



Frequency Synchronization Commands

This chapter describes the Cisco IOS XR frequency synchronization commands that are used to distribute precision frequency around a network.

For detailed information about frequency synchronization concepts, configuration tasks, and examples, see the *Configuring Frequency Synchronization on Cisco IOS XR Software* configuration module in *System Management Configuration Guide for Cisco ASR 9000 Series Routers*.

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clear SyncE esmc statistics

To clear the Ethernet Synchronization Messaging Channel (ESMC) statistics, use the **clear SyncE esmc statistics** command in EXEC mode.

clear SyncE esmc statistics interface *{interface | all | summary location {node-id | all}}*

| | |
|---------------------------|--|
| Syntax Description | <i>interface</i> The command can be restricted to clear the ESMC statistics for a particular interface by specifying the interface. |
| | <i>node-id</i> The output can be restricted to clear the ESMC statistics for a particular node by specifying the location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. |

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

| | |
|----------------------|------|
| Command Modes | EXEC |
|----------------------|------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | Release 6.1.2 | 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 | Operations |
| | ethernet-services | execute |

Examples

The following example shows how to clear the ESMC statistics:

```
RP/0/0RP0/CPU0:router:hostname# clear SyncE esmc statistics interface gigabitethernet 0/1/0/1
```

clear SyncE wait-to-restore

To clear the SyncE wait-to-restore timer, use the **clear SyncE wait-to-restore** command in EXEC mode.

```
clear SyncE wait-to-restore {{all | sync port-num location node-id} | interface {type interface-path-id | all}}
```

| | | |
|---------------------------|---|---|
| Syntax Description | all | Clears all wait-to-restore timers. |
| | interface <i>type interface-path-id</i> | Clears the wait-to-restore timers for a specific interface or all interfaces. |
| Command Default | No default behavior or values | |
| Command Modes | EXEC | |
| Command History | Release | Modification |
| | Release 6.1.2 | 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 | Operations |
| | ethernet-services | execute |

Examples

The following example shows how to clear the SyncE wait-to-restore timer on a specific interface:

```
RP/0/0RP0/CPU0:router:hostname#clear SyncE wait-to-restore interface gigabitethernet 0/1/0/1
```

Related Topics

[wait-to-restore](#), on page 36

clock-interface timing-mode

To configure the type of timing sources that can be used to drive the output from the clock interfaces on the router, use the **clock-interface timing-mode** command in frequency synchronization configuration mode. To revert to the default timing mode, use the **no** form of this command.

```
clock-interface timing-mode {independent | system}
no clock-interface timing-mode
```

| Syntax Description | | |
|--------------------|--------------------|--|
| | independent | Specifies that the output of clock interfaces is driven only by the line interfaces (Ethernet and SONET). Each clock interface port on the router is completely independent. The same timing source cannot be used on more than one port and no loopbacks are allowed between clock interface ports. |
| | system | Specifies that the output of a clock interface is driven by the system-selected timing source, which can be either the line interface or the clock interface. |

Command Default Clock interface output is driven only by input from line interfaces or the internal oscillator.

Command Modes Frequency synchronization configuration

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 3.9.0 | 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.

In the default clock mode, clock interface loopback detection is turned on. This means that heuristic tests are run to detect if the signal being sent out of one clock interface can be looped back by some external box and sent back in via the same, or another, clock interface. In addition, output from the clock interface is driven only by input from line interfaces (and the internal oscillator). It is never driven by input from another clock interface.

| Task ID | Task ID | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |
| | sonet-sdh | execute |

Examples The following examples show how to configure the timing source for the clock interfaces on the router:

```
RP/0/RSP0/CPU0:router# config  
RP/0/RSP0/CPU0:router(config)# frequency synchronization  
RP/0/RSP0/CPU0:router(config-freqsync)#clock-interface independent  
  
RP/0/RSP0/CPU0:router# config  
RP/0/RSP0/CPU0:router(config)# frequency synchronization  
RP/0/RSP0/CPU0:router(config-freqsync)#clock-interface system
```

clock-interface sync

To configure a clock interface for frequency synchronization on a specific node, use the **clock-interface sync** command in global configuration mode. To remove the clock interface from a node, use the **no** form of this command.

```
clock-interface sync port-id location node-id
no clock-interface sync port-id location node-id
```

| Syntax Description | | |
|--------------------|-----------------------------------|---|
| | <i>port-id</i> | Clock interface port number. |
| | location <i>node-id</i> | Specifies the node for clock interface frequency synchronization. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. |

Command Default No default behavior or values

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 3.9.0 | 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 | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |
| | sonet-sdh | execute |

Examples This example shows how to configure a clock interface for frequency synchronization on a specific node:

```
RP/0/RSP0/CPU0:router# config
RP/0/RSP0/CPU0:router(config)# clock-interface sync 0 location 0/1/cpu0
RP/0/RSP0/CPU0:router(config-clock-if)# frequency synchronization
RP/0/RSP0/CPU0:router(config-clk-freqsync)#
```

SyncE

To enable SyncE globally on the router and to configure SyncE options for a controller or interface, use the **SyncE** command in the appropriate configuration mode. To disable SyncE, use the **no** form of this command.

SyncE
no SyncE

Syntax Description This command has no keywords or arguments.

Command Default Disabled

Command Modes Global configuration (config)
 Interface configuration (config-interface)

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 6.1.2 | 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.

Configuration of SyncE on the router involves enabling it both in global configuration, and at the interface, where you can configure additional commands.

When you configure SyncE in global configuration mode, the default clocking is configured for line timing mode.

| Task ID | Task ID | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |

Examples

The following example shows how to enable SyncE in global configuration:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname(config)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-freqsync)# commit
```

The following example shows how to enable SyncE on an Ethernet interface:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname(config)# interface gigabitEthernet 0/5/0/0
RP/0/0RP0/CPU0:router:hostname(config-if)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)#
```

gps-input

To configure the GPS input parameters on an interface, use the **gps-input** command in clock interface port parameters configuration mode. To revert to the default parameters, use the **no** form of this command.

```
gps-input tod-format {cisco | ntp4 | gprmc} pps-input {rs422 | ttl} [offset {gps | tai | utc}]
input-phase-delay delay-nanoseconds
```

Syntax Description

| | |
|--|--|
| tod-format | Specifies the format of the time-of-day messages. |
| gprmc | Specifies that the received time of day messages are in the NMEA GPRMC format. |
| cisco | Specifies that received time-of-day messages are in the Cisco ASCII format. |
| ntp4 | Specifies that received time-of-day messages are in the NTP Type 4 format. |
| pps-input | Specifies the mode of one pulse-per-second signals. |
| rs422 | Specifies that received 1PPS messages are in RS-422 mode. |
| ttl | Specifies that received 1PPS messages are in TTL mode. |
| offset | Specifies the leap second correction to be applied on GPS input time. This is an optional parameter. If no option is specified, the GPS input time is based on UTC (Coordinated Universal Time) and the leap second correction is performed accordingly. |
| gps | Specifies the GPS input time based on GPS epoch. |
| tai | Specifies the GPS input time based on TAI (Temps Atomique International also known as International Atomic Time) time scale and no leap second correction is required. |
| utc | Specifies the GPS input time based on UTC. |
| input-phase-delay <i>input-phase-delay</i> | Specifies the compensation when there is phase delay. Note When you use an ASR 9000 router as Grand Master (GM), it may be connected to a GPS source. If there is a phase delay that is caused by either the GPS source itself or the cable, use the input-phase-delay keyword to compensate the delay. |

Command Default

GPS parameters are not configured.

Command Modes

Clock interface port parameters configuration

Command History

| Release | Modification |
|---------------|---|
| Release 4.2.0 | This command was introduced. |
| Release 5.1.3 | The Offset keyword was introduced. |

| Release | Modification |
|---------------|--|
| Release 5.2.2 | Support for GPRMC format. |
| Release 5.3.2 | The input-phase-delay keyword was introduced. |
| Release 6.2.1 | The input-phase-delay 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.

Use the **gps-input** command to specify input parameters for a clock interface that is configured for GPS timing.

The Offset keyword adjusts the GPS input time for leap seconds. ASR 9000 internally converts the TOD received from GPS to TAI time scale and the offset can be specified for correction. This is an optional parameter. If no option is specified, the GPS input time is based on UTC and leap second correction is performed accordingly.

Task ID

| Task ID | Operation |
|---------|----------------|
| drivers | read, write |

This example shows how to specify sample input parameters for a clock interface:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# clock-interface sync 2 location 0/rsp0/cpu0
RP/0/RSP0/CPU0:router(config-clock-if)# port-parameters
RP/0/RSP0/CPU0:router(config-clk-parms)# gps-input tod-format cisco pps-input rs422 offset
utc
```

log selection

To enable logging of changes or errors to SyncE, use the **log selection** command in SyncE configuration mode. To disable logging, use the **no** form of this command.

```
log selection {changes | errors}
no log selection
```

Syntax Description

changes Logs every time there is a change to the selected source, including any logs that the **errors** keyword logs.

errors Logs only when there are no available frequency sources, or when the only available frequency source is the internal oscillator.

Command Default

No default behavior or values

Command Modes

SyncE configuration

Command History

| Release | Modification |
|---------------|------------------------------|
| Release 6.1.2 | 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 | Operations |
|-------------------|------------|
| ethernet-services | execute |

Examples

This example shows how to enable logging of changes to SyncE:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname# (config)# SyncE
RP/0/0RP0/CPU0:router:hostname# (config-freqsync)# log selection changes

#
```

port-parameters

To specify the type of external clock source for a clock interface, use the **port-parameters** command in clock interface configuration mode. To remove the clock source definition, use the **no** form of this command.

```
port-parameters {bits-input mode | bits-output mode | dti | ics}
no port-parameters {bits-input mode | bits-output mode | dti | ics}
```

Syntax Description

{bits-input } Specifies a building integrated timing supply (BITS) input timing device.

{bits-output } Specifies a building integrated timing supply (BITS) output timing device.

mode Type of BITS signal. Valid options are:

- **2m**
- **6m-output-only**
- **e1**
- **t1**

dti Specifies a DOCSIS® Timing Interface (DTI).

ics Enables inter-chassis clock synchronisation.

Command Default

No clocking type is defined.

Command Modes

Clock interface configuration mode

Command History

| Release | Modification |
|---------------|---|
| Release 3.9.0 | This command was introduced. |
| Release 5.3.0 | The ics keyword was introduced. |
| Release 6.6.2 | The bits-default 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 |
|---------|----------------|
| drivers | read, write |

This example shows how to configure the external clock source to be DTI:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# clock-interface sync 1 location 0/RSP0/CPU0
RP/0/RSP0/CPU0:router(config-clock-if)# port-parameters dti
```

priority (SyncE)

To configure the priority of the frequency source on a controller or an interface, use the **priority** command in the appropriate SyncE configuration mode. To return the priority to the default value, use the no form of this command.

priority *priority-value*
no priority *priority-value*

| | |
|---------------------------|--|
| Syntax Description | <i>priority-value</i> Priority of the frequency source. The priority is used to select between sources with the same Quality Level (QL). The range is 1 (highest priority) to 254 (lowest priority). |
|---------------------------|--|

| | |
|------------------------|-----|
| Command Default | 100 |
|------------------------|-----|

| | |
|----------------------|---|
| Command Modes | Controller SyncE configuration Interface SyncE configuration |
|----------------------|---|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | Release 6.1.2 | 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 | Operations |
| | ethernet-services | execute |

Examples

The following example shows how to configure the SyncE priority on a controller:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname# (config)# controller 0/1/0/1
RP/0/0RP0/CPU0:router:hostname# (config-controller)# SyncE
RP/0/0RP0/CPU0:router:hostname# (config-controller-freqsync)# priority 150
RP/0/0RP0/CPU0:router:hostname# (config-controller-freqsync)# commit
```

The following example shows how to configure the SyncE priority on interface:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname# (config)# interface gigabitethernet 0/1/0/1
RP/0/0RP0/CPU0:router:hostname# (config-if)# frequency synchronization
RP/0/0RP0/CPU0:router:hostname# (config-if-freqsync)# priority 150
RP/0/0RP0/CPU0:router:hostname# (config-if-freqsync)# commit
```

quality itu-t option

To configure the ITU-T quality level (QL) options, use the **quality itu-t option** command in SyncE configuration mode. To return to the default levels, use the **no** form of this command.

```
quality itu-t option {1 | 2 generation {1 | 2}}
no quality
```

| | |
|---------------------------|--|
| Syntax Description | <p>{1 2 generation} Specifies the quality level for the router. Valid options are:</p> <p>{1 2}}</p> <ul style="list-style-type: none"> • 1—ITU-T QL option 1, which uses the PRC, SSU-A, SSU-B, SEC and DNU quality levels. • 2 generation 1—ITU-T QL option 2 generation 1, which uses the PRS, STU, ST2, ST3, SMC, ST4, RES and DUS quality levels. • 2 generation 2—ITU-T QL option 2, generation 2, which uses the PRS, STU, ST2, ST3 TNC, ST3E, SMC, ST4, PROV and DUS quality levels. |
|---------------------------|--|

| | |
|------------------------|----------------|
| Command Default | ITU-T option 1 |
|------------------------|----------------|

| | |
|----------------------|---------------------|
| Command Modes | SyncE configuration |
|----------------------|---------------------|

| Command History | <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. | | | | |

| | |
|-------------------------|--|
| 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> |
|-------------------------|--|

The QL configured with the **quality itu-t option** command must match the QL specified in the **quality transmit** and **quality receive** commands configured in clock interface or interface SyncE configuration mode.

| Task ID | <table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>ethernet-services</td> <td>execute</td> </tr> </tbody> </table> | Task ID | Operations | ethernet-services | execute |
|-------------------|--|---------|------------|-------------------|---------|
| Task ID | Operations | | | | |
| ethernet-services | execute | | | | |

| | |
|-----------------|---|
| Examples | <p>The following example shows how to configure the ITU-T QL options:</p> |
|-----------------|---|

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname# (config)# SyncE
RP/0/0RP0/CPU0:router:hostname# (config-sonet-freqsync)# quality itu-t option 1
```

Related Topics

- [quality receive](#), on page 15
- [quality transmit](#), on page 18

quality receive

To configure all the Synchronization Status Message (SSM) quality levels (QLs) for the frequency source from the receive interface, use the **quality receive** command in the appropriate SyncE mode. To return to the default levels, use the no form of this command.

```
quality receive itu-t option {lowest ql-option ql [highest ql] | highest ql-option ql | exact ql-option ql}
```

```
no quality receive receive
```

Syntax Description

ql-option Quality Level (QL) ITU-T options.

Valid values are:

- **1**—ITU-T Option 1
- **2 generation 1**—ITU-T Option 2 Generation 1
- **2 generation 2**—ITU-T Option 2 Generation 2

ql Quality Level (QL) value.

For line interfaces and clock interface with SSM support, any of the following combinations of QL values can be specified to modify the QL value received via SSM:

- If the **exact** keyword is used and the received or default QL is not DNU, then this value is used (rather than the received/default QL).
- If the **lowest** keyword is used and the received QL is a lower quality than this, then the received QL value is ignored and DNU is used instead.
- If the **highest** keyword is used and the received QL is higher quality than this, then the received QL value is ignored and this value is used instead.
- If the **lowest** and **highest** keywords are used, the behavior is as above. The maximum QL must be at least as high quality as the minimum QL.

Valid QL values for ITU-T Option 1 are:

- PRC
- SSU-A
- SSU-B
- SEC
- DNU

Valid QL values for ITU-T Option 2 Generation 1 are:

- PRS
- STU
- ST2
- ST3
- SMC
- ST4
- RES
- DUS

Valid QL values for ITU-T Option 2 Generation 2 are:

- PRS
 - STU
 - ST2
 - TNC
 - ST3E
 - ST3
 - SMC
 - ST4
 - PROV
 - DUS
-

Command Default QL is unmodified.

Command Modes Interface SyncE

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 6.1.2 | 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.

In cases where the clock interface supports SSM but it is not always enabled, all options are available. For clock interfaces where SSM is disabled or not being received, the QL used with the **exact** keyword specifies a precise QL to use for the interface. The QL specified with the **lowest** and **highest** keywords only acts on a received QL, which is only detected in cases where SSM is not running and a loopback has been detected. In this case the **lowest** and **highest** QL values modify the effective input QL.



Note If SSM is disabled, only the exact QL option is available.

| Task ID | Task ID | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |

Examples The following example shows how to configure all the SSM quality levels for the frequency source from the receive interface:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname(config)# controller sonet 0/1/0/1
RP/0/0RP0/CPU0:router:hostname(config-sonet)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-sonet-freqsync)# quality receive itu-t
option 2 generation 2 ST3
```


Related Topics

[quality itu-t option](#), on page 14

quality transmit

To configure all the Synchronization Status Message (SSM) quality levels for the frequency source from the transmit interface, use the **quality transmit** command in the appropriate SyncE mode. To return to the default levels, use the **no** form of this command.

quality transmit *itu-t option* {**lowest** *ql-option ql* [**highest** *ql*] | **highest** *ql-option ql* | **exact** *ql-option ql*}

no quality transmit

Syntax Description

ql-option Quality Level (QL) ITU-T options.

Valid values are:

- **1**—ITU-T Option 1
- **2 generation 1**—ITU-T Option 2 Generation 1
- **2 generation 2**—ITU-T Option 2 Generation 2

ql Quality Level (QL) value.

- If the **exact** keyword is used and the received or default QL is not DNU, then this value is used (rather than the received/default QL).
- If the **lowest** keyword is used and the received QL is a lower quality than this, then the received QL value is ignored and DNU is used instead.
- If the **highest** keyword is used and the received QL is higher quality than this, then the received QL value is ignored and this value is used instead.
- If the **lowest** and **highest** keywords are used, the behavior is as above. The maximum QL must be at least as high quality as the minimum QL.

Valid QL values for ITU-T Option 1 are:

- PRC
- SSU-A
- SSU-B
- SEC
- DNU

Valid QL values for ITU-T Option 2 Generation 1 are:

- PRS
- STU
- ST2
- ST3
- SMC
- ST4
- RES
- DUS

Valid QL values for ITU-T Option 2 Generation 2 are:

- PRS
 - STU
 - ST2
 - TNC
 - ST3E
 - ST3
 - SMC
 - ST4
 - PROV
 - DUS
-

Command Default The QL is unmodified

Command Modes Interface SyncE

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 6.1.2 | 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.

If the interface is the selected source, DNU is always sent regardless of this configuration.

This configuration has no effect when SSM is disabled.



Note For clock interfaces that do not support SSM, only the lowest QL can be specified. In this case, rather than sending DNU, the output is squelched, and no signal is sent.

| Task ID | Task ID | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |

Examples The following example show how to configure all the SSM quality levels for the frequency source from the transmit interface:

```
RP/0/0RP0/CPU0:router:hostname#(config)#controller sonet 0/1/0/1
RP/0/0RP0/CPU0:router:hostname(config-sonet)#SyncE
RP/0/0RP0/CPU0:router:hostname(config-sonet-freqsync)quality transmit itu-t option 2
generation 2
RP/0/0RP0/CPU0:router:hostname(config-sonet-freqsync)#commit
```

Related Topics

[quality itu-t option](#), on page 14

selection input

To configure an interface so that it is available as a timing source for selection by the system, use the **selection input** command in the appropriate SyncE configuration mode. To remove the interface as an available timing source, use the **no** form of this command.

selection input
no selection input

Syntax Description This command has no keywords or arguments.

Command Default Disabled

Command Modes Controller SyncE configuration
 Interface SyncE configuration

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 6.1.2 | 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 | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |

Examples The following example shows how to configure an interface so that it is available as a timing source for selection by the system:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname(config)# interface gigabitethernet 0/1/0/1
RP/0/0RP0/CPU0:router:hostname(config-if)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# selection input
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# commit
```

show frequency synchronization clock-interfaces

To display the frequency synchronization information for all clock-interfaces or for a specific node, use the **show frequency synchronization clock-interfaces** command in EXEC mode.

show frequency synchronization clock-interfaces [**brief**] [**location** *node-id*]

| Syntax Description | | |
|--------------------------------|--|--|
| brief | | Displays summary information for all clock interfaces. |
| location <i>node-id</i> | | Displays information for a specific interface. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. |

Command Default No default behavior or values

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 3.9.0 | 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 | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |
| | sonet-sdh | execute |

Examples

The following example shows the output for the **show frequency synchronization clock-interfaces** command:

```
RP/0/RSP0/CPU0:router# show frequency synchronization clock-interfaces
```

```
Node 0/0/CPU0:
```

```
=====
```

```
  Clock interface Sync0 (Up):
    Assigned as input for selection
    SSM supported and enabled
    Input:
      Going down in 00:00:20
      Last received QL: OPT-II,1/PRC
      Effective QL: OPT-II,1/PRC, Priority: 200
    Output:
      Selected source: GigabitEthernet0/0/0/3
```

```

    Selected source QL: OPT-II,1/PRC
    Effective QL: DNU
Next selection points: RP_SELECTOR

Clock interface Sync1 (Down: mode is not configured):
Assigned as input for selection
SSM supported and enabled
Input:
  Restore in 00:02:00
  Last received QL: Opt-II,2/ST3
  Effective QL: Opt-II,2/ST3, Priority: 100
Output:
  Selected source: GigabitEthernet0/0/0/3
  Selected source QL: Opt-II,2/PRC
  Effective QL: DNU
Next selection points: RP_SYSTEM

Clock interface Internal0 (Up):
Input:
  Default QL: OPT-II,2/ST3
  Effective QL: OPT-II,2/ST3, Priority 255
Next selection points: RP_SELECTOR

```



Note The last received QL and effective output QL are only shown if SSM is supported and enabled on the clock.

The output in brief mode is as follows:

```

RP/0/RSP0/CPU0:router# show frequency synchronization clock-interfaces brief

Flags: > - Up           D - Down           S - Assigned for selection
       d - SSM Disabled  s - Output squelched L - Looped back
Node 0/0/CPU0:
=====
Fl   Clock Interface   QLrcv  QLuse  Pri  QLsnd  Source
=====  =====  =====  =====  ===  =====  =====
>S   Sync0              PRC    PRC    100  DNU    GigabitEthernet0/0/0/3
DS   Sync1              FAILED  DNU    100  n/a    GigabitEthernet0/0/0/3
>S   Internal0          ST3    ST3    255  n/a

```

show SyncE configuration-errors

To display information about any configuration inconsistencies that are detected, but that are not rejected by verification, use the **show SyncE configuration-errors** command in EXEC mode.

show SyncE configuration-errors [**location** *node-id*]

Syntax Description

location Location of the card, specified by *node-id*.

node-id The output can be restricted to a particular node by specifying the location. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

| Release | Modification |
|---------------|------------------------------|
| Release 6.1.2 | 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 | Operations |
|-------------------|------------|
| ethernet-services | execute |

Examples

This example shows the normal output for the **show SyncE configuration-errors** command:

```
RP/0/ORP0/CPU0:router:hostname# show SyncE configuration-errors
```

```
Node 0/0/CPU0:
```

```
=====
```

```
interface GigabitEthernet0/0/0/0 SyncE
```

```
* SyncE is enabled on this interface, but isn't enabled globally.
```

```
* The QL that is configured is from a different QL option set than is configured globally.
```


show SyncE interfaces

To show the SyncE information for all interfaces or for a specific interface, use the **show SyncE interfaces** command in EXEC mode.

```
show frequency SyncE {brief | summary [location node-id] | type interface-path-id}
```

| Syntax Description | | |
|-----------------------------------|--|--|
| brief | | Displays brief information for all interfaces. |
| summary [location node-id] | | Displays summary information for all notes or a specific node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. |
| type interface-path-id | | Displays information for a specific interface. |

Command Default No default behavior or values

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 6.1.2 | 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 | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |

Examples

The following example shows the display output for the **show SyncE interfaces** command:

show SyncE interfaces

```
RP/0/0RP0/CPU0:router:hostname# show SyncE interfaces

Interface GigabitEthernet0/0/0/0 (Up)
  Assigned as input for selection
  SSM Enabled
  Peer Up for 00:01:30, last SSM received 0.345s ago
  Peer has come up 4 times and timed out 3 times
  ESMC SSMs      Total  Information      Event      DNU
    Sent:        98765      98665      100        50
    Received:    54321      54320      1          54300
  13 malformed packets received
  11 received packets were not handled
  Input:
  Restore in 00:03:30
  Last received QL: Opt-II,2/PRC
  Effective QL: DNU, Priority 100
  Output:
```

```

Selected source: Sync0 [0/0/CPU0]
Selected source QL: OPT-II,2/SEC
Effective QL: OPT-II,2/SEC
Output is squelched
Next selection points: LC_INGRESS

Interface SONET0/2/0/0 (Up)
Assigned as input for selection
SSM Enabled
Input:
  Restore in 00:03:30
  Last received QL: Opt-II,2/PRC
  Effective QL: DNU, Priority 100
Output:
  Selected source: Sync0 [0/0/CPU0]
  Selected source QL: OPT-II,2/SEC
  Effective QL: OPT-II,2/SEC
  Output is squelched
  Next selection points: LC_INGRESS

```

The output in brief mode is as follows:

```

Flags: > - Up           D - Down           S - Assigned for selection
       d - SSM Disabled  x - Peer timed out  i - Init state
       s - Output squelched

Fl  Interface          QLrcv QLluse Pri  QLsnd Source
====
>S  GigabitEthernet0/0/0/0  ST2   ST3   100 PRC  Sync0 [0/0/CPU0]
>S  GigabitEthernet0/0/0/1  PROV  DNU   100 PRC  Sync0 [0/0/CPU0]
DdS GigabitEthernet0/1/0/0  n/a   ST3   50   Sync0 [0/0/CPU0]
D   SONET0/1/0/0          n/a   n/a   100 DNU  Sync0 [0/0/CPU0]
>   GigabitEthernet0/12/0/13 PRC   n/a   200 DNU  Sync0 [0/0/CPU0]

```

The output in summary mode is as follows, for each node:

```

Node 0/0/CPU0:
  34 Ethernet interfaces in Synchronous mode, 10 assigned for selection, 23 with SSM enabled

ESMC SSMS      Total  Information  Event      DNU
Sent:          198765  189665     9100      650
Received:      654321  654320     91        54321

  12 SONET interfaces in Synchronous mode, 5 assigned for selection, 11 with SSM enabled

```

show SyncE selection

To display the SyncE selection information for all selection points or for a specific node, use the **show SyncE selection** command in EXEC mode.

```
show SyncE selection {location node-id}
```

| | | |
|---------------------------|-------------------------|---|
| Syntax Description | location node-id | Displays information for a specific node on the router. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. |
|---------------------------|-------------------------|---|

Command Default No default behavior or values

Command Modes EXEC

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | Release 6.1.2 | 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 **show SyncE selection** command shows the status of the timing stream from the timing source

| | | |
|----------------|-------------------|-------------------|
| Task ID | Task ID | Operations |
| | ethernet-services | execute |

Examples

This example shows the normal output for the **show SyncE selection** command:

```
RP/0/0RP0/CPU0:router:hostname# show frequency synchronization selection

Node 0/0/CPU0:
=====
Selection point: LC_INGRESS (4 inputs, 2 selected)
  Last programmed 00:01:30 ago, and selection made 00:01:29 ago
  Next selection points:
    SPA scoped      : None
    Node scoped     : None
    Chassis scoped  : None
    Router scoped   : RP_SELECTOR RP_CLOCK_INTF_SELECTOR
  S  Input                                     Last Selection Point          QL  Pri  Status
  ==  =====
  1  GigabitEthernet0/0/0/3                   n/a                            PRC 100 Unmonitored
  2  GigabitEthernet0/0/0/0                   n/a                            PRC 200 Down
     GigabitEthernet0/0/0/1                   n/a                            ST2  50  Unmonitored
     GigabitEthernet0/0/0/2                   n/a                            ST3 100 Unmonitored

Selection point: LC_EGRESS (2 inputs, 1 selected)
  Last programmed 00:25:42 ago, and selection made 00:00:15 ago
  Next selection points:
    SPA scoped      : None
```

show SyncE selection

```

Node scoped      : None
Chassis scoped: None
Router scoped   : None
Used for local line interface output
Used for local clock-interface output
S  Input                Last Selection Point          QL Pri Status
== =====
1  GigabitEthernet0/0/0/3  0/1/CPU0 RP_SELECTOR 1          PRC 100 Ok
   GigabitEthernet0/0/0/3  0/2/CPU0 RP_SELECTOR 1          PRC 100 Ok

Node 0/1/CPU0:
=====
Selection point: RP_SELECTOR (5 inputs, 1 selected)
Last programmed 00:01:32 ago, and selection made 00:01:28 ago
Next selection points:
  SPA scoped      : None
  Node scoped     : None
  Chassis scoped: None
  Router scoped   : LC_EGRESS
S  Input                Last Selection Point          QL Pri Status
== =====
1  GigabitEthernet0/0/0/3  0/0/CPU0 LC_INGRESS 1          PRC 100 Ok
   Sync0 [0/1/CPU0]        n/a                          PRC 50  LOS
   GigabitEthernet0/0/0/3  0/2/CPU0 RP_SELECTOR 1          PRC 100 Ok
   GigabitEthernet0/0/0/0  0/0/CPU0 LC_INGRESS 2          PRC 200 Ok
   Internal0 [0/1/CPU0]    n/a                          ST3 255  Ok

Selection point: RP_CLOCK_INTF_SELECTOR (4 inputs, 1 selected)
Last programmed 00:01:32 ago, and selection made 00:01:28 ago
Next selection points:
  SPA scoped      : None
  Node scoped     : None
  Chassis scoped: None
  Router scoped   : None
Used for local clock-interface output
S  Input                Last Selection Point          QL Pri Status
== =====
1  GigabitEthernet0/0/0/3  0/0/CPU0 LC_INGRESS 1          PRC 100 Ok
   GigabitEthernet0/0/0/3  0/2/CPU0 RP_SELECTOR 1          PRC 100 Ok
   GigabitEthernet0/0/0/0  0/0/CPU0 LC_INGRESS 2          PRC 200 Ok
   Internal0 [0/1/CPU0]    n/a                          ST3 255  Ok

Node 0/2/CPU0:
=====
Selection point: RP_SELECTOR (4 inputs, 1 selected)
Last programmed 00:28:55 ago, and selection made 00:00:20 ago
Next selection points:
  SPA scoped      : None
  Node scoped     : None
  Chassis scoped: None
  Router scoped   : LC_EGRESS
S  Input                Last Selection Point          QL Pri Status
== =====
1  GigabitEthernet0/0/0/3  0/1/CPU0 RP_SELECTOR 1          PRC 100 Ok
   GigabitEthernet0/0/0/3  0/0/CPU0 LC_INGRESS 1          PRC 100 Ok
   GigabitEthernet0/0/0/0  0/0/CPU0 LC_INGRESS 2          PRC 200 Ok
   Internal0 [0/2/CPU0]    n/a                          ST3 255  Ok

Selection point: RP_CLOCK_INTF_SELECTOR (4 inputs, 1 selected)
Last programmed 00:28:55 ago, and selection made 00:00:20 ago
Next selection points:
  SPA scoped      : None
  Node scoped     : None
  Router scoped   : None

```

```

Chassis scoped: None
Used for local clock-interface output
S  Input                               Last Selection Point           QL  Pri  Status
==  =====
1  GigabitEthernet0/0/0/3              0/1/CPU0 RP_SELECTOR 1        PRC 100  Ok
   GigabitEthernet0/0/0/3              0/0/CPU0 LC_INGRESS 1        PRC 100  Ok
   GigabitEthernet0/0/0/0              0/0/CPU0 LC_INGRESS 2        PRC 200  Ok
   Internal0 [0/2/CPU0]                 n/a                             ST3 255  Ok

```

This example shows output from the **show frequency synchronization selection summary** command. The timing sources which are selected in the system are displayed and are clocking one or more outputs:

```
RP/0/RSP0/CPU0:router# show frequency synchronization selection summary
```

```
GigabitEthernet0/0/0/3 is selected for 2 outputs
Sync0 [0/0/CPU0] is selected for 25 outputs
```

This example displays information relevant to the ICS interfaces:

```

Node 1/RSP0/CPU0:
=====
Selection point: T0-SEL-B (4 inputs, 1 selected)
Last programmed 00:04:59 ago, and selection made 00:02:55 ago
Next selection points
  SPA scoped      : None
  Node scoped     : T4-SEL-C CHASSIS-TOD-SEL
  Chassis scoped: LC_TX_SELECT
  Router scoped  : None
Uses frequency selection
Used for local line interface output
S  Input                               Last Selection Point           QL  Pri  Status
==  =====
1  Sync3 [1/RSP0/CPU0]                 n/a                             PRC 25  Locked
   GigabitEthernet1/0/0/6             1/0/CPU0 SPA_RXMUX 1          PRC 50  Available
   PTP [1/RSP0/CPU0]                  n/a                             SEC 254  Available
   Internal0 [1/RSP0/CPU0]             n/a                             SEC 255  Available

Selection point: T4-SEL-A (1 inputs, 1 selected)
Last programmed 00:22:28 ago, and selection made 00:02:55 ago
Next selection points
  SPA scoped      : None
  Node scoped     : T4-SEL-C
  Chassis scoped: None
  Router scoped  : None
Uses frequency selection
S  Input                               Last Selection Point           QL  Pri  Status
==  =====
1  GigabitEthernet1/0/0/6             1/0/CPU0 SPA_RXMUX 1          PRC 50  Available

Selection point: T4-SEL-C (2 inputs, 1 selected)
Last programmed 00:04:47 ago, and selection made 00:02:55 ago
Next selection points
  SPA scoped      : None
  Node scoped     : None
  Chassis scoped: None
  Router scoped  : None
Uses frequency selection
Used for local clock interface output
S  Input                               Last Selection Point           QL  Pri  Status
==  =====
1  Sync3 [1/RSP0/CPU0]                 1/RSP0/CPU0 T0-SEL-B 1        PRC 25  Locked

```

show SyncE selection

```

GigabitEthernet1/0/0/6    1/RSP0/CPU0 T4-SEL-A 1    PRC    50    Available

Selection point: CHASSIS-TOD-SEL (3 inputs, 1 selected)
  Last programmed 00:04:47 ago, and selection made 00:04:47 ago
RP/0/RSP1/CPU0:Swordfish#sh freq syn sel loc 1/rsp0/cpu0
Thu Jul 24 10:03:05.764 UTC
Node 1/RSP0/CPU0:
=====
Selection point: T0-SEL-B (4 inputs, 1 selected)
  Last programmed 00:09:35 ago, and selection made 00:07:31 ago
Next selection points
  SPA scoped      : None
  Node scoped     : T4-SEL-C CHASSIS-TOD-SEL
  Chassis scoped : LC_TX_SELECT
  Router scoped  : None
Uses frequency selection
Used for local line interface output
S  Input                               Last Selection Point          QL  Pri  Status
==  =====                               =====                       ==  ==  =====
1  Sync3 [1/RSP0/CPU0]                  n/a                            PRC  25  Locked
   GigabitEthernet1/0/0/6              1/0/CPU0 SPA_RXMUX 1         PRC  50  Available
   PTP [1/RSP0/CPU0]                   n/a                            SEC  254 Available
   Internal0 [1/RSP0/CPU0]              n/a                            SEC  255 Available

Selection point: T4-SEL-A (1 inputs, 1 selected)
  Last programmed 00:27:04 ago, and selection made 00:07:31 ago
Next selection points
  SPA scoped      : None
  Node scoped     : T4-SEL-C
  Chassis scoped : None
  Router scoped  : None
Uses frequency selection
S  Input                               Last Selection Point          QL  Pri  Status
==  =====                               =====                       ==  ==  =====
1  GigabitEthernet1/0/0/6              1/0/CPU0 SPA_RXMUX 1         PRC  50  Available

Selection point: T4-SEL-C (2 inputs, 1 selected)
  Last programmed 00:09:23 ago, and selection made 00:07:31 ago
Next selection points
  SPA scoped      : None
  Node scoped     : None
  Chassis scoped : None
  Router scoped  : None
Uses frequency selection
Used for local clock interface output
S  Input                               Last Selection Point          QL  Pri  Status
==  =====                               =====                       ==  ==  =====
1  Sync3 [1/RSP0/CPU0]                  1/RSP0/CPU0 T0-SEL-B 1       PRC  25  Locked
   GigabitEthernet1/0/0/6              1/RSP0/CPU0 T4-SEL-A 1       PRC  50  Available

Selection point: CHASSIS-TOD-SEL (3 inputs, 1 selected)
  Last programmed 00:09:23 ago, and selection made 00:09:23 ago
Next selection points
  SPA scoped      : None
  Node scoped     : None
  Chassis scoped : None
  Router scoped  : None
Uses time-of-day selection
S  Input                               Last Selection Point          Pri  Time  Status
==  =====                               =====                       ==  ==  =====
1  Sync3 [1/RSP0/CPU0]                  n/a                            15  Yes  Available
   Sync3 [1/RSP0/CPU0]                  1/RSP0/CPU0 T0-SEL-B 1       15  Yes  Available
   PTP [1/RSP0/CPU0]                   n/a                            100 Yes  Available

```

show frequency synchronization selection back-trace

To display the path that was followed by the clock source that is being used to drive a particular interface use the **show frequency synchronization selection back-trace** command in EXEC mode.

show frequency synchronization selection back-trace {**clock-interface sync** *port-nu* | **interface** *type interface-path-id* | **ptp location** *node-id*}

| Syntax Description | |
|--|--|
| clock-interface sync <i>port- nu</i> | Displays the path to the specified clock interface. |
| interface <i>type interface-path-id</i> | Displays the path to the specified interface. |
| ptp location <i>node-id</i> | Displays the path to the specified PTP clock location. |

Command Default None

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 4.0.0 | 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 **show frequency synchronization selection back-trace** command displays the trace from the specified target interface, back to the clock source being used to drive it. The display includes the selection points that are being hit along the way.

| Task ID | Task ID | Operation |
|---------|-------------------|-----------|
| | ethernet-services | read |

This example shows sample output from the **show frequency synchronization selection back-trace** command:

```
RP/0/RSP0/CPU0:router# show frequency synchronization selection back-trace interface GigabitEthernet0/2/0/0
```

```
Selected Source: GigabitEthernet0/3/0/0
Selection Points:
 0/2/CPU0 LC_TX_SELECT 1
 0/RSP0/CPU0 T0_SEL_B 1
 0/RSP0/CPU0 T4_SEL_A 1
 0/3/CPU0 ETH_RXMUX 1
 0/3/CPU0 EZ_RX_0_9 1
```

show frequency synchronization selection forward-trace

To display the path that was recovered from a particular interface, use the **show frequency synchronization selection forward-trace**

show frequency synchronization selection forward-trace {**clock-interface sync** *port-nu* | **interface type** *interface-path-id* | **ptp location** *node-id*}

| Syntax Description | | |
|--|--|--|
| clock-interface sync <i>port-nu</i> | Displays the path to the specified clock interface. | |
| interface type <i>interface-path-id</i> | Displays the path to the specified interface. | |
| ptp location <i>node-id</i> | Displays the path to the specified PTP clock location. | |

Command Default None

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|---------------|------------------------------|
| | Release 4.0.0 | 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 **show frequency synchronization selection forward-trace** command displays the trace from the specified interface, out to all selection points that receive the clock from the interface, and from any interfaces that are potentially being driven by this clock source.

| Task ID | Task ID | Operation |
|---------|-------------------|-----------|
| | ethernet-services | read |

This example shows sample output from the **show frequency synchronization selection forward-trace** command:

```
RP/0/RSP0/CPU0:router# show frequency synchronization selection forward-trace interface
GigabitEthernet0/2/0/0

0/2/CPU0 EZ_RX_0_9
 0/2/CPU0 ETH_RXMUX
  0/RSP0/CPU0 T4_SEL_A
    0/RSP0/CPU0 T0_SEL_B
      0/RSP0/CPU0 CHASSIS_TOD_SEL
        0/RSP0/CPU0 T4_SEL_C

      Sync0 [0/0/CPU0]
      Sync1 [0/0/CPU0]
```



```
0/2/CPU0 LC_TX_SELECT
  GigabitEthernet 0/2/0/3

0/3/CPU0 LC_TX_SELECT
  GigabitEthernet 0/3/0/0
  GigabitEthernet 0/3/0/1

0/RSP0/CPU0 T4_SEL_A
  0/RSP1/CPU0 T0_SEL_B
  0/RSP1/CPU0 CHASSIS_TOD_SEL

  0/RSP1/CPU0 T4_SEL_C
0/2/CPU0 LC_TX_SELECT
0/3/CPU0 LC_TX_SELECT
```

ssm disable

To disable Synchronization Status Messaging (SSM) on an interface, use the **ssm disable** command in the appropriate SyncE configuration mode. To return SSM to the default value of enabled, use the **no** form of this command.

ssm disable
no ssm disable

| Command Default | Enabled | | | | |
|------------------------|---|---------|--------------|---------------|------------------------------|
| Command Modes | Interface SyncE configuration | | | | |
| Command History | <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. | | | | |

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.

For SyncE interfaces, the **ssm disable** command disables sending ESMC packets, and ignores any received ESMC packets.

The received QL value that is used if SSM is disabled depends on the option:

- Option 1: DNU
- Option 2: STU



Note If a clock interface does not support SSM, you are advised to disable SSM on the clock interface. This ensures that the clock interface output is squelched if the output QL from the clock interface would otherwise be DNU.

| Task ID | Task ID | Operations |
|---------|-------------------|------------|
| | ethernet-services | execute |

Examples

The following example shows how to disable SSM on an interface:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname(config)# interface gigabitethernet 0/1/0/1
RP/0/0RP0/CPU0:router:hostname(config-if)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# ssm disable
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# commit
```

time-of-day-priority

To control the order for which sources are selected for time-of-day (ToD), use the **time-of-day-priority** command in the appropriate SyncE configuration mode. To revert to the default time-of-day priority, use the **no** form of this command.

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

| Syntax Description | <i>priority</i> Priority that is used for SyncE as the source for the ToD. Values can range from 1 (highest priority) to 254 (lowest priority). | | | | |
|---------------------------|--|---------|--------------|-------------------|------------------------------|
| Command Default | The default priority is 100. | | | | |
| Command Modes | Interface SyncE | | | | |
| Command History | <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. | | | | |
| 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>Use the time-of-day-priority to prioritize between different sources of the ToD source.</p> | | | | |
| 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 | | | | |

This example shows how to configure the ToD priority for SyncE:

```
RP/0/0RP0/CPU0:router:hostname(config)# interface Gig 0/1/0/0
RP/0/0RP0/CPU0:router:hostname(config-if)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# time-of-day-priority 200
```

wait-to-restore

To configure the wait-to-restore time for SyncE on an interface, use the **wait-to-restore** command in the appropriate SyncE configuration mode. To return the wait-to-restore time to the default value, use the **no** form of this command.

wait-to-restore *minutes*
no wait-to-restore *minutes*

| | |
|---------------------------|--|
| Syntax Description | <i>minutes</i> The delay time (in minutes) between when an interface comes up and when it is used for synchronization. The range is 0 to 12. |
|---------------------------|--|

| | |
|------------------------|--|
| Command Default | There is a 5-minute delay for SyncE after an interface comes up. |
|------------------------|--|

| | |
|----------------------|--------------------------------------|
| Command Modes | Interface SyncE (config-if-freqsync) |
|----------------------|--------------------------------------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | Release 6.1.2 | 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 wait-to-restore time is in minutes. When the configuration is changed, it does not affect any timers that are currently running. Any currently running wait-to-restore timers can be cleared using the **clear SyncE wait-to-restore** command.

| | | |
|----------------|-------------------|-------------------|
| Task ID | Task ID | Operations |
| | ethernet-services | execute |

Examples

The following example shows how to configure the wait-to-restore time for SyncE on an interface:

```
RP/0/0RP0/CPU0:router:hostname# config
RP/0/0RP0/CPU0:router:hostname(config)# interface gigabitethernet 0/1/0/1
RP/0/0RP0/CPU0:router:hostname(config-if)# SyncE
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# wait-to-restore 0
RP/0/0RP0/CPU0:router:hostname(config-if-freqsync)# selection input
RP/0/0RP0/CPU0:router:hostname(config-sonet-freqsync)# commit
```

Related Topics

[clear SyncE wait-to-restore](#), on page 3