



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 | grant-duration duration | timeout timeout}
no announce{frequency | interval | grant-duration | timeout}
```

Syntax Description	Parameter	Description
	frequency <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.
	interval <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.
	grant-duration <i>duration</i>	Specifies the length of time that permission to send unicast messages is granted (60-1000 seconds).
	timeout <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: grant-duration 600, interval 2, timeout 3.

Command Modes PTP profile configuration

Command History	Release	Modification
	Release 4.2.0	This command was introduced.
	Release 4.3.0	The grant duration option 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.

The **grant-duration** keyword is used for the ITU-T Telecom Profile.

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	<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.				

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
	ptp, on page 31	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

Syntax Description

one-step Specifies that the timestamp for the time synchronization message is directly in the synchronization message itself.

two-step Specifies that the timestamp for the time synchronization message is sent in a message that follows the synchronization message.

Command Default

The default is two-step.

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 **clock operation** 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 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.

Task ID

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	<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> <tr> <td>Release 6.1.2</td> <td>This command has been deprecated from Release 6.1.2.</td> </tr> </tbody> </table>	Release	Modification	Release 4.3.0	This command was introduced.	Release 6.1.2	This command has been deprecated from Release 6.1.2.
Release	Modification						
Release 4.3.0	This command was introduced.						
Release 6.1.2	This command has been deprecated from Release 6.1.2.						

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
	ptp, on page 31	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

Syntax Description

class Specifies the clock class to use when advertising this clock. Values can range from 0 to 255.

Command Default

The default is that the clock class is derived from platform properties.

Command Modes

PTP clock 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.

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

Task ID

Task ID	Operation
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
```

Related Commands

Command	Description
ptp, on page 31	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}
```

Syntax Description

clock-type T-GM | T-BC | T-TSC Indicates the clock type for G.8275.1 profile. G.8275.1 profile supports three clock types:

- T-GM: Telecom Grandmaster
- T-BC: Telecom Boundary Clock
- T-TSC: Telecom Time Slave Clock

Command Default

The default PTP profile defined in the IEEE-1588 standard is used if this configuration is not used.

Command Modes

PTP configuration

Command History

Release	Modification
Release 6.1.2	This command was introduced.

Usage Guidelines

The **clock-type** can be configured only when G.8275.1 is selected as the PTP profile.



Note The **clock-selection telecom-profile** and **clock-advertisement telecom-profile** commands are deprecated from Release 6.1.2. They are replaced by the **clock profile** command.

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
```



Note Configuring the G.8265.1 profile using **clock profile** command is equivalent to using **clock-selection telecom-profile** and **clock-advertisement telecom-profile** commands to configure the G.8265.1 profile in the earlier releases.

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

Syntax Description	This command has no keywords or arguments.
Command Default	By default, the clock selection algorithm is compliant with the PTP 1588 standard.
Command Modes	PTP configuration

Command History	Release	Modification
	Release 4.3.0	This command was introduced.
	Release 6.1.2	This command has been deprecated from Release 6.1.2.

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
	ptp, on page 31	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
```

Syntax Description	<i>number</i> Specifies the CoS value to use (0-7).
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Command Default	The default CoS value is 6.
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Command Modes	PTP profile configuration Interface PTP configuration
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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.
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The **cos** 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.

Task ID	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

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

Syntax Description	<i>number</i> Specifies the domain number to use for this clock (0-255).
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Command Default	Default is 0.
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Command Modes	PTP clock configuration
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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.
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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.

Task ID	Task ID	Operation
	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
```

Related Commands	Command	Description
	ptp , on page 31	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

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

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

eui-64 <i>number</i>	Specifies the full EUI-64 number to determine the clock identity.
mac-address <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"> router. Use the router's built-in MAC address as the clock identity address. Enter a MAC address (H.H.H format).

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
ptp, on page 31	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	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
	ptp, on page 31	Enters PTP configuration mode.

master

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

ipv4 <i>address</i>	Specifies the IPv4 address of a master.
ipv6 <i>address</i>	Specifies the IPv6 address of a master.
clock-class <i>class</i>	Overrides the clock class received in announce messages from this master.
delay-symmetry <i>number</i>	Specifies the expected asymmetry.
multicast	Indicates that the master sends multicast message.
non-negotiated	Specifies non-negotiated unicast message.
priority <i>number</i>	Indicates the priority for selecting between multiple masters (lower numbers are high priority).
clock-class <i>class</i>	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 {target-address ethernet{forwardable mac-address | non-forwardable mac-address}}
no multicast {target-address ethernet{forwardable mac-address | non-forwardable mac-address}}
```

Syntax Description

target-address ethernet <i>forwardable mac-address</i> <i>non-forwardable mac-address</i>	Indicates the Ethernet multicast group address to send the multicast messages. This command supports either forwardable or non-forwardable Ethernet mac addresses only. <ul style="list-style-type: none"> • Forwardable mac-address: 01-1B-19-00-00-00 • Non-forwardable mac-address: 01-80-C2-00-00-0E
--	--

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.
Release 6.1.2	Support for ethernet multicast address 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 to be sent to the forwardable mac-address:

```
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 target-address ethernet 01-1B-19-00-00-00
```


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

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

Command Default	Default is 128.
------------------------	-----------------

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.
-------------------------	---

Task ID	Task ID	Operation
	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
```

Related Commands	Command	Description
	ptp, on page 31	Enters PTP configuration mode.
	priority2, on page 26	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

Syntax Description

number Specifies the priority 2 number to use for this clock (0-255).

Command Default

Default is 128.

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.

Task ID

Task ID	Operation
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
```

Related Commands

Command	Description
ptp, on page 31	Enters PTP configuration mode
priority1, on page 25	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*

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

Command Default	No configuration profile is associated with the interface.
------------------------	--

Command Modes	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.
-------------------------	---

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.

Task ID	Task ID	Operation
	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
```

Related Commands	Command	Description
	profile (PTP), on page 28	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*

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

Command Default	No default behavior or values
------------------------	-------------------------------

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.
-------------------------	---

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
	profile (interface), on page 27	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 | master-only}
no port state
```

Syntax Description

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

master-only Configures the port state to be a master. The **master-only** keyword is used for multicast transport mode.

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.
Release 6.1.2	master-only keyword 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
```

The following example configures the PTP port state to be master-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 master-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
```

PTP commands can be run on Gigabit Ethernet interfaces or Bundle Ethernet interfaces.

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
profile (PTP), on page 28	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

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

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 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 (2651ffffec41c26)
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
best	Displays the state of the best foreign master found in the network

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.

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
```

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
```

show ptp foreign-masters

```

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

The output displays Local Priority value only if the configured profile is G.8275.1 profile.

```
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
Local Priority: 128
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
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

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

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 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

show ptp packet-counters

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

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

show ptp packet-counters

```
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*

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

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

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
```

show ptp unicast-peers

```
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
```

Syntax Description

address Specifies an IPv4 address.

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 **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.

Task ID

Task ID	Operation
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 | grant-duration duration | interval interval | timeout timeout}
no sync {frequency | grant-duration | interval | timeout}
```

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.
grant-duration <i>duration</i>	Specifies the announce grant duration (60-1000 seconds). If the port is in the slave state, this is the grant that is requested. If the port is in the master state, this is the maximum grant that is allowed.
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.
timeout <i>timeout</i>	Specifies the time after which the sync message times out (100-10000 milliseconds).

Command Default

Defaults: grant-duration 600, interval 1, timeout 5000.

Command Modes

PTP profile configuration
Interface PTP configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.
Release 4.3.0	The grant-duration and timeout keywords were added.

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.

The **grant-duration** and **timeout** keywords are used for the ITU-T Telecom Profile. A frequency value of 128 messages per second is valid for the ITU-T Telecom Profile only.

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
	ptp, on page 31	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*

Syntax Description	priority <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).				
Command Default	The default is priority 100.				
Command Modes	PTP configuration				
Command History	<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.				
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	<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

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

Command Default The default is the value specified by the platform.

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, using any of the time-source values specified in the IEEE 1588-2008 standard.

Task ID	Task ID	Operation
	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
```

Related Commands	Command	Description
	ptp, on page 31	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

ethernet Specifies that Ethernet is used as the transport type on the interface.

ipv4 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 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 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*

Syntax Description	<i>class</i> Indicates the clock class to be advertised when PTP is in ACQUIRING state. 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	This command is used to override the platform value (if needed).
-------------------------	--

The following example configures the clock class to 255:

```
RP/0/RSP0/CPU0:router(config)# ptp
RP/0/RSP0/CPU0:router(config-ptp)# uncalibrated-clock-class 255
```

Related Commands	clock-class 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
```