



## **Troubleshooting Guide for Cisco NCS 1010, IOS XR Release 7.10.x**

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# CHAPTER 1

## Troubleshooting of Infrastructure Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered Cisco NCS 1010 infrastructure alarm and condition. When an alarm is raised, refer to its clearing procedure.

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- [UPGRADE\\_LICENSE\\_GRACE\\_PERIOD\\_REMAINING](#), on page 15
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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

---

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).

---

## DISASTER\_RECOVERY\_UNAVAILABLE\_ALARM

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

Logical Object: Instorch

The DISASTER\_RECOVERY\_UNAVAILABLE\_ALARM is raised when the chassis SSD image is corrupted or system is running with a software not committed.

### Clear the Disaster Recovery Unavailable Alarm

---

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 1010 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).

---

## 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

---

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

---

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

---

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

---

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

---

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 switch configuration fails.

## Clear the SWITCH\_CFG\_INIT\_ERR\_E Alarm

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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 1010 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).

---

## 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

---

- 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).

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## NODE-UNPAIRED-FROM-BAND-PARTNER NODE Alarm

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

Logical Object: OTS Controller

The NODE-UNPAIRED-FROM-AND-PARTNER-NODE alarm is raised when:

- The interlink management port is shut, and cable between C and L band is disconnected.
- 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 NODE-UNPAIRED-FROM-BAND-PARTNER-NODE Alarm

This alarm gets cleared when:

- The cable between C and L band is connected and the interlink management port is brought up.
- The OLC partner band configuration is removed from the alarmed node.

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).

## OPTICAL-MOD-ABSENT

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

Logical Object: Phy1\_mgmt

The Optical-Mod-Absent alarm is raised when:

- line card is not inserted properly or is removed from the chassis.

## Clear the Optical MOD Absent Alarm

To clear this alarm, perform the following steps:

## SUMMARY STEPS

1. Follow the procedure [Remove and Replace Line Card](#) to reinsert the line card and connect the fan.
2. The alarm clears automatically once the LC reload is complete.

## DETAILED STEPS

---

**Step 1** Follow the procedure [Remove and Replace Line Card](#) to reinsert the line card and connect the fan.

**Step 2** The alarm clears automatically once the LC reload is complete.

---

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).

# 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

---

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).

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# PID-MISMATCH

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

Logical Object: SPI-ENVMON

The PID-MISMATCH alarm is raised when one AC and one DC PSU are connected.

## Clear the PID-MISMATCH Alarm

---

To clear this alarm, ensure that both connected PSU's are either AC or DC.

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

---

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

---

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).

---

## SIA\_GRACE\_PERIOD\_REMAINING

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

Logical Object: plat\_sl\_client

The SIA\_GRACE\_PERIOD\_REMAINING alarm is raised when a software innovation access(SIA) upgrade is allowed in the SIA upgrade license grace period is remaining.

### Clear SIA Grace Period Remaining

#### SUMMARY STEPS

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

#### DETAILED STEPS

---

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

#### SUMMARY STEPS

1. This alarm is cleared when the SIA licences are purchase.

## DETAILED STEPS

---

This alarm is cleared when the SIA licences are purchase.

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).

---

# TEMPERATURE

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

Logical Object: SPI-ENVMON

The TEMPERATURE alarm is raised when the ambient temperature raises above 30 degrees because of any of the following reasons:

- One or more fans stops working.
- Inadequate airflow.

## Clear the TEMPERATURE Alarm

---

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.

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.

## 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.

## 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

---

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).

---





## CHAPTER 2

# Troubleshooting of Data Path Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered Cisco NCS 1010 data path alarm and condition. When an alarm is raised, refer to its clearing procedure.

- [EGRESS-AMPLI-GAIN-HIGH](#), on page 17
- [EGRESS-AMPLI-GAIN-LOW](#), on page 18
- [EGRESS-AUTO-LASER-SHUT](#), on page 19
- [EGRESS-AUTO-POW-RED](#), on page 19
- [HIGH-RX-BR-PWR](#), on page 19
- [HIGH-TX-BR-PWR](#), on page 20
- [INGRESS-AMPLI-GAIN-HIGH](#), on page 20
- [INGRESS-AMPLI-GAIN-LOW](#), on page 21
- [INGRESS-AUTO-LASER-SHUT](#), on page 21
- [INGRESS-AUTO-POW-RED](#), on page 22
- [RAMAN-AUTO-LASER-SHUT](#), on page 22
- [RAMAN-AUTO-POW-RED](#), on page 23
- [RAMAN-\[1-5\]-HIGH-PWR](#), on page 23
- [RAMAN-\[1-5\]-LOW-PWR](#), on page 24
- [RX-LOC](#), on page 24
- [RX-LOS-P](#), on page 25
- [SPAN-TOO-SHORT-RX](#), on page 25
- [SPAN-TOO-SHORT-TX](#), on page 26
- [TD-FAILED](#), on page 26
- [TD-INPROGRESS](#), on page 27
- [TD-SUCCESS](#), on page 27
- [TG-INPROGRES](#), on page 27
- [TX-POWER-FAIL-LOW](#), on page 28

## 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

---

- Step 1** Adjust the gain setting to a correct value between +30 and +400 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

---

- Step 1** Adjust the gain setting to a correct value between +30 and +400 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

---

**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

---

**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 ingress port due to a poor fiber connection.

## Clear the HIGH-RX-BR-PWR Alarm

---

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 1010 and Cisco NCS 1000 Passive Modules* 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).

---

## 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

---

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 1010 and Cisco NCS 1000 Passive Modules* 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).

---

## 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

---

**Step 1** Adjust the ingress amplification gain to a correct value between +80 and +400 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

---

**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

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

## Clear the INGRESS-AUTO-LASER-SHUT Alarm

---

**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

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

---

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

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

---

## 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

---

**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 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

---

- 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

---

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

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	<ul style="list-style-type: none"> <li>• DFB</li> <li>• OSC</li> <li>• OTS</li> <li>• Line OTS-OCH</li> </ul>	Line RX
TX-POWER-FAIL-LOW	<ul style="list-style-type: none"> <li>• OTS</li> <li>• OTS-OCH</li> </ul>	LINE TX
RX-LOS-P	OTS-OCH	Line RX



## Clear the RX-LOC Alarm

---

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

---

**Step 1** Check and adjust the threshold setting between -400 to +400 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

---

**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

---

**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

---

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

---

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

---

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

---

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

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

---

- Step 1** Check if the threshold settings are between -1 dBm to -40 dBm using the **show controllers ots R/S/I/P** command.
- Step 2** Check if the corresponding receiving 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).

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## CHAPTER 3

# Troubleshooting of Optical Application Alarms

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered Cisco NCS 1010 optical application alarm and condition. When an alarm is raised, refer to its clearing procedure.

- [APC-BLOCKED-RX](#), on page 29
- [APC-BLOCKED-TX](#), on page 30
- [APC-OUT-OF-RANGE-TX](#), on page 31
- [APC-OUT-OF-RANGE-RX](#), on page 31
- [APC-PARTIAL-TOPOLOGY](#), on page 32
- [RAMAN-TUNE-FAILED](#), on page 33
- [RAMAN\\_TUNE\\_GAIN\\_UNREACHABLE](#), on page 33
- [RAMAN-TUNE-IN-PROGRESS](#), on page 34
- [SPAN-LOSS-OUT-OF-RANGE](#), on page 34

## 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** 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** 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).



## RAMAN-TUNE-FAILED

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

Logical Object: OTS Controller

The RAMAN-TUNE-FAILED alarm is raised when Raman tuning is blocked due to:

- Raman tuning turns the Raman pumps off and goes into blocked state because of high Raman back reflection (BR).

If peer nodes are unreachable due to span down, OSC fail, DFB fail and High Availability events like powercycle and card cold reload. Raman tuning requires communication between peer nodes to run.

### Clear the RAMAN-TUNE-FAILED Alarm

This alarm gets cleared when:

- Clear the high BR by cleaning the fiber and port, and reconnect the fiber to the port. When BR is at acceptable levels, the system triggers Raman tuning and turns the Raman pumps on which in turn clears the alarm.
- Check the OSPF neighbors are established using the **show ospf neighbor** command. When OSPF neighbors are established, Raman Tuning is started automatically and completes calibration.

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\_TUNE\_GAIN\_UNREACHABLE

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

Logical Object: OTS Controller

The RAMAN-TUNE-GAIN-UNREACHABLE alarm is raised when Raman Tuner is unable to achieve the target gain set by the user or algorithm.

### Clear the RAMAN\_TUNE\_GAIN\_UNREACHABLE Alarm

Configure the target Raman gain to the maximum possible value. This triggers the Raman tuning with the new target gain which clears the alarm. Use the following commands to configure the target Raman gain:

```
configure  
optical-line-control  
controller ots Rack/Slot/Instance/Port  
raman-tuning raman-gain-target value  
commit  
end
```

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-TUNE-IN-PROGRESS

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

Logical Object: OTS Controller

The RAMAN-TUNE-IN-PROGRESS alarm is raised when Raman tuning is in progress.

### Clear the RAMAN-TUNE-IN-PROGRESS Alarm

This alarm is cleared automatically when any of the following conditions are met:

- Raman tuning is completed. To check the status of Raman tuning, use the **show olc raman-tuning** command.
- Raman tuning is disabled. To disable Raman tuning, use the **raman-tuning disable** 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-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.

### 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).



## CHAPTER 4

# General Troubleshooting

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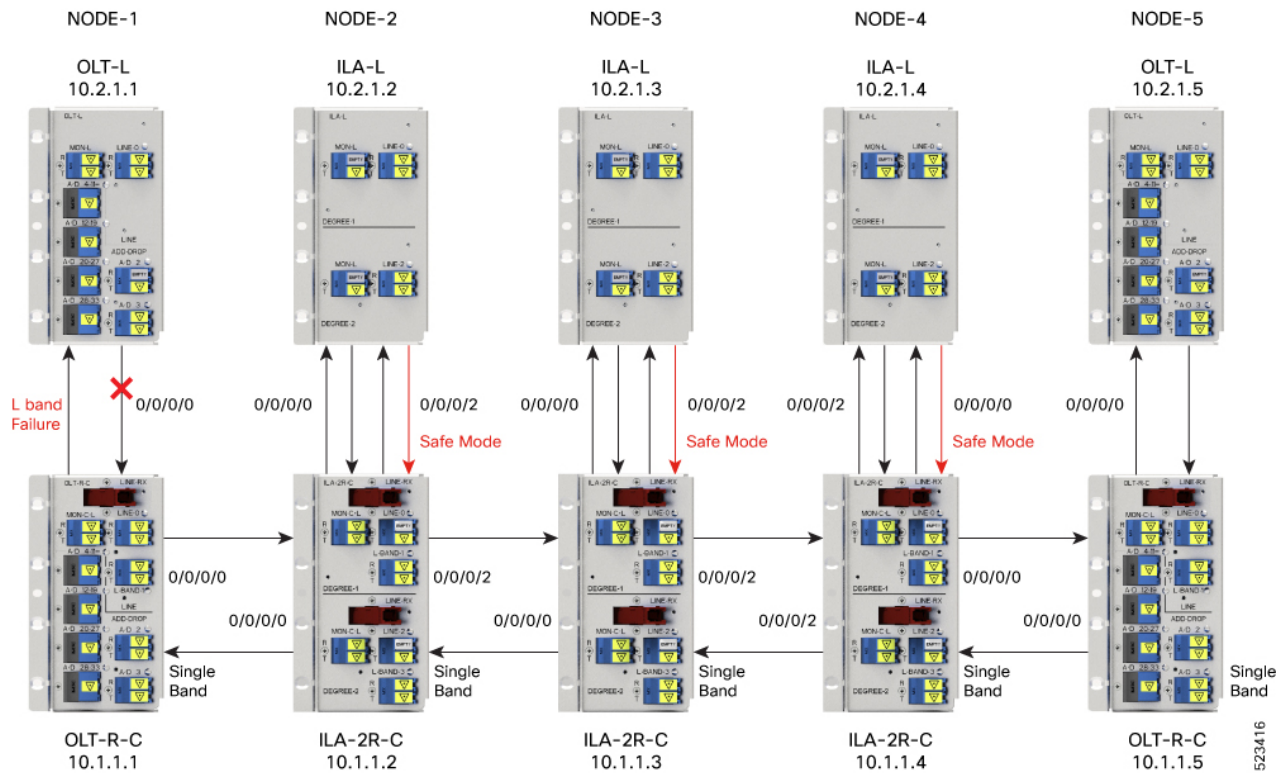
This chapter provides procedures for troubleshooting the most common problems encountered when operating the NCS 1010 chassis.

- [Troubleshooting L Band Failure on a C+L Band Network, on page 35](#)
- [Troubleshooting C Band Failure on a C+L Band Network, on page 38](#)
- [Troubleshooting Span Failure on a C+L Band Network, on page 41](#)
- [Troubleshooting RP or LC Warm Reload on a C+L Band Network, on page 44](#)
- [Troubleshooting Client-Side Failure, on page 47](#)
- [Troubleshooting Line Port SPAN Failure, on page 49](#)
- [Troubleshooting Express Connection Failure Between Two Passive Devices, on page 52](#)
- [Troubleshooting Power Oscillation in the Network, on page 54](#)

## Troubleshooting L Band Failure on a C+L Band Network

In this section, we will troubleshoot L band failure due to connectivity failure between OLT-C and OLT-L nodes. To troubleshoot L-band failure on a C+L band network, start by running the following commands on the manager nodes:

Figure 1: Example of L-band Failure



**Step 1** Run the `show olc band-status` command on node 10.2.1.1.

**Example:**

The following command example shows the status of all the L-band nodes as FAILED which indicates that the issue is between the L-band devices of nodes 10.2.1.1 and 10.2.1.2.

```
RP/0/RPO/CPU0#show olc band-status
Fri Dec 16 03:02:07.304 UTC

Controller          : Ots0/0/0/0
Self-Band           : C-Band
BFR status          : Running

Node RID            : 10.2.1.1
Self IP Address     : 192.0.2.1
Self Controller     : Ots0/0/0/0
Partner IP address  : 192.0.2.2
Partner Controller  : Ots0/0/0/0
Partner link status : UP
C-Band status       : ACTIVE
C-Band PSD          : Single Band
L-Band status      : FAILED
L-Band PSD          : NA

Node RID            : 10.2.1.2
Self IP Address     : 198.51.100.1
Self Controller     : Ots0/0/0/0
Partner IP address  : 198.51.100.2
Partner Controller  : Ots0/0/0/2
```

```

Partner link status      : UP
C-Band status           : ACTIVE
C-Band PSD              : Single Band
L-Band status         : FAILED
L-Band PSD              : NA

Node RID                : 10.2.1.3
Self IP Address         : 203.0.113.1
Self Controller         : Ots0/0/0/0
Partner IP address     : 203.0.113.2
Partner Controller     : Ots0/0/0/2
Partner link status    : UP
C-Band status           : ACTIVE
C-Band PSD              : Single Band
L-Band status         : FAILED
L-Band PSD              : NA

Node RID                : 10.2.1.4
Self IP Address         : 209.165.200.225
Self Controller         : Ots0/0/0/0
Partner IP address     : 209.165.200.226
Partner Controller     : Ots0/0/0/0
Partner link status    : UP
C-Band status           : ACTIVE
C-Band PSD              : Single Band
L-Band status         : FAILED
L-Band PSD              : NA

Node RID                : 10.2.1.5
Self IP Address         : 209.165.201.1
Self Controller         : Ots0/0/0/0
Partner IP address     : 209.165.201.2
Partner Controller     : Ots0/0/0/0
Partner link status    : UP
C-Band status           : ACTIVE
C-Band PSD              : Single Band
L-Band status         : FAILED
L-Band PSD              : NA

```

All the network failure conditions might not reflect in the **show olc band-status** command output. Proceed to the next step to troubleshoot further.

Based on the above output, it appears that all of the C band nodes are currently active, indicating that the span has not been impacted.

**Step 2** Run the **show olc apc** command on node 10.2.1.1.

**Example:**

The following example shows the APC status as **BLOCKED** with the *Blocked Reason* as **PARTIAL-TOPOLOGY**. As the APC manager discovers only node 10.2.1.1 and the rest nodes are not discovered. This clearly indicates that the neighbour node of 10.2.1.1 is not reachable. This indicates hence connectivity failure is between the OLT-C node 10.1.1.1 and OLT-L node 10.1.1.2.

```

RP/0/RP0/CPU0:P1BL_DT_07#show olc apc
Mon Dec 26 09:32:23.624 UTC

Controller      : Ots0/0/0/0
APC Status      : BLOCKED
Blocked Reason : [ PARTIAL-TOPOLOGY NODE-BLOCKED ]

Node RID       : 10.2.1.1

```

```
Internal State : BLOCKED
Blocked Reason : [ AMPLI-SHUT ]
```

**Step 3** Run the **show alarms brief system active** command.

**Example:**

The following example shows the *Loss Of Continuity* alarm which confirms the fiber failure between the the OLT-L node 10.2.1.1 and ILA-L node 10.2.1.2.

```
RP/0/RP0/CPU0:P1BL_DT_07#show alarms brief system active
```

```
0/0/NXR0      Minor      Software      12/26/2022 09:27:47 UTC    Ots0/0/0/0 - APC Partial
topology

0/0           Major      Ethernet      12/26/2022 09:27:47 UTC    GigabitEthernet0/0/0/0 -
Loss of Synchronization The Data Interface

0/0/NXR0      Minor      Software      12/26/2022 09:32:15 UTC    Ots0/0/0/0 - APC blocked

0/0           Critical   Controller    12/26/2022 09:32:16 UTC    Ots0/0/0/0 - Loss Of Continuity

0/0           Not Alarmed Controller    12/26/2022 09:32:16 UTC    Ots0/0/0/0 - Egress Amplifier
OFF for Safety Reasons
```

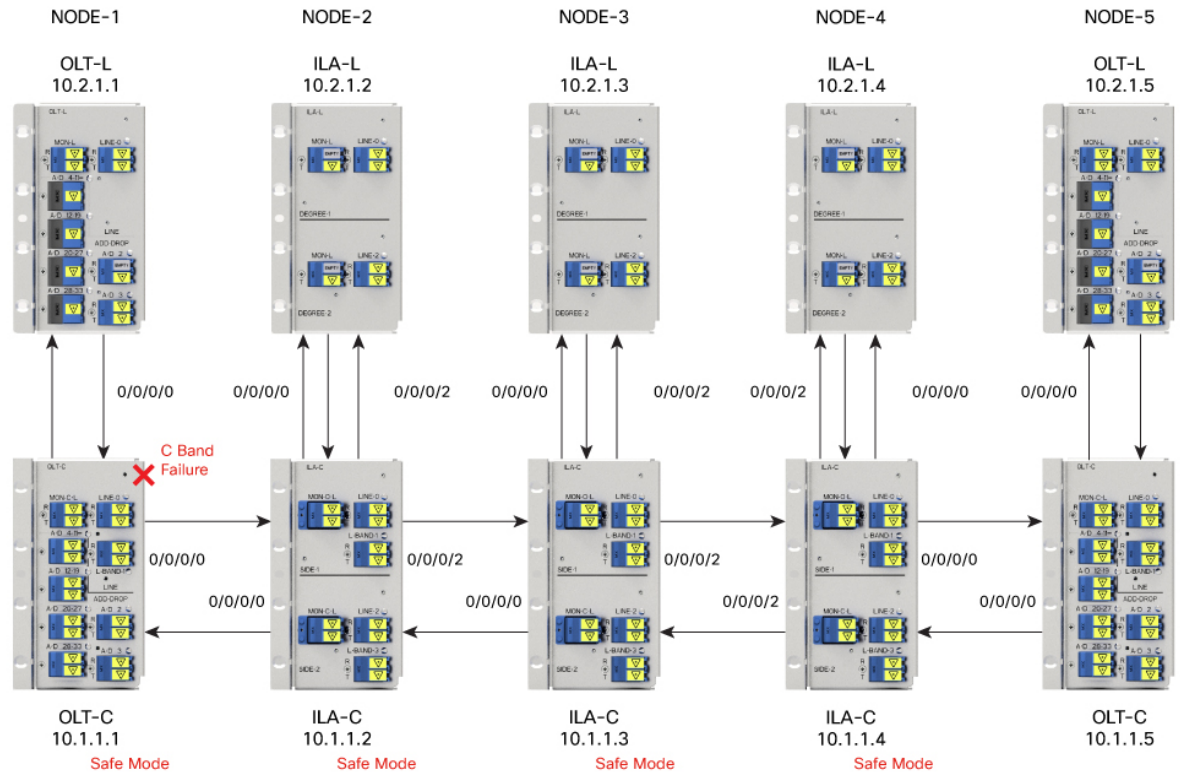
---

Hence, from steps 2 and 3 outputs, we can conclude that the connectivity failure is between the OLT-L node 10.2.1.1 and ILA-L node 10.2.1.2, and the *Loss Of Continuity* alarm confirms the fiber failure between the nodes 10.2.1.1 and 10.2.1.2.

## Troubleshooting C Band Failure on a C+L Band Network

In this section, we will troubleshoot C band failure due to amplifier shutdown or failure. To troubleshoot C-band failure on a C+L band network, start by running the following commands on the manager nodes in the same order:

Figure 2: Example of C-band Failure on a C+L Band Network



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**Step 1** Run the `show olc band-status` command on node 10.1.1.1.

**Example:**

The following command example shows the status of all the C-band nodes as FAILED which indicates that the issue is between the C-band devices of nodes 10.1.1.1 and 10.1.1.2.

```
RP/0/RP0/CPU0:#sh olc band-status
Tue Feb  7 13:37:38.618 UTC

Controller          : Ots0/0/0/0
Self-Band           : C-Band
BFR status          : Running

Node RID            : 10.1.1.1
Self IP address     : 10.9.1.1
Self Controller     : Ots0/0/0/0
Partner IP address  : 192.0.2.1
Partner Controller  : Ots0/0/0/0
Partner link status : UP
C-Band status      : FAILED
C-Band PSD         : NA
L-Band status      : ACTIVE
L-Band PSD         : Single Band

Node RID            : 10.1.1.2
Self IP address     : 192.0.2.8
Self Controller     : Ots0/0/0/2
Partner IP address  : 192.0.2.2
Partner Controller  : Ots0/0/0/2
```

```

Partner link status      : UP
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status           : ACTIVE
L-Band PSD              : Single Band

Node RID                 : 10.1.1.3
Self IP address          : 198.51.100.1
Self Controller          : Ots0/0/0/2
Partner IP address       : 192.0.2.3
Partner Controller       : Ots0/0/0/2
Partner link status      : UP
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status           : ACTIVE
L-Band PSD              : Single Band

Node RID                 : 10.1.1.4
Self IP address          : 203.0.113.1
Self Controller          : Ots0/0/0/0
Partner IP address       : 192.0.2.4
Partner Controller       : Ots0/0/0/0
Partner link status      : UP
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status           : ACTIVE
L-Band PSD              : Single Band

Node RID                 : 10.1.1.5
Self IP address          : 209.165.200.225
Self Controller          : Ots0/0/0/0
Partner IP address       : 192.0.2.5
Partner Controller       : Ots0/0/0/0
Partner link status      : UP
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status           : ACTIVE
L-Band PSD              : Single Band

```

All the network failure conditions might not reflect in the **show olc band-status** command output. Proceed to the next step to troubleshoot further.

**Step 2** Run the **show olc apc** command on node 10.1.1.1.

**Example:**

The following command output shows APC status of Manager node as NODE-BLOCKED. As the APC manager shows the *Blocked Reason* of the agent node 10.1.1.1 as AMPLI-SHUT, it clearly indicates that amplifier is set to OFF state between the manager node 10.1.1.1 and the agent node 10.1.1.2.

```

RP/0/RP0/CPU0:# show olc apc
Tue Feb  7 13:37:40.146 UTC

Controller      : Ots0/0/0/0
APC Status      : BLOCKED
Blocked Reason  : [ NODE-BLOCKED ]

Node RID        : 10.1.1.1
Internal State  : BLOCKED
Blocked Reason  : [ AMPLI-SHUT ]

Node RID        : 10.1.1.2
Internal State  : BLOCKED
Blocked Reason  : [ BAND-FAILURE ]

```



```
Node RID      : 10.1.1.3
Internal State : BLOCKED
Blocked Reason : [ BAND-FAILURE ]

Node RID      : 10.1.1.4
Internal State : BLOCKED
Blocked Reason : [ BAND-FAILURE ]

Node RID      : 10.1.1.5
Internal State : BLOCKED
Blocked Reason : [ AMPLI-SHUT ]
```

**Step 3** Run the **show alarms brief system active** command.

**Example:**

The following example shows APC output as BLOCKED but without any partial topology alarm which indicates that the span is intact.

```
RP/0/RP0/CPU0:#show alarms b s a
```

```
0/0/NXR0      Minor      Software      02/07/2023 13:37:16 UTC      Ots0/0/0/0 - APC blocked
```

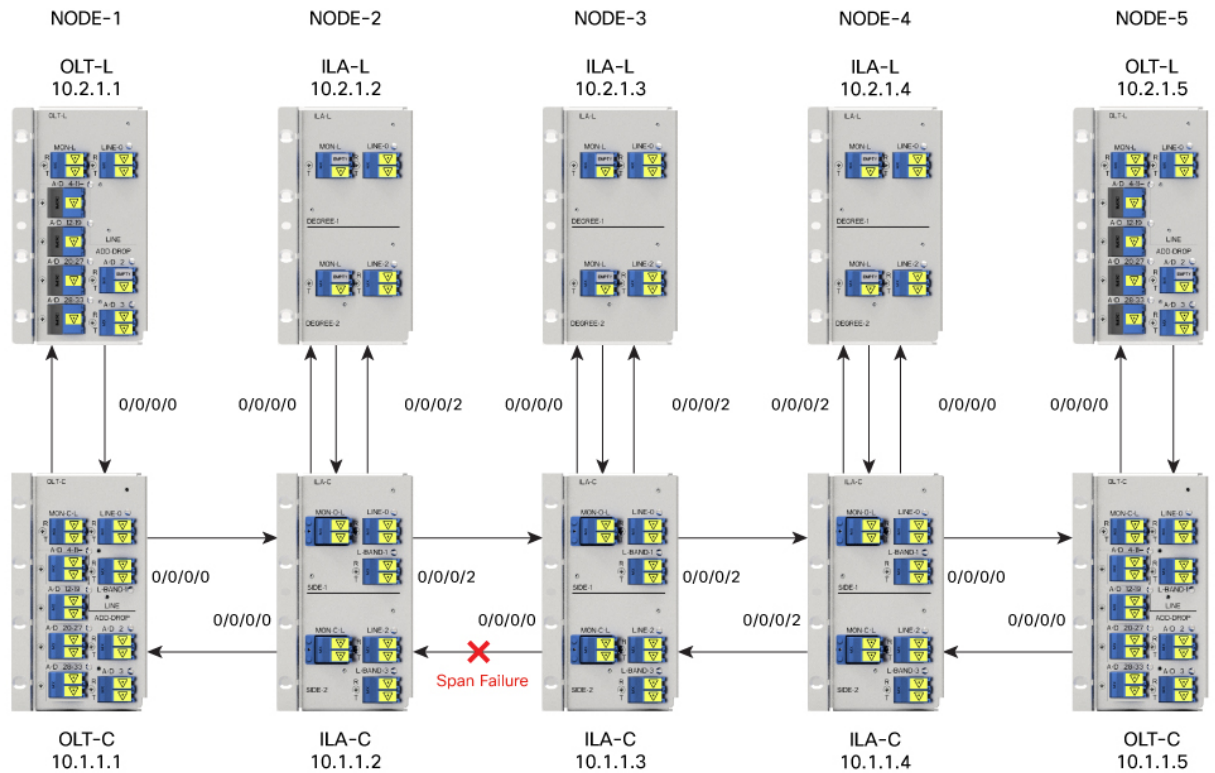
---

Based on the analysis of steps 2 and 3 we can conclude that the amplifier between the manager node 10.1.1.1 and the agent node 10.1.1.2 is shut down which has caused the C-band 10.1.1.1 to fail.

## Troubleshooting Span Failure on a C+L Band Network

To troubleshoot span failure on a C+L band network, start by running the following commands on the manager nodes in the same order:

Figure 3: Example of Span Failure



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**Step 1** Run the `show olc band-status` command on node 10.1.1.1.

#### Example:

The following command output shows that the C and L-band devices from the nodes 10.1.1.2 to 10.1.1.5 are FAILED, there is a possibility of span failure.

```
RP/0/RP0/CPU0:#sh olc band-status
Tue Feb  7 13:55:21.265 UTC

Controller          : Ots0/0/0/0
Self-Band           : C-Band
BFR status          : Running

Node RID            : 10.1.1.1
Self IP Address     : 192.0.2.1
Self Controller     : Ots0/0/0/0
Partner IP address  : 192.0.2.2
Partner Controller  : Ots0/0/0/0
Partner link status : UP
C-Band status       : ACTIVE
C-Band PSD          : Dual Band
L-Band status       : ACTIVE
L-Band PSD          : Dual Band

Node RID            : 10.1.1.2
Self IP address     : 198.51.100.1
Self Controller     : Ots0/0/0/2
Partner IP address  : 198.51.100.2
Partner Controller  : Ots0/0/0/2
```

```

Partner link status      : UP
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status         : FAILED
L-Band PSD              : NA

Node RID                 : 10.1.1.3
Self IP address         : 203.0.113.1
Self Controller         : Ots0/0/0/2
Partner IP address     : 203.0.113.2
Partner Controller     : Ots0/0/0/2
Partner link status    : NA
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status         : FAILED
L-Band PSD              : NA

Node RID                 : 10.1.1.4
Self IP address         : 209.165.200.225
Self Controller         : Ots0/0/0/0
Partner IP address     : 209.165.200.226
Partner Controller     : Ots0/0/0/0
Partner link status    : NA
C-Band status         : FAILED
C-Band PSD              : NA
L-Band status         : FAILED
L-Band PSD              : NA

Node RID                 : 10.1.1.5
Self IP address         : 209.165.201.1
Self Controller         : Ots0/0/0/0
Partner IP address     : 209.165.201.2
Partner Controller     : Ots0/0/0/0
Partner link status    : NA
C-Band status         : FAILED
L-Band status         : FAILED

```

All the network failure conditions might not reflect in the **show olc band-status** command output. Proceed to the next step to troubleshoot further.

**Step 2** Run the **show olc apc** command on node 10.1.1.1.

**Example:**

The following command output shows the APC status as **BLOCKED** with the reason as **PARTIAL-TOPOLOGY** on both C and L-band OLT devices. This indicates that there is a span failure.

```

RP/0/RP0/CPU0:# show olc apc

Controller      : Ots0/0/0/0
APC Status     : BLOCKED
Blocked Reason : [ PARTIAL-TOPOLOGY NODE-BLOCKED ]

Node RID       : 10.1.1.1
Internal State : IDLE

Node RID       : 10.1.1.2
Internal State : BLOCKED
Blocked Reason : [ AMPLI-SHUT ]

```

**Step 3** Run the **show alarms brief system active** command.

**Example:**

The following example shows the *Loss Of Signal* alarm which confirms the span failure.

```
RRP/0/RP0/CPU0:3#sh alarms breif system active
```

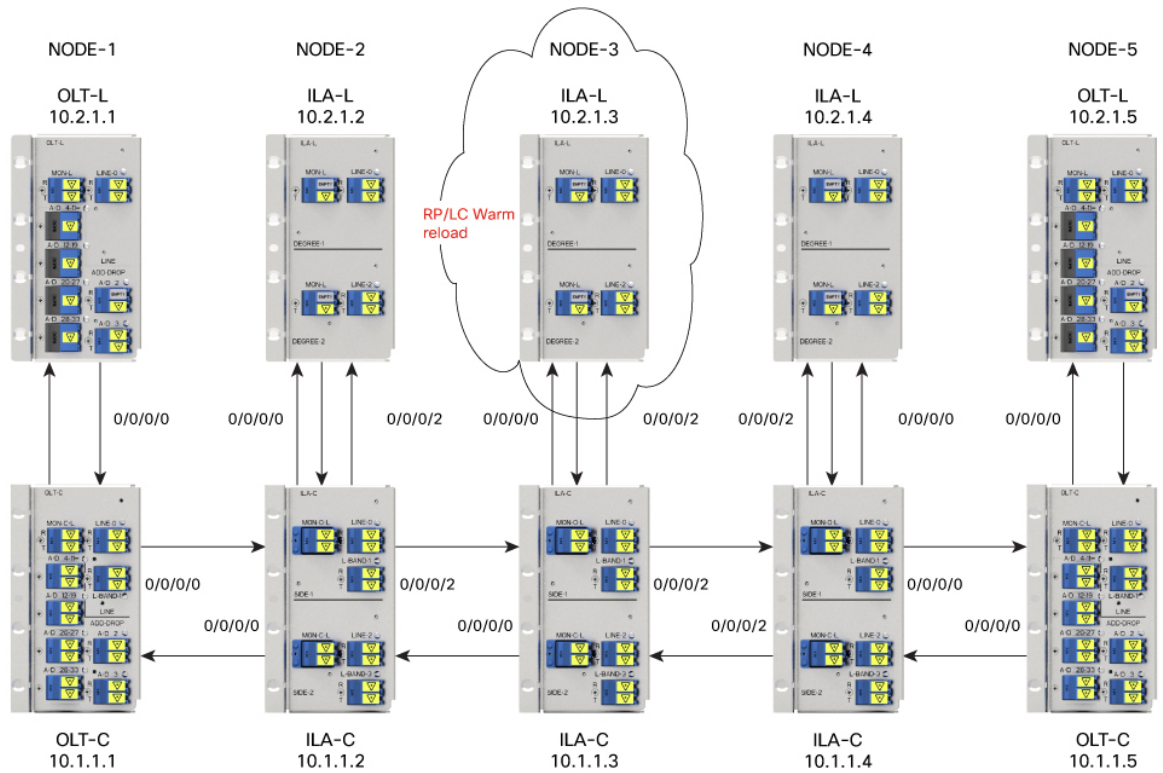
0/0/NXR0 topology	Minor	Software	02/07/2023 13:52:44 UTC	Ots0/0/0/0 - APC Partial
0/0/NXR0	Minor	Software	02/07/2023 14:01:39 UTC	Ots0/0/0/0 - APC blocked
0/0 - Payload	Critical	Controller	02/07/2023 13:55:00 UTC	Ots0/0/0/0 - Loss of Signal

Hence, from steps 2 and 3 outputs, we can conclude that the PARTIAL-TOPOLOGY status on the OLT devices and the *Loss Of Signal* alarm confirmed the span failure.

## Troubleshooting RP or LC Warm Reload on a C+L Band Network

On a C+L band network, RP or LC warm reload on a C or L band device might affect the partner band connectivity. In this case, traffic is not impacted. To troubleshoot a RP or LC warm reload on a C+L band network, following these steps:

**Figure 4: Example RP or LC Warm Reload Troubleshooting on C+L Band Network**



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**Step 1** Run the **show olc band-status** command on node 10.1.1.1.

**Example:**

The following example shows the *Partner link status* at node 10.1.1.3 is DOWN. *Partner link status* can be down due to communication failure between C and L-band devices at the node which can be due to RP reload, power cycle event or LC cold reload.

```
RP/0/RP0/CPU0:#sh olc band-status
Tue Feb  7 14:14:40.933 UTC

Controller           : Ots0/0/0/0
Self-Band            : C-Band
BFR status           : Running

Node RID             : 10.1.1.1
Self IP address      : 192.0.2.1
Self Controller      : Ots0/0/0/0
Partner IP address   : 198.51.100.2
Partner Controller   : Ots0/0/0/0
Partner link status  : UP
C-Band status        : ACTIVE
C-Band PSD           : Dual Band
L-Band status        : ACTIVE
L-Band PSD           : Dual Band

Node RID             : 10.1.1.2
Self IP address      : 192.0.2.2
Self Controller      : Ots0/0/0/2
Partner IP address   : 198.51.100.1
Partner Controller   : Ots0/0/0/2
Partner link status  : UP
C-Band status        : ACTIVE
C-Band PSD           : Dual Band
L-Band status        : ACTIVE
L-Band PSD           : Dual Band

Node RID             : 10.1.1.3
Self IP address      : 192.0.2.3
Self Controller      : Ots0/0/0/2
Partner IP address   : 203.0.113.1
Partner Controller   : Ots0/0/0/2
Partner link status : DOWN
C-Band status        : ACTIVE
C-Band PSD           : Dual Band
L-Band status        : ACTIVE
L-Band PSD           : Dual Band

Node RID             : 10.1.1.4
Self IP address      : 192.0.2.4
Self Controller      : Ots0/0/0/0
Partner IP address   : 209.165.200.225
Partner Controller   : Ots0/0/0/0
Partner link status  : UP
C-Band status        : ACTIVE
C-Band PSD           : Dual Band
L-Band status        : ACTIVE
L-Band PSD           : Dual Band

Node RID             : 10.1.1.5
Self IP address      : 192.0.2.5
Self Controller      : Ots0/0/0/0
```

```

Partner IP address      : 209.165.201.1
Partner Controller     : Ots0/0/0/0
Partner link status    : UP
C-Band status          : ACTIVE
L-Band status          : ACTIVE

```

All the network failure conditions might not reflect in the **show olc band-status** command output. Proceed to the next step to troubleshoot further.

To investigate further, run the command in step 2.

**Step 2** Run the **show olc apc** command on node 10.1.1.1 and 10.2.1.1.

**Example:**

The following command example on node 10.1.1.1 shows APC status on OLT-C device as IDLE as the APC manager discovers all the C-band nodes. This clearly indicates all the C-Band nodes are active.

```

RP/0/RP0/CPU0:#show olc apc

Controller      : Ots0/0/0/0
APC Status      : IDLE

Node RID        : 10.1.1.1
Internal State  : IDLE

Node RID        : 10.1.1.2
Internal State  : IDLE

Node RID        : 10.1.1.3
Internal State  : IDLE

Node RID        : 10.1.1.4
Internal State  : IDLE

Node RID        : 10.1.1.5
Internal State  : IDLE

```

**Example:**

The following command example on 10.2.1.1 shows APC manager discovers only nodes 10.2.1.1 and 10.2.1.2. This indicates that the L-Band device 10.2.1.3 is not reachable to the manager node 10.2.1.1.

```

RP/0/RP0/CPU0:#show olc apc
Tue Feb  7 14:16:46.264 UTC

Controller      : Ots0/0/0/0
APC Status      : BLOCKED
Blocked Reason   : [ PARTIAL-TOPOLOGY ]

Node RID        : 10.2.1.1
Internal State  : IDLE

Node RID        : 10.2.1.2
Internal State  : IDLE

```

**Step 3** Run the **show alarms brief system active** command on 10.2.1.1.

**Example:**

The following command example shows the *Node is unpaired from band partner node* alarm which confirms connection between node 10.2.1.3 is not paired with 10.1.1.3.

```

RP/0/RP0/CPU0:P1BL_DT_07#show alarms brief system active

```

```
RP/0/RP0/CPU0:P1BL_DT_07#show alarms brief system active      0/0/NXR0      NotAlarmed   Software
02/07/2023 14:13:01 UTC      Node is unpaired from band partner node
```

---

The analysis of steps 2 and 3 confirm that node 10.2.1.3 is not available due to RP or LC warm reload.

## 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 NCS1010, 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 NCS1010 to the client, the LOS-P alarm is raised at the Passive device controller OMS.

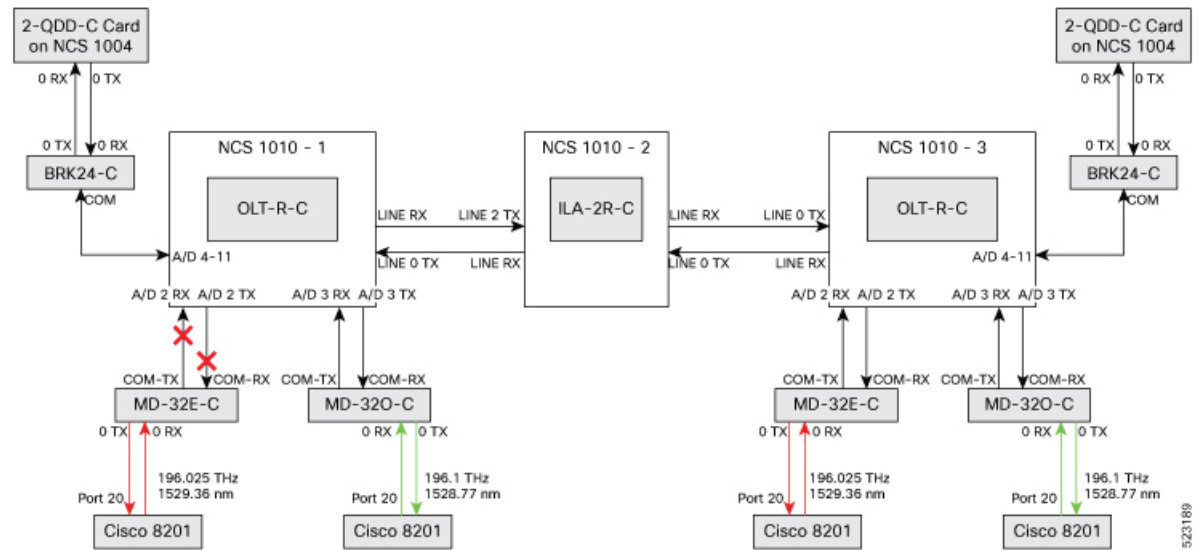
### Topology and Components

To build this topology, you need the following hardware:

- Cisco NCS 1010 devices
- NCS1K-MD32E-C modules
- NCS1K-MD32O-C modules
- NCS1K-BRK-24 modules
- QDD-400G-ZR-S transceiver

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

Figure 5: Fiber Cut at the AD Port OTS Controller and OMS Controller



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### 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.

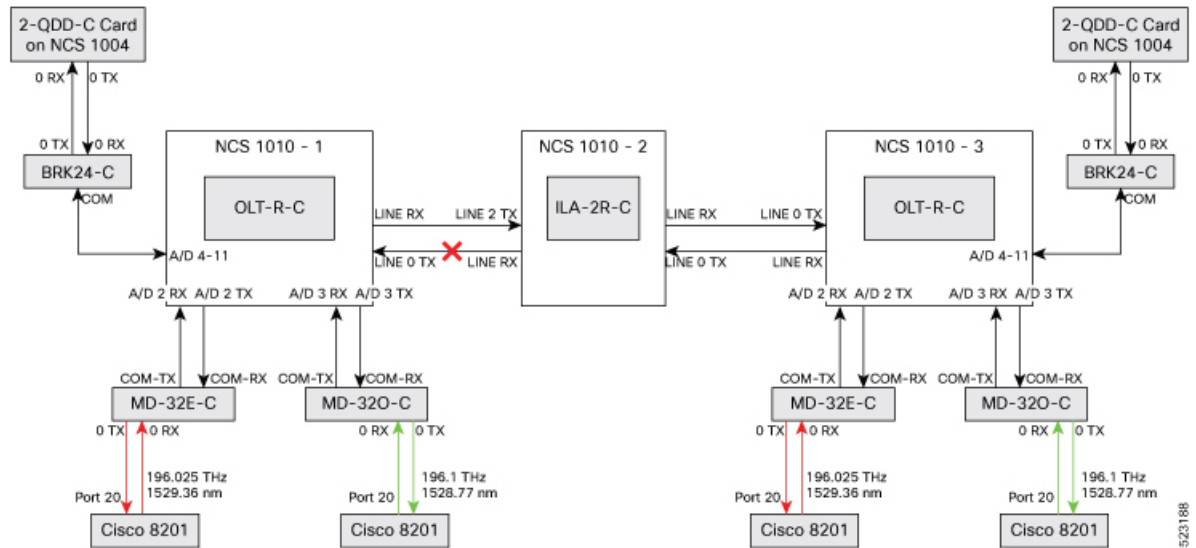
### Topology and Components

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

- Cisco NCS1010 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 6: Fiber Cut at the Line OTS Controller**



### Example 1

The following example shows how to determine a span failure.

```
RP/0/RP0/CPU0:ios#show controllers ots0/0/0/0
Tue Mar 28 15:48:31.486 UTC
```

```
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 = 2
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 = 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
```

Parameter Statistics:

```
-----
Total Rx Power(C+L) = 10.69 dBm
Total Tx Power(C+L) = 19.50 dBm
Total Rx Power = -50.00 dBm
Total Tx Power = -50.00 dBm
Rx Signal Power = -50.00 dBm
Tx Signal Power = -50.00 dBm
BR Power = -90.00 dBm
Tx Voa Attenuation = 15.0 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 = 0.0 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
```

Configured Parameters:

```
-----
Tx Voa Attenuation = 15.0 dB
Ingress Ampli Mode = Gain
Ingress Ampli Gain = 12.0 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 = 16.0 dB
Egress Ampli Power = 5.0 dBm
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
BR High Threshold = -17.0 dBm
Rx Low Threshold = -3276.8 dBm
Tx Low Threshold = -3276.8 dBm
```

**Solution**

See [RX-LOC Alarm](#) to resolve this problem.

# Troubleshooting Express Connection Failure Between Two Passive Devices

**Problem**

This problem occurs when there is a signal payload loss in the express connections between two passive devices due to a fiber cut. As a result, the LOS-P alarm is raised at the passive device controller OCH.

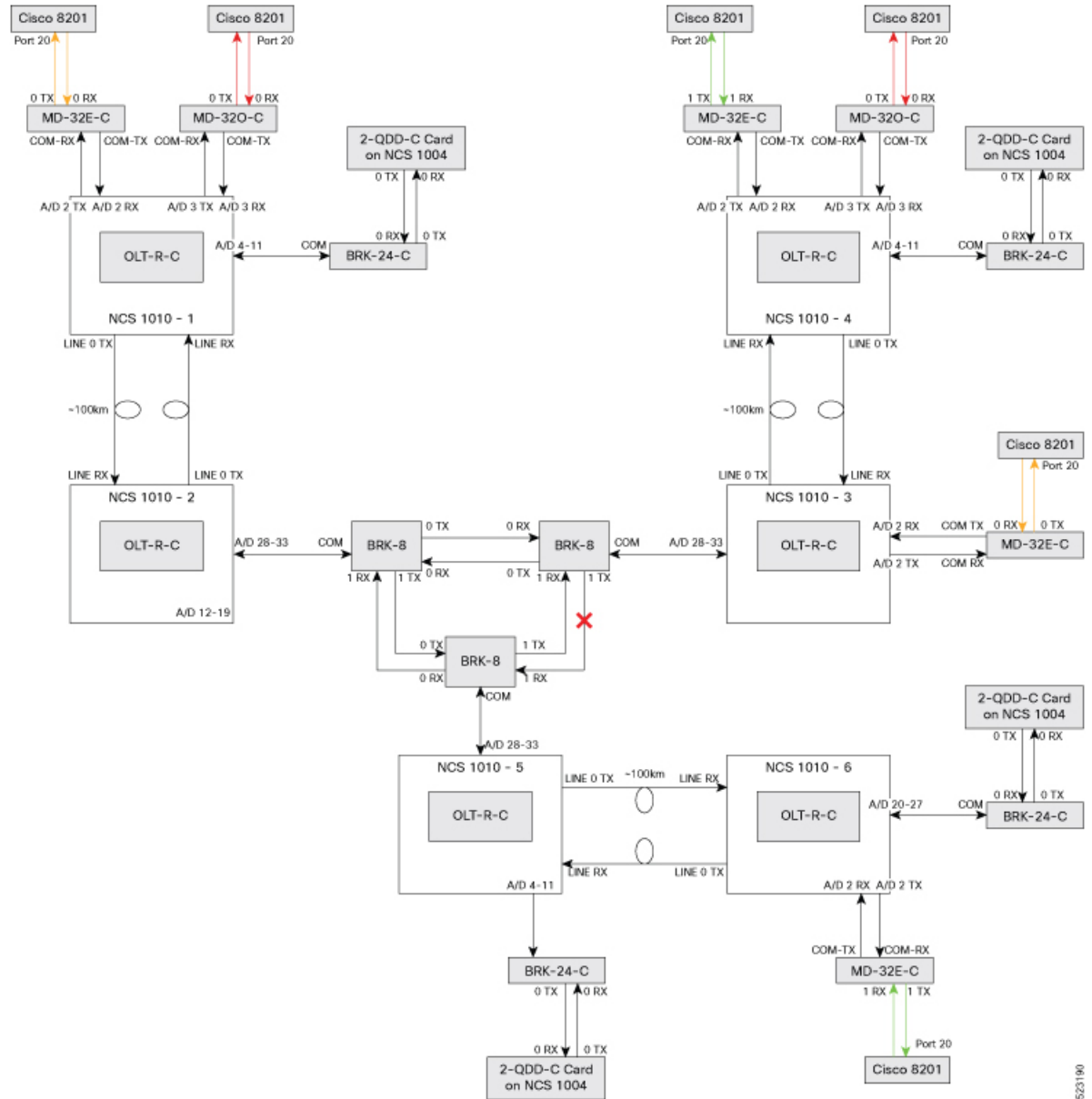
**Topology and Component**

To build this topology, you need the following hardware.

- Cisco NCS 1010 devices
- NCS1K-MD32E-C modules
- NCS1K-MD32O-C modules
- NCS1K-BRK-8 modules
- NCS1K-BRK-24 modules
- Cisco 8201 routers
- QDD-400G-ZR-S transceivers
- CFP2-400G-DCO transceivers
- Cisco NCS 1004 devices
- NCS1K4-2-QDD-C-K9 line card
- LC/LC cables
- MPO cables

The following figure displays the fiber cut between two passive devices:

Figure 7: Fiber Cut Between Two Passive Devices



**Example 1**

The following example shows how to determine the fiber cut between two passive devices:

```
RP/0/RP0/CPU0:OLT-C-SITE-2#sh controllers och 0/3/0/0
Wed Apr 12 10:25:27.139 IST
```

Controller State: Down

Transport Admin State: 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 = 13.09 dBm
Rx Power = -50.00 dBm

```



**Note** The slot number 3 in the preceding show controller command is the USB cable port number to which BRK8 is connected (This USB number is derived from the show platform output).

### Solution

See [RX-LOS-P](#) to resolve this alarm.

## 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
```

	Configured	MIN	AVG	MAX	Operational	Configured	TCA	Operational
	Threshold(max)	Threshold(max)			Threshold(min)	Threshold(min)	(min)	Threshold(max)
OPT [dBm]	NA	-50.00	-7.32	6.10	-20.00	NA	NO	40.00
OPR [dBm]	NA	-50.00	-50.00	-50.00	-30.00	NA	NO	18.00
OPT (C+L) [dBm]	NA	19.50	19.51	19.70	-20.00	NA	NO	60.85
OPR (C+L) [dBm]	NA	10.60	10.64	10.70	-30.00	NA	NO	36.00
OPT (S) [dBm]	NA	-50.00	-50.00	-50.00	-5.00	NA	NO	28.00
OPR (S) [dBm]	NA	-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.

