Troubleshooting Guide for Cisco NCS 1020, IOS XR Releases 24.3.x and 25.x.x

First Published: 2024-09-04

Last Modified: 2026-05-13

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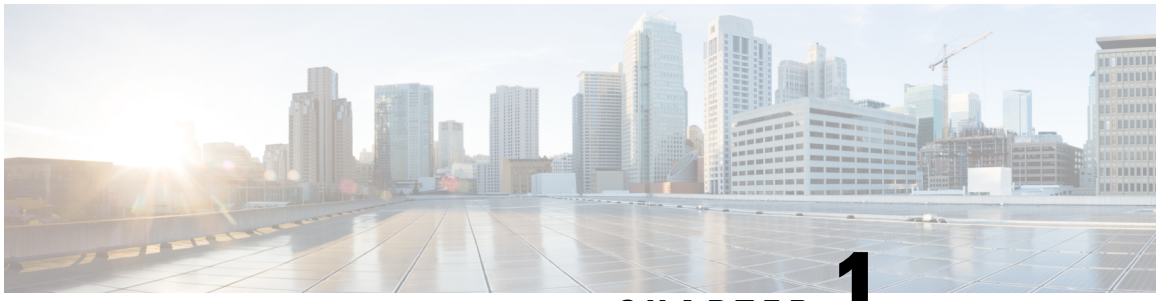

CHAPTER 1

Troubleshooting of Infrastructure Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered infrastructure alarm and condition in Cisco NCS 1020. When an alarm is raised, refer to its clearing procedure.

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LICENSE-COMM-FAIL

Default Severity: Major(MJ), Non-Service-Affecting (NSA)

Logical Object: plat_sl_client

The LICENSE-COMM-FAIL alarm is raised when the device is not able to communicate with the Cisco license cloud server.

Clear LICENSE-COMM-FAIL Alarm

Procedure

This alarm is cleared when the communication with the Cisco cloud license server is restored.

If the alarm does not clear, contact your Cisco account representative or log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

Chassis Door Alarm

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: SPI-ENVMON

The *Chassis Door is Open* alarm is raised when the chassis door is open.

Clear the Chassis Door Alarm

Procedure

To clear the alarm, close the chassis door.

DISASTER_RECOVERY_UNAVAILABLE_ALARM

Default Severity: Major(MJ), Non-Service-Affecting (NSA)

Logical Object: Instorch

The DISASTER_RECOVERY_UNAVAILABLE_ALARM is triggered when the chassis SSD image is corrupted or the system operates with uncommitted software.

Clear the Disaster Recovery Unavailable Alarm

Procedure

This alarm clears automatically after the upgrade from a lower release to a higher release. The upgrade process completes after running the **install commit** command. It syncs the image with the local repository every 12 hours. For more details about software upgrade, see the Upgrade Software section of the *Cisco NCS 1020 System Setup and Software Installation Guide*.

If the alarm does not clear, contact your Cisco account representative or log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EQUIPMENT_FAILURE

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: LC

The EQUIPMENT_FAILURE alarm is raised when any of the following equipment fails:

- Optical module
- Phase Lock Loop (PLL)
- Cloud Detection and Response (CDR)
- Line Card
- Field Programmable Gate Array (FPGA)
- Line card RAM or Disk
- META-DX2
- I/O Expander

Clear the EQUIPMENT_FAILURE Alarm

Procedure

Step 1 Collect logs to gather detailed diagnostic information. Use the **show tech-support** command in privileged EXEC mode:

Example:

```
RP/0/RP0/CPU0:ios#show tech-support
```

Step 2 Check for any active alarms or syslogs to identify unexpected alarms that may have triggered the failure. If there are any alarms, clear the active alarms.

Step 3 Examine the following parameters related to the failed equipment or line card.

- Ambient temperature
- Voltage
- Current
- Power supply

Step 4 (Optional) If the alarm was raised for a CIM8 module in a 2.4T or 2.4TX line card, perform the following checks.

a) If there was an ambient temperature issue, perform the following steps.
b) Ensure that all fan trays are operational and the chassis and line card temperatures are within the recommended range.
c) After the chassis and line card temperatures are optimal, perform a CIM8 Online Insertion and Removal.
d) If the alarm is still active, conduct a cold reload of the Line Card using the **reload** *location Rack/Slot* **noprompt** command.

Step 5 Attempt the following workarounds in sequence to resolve the issue:

a) Perform online insertion and removal of the failed module.
b) Conduct a warm reload of the Line Card using the **reload** *location* **0/1/NXR0 noprompt** command.
c) Conduct a cold reload of the Line Card using the **reload** *location Rack/Slot* command.

Warning
A cold reload of the line card affects traffic on the other slice of the line card.

Step 6 If the alarm is still active after trying the workarounds in the previous steps, replace the faulty equipment.

For more details, refer to the Cisco Returns Portal or log in to the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

ESD_INIT_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The ESD_INIT_ERR_E alarm is raised when the Ethernet Switch Driver (ESD) initialization fails.

Clear the ESD_INIT_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PORT_AUTO_TUNE_ERR_E

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: ESD

The PORT_AUTO_TUNE_ERR_E alarm is raised when the port auto-tuning fails.

Clear the PORT_AUTO_TUNE_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the port.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PORT_INIT_ERR_E

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: ESD

The PORT_INIT_ERR_E alarm is raised when the port initialization fails.

Clear the PORT_INIT_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the port.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SPI_FLASH_CFG_INIT_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SPI_FLASH_CFG_INIT_ERR_E alarm is raised when there is an unsupported switch firmware version present.

Clear the SPI_FLASH_CFG_INIT_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the Aldrin. If the alarm does not clear automatically:

- Restart the ESD process using the **process restart esd location 0/rp0/cpu0** command.
- Reload the rack using the **reload location 0/rack** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_ALL_PORTS_DOWN_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_ALL_PORTS_DOWN_ERR_E alarm is raised when all the switch ports are down.

Clear the SWITCH_ALL_PORTS_DOWN_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the ports.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_CFG_INIT_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_CFG_INIT_ERR_E alarm is raised when the initial switch configuration fails.

Clear the SWITCH_CFG_INIT_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_CRITICAL_PORT_FAILED_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_CRITICAL_PORT_FAILED_E alarm is raised when there is a critical port failure.

Clear the SWITCH_CRITICAL_PORT_FAILED_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the Aldrin. If the alarm does not clear automatically:

- Restart the ESD process using the **process restart esd location 0/rp0/cpu0** command.
- Reload the rack using the **reload location 0/rack** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_DMA_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_DMA_ERR_E alarm is raised when the switch Direct Memory Access (DMA) engine fails.

Clear the SWITCH_DMA_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_EEPROM_INIT_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_EEPROM_INIT_ERR_E alarm is raised when the Switch EEPROM initialization fails.

Clear the SWITCH_EEPROM_INIT_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_FDB_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_FDB_ERR_E alarm is raised when the switch forwarding database (FDB) operation fails.

Clear the SWITCH_FDB_ERR_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_FDB_MAC_ADD_ERR_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_FDB_MAC_ADD_ERR_E alarm is raised when the switch firmware is unable to add a MAC address to its database.

Clear the SWITCH_FDB_MAC_ADD_ERR_E Alarm

Procedure

To clear this alarm, contact technical support by logging into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html or call Cisco TAC (1 800 553-2447).

SWITCH_FIRMWARE_BOOT_FAIL_E

Default Severity: Critical (CR), Non-Service-Affecting (NSA)

Logical Object: ESD

The SWITCH_FIRMWARE_BOOT_FAIL_E alarm is raised when the switch firmware boot fails.

Clear the SWITCH_FIRMWARE_BOOT_FAIL_E Alarm

Procedure

This alarm can be cleared when the ESD auto clears the alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_NOT_DISCOVERED_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_NOT_DISCOVERED_E alarm is raised when the switch is not discovered on the Peripheral Component Interconnect express (PCIe) bus.

Clear the SWITCH_NOT_DISCOVERED_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the switch.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SWITCH_RESET_RECOVERY_FAILED_E

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: ESD

The SWITCH_RESET_RECOVERY_FAILED_E alarm is raised when the Switch Reset operation does not recover the switch.

Clear the SWITCH_RESET_RECOVERY_FAILED_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by reloading the card using the **reload cpu0/rp0** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

UNSTABLE_LINK_E

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: ESD

The UNSTABLE_LINK_E alarm is raised when there is an unstable link with high number of UP and DOWN state changes.

Clear the UNSTABLE_LINK_E Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by resetting the port.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FAN FAIL

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-ENVMON

The FAN FAIL alarm is raised when one of the two fans stops spinning or fails. If a fan stops working properly, the temperature can increase beyond the usual operating range, which might also trigger the TEMPERATURE alarm to activate.

Clear the FAN FAIL Alarm

Procedure

To clear this alarm, replace the faulty fan in the chassis.

If the alarm does not clear after replacing the faulty fan, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FAN SPEED SENSOR 0: OUT OF TOLERANCE FAULT

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-ENVMON

The FAN SPEED SENSOR 0: OUT OF TOLERANCE FAULT alarm is raised when one or more fans in the fan tray are faulty.

Clear the FAN SPEED SENSOR 0: OUT OF TOLERANCE FAULT Alarm

Procedure

To clear this alarm, replace the faulty fans in the chassis.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FAN-POWER-ERROR

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: SPI-ENVMON

The FAN-POWER-ERROR alarm is raised when the power supply to the fan tray fails.

Clear the FAN-POWER-ERROR Alarm

Procedure

This alarm is cleared when:

- The power supply to the fan tray is restored.
- Online Insertion and Removal (OIR) of the fan tray is performed.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FAN-TRAY-ABSENT

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: SPI-ENVMON

The FAN-TRAY-ABSENT alarm is raised when one or more fan trays are absent or removed from the chassis.

Clear the FAN-TRAY-REMOVAL Alarm

Procedure

Insert the fan trays into the chassis.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FPD IN NEED UPGD

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-FPD

The FPD IN NEED UPGD alarm is raised when a newer FPD version in the FPD package is available on the FPD boot disk and the its internal memory has an outdated FPD version. A FPD package is stored on the boot disk and contains all the FPD images for each FPD on the platform for that Cisco IOS XR version. The FPDs run from images stored in its internal memory and not from the images inside the FPD package.

Clear the FPD IN NEED UPGD Alarm

Procedure

This alarm is cleared when the correct FPD is upgraded using the **upgrade hw-module location** *location-id* **fpd** *fpd name* command. For more details, see the Upgrade FPDs Manually section of the *Cisco NCS 1020 System Setup and Software Installation Guide*.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

IMPROPRMVL

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: LC/PPM

The IMPROPRMVL alarm is raised when a line card or PPM is removed without deleting its configuration.

Clear the IMPROPRMVL Alarm

To clear this alarm:

Procedure

Step 1 Re-insert the line card or PPM.

Step 2 Delete the line card configuration.

Step 3 Remove the line card.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

INSTALL IN PROGRESS

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-INSTALL

The INSTALL IN PROGRESS alarm is raised when the install operation is in progress or if the "install commit" is not performed after activating a new image or package.

Clear the INSTALL IN PROGRESS Alarm

Procedure

Step 1 1) Wait until the install operation is completed.

Step 2 2) Run the **install commit** command after the **install activate** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

Invalid sensor read error

Default Severity: Minior(MN),Non Service-Affecting (NSA)

Logical Object: SPI-ENVMON

Invalid sensor read error alarm raised when the system is unable to retreive data from its sensors.

Clear the Invalid sensor read error Alarm

Procedure

To clear this alarm, log in to the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html or call Cisco TAC (1 800 553-2447).

Line card missing

Default Severity: Major (MJ) ,Non-Service-Affecting(NSA)

Logical Object: SPI-ENVMON

The *One or more LCs missing, running fans at max speed* alarm is raised when one or more line cards are missing, causing the fans to run at maximum speed.

Clear the Line card missing Alarm

To clear this alarm:

Procedure

Insert a line card or filler card in every slot where a line card is missing.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

[Low | High] Voltage

Default Severity: Critical (CR), Minor (MN), Non-Service-Affecting (NSA), Service Affecting (SA)

Note The severity of the alarm is determined by the voltage values detected by the sensor.

Logical Object: LC

A [Low | High] Voltage is raised if any of the internal voltage measurements are not within the operating range. Following are the formats of the alarms along with their descriptions:

- *[sensor name]: high voltage alarm* is raised when the voltage is above the operating range.
- *[sensor name]: low voltage alarm* is raised when the voltage is below the operating range.

Clear the [Low | High] Voltage Alarm

Procedure

Verify the voltage of the power source. The voltage alarms clear automatically when the voltage is within the operating conditions. The voltage rating value varies depending on the standards of different countries for AC and DC power ranges.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

MEA Alarm

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: LC/PPM

The Mismatch Equipment Attributes (MEA) alarm for the Pluggable Port Module (PPM) or Quad Small Form-Factor Pluggable (QSFP) is raised when:

- There is a mismatch in the configured client data rate and the supported QSFP physical data rate.
- The inserted line card is not compatible with the configuration that is currently available in the slot.

Clear the MEA Alarm

Procedure

Step 1 Verify the client data rate:

a) Verify the supported physical data rate of the QSFP on NCS 1020 using the **show inventory** command.
b) Verify the configured client data rate on NCS 1020 using the **show hw-module location** command.
c) If the above values do not match, insert the appropriate pluggable or configure the required client data rate.

For more details on configuring the client data rate, see *Configuring the Card Mode* chapter of the Configuration Guide for Cisco NCS 1020.

Step 2 Physically verify the type of card and configure the slot with the desired card type.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

BAND-PARTNER-NODE-UNPAIRED alarm

Default severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The *Node is unpaired from band partner node* (BAND-PARTNER-NODE-UNPAIRED) alarm is raised when the management (MGMT) port connectivity between C-band and L-band nodes is down or the partner band configuration is incorrect.

- The MGMT cable between C-band and L-band nodes is not connected properly or is disconnected.
- The interlink management or MGMT port is in shutdown state.
- The partner band configuration is incorrect or missing, such as when the partner band OLC configuration is removed from one end after the bidirectional connection is established, causing the connection to break in one of the directions.
- The partner-band node is unavailable due to RP reload or power cycle events.

Clear BAND-PARTNER-NODE-UNPAIRED alarm

Follow these steps to clear the BAND-PARTNER-NODE-UNPAIRED.

Procedure

Step 1 Check the MGMT cable between the C-band and L-band nodes and ensure that it is connected properly.

Step 2 Bring up the interlink management or MGMT port if it is in shutdown state.

Step 3 Verify and correct any incorrect or missing partner band configuration on the C-band and L-band nodes.

Step 4 If the the OLC partner band configuration on the alarmed node is incorrect or no longer required, remove the configuration.

What to do next

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OUT_OF_COMPLIANCE

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: plat_sl_client

The OUT_OF_COMPLIANCE alarm is raised when one or more license entitlements is not in compliance. This state is seen when the license does not have an available license in the corresponding Virtual Account that the Cisco device is registered to, in the Cisco Smart Account.

Clear Out of Compliance Alarm

SUMMARY STEPS

1. To clear this alarm, enter into a compliance by adding the correct number and type of licenses to the Smart Account.

DETAILED STEPS

Procedure

To clear this alarm, enter into a compliance by adding the correct number and type of licenses to the Smart Account.

If the alarm does not clear, contact your Cisco account representative or log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PEM PID-MISMATCH

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-ENVMON

The PEM PID-MISMATCH alarm is raised when two different Power Entry Modules (PEM) or PSUs with different PIDs are connected to the 0/PM0 and 0/PM1 node positions.

Clear the PEM PID-MISMATCH Alarm

Procedure

To clear this alarm, make sure that both connected PSUs are of the same type and rating: either both AC 2KW or both AC 2.5KW. Similarly, for DC PSUs, both should be either DC 2KW or DC 2.5KW.

We recommend using PSUs with the same PIDs in both the 0/PM0 and 0/PM1 node positions.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

POWER MODULE OUTPUT DISABLED

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-ENVMON

The POWER MODULE OUTPUT DISABLED alarm is raised power supply is not connected to the power module.

Clear the POWER MODULE OUTPUT DISABLED Alarm

Procedure

This alarm is automatically cleared when power supply is connected to the power module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

POWER-MODULE-REDUNDANCY-LOST

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: SPI-ENVMON

The Power Group redundancy lost (POWER-MODULE-REDUNDANCY-LOST) alarm is raised if:

- the Power Supply Unit (PSU) is faulty or removed.
- the input PSU voltage goes beyond the working range of 180 to 264 volts for input high line (HL) and 90 to 140 volts for input low line (LL) nominal voltages.

Clear the POWER-MODULE-REDUNDANCY-LOST Alarm

Procedure

To clear this alarm:

- Re-insert the power module and then connect the power supply to the module.
- If the alarm does not clear after re-inserting, replace the power module.
- Check the input voltage value of the PSU using the **show environment power** command.
- If the input voltage is beyond the working range, check the power supplied to the PSU.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

Provisioning Failed Alarm

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: LC/Controller Name

The Provisioning Failed alarm is raised when invalid configuration is configured or invalid slice provisioning is made on the controller.

Clear the Provisioning Failed Alarm

Procedure

Step 1 Verify whether the provisioning configurations are supported for the line card.

Step 2 Change it to supported configurations for the line card.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

Provisioning in Progress Alarm

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: LC

The Provisioning in Progress alarm is raised when the provisioning request is in progress on the line card.

Clear the Provisioning in Progress Alarm

Procedure

Step 1 Verify the status of the alarm using the following debug command:

```
RP/0/RP0/CPU0:ios#show hw-module location '<0/n/NXR0>' mxponder
```

Step 2 Wait till the status changes to **Provisioned**.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SIA_GRACE_PERIOD_REMAINING

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: plat_sl_client

When the device enters an Out-of-Compliance (OOC) state, a grace period of 90 days begins. During this period, SIA license benefits can still be availed. The SIA_GRACE_PERIOD_REMAINING alarm is raised when a Software Innovation Access(SIA) upgrade is allowed during this grace period.

Clear SIA Grace Period Remaining

SUMMARY STEPS

1. This alarm is cleared when Software Innovation Access(SIA) licenses are purchased.

DETAILED STEPS

Procedure

This alarm is cleared when Software Innovation Access(SIA) licenses are purchased.

If the alarm does not clear, contact your Cisco account representative or log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SIA_UPGRADE_BLOCKED

Default Severity: Major(MJ), Service-Affecting (SA)

Logical Object: plat_sl_client

The SIA_UPGRADE_BLOCKED alarm is raised when Software Innovation Access(SIA) grace period has expired.

Clear SIA Grace Period Remaining

Procedure

This alarm is cleared when the SIA licences are purchased.

If the alarm does not clear, contact your Cisco account representative or log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SSD-ACCESS-ERROR

Default Severity: Critical (CR) ,Non-Service-Affecting(NSA)

Logical Object: Instorch

The SSD-ACCESS-ERROR is raised when the system cannot access the chassis SSD either because of chassis SSD corruption or because the chassis SSD has been removed.

Clear the SSD-ACCESS-ERROR Alarm

To clear this alarm:

Procedure

Step 1 Re-insert the chassis SSD if it is not properly inserted.

Step 2 If the alarm does not clear after reinserting, replace the corrupted SSD on the chassis.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

TEMPERATURE

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: SPI-ENVMON

The TEMPERATURE alarm is raised when the temperature of a sensor exceeds the normal operating range because of any of the following reasons:

- One or more fans stops working.
- Inadequate airflow.
- Environmental temperature of the room is abnormally high.

Clear the TEMPERATURE Alarm

Procedure

To clear this alarms:

Step 1 Check the fan speed and temperature values using the **show environment** command.

Step 2 Check any fan tray or failure alarms using the **show alarms brief system active**.

Step 3 Ensure that:

a) there are no airflow obstructions.
b) fans are working fine.
c) environmental temperature of the room is not abnormally high.

Step 4 If your pluggable shuts down due to high temperature and does not recover after the temperature returns to normal, recover traffic by performing an OIR (Online Insertion and Removal) of the pluggable or by resetting the line card.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

UPGRADE_LICENSE_GRACE_PERIOD_REMAINING

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: plat_sl_client

The UPGRADE_LICENSE_GRACE_PERIOD_REMAINING alarm is raised when a software upgrade is allowed in the upgrade license grace period.

Clear Upgrade License Grace Period Remaining

SUMMARY STEPS

1. This alarm is cleared when SIA licenses are purchased.

DETAILED STEPS

Procedure

This alarm is cleared when SIA licenses are purchased.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

VOLTAGE

Default Severity: Minor (MN), Major (MJ), Critical (CR), Non-Service-Affecting (NSA)

Logical Object: SPI-ENVMON

The VOLTAGE alarm is raised when the voltage is out of the operating range.

Clear the VOLTAGE Alarm

Procedure

To clear this alarm:

Step 1 Check if the input voltage is within the expected range.

Step 2 Check the component level voltage is within the operating range using the **show environment voltage** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

CPU_NOT_SEATED_PROPERLY_FAILURE

Default Severity: Critical

Logical Object: N/A

The CPU_NOT_SEATED_PROPERLY_FAILURE alarm is raised when the CPU card is not inserted completely into the chassis.

Clear the CPU_NOT_SEATED_PROPERLY_FAILURE Alarm

To clear this alarm:

Procedure

Remove and re-insert the CPU into the chassis.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

CPU-CURRMON-I2C-BUS

Default Severity: Critical

Logical Object: N/A

The CPU-CURRMON-I2C-BUS alarm is raised when either the Interface or the current sensors of the RP fail.

Clear the CPU-CURRMON-I2C-BUS Alarm

To clear this alarm:

Procedure

Verify the environmental monitor parameters for the system using the **show environment all location** *0/RP0/CPU0* command

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

CPU-JMAC-I2C-BUS

Default Severity: Critical

Logical Object: N/A

The CPU-JMAC-I2C-BUS alarm is raised when either the Interface or the JMAC device on the RP fails.

Clear the CPU-JMAC-I2C-BUS Alarm

To clear this alarm:

Procedure

Verify the environmental monitor parameters for the system using the **show environment all location** *0/RP0/CPU0* command

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

CPU-POWMAN-I2C-BUS

Default Severity: Critical

Logical Object: N/A

The CPU-POWMAN-I2C-BUS alarm is raised when the Interface or Power Manager device on the controller fails, which might also trigger High Voltage alarms on the RP.

Clear the CPU-POWMAN-I2C-BUS Alarm

To clear this alarm:

Procedure

Verify the environmental monitor parameters for the system using the **show environment all location** *0/RP0/CPU0* command

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

CPU-TEMP-I2C-BUS

Default Severity: Critical

Logical Object: N/A

The CPU-TEMP-I2C-BUS alarm is raised when the Interface or temperature sensor on the RP fails, which might also trigger High Voltage alarms on the RP.

Clear the CPU-TEMP-I2C-BUS Alarm

To clear this alarm:

Procedure

Verify the environmental monitor parameters for the system using the **show environment all location** *0/RP0/CPU0* command

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EITU-FPGA-PCIE-ERROR

Default Severity: Critical

Logical Object: N/A

The EITU-FPGA-PCIE-ERROR alarm is raised when

- the EITU FPGAs or the PCIe link between the FPGA and the RP fails, or
- the FPGA and the RP are disconnected.

Clear the EITU-FPGA-PCIE-ERROR Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by recovering the FPGA.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EITU-SECONDARY-FPGA-PCIE-ERROR

Default Severity: Critical

Logical Object: N/A

The EITU-SECONDARY-FPGA-PCIE-ERROR alarm is raised when

- the EITU FPGAs or the PCIe link between the FPGA and the RP fails, or
- the FPGA and the RP are disconnected.

Clear the EITU-SECONDARY-FPGA-PCIE-ERROR Alarm

Procedure

Cisco IOS XR automatically detects and clears this alarm by recovering the FPGA.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FPGA-SEU-UNCORR-ERROR

Default Severity: Critical

Logical Object: N/A

The FPGA-SEU-UNCORR-ERROR alarm is raised when an irrecoverable SEU occurs on an EITU FPGA.

Clear the FPGA-SEU-UNCORR-ERROR Alarm

To clear this alarm:

Procedure

Log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

FT0-IDPROM-I2C_ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The FT<*fan_tray_number*>-IDPROM-I2C_ACCESS-ERROR alarm is raised when there is a failure or disconnection on the interface or the EEPROM on the fan tray.

Clear the FT0-IDPROM-I2C_ACCESS-ERROR Alarm

To clear this alarm:

Procedure

Step 1 Remove and re-insert the fan tray into the chassis.

Step 2 Swap the fan tray with another slot's tray to check if the alarm follows the fan tray or the slot location. If the alarm is raised again, replace the faulty fan tray.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

GNSS-I2C-ERROR

Default Severity: Critical

Logical Object: N/A

The GNSS-I2C-ERROR alarm is raised when either the I2C interface or the GNSS module on the EITU fails.

This can lead to unexpected behavior in the timing features.

Clear the GNSS-I2C-ERROR Alarm

To clear this alarm:

Procedure

Log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

GOLDEN_BIOS_BOOTED

Default Severity: Critical

Logical Object: N/A

The GOLDEN_BIOS_BOOTED alarm is raised when the RP has booted from the Golden BIOS Flash due to:

- a hardware failure, or
- a software corruption on the primary BIOS flash.

Clear the GOLDEN_BIOS_BOOTED Alarm

To clear this alarm:

Procedure

Log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

IDPROM-CORRUPT

Default Severity: Critical

Logical Object: N/A

The IDPROM-CORRUPT alarm is raised when

- the manufacturing EEPROM of the unit, such as an Optical Module, Fan Tray, or Rack, is corrupted or
- the software is unable to identify the unit due to corruption.

As a result, the **show inventory** command output may display missing hardware for the affected unit.

Clear the IDPROM-CORRUPT Alarm

To clear this alarm:

Procedure

Log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

IDPROM-I2C_ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The IDPROM-I2C_ACCESS-ERROR alarm is raised when there is:

- a failure on the I2C interface, or
- a malfunction in the Manufacturing EEPROM on the Rack.

As a result, the **show inventory** command output displays missing a serial number or PID information.

Clear the IDPROM-I2C_ACCESS-ERROR Alarm

To clear this alarm:

Procedure

Log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

LC_SEATED

Default Severity: Critical

Logical Object: N/A

The LC_SEATED alarm is raised when the line card is not inserted completely into the chassis.

Clear the LC_SEATED Alarm

To clear this alarm:

Procedure

Step 1 Remove the line card from the chassis and then re-insert it.

Step 2 If the traffic is down, swap the line card to another slot to check if the alarm is raised again on the new slot. If the alarm is raised again, replace the faulty line card.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

LC1_PRI_I2C_ACCESS_FAILURE

Default Severity: Critical

Logical Object: N/A

The LC<*line_card_number*>_PRI_I2C_ACCESS_FAILURE alarm is raised when either the I2C interface or the devices on the targeted line card fail.

As a result, the software may be unable to recognize or reload the affected line card.

Clear the LC1_PRI_I2C_ACCESS_FAILURE Alarm

To clear this alarm:

Procedure

Step 1 Remove the line card from the chassis and then re-insert it.

Step 2 If the traffic is down, swap the line card to another slot to check if the alarm is raised again on the new slot. If the alarm is raised again, replace the faulty line card.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OPT-MOD-SPI-FAILURE

Default Severity: Critical

Logical Object: N/A

The OPT-MOD-SPI-FAILURE alarm is raised when the Optical Module becomes inaccessible through the SPI interface due to a software or hardware failure.

This results in the software being unable to communicate with the Optical Module.

Clear the OPT-MOD-SPI-FAILURE Alarm

To clear this alarm:

Procedure

If the traffic is down, do one of the following:

a) Reload the optical module using the **reload location** command.
b) Remove the optical module and re-insert it.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OPT-MOD-0-PGOOD-INRUSH-LOW

Default Severity: Critical

Logical Object: N/A

The OPT-MOD-0-PGOOD-INRUSH-LOW alarm is triggered when the main power input from the rack to Optical Module 0 in Slot 0 fails, causing the module to become nonfunctional.

Clear the OPT-MOD-0-PGOOD-INRUSH-LOW Alarm

To clear this alarm:

Procedure

Step 1 Check the values of these parameters using the **show environment all** command.

- SA_U_ADM1275_12V_MOD0
- SA_U_ADM1275_12V_MOD0_IMON

Step 2 If the traffic is down, do one of the following:

- Reload the optical module using the **reload location** *0/0* command.
- Remove the optical module and re-insert it.
- Swap the optical module to another slot to check if the alarm is raised again on the new slot. If the alarm is raised again, replace the faulty optical module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OPT-MOD-0-PGOOD-LOW

Default Severity: Critical

Logical Object: N/A

The OPT-MOD-0-PGOOD-LOW alarm is triggered when Optical Module 0 in Slot 0 becomes nonfunctional due to an internal power failure.

Clear the OPT-MOD-0-PGOOD-LOW Alarm

Procedure

1) If the traffic is down, reload the optical module using the **reload location** *0/0* command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OPT-MOD-3-PGOOD-INRUSH-LOW

Default Severity: Critical

Logical Object: N/A

The OPT-MOD-3-PGOOD-INRUSH-LOW alarm is triggered when the main power input from the rack to Optical Module 3 in Slot 1 fails, causing the module to become nonfunctional.

Clear the OPT-MOD-3-PGOOD-INRUSH-LOW Alarm

To clear this alarm:

Procedure

Step 1 Check the values of these parameters using the **show environment all** command.

- SA_U_ADM1275_12V_MOD3
- SA_U_ADM1275_12V_MOD3_IMON

Step 2 If the traffic is down, do one of the following:

- Reload the optical module using the **reload location** *0/1* command.
- Remove the optical module and re-insert it.
- Swap the optical module to another slot to check if the alarm is raised again on the new slot. If the alarm is raised again, replace the faulty optical module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OPT-MOD-3-PGOOD-LOW

Default Severity: Critical

Logical Object: N/A

The OPT-MOD-3-PGOOD-LOW alarm is triggered when Optical Module 3 in Slot 1 becomes nonfunctional due to an internal power failure.

Clear the OPT-MOD-3-PGOOD-LOW Alarm

Procedure

If the traffic is down, reload the optical module using the **reload location** *0/1* command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PHY1-MDIO-ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The PHY1-MDIO-ACCESS-ERROR alarm is raised when either the MDIO interface or the PHY1 device on the Rack fails.

Clear the PHY1-MDIO-ACCESS-ERROR Alarm

Procedure

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PHY2-MDIO-ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The PHY2-MDIO-ACCESS-ERROR alarm is raised when either the MDIO interface or the PHY2 device on the Optical Module in Slot 0 fails.

This results in unexpected behaviour for timing features.

Clear the PHY2-MDIO-ACCESS-ERROR Alarm

To clear this alarm:

Procedure

If the traffic is down, do one of the following:

- Reload the optical module using the **reload location** *0/0* command.
- Remove the optical module and re-insert it.
- Swap the optical module to another slot to check if the alarm is raised again on the new slot. If the alarm is raised again, replace the faulty optical module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PHY2-POWER-ZONE-ERROR

Default Severity: Critical

Logical Object: N/A

The PHY2-POWER-ZONE-ERROR alarm is raised when there is a failure in the power zone of PHY2, located on the Optical Module in Slot 0.

This results in unexpected behaviour for timing features.

Clear the PHY2-POWER-ZONE-ERROR Alarm

To clear this alarm:

Procedure

If the traffic is down, do one of the following:

a) Reload the optical module using the **reload location** *0/0* command.
b) Remove the optical module and re-insert it.
c) Swap the optical module to another slot to check if the alarm is raised again on the new slot.
d) If the alarm is raised again, replace the faulty optical module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PHY3-MDIO-ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The PHY3-MDIO-ACCESS-ERROR alarm is raised when there is:

- a failure on the MDIO interface, or
- a failure on the PHY3 device located on the Optical Module in Slot 1.

This results in unexpected behaviour for timing features.

Clear the PHY3-MDIO-ACCESS-ERROR Alarm

To clear this alarm:

Procedure

If the traffic is down, do one of the following:

a) Reload the optical module using the **reload location** *0/1* command.
b) Remove the optical module and re-insert it.
c) Swap the optical module to another slot to check if the alarm is raised again on the new slot.
d) If the alarm is raised again, replace the faulty optical module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PHY3-POWER-ZONE-ERROR

Default Severity: Critical

Logical Object: N/A

The PHY3-POWER-ZONE-ERROR alarm is raised when there is a failure in the power zone of PHY3, located on the Optical Module in Slot 1.

This results in unexpected behaviour for timing features.

Clear the PHY3-POWER-ZONE-ERROR Alarm

To clear this alarm:

Procedure

If the traffic is down, do one of the following:

a) Reload the optical module using the **reload location** *0/1* command.
b) Remove the optical module and re-insert it.
c) Swap the optical module to another slot to check if the alarm is raised again on the new slot.
d) If the alarm is raised again, replace the faulty optical module.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PM0-IDPROM-I2C_ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The PM0-IDPROM-I2C_ACCESS-ERROR alarm is raised when there is:

- a hardware failure on the I2C interface, or
- a hardware failure on the manufacturing EEPROM of the PSU in slot 0.

As a result, the **show inventory** command output displays missing a serial number or PID information.

Clear the PM0-IDPROM-I2C_ACCESS-ERROR Alarm

To clear this alarm:

Procedure

Step 1 If the setup has a redundant-powered PSU, remove the PSU and re-insert it.

Step 2 If the traffic is down, swap the PSU to another slot to check if the alarm is raised again on the new slot.

Step 3 If the alarm is raised again, replace the faulty PSU.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

PM1-IDPROM-I2C_ACCESS-ERROR

Default Severity: Critical

Logical Object: N/A

The PM1-IDPROM-I2C_ACCESS-ERROR alarm is raised when there is:

- a hardware failure on the I2C interface, or
- a hardware failure on the manufacturing EEPROM of the PSU in Slot 1.

As a result, the **show inventory** command output displays missing serial number or PID information.

Clear the PM1-IDPROM-I2C_ACCESS-ERROR Alarm

To clear this alarm:

Procedure

Step 1 If setup has redundant powered PSU, remove the PSU and re-insert it.

Step 2 If the traffic is down, swap the PSU to another slot to check if the alarm is raised again on the new slot.

Step 3 If the alarm is raised again on a new slot, replace the faulty PSU.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

USB-3-OVERCURRENT-ERROR

Default Severity: Critical

Logical Object: N/A

The USB-3-OVERCURRENT-ERROR alarm is raised when there is an overcurrent detected on the BOOT USB port on the RP.

Clear the USB-3-OVERCURRENT-ERROR Alarm

Procedure

1) Remove any faulty USB device connected to the USB port of the Controller (RP).

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

ZARLINK-SPI-OR-114M-CLOCK-ERROR

Default Severity: Critical

Logical Object: N/A

The ZARLINK-SPI-OR-114M-CLOCK-ERROR alarm is raised when there is a failure on the DPLL located on the Rack, making it no longer accessible by software.

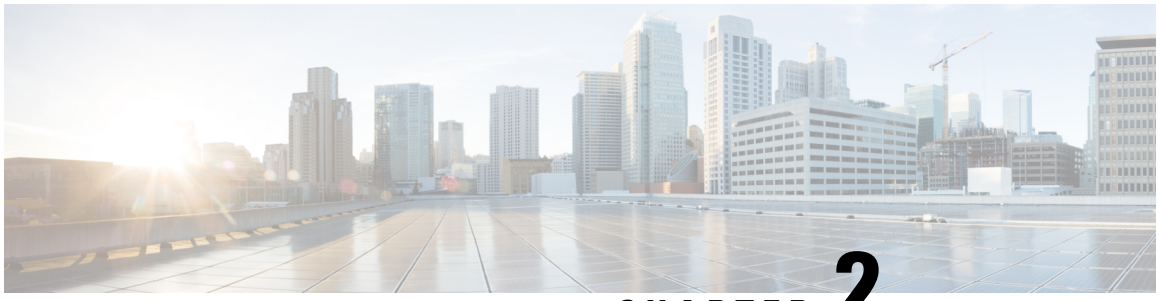
This may result in unexpected behaviour in timing features.

Clear the ZARLINK-SPI-OR-114M-CLOCK-ERROR Alarm

To clear this alarm:

Procedure

Log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).



CHAPTER 2

Troubleshooting of Data Path Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered data path alarm and condition in Cisco NCS 1020. When an alarm is raised, refer to its clearing procedure.

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CHANNEL-NOISE-LOADED

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: OTS-OCH

The CHANNEL-NOISE-LOADED alarm is raised when a traffic channel is loaded with noise. When a traffic channel fails, an equivalent temporary Amplified Spontaneous Emission (ASE) channel is inserted to maintain the spectral density of the port.

Clear the CHANNEL-NOISE-LOADED Alarm

Procedure

This alarm is cleared automatically when the original traffic channel is restored and the temporary ASE channel is removed. To check the channel status, use the **show hw-module location** *location* **terminal-ampli** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EGRESS-AMPLI-GAIN-HIGH

Default Severity: Non Service-Affecting (NSA)

Logical Object: Controller OTS

The EGRESS-AMPLI-GAIN-HIGH alarm is raised when the EGRESS EDFA module cannot reach the gain setpoint. This condition occurs if the amplifier reaches its range boundaries and the Egress Amplifier Gain Degrade is high.

Clear the EGRESS-AMPLI-GAIN-HIGH Alarm

Procedure

Step 1 Adjust the gain setting to a correct value using the **controller ots egress-ampli-gain** command.

If the APC value is set to the disabled state, the applied gain results from the configuration. Therefore, you must adjust the gain setting to a high value.

Step 2 Check the overall system settings, performance, and the configured EDFA Gain using the **show configuration commit changes all** command.

If the APC value is set to the enabled state, it may be due to an unexpected long or short span, or due to other measured channels. If the alarm persists, it may indicate an amplifier hardware failure.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EGRESS-AMPLI-GAIN-LOW

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The EGRESS-AMPLI-GAIN-LOW alarm is raised when the Egress Amplifier Gain Degrade is Low.

Clear the EGRESS-AMPLI-GAIN-LOW Alarm

Procedure

Step 1 Adjust the gain setting to a correct value using the **controller ots egress-ampli-gain** command.

If the APC value is set to the disabled state, the applied gain results from the configuration. Therefore, you must adjust the gain setting to a low value.

Step 2 Check the overall system settings, performance, and the configured EDFA Gain using the **show configuration commit changes all** command.

If the APC value is set to the enabled state, it may be due to an unexpected long or short span, or due to other measured channels. If the alarm persists, it may indicate an amplifier hardware failure.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EGRESS-AUTO-LASER-SHUT

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The EGRESS-AUTO-LASER-SHUT alarm is raised when the Egress EDFA shuts down its Tx power if it is not receiving any input power on the Line Rx port due to a fiber cut. This alarm is raised if the safety-control-mode is set to the auto state on line OTS controller.

Clear the EGRESS-AUTO-LASER-SHUT Alarm

Procedure

Step 1 Check and clear the RX-LOC alarm by repairing any cut in fiber cable.

Step 2 Check and clear the RX-LOS-P alarm by adjusting the threshold setting.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

EGRESS-AUTO-POW-RED

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The EGRESS-AUTO-POW-RED alarm is raised when LOS is detected on the line RX, the line TX normalizes the signal output power. In this case, if safety-control-mode set to auto, the egress amplifier goes into power reduction mode for safety reasons.

Clear the EGRESS-AUTO-POW-RED Alarm

Procedure

Step 1 Check if the egress amplifier automatic power reduction is active using the **show controllers** *Controller-type R/S/I/P* command.

Step 2 Check if the safety conditions of the Egress EDFA are active using the **show controllers** *Controller-type R/S/I/P* command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

HIGH-RX-BR-PWR

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The HI-RX-BR-PWR alarm is raised when there is a high back reflection power at the egress port due to a poor fiber connection.

Clear the HIGH-RX-BR-PWR Alarm

Procedure

Ensure that the span fiber is thoroughly clean and properly connected. For more details about cleaning fiber, see the Cleaning and Maintaining Fiber-Optic Connectors section of the *Hardware Installation Guide for Cisco NCS 1020*.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

HIGH-TX-BR-PWR

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: Controller OTS

The HI-TX-BR-PWR alarm is raised when there is a high back reflection power at the ingress port due to a poor fiber connection.

Clear the HIGH-TX-BR-PWR Alarm

Procedure

Ensure that the span fiber is thoroughly clean and properly connected. For more details about cleaning fiber, see the Cleaning and Maintaining Fiber-Optic Connectors section of the *Hardware Installation Guide for Cisco NCS 1020*.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

INGRESS-AMPLI-GAIN-HIGH

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The INGRESS-AMPLI-GAIN-HIGH alarm is raised when the Ingress EDFA module cannot reach the gain setpoint. This condition occurs if the amplifier reaches its range boundaries.

Clear the INGRESS-AMPLI-GAIN-HIGH Alarm

Procedure

Step 1 Adjust the ingress amplification gain to a correct value using the **controller ots ingress-ampli-gain** command.

If the APC value is set to the disabled state, the applied gain results from the configuration. Therefore, you must adjust the gain setting to a high value.

Step 2 Check the overall system settings, performance, and the configured EDFA Gain using the **show configuration commit changes all** command.

If the APC value is set to the enabled state, it may be due to an unexpected long or short span, or due to other measured channels. If the alarm persists, it may indicate an amplifier hardware failure.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

INGRESS-AMPLI-GAIN-LOW

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The INGRESS-AMPLI-GAIN-LOW alarm is raised when the Ingress EDFA module cannot reach the gain setpoint. This condition occurs if the amplifier reaches its range boundaries.

Clear the INGRESS-AMPLI-GAIN-LOW Alarm

Procedure

Step 1 Adjust the ingress amplification gain to a correct value using the **controller ots ingress-ampli-gain** command.

If the APC value is set to the disabled state, the applied gain results from the configuration. Therefore, you must adjust the gain setting to a high value.

Step 2 Check the overall system settings, performance, and the configured EDFA Gain using the **show configuration commit changes all** command.

If the APC value is set to the enabled state, it may be due to an unexpected long or short span, or due to other measured channels. If the alarm persists, it may indicate an amplifier hardware failure.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

INGRESS-AUTO-LASER-SHUT

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

Supported from release: R25.1.1

The INGRESS-AUTO-LASER-SHUT alarm is raised when the ingress amplifier is off for safety Reasons.

Clear the INGRESS-AUTO-LASER-SHUT Alarm

Procedure

Step 1 For the controller OTS, check the RX-LOC or RX-LOSP alarm.

Step 2 Check if the safety conditions of the Ingress EDFA ALS are active.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

INGRESS-AUTO-POW-RED

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

Supported from release: R25.1.1

The INGRESS-AUTO-POW-RED alarm is raised when the ingress amplifier is in power reduction mode for safety reasons.

Clear the INGRESS-AUTO-POW-RED Alarm

Procedure

Step 1 For controller OTS, check if the APR configuration is active.

Step 2 Check if the safety conditions of the Ingress EDFA for APR are active.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

LINK-DOWN

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: Ethernet

Supported from release: R25.4.1

The *Ethernet Link Down*(LINK-DOWN) alarm is raised due to these reasons:

- A single or bidirection fiber cut.
- The OSC or GigbitEthernet port going down.

Clear the LINK-DOWN alarm

Before you begin

Follow these steps to clear the alarm:

Procedure

Step 1 Check the optical power for OSC on near end and far end node using the **show controllers osc** *R/S/I/P* command.

Step 2 Check and repair any cut in fiber cable.

Step 3 Check if any OSC or GigbitEthernet port is not in shut down state.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

RAMAN-AUTO-LASER-SHUT

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The RAMAN-AUTO-LASER-SHUT alarm is raised when the laser inside the Raman pumps is automatically shut down if loss of signal is detected on the receiving fiber.

Clear the RAMAN-AUTO-LASER-SHUT Alarm

Procedure

Step 1 Check and clear the RX-LOC alarm by repairing any cut in fiber cable.

Step 2 Check if the safety conditions of the Raman pumps are active using the **show controllers ots** *0/0/0/0* **raman-info**.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

RAMAN-AUTO-POW-RED

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The RAMAN-AUTO-POW-RED alarm is raised when the Raman amplifier is in power reduction mode for safety reasons.

Clear the RAMAN-AUTO-POW-RED Alarm

Procedure

Step 1 Check if the Automatic Power Reduction (APR) and safety conditions for Raman amplifier are enabled using the **show configuration commit changes all** command.

Step 2 If APR is disabled, enable using the **controller ots** *R/S/I/P* **raman-force-apr on** command.

Step 3 If safety conditions are disabled, enable using the **controller ots** *R/S/I/P* **raman-osri on** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

RAMAN-[1-5]-HIGH-PWR

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The RAMAN-[1-5]-HIGH-PWR alarm is raised when the Raman [1-5] pumps have high power.

Clear the RAMAN-[1-5]-HIGH-PWR Alarm

Procedure

Check the span length and configured Raman pump power for controller OTS.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

RAMAN-[1-5]-LOW-PWR

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The RAMAN-[1-5]-LOW-PWR alarm is raised when the raman [1-5] pumps have low power.

Clear the RAMAN-[1-5]-LOW-PWR Alarm

Procedure

Check the span length and configured Raman pump power for controller OTS.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

RX-LOC

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: Line OTS Controller

The RX-LOC alarm is raised when there is a loss in the fiber connection continuity.

When the RX-LOC alarm is raised at the line OTS, the following alarms at the controller and port are suppressed:

Table 1: Suppressed Alarms List

Alarms	Controller	Port
RX-LOS-P	• DFB • OSC • OTS • Line OTS-OCH	Line RX
TX-POWER-FAIL-LOW	• OTS • OTS-OCH	LINE TX
RX-LOS-P	OTS-OCH	Line RX

Clear the RX-LOC Alarm

Procedure

Check and repair any cut in fiber cable.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

RX-LOS-P

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: Controller DFB, Controller OSC, Controller OTS-OCH, Controller OMS, Controller OTS, or Controller OCH

The RX-LOS-P alarm is raised when:

- there is a loss of signal payload.
- the cable is not properly inserted or disconnected from a port.
- port is not currently in use.

Clear the RX-LOS-P Alarm

Procedure

Step 1 Check and adjust the threshold values using the **controller ots** *0/0/0/0* **rx-low-threshold** *value* command.

Step 2 Check if the received power is between -1dBm to -40dBm.

Step 3 Check if the cable is properly inserted into the port.

Step 4 If the port is not in use, shutdown the port using the **controller ots** *R/S/I/P* **shutdown** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SPAN-TOO-SHORT-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The SPAN-TOO-SHORT-RX alarm is raised when the input of the OTS span is too short.

Clear the SPAN-TOO-SHORT-RX Alarm

Procedure

Step 1 Inspect the RX fiber for any signs of damage.

Step 2 Increase the span length of the fiber using the **controller ots** *R/S/I/P* **span-length** *length* command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

SPAN-TOO-SHORT-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS

The SPAN-TOO-SHORT-TX alarm is raised when the output of the OTS span is too short.

Clear the SPAN-TOO-SHORT-TX Alarm

Procedure

Step 1 Inspect the TX fiber for any signs of damage.

Step 2 Increase the span length of the fiber using the **controller ots** *R/S/I/P* **span-length** *length* command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

TD-FAILED

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS, Controller OMS, or Controller OCH

The TD-FAILED alarm is raised when the Tone Detection fails.

Clear the TD-FAILED Alarm

Procedure

Stop Tone Detection on the corresponding controller using the **tone-pattern-detect controller ots** *R/S/I/P* **stop** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

TD-INPROGRESS

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS, Controller OMS, or Controller OCH

The TD-INPROGRESS alarm is raised when the Tone Detection is in progress.

Clear the TD-INPROGRESS Alarm

Procedure

This alarm is cleared automatically when Tone Detection is completed successfully.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

TD-SUCCESS

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS, Controller OMS, or Controller OCH

The TD-SUCCESS alarm is raised when Tone Detection is completed successfully.

Clear the TD-SUCCESS Alarm

Procedure

Stop Tone Detection on the corresponding controller using the **tone-pattern-detect controller ots** *R/S/I/P* **stop** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

TG-INPROGRES

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Controller OTS, Controller OMS, or Controller OCH

The TG-INPROGRES alarm is raised when the Tone Generation is in progress.

Clear the TG-INPROGRES Alarm

Procedure

Stop Tone Generation on the corresponding controller using the **tone-pattern controller ots** *R/S/I/P* **stop** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

TX-POWER-FAIL-LOW

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: Controller DFB, Controller OSC, Controller OTS-OCH, Controller OMS, or Controller OCH

Supported from release: R25.1.1

The TX-POWER-FAIL-LOW alarm is raised when the output of the OTS power reading is below the Fail-Low threshold.

Clear the TX-POWER-FAIL-LOW Alarm

Procedure

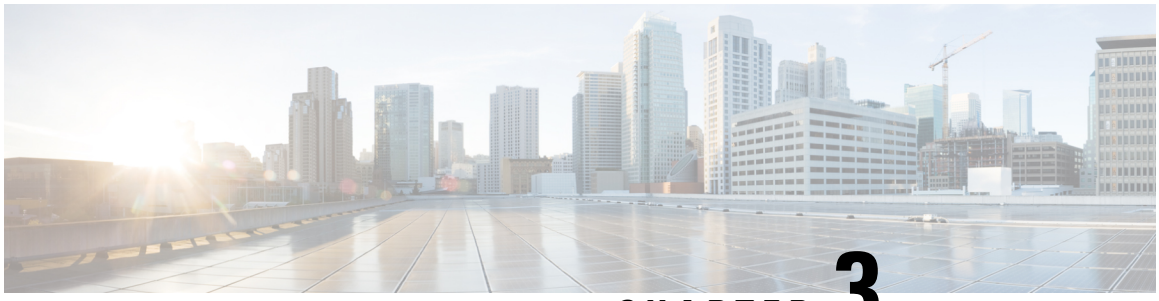
Step 1 Check if the threshold values are correct using the **show controllers ots** *R/S/I/P* command.

Step 2 Check if the corresponding Rx power is correct using the **show controllers ots** *R/S/I/P* command. For example, an OTS Controller 2 TX receives power from the controller 0 RX.

Step 3 Check the configured EDFA gain values using the using the **show controllers ots** *R/S/I/P* command.

Step 4 Check for any hardware failure alarms using the **show alarms brief system active** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).



CHAPTER 3

Troubleshooting of Optical Application Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered optical application alarm and condition in Cisco NCS 1020. When an alarm is raised, refer to its clearing procedure.

- APC-BLOCKED-RX, on page 57
- APC-BLOCKED-TX, on page 58
- APC-OUT-OF-RANGE-TX, on page 59
- APC-OUT-OF-RANGE-RX, on page 60
- APC-PARTIAL-TOPOLOGY, on page 60
- NEIGHBOUR-MISSING, on page 61
- RX-BELOW-MIN-PSD, on page 62
- SPAN-LOSS-OUT-OF-RANGE, on page 62
- APC-TARGET-PSD-NOT-MET-RX, on page 63
- APC-TARGET-PSD-NOT-MET-TX, on page 63
- OTDR-ABS-ATTENUATION-EXCEEDED-RX, on page 64
- OTDR-ABS-ATTENUATION-EXCEEDED-TX, on page 65
- OTDR-ABS-ORL-EXCEEDED-RX, on page 65
- OTDR-ABS-ORL-EXCEEDED-TX, on page 66
- OTDR-ABS-REFLECTANCE-EXCEEDED-RX, on page 67
- OTDR-ABS-REFLECTANCE-EXCEEDED-TX, on page 67
- OTDR-SCAN-FAILED-RX, on page 68
- OTDR-SCAN-FAILED-TX, on page 68
- OTDR-SCAN-IN-PROGRESS-RX, on page 69
- OTDR-SCAN-IN-PROGRESS-TX, on page 69

APC-BLOCKED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-BLOCKED-RX alarm is raised when:

- The APC domain (OLT—OLT) is down due to:
  - Fiber cut in the receive (RX) direction of the span in the network.

- Network events such as: OTS controller fail or shutdown, OSC fail or shutdown, LC reload, RP reload, and power cycle events.

- The topology is not discovered by the OSPF end-to-end and the connection bring up is pending.
- The user configured amplifier safety conditions, such as Optical safety remote interlock (OSRI) and Automatic power reduction (APR), and so on.
- Safety condition is triggered due to a High Back Reflection event.
- The participating agent nodes have locally disabled the APC.

Clear the APC-BLOCKED-RX Alarm

This alarm gets cleared when:

- The fiber issues are resolved and the network connectivity is restored in the receive direction.
- All the participating nodes are recovered from High Availability (HA) events.
- The end-to-end topology is discovered using the **show olc apc** command.
- All the safety conditions are cleared from the network.
- Verify that all the agent nodes in the domain have APC enabled using the **show olc apc-local** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

APC-BLOCKED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-BLOCKED-TX alarm is raised when:

- The APC domain (OLT—OLT) is down due to:
  - Fiber cut in the transmit (TX) direction of the span in the network.
  - Network events such as: OTS controller fail or shutdown, OSC fail or shutdown, LC reload, RP reload, and power cycle events.

- The topology is not discovered by the OSPF end-to-end and the connection bring up is pending.
- The user configured amplifier safety conditions, such as Optical safety remote interlock (OSRI) and Automatic power reduction (APR), and so on.
- Safety condition is triggered due to a High Back Reflection event.
- The participating agent nodes have locally disabled the APC.

Clear the APC-BLOCKED-TX Alarm

This alarm gets cleared when:

- The fiber issues are resolved and the network connectivity is restored in the transmit direction.
- All the participating nodes are recovered from High Availability (HA) events.
- The end-to-end topology is discovered using the **show olc apc** command.
- All the safety conditions are cleared from the network.
- Verify that all the agent nodes in the domain have APC enabled using the **show olc apc-local** command.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

APC-OUT-OF-RANGE-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-OUT-OF-RANGE-TX alarm is raised when the APC system fails to regulate and achieve the target PSD power level in the transmit direction.

The possible conditions are:

- amplifier gain is exhausted in a particular gain range.
- WSS range (0-25 dB) is exhausted for a single or multiple channels.
- DGE range (0-3 dB) is exhausted for a single or multiple channels.
- increased span loss and the amplifier gain is not enough to achieve the target PSD.

Clear the APC-OUT-OF-RANGE-TX Alarm

This alarm gets cleared in the following conditions:

- If the requested amplifier gain is outside the current configured gain range, change it to the correct gain-range using the **controller ots egress-ampli-gain-range** *{normal | extended}*.
- If the WSS range is exhausted for a channel, check and correct the power levels on the add ports and ensure that there is no extra attenuation added due to a bad patchcord.
- Check the TX power is configured as required using the **show controllers osc** command. If required, configure the TX power using the **controller osc transmit-power** *value* command.
- Check and clear if there are any SPAN-LOSS-OUT-OF-RANGE alarms.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

APC-OUT-OF-RANGE-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-OUT-OF-RANGE-RX alarm is raised when the APC system fails to regulate and achieve the target PSD power level in the receive direction.

The possible conditions are:

- amplifier gain is exhausted in a particular gain range.
- WSS range (0-25 dB) is exhausted for a single or multiple channels.
- DGE range (0-3 dB) is exhausted for a single or multiple channels.
- increased span loss and the amplifier gain is not enough to achieve the target PSD.

Clear the APC-OUT-OF-RANGE-RX Alarm

This alarm gets cleared in the following conditions:

- If the requested amplifier gain is outside the current configured gain range, change it to the correct gain-range using the **controller ots egress-ampli-gain-range** *{normal | extended}*.
- If the WSS range is exhausted for a channel, check and correct the power levels on the add ports and ensure that there is no extra attenuation added due to a bad patchcord.
- Check the RX power is configured as required using the **show controllers osc** command. If required, configure the RX power using the **controller osc transmit-power** *value* command.
- Check and clear if there are any SPAN-LOSS-OUT-OF-RANGE alarms.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

APC-PARTIAL-TOPOLOGY

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The APC-PARTIAL-TOPOLOGY alarm is raised when:

- The APC domain (OLT—OLT) is down due to:
  - Fiber cut in one of the spans in the network.
  - Network events such as: OTS Controller fail/shutdown, OSC fail/shutdown, LC reload, RP reload, and powercycle events.
- The topology is not discovered by the OSPF end-to-end and the connection bring up is pending.

Clear the APC-PARTIAL-TOPOLOGY Alarm

This alarm gets cleared when:

- The fiber issues in the network are resolved, and the connectivity is restored.
- All the participating nodes are recovered from HA events.
- The OSPF is able to discover the topology OLT to OLT.
- All the safety conditions are cleared from the network.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

NEIGHBOUR-MISSING

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The *Neighbour not found* alarm is raised when a neighbour node is not discoverable or unreachable. This can happen due to any of the following reasons:

- OSPF configuration is not correct.
- Cut in the fiber cable that connects to the neighboring node.

Note From 25.3.x, this alarm is not raised when the OSC Controller is in the *admin-down* state.

Clear the NEIGHBOUR-MISSING Alarm

This alarm is cleared when the neighbour node is reachable and OSPF is able to discover the topology.

To clear the alarm:

Procedure

Step 1 Check the OSPF neighbors connections are established using the **show ospf neighbor** command.

Step 2 Check the OSPF configurations are correct. For more details, refer to the Understanding Remote Node Management Using OSC.

Step 3 Check and repair any cuts in the fiber cable that connects to the neighboring node.

RX-BELOW-MIN-PSD

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: Controller

The *Receive Channel Power Below Minimum Power Spectral Density* alarm is raised on a OLT Add/Drop port when the input power of channel falls below the configured minimum Power Spectral Density (PSD) threshold. The default value for the minimum PSD threshold is *-24* dBm.

Clear the RX-BELOW-MIN-PSD Alarm

This alarm is cleared when the input channel power exceeds the minimum PSD threshold value.

To clear the alarm:

Before you begin

Procedure

Step 1 Check the PSD values using the **show olc apc-local regulation-info** command.
If the *Ampli-Input PSD* value of a channel is below the *PSD Minumum* threshold, proceed to the next step.

Step 2 Change the minimum PSD threshold using the **psd-min <value>** command.

SPAN-LOSS-OUT-OF-RANGE

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The Span Loss Value Out Of Range (SPAN-LOSS-OUT-OF-RANGE) alarm is raised when the span loss measured is not within the configured threshold range.

The hysteresis value used for this alarm is 0.5dB.

Clear the SPAN-LOSS-OUT-OF-RANGE Alarm

Check and fix any fiber related issues using the OTDR scan measurements results stored in the SOR file. Use the **show controllers ots R/S/I/P otdr-info direction** command to view the OTDR scan events and the location of the SOR file.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

APC-TARGET-PSD-NOT-MET-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Optical Line Controller

Note The default value for APC-ALARM-DISCREPANCY-THRESHOLD is set to 1dB and the default value of APC-ALARM-HOLD-OFF-TIMER is set to 30 secs.

The APC-TARGET-PSD-NOT-MET-RX alarm is raised when:

- The difference between the target PSD and current PSD value is more than the APC-ALARM-DISCREPANCY-THRESHOLD value in the receive direction after the APC-ALARM-HOLD-OFF-TIMER expires.
- There is a change in spanloss in the upstream direction for a short time.
- There is no change in spanloss, the reduction in power can also lead to the discrepancy which can raise the alarm.

Clear the APC-TARGET-PSD-NOT-MET-RX Alarm

This alarm gets cleared when:

- The Force APC Correction is done using the CLI **olc start-apc-correction** at the respective controller.
- If the alarm is raised due to the change in spanloss in the upstream direction for a short time, it is cleared once the APC correction is completed. Use the Use the **show olc apc** command to view APC status.
- If the alarm is raised due to no change in spanloss or reduction in power then the amplifier must be checked for the power reduction which is causing the discrepancy. To check if automatic power reduction is enabled on a node amplifier, use the **show olc apc** command.

Note APC-ALARM-DISCREPANCY-THRESHOLD and APC-ALARM-HOLD-OFF-TIMER are configurable parameters that can be configured to required values.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

APC-TARGET-PSD-NOT-MET-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: Optical Line Controller

Note The default value for APC-ALARM-DISCREPANCY-THRESHOLD is set to 1dB and the default value of APC-ALARM-HOLD-OFF-TIMER is set to 30 secs.

The TARGET-PSD-NOT-MET-TX alarm is raised when:

- The difference between the target PSD and current PSD value is more than the APC-ALARM-DISCREPANCY-THRESHOLD value in the transmit direction after the APC-ALARM-HOLD-OFF-TIMER expires.
- There is a change in spanloss in the upstream direction for a short time.
- There is no change in spanloss, the reduction in power can also lead to the discrepancy which can raise the alarm.

Clear the APC-TARGET-PSD-NOT-MET-TX Alarm

This alarm gets cleared when:

- The Force APC Correction is done using the CLI **olc start-apc-correction** at the respective controller.
- If the alarm is raised due to the change in spanloss in the upstream direction for a short time, it is cleared once the APC correction is completed.
- If the alarm is raised due to no change in spanloss or reduction in power then the amplifier must be checked for the power reduction which is causing the discrepancy.

Note APC-ALARM-DISCREPANCY-THRESHOLD and APC-ALARM-HOLD-OFF-TIMER are configurable parameters that can be configured to required values.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-ABS-ATTENUATION-EXCEEDED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR-ABS-ATTENUATION-EXCEEDED-RX alarm is raised when any attenuation event in the last scan exceeds the **otdr rx excess-attenuation-threshold**.

Clear the OTDR-ABS-ATTENUATION-EXCEEDED-RX Alarm

Procedure

The alarm is cleared automatically when one of the following conditions is satisfied:

- The value of the **otdr rx excess-attenuation-threshold** that is configured is lower than the magnitude of the attenuation event.
- The attenuation event in the last scan is below the threshold.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-ABS-ATTENUATION-EXCEEDED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR-ABS-ATTENUATION-EXCEEDED-TX alarm is raised when any attenuation event in the last scan exceeds the **otdr tx excess-attenuation-threshold**.

Clear the OTDR-ABS-ATTENUATION-EXCEEDED-TX Alarm

Procedure

The alarm is cleared automatically when one of the following conditions is satisfied:

- The value of the **otdr rx excess-attenuation-threshold** that is configured is lower than the magnitude of the attenuation event.
- The attenuation event in the last scan is below the threshold.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-ABS-ORL-EXCEEDED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The ORL Exceeded Threshold - Receive Direction alarm is raised if the current ORL value is below its threshold value.

Clear the OTDR-ABS-ORL-EXCEEDED-RX Alarm

Procedure

Step 1 Clean the fiber causing the major reflection contribution.

Major reflection contribution can be found in the OTDR Scans.

Step 2 Alternatively, reduce the ORL threshold using the command **Controller Ots** *R/S/I/P* **otdr rx auto excess-orl-threshold** *value*

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-ABS-ORL-EXCEEDED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The ORL Exceeded Threshold - Transmit Direction alarm is raised if the current ORL value is below its threshold value.

Clear the OTDR-ABS-ORL-EXCEEDED-TX Alarm

Procedure

Step 1 Clean the fiber causing the major reflection contribution.

Major reflection contribution can be found in the OTDR Scans.

Step 2 Alternatively, reduce the ORL threshold using the command **Controller Ots** *R/S/I/P* **otdr tx auto excess-orl-threshold** *value*

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-ABS-REFLECTANCE-EXCEEDED-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Reflectance Exceeded Absolute Threshold - Receive Direction alarm is raised when the reflectance event in the last scan exceeds the absolute threshold in the Rx direction.

Clear the OTDR-ABS-REFLECTANCE-EXCEEDED-RX Alarm

Procedure

The alarm is cleared automatically when one of the following conditions is satisfied:

- The excess reflection threshold that is configured is lower than the magnitude of the reflective event.
- The reflectance event in the last scan is below the threshold.

If the alarm does not clear, log in to the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-ABS-REFLECTANCE-EXCEEDED-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Reflectance Exceeded Absolute Threshold - Transmit Direction alarm is raised when the reflectance event in the last scan exceeds the absolute threshold in the Tx direction.

Clear the OTDR-ABS-REFLECTANCE-EXCEEDED-TX Alarm

Procedure

The alarm is cleared automatically when one of the following conditions is satisfied:

- The excess reflection threshold that is configured is lower than the magnitude of the reflective event.
- The reflectance event in the last scan is below the threshold.

If the alarm does not clear, log in to the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-SCAN-FAILED-RX

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan Failed - Receive Direction is raised when the OTDR scan fails and no result is provided to the user.

Clear the OTDR-SCAN-FAILED-RX Alarm

Procedure

This alarm is cleared after performing a successful OTDR scan in Rx direction.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-SCAN-FAILED-TX

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan Failed - Transmit Direction alarm is raised when the OTDR scan fails and no result is provided to the user.

Clear the OTDR-SCAN-FAILED-TX Alarm

Procedure

This alarm is cleared after performing a successful OTDR scan in Tx direction.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-SCAN-IN-PROGRESS-RX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

The OTDR Scan In Progress – Receive Direction alarm is raised when OTDR scan is running in Rx direction.

Clear the OTDR-SCAN-IN-PROGRESS-RX Alarm

Procedure

The alarm is cleared automatically when the OTDR scan is completed or terminated by the user.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).

OTDR-SCAN-IN-PROGRESS-TX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OTS Controller

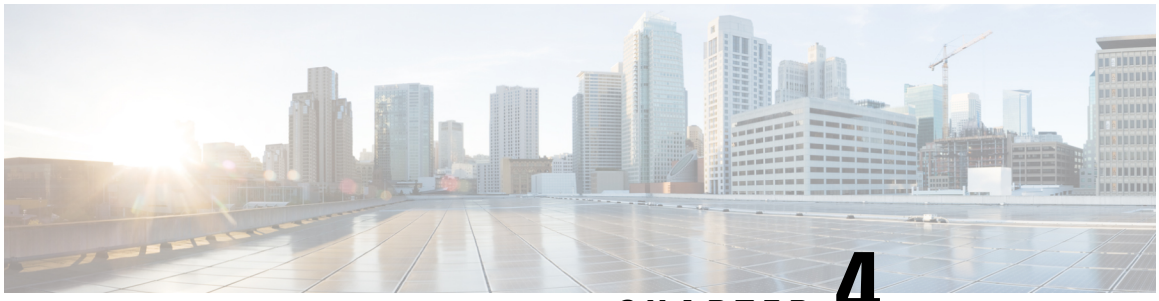
The OTDR Scan In Progress – Transmit Direction alarm is raised when OTDR scan is running in Tx direction.

Clear the OTDR-SCAN-IN-PROGRESS-TX Alarm

Procedure

The alarm is cleared automatically when the OTDR scan is completed or terminated by the user.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call Cisco TAC (1 800 553-2447).



CHAPTER 4

General Troubleshooting

This chapter provides procedures for troubleshooting the most common problems encountered when operating the NCS 1020 chassis.

- Troubleshooting Client-Side Failure, on page 71
- Troubleshooting Line Port SPAN Failure, on page 73
- Troubleshooting Power Oscillation in the Network, on page 80
- Troubleshooting Connection Verification Failures, on page 81

Troubleshooting Client-Side Failure

Problem

This problem occurs when there is a signal payload loss in the following conditions:

- If the fiber cut occurs at the client-side in the direction from the client to the NCS 1020, the LOS-P alarm is raised at the AD port controller OTS.
- If the fiber cut occurs at the client-side in the direction from the NCS 1020 to the client, the LOS-P alarm is raised at the Passive device controller OMS.

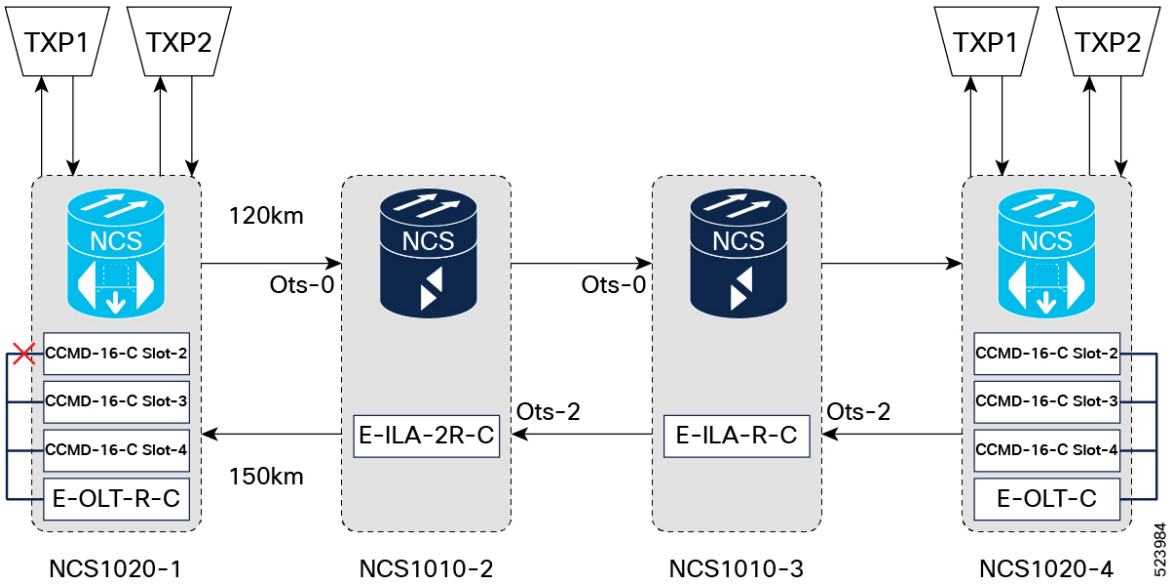
Topology and Components

To build this topology, you need the following hardware:

- Cisco NCS 1020 devices
- QDD-400G-ZR-S transceiver

The following figure displays client-side failure due to fiber cut:

Figure 1: Fiber Cut on Line



Example 1

The following example shows how to determine LOS-P failure at the AD port controller OTS:

```
RP/0/RP0/CPU0:ios#show controllers ots0/0/0/3
Tue Mar 28 15:58:12.210 UTC

Controller State: Down

Transport Admin State: Automatic In Service

LED State: Red

          Alarm Status:
          -------------
          Detected Alarms:
                  RX-LOS-P

          Alarm Statistics:
          -----------------
          RX-LOS-P = 2
          RX-LOC = 0
          TX-POWER-FAIL-LOW = 0
          INGRESS-AUTO-LASER-SHUT = 0
          INGRESS-AUTO-POW-RED = 0
          INGRESS-AMPLI-GAIN-LOW = 0
          INGRESS-AMPLI-GAIN-HIGH = 0
          EGRESS-AUTO-LASER-SHUT = 0
          EGRESS-AUTO-POW-RED = 0
          EGRESS-AMPLI-GAIN-LOW = 0
          EGRESS-AMPLI-GAIN-HIGH = 0
          HIGH-TX-BR-PWR = 0
          HIGH-RX-BR-PWR = 0
          SPAN-TOO-SHORT-TX = 0
          SPAN-TOO-SHORT-RX = 0

          Parameter Statistics:
```

```
---------------------
Total Rx Power = -50.00 dBm
Total Tx Power = -50.00 dBm
Ingress Ampli Mode = Gain
Ingress Ampli Gain = 0.0 dB
Ingress Ampli Tilt = 0.0 dB


Configured Parameters:
-------------
Ingress Ampli Mode = Gain
Ingress Ampli Gain = 16.0 dB
Ingress Ampli Power = -3.0 dBm
Ingress Ampli Tilt = 0.0 dB
Rx Low Threshold = -3276.8 dBm
Tx Low Threshold = -3276.8 dBm
```

Example 2

The following example shows how to determine LOS-P failure at the passive device controller OMS:

```
RP/0/RP0/CPU0:P2A_DT_07#sh controllers oms 0/1/0/8
Tue Mar 28 16:00:33.685 UTC

Controller State: Down

Transport Admin State: Automatic In Service

LED State: Red

        Alarm Status:
        -------------
        Detected Alarms:
                RX-LOS-P

        Alarm Statistics:
        -----------------
        RX-LOS-P = 1
        TX-POWER-FAIL-LOW = 0

        Parameter Statistics:
        ---------------------
        Tx Power = -50.00 dBm
        Rx Power = -50.00 dBm
```

Solution

See RX-LOS-P to resolve this alarm.

Troubleshooting Line Port SPAN Failure

Problem

This problem occurs when there is a loss of fiber connection at the Line port due to fiber cut. As a result, the LOC alarm is raised at the Line OTS controller.

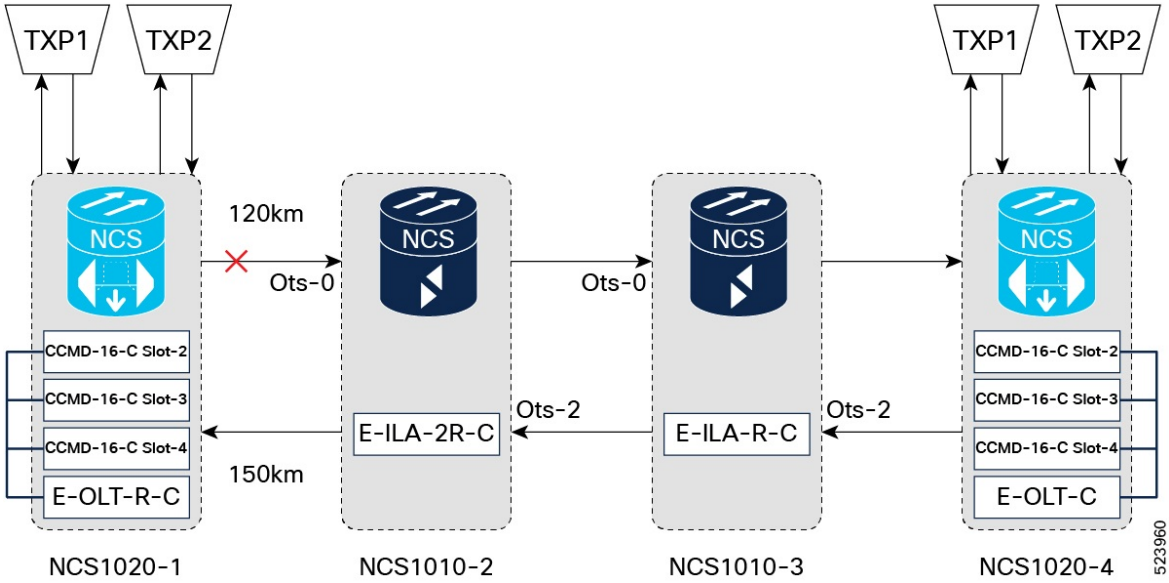
Topology and Components

To build this point-to-point topology, you need the following hardware:

- Cisco NCS 1020 devices
- NCS1K-MD32E-C modules
- NCS1K-MD32O-C modules
- QDD-400G-ZR-S transceiver

The following figure shows loss of fiber connection continuity at the Line port:

Figure 2: Fiber Cut at the Line OTS Controller



Example 1

The following example shows how to determine a span failure. Look for the higlighted alarms in the **show controllers** output.

On OLT 1

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/0
Tue Feb 18 16:03:51.365 IST

 Controller State: Up

 Transport Admin State: In Service

 LED State: Red

         Alarm Status:
         -------------
         Detected Alarms:
                 RX-LOS-P
                 EGRESS-AUTO-LASER-SHUT
                 INGRESS-AMPLI-LASER-OFF
```

```
Alarm Statistics:
-----------------
RX-LOS-P = 8
RX-LOC = 1
TX-POWER-FAIL-LOW = 3
INGRESS-AUTO-LASER-SHUT = 0
INGRESS-AUTO-POW-RED = 0
INGRESS-AMPLI-GAIN-LOW = 0
INGRESS-AMPLI-GAIN-HIGH = 0
EGRESS-AUTO-LASER-SHUT = 2
EGRESS-AUTO-POW-RED = 0
EGRESS-AMPLI-GAIN-LOW = 0
EGRESS-AMPLI-GAIN-HIGH = 0
HIGH-TX-BR-PWR = 0
HIGH-RX-BR-PWR = 0
SPAN-TOO-SHORT-TX = 0
SPAN-TOO-SHORT-RX = 0
INGRESS-AMPLI-LASER-OFF = 8
EGRESS-AMPLI-LASER-OFF = 1

Parameter Statistics:
---------------------
Total Rx Power(C+L) = -14.21 dBm
Total Tx Power(C+L) = 3.33 dBm
Total Rx Power = -14.21 dBm
Total Tx Power = 3.33 dBm
Rx Signal Power = -50.00 dBm
Tx Signal Power = -50.00 dBm
Tx Voa Attenuation = 5.3 dB
Ingress Ampli Mode = Gain
Ingress Ampli Gain = -1.2 dB
Ingress Ampli Tilt = 0.0 dB
Ingress Ampli Gain Range = Extended
Ingress Ampli Safety Control mode = auto
Ingress Ampli OSRI = OFF
Ingress Ampli Force Apr = OFF
Egress Ampli Mode = Gain
Egress Ampli Gain = -0.6 dB
Egress Ampli Tilt = 0.0 dB
Egress Ampli Safety Control mode = auto
Egress Ampli OSRI = OFF
Egress Ampli Force APR = OFF
Egress Ampli BR = ENABLE
Egress Ampli BR Power = -50.00 dBm
Egress Ampli BR Ratio = -90.00 dB


Configured Parameters:
----------------
Tx Voa Attenuation = 2.6 dB
Ingress Ampli Mode = Gain
Ingress Ampli Gain = 24.4 dB
Ingress Ampli Power = -1.0 dBm
Ingress Ampli Tilt = 0.0 dB
Ingress Ampli Gain Range = Extended
Ingress Ampli Safety Control mode = auto
Ingress Ampli OSRI = OFF
Ingress Ampli Force Apr = OFF
Egress Ampli Mode = Gain
Egress Ampli Gain = 20.0 dB
Egress Ampli Power = 4.4 dBm
Egress Ampli Tilt = -2.3 dB
Egress Ampli Safety Control mode = auto
```

```
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
        BR High Threshold = -17.0 dBm

RP/0/RP0/CPU0:ios#show alarms brief system active
Tue Feb 18 16:05:40.709 IST

------------------------------------------------------------------------------------
Active Alarms
------------------------------------------------------------------------------------
Location        Severity     Group            Set Time                    Description



------------------------------------------------------------------------------------
0/0            NotAlarmed   Controller       02/18/2025 16:03:04 IST    Ots0/0/0/0 - Egress
 Amplifier OFF for Safety Reasons


0/0            NotAlarmed   Controller       02/18/2025 16:03:04 IST    Ots0/0/0/0 - Ingress
 Amplifier OFF for Fail Low Input Power


0/0             Major        Controller       02/18/2025 16:03:07 IST
GigabitEthernet0/0/0/0 - Far End Fault Indication
```

On ILA (node 2)

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/0
Tue Feb 18 16:04:19.948 IST

 Controller State: Down

 Transport Admin State: In Service

 LED State: Red

        Alarm Status:
        -------------
        Detected Alarms:
                RX-LOS-P
                RX-LOC
                EGRESS-AUTO-LASER-SHUT

        Alarm Statistics:
        -----------------
        RX-LOS-P = 4
        RX-LOC = 2
        TX-POWER-FAIL-LOW = 3
        INGRESS-AUTO-LASER-SHUT = 0
        INGRESS-AUTO-POW-RED = 0
        INGRESS-AMPLI-GAIN-LOW = 0
        INGRESS-AMPLI-GAIN-HIGH = 0
        EGRESS-AUTO-LASER-SHUT = 1
        EGRESS-AUTO-POW-RED = 0
        EGRESS-AMPLI-GAIN-LOW = 0
        EGRESS-AMPLI-GAIN-HIGH = 0
        HIGH-TX-BR-PWR = 0
        HIGH-RX-BR-PWR = 0
        SPAN-TOO-SHORT-TX = 0
        SPAN-TOO-SHORT-RX = 0
```

```
        INGRESS-AMPLI-LASER-OFF = 0
        EGRESS-AMPLI-LASER-OFF = 5

        Parameter Statistics:
        ---------------------
        Total Rx Power(C+L) = -50.00 dBm
        Total Tx Power(C+L) = 3.15 dBm
        Total Rx Power = -50.00 dBm
        Total Tx Power = 3.15 dBm
        Rx Signal Power = -50.00 dBm
        Tx Signal Power = -50.00 dBm
        Tx Voa Attenuation = 5.2 dB
        Egress Ampli Mode = Gain
        Egress Ampli Gain = -1.5 dB
        Egress Ampli Tilt = 0.0 dB
        Egress Ampli Gain Range = Extended
        Egress Ampli Safety Control mode = auto
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
        Egress Ampli BR Power = -50.00 dBm
        Egress Ampli BR Ratio = -90.00 dB



        Configured Parameters:
        ----------
        Tx Voa Attenuation = 2.9 dB
        Egress Ampli Mode = Gain
        Egress Ampli Gain = 24.8 dB
        Egress Ampli Power = -3.5 dBm
        Egress Ampli Tilt = -2.2 dB
        Egress Ampli Gain Range = Extended
        Egress Ampli Safety Control mode = auto
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
        BR High Threshold = -17.0 dBm
```

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/2
Tue Feb 18 16:04:38.210 IST

 Controller State: Up

 Transport Admin State: In Service

 LED State: Red

        Alarm Status:
        -------------
        Detected Alarms:
                EGRESS-AMPLI-LASER-OFF

        Alarm Statistics:
        -----------------
        RX-LOS-P = 5
        RX-LOC = 1
        TX-POWER-FAIL-LOW = 3
        INGRESS-AUTO-LASER-SHUT = 0
        INGRESS-AUTO-POW-RED = 0
        INGRESS-AMPLI-GAIN-LOW = 0
```

```
        INGRESS-AMPLI-GAIN-HIGH = 0
        EGRESS-AUTO-LASER-SHUT = 1
        EGRESS-AUTO-POW-RED = 0
        EGRESS-AMPLI-GAIN-LOW = 2
        EGRESS-AMPLI-GAIN-HIGH = 0
        HIGH-TX-BR-PWR = 0
        HIGH-RX-BR-PWR = 0
        SPAN-TOO-SHORT-TX = 0
        SPAN-TOO-SHORT-RX = 0
        INGRESS-AMPLI-LASER-OFF = 0
        EGRESS-AMPLI-LASER-OFF = 4

        Parameter Statistics:
        ---------------------
        Total Rx Power(C+L) = -4.49 dBm
        Total Tx Power(C+L) = 2.86 dBm
        Total Rx Power = -4.49 dBm
        Total Tx Power = 2.86 dBm
        Rx Signal Power = -4.55 dBm
        Tx Signal Power = -50.00 dBm
        Tx Voa Attenuation = 3.5 dB
        Egress Ampli Mode = Gain
        Egress Ampli Gain = -2.2 dB
        Egress Ampli Tilt = 0.0 dB
        Egress Ampli Gain Range = Extended
        Egress Ampli Safety Control mode = auto
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
        Egress Ampli BR Power = -50.00 dBm
        Egress Ampli BR Ratio = -90.00 dB



        Configured Parameters:
        ----------
        Tx Voa Attenuation = 2.3 dB
        Egress Ampli Mode = Gain
        Egress Ampli Gain = 22.9 dB
        Egress Ampli Power = -3.8 dBm
        Egress Ampli Tilt = -2.4 dB
        Egress Ampli Gain Range = Extended
        Egress Ampli Safety Control mode = auto
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
        BR High Threshold = -17.0 dBm

RP/0/RP0/CPU0:ios#show alarms brief system active
Tue Feb 18 16:05:40.709 IST

------------------------------------------------------------------------------------
Active Alarms
------------------------------------------------------------------------------------
Location        Severity     Group            Set Time                    Description



------------------------------------------------------------------------------------
0/0             NotAlarmed   Controller       02/18/2025 16:03:04 IST    Ots0/0/0/0 - Egress
 Amplifier OFF for Safety Reasons


0/0             NotAlarmed   Controller       02/18/2025 16:03:04 IST    Ots0/0/0/2 - Egress
```

```
 Amplifier OFF for Fail Low Input Power
0/0             Critical     Controller       02/18/2025 16:03:05 IST    Ots0/0/0/0 - Loss
 Of Continuity
```

On the far end OLT

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/0
Tue Feb 18 16:04:58.387 IST

 Controller State: Up

 Transport Admin State: In Service

 LED State: Red

        Alarm Status:
        -------------
        Detected Alarms:
                RX-LOS-P
                INGRESS-AMPLI-LASER-OFF

        Alarm Statistics:
        -----------------
        RX-LOS-P = 11
        RX-LOC = 0
        TX-POWER-FAIL-LOW = 2
        INGRESS-AUTO-LASER-SHUT = 0
        INGRESS-AUTO-POW-RED = 0
        INGRESS-AMPLI-GAIN-LOW = 0
        INGRESS-AMPLI-GAIN-HIGH = 0
        EGRESS-AUTO-LASER-SHUT = 1
        EGRESS-AUTO-POW-RED = 0
        EGRESS-AMPLI-GAIN-LOW = 0
        EGRESS-AMPLI-GAIN-HIGH = 0
        HIGH-TX-BR-PWR = 0
        HIGH-RX-BR-PWR = 0
        SPAN-TOO-SHORT-TX = 0
        SPAN-TOO-SHORT-RX = 0
        INGRESS-AMPLI-LASER-OFF = 11
        EGRESS-AMPLI-LASER-OFF = 1

        Parameter Statistics:
        ---------------------
        Total Rx Power(C+L) = -13.94 dBm
        Total Tx Power(C+L) = 13.15 dBm
        Total Rx Power = -13.94 dBm
        Total Tx Power = 13.16 dBm
        Rx Signal Power = -50.00 dBm
        Tx Signal Power = 13.12 dBm
        Tx Voa Attenuation = 9.7 dB
        Ingress Ampli Mode = Gain
        Ingress Ampli Gain = 0.0 dB
        Ingress Ampli Tilt = 0.0 dB
        Ingress Ampli Gain Range = Normal
        Ingress Ampli Safety Control mode = auto
        Ingress Ampli OSRI = OFF
        Ingress Ampli Force Apr = OFF
        Egress Ampli Mode = Gain
        Egress Ampli Gain = 19.0 dB
        Egress Ampli Tilt = -0.4 dB
        Egress Ampli Safety Control mode = auto
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
```

```
        Egress Ampli BR Power = -19.89 dBm
        Egress Ampli BR Ratio = -33.00 dB


        Configured Parameters:
        ----------
        Tx Voa Attenuation = 6.8 dB
        Ingress Ampli Mode = Gain
        Ingress Ampli Gain = 15.5 dB
        Ingress Ampli Power = -1.0 dBm
        Ingress Ampli Tilt = 0.0 dB
        Ingress Ampli Gain Range = Normal
        Ingress Ampli Safety Control mode = auto
        Ingress Ampli OSRI = OFF
        Ingress Ampli Force Apr = OFF
        Egress Ampli Mode = Gain
        Egress Ampli Gain = 20.0 dB
        Egress Ampli Power = 5.0 dBm
        Egress Ampli Tilt = -0.4 dB
        Egress Ampli Safety Control mode = auto
        Egress Ampli OSRI = OFF
        Egress Ampli Force APR = OFF
        Egress Ampli BR = ENABLE
        BR High Threshold = -17.0 dBm


RP/0/RP0/CPU0:ios#show alarms brief system active
Tue Feb 18 16:05:40.709 IST

------------------------------------------------------------------------------------------
Active Alarms
------------------------------------------------------------------------------------------
Location        Severity     Group            Set Time                    Description


------------------------------------------------------------------------------------------
0/0            NotAlarmed   Controller      02/18/2025 16:03:05 IST    Ots0/0/0/0 - Ingress
 Amplifier OFF for Fail Low Input Power
```

Solution

See RX-LOC Alarm to resolve this problem.

Troubleshooting Power Oscillation in the Network

Problem

This problem occurs when there is a power oscillation in the network.

Example 1

The following example shows the power fluctuation in the network:

```
RP/0/RP0/CPU0:ios#show controllers ots0/0/0/0 pm current 30-sec optics 1
Tue Mar 28 16:02:22.332 UTC
```

```
Optics in the current interval [16:02:00 - 16:02:22 Tue Mar 28 2023]

Optics current bucket type : Valid
              MIN        AVG      MAX      Operational    Configured      TCA   Operational
     Configured     TCA
                                          Threshold(min)  Threshold(min) (min) Threshold(max)
   Threshold(max) (max)
OPT[dBm]       : -50.00   -7.32    6.10     -20.00           NA              NO   40.00
         NA               NO
OPR[dBm]       : -50.00   -50.00   -50.00   -30.00           NA              NO   18.00
         NA               NO
OPT(C+L)[dBm] : 19.50    19.51    19.70    -20.00           NA              NO   60.85
         NA               NO
OPR(C+L)[dBm] : 10.60    10.64    10.70    -30.00           NA              NO   36.00
         NA               NO
OPT(S)[dBm]    : -50.00   -50.00   -50.00   -5.00            NA              NO   28.00
         NA               NO
OPR(S)[dBm]    : -50.00   -50.00   -50.00   -30.00           NA              NO   18.00
         NA               NO
 OPBR[dBm]     : -50.00   -50.00   -50.00   -30.00           NA              NO   -14.09
         NA               NO
EAGN[dB]       : 0.00     0.00     0.00     16.00            NA              NO   31.00
         NA               NO
EATL[dB]       : 0.00     0.00     0.00     -5.00            NA              NO   5.00
         NA               NO
IAGN[dB]       : 0.00     0.00     0.00     12.00            NA              NO   25.00
         NA               NO
IATL[dB]       : 0.00     0.00     0.00     -5.00            NA              NO   5.00
         NA               NO

Last clearing of "show controllers OPTICS" counters never
```

Solution

You need to monitor the performance monitor statistics of the corresponding OTS and OTS-OCH controllers to determine where the power oscillation occurs in the network. Check for the transient alarms on the node, such as RX-LOC and RX-LOS-P. See RX-LOS-P and RX-LOC Alarm to resolve this problem.

Troubleshooting Connection Verification Failures

sysdb_item_set_failed

The *sysdb_item_set_failed* error message is a warning condition that the system reports when incorrect configurations are made during connection verification. This message appears for the following conditions:

1. Tone Generation Already In Progress
2. Tone Generation Has Invalid Pattern
3. Tone Generation Has Invalid Frequency
4. Tone Generation Start Failed
5. Tone Detection Has Invalid Pattern-Expected

Error Message 1:

sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Already In Progress')

Tone Generation Already In Progress appears when an attempt was made to start tone generation on one controller without stopping the tone generation operation on another controller.

The following example shows that the tone generation is initiated on port 5 OTS controller (*ots0/0/0/5*) while tone generation on port 4 OTS controller (*ots0/0/0/4*) is still in progress.

Example

```
RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/4 start
Fri Sep 15 14:26:18.670 UTC
Tone pattern started
RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/5 start
Fri Sep 15 14:27:20.418 UTC
sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Already
In Progress')
```

Solution

If you want to continue tone generation in the new OTS controller, then follow the following procedure to stop the tone generation that is already in progress.

1. Find the OTS controller that currently has tone generation in progress. To find, run the `show alarms brief system active` or `show alarms brief system conditions` command.

   The following example shows that tone generation is active on the port 4 OTS controller.

   Example

   ```
   RP/0/RP0/CPU0:ios#show alarms brief system active
   Thu Nov 23 06:42:20.077 UTC

   ------------------------------------------------------------------------------------
   Active Alarms
   ------------------------------------------------------------------------------------
   Location        Severity     Group            Set Time                    Description
   ------------------------------------------------------------------------------------
   0/PM1           Major        Environ          11/17/2023 04:11:37 UTC     Power Module
   Error (PM_VIN_VOLT_OOR)
   0/PM1           Major        Environ          11/17/2023 04:11:37 UTC     Power Module
   Output Disabled (PM_OUTPUT_DISABLED)
   0               Major        Environ          11/17/2023 04:11:37 UTC     Power Group
   redundancy lost
   0/RP0/CPU0      Minor        Software         11/17/2023 04:12:39 UTC     SW Upgrade is
   still allowed as SIA Grace Period is remaining
   0/0             Minor        Controller       11/23/2023 02:34:38 UTC     Ots0/0/0/4 -
   Tone Generation In Progress
   0/0             Critical     Controller       11/23/2023 06:41:07 UTC     Ots0/0/0/14 -
   Loss of Signal - Payload
   ```

2. Stop the tone generation in that OTS controller. To stop, run the `tone-pattern controller ots 0/0/0/4 stop` command.

   The following example shows that tone pattern generation is stopped on the port 4 OTS controller.

   Example

   ```
   RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/4 stop
   Tue May 10 11:50:45.837 UTC
   Tone pattern stopped
   ```

Error Message 2:

sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Has Invalid Pattern')

The *Tone Generation Has Invalid Pattern* error message appears when an attempt was made to start the tone generation on the OTS controller without configuring the `tone-pattern` value for the controller.

The following example does not display `tone-pattern` for the `show run controller ots 0/0/0/4` command. Due to the absence of `tone-pattern`, the system reports the *Tone Generation Has Invalid Pattern* message.

Example

```
RP/0/RP0/CPU0:ios#show run controller ots 0/0/0/33
Fri Nov  3 10:17:01.999 UTC
controller Ots0/0/0/33
 tone-rate 25
 tone-frequency 196
!
```

```
          RP/0/RP0/CPU0:Enceladus_1#tone-pattern controller ots 0/0/0/33 start
Fri Nov  3 10:17:46.389 UTC
sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Has Invalid
 Pattern')
RP/0/RP0/CPU0:ios
```

Solution

Set the `tone-pattern` value for the OTS controller. To set, run the following command:

Command Example

```
RP/0/RP0/CPU0:(config-Ots)#tone-pattern abcd1234
RP/0/RP0/CPU0:(config-Ots)#commit
```

Error Message 3:

sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Has Invalid Frequency')

The *Tone Generation Has Invalid Frequency* error message appears when an attempt was made to start tone generation without configuring the `tone-frequency` value in the OTS controller.

The following example does not display `tone-frequency` for the `show run controller ots 0/0/0/4` command. Due to the absence of `tone-frequency`, the system reports the *Tone Generation Has Invalid Frequency* message.

Example

```
RP/0/RP0/CPU0:ios#show run controller ots 0/0/0/4
Fri Sep 15 14:37:03.381 UTC
controller Ots0/0/0/4
 tone-rate 2
 tone-pattern abcd1234
 tone-detect-oob
 tone-pattern-expected abcd1234
!

RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/4 start
Fri Sep 15 14:37:41.777 UTC
sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Has Invalid
```

```
 Frequency')
RP/0/RP0/CPU0:ios#
```

Solution

Set the `tone-frequency` value in out-of-band (OOB) frequency for the OTS controller. To set, run the following command:

Command Example

```
RP/0/RP0/CPU0:(config-Ots)#tone-frequency 191.175
RP/0/RP0/CPU0:(config-Ots)#commit
```

Error Message 4:

sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Start Failed')

The *Tone Generation Start Failed* error message appears when an attempt was made to start tone generation using an in-band frequency of a provisioned channel.

The following example shows that `tone-frequency` is configured for the `show run controller ots 0/0/0/33` command. However, the `tone-frequency` value that is configured is the central frequency (*191.375*) of the provisioned channel 1. Hence, the system reports the *Tone Generation Start Failed* message.

Example

```
RP/0/RP0/CPU0:ios#show hw-module location 0/0/NXR0 terminal-ampli
Fri Nov  3 10:31:25.329 UTC

Legend:
NXC      - Channel not cross-connected
ACTIVE - Channel cross-connected to data port
ASE        - Channel filled with ASE
FAILED - Data channel failed, pending transition to ASE

Location:             0/0/NXR0

Status:               Provisioned

Flex Grid Info

Channel Number      Centre Frequency(THz)       Channel Width(GHz)    Channel Status
Overlapping Channels
1                   191.375000                  75.000                ACTIVE
- ,   2
2                   191.435000                  75.000                ASE
1 ,   -

RP/0/RP0/CPU0:ios#show run controller ots 0/0/0/33
Fri Nov  3 10:38:44.414 UTC
controller Ots0/0/0/33
 tone-rate 25
 tone-pattern abcd1234
 tone-frequency 191.375
!

RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/33 start
Fri Nov  3 10:39:03.532 UTC
sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Generation Start
Failed')
RP/0/RP0/CPU0:ios#
```

Solution

Set the `tone-frequency` value in the out-of-band (OOB) frequency for the OTS controller. To set, run the following command:

Command Example

```
RP/0/RP0/CPU0:(config-Ots)#tone-frequency 191.175
RP/0/RP0/CPU0:(config-Ots)#commit
```

Error Message 5:

sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Detection Has Invalid Pattern-Expected')

The *Tone Detection Has Invalid Pattern-Expected* error message appears when an attempt was made to start tone generation without configuring the expected tone pattern in the OTS, OMS, or OCH controller.

The following example shows the `show run controller ots 0/0/0/33` output without the `tone-pattern-expected` value. Due to the absence of `tone-pattern-expected`, the system reports the *Tone Detection Has Invalid Pattern-Expected* message.

Example

```
RP/0/RP0/CPU0:ios#show run controller ots 0/0/0/33
Fri Nov  3 10:45:29.171 UTC
controller Ots0/0/0/33
 tone-rate 25
 tone-pattern abcd1234
 tone-frequency 191.375
!

RP/0/RP0/CPU0:ios#tone-pattern-detect controller ots 0/0/0/33 start
Fri Nov  3 10:46:01.585 UTC
sysdb_item_set_failed('optics' detected the 'warning' condition 'Tone Detection Has Invalid
 Pattern-Expected')
RP/0/RP0/CPU0:ios#
```

Solution

Set the `tone-pattern-expected` value on the controller that is expecting the tone pattern. In this example, the tone pattern is expected on the OTS controller. To set, run the following command:

Command Example

```
RP/0/RP0/CPU0:(config-Ots)#tone-pattern-expected abcd1234
RP/0/RP0/CPU0:(config-Ots)#commit
```

Failed to Commit One or More Configuration Items During a Pseudo-Atomic Operation.

The NCS 1020 CLI fails to commit connection verification configuration when an attempt was made to set an incorrect value or parameter on an OTS controller.

In the following examples, the *Failed to commit one or more configuration...* error message appears to indicate that controller configuration has failed.

Example 1:

Example

```
RP/0/RP0/CPU0:ios#configure
Fri Sep 15 14:38:18.254 UTC
RP/0/RP0/CPU0:ios(config)#controller ots 0/0/0/4
RP/0/RP0/CPU0:ios(config-Ots)#tone-frequency 30
RP/0/RP0/CPU0:ios(config-Ots)#commit
Fri Sep 15 14:38:50.918 UTC
```

```
% Failed to commit one or more configuration items during a pseudo-atomic operation. All
changes made have been reverted. Please issue 'show configuration failed [inheritance]'
from this session to view the errors
```

Solution 1:

Run the `show configuration failed` command to find the cause for the system to fail the OTS controller configuration.

Command

```
RP/0/RP0/CPU0:ios(config-Ots)#show configuration failed
Fri Sep 15 14:38:57.773 UTC
!! SEMANTIC ERRORS: This configuration was rejected by
!! the system due to semantic errors. The individual
!! errors with each failed configuration command can be
!! found below.


controller Ots0/0/0/4
 tone-frequency 30
!!% Invalid argument: Entered value not supported. Range supported by the platform is from
 191.175000 to 196.100000
!
end
```

The preceding output shows that an unsupported value is entered for `tone-frequency`. The output also suggests the frequency range (*191.175000…196.100000*) that the platform supports for connection verification.

Example 2:

Example

```
RP/0/RP0/CPU0:ios#configure
Fri Sep 15 14:45:44.275 UTC
RP/0/RP0/CPU0:ios(config)#controller ots 0/0/0/4
RP/0/RP0/CPU0:ios(config-Ots)#tone-pattern ?
  LINE  Enter Hex Values(Max Length 64 Bytes)
RP/0/RP0/CPU0:ios(config-Ots)#tone-pattern xxxyyyzzz
RP/0/RP0/CPU0:ios(config-Ots)#commit
Fri Sep 15 14:46:20.073 UTC

% Failed to commit one or more configuration items during a pseudo-atomic operation. All
changes made have been reverted. Please issue 'show configuration failed [inheritance]'
from this session to view the errors
```

Solution 2:

Command

```
RP/0/RP0/CPU0:iosconfig-Ots)#show configuration failed
Fri Sep 15 14:46:39.396 UTC
!! SEMANTIC ERRORS: This configuration was rejected by
!! the system due to semantic errors. The individual
!! errors with each failed configuration command can be
!! found below.


controller Ots0/0/0/4
 tone-pattern xxxyyyzzz
!!% Invalid argument: invalid hex value,valid value is 0-9 a-f A-F
!
end
```

The preceding output shows that an unsupported value is entered for `tone-pattern`. The output also suggests the supported values for tone pattern.

Example 3:

Example

```
RP/0/RP0/CPU0:ios#configure
Fri Sep 15 15:14:36.131 UTC
RP/0/RP0/CPU0:ios(config)#controller och 0/3/0/1
RP/0/RP0/CPU0:ios(config-Och)#tone-detect-oob
RP/0/RP0/CPU0:ios(config-Och)#commit
Fri Sep 15 15:14:57.286 UTC

% Failed to commit one or more configuration items during a pseudo-atomic operation. All
changes made have been reverted. Please issue 'show configuration failed [inheritance]'
from this session to view the errors
```

Solution 3:

Command

```
RP/0/RP0/CPU0:ios(config-Och)#show configuration failed
Fri Sep 15 15:15:06.219 UTC
!! SEMANTIC ERRORS: This configuration was rejected by
!! the system due to semantic errors. The individual
!! errors with each failed configuration command can be
!! found below.


controller Och0/3/0/1
 tone-detect-oob
!!% Invalid argument: Tone Detect OOB is not configurable for this controller
!
end
```

The preceding output informs that Tone Detect OOB is not configurable on OCH controllers. Configure OOB only on OMS controllers.

Invalid Input Detected at '^' Marker

The *Invalid input detected at '^' marker* error message appears when an attempt was made to start tone generation on the OMS and OCH controllers. Tone generation must be initiated on the OTS controller. The OMS and OCH controllers should be used only to detect the tone that is generated from the OTS controller.

The following example shows the system reporting the *Invalid input detected at '^' marker* error message on the port 0 OMS controller (*oms 0/3/0/0*).

Example

```
RP/0/RP0/CPU0:ios#tone-pattern controller oms 0/3/0/0 start
                                                       ^
% Invalid input detected at '^' marker.
RP/0/RP0/CPU0:ios#
```

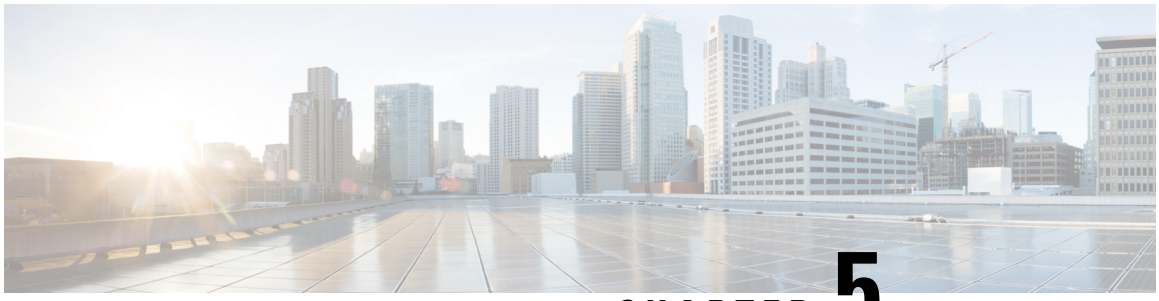
The following example shows the system reporting the *Invalid input detected at '^' marker* error message on the port 1 OCH controller (*och 0/3/0/1*).

Example

```
RP/0/RP0/CPU0:ios#tone-pattern controller och 0/3/0/1 start
                                                      ^
% Invalid input detected at '^' marker.
```

Solution

Use the OMS and OCH controllers for detecting the tone generation only. See for OCH and OMS controller syntax and parameters.



CHAPTER 5

Alarm Propagation Scenarios

In an optical network, alarm propagation defines how different alarms propagate in a larger link during any failure in the network. The alarm correlation algorithm suppresses the lower-priority alarms on each device in the network. Hence, the network administrator can assess the health of the optical network and detect the root cause of the problem by focusing only on the significant alarms on the node.

This chapter covers the alarms that are active and suppressed during the common alarm propagation scenarios when operating the NCS 1020 chassis.

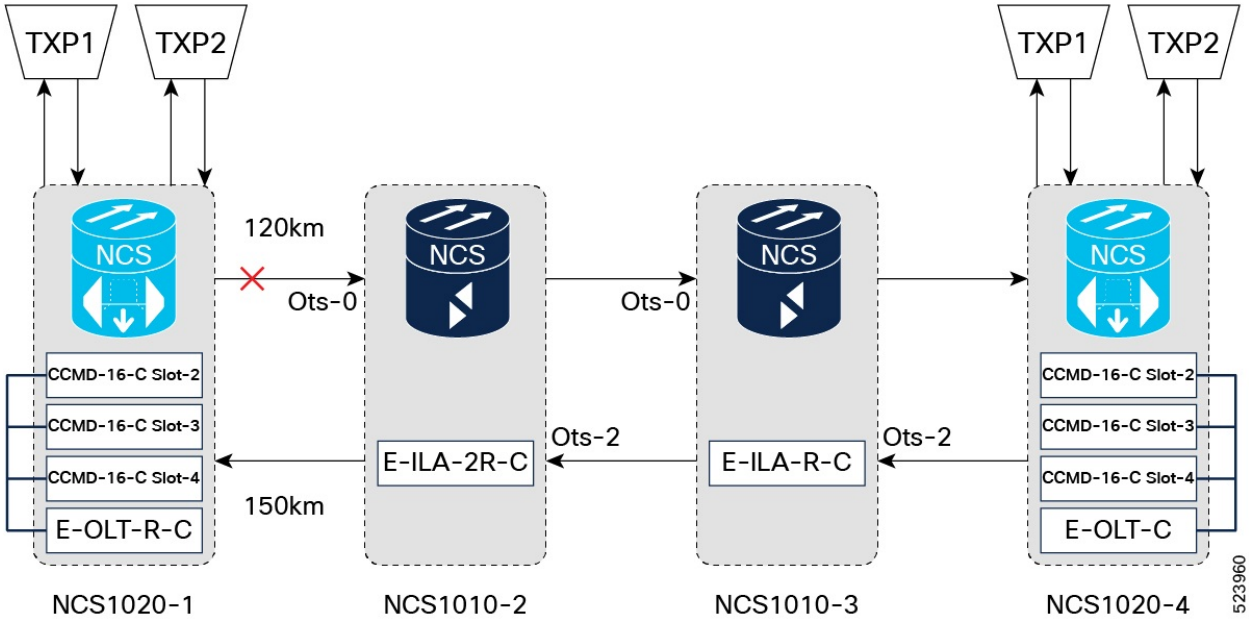
- Unidirectional Fiber Cut on Line, on page 89
- Bidirectional Fiber Cut on Line, on page 91
- Fiber Cut Between CCMD and OLT, on page 93
- High Back Reflection Condition on Line Tx Port, on page 94
- High Back Reflection Condition on Line Rx RAMAN Port , on page 95
- High Span Loss on Line Tx Port, on page 96
- High Span Loss on Line Rx Port, on page 97
- Single Channel Failure due to Bidirectional Fiber Cut on Line, on page 98
- Single Channel Failure due to Unidirectional Fiber Cut at TXP-Tx, on page 99
- Single Channel Failure due to Unidirectional Fiber Cut at TXP-Rx, on page 100

Unidirectional Fiber Cut on Line

When there is a line unidirectional fiber cut on a NCS 1020 network, alarms are raised and suppressed at the respective ports of each node.

The following figure displays line unidirectional fiber cut on a NCS 1020:

Figure 3: Unidirectional Fiber Cut on Line



The following table lists the alarms that are raised and suppressed at the respective ports of each node:

Table 2: Active and Suppressed Alarms

NODE	Active Alarms	Ports where alarms are raised	Suppressed Alarms	Ports where alarms are suppressed
NCS 1020 - 1	• Rx-LOC • INGRESS-AUTO-LASER-SHUT • EGRESS-AUTO-LASER-SHUT • Raman-AUTO-LASER-SHUT • APC-BLOCKED-TX • APC-BLOCKED-RX • RAMAN-TUNE-FAILED	Line OTS 0/0/0/0	Rx-LOS-P	• Line OTS 0/0/0/0 • DFB 0/0/0/0 • OSC 0/0/0/0 • OTS-OCH 0/0/0/0/x x is channel id
	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/com-port/channel	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/0/channel

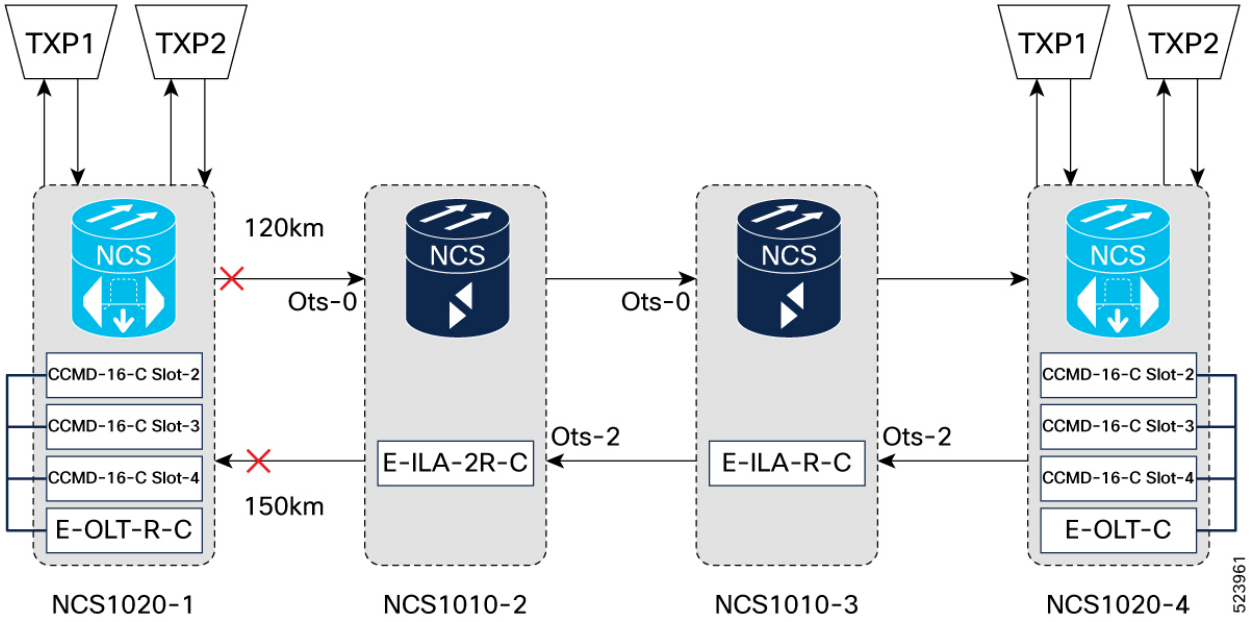
NODE	Active Alarms	Ports where alarms are raised	Suppressed Alarms	Ports where alarms are suppressed
NCS1020 – 2 (ots - 0)	• Rx-LOS-P • EGRESS-AUTO-LASER-SHUT • Raman-AUTO-LASER-SHUT • APC-BLOCKED-TX • RAMAN-TUNE-FAILED	Line OTS 0/0/0/0	Rx-LOS-P	OTS-OCH 0/0/0/0/x x is channel id
			TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/0/channel
NCS1020 – 2 (ots - 2)	• EGRESS-AUTO-LASER-SHUT • APC-BLOCKED-TX	Line OTS 0/0/0/2	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/2/channel
NCS1020 – 3 (ots - 0)	Rx-LOS-P	Line OTS 0/0/0/0	Rx-LOS-P	OTS-OCH 0/0/0/0/x x is channel id
NCS1020– 3 (ots - 2)	• EGRESS-AUTO-LASER-SHUT • APC-BLOCKED-TX	Line OTS 0/0/0/2	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/0/2
NCS1020 – 4	• INGRESS-AUTO-LASER-SHUT • APC-BLOCKED-RX • Rx-LOS-P	Line OTS 0/0/0/0	Rx-LOS-P	OTS-OCH 0/0/0/0/x x is channel id
	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/com-port/channel		
NCS1020	Rx-LOS-P	OMS 0/0/slot/0		

Bidirectional Fiber Cut on Line

When there is a line bidirectional fiber cut on a NCS 1020 network, alarms are raised and suppressed at the respective ports of each node.

The following figure displays line bidirectional fiber cut on a NCS 1020 network:

Figure 4: Bidirectional Fiber Cut on Line



The following table lists the alarms that are raised and suppressed at the respective ports of each node:

Table 3: Active and Suppressed Alarms

NODE	Active Alarms	Ports where alarms are raised	Suppressed Alarms	Ports where alarms are suppressed
NCS1020-1	• Rx-LOC • INGRESS-AUTO-LASER-SHUT • EGRESS-AUTO-LASER-SHUT • Raman-AUTO-LASER-SHUT • APC-BLOCKED-TX • APC-BLOCKED-RX • RAMAN-TUNE-FAILED	Line OTS 0/0/0/0	Rx-LOS-P	• Line OTS 0/0/0/0 • DFB0/0/0/0 • OSC0/0/0/0 • OTS-OCH0000/x x is channel id
	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/com-port	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/0/channel

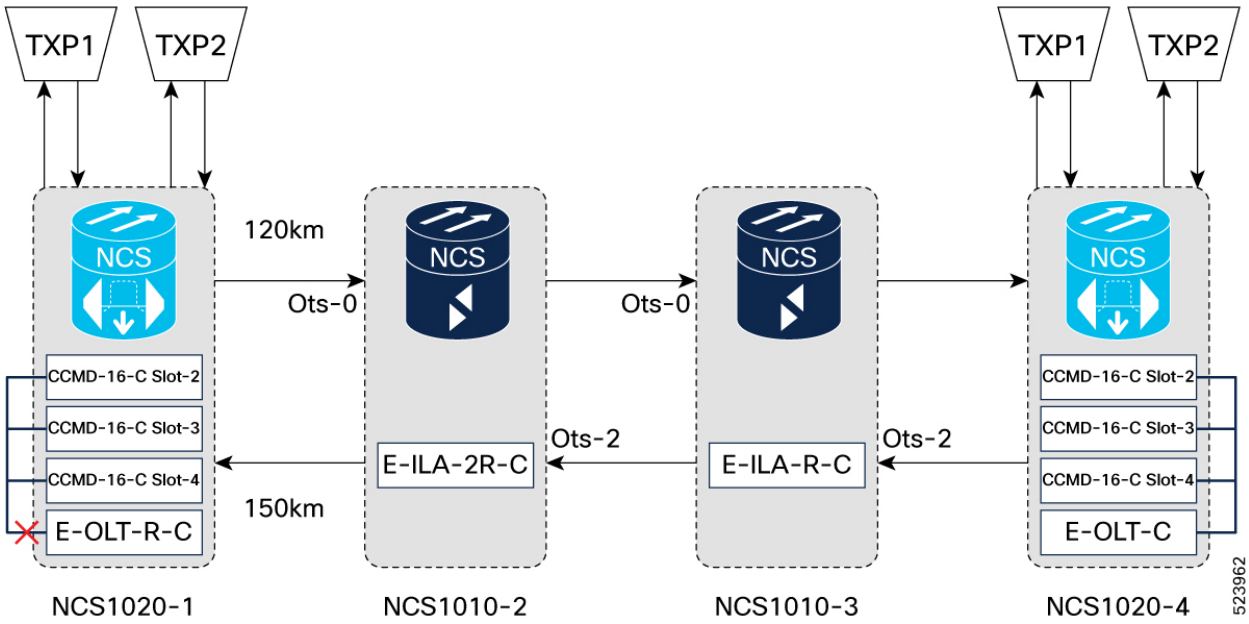
NODE	Active Alarms	Ports where alarms are raised	Suppressed Alarms	Ports where alarms are suppressed
NCS1020 – 2 (ots - 0)	• Rx-LOC • EGRESS-AUTO-LASER-SHUT • Raman-AUTO-LASER-SHUT • APC-BLOCKED-TX • RAMAN-TUNE-FAILED	Line OTS 0/0/0/0	Rx-LOS-P	• Line OTS 0/0/0/0 • DFB 0/0/0/0 • OSC 0/0/0/0 • OTS-OCH 0/0/0/x x is channel id
			TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/0/channel
NCS1020 – 2 (ots - 2)	• EGRESS-AUTO-LASER-SHUT • APC-BLOCKED-TX	Line OTS 0/0/0/2	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/2/channel
NCS1020 – 3 (ots - 0)	Rx-LOS-P	Line OTS 0/0/0/0	Rx-LOS-P	OTS-OCH 0/0/0/0/x x is channel id
NCS1020 – 3 (ots - 2)	• EGRESS-AUTO-LASER-SHUT • APC-BLOCKED-TX	Line OTS 0/0/0/2	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/2/channel
NCS1020 – 4	• INGRESS-AUTO-LASER-SHUT • APC-BLOCKED-RX • Rx-LOS-P	Line OTS 0/0/0/0	Rx-LOS-P	OTS-OCH 0/0/0/0/x x is channel id
	TX-POWER-FAIL-LOW	OTS-OCH 0/0/0/com-port/channel		
NCS1020	Rx-LOS-P	OMS 0/0/slot/0		

Fiber Cut Between CCMD and OLT

When a fiber cut occurs between CCMD and OLT, alarms are raised and suppressed at the respective ports of each node.

The following figure displays fiber cut between CCMD and OLT:

Figure 5: Fiber Cut Between CCMD and OLT



The following table lists the alarms that are raised and suppressed at the respective ports of each node:

Table 4: Active and Suppressed Alarms

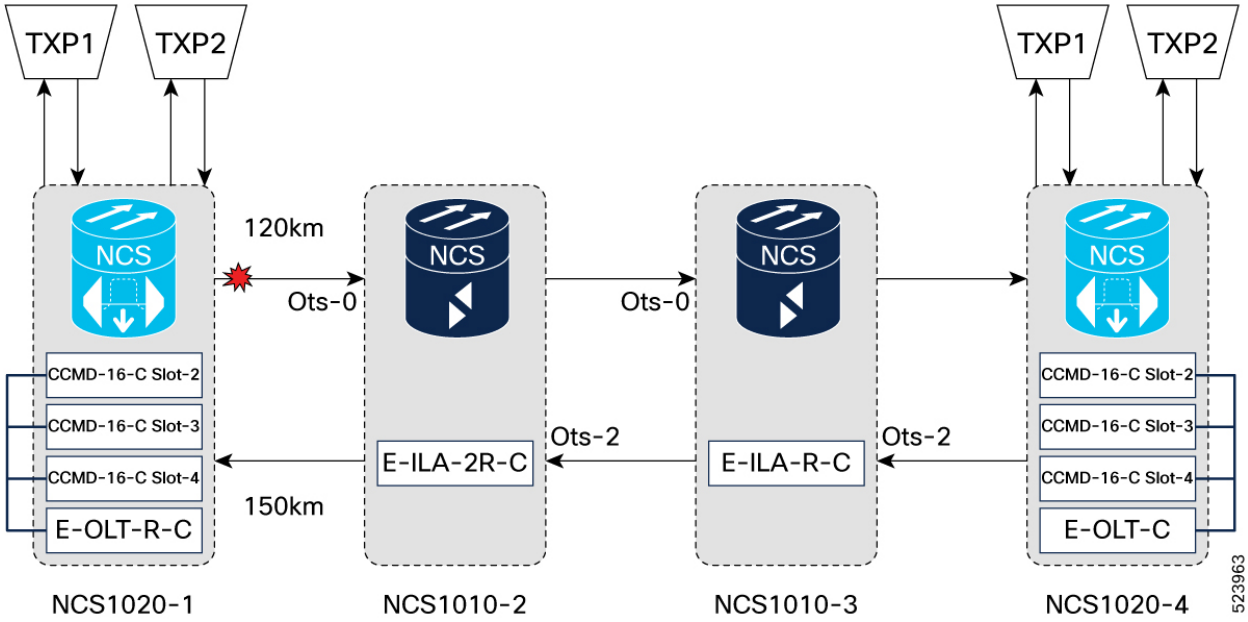
Condition	NODE	Active Alarms	Ports where alarms are raised	Suppressed Alarms	Ports where alarms are suppressed
CCMD Rx Fiber Cut	NCS1020	Rx-LOS-P	OMS 0/0/slot/0		
CCMD Tx Fiber Cut	NCS1020 - 1	Rx-LOS-P	Line OTS 0/0/0/x x is a com port	Rx-LOS-P	OTS-OCH 0/0/0/x/y x is com port y is channel id
		CHANNEL-NOISE-LOADED	OTS-OCH 0/0/0/0/y y is channel id		

High Back Reflection Condition on Line Tx Port

When there is a high back reflection condition on the line Tx port, Egress EDFA goes into Automatic Power Reduction (APR) mode, and alarms are raised at the respective ports of each node.

The following figure displays high back reflection condition on the line Tx port:

Figure 6: High Back Reflection Condition on the Line Tx port



The following table lists the alarms that are raised at the respective ports of each node:

Table 5: Active Alarms

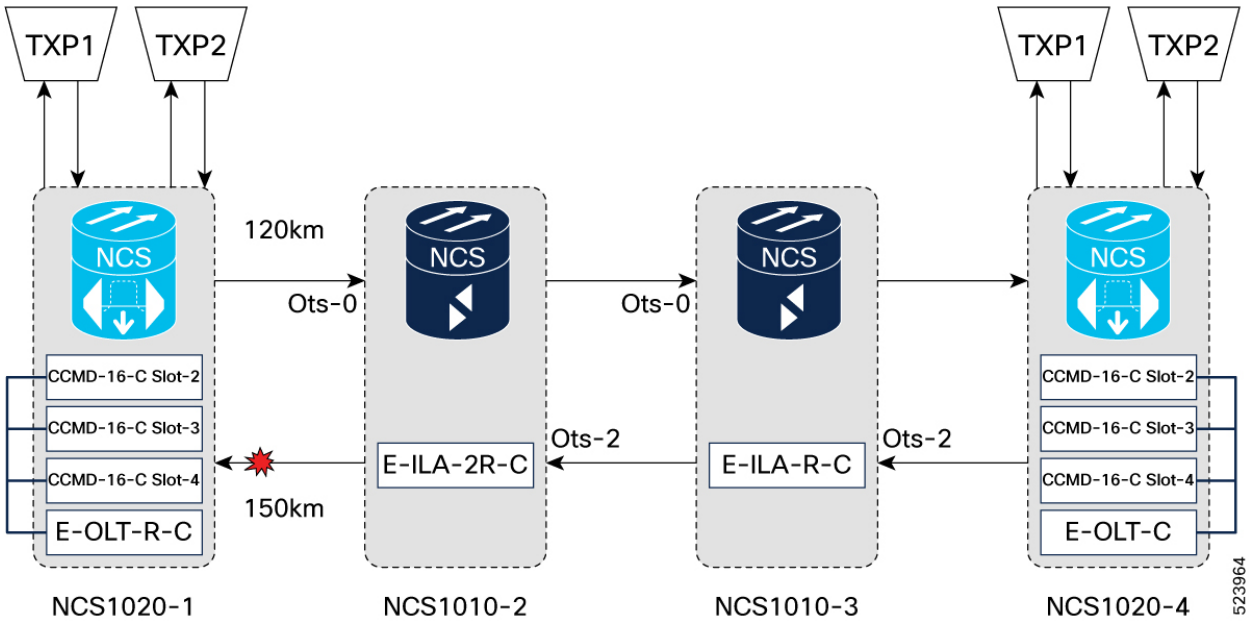
NODE	Active Alarms	Ports where alarms are raised
NCS1020 - 1	• TX-POWER-FAIL-LOW • High-TX-BR-PWR • APC-BLOCKED-TX	Line OTS 0/0/0/0
NCS1020 – 2 (ots - 2)	APC-TARGET-PSD-NOT-MET-TX	Line OTS 0/0/0/2
NCS1020 – 3 (ots - 2)	APC-TARGET-PSD-NOT-MET-TX	Line OTS 0/0/0/2
NCS1020 – 4	APC-TARGET-PSD-NOT-MET-RX	Line OTS 0/0/0/0

High Back Reflection Condition on Line Rx RAMAN Port

When there is a high back reflection on the Line Rx Raman port, RAMAN pumps goes into Automatic Power Reduction (APR) mode, and alarms are raised at the respective ports of each node.

The following figure displays high back reflection condition on the line Rx RAMAN port:

Figure 7: High Back Reflection Condition on the Line Rx RAMAN Port



The following table lists the alarms that are raised at the respective ports of each node:

Table 6: Active Alarms

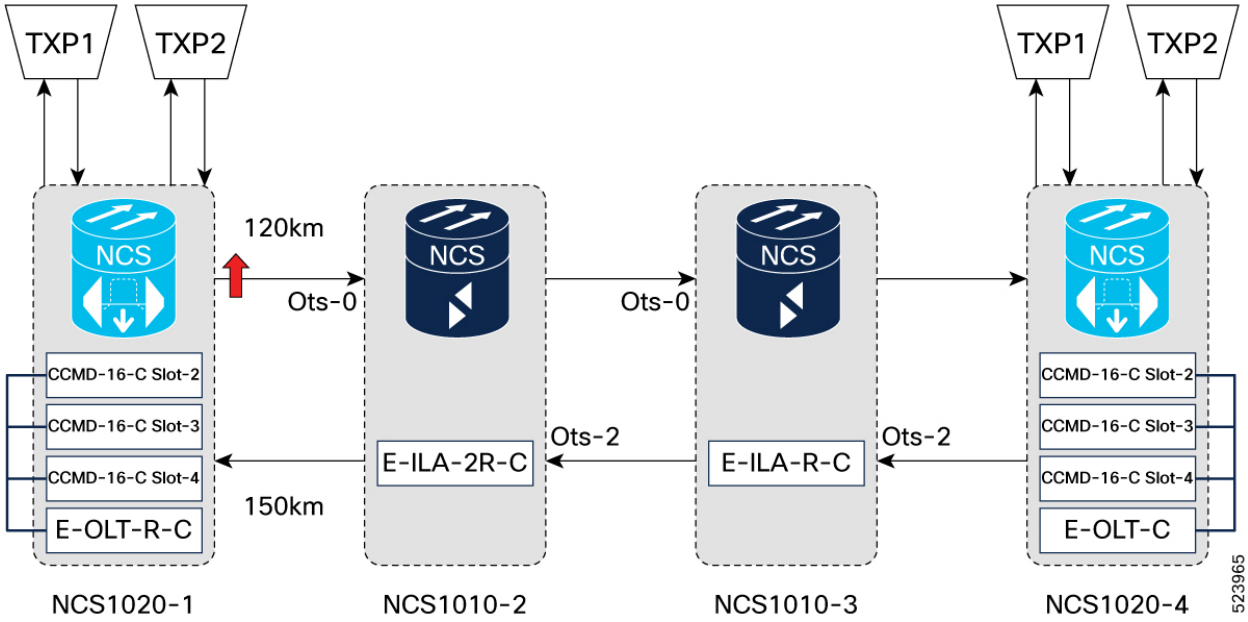
NODE	Active Alarms	Ports where alarms are raised
NCS1020	Rx-LOS-P	OMS 0/0/x/0 x is slot id
NCS1020 - 1	• High-RX-BR-PWR • APC-OUT-OF-RANGE-RX • RT- BLOCKED	Line OTS 0/0/0/0

High Span Loss on Line Tx Port

When high span loss occurs on the line Tx port, alarms are raised at the respective ports of each node.

The following figure displays high span loss on line Tx port:

Figure 8: High span loss on Line Tx Port



The following table lists the alarms that are raised at the line Tx port:

Table 7: Active Alarms

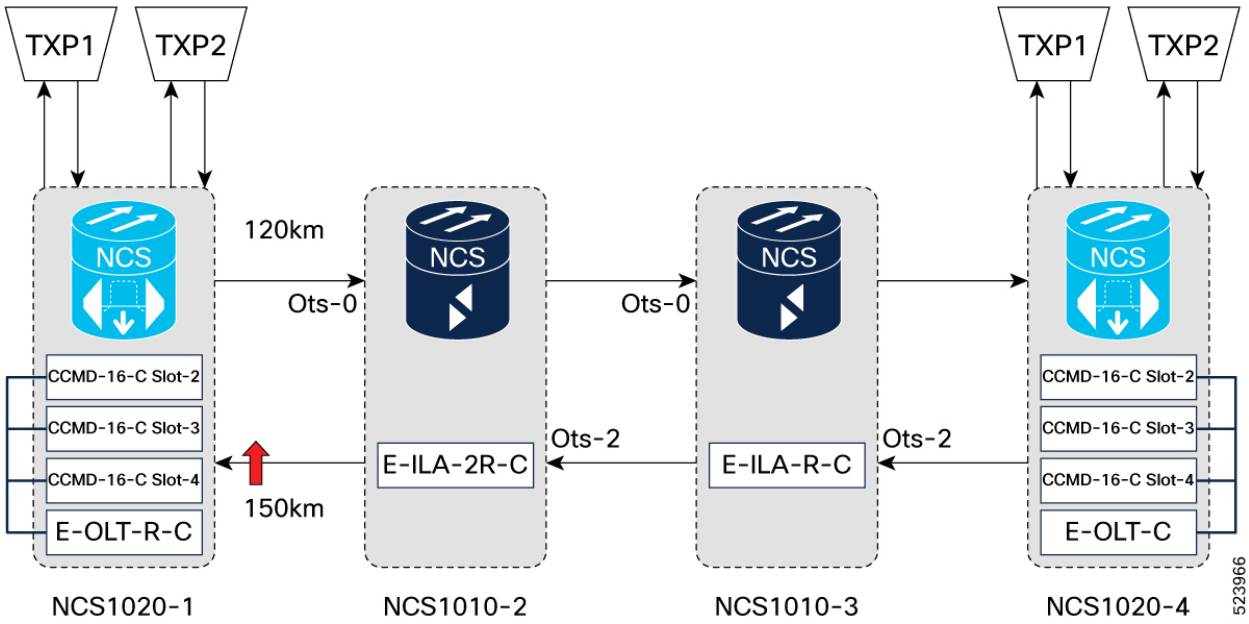
NODE	Active Alarms	Ports where alarms are raised
NCS1020 – 2 (ots - 0)	Span Loss Value Out Of Range	Line OTS 0/0/0/0
NCS1020 – 2 (ots - 2)	APC-OUT-OF-RANGE-TX	Line OTS 0/0/0/2

High Span Loss on Line Rx Port

When high span loss occurs on the line Rx, alarms are raised at the respective ports of each node.

The following figure displays high span loss on the line Rx port:

Figure 9: High span loss on Line Rx port



The following table lists the alarms that are raised at the line Rx port:

Table 8: Active Alarms

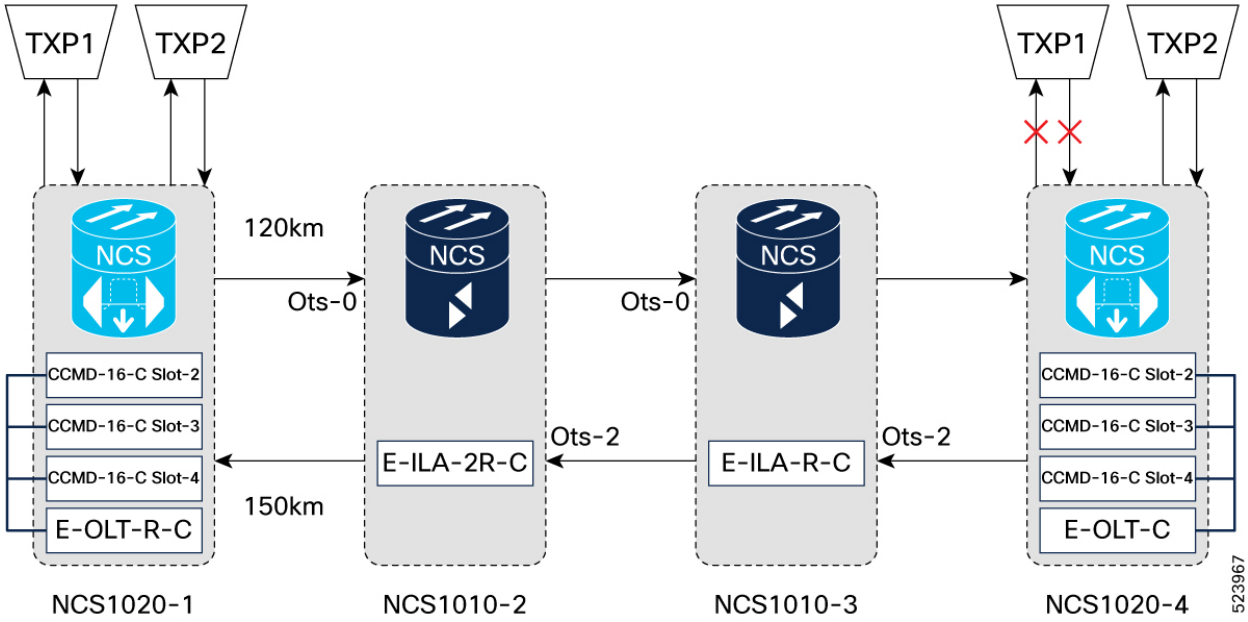
NODE	Active Alarms	Ports where alarms are raised
NCS1020 - 1	• Span Loss Value Out Of Range • APC-BLOCKED-RX	Line OTS 0/0/0/0

Single Channel Failure due to Bidirectional Fiber Cut on Line

When there is a bidirectional fiber cut on the line, single channel failure occurs, and alarms are raised at each node's port.

The following figure displays single channel failure due to bidirectional fiber cut on line:

Figure 10: Single Channel Failure due to Bidirectional Fiber Cut on Line



The following table lists the alarms that are raised at the respective ports of each node:

Table 9: Active Alarms

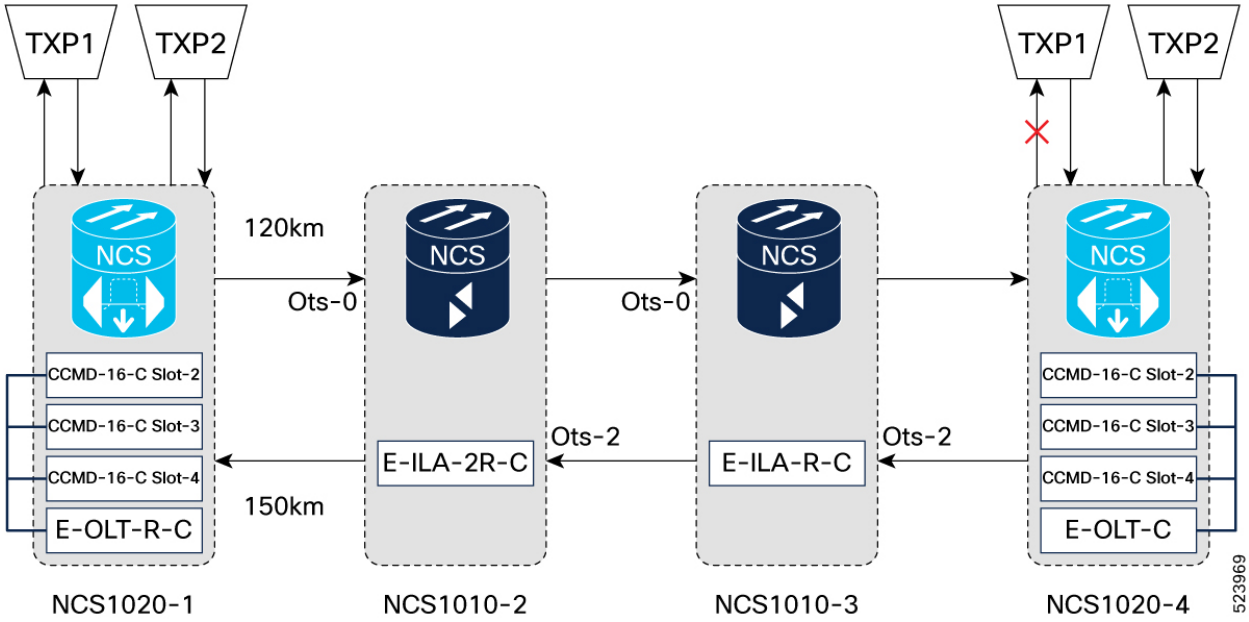
NODE	Active Alarms	Ports where alarms are raised
NCS1020 - 4	Rx-LOS-P	OTS-OCH 0/0/0/x/y x is com port y is channel number
	CHANNEL-NOISE-LOADED	OTS-OCH 0/0/0/0/y y is channel id
NCS1020 - 1	Rx-LOS-P	OCH 0/0/0/x/y x is slot id y is port number

Single Channel Failure due to Unidirectional Fiber Cut at TXP-Tx

When there is a unidirectional fiber cut at TXP-Tx, single channel failure occurs, and alarms are raised at each node's port.

The following figure displays single channel failure due to unidirectional fiber cut at TXP-Tx:

Figure 11: Single Channel Failure due to Unidirectional Fiber Cut at TXP-Tx



The following table lists the alarms that are raised at the respective ports of each node:

Table 10: Active Alarms

NODE	Active Alarms	Ports where alarms are raised
NCS1020 - 4	Rx-LOS-P	OTS-OCH 0/0/0/x/y x is com port y is channel number
	CHANNEL-NOISE-LOADED	OTS-OCH 0/0/0/0/y y is channel id
NCS1020	Rx-LOS-P	OCH 0/0/x/y x is slot id y is port number

Single Channel Failure due to Unidirectional Fiber Cut at TXP-Rx

When there is a unidirectional fiber cut at TXP-Rx, a single channel failure occurs, and no alarms are raised at each node's port.

The following figure displays single channel failure due to unidirectional fiber cut at TXP-Rx:

Figure 12: Single Channel Failure due to Unidirectional Fiber Cut at TXP-Tx

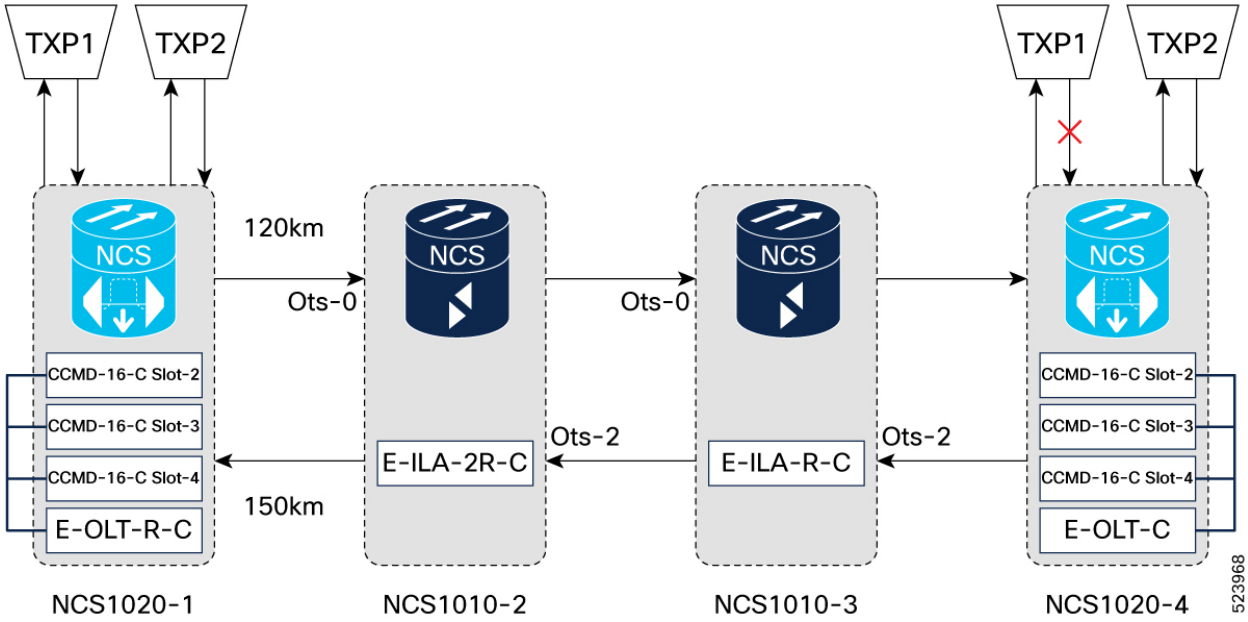


Table 11: Alarms

NODE	Active Alarms
NCS1020 - 4	No Alarm
NCS1020	No Alarm