>priority</b> <i>number</i> Specifies the time of day priority to rank a foreign PTP grand master against other time sources, such as GPS (1-255).				
<b>Command Default</b>	The default is priority 100.				
<b>Command Modes</b>	PTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.2.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.2.0	This command was introduced.
Release	Modification				
Release 4.2.0	This command was introduced.				
<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>ethernet-services</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operation	ethernet-services	read, write
Task ID	Operation				
ethernet-services	read, write				

The following example sets the time of day priority to 200.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# time-of-day priority 200
```

# time-source

To set the time source advertised in announcement messages by the local clock for Precision Time Protocol (PTP), use the **clock time-source** command in PTP clock configuration mode. To remove the setting, use the **no** form of this command.

**time-source** *source*  
**no time-source**

<b>Syntax Description</b>	<i>source</i> Specifies the type of time source: GPS, NTP, PTP, atomic-clock, hand-set, internal oscillator, other, or terrestrial radio.
---------------------------	---

<b>Command Default</b>	The default is the value specified by the platform.
------------------------	---

<b>Command Modes</b>	PTP clock configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 4.2.1	This command was introduced.

<b>Usage Guidelines</b>	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	---

Use this command to override the platform value, if needed, using any of the time-source values specified in the IEEE 1588-2008 standard.

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	ethernet-services	read, write

The following example sets the time source to PTP.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# clock
RP/0/RSP0/CPU0:router(config-ptp-clock)# time-source ptp
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ptp, on page 30</a>	Enters PTP configuration mode.

# transport

To specify the PTP transport type, use the **transport** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
transport {ethernet | ipv4}
no transport
```

## Syntax Description

<b>ethernet</b>	Specifies that Ethernet is used as the transport type on the interface.
<b>ipv4</b>	Specifies IPv4 is used as the transport type on the interface

## Command Default

This command has no default values or behavior.

## Command Modes

PTP profile configuration  
Interface PTP configuration

## Command History

Release	Modification
Release 4.2.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **transport** command can be used configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the transport type for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

## Task ID

Task ID	Operation
ethernet-services	read, write

The following example sets the transport type to be Ethernet.

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-ptp-profile)# transport ethernet
```

The following example overrides the transport type in the profile and sets it to be ipv4 for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10
RP/0/RSP0/CPU0:router(config-if) ptp
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1
RP/0/RSP0/CPU0:router(config-if-ptp)# transport ipv4
```

## uncalibrated-clock-class

To configure the clock class that is advertised when PTP is in ACQUIRING state and interface connected to the Best Master is in Uncalibrated state, use the **uncalibrated-clock-class** command in the PTP configuration mode. To remove the configuration, use the **no** form of this command.

**uncalibrated-clock-class** *class*

**no uncalibrated-clock-class** *class*

<b>Syntax Description</b>	<i>class</i> Indicates the clock class to be advertised when PTP is in ACQUIRING state. The range is between 0 and 255.				
<b>Command Default</b>	The default clock class can be obtained from the platform properties.				
<b>Command Modes</b>	PTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.1.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.1.2	This command was introduced.
Release	Modification				
Release 6.1.2	This command was introduced.				
<b>Usage Guidelines</b>	<p>This command is used to override the platform value (if needed).</p> <p>The following example configures the clock class to 255:</p> <pre>RP/0/RSP0/CPU0:router(config)# <b>ptp</b> RP/0/RSP0/CPU0:router(config-ptp)# <b>uncalibrated-clock-class 255</b></pre>				
<b>Related Commands</b>	<table border="1"> <tr> <td><a href="#">clock-class</a></td> <td>Configures the clock class that can be used to advertise a PTP clock.</td> </tr> </table>	<a href="#">clock-class</a>	Configures the clock class that can be used to advertise a PTP clock.		
<a href="#">clock-class</a>	Configures the clock class that can be used to advertise a PTP clock.				

## unicast-grant invalid-request

To specify whether unicast grant requests with unacceptable parameters are denied or granted with reduced parameters, use the **unicast-grant invalid-request** command in PTP profile configuration or interface PTP configuration mode. To remove the setting, use the **no** form of this command.

```
unicast-grant invalid-request {deny | reduce}
no unicast-grant invalid-request
```

### Syntax Description

**deny** Indicates that unicast grant requests with unacceptable parameters are denied.

For example, assume that a request for a grant is received with a packet interval of 1 per second and duration of 600 seconds, and that the maximum packet interval is 2 per second and duration is 500 seconds. If **deny** is configured, the grant will be denied.

**reduce** Indicates that unicast grant requests with unacceptable parameters are granted with reduced parameters.

For example, assume that a request for a grant is received with a packet interval of 1 per second and duration of 600 seconds, and that the maximum packet interval is 2 per second and duration is 500 seconds. If **reduce** is configured, a grant with packet interval of 2-per-second and duration of 500 seconds will be granted.

### Command Default

The default is **reduce**.

### Command Modes

PTP profile configuration

Interface PTP configuration

### Command History

Release	Modification
Release 4.2.1	This command was introduced.

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **unicast-grant invalid-request** command can be used to configure the global PTP configuration profile which can then be associated with many interfaces. Similarly it can be used in interface PTP configuration mode to set the unicast-grant invalid-request value for a specific interface. Any values set in interface PTP configuration mode override the settings in the PTP configuration profile associated with the interface.

### Task ID

Task ID	Operation
ethernet-services	read, write

The following example determines that unicast grant requests with unacceptable parameters are granted with reduced parameters.

```
RP/0/RSP0/CPU0:router(config)# ptp  
RP/0/RSP0/CPU0:router(config-ptp)# profile p1  
RP/0/RSP0/CPU0:router(config-ptp-profile)# unicast-grant invalid-request reduce
```

The following example overrides the unicast grant value in the profile and sets it to be deny for the interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/0/0/10  
RP/0/RSP0/CPU0:router(config-if) ptp  
RP/0/RSP0/CPU0:router(config-if-ptp)# profile p1  
RP/0/RSP0/CPU0:router(config-if-ptp)# unicast-grant invalid-request deny
```

unicast-grant invalid-request