Configuring Synchronous Ethernet ESMC and SSM

Synchronous Ethernet is an extension of Ethernet designed to provide the reliability found in traditional SONET/SDH and T1/E1 networks to Ethernet packet networks by incorporating clock synchronization features that support the Synchronization Status Message (SSM) and Ethernet Synchronization Message Channel (ESMC) for synchronous Ethernet clock synchronization.

The following sections describe ESMC and SSM support on the Cisco ASR 903 Series Router.

- Understanding Synchronous Ethernet ESMC and SSM, on page 1
- Restrictions and Usage Guidelines, on page 3
- Configuring Synchronous Ethernet ESMC and SSM, on page 3
- Managing Clock Source Selection, on page 7
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- SSM Support on Cisco ASR 900 Series 4-Port OC3/STM1 or 1-Port OC12/STM4 Interface Module, on page 11
- SSM Support on Cisco 48-Port T3/E3 CEM Interface Module, on page 13

Understanding Synchronous Ethernet ESMC and SSM

Ethernet Synchronization Message Channel (ESMC) incorporates the Synchronization Status Message (SSM) used in Synchronous Optical Networking (SONET) and Synchronous Digital Hierarchy (SDH) networks. While SONET and SDH transmit the SSM in a fixed location within the frame, ESMC transmits the SSM using a protocol: the IEEE 802.3 Organization-Specific Slow Protocol (OSSP) standard.

The ESMC carries a Quality Level (QL) value identifying the clock quality of a given synchronous Ethernet timing source. Clock quality values help a synchronous Ethernet node derive timing from the most reliable source and prevent timing loops.

When configured to use synchronous Ethernet, the Cisco ASR 903 Series Router synchronizes to the best available clock source. If no better clock sources are available, the router remains synchronized to the current clock source.

The router supports two clock selection modes: QL-enabled and QL-disabled. Each mode uses different criteria to select the best available clock source.
The router can only operate in one clock selection mode at a time.

Conversely, PTP clock sources are not supported with synchronous Ethernet. However, you can use hybrid clocking to allow the router to obtain frequency using Synchronous Ethernet and phase using PTP.

**Clock Selection Modes**

The Cisco ASR 903 Series Router supports two clock selection modes, which are described in the following sections.

**QL-Enabled Mode**

In QL-enabled mode, the router considers the following parameters when selecting a clock source:

- Clock quality level (QL)
- Clock availability
- Priority

**QL-Disabled Mode**

In QL-disabled mode, the router considers the following parameters when selecting a clock source:

- Clock availability
- Priority

You can use override the default clock selection using the commands described in the Managing Clock Source Selection, on page 7.

8275.1 profile does not support QL-disabled mode on RSP3.

**Managing Clock Selection**

You can manage clock selection by changing the priority of the clock sources; you can also influence clock selection by modifying modify the following clock properties:

- **Hold-Off Time**: If a clock source goes down, the router waits for a specific hold-off time before removing the clock source from the clock selection process. By default, the value of hold-off time is 300 ms.
- **Wait to Restore**: The amount of time that the router waits before including a newly active synchronous Ethernet clock source in clock selection. The default value is 300 seconds.
- **Force Switch**: Forces a switch to a clock source regardless of clock availability or quality.
• Manual Switch: Manually selects a clock source, provided the clock source has a equal or higher quality level than the current source.

For more information about how to use these features, see Managing Clock Source Selection, on page 7.

Restrictions and Usage Guidelines

The following restrictions apply when configuring synchronous Ethernet SSM and ESMC:

• To use the `network-clock synchronization ssm option` command, ensure that the router configuration does not include the following:
  • Input clock source
  • Network clock quality level
  • Network clock source quality source (synchronous Ethernet interfaces)

• The `network-clock synchronization ssm option` command must be compatible with the `network-clock eec` command in the configuration.

• To use the `network-clock synchronization ssm option` command, ensure that there is not a network clocking configuration applied to synchronous Ethernet interfaces, BITS interfaces, and timing port interfaces.

• SSM and ESMC are SSO-coexistent, but not SSO-compliant. The router goes into hold-over mode during switchover and restarts clock selection when the switchover is complete.

• It is recommended that you do not configure multiple input sources with the same priority as this impacts the TSM (Switching message delay).

• You can configure a maximum of 4 clock sources on interface modules, with a maximum of 2 per interface module. This limitation applies to both synchronous Ethernet and TDM interfaces.

• Copper SFP is not supported for SyncE Rx and Tx on the uplink interfaces. SyncE Rx and Tx is supported on the uplink interfaces only for fiber SFP only.

Configuring Synchronous Ethernet ESMC and SSM

Follow these steps to configure ESMC and SSM on the Cisco ASR 903 Series Router.

SUMMARY STEPS

1. enable
2. configure terminal
3. network-clock synchronization automatic
4. network-clock eec \{1 | 2\}
5. network-clock synchronization ssm option \{1 | 2 \{GEN1 | GEN2\}\}
6. network-clock input-source priority \{interface interface_name slot/card/port | ptp domain domain_num | \{external \{R0 | R1 \{ | \{ tl | sf \{ esf \} | linecode \{ami | b8zs\} | line-build-out length\} | e1 [crc4 | fas] \{125ohm | 75ohm\} | linecode \{hdb3 | amei | 10m\}\} }}
7. network-clock synchronization mode ql-enabled
8. network-clock hold-off \{0 | milliseconds\} global
9. network-clock wait-to-restore seconds global
10. network-clock revertive
### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router&gt; enable</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> network-clock synchronization automatic</td>
<td>Enables the network clock selection algorithm. This command disables the Cisco-specific network clock process and turns on the G.781-based automatic clock selection process.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config)# network-clock synchronization automatic</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> network-clock eec {1</td>
<td>2}</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config)# network-clock eec 1</td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong> network-clock synchronization ssm option {1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config)# network-clock synchronization ssm option 2 GEN2</td>
<td></td>
</tr>
<tr>
<td>Command or Action</td>
<td>Purpose</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Step 6</strong></td>
<td>Enables you to select an interface as an input clock for the router. You can select the BITS, Gigabit Ethernet 0/0, Gigabit Ethernet 0/1 interfaces, or GPS interfaces, or an external interface.</td>
</tr>
<tr>
<td>`network-clock input-source priority [interface interface_name slot/card/port</td>
<td>ptp domain domain_num</td>
</tr>
<tr>
<td>Example:</td>
<td>Before configuring ethernet interface as clock source, you should configure synchronous mode under interface configuration.</td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>Enables automatic selection of a clock source based on quality level (QL).</td>
</tr>
<tr>
<td><code>network-clock synchronization mode ql-enabled</code></td>
<td>This command is disabled by default.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td>(Optional) Configures a global hold-off timer specifying the amount of time that the router waits when a synchronous Ethernet clock source fails before taking action.</td>
</tr>
<tr>
<td>`network-clock hold-off {0</td>
<td>milliseconds} global`</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td><strong>Step 9</strong></td>
<td>(Optional) Configures a global wait-to-restore timer for synchronous Ethernet clock sources. The timer specifies how long the router waits before including a restored clock source in the clock selection process.</td>
</tr>
<tr>
<td><code>network-clock wait-to-restore seconds global</code></td>
<td>You can also specify a wait-to-restore value for an individual interface using the <code>network-clock wait-to-restore</code> command in interface mode.</td>
</tr>
<tr>
<td>Example:</td>
<td>Valid values are 0 to 86400 seconds. The default value is 300 seconds.</td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td>(Optional) Sets the router in revertive switching mode when recovering from a failure. To disable revertive mode, use the <code>no</code> form of this command.</td>
</tr>
<tr>
<td><code>network-clock revertive</code></td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td><strong>Step 11</strong></td>
<td>Enables the ESMC process globally.</td>
</tr>
<tr>
<td><code>esmc process</code></td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td>Router(config)# esmc process</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Command or Action</td>
</tr>
<tr>
<td>------</td>
<td>-------------------</td>
</tr>
<tr>
<td>12</td>
<td>`network-clock external [r0</td>
</tr>
<tr>
<td></td>
<td>Example: <code>Router(config)# network-clock external r0 hold-off 0</code></td>
</tr>
<tr>
<td>13</td>
<td>`network-clock quality-level {tx</td>
</tr>
<tr>
<td></td>
<td>Example: <code>Router(config)# network-clock quality-level rx ql-pRC external R0 e1 cas crc4</code></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><code>interface type number</code></td>
</tr>
<tr>
<td></td>
<td>Example: <code>Router(config)# interface GigabitEthernet 0/0/1</code></td>
</tr>
<tr>
<td>15</td>
<td><code>synchronous mode</code></td>
</tr>
<tr>
<td></td>
<td>Example: <code>Router(config-if)# synchronous mode</code></td>
</tr>
<tr>
<td>16</td>
<td>`esmc mode [ql-disabled</td>
</tr>
<tr>
<td></td>
<td>Example: <code>Router(config-if)# esmc mode rx QL-STU</code></td>
</tr>
<tr>
<td>17</td>
<td>`network-clock hold-off {0</td>
</tr>
<tr>
<td></td>
<td>Example: <code>Router(config-if)# network-clock hold-off 0</code></td>
</tr>
</tbody>
</table>
### Purpose

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>network-clock wait-to-restore seconds</td>
<td>(Optional) Configures the wait-to-restore timer for an individual synchronous Ethernet interface.</td>
</tr>
</tbody>
</table>

**Example:**

Step 18

```
Router(config-if)# network-clock wait-to-restore 70
```

### Step 19

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>end</td>
<td>Exits interface configuration mode and returns to privileged EXEC mode.</td>
</tr>
</tbody>
</table>

**Example:**

```
Router(config-if)# end
```

### What to do next

You can use the `show network-clocks` command to verify your configuration.

---

## Managing Clock Source Selection

The following sections describe how to manage the selection on the Cisco ASR 903 Series Router:

### Specifying a Clock Source

The following sections describe how to specify a synchronous Ethernet clock source during the clock selection process:

### Selecting a Specific Clock Source

To select a specific interface as a synchronous Ethernet clock source, use the `network-clock switch manual` command in global configuration mode.

**Note**

The new clock source must be of higher quality than the current clock source; otherwise the router does not select the new clock source.

### Configuring Synchronous Ethernet ESMC and SSM

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>network-clock switch manual external R0</td>
<td>Manually selects a synchronization source, provided the source is available and is within the range.</td>
</tr>
</tbody>
</table>

**Example:**

```
Router# network-clock switch manual external r0 el crc4 120ohms t0
```

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>network-clock clear switch t0</td>
<td>Disable a clock source selection.</td>
</tr>
</tbody>
</table>

**Example:**

```
Router# network-clock clear switch t0
```
Forcing a Clock Source Selection

To force the router to use a specific synchronous Ethernet clock source, use the `network-clock switch force` command in global configuration mode.

**Note**

This command selects the new clock regardless of availability or quality.

**Note**

Forcing a clock source selection overrides a clock selection using the `network-clock switch manual` command.

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>network-clock switch force external R0 | R1 \{E1 \{crc4 | cas | fas\}\} \{120ohms | 75ohms | t0 \}\}</code></td>
<td>Forces the router to use a specific synchronous Ethernet clock source, regardless of clock quality or availability.</td>
</tr>
<tr>
<td><code>Router# network-clock switch force r0 e1 crc4 120ohms t0</code></td>
<td></td>
</tr>
<tr>
<td><code>network-clock clear switch \{t0 | external slot/card/port \[10m | 2m\}\}</code></td>
<td>Disable a clock source selection.</td>
</tr>
<tr>
<td><code>Router# network-clock clear switch t0</code></td>
<td></td>
</tr>
</tbody>
</table>

Disabling Clock Source Specification Commands

To disable a `network-clock switch manual` or `network-clock switch force` configuration and revert to the default clock source selection process, use the `network-clock clear switch` command.

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>network-clock clear switch \{t0 | external slot/card/port \[10m | 2m\}\}</code></td>
<td>Disable a clock source selection.</td>
</tr>
<tr>
<td><code>Router# network-clock clear switch t0</code></td>
<td></td>
</tr>
</tbody>
</table>

Disabling a Clock Source

The following sections describe how to manage the synchronous Ethernet clock sources that are available for clock selection:

Locking Out a Clock Source

To prevent the router from selecting a specific synchronous Ethernet clock source, use the `network-clock set lockout` command in global configuration mode.
### Restoring a Clock Source

To restore a clock in a lockout condition to the pool of available clock sources, use the `network-clock clear lockout` command in global configuration mode.

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>`network-clock clear lockout {interface interface_name slot/card/port</td>
<td>external</td>
</tr>
</tbody>
</table>

```
Router# network-clock clear lockout interface GigabitEthernet 0/0/0
```

### Verifying the Configuration

You can use the following commands to verify your configuration:

- `show esmc`—Displays the ESMC configuration.
- `show esmc detail`—Displays the details of the ESMC parameters at the global and interface levels.
- `show network-clock synchronization`—Displays the router clock synchronization state.
- `show network-clock synchronization detail`—Displays the details of network clock synchronization parameters at the global and interface levels.

### Troubleshooting

Table 1: SyncE Debug Commands, on page 10 list the debug commands that are available for troubleshooting the SyncE configuration on the Cisco ASR 903 Series Router:
We recommend that you do not use debug commands without TAC supervision.

<table>
<thead>
<tr>
<th>Debug Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>debug platform network-clock</td>
<td>Debugs issues related to the network clock including active-standby selection, alarms, and OOR messages.</td>
</tr>
<tr>
<td>debug network-clock</td>
<td>Debugs issues related to network clock selection.</td>
</tr>
<tr>
<td>debug esmc error</td>
<td>These commands verify whether the ESMC packets are transmitted and received with proper quality-level values.</td>
</tr>
<tr>
<td>debug esmc event</td>
<td></td>
</tr>
<tr>
<td>debug esmc packet [interface interface-name]</td>
<td></td>
</tr>
<tr>
<td>debug esmc packet rx [interface interface-name]</td>
<td></td>
</tr>
<tr>
<td>debug esmc packet tx [interface interface-name]</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Troubleshooting Scenarios, on page 10 provides the information about troubleshooting your configuration

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clock selection</td>
<td>• Verify that there are no alarms on the interfaces using the show network-clock synchronization detail command.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the nonrevertive configurations are in place.</td>
</tr>
<tr>
<td></td>
<td>• Reproduce the issue and collect the logs using the debug network-clock errors, debug network-clock event, and debug network-clock sm commands. Contact Cisco Technical Support if the issue persists.</td>
</tr>
<tr>
<td>Incorrect QL values</td>
<td>• Ensure that there is no framing mismatch with the SSM option.</td>
</tr>
<tr>
<td></td>
<td>• Reproduce the issue using the debug network-clock errors and debug network-clock event commands.</td>
</tr>
<tr>
<td>Alarms</td>
<td>• Reproduce the issue using the debug platform network-clock command enabled in the RSP. Alternatively, enable the debug network-clock event and debug network-clock errors commands.</td>
</tr>
<tr>
<td>Incorrect clock limit set or queue limit disabled mode</td>
<td>• Verify that there are no alarms on the interfaces using the show network-clock synchronization detail command.</td>
</tr>
<tr>
<td></td>
<td>• Use the show network-clock synchronization command to confirm if the system is in revertive mode or nonrevertive mode and verify the non-revertive configurations.</td>
</tr>
<tr>
<td></td>
<td>• Reproduce the current issue and collect the logs using the debug network-clock errors, debug network-clock event, and debug network-clock sm RSP commands.</td>
</tr>
<tr>
<td>Problem</td>
<td>Solution</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>Incorrect QL values when you use the <code>show network-clock synchronization detail</code> command.</td>
<td>• Use the `network clock synchronization SSM (option 1</td>
</tr>
</tbody>
</table>

## Configuration Examples

### Example: Input Synchronous Ethernet Clocking

The following example shows how to configure the router to use the BITS interface and two Gigabit Ethernet interfaces as input synchronous Ethernet timing sources. The configuration enables SSM on the BITS port.

```plaintext
! Interface GigabitEthernet0/0
   synchronous mode
   network-clock wait-to-restore 720
!
Interface GigabitEthernet0/1
   synchronous mode
!
! network-clock synchronization automatic
network-clock input-source 1 External R0 e1 crc4
network-clock input-source 1 gigabitethernet 0/0
network-clock input-source 2 gigabitethernet 0/1
network-clock synchronization mode QL-enabled
no network-clock revertive
```

### SSM Support on Cisco ASR900 Series 4-Port OC3/STM1 or 1-Port OC12/STM4 Interface Module

SSM is carried over OC-3 and OC-12 optical links. Effective Cisco IOS-XE release 3.18 SP, the SSM is transported in the S1 byte when it is carried over an optical line for SONET and SDH. The SSM messages enable SONET and SDH devices to select the highest quality timing reference automatically and avoid the timing loops.

SSM is supported on Cisco ASR 900 Series 4-Port OC3/STM1 or 1-Port OC12/STM4 Module. It has four ports and the default rate is OC-3. OC-3 rate is supported on all the four ports and OC-12 rate is supported on first port only.
S1 Byte

The SSM is transported in the S1 byte when it is carried over an optical line for SONET and SDH. S1 byte resides in Multiplex Section Overhead (MSOH) in SDH frame. The last four bits (5 to 8) carries SSM information.

Supported Quality Levels

The quality levels supported for SDH framing mode are:

- QL-PRC
- QL-SSU-A
- QL-SSU-B
- QL-SEC (SDH equipment clock)
- QL-DNU

The quality levels supported for SONET framing mode are:

- GEN1—PRS, STU, ST2, ST3, SMC, ST4, and DUS
- GEN2—PRS, STU, ST2, TNC, ST3E, ST3, SMC, ST4, and DUS

Configuring SSM on Cisco ASR 900 Series 4-Port OC3/STM1 or 1-Port OC12/STM4 IM

```
enable
configure terminal
network-clock synchronization automatic
network-clock eec 1
network-clock synchronization ssm option 2 GEN2
controller SONET 0/0/0
framing sdh
network-clock input-source 10 controller SONET 0/5/1
network-clock synchronization mode ql-enabled
network-clock hold-off 0
network-clock wait-to-restore 70
network-clock revertive
network-clock quality-level tx ql-prC controller SONET 0/0/0
network-clock quality-level rx ql-ssu-a controller SONET 0/5/1
network-clock hold-off 0 global
network-clock wait-to-restore 70
end
```

Configuring Clock Source

```
enable
configure terminal
controller sonet 0/5/0
clock source line
end
```
Verification of SSM Configuration

Use the `show network-clocks synchronization` command to verify the SSM configuration on Cisco ASR 900 Series 4-Port OC3/STM1 or 1-Port OC12/STM4 IM:

```
Router# show network-clocks synchronization
Symbols:    En - Enable, Dis - Disable, Adis - Admin Disable
            NA - Not Applicable
            * - Synchronization source selected
            # - Synchronization source force selected
            & - Synchronization source manually switched

Automatic selection process: Enable
Equipment Clock: 2048 (EEC-Option1)
Clock Mode: QL-Enable
ESMC: Enabled
SSM Option: 1
T0: TenGigabitEthernet0/3/0
Hold-off (global): 300 ms
Wait-to-restore (global): 0 sec
Tsm Delay: 180 ms
Revertive: Yes

Nominated Interfaces

<table>
<thead>
<tr>
<th>Interface</th>
<th>SigType</th>
<th>Mode/QL</th>
<th>Prio</th>
<th>QL_IN</th>
<th>ESMC Tx</th>
<th>ESMC Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>NA</td>
<td>NA/Dis</td>
<td>251</td>
<td>QL-SEC</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>*SONET 0/5/1</td>
<td>NA</td>
<td>NA/En</td>
<td>10</td>
<td>QL-PRC</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
```

-router#

SSM Support on Cisco 48-Port T3/E3 CEM Interface Module

Synchronization Status Message (SSM) is transported over T3 links using proprietary method. SSM enables T3 to select the highest quality timing reference automatically and avoid the timing loops.

SSM is supported on Cisco 48-Port T3/E3 CEM Interface Module.

**Note**

Effective IOS XE Everest 16.5.1, E3 mode is not supported.

Supported Quality Levels

The quality levels supported on T3 are:

- GEN1—PRS, STU, ST2, ST3, SMC, ST4, and DUS
- GEN2—PRS, STU, ST2, TNC, ST3E, ST3, SMC, ST4, and DUS

Configuring SSM on Cisco 48-Port T3/E3 CEM Interface Module

```
enable
configure terminal
controller media-type controller 0/5/0
mode t3
controller t3 0/0/0
```
network-clock synchronization automatic
network-clock eec 1
network-clock synchronization ssm option 2 GEN2
network-clock input-source 10 controller t3 0/5/1
network-clock synchronization mode q1-enabled
network-clock hold-off 0
network-clock wait-to-restore 70
network-clock revertive
network-clock quality-level tx ql-prs controller t3 0/0/0
network-clock quality-level rx ql-st2 controller t3 0/5/1
network-clock hold-off 0
network-clock wait-to-restore 70
der

Configuring Clock Source

enable
cfg t
controller media-type controller 0/5/0
mode t3
controller t3 0/5/0
clock source line
der

Verification of SSM Configuration

Use the show network-clocks synchronization detail command to verify the SSM configuration on Cisco 48-Port T3/E3 CEM Interface Module:

show network-clock synchronization detail
Symbols: En - Enable, Dis - Disable, Adis - Admin Disable
NA - Not Applicable
* - Synchronization source selected
# - Synchronization source force selected
& - Synchronization source manually switched

Automatic selection process : Enable
Equipment Clock : 1544 (EEC-Option2)
Clock State : Frequency Locked
Clock Mode : QL-Enable
ESMC : Enabled
SSM Option : GEN1
T0 : T3 0/0/21
Hold-off (global) : 300 ms
Wait-to-restore (global) : 0 sec
Tsm Delay : 180 ms
Revertive : No
Force Switch: FALSE
Manual Switch: FALSE
Number of synchronization sources: 1
Squelch Threshold: QL-ST3
sm(netsync NETCLK_QL_ENABLE), running yes, state 1A
Last transition recorded: (begin)-> 2A (ql_mode_enable)-> 1A (src_added)-> 1A (ql_change)-> 1A (sf_change)-> 1A (ql_change)-> 1A

Nominated Interfaces

Interface SigType Mode/QL Prio QL_IN ESMC Tx ESMC Rx
Internal NA NA/Dis 251 QL-ST3 NA NA
&T3 0/0/21 NA NA/En 2 QL-PRS NA NA
Interface:
---------------------------------------------
Local Interface: Internal
Signal Type: NA
Mode: NA(Qu-enabled)
SSM Tx: DISABLED
SSM Rx: DISABLED
Priority: 251
QL Receive: QL-ST3
QL Receive Configured: -
QL Receive Overrided: -
QL Transmit: -
QL Transmit Configured: -
Hold-off: 0
Wait-to-restore: 0
Lock Out: FALSE
Signal Fail: FALSE
Alarms: FALSE
Active Alarms: None
Slot Disabled: FALSE
SNMP input source index: 1
SNMP parent list index: 0
Description: None

Local Interface: T3 0/0/21
Signal Type: NA
Mode: NA(Qu-enabled)
SSM Tx: ENABLED
SSM Rx: ENABLED
Priority: 2
QL Receive: QL-PRS
QL Receive Configured: QL-PRS
QL Receive Overrided: -
QL Transmit: -
QL Transmit Configured: -
Hold-off: 300
Wait-to-restore: 0
Lock Out: FALSE
Signal Fail: FALSE
Alarms: FALSE
Active Alarms: None
Slot Disabled: FALSE
SNMP input source index: 8
SNMP parent list index: 0
Description: None
Verification of SSM Configuration