Troubleshooting Guide for Cisco NCS 1004, IOS XR Releases 7.8.x and 7.9.x

First Published: 2022-11-30

Last Modified: 2024-11-22

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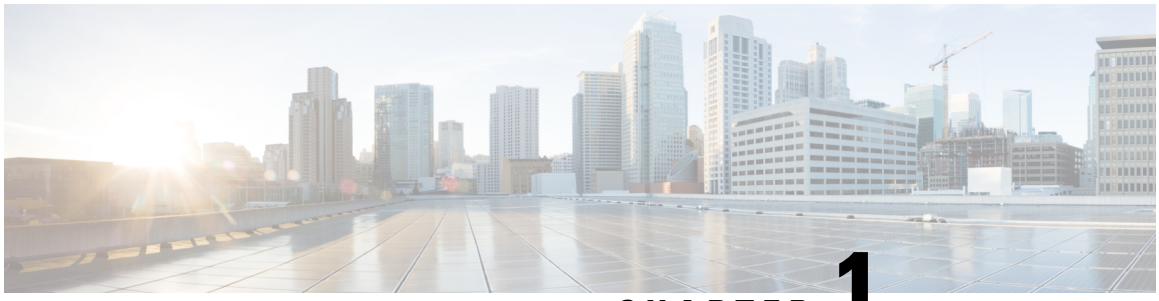


CHAPTER 1

General Troubleshooting

This chapter provides procedures for troubleshooting the most common problems encountered when operating the NCS 1004 chassis. To troubleshoot specific alarms, see the *Alarm Troubleshooting* chapter. If you cannot find what you are looking for, contact Cisco Technical Support (1 800 553-2447).

Validate and Troubleshoot Installation of Software Packages

Procedure

Step 1 **show version**

Displays the software version and details such as system uptime.

Example:

```
RP/0/RP0/CPU0:ios# show version
Mon Nov 22 22:50:09.240 IST
Cisco IOS XR Software, Version 7.5.1
Copyright (c) 2013-2021 by Cisco Systems, Inc.
```

```
Build Information:
Built By     : xxxxxxxxx
Built On     : Sun Nov 21 23:25:35 PST 2021
Built Host   : iox-lnx-054
Workspace    : /auto/srcarchive15/prod/7.5.1/ncs1004/ws
Version      : 7.5.1
Location     : /opt/cisco/XR/packages/
Label        : 7.5.1

cisco NCS-1004 () processor
System uptime is 2 minutes
```

Step 2 **show install repository**

Displays a list of all the installed software packages on NCS 1004.

Example:

```
RP/0/RP0/CPU0:ios# show install repository
Wed Oct 13 20:14:15.984 IST
6 package(s) in XR repository:
    ncs1004-mini-x-7.5.1
    ncs1004-mpls-2.0.0.0-r751
    ncs1004-k9sec-2.1.0.0-r751.x86_64
    ncs1004-xr-7.5.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r751
```

Step 3 **show install active**

Displays a list of all the installed and active software packages on NCS 1004.

The following sample output displays active software packages.

Example:

```
RP/0/RP0/CPU0:ios# show install active     Mon Mar 11 07:31:12.302 UTC
Wed Oct 13 20:14:15.984 IST
Node 0/RP0/CPU0 [RP]
  Boot Partition: xr_lv19
  Active Packages: 5
    ncs1004-mini-x-7.5.1
    ncs1004-mpls-2.0.0.0-r751
    ncs1004-k9sec-2.1.0.0-r751.x86_64
    ncs1004-xr-7.5.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r751
```

Step 4 **show install committed**

Displays a list of all committed software packages on NCS 1004.

The committed software packages are the software packages that are booted on an NCS 1004 reload. Committed packages are the packages that are persistent across reloads. If you install and activate a package, it remains active until the next reload. If you commit a package set, all packages in that set remain active across reloads until the package set is replaced with another committed package set.

The following sample output displays the committed software packages.

Example:

```
RP/0/RP0/CPU0:ios# show install committed
Wed Oct 13 20:14:15.984 IST
Node 0/RP0/CPU0 [RP]
  Boot Partition: xr_lv19
  Committed Packages: 5
    ncs1004-mini-x-7.5.1
```

```
    ncs1004-mpls-2.0.0.0-r751
    ncs1004-k9sec-2.1.0.0-r751.x86_64
    ncs1004-xr-7.5.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r751
```

Step 5 **show install log**

Displays information on the history of the installation operations. This command provides information about both successful and failed installation operations on NCS 1004. You can also verify a Service Maintenance Update (SMU) installation using this command.

Example:

```
RP/0/RP0/CPU0:ios# show install log 49 detail
Wed Dec  9 01:19:18.680 UTC
Dec 09 01:19:07 Install operation 49 started by root:
 install add source tftp://10.105.236.167 ncs1004-k9sec.rpm
Dec 09 01:19:08 Action 1: install add action started
Dec 09 01:19:08 ERROR! Either file is not proper or error in getting rpm metadata from rpm
 file

Dec 09 01:19:08 ERROR!! failed to complete install add precheck

Dec 09 01:19:09 Install operation 49 aborted
Dec 09 01:19:10 Ending operation 49
```

In the above example, either a wrong rpm package is used or the rpm package is corrupted.

For failure on install add source, check that the package is correctly named and is available at the location.

What to do next

If the expected active software packages are not displayed, install the packages (if required) and activate the packages using the **install activate** *package_name* command.

Troubleshoot the Management Interface

Before you begin

Management interface should be configured.

Procedure

Step 1 **show interfaces mgmtEth** *instance*

Displays the management interface configuration.

Example:

```
RP/0/RP0/CPU0:ios# show interfaces MgmtEth 0/RP0/CPU0/0
Fri Nov 13 19:42:29.716 UTC
MgmtEth0/RP0/CPU0/0 is administratively down, line protocol is administratively down
  Interface state transitions: 0
  Hardware is Management Ethernet, address is badb.adba.d098 (bia badb.adba.d098)
```

```
Internet address is 10.58.227.183/24
MTU 1514 bytes, BW 100000 Kbit (Max: 100000 Kbit)
   reliability 255/255, txload 0/255, rxload 0/255
Encapsulation ARPA,
Full-duplex, 100Mb/s, CX, link type is autonegotiation
loopback not set,
ARP type ARPA, ARP timeout 04:00:00
Last input never, output never
Last clearing of "show interface" counters never
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
   0 packets input, 0 bytes, 0 total input drops
   0 drops for unrecognized upper-level protocol
   Received 0 broadcast packets, 0 multicast packets
            0 runts, 0 giants, 0 throttles, 0 parity
   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
   0 packets output, 0 bytes, 0 total output drops
   Output 0 broadcast packets, 0 multicast packets
   0 output errors, 0 underruns, 0 applique, 0 resets
   0 output buffer failures, 0 output buffers swapped out
   0 carrier transitions
```

a) In the above result, the management interface is administratively down. Use the **no shut** command to enable the management interface.

The following example shows sample output from the **show running-config interface mgmtEth** command when the management interface is in the no shut state.

```
RP/0/RP0/CPU0:ios#show running-config interface mgmtEth 0/RP0/CPU0/0
Fri Nov 13 19:42:54.368 UTC
interface MgmtEth0/RP0/CPU0/0
 ipv4 address dhcp
!
```

You can also use the **show interfaces summary** and **show interfaces brief** commands in the Cisco IOS XR EXEC mode to verify the management interface status.

- The following example shows sample output from the **show interfaces summary** command.

```
RP/0/RP0/CPU0:ios# show interfaces summary
Wed Mar  4 06:14:52.995 UTC
Interface Type          Total    UP       Down     Admin Down
--------------          -----    --       ----     ----------
ALL TYPES               4        2        0        2
--------------
IFT_ETHERNET            3        1        0        2
IFT_NULL                1        1        0        0
```

- The following example shows sample output from the **show interfaces brief** command.

```
RP/0/RP0/CPU0:ios# show interfaces brief
Wed Mar  4 06:15:51.689 UTC

               Intf       Intf        LineP    Encap  MTU        BW
               Name       State       State    Type (byte)    (Kbps)
--------------------------------------------------------------------------------
                Nu0          up          up    Null  1500          0
     Mg0/RP0/CPU0/0          up          up    ARPA  1514    1000000
     Mg0/RP0/CPU0/1  admin-down  admin-down    ARPA  1514    1000000
     Mg0/RP0/CPU0/2  admin-down  admin-down    ARPA  1514    1000000
```

Step 2 When the line protocol is down, you must verify the Layer 3 connectivity. You can perform the following steps.

a) Check the Ethernet cable connection and physical connectivity of NCS 1004 to get the line protocol up.
b) Ensure ARP connectivity.
c) Use the **ping** command to check reachability and network connectivity on the IP network.
d) Verify the static IP and default gateway configuration.

Troubleshoot Environmental Parameters

Some of the common environmental problems are listed below.

- Fan failure
- Fan not detected
- Fan speed problem
- Power module fails
- Power module not detected
- Temperature of the device exceeds a threshold value
- Voltage of the device exceeds a threshold value

Procedure

Step 1 **admin**

Enters system admin EXEC mode.

Example:

```
RP/0/RP0/CPU0:ios# admin
```

Step 2 **show environment** [**all** | **fan** | **power** | **voltages** | **current** | **temperatures**] [**location** | *location*]

Displays the environmental parameters of NCS 1004.

Example:

The following example shows sample output from the **show environment** command with the **fan** keyword.

```
sysadmin-vm:0_RP0# show environment fanWed Mar  4  05:36:33.678 UTC+00:00
=============================================
                          Fan speed (rpm)
Location     FRU Type           FAN_0   FAN_1
---------------------------------------------
0/FT0        NCS1K4-FAN          7020    6930
0/FT1        NCS1K4-FAN          6780    6690
0/FT2        NCS1K4-FAN          6810    6720
0/PM0        NCS1K4-AC-PSU      25376   24352
0/PM1        NCS1K4-AC-PSU      11200   11232
```

The following example shows sample output from the **show environment** command with the **temperatures** keyword.

```
sysadmin-vm:0_RP0# show environment temperatures location 0/RP0
Wed Mar  4  05:44:51.221 UTC+00:00
================================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                   (deg C)   (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/RP0
          TEMP_LOCAL                  32    -10    -5     0    55    65    70
          TEMP_REMOTE1                32    -10    -5     0    55    65    70
          TEMP_CPU_DIE                31    -10    -5     0    75    80    90
```

The following example shows sample output from the **show environment** command with the **power** keyword.

```
sysadmin-vm:0_RP0# show environment power
Wed Mar  4  05:45:35.640 UTC+00:00
================================================================================
CHASSIS LEVEL POWER INFO: 0
================================================================================
   Total output power capacity (N + 1)             :    2000W +       0W
   Total output power required                     :     910W
   Total power input                               :     456W
   Total power output                              :     407W

Power Group 0:
================================================================================
   Power       Supply     ------Input----   ------Output---      Status
   Module      Type        Volts     Amps    Volts     Amps
================================================================================
   0/PM0       2kW-AC        0.0      0.0      0.0      0.0    FAILED or NO PWR

Total of Power Group 0:          0W/  0.0A         0W/  0.0A

Power Group 1:
================================================================================
   Power       Supply     ------Input----   ------Output---      Status
   Module      Type        Volts     Amps    Volts     Amps
================================================================================
   0/PM1       2kW-AC      227.8      2.0     12.0     33.9    OK

Total of Power Group 1:        456W/  2.0A       407W/ 33.9A

================================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
================================================================================
   0/0          NCS1K4-LC-FILLER       0           -       RESERVED
   0/1          NCS1K4-1.2T-K9       260         101       ON
   0/2          NCS1K4-1.2TL-K9      260         168       ON
   0/3          NCS1K4-LC-FILLER       0           -       RESERVED
   0/RP0        NCS1K4-CNTLR-K9       55           -       ON
   0/FT0        NCS1K4-FAN           100           -       ON
   0/FT1        NCS1K4-FAN           100           -       ON
   0/FT2        NCS1K4-FAN           100           -       ON
   0/SC0        NCS1004               35           -       ON
```

The following example shows sample output from the **show environment** command with the **voltages** keyword.

```
sysadmin-vm:0_RP0# show environment voltages location 0/RP0
Wed Mar  4  05:47:24.668 UTC+00:00
================================================================================
```

```
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
          Sensor                     (mV)    (Lo) (Lo)  (Hi)   (Hi)
-------------------------------------------------------------------------------
0/RP0
          ADM1266_VH1_12V            12028  10800 11040 12960 13200
          ADM1266_VH3_3V3             3306   3036  3135  3465  3564
          ADM1266_VH4_2V5             2492   2300  2375  2625  2700
          ADM1266_VP1_1V8             1801   1656  1710  1890  1944
          ADM1266_VP2_1V2             1201   1104  1140  1260  1296
          ADM1266_3V3_STAND_BY        3293   3036  3135  3465  3564
          ADM1266_VP4_3V3_CPU         3301   3036  3135  3465  3564
          ADM1266_VP5_2V5_CPU         2494   2300  2375  2625  2700
          ADM1266_VP6_1V8_CPU         1797   1656  1710  1890  1944
          ADM1266_VP7_1V24_VCCREF     1236   1140  1178  1302  1339
          ADM1266_VP8_1V05_CPU        1045    966   997  1102  1134
          ADM1266_VP9_1V2_DDR_VDDQ    1196   1104  1140  1260  1296
          ADM1266_VP10_1V0_VCCRAM     1074    500   650  1300  1400
          ADM1266_VP11_VNN             882    400   550  1300  1400
          ADM1266_VP12_VCCP           1068    300   450  1300  1400
          ADM1266_VP13_0V6_VTT         599    552   570   630   648
          ADM1293_DB_5V0              5007   4600  4750  5250  5400
          ADM1293_DB_3V3              3305   3036  3135  3465  3564
          ADM1293_DB_5V0_USB_0        5007   4000  4500  5500  6000
          ADM1293_DB_5V0_USB_1        5017   4000  4500  5500  6000
          ADM1293_MB_5V0_PMOD0        5062   4600  4750  5250  5400
          ADM1293_MB_5V0_PMOD1        5032   4600  4750  5250  5400
          ADM1293_MB_2V5_PLL          2483   2300  2375  2625  2700
```

Step 3 **show inventory**

Displays inventory information for all the physical entities of NCS 1004.

```
RP/0/RP0/CPU0:ios# show inventory
Wed Mar  4 05:10:17.107 UTC
NAME: "0/0", DESCR: "Network Convergence System 1004 Filler"
PID: NCS1K4-LC-FILLER, VID: V01, SN: N/A

NAME: "0/1", DESCR: "NCS1K4 12x QSFP28 2 Trunk C-Band DWDM card"
PID: NCS1K4-1.2T-K9, VID: V00, SN: CAT2250B0AE

NAME: "0/1-Optics0/1/0/2", DESCR: "Cisco 100G QSFP28 AOC Pluggable Optics Module"
PID: QSFP-100G-AOC3M   , VID: V03, SN: INL22262339-A

NAME: "0/1-Optics0/1/0/4", DESCR: "Cisco 100GE QSFP28 SR4 Pluggable Optics Module"
PID: QSFP-100G-SR4-S, VID: V03, SN: AVF2219S16U

NAME: "0/1-Optics0/1/0/5", DESCR: "Cisco 100G QSFP28 LR4-S Pluggable Optics Module"
PID: QSFP-100G-LR4-S, VID: V02, SN: JFQ2145701U

NAME: "0/1-Optics0/1/0/6", DESCR: "Cisco 100GE QSFP28 SR4 Pluggable Optics Module"
PID: QSFP-100G-SR4-S, VID: ES1, SN: AVF1925G012

NAME: "0/1-Optics0/1/0/7", DESCR: "Cisco 100G QSFP28 LR4-S Pluggable Optics Module"
PID: QSFP-100G-LR4-S, VID: V02, SN: JFQ2145706N

NAME: "0/1-Optics0/1/0/8", DESCR: "Cisco QSFP-100G-LR4 Pluggable Optics Module"
PID: ONS-QSFP28-LR4, VID: V01, SN: JFQ19026014

NAME: "0/1-Optics0/1/0/9", DESCR: "Cisco 100G QSFP28 LR4-S Pluggable Optics Module"
PID: QSFP-100G-LR4-S, VID: V02, SN: OPM220518HS

NAME: "0/1-Optics0/1/0/10", DESCR: "Cisco 100G QSFP28 SM-SR Pluggable Optics Module"
PID: QSFP-100G-SM-SR, VID: V02, SN: INL21490043

NAME: "0/1-Optics0/1/0/11", DESCR: "Cisco 100G QSFP28 CWDM4 Pluggable Optics Module"
```

```
PID: QSFP-100G-CWDM4-S , VID: V01, SN: JFQ211930JL

NAME: "0/1-Optics0/1/0/12", DESCR: "Cisco 100G QSFP28 CWDM4 Pluggable Optics Module"
PID: QSFP-100G-CWDM4-S, VID: V02, SN: JFQ2210801H

NAME: "0/2", DESCR: "NCS1K4 12x QSFP28 2 Trunk L-Band DWDM card"
PID: NCS1K4-1.2TL-K9   , VID: V00, SN: CAT2337B0S4

NAME: "0/2-Optics0/2/0/2", DESCR: "Cisco 100G QSFP28 AOC Pluggable Optics Module"
PID: QSFP-100G-AOC3M, VID: V03, SN: INL22262332-A

NAME: "0/2-Optics0/2/0/4", DESCR: "Cisco 100G QSFP28 SM-SR Pluggable Optics Module"
PID: QSFP-100G-SM-SR, VID: V02, SN: FNS22070HWF

NAME: "0/2-Optics0/2/0/5", DESCR: "Cisco 100G QSFP28 SM-SR Pluggable Optics Module"
PID: QSFP-100G-SM-SR, VID: V02, SN: SPT2225302D

NAME: "0/2-Optics0/2/0/6", DESCR: "Cisco 100G QSFP28 LR4-S Pluggable Optics Module"
PID: QSFP-100G-LR4-S, VID: V02, SN: FNS22310Z1X

NAME: "0/2-Optics0/2/0/8", DESCR: "Cisco QSFP-100G-LR4 Pluggable Optics Module"
PID: ONS-QSFP28-LR4, VID: V01, SN: FNS20520R8Z

NAME: "0/2-Optics0/2/0/9", DESCR: "Cisco 100G QSFP28 AOC Pluggable Optics Module"
PID: QSFP-100G-AOC3M, VID: V03, SN: INL23312282-A

NAME: "0/2-Optics0/2/0/10", DESCR: "Cisco 100G QSFP28 AOC Pluggable Optics Module"
PID: QSFP-100G-AOC3M, VID: V03, SN: INL23312282-B

NAME: "0/2-Optics0/2/0/11", DESCR: "Cisco 100G QSFP28 LR4-S Pluggable Optics Module"
PID: QSFP-100G-LR4-S, VID: V02, SN: FNS23080LKF

NAME: "0/3", DESCR: "Network Convergence System 1004 Filler"
PID: NCS1K4-LC-FILLER, VID: V01, SN: N/A

NAME: "0/RP0", DESCR: "Network Convergence System 1004 Controller"
PID: NCS1K4-CNTLR-K9, VID: V00, SN: CAT2231B069

NAME: "0/SC0", DESCR: "Network Convergence System 1004 Chassis"
PID: NCS1004, VID: V00, SN: CAT2231B192

NAME: "Rack 0", DESCR: "Network Convergence System 1004 Chassis"
PID: NCS1004, VID: V00, SN: CAT2231B192

NAME: "0/FT0", DESCR: "Network Convergence System 1004 Fan"
PID: NCS1K4-FAN, VID: V00, SN: CAT2231B2GL

NAME: "0/FT1", DESCR: "Network Convergence System 1004 Fan"
PID: NCS1K4-FAN, VID: V00, SN: CAT2231B2H4

NAME: "0/FT2", DESCR: "Network Convergence System 1004 Fan"
PID: NCS1K4-FAN, VID: V00, SN: CAT2231B2GW

NAME: "0/PM0", DESCR: "Network Convergence System 1004 AC Power Supply Unit"
PID: NCS1K4-AC-PSU, VID: V00, SN: POG2221CL1V

NAME: "0/PM1", DESCR: "Network Convergence System 1004 AC Power Supply Unit"
PID: NCS1K4-AC-PSU, VID: V00, SN: POG2221CL04
```

What to do next

Environment parameter anomalies are logged in the syslog. Hence, if an environment parameter displayed in the **show environment** command output is not as expected, check the syslog using the **show logging** command. The syslog provides details on any logged problems.

Verify Firmware Version

The firmware on various hardware components of NCS 1004 must be compatible with the installed Cisco IOS XR image. Incompatibility may cause the NCS 1004 to malfunction.

To verify the firmware version, perform the following procedure.

Procedure

Step 1 **show hw-module fpd**

```
RP/0/RP0/CPU0:ios# show hw-module fpd
Fri Nov 26 14:53:27.188 UTC

Auto-upgrade:Disabled
                                                                                FPD Versions
                                                                                ==============
Location   Card type              HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1K4-OTN-XPL         3.0   LC_CPU_MOD_FW        CURRENT    75.10     75.10
0/0        NCS1K4-OTN-XPL         7.0   LC_DP_MOD_FW         CURRENT     3.10      3.10
0/0        NCS1K4-OTN-XPL         2.0   LC_QSFPDD_PORT_11    CURRENT    61.2013   61.2013
0/0        NCS1K4-OTN-XPL         2.0   LC_QSFPDD_PORT_9     CURRENT    61.2013   61.2013
0/1        NCS1K4-OTN-XP          2.0   LC_CPU_MOD_FW        CURRENT    75.10     75.10
0/1        NCS1K4-OTN-XP          7.0   LC_DP_MOD_FW         CURRENT     3.10      3.10
0/1        NCS1K4-OTN-XP          2.0   LC_QSFPDD_PORT_11    CURRENT    61.2013   61.2013
0/1        NCS1K4-OTN-XP          2.0   LC_QSFPDD_PORT_9     CURRENT    61.2013   61.2013
0/RP0      NCS1K4-CNTLR-K9        5.0   CSB_IMG           S  CURRENT     0.200     0.200
0/RP0      NCS1K4-CNTLR-K9        5.0   TAM_FW               CURRENT    36.08     36.08
0/RP0      NCS1K4-CNTLR-K9        1.14  BIOS              S  CURRENT     5.30      5.30
0/RP0      NCS1K4-CNTLR-K9        5.0   CPU_FPGA             CURRENT     1.14      1.14
0/PM1      NCS1K4-AC-PSU          0.1   PO-PriMCU            CURRENT     2.70      2.70
0/SC0      NCS1004                2.0   BP_FPGA              CURRENT     1.25      1.25
0/SC0      NCS1004                2.0   XGE_FLASH            CURRENT    18.04     18.04
```

Displays firmware information of various hardware components of NCS 1004 in the Cisco IOS XR EXEC mode.

In the previous output, some of the significant fields are:

- FPD Device—Name of the hardware component such as FPD, CFP, and so on.
- ATR—Attribute of the hardware component. Some of the attributes are:
  - B—Backup Image
  - S—Secure Image
  - P—Protected Image

- Status—Upgrade status of the firmware. The different states are:
  - CURRENT—The firmware version is the latest version.
  - NOT READY—The firmware of the FPD is not ready for upgrade.
  - NEED UPGD—A newer firmware version is available in the installed image. We recommended that upgrade be performed.
  - UPGD PREP—The firmware of the FPD is preparing for upgrade.
  - RLOAD REQ—The upgrade is completed, and the card requires a reload.
  - UPGD DONE—The firmware upgrade is successful.
  - UPGD FAIL—The firmware upgrade has failed.
  - UPGD SKIP—The upgrade is skipped because the installed firmware version is higher than the version available in the image.
  - Running—Current version of the firmware running on the FPD.

Step 2 **show fpd package**

Use the **show fpd package** command to display the FPD image version available with this software release for each hardware component.

```
RP/0/RP0/CPU0:ios# show fpd package
Fri May  8 05:11:47.819 UTC

================================ ============================================
                                        Field Programmable Device Package
                                 ============================================
                                              Req     SW      Min Req   Min Req
Card Type            FPD Description          Reload  Ver     SW Ver  Board Ver
================== ========================== ====== ======= ======== =========
------------------------------------------------------------------------------
NCS1004-K9           BP_FPGA(A)                NO      1.25    1.25    0.0
                     XGE_FLASH(A)              YES    18.04   18.04    0.0
------------------------------------------------------------------------------
NCS1K4-1.2T-K9       LC_CPU_MOD_FW(A)          YES    75.10   75.10    0.0
                     LC_OPT_MOD_FW(A)          YES     1.25    1.25    0.0
------------------------------------------------------------------------------
NCS1K4-1.2T-L-K9     LC_CPU_MOD_FW(A)          YES    75.10   75.10    0.0
                     LC_OPT_MOD_FW(A)          YES     1.25    1.25    0.0
------------------------------------------------------------------------------
NCS1K4-1.2TL-K9      LC_CPU_MOD_FW(A)          YES    75.10   75.10    0.0
                     LC_OPT_MOD_FW(A)          YES     1.25    1.25    0.0
------------------------------------------------------------------------------
NCS1K4-2-QDD-C-K9    LC_CPU_MOD_FW(A)          YES    75.10   75.10    0.0
                     LC_OPT_MOD_FW(A)          YES     1.26    1.26    0.0
------------------------------------------------------------------------------
NCS1K4-2KW-AC        PO-PriMCU(A)              NO      2.70    2.70    0.0
                     PO-PriMCU(A)              NO      2.70    2.70    0.1
------------------------------------------------------------------------------
NCS1K4-AC-PSU        PO-PriMCU(A)              NO      2.70    2.70    0.0
                     PO-PriMCU(A)              NO      2.70    2.70    0.1
------------------------------------------------------------------------------
NCS1K4-CNTLR         BIOS(A)                   YES     5.30    5.30    1.5
                     CSB_IMG                   YES     0.200   0.200   0.0
------------------------------------------------------------------------------
NCS1K4-CNTLR-B-K9    BIOS(A)                   YES     5.30    5.30    1.0
```

```
                     CSB_IMG                    YES     0.200   0.200   0.0
-------------------------------------------------------------------------------
NCS1K4-DC-PSU        PO-PriMCU(A)               NO      1.12    1.12    0.0
                     PO-PriMCU(A)               NO      1.12    1.12    0.1
-------------------------------------------------------------------------------
NCS1K4-OTN-XP        LC_CFP2_PORT_0(A)          NO      0.00    0.00    0.0
   LC_CFP2_PORT_0(A)           NO      1.00    1.00    1.0
                     LC_CFP2_PORT_0(A)          NO      1.52    1.52    2.0
                     LC_CFP2_PORT_1(A)          NO      0.00    0.00    0.0
                     LC_CFP2_PORT_1(A)          NO      1.00    1.00    1.0
                     LC_CFP2_PORT_1(A)          NO      1.52    1.52    2.0
                     LC_CPU_MOD_FW(A)           YES     75.10   75.10   0.0
                     LC_DP_MOD_FW(A)            YES     3.10    3.10    1.0
                     LC_DP_MOD_FW(A)            YES     11.10   11.10   2.0
                     LC_DP_MOD_FW(A)            YES     11.10   11.10   3.0
                     LC_DP_MOD_FW(A)            YES     1.10    1.10    4.0
                     LC_DP_MOD_FW(A)            YES     3.10    3.10    7.0
                     LC_DP_MOD_FW(A)            YES     1.10    1.10    8.0
                     LC_QSFPDD_PORT_11(A)        NO     0.00    0.00    0.0
                     LC_QSFPDD_PORT_11(A)        NO     61.2013 61.2013 1.0
                     LC_QSFPDD_PORT_11(A)        NO     61.2013 61.2013 2.0
                     LC_QSFPDD_PORT_9(A)         NO     0.00    0.00    0.0
                     LC_QSFPDD_PORT_9(A)         NO     61.2013 61.2013 1.0
                     LC_QSFPDD_PORT_9(A)         NO     61.2013 61.2013 2.0
-------------------------------------------------------------------------------
NCS1K4-OTN-XPL       LC_CFP2_PORT_0(A)          NO      0.00    0.00    0.0
   LC_CFP2_PORT_0(A)           NO      1.00    1.00    1.0
                     LC_CFP2_PORT_0(A)          NO      1.52    1.52    2.0
                     LC_CFP2_PORT_1(A)          NO      0.00    0.00    0.0
                     LC_CFP2_PORT_1(A)          NO      1.00    1.00    1.0
                     LC_CFP2_PORT_1(A)          NO      1.52    1.52    2.0
                     LC_CPU_MOD_FW(A)           YES     75.10   75.10   0.0
                     LC_DP_MOD_FW(A)            YES     3.10    3.10    1.0
                     LC_DP_MOD_FW(A)            YES     11.10   11.10   2.0
                     LC_DP_MOD_FW(A)            YES     11.10   11.10   3.0
                     LC_DP_MOD_FW(A)            YES     1.10    1.10    4.0
                     LC_DP_MOD_FW(A)            YES     3.10    3.10    7.0
                     LC_DP_MOD_FW(A)            YES     1.10    1.10    8.0
                     LC_QSFPDD_PORT_11(A)        NO     0.00    0.00    0.0
                     LC_QSFPDD_PORT_11(A)        NO     61.2013 61.2013 1.0
                     LC_QSFPDD_PORT_11(A)        NO     61.2013 61.2013 2.0
                     LC_QSFPDD_PORT_9(A)         NO     0.00    0.00    0.0
                     LC_QSFPDD_PORT_9(A)         NO     61.2013 61.2013 1.0
                     LC_QSFPDD_PORT_9(A)         NO     61.2013 61.2013 2.0
-------------------------------------------------------------------------------
NCS1K4-TESTUNIT      LC_CPU_MOD_FW(A)           YES     0.01    0.01    0.0
```

What to do next

Upgrade all the FPDs using the **upgrade hw-module location all fpd all** command in the Cisco IOS XR EXEC mode. After upgrade is completed, the Status column shows RLOAD REQ if the software requires reload.

If Reload is required

If the FPGA location is 0/RP0, use the **admin hw-module location 0/RP0 reload** command. This command reboots only the CPU. As a result, traffic is not impacted. If the FPGA location is 0/0, use the **admin hw-module location all reload** command. This command reboots the chassis. As a result, traffic is impacted. After the reload is completed, the new FPGA runs the current version.

Caution The upgrade of OTNXP LC_DP_MOD_FW and LC_OPT_MOD_FW FPDs affect traffic. Hence, you must perform this upgrade during a maintenance window.

If Firmware Upgrade Fails

If firmware upgrade fails, use the **show logging** command to view the details and upgrade the firmware again using the above commands.

Note You can upgrade the firmware version of power modules, only when both the power modules are present and powered on.

Loopback

Table 1: Feature History

Feature Name	Release Information	Description
Configuration Alarms for Loopback	Cisco IOS XR Release 7.8.1	A configuration alarm is now triggered whenever there is a change in the loopback configuration. This alarm helps in improving loopback status monitoring. You can now view the alarm details such as, the configuration time and date, description, severity, and location using the **show alarms brief system active** command.

You can configure the loopback on the CoherentDSP, FC, OTU, and Ethernet controllers to identify connection problems. The loopback can be configured only in the maintenance mode. Use the **controller** ***controller-type*** and the **secondary-admin-state maintenance** commands to place the controllers in the maintenance mode.

From R7.8.1, loopback configuration alarm details for each controller are triggered whenever there is a change in the loopback configuration. Details such as, location of the controller, severity, configuration date and time, and description are available in the output of the **show alarms brief system active** and **show alarms brief history** commands.

Note Internal and line loopbacks are supported on the FC, OTU, and Ethernet controllers whereas only internal loopbacks are supported on the CoherentDSP controllers.

Configuring Loopback on the 1.2T Card

To configure the loopback, use the following commands:

configure

controller *controllertype Rack/Slot/Instance/Port*

sec-admin-state maintenance

loopback [**line** | **internal**]

commit

Example 1

The following example shows how a line loopback is configured on the Ethernet controller.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller HundredGigECtrlr 1/0/1/10 secondary-admin-state
maintenance
RP/0/RP0/CPU0:ios(config)#commit
Fri Feb 22 19:49:46.504 UTC
RP/0/RP0/CPU0:ios(config)#exit
```

The following example shows how to verify a line loopback configured on the Ethernet controller.

```
RP/0/RP0/CPU0:ios#show controller HundredGigECtrlr 0/1/0/10
Fri Feb 22 19:50:08.328 UTC
Operational data for interface HundredGigECtrlr0/1/0/10:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On
    Maintenance: Enabled
    AINS Soak: Pending
      Total Duration: 0 hour(s) 30 minute(s)
      Remaining Duration: 0 hour(s) 30 minute(s) 0 second(s)
    Laser Squelch: Enabled

Phy:
    Media type: Not known
    Statistics:
        FEC:
            Corrected Codeword Count: 0
            Uncorrected Codeword Count: 0

Autonegotiation disabled.

Operational values:
    Speed: 100Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    BER monitoring:
        Not supported
    Forward error correction: Standard (Reed-Solomon)
    Holdoff Time: 0ms
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller HundredGigECtrlr 0/1/0/10 loopback line
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#exit
RP/0/RP0/CPU0:ios#show controller HundredGigECtrlr 0/1/0/10
Fri Feb 22 20:01:00.521 UTC
Operational data for interface HundredGigECtrlr0/1/0/10:
```

```
State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On
    Maintenance: Enabled
    AINS Soak: Pending
      Total Duration: 0 hour(s) 30 minute(s)
      Remaining Duration: 0 hour(s) 30 minute(s) 0 second(s)
    Laser Squelch: Enabled

Phy:
    Media type: Not known
    Statistics:
        FEC:
            Corrected Codeword Count: 0
            Uncorrected Codeword Count: 6

Autonegotiation disabled.

Operational values:
    Speed: 100Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: Line
    BER monitoring:
        Not supported
    Forward error correction: Standard (Reed-Solomon)
    Holdoff Time: 0ms
```

Example 2

The following example shows how to verify an internal loopback configured on the coherent DSP controller.

```
RP/0/RP0/CPU0:ios#show controllers coherentDSP  0/0/0/0
Fri Mar 13 22:00:20.951 UTC

Port                                          : CoherentDSP 0/0/0/0
Controller State                              : Up
Inherited Secondary State                     : Normal
Configured Secondary State                    : Maintenance
Derived State                                 : Maintenance
Loopback mode                                 : Internal
BER Thresholds                                : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                        : Enable
Bandwidth                                     : 200.0Gb/s

Alarm Information:
LOS = 0 LOF = 1 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 3 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                               : None

Bit Error Rate Information
PREFEC  BER                                   : 0.00E+00
POSTFEC BER                                   : 0.00E+00
Q-Factor                                      : 16.70 dB

Q-Margin                                      : 0.99dB

TTI :
        Remote hostname                       : ios
        Remote interface                      : CoherentDSP 0/0/0/0
```

```
        Remote IP addr                          : 0.0.0.0

FEC mode                                        : Soft-Decision 27

AINS Soak                                       : None
AINS Timer                                      : 0h, 0m
AINS remaining time                             : 0 seconds
```

Configuring Loopback on OTN-XP Card

From R7.2.1 onwards, OTN-XP card supports loopback on the OTU2, OTU2e, OTU4, 10GE, and CoherentDSP controllers.

From R7.3.2 onwards, OTN-XP card supports loopback on the 100GE and 400GE controllers.

From R7.5.2 onwards, OTN-XP card supports loopback on the 16G FC and 32G FC controllers.

The CoherentDSP controller supports both line and internal.

To configure the loopback on the controllers, use the following commands:

configure

controller *controller type Rack/Slot/Instance/Port/Lane number*

sec-admin-state maintenance

loopback [**line** | **internal**]

commit

The range of *Lane number* is 1–4.

Example 1

The following example shows how an internal loopback is configured on the 10GE controller.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller tenGigECtrlr 0/0/0/5/2
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback internal
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#commit
```

The following example shows how to verify an internal loopback configured on the 10GE controller.

```
RP/0/RP0/CPU0:ios#show controllers tenGigECtrlr 0/0/0/5/2
Thu Apr 23 10:47:48.020 UTC
Operational data for interface TenGigECtrlr0/0/0/5/2:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On
    Maintenance: Enabled
    AINS Soak: None
      Total Duration: 0 hour(s) 0 minute(s)
      Remaining Duration: 0 hour(s) 0 minute(s) 0 second(s)
    Laser Squelch: Disabled

Phy:
    Media type: Not known

Autonegotiation disabled.
```

```
Operational values:
    Speed: 10Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: Internal
    Inter-packet gap: standard (12)
    BER monitoring:
        Not supported
    Holdoff Time: 0ms
```

Example 2

The following example shows how a line loopback is configured on the OTU2e controller.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller otu2e 0/0/0/11/3
RP/0/RP0/CPU0:ios(config-otu2e)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-otu2e)#loopback line
RP/0/RP0/CPU0:ios(config-otu2e)#commit
Thu Apr 23 10:55:19.319 UTC
RP/0/RP0/CPU0:ios(config-otu2e)#end
```

The following example shows how to verify a line loopback configured on the OTU2e controller.

```
RP/0/RP0/CPU0:ios#show controllers otu2e 0/0/0/11/3
Thu Apr 23 10:55:28.014 UTC

Port                                        : OTU2E 0/0/0/11/3
Controller State                            : Up
Inherited Secondary State                   : Normal
Configured Secondary State                  : Maintenance
Derived State                               : Maintenance
Loopback mode                               : Line
BER Thresholds                              : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                      : Enable
Bandwidth                                   : 10.0Gb/s

Alarm Information:
LOS = 0 LOF = 1 LOM = 0
OOF = 1 OOM = 1 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                             : None

Bit Error Rate Information
PREFEC  BER                                 : 0.00E+00
POSTFEC BER                                 : 0.00E+00

TTI :
        Remote hostname                     : ios
        Remote interface                    : OTU2E 0/0/0/11/3
        Remote IP addr                      : 0.0.0.0

FEC mode                                    : STANDARD

AINS Soak                                   : None
AINS Timer                                  : 0h, 0m
AINS remaining time                         : 0 seconds
```

Example 3

The following example shows how an internal loopback is configured on the OTU2 controller.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller otu2 0/0/0/5/1
RP/0/RP0/CPU0:ios(config-otu2)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-otu2)#loopback internal
RP/0/RP0/CPU0:ios(config-otu2)#commit
Thu Apr 23 11:01:00.562 UTC
RP/0/RP0/CPU0:ios(config-otu2)#end
```

The following example shows how to verify an internal loopback configured on the OTU2 controller.

```
RP/0/RP0/CPU0:ios#show controllers otU2 0/0/0/5/1
Thu Apr 23 11:01:04.126 UTC

Port                                        : OTU2 0/0/0/5/1
Controller State                            : Up
Inherited Secondary State                   : Normal
Configured Secondary State                  : Maintenance
Derived State                               : Maintenance
Loopback mode                               : Internal
BER Thresholds                              : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                      : Enable
Bandwidth                                   : 10.0Gb/s

Alarm Information:
LOS = 0 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                             : None

Bit Error Rate Information
PREFEC  BER                                 : 0.00E+00
POSTFEC BER                                 : 0.00E+00

TTI :
        Remote hostname                     : SM-TRC SAPI-SECSM-TRC DA
        Remote IP addr                      : 209.165.200.229

FEC mode                                    : STANDARD

AINS Soak                                   : None
AINS Timer                                  : 0h, 0m
AINS remaining time                         : 0 seconds
```

Example 4

The following example shows how an internal loopback is configured on the OTU4 controller.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller otu4 0/0/0/0
RP/0/RP0/CPU0:ios(config-otu4)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-otu4)#loopback internal
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Apr 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how to verify an internal loopback configured on the OTU4 controller.

```
RP/0/RP0/CPU0:ios#show controllers otu4 0/0/0/0
Thu Apr 23 11:05:30.281 UTC

Port                                        : OTU4 0/0/0/0
Controller State                            : Up
Inherited Secondary State                   : Normal
Configured Secondary State                  : Maintenance
Derived State                               : Maintenance
Loopback mode                               : Internal
BER Thresholds                              : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                      : Enable
Bandwidth                                   : 100.0Gb/s

Alarm Information:
LOS = 1 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                             : None

Bit Error Rate Information
PREFEC  BER                                 : 0.00E+00
POSTFEC BER                                 : 0.00E+00

TTI :
        Remote hostname                     : ios
        Remote interface                    : OTU4 0/0/0/0
        Remote IP addr                      : 0.0.0.0

FEC mode                                    : STANDARD

AINS Soak                                   : None
AINS Timer                                  : 0h, 0m
AINS remaining time                         : 0 seconds
```

Example 5

The following example shows how an internal loopback is configured on the 16G FC controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller SixteenGigFibreChanCtrlr 0/2/0/1/1
RP/0/RP0/CPU0:ios(config-SixteenGigFibreChanCtrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-SixteenGigFibreChanCtrlr)#loopback internal
RP/0/RP0/CPU0:ios(config-SixteenGigFibreChanCtrlr)#commit
Thu Apr 11 10:05:21.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how to verify the internal loopback configured on the 16G FC controller:

```
RP/0/RP0/CPU0:ios#show controller SixteenGigFibreChanCtrlr 0/1/0/0/2

Sat Apr  9 22:50:38.930 UTC

Operational data for Fibre Channel controller SixteenGigFibreChanCtrlr0/1/0/0/2

State:
 Admin State           : Up
 Operational state     : Up
 LED state             : Green On
 Secondary admin state : Maintenance
```

```
 AINS Soak             : None
     Total Duration    : 0 hour(s) 0 minute(s)
     Remaining Duration: 0 hour(s) 0 minute(s) 0 second(s)
 Laser Squelch         : Disabled

Performance Monitoring is enabled

Operational values:
 Speed                 : 16 Gbps
 Loopback              : Internal
 BER monitoring:
     Not supported
 Hold-off Time         : 0 ms
 Forward Error Correction : Not Configured
RP/0/RP0/CPU0:ios#
```

Example 6

The following example shows how an internal loopback is configured on the 32G FC controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller ThirtyTwoGigFibreChanCtrlr 0/1/0/6/4
RP/0/RP0/CPU0:ios(config-ThirtyTwoGigFibreChanCtrlr)#loopback internal

RP/0/RP0/CPU0:ios(config-ThirtyTwoGigFibreChanCtrlr)#commit

Sat Apr  9 22:50:11.666 UTC
RP/0/RP0/CPU0:ios(config-ThirtyTwoGigFibreChanCtrlr)#end
```

The following example shows how to verify the internal loopback configured on the 32G FC controller:

```
RP/0/RP0/CPU0:ios#show controller ThirtyTwoGigFibreChanCtrlr 0/1/0/6/4

Sat Apr  9 22:50:39.082 UTC

Operational data for Fibre Channel controller ThirtyTwoGigFibreChanCtrlr0/1/0/6/4

State:
 Admin State           : Up
 Operational state     : Up
 LED state             : Green On
 Secondary admin state : Maintenance
 AINS Soak             : None
     Total Duration    : 0 hour(s) 0 minute(s)
     Remaining Duration: 0 hour(s) 0 minute(s) 0 second(s)
 Laser Squelch         : Disabled

Performance Monitoring is enabled

Operational values:
 Speed                 : 32 Gbps
 Loopback              : Internal
 BER monitoring:
     Not supported
 Hold-off Time         : 0 ms
 Forward Error Correction : Standard(Reed Solomon)
RP/0/RP0/CPU0:ios#
```

Example: Loopback Configuration in 4X100G MXP on 100GE Controller

The following example shows how the client internal loopback is configured on the 100GE controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller HundredGigECtrlr 0/2/0/1
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback internal
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how the client line loopback is configured on the 100GE controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller HundredGigECtrlr 0/2/0/1
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback line
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how the trunk internal is configured on the coherentDSP controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/2/0/11
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback internal
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how the trunk line is configured on the coherentDSP controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/2/0/11
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback line
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

Example: Loopback Configuration in 400G-TXP on 400GE Controller

The following example shows how the client internal loopback is configured on the 400GE controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller FourHundredGigECtrlr 0/2/0/10
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback internal
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how the client line loopback is configured on the 100GE controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller FourHundredGigECtrlr 0/2/0/10
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback line
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how the trunk internal is configured on the coherentDSP controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/2/0/10
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback internal
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

The following example shows how the trunk line is configured on the coherentDSP controller:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/2/0/10
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback line
RP/0/RP0/CPU0:ios(config-otu4)#commit
Thu Sep 23 11:05:22.429 UTC
RP/0/RP0/CPU0:ios(config-otu4)#end
```

Configure Loopback in Inverse Muxponder Configured on the OTN-XP Card

You can configure loopback on the coherentDSP controllers in the inverse muxponder configuration.

Note You must configure loopback on both trunk ports 12 and 13, otherwise traffic goes down.

The following example shows how loopback is configured on both the trunk ports:

```
RP/0/RP0/CPU0:ios#configure
Thu Sep 30 14:16:04.678 UTC
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/2/0/12
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback internal
RP/0/RP0/CPU0:ios(config-CoDSP)#commit
Thu Sep 30 14:16:19.594 UTC
RP/0/RP0/CPU0:ios(config-CoDSP)#controller coherentDSP 0/2/0/13
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback internal
RP/0/RP0/CPU0:ios(config-CoDSP)#commit
Thu Sep 30 14:16:32.390 UTC
RP/0/RP0/CPU0:ios(config-CoDSP)#
```

The following examples shows how to verify loopback configured on the OTN-XP card in the inverse muxponder configuration:

```
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/2/0/12
Thu Sep 30 14:17:04.411 UTC

Port                                          : CoherentDSP 0/2/0/12
Controller State                              : Up
Inherited Secondary State                     : Normal
Configured Secondary State                    : Maintenance
Derived State                                 : Maintenance
Loopback mode                                 : Internal
BER Thresholds                                : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                        : Enable
Bandwidth                                     : 200.0Gb/s

Alarm Information:
```

```
LOS = 2 LOF = 0 LOM = 0
OOF = 1 OOM = 0 AIS = 1
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0     FLEXO_GIDM = 0
FLEXO-MM = 0    FLEXO-LOM = 0   FLEXO-RDI = 1
FLEXO-LOF = 0
Detected Alarms                                 : None

Bit Error Rate Information
PREFEC  BER                                     : 2.46E-08
POSTFEC BER                                     : 0.00E+00
Q-Factor                                        : 14.60 dB

Q-Margin                                        : 8.30dB

TTI :
        Remote hostname                         : ios
        Remote interface                        : CoherentDSP 0/2/0/12
        Remote IP addr                          : 0.0.0.0

FEC mode                                        : O_FEC

Flexo-Mode                                      : Enable
Flexo Details:
        Tx GID                                  : 1
        TX IID                                  : 1, 2,
        Rx GID                                  : 1
        RX IID                                  : 1, 2,

Flexo Peers Information:
        Controller                              : CoherentDSP0_2_0_13
        OTUCn rate                              : OTUC2


AINS Soak                                       : None
AINS Timer                                      : 0h, 0m
AINS remaining time                             : 0 seconds


RP/0/RP0/CPU0:ios#sh controllers coherentDSP 0/2/0/13
Thu Sep 30 14:17:08.140 UTC

Port                                            : CoherentDSP 0/2/0/13
Controller State                                : Up
Inherited Secondary State                       : Normal
Configured Secondary State                      : Maintenance
Derived State                                   : Maintenance
Loopback mode                                   : Internal
BER Thresholds                                  : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                          : Enable
Bandwidth                                       : 200.0Gb/s

Alarm Information:
LOS = 1 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0     FLEXO_GIDM = 0
FLEXO-MM = 0    FLEXO-LOM = 0   FLEXO-RDI = 1
FLEXO-LOF = 0
Detected Alarms                                 : None

Bit Error Rate Information
```

```
PREFEC  BER                                     : 0.00E+00
POSTFEC BER                                     : 0.00E+00
Q-Factor                                        : 15.70 dB

Q-Margin                                        : 9.50dB

TTI :
        Remote IP addr                          : 0.0.0.0

FEC mode                                        : O_FEC

Flexo-Mode                                      : Enable
Flexo Details:
        Tx GID                                  : 1
        TX IID                                  : 3, 4,
        Rx GID                                  : 1
        RX IID                                  : 3, 4,

Flexo Peers Information:
        Controller                              : CoherentDSP0_2_0_12
        OTUCn rate                              : OTUC2


AINS Soak                                       : None
AINS Timer                                      : 0h, 0m
AINS remaining time                             : 0 seconds
```

Configuring Loopback on 2-QDD-C Card

From R7.3.1 onwards, 2-QDD-C card supports loopback on the 100 and 400GE controllers.

Note On applying client-side loopbacks, traffic is looped and does not continue in the 2-QDD-C card. QSFP squelching happens on applying internal loopback.

To configure the loopback on the controllers, use the following commands.

configure

controller *controllertype Rack/Slot/Instance/Port/Lanenumber*

sec-admin-state maintenance

loopback [**line** | **internal**]

commit

From R7.5.2 onwards, Loopback is supported for the OTUCn-REGEN mode on the coherent DSP controller.

Example

The following example shows how to configure an internal loopback on a coherent DSP controller.

```
Sun Dec 26 14:34:02.733 UTC
RP/0/RP0/CPU0:ios(config)#controller CoherentDSP 0/3/0/12
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#commit
Sun Dec 26 14:34:03.437 UTC
RP/0/RP0/CPU0:ios(config-CoDSP)#end
```

The following example shows how to verify internal loopback configured on a coherent DSP controller.

```
RP/0/RP0/CPU0:ios#show controller CoherentDSP 0/3/0/12

Sun Dec 26 14:34:28.391 UTC

Port : CoherentDSP 0/3/0/12
Controller State : Up
Inherited Secondary State : Normal
Configured Secondary State : Maintenance
Derived State : Maintenance
Loopback mode : Line
BER Thresholds : SF = 1.0E-5 SD = 1.0E-7
Performance Monitoring : Enable
Bandwidth : 200.0Gb/s

Alarm Information:
LOS = 1 LOF = 0 LOM = 0
OOF = 1 OOM = 0 AIS = 1
IAE = 0 BIAE = 0 SF_BER = 0
SD_BER = 0 BDI = 5 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0 FLEXO_GIDM = 0
FLEXO-MM = 0 FLEXO-LOM = 0 FLEXO-RDI = 0
FLEXO-LOF = 0
Detected Alarms : None

Bit Error Rate Information
PREFEC BER : 3.12E-07
POSTFEC BER : 0.00E+00
Q-Factor : 14.00 dB

Q-Margin : 6.40dB

TTI :
Remote hostname : ios
Remote interface : CoherentDSP 0/2/0/13
Remote IP addr : 0.0.0.0

FEC mode : O_FEC

Flexo-Mode : Enable
Flexo Details:
Tx GID : 1
TX IID : 1, 2,
Rx GID : 1
RX IID : 1, 2,

AINS Soak : None
AINS Timer : 0h, 0m
AINS remaining time : 0 seconds
```

Configuring Loopback on the QXP Card

Example 1

The following example shows how to configure internal loopback on a coherent DSP controller.

```
RP/0/RP0/CPU0:ios#configure
Fri Jul 8 10:42:51.329 UTC
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/0/0/0
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback internal
RP/0/RP0/CPU0:ios(config-CoDSP)#commit
Fri Jul 8 10:43:48.644 UTC
RP/0/RP0/CPU0:ios(config-CoDSP)#end
```

The following example shows how to verify the internal loopback configured on a coherent DSP controller.

```
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/0/0/0
Fri Jul 8 10:45:53.820 UTC
Port : CoherentDSP 0/0/0/0
Controller State : Down
Inherited Secondary State : Normal
Configured Secondary State : Maintenance
Derived State : Maintenance
Loopback mode : Internal
BER Thresholds : SF = 1.0E-5 SD = 1.0E-7
Performance Monitoring : Enable
Bandwidth : 400.0Gb/s
Alarm Information:
LOS = 2 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0 SF_BER = 0
SD_BER = 0 BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0 FLEXO_GIDM = 0
FLEXO-MM = 0 FLEXO-LOM = 0 FLEXO-RDI = 0
FLEXO-LOF = 0
Detected Alarms : LOS
Bit Error Rate Information
PREFEC BER : 5.00E-01
POSTFEC BER : 0.00E+00
Q-Factor : 0.00 dB
Q-Margin : 0.00dB
OTU TTI Received
FEC mode : C_FEC
Flexo-Mode : Enable
Flexo Details:
Tx GID : 0
Rx GID : 0
AINS Soak : None
AINS Timer : 0h, 0m
AINS remaining time : 0 seconds
```

Example 2

The following example shows how to configure line loopback on a coherent DSP controller.

```
RP/0/RP0/CPU0:ios#configure
Fri Jul 8 10:48:48.577 UTC
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/0/0/0
RP/0/RP0/CPU0:ios(config-CoDSP)#secondary-admin-state maintenance
RP/0/RP0/CPU0:ios(config-CoDSP)#loopback line
RP/0/RP0/CPU0:ios(config-CoDSP)#commit
Fri Jul 8 10:49:26.809 UTC
RP/0/RP0/CPU0:ios(config-CoDSP)#end
```

The following example shows how to verify the line loopback configured on a coherent DSP controller.

```
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/0/0/0
Fri Jul 8 10:49:44.073 UTC
Port : CoherentDSP 0/0/0/0
Controller State : Down
Inherited Secondary State : Normal
Configured Secondary State : Maintenance
Derived State : Maintenance
Loopback mode : Line
BER Thresholds : SF = 1.0E-5 SD = 1.0E-7
Performance Monitoring : Enable
Bandwidth : 400.0Gb/s
Alarm Information:
LOS = 2 LOF = 0 LOM = 0
```

```
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0 SF_BER = 0
SD_BER = 0 BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0 FLEXO_GIDM = 0
FLEXO-MM = 0 FLEXO-LOM = 0 FLEXO-RDI = 0
FLEXO-LOF = 0
Detected Alarms : LOS
Bit Error Rate Information
PREFEC BER : 5.00E-01
POSTFEC BER : 0.00E+00
Q-Factor : 0.00 dB
Q-Margin : 0.00dB
OTU TTI Received
FEC mode : C_FEC
Flexo-Mode : Enable
Flexo Details:
Tx GID : 0
Rx GID : 0
AINS Soak : None
AINS Timer : 0h, 0m
AINS remaining time : 0 seconds
```

Example 3

The following example shows how to configure internal loopback on the 400GE controller.

```
RP/0/RP0/CPU0:ios#configure
Fri Jul 8 11:19:26.286 UTC
RP/0/RP0/CPU0:ios(config)#controller FourHundredGigECtrlr 0/0/0/3
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback internal
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#commit
Fri Jul 8 11:19:47.496 UTC
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#end
```

The following example shows how to verify the internal loopback configured on the 400GE controller.

```
RP/0/RP0/CPU0:ios#show controllers FourHundredGigECtrlr 0/0/0/3
Fri Jul 8 11:19:59.597 UTC
Operational data for interface FourHundredGigECtrlr0/0/0/3:
State:
Administrative state: enabled
Operational state: Down (Reason: State undefined)
LED state: Red On
Maintenance: Enabled
AINS Soak: None
Total Duration: 0 hour(s) 0 minute(s)
Remaining Duration: 0 hour(s) 0 minute(s) 0 second(s)
Laser Squelch: Disabled
Insert Idle Ingress: Disabled
Insert Idle Egress: Disabled
Phy:
Media type: Not known
Alarms:
Current:
Loss of Signal
Statistics:
FEC:
Corrected Codeword Count: 702710
Uncorrected Codeword Count: 1147
Autonegotiation disabled.
Operational values:
Speed: 400Gbps
Duplex: Full Duplex
```

```
Flowcontrol: None
Loopback: Internal
BER monitoring:
Not supported
Forward error correction: Standard (Reed-Solomon)
Holdoff Time: 0ms
```

Example 4

The following example shows how to configure line loopback on the 4X100GE MXP.

```
RP/0/RP0/CPU0:ios(config)#controller hundredGigECtrlr 0/3/0/1/1
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback line
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#commit
```

The following example shows how to verify the line loopback configured on the 4X100GE MXP.

```
RP/0/RP0/CPU0:ios#sh controllers hundredGigECtrlr 0/3/0/1/1
Fri Jul 22 10:34:39.730 UTC
Operational data for interface HundredGigECtrlr0/3/0/1/1:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On
    Maintenance: Enabled
    AINS Soak: None
      Total Duration: 0 hour(s) 0 minute(s)
      Remaining Duration: 0 hour(s) 0 minute(s) 0 second(s)
    Laser Squelch: Disabled
    Insert Idle Ingress: Disabled
    Insert Idle Egress: Disabled

Phy:
    Media type: Not known
    Statistics:
        FEC:
            Corrected Codeword Count: 6110368                Valid: True       Start time:
 13:10:41 Thu Jul 21 2022
            Uncorrected Codeword Count: 2771                 Valid: True       Start time:
 13:10:41 Thu Jul 21 2022
        PCS:
            Total BIP errors: 63700992                       Valid: True       Start time:
 13:10:41 Thu Jul 21 2022
            Total frame errors: 0                            Valid: False      Start time:
 13:10:41 Thu Jul 21 2022
            Total Bad SH: 0                                  Valid: False      Start time:
 13:10:41 Thu Jul 21 2022

Autonegotiation disabled.

Operational values:
    Speed: 100Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: Line
    BER monitoring:
        Not supported
    Forward error correction: Standard (Reed-Solomon)
    Holdoff Time: 0ms
```

Example 5

The following example shows how to configure internal loopback on the 4X100GE MXP.

```
RP/0/RP0/CPU0:ios#conf
RP/0/RP0/CPU0:ios(config)#controller hundredGigECtrlr 0/3/0/7/1
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#loopback internal
RP/0/RP0/CPU0:ios(config-eth-ctrlr)#commit
```

The following example shows how to verify the internal loopback configured on the 4X100GE MXP.

```
RP/0/RP0/CPU0:ios#show controller HundredGigECtrlr 0/3/0/7/1
Fri Jul 22 10:40:34.928 UTC

Operational data for interface HundredGigECtrlr0/3/0/7/1:

State:
    Administrative state: enabled
    Operational state: Down (Reason: State undefined)
    LED state: Red On
    Maintenance: Enabled
    AINS Soak: None
      Total Duration: 0 hour(s) 0 minute(s)
      Remaining Duration: 0 hour(s) 0 minute(s) 0 second(s)
    Laser Squelch: Disabled
    Insert Idle Ingress: Disabled
    Insert Idle Egress: Disabled

Phy:
    Media type: Not known
    Alarms:
        Current:
            Loss of Signal
    Statistics:
        FEC:
            Corrected Codeword Count: 31426046
            Uncorrected Codeword Count: 2187

Autonegotiation disabled.

Operational values:
    Speed: 100Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: Internal
    BER monitoring:
        Not supported
    Forward error correction: Standard (Reed-Solomon)
    Holdoff Time: 0ms
```

Viewing Loopback Configuration Alarm

The following example shows how to view the loopback configuration alarms on the 2-QDD-C, 1.2TC, 1.2TL, OTN-XP, and QXP cards.

```
RP/0/RP0/CPU0:ios#show alarms brief system active
Tue Sep 13 17:43:35.212 UTC

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

```
--------------------------------------------------------------------------------


        0/2             Minor        Controller       09/13/2022 17:34:32 UTC
HundredGigECtrlr0/2/0/2 - Internal Loopback Configured
0/2             Minor        Controller       09/13/2022 17:34:32 UTC
HundredGigECtrlr0/2/0/2 - Internal Loopback Configured
0/2             Minor        Controller       09/13/2022 17:34:32 UTC
HundredGigECtrlr0/2/0/8 - Line Loopback Configured


0/2             Major        Ethernet         09/13/2022 17:34:31 UTC
HundredGigECtrlr0/2/0/4 - Loss of Synchronization The Data Interface


0/2             Minor        Controller       09/13/2022 17:37:42 UTC    OTU40/2/0/8 -
Internal Loopback Configured

0/2             Minor        Controller       09/13/2022 17:39:19 UTC    CoherentDSP0/2/0/0
 - Internal Loopback Configured
```

LLDP Drop

Link Layer Discovery Protocol (LLDP) Snooping is enabled by default on all ethernet controllers.

To verify the LLDP neighbors, use the following commands:

```
RP/0/RP0/CPU0:ios#show lldp neighbors detail
Tue Mar 12 11:49:20.819 IST
Capability codes:
        (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
        (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

------------------------------------------------
Local Interface: HundredGigECtrlr0/1/0/7
Chassis id: 008a.96cd.34e1
Port id: Hu0/0/0/4
Port Description - not advertised
System Name: ncs5500_node

System Description:
 6.1.4, NCS-5500

Time remaining: 116 seconds
Hold Time: 120 seconds
System Capabilities: R
Enabled Capabilities: R
Management Addresses - not advertised
Peer MAC Address: 00:8a:96:cd:34:10


------------------------------------------------
Local Interface: HundredGigECtrlr0/1/0/13
Chassis id: 008a.96cd.34e1
Port id: Hu0/0/0/5
Port Description - not advertised
System Name: ncs5500_node
```

```
System Description:
 6.1.4, NCS-5500

Time remaining: 90 seconds
Hold Time: 120 seconds
System Capabilities: R
Enabled Capabilities: R
Management Addresses - not advertised
Peer MAC Address: 00:8a:96:cd:34:14


Total entries displayed: 2


RP/0/RP0/CPU0:ios#show lldp neighbors
Tue Mar 12 16:17:56.713 IST
Capability codes:
        (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
        (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

Device ID       Local Intf              Hold-time  Capability     Port ID
ncs5500_node    HundredGigECtrlr0/1/0/7  120        R               Hu0/0/0/4
ncs5500_node    HundredGigECtrlr0/1/0/13 120        R               Hu0/0/0/5

Total entries displayed: 2
```

When you enable LLDP drop on the client controller ports of the muxponder or muxponder slice, the LLDP frames drop on the ports without forwarding.

Note LLDP on 400GE is not supported on the OTN-XP card.

Configuring LLDP Drop

You can configure the LLDP drop for a muxponder or muxponder slice. By default, the LLDP drop status is set to False. On enabling the LLDP Drop, the status is set to True.

To configure LLDP drop on a muxponder use the following command:

configure

hw-module location *location* **mxponder drop-lldp**

Note Use the **no** form of the command to disable LLDP drop.

commit

Limitation

- When you disable LLDP globally, the LLDP gets disabled on all the interfaces.

Note By default, LLDP is enabled for NCS 1004. But when you enable and disable LLDP in the global configuration mode, LLDP gets disabled on all the interfaces.

Workaround: You must enable LLDP globally or reload the Router.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios#hw-module location 0/1 mxponder drop-lldp
RP/0/RP0/CPU0:ios#commit
```

configure

hw-module location *location* **mxponder-slice** *slice-number* **drop-lldp**

Note Use the **no** form of the command to disable LLDP drop.

To configure LLDP drop on a muxponder slice, use the following command:

commit

The following is a sample in which slice 0 client ports are enabled with LLDP drop.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#hw-module location 0/1 mxponder-slice 0 drop-lldp
RP/0/RP0/CPU0:ios(config)#commit
```

Verifying the Status of LLDP Drop

To verify the LLDP drop enabled status, use the following command.

```
RP/0/RP0/CPU0:ios#show hw-module location all mxponder
Fri Feb 22 13:22:19.281 UTC

Location:             0/0
Client Bitrate:       NONE
Trunk  Bitrate:       NONE
Status:               Not Provisioned


Location:             0/1
Slice ID:             0
Client Bitrate:       100GE
Trunk  Bitrate:       500G
Status:               Provisioned
LLDP Drop Enabled:    FALSE
Client Port                     Mapper/Trunk Port          CoherentDSP0/1/0/0
                                Traffic Split Percentage

HundredGigECtrlr0/1/0/2         ODU40/1/0/0/0                     100
HundredGigECtrlr0/1/0/3         ODU40/1/0/0/1                     100
HundredGigECtrlr0/1/0/4         ODU40/1/0/0/2                     100
HundredGigECtrlr0/1/0/5         ODU40/1/0/0/3                     100
HundredGigECtrlr0/1/0/6         ODU40/1/0/0/4                     100


Location:             0/1
Slice ID:             1
```

```
Client Bitrate:       100GE
Trunk  Bitrate:       500G
Status:               Provisioned
LLDP Drop Enabled:    FALSE
Client Port                     Mapper/Trunk Port          CoherentDSP0/1/0/1
                                Traffic Split Percentage

HundredGigECtrlr0/1/0/8         ODU40/1/0/1/0                     100
HundredGigECtrlr0/1/0/9         ODU40/1/0/1/1                     100
HundredGigECtrlr0/1/0/10        ODU40/1/0/1/2                     100
HundredGigECtrlr0/1/0/11        ODU40/1/0/1/3                     100
HundredGigECtrlr0/1/0/12        ODU40/1/0/1/4                     100


Location:             0/2
Slice ID:             0
Client Bitrate:       100GE
Trunk  Bitrate:       500G
Status:               Provisioned
LLDP Drop Enabled:    FALSE
Client Port                     Mapper/Trunk Port          CoherentDSP0/2/0/0
                                Traffic Split Percentage

HundredGigECtrlr0/2/0/2         ODU40/2/0/0/0                     100
HundredGigECtrlr0/2/0/3         ODU40/2/0/0/1                     100
HundredGigECtrlr0/2/0/4         ODU40/2/0/0/2                     100
HundredGigECtrlr0/2/0/5         ODU40/2/0/0/3                     100
HundredGigECtrlr0/2/0/6         ODU40/2/0/0/4                     100


Location:             0/2
Slice ID:             1
Client Bitrate:       100GE
Trunk  Bitrate:       500G
Status:               Provisioned
LLDP Drop Enabled:    FALSE
Client Port                     Mapper/Trunk Port          CoherentDSP0/2/0/1
                                Traffic Split Percentage

HundredGigECtrlr0/2/0/8         ODU40/2/0/1/0                     100
HundredGigECtrlr0/2/0/9         ODU40/2/0/1/1                     100
HundredGigECtrlr0/2/0/10        ODU40/2/0/1/2                     100
HundredGigECtrlr0/2/0/11        ODU40/2/0/1/3                     100
HundredGigECtrlr0/2/0/12        ODU40/2/0/1/4                     100


Location:             0/3
Slice ID:             0
Client Bitrate:       100GE
Trunk  Bitrate:       300G
Status:               Provisioned
LLDP Drop Enabled:    TRUE
Client Port                     Mapper/Trunk Port          CoherentDSP0/3/0/0
                                Traffic Split Percentage

HundredGigECtrlr0/3/0/2         ODU40/3/0/0/0                     100
HundredGigECtrlr0/3/0/3         ODU40/3/0/0/1                     100
HundredGigECtrlr0/3/0/4         ODU40/3/0/0/2                     100
```

Trail Trace Identifier

The Trail trace identifier (TTI) feature helps you to identify the signal from the source to the destination within the network. You can configure the TTI sent or expected string only in ASCII string format. When the expected TTI string does not match the received TTI trace string, the controller goes down and the OTUK-TIM alarm is raised. To configure TTI on the coherent DSP controllers, use the following commands:

configure

controller coherentDSP *R/S/I/P* **tti** {**sent | expected**} **ascii** *tti-string*

commit

Note The *tti-string* can have a maximum of 64 characters.

The following sample displays how to configure TTI on a coherent DSP controller with the sent and expected strings set to the same ASCII string. The state of the controller is up.

```
RP/0/RP0/CPU0:ios#config
Fri Mar 15 08:03:02.094 UTC
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/1/0/1 tti sent ascii 1234
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/1/0/1 tti expected ascii 1234
RP/0/RP0/CPU0:ios(config)#commit
Fri Mar 15 08:03:49.725 UTC
RP/0/RP0/CPU0:ios(config)#exit
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/1/0/1
Fri Mar 15 08:04:06.290 UTC

Port                                        : CoherentDSP 0/1/0/1
Controller State                            : Up
Inherited Secondary State                   : Normal
Configured Secondary State                  : Normal
Derived State                               : In Service
Loopback mode                               : None
BER Thresholds                              : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                      : Enable

Alarm Information:
LOS = 0 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 1 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                             : None

Bit Error Rate Information
PREFEC  BER                                 : 7.7E-03
POSTFEC BER                                 : 0.0E+00

OTU TTI Sent
     OPERATOR SPECIFIC  ASCII               : 1234
                                            :
     OPERATOR SPECIFIC HEX                  : 31323334000000000000000000000000
                                            : 00000000000000000000000000000000
OTU TTI Received
     OPERATOR SPECIFIC  ASCII               : 1234
                                            :
     OPERATOR SPECIFIC HEX                  : 31323334000000000000000000000000
```

```
                                                : 00000000000000000000000000000000
OTU TTI Expected
     OPERATOR SPECIFIC  ASCII                   : 1234
                                                :
     OPERATOR SPECIFIC HEX                      : 31323334000000000000000000000000
                                                : 00000000000000000000000000000000
FEC mode                                        : Soft-Decision 27

AINS Soak                                       : None
AINS Timer                                      : 0h, 0m
AINS remaining time                             : 0 seconds
```

The following example shows how to configure TTI on a coherent DSP controller with the sent and expected strings set to different ASCII strings. The state of the controller goes down and the TIM alarm is raised.

```
RP/0/RP0/CPU0:ios#config
Fri Mar 15 08:54:29.780 UTC
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/1/0/1 tti sent ascii 1234
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/1/0/1 tti expected ascii 5678
RP/0/RP0/CPU0:ios(config)#commit
Fri Mar 15 08:56:12.293 UTC
RP/0/RP0/CPU0:ios(config)#exit
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/1/0/1
Fri Mar 15 08:56:33.910 UTC

Port                                            : CoherentDSP 0/1/0/1
Controller State                                : Down
Inherited Secondary State                       : Normal
Configured Secondary State                      : Normal
Derived State                                   : In Service
Loopback mode                                   : None
BER Thresholds                                  : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                          : Enable

Alarm Information:
LOS = 1 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 3 TIM = 1
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                                 : BDI TIM

Bit Error Rate Information
PREFEC  BER                                     : 8.2E-03
POSTFEC BER                                     : 0.0E+00

OTU TTI Sent
     OPERATOR SPECIFIC  ASCII                   : 1234
                                                :
     OPERATOR SPECIFIC HEX                      : 31323334000000000000000000000000
                                                : 00000000000000000000000000000000
OTU TTI Received
     OPERATOR SPECIFIC  ASCII                   : 1234
                                                :
     OPERATOR SPECIFIC HEX                      : 31323334000000000000000000000000
                                                : 00000000000000000000000000000000
OTU TTI Expected
     OPERATOR SPECIFIC  ASCII                   : 5678
                                                :
     OPERATOR SPECIFIC HEX                      : 35363738000000000000000000000000
                                                : 00000000000000000000000000000000
FEC mode                                        : Soft-Decision 27

AINS Soak                                       : None
```

```
AINS Timer                                        : 0h, 0m
AINS remaining time                               : 0 seconds
```

Configure TTI on OTN-XP Card

You can configure the TTI sent or expected string in the full ASCII format, or Source Access Point Identifier (SAPI)/Destination Access Point Identifier (DAPI) format on OTU, ODU, ODU-flex, ODUCn, and coherentDSP controllers for the OTN-XP card.

From R7.3.1 onwards, coherentDSP controller supports only the full ASCII string format.

From R7.3.2 onwards, coherentDSP controller supports SAPI/DAPI string format in addition to the full ASCII string format.

You can configure TTI for the following muxponder modes:

- 10G-Grey-MXP
- 4x100G-MXP-400G-TXP

The following table lists the ASCII format that is supported on each muxponder mode for TTI:

Table 2: ASCII Format Supported on Each Muxponder Mode

Muxponder Mode	ASCII with Character String	Controller
10G Grey	Full ASCII 64-character	OTU2, OTU2E, OTU4, ODU4, ODU2E (10G mapper)
	SAPI ASCII 15-character	OTU2, OTU2E, OTU4, ODU4, ODU2E (10G mapper)
	DAPI ASCII 15-character	OTU2, OTU2E, OTU4, ODU4, ODU2E (10G mapper)
	Operator-specific ASCII 32-character	OTU2, OTU2E, OTU4, ODU4, ODU2E (10G mapper)
4x100G-MXP-400G-TXP	Full ASCII 64-character	OTU4, coherentDSP, ODUC4, ODU4 (100G mapper), and ODU-FLEX (400G mapper)
	SAPI ASCII 15-character	OTU4, coherentDSP, ODUC4, ODU4 (100G mapper), and ODU-FLEX (400G mapper)
	DAPI ASCII 15-character	OTU4, coherentDSP, ODUC4, ODU4 (100G mapper), and ODU-FLEX (400G mapper)
	Operator-specific ASCII 32-character	OTU4, coherentDSP, ODUC4, ODU4 (100G mapper), and ODU-FLEX (400G mapper)

To configure TTI, use the following commands:

configure

controller *controller-type R/S/I/P* **tti** {**sent | expected**} {**ascii | sapi ascii | dapi ascii | operator-specific ascii** } *tti-string*

commit

Note We recommend that you configure TTI in the SAPI/DAPI ASCII format.

The following is a sample configuration on ODU4 controller:

```
RP/0/RP0/CPU0:ios#configure
Thu Sep 30 17:19:11.804 UTC
Current Configuration Session  Line       User     Date                       Lock
00001000-00005c15-00000000     vty0       root     Thu Sep 30 11:50:12 2021
RP/0/RP0/CPU0:ios(config)#controller odU4 0/1/0/12/7 tti sent sapi ascii cisco123
RP/0/RP0/CPU0:ios(config)#controller odU4 0/1/0/12/7 tti expect sapi ascii 123cisco
RP/0/RP0/CPU0:ios(config)#controller odU4 0/1/0/12/7 tti sent dapi ascii dapistring123
RP/0/RP0/CPU0:ios(config)#controller odU4 0/1/0/12/7 tti expected dapi ascii 123stringdapi
RP/0/RP0/CPU0:ios(config)#controller odU4 0/1/0/12/7 tti sent operator-specific ascii
operation123
RP/0/RP0/CPU0:ios(config)#controller odU4 0/1/0/12/7 tti expected operator-specific ascii
123operator
RP/0/RP0/CPU0:ios(config)#commit
Thu Sep 30 17:21:49.521 UTC
RP/0/RP0/CPU0:ios(config)#end
```

The following is a sample output of the TTI configuration on the ODU4 controller:

```
RP/0/RP0/CPU0:ios#show controllers odU4 0/1/0/12/7
Thu Sep 30 17:22:30.658 UTC

Port                                        : ODU4 0/1/0/12/7
Controller State                            : Down
Inherited Secondary state                   : Normal
Configured Secondary state                  : Normal
Derived State                               : In Service
Loopback mode                               : None
BER Thresholds                              : SF = 1.0E-6  SD = 1.0E-7

Performance Monitoring                      : Enable

Path Monitoring Mode                        : Operational
PM TIM-CA state                             : Disable

Alarm Information:
AIS = 3 IAE = 0 BIAE = 0
SF_BER = 0      SD_BER = 0      BDI = 1
OCI = 0 LCK = 2 PTIM = 0
TIM = 1 CSF = 0 GFP LFD = 0
GFP LOCS = 0    GFP LOCCS = 0   GFP UPM = 0

Detected Alarms                             : TIM

ODU TTI Sent
     SAPI  ASCII                            : c i s c o 1 2 3
     SAPI  HEX                              : 00636973636F31323300000000000000000
     DAPI  ASCII                            : d a p i s t r i n g 1 2 3
```

```
     DAPI  HEX                                 : 006461706973747269 6E673132330000
     OPERATOR SPECIFIC ASCII                   : operation123
     OPERATOR SPECIFIC HEX                     :
6F7065726174696F6E3132330000000000000000000000000000000000000000
ODU TTI Received

ODU TTI Expected
     SAPI  ASCII                               : 1 2 3 c i s c o
     SAPI  HEX                                 : 00313233636973636F00000000000000
     DAPI  ASCII                               : 1 2 3 s t r i n g d a p i
     DAPI  HEX                                 : 00313233737472696E67646170690000
     OPERATOR SPECIFIC ASCII                   : 123operator
     OPERATOR SPECIFIC HEX                     :
3132336F70657261746F7200000000000000000000000000000000000000000000
AINS Soak                                      : None
AINS Timer                                     : 0h, 0m
AINS remaining time                            : 0 seconds

Private Line Emulation(PLE) supported          : No
```

You can configure TTI on OTUCn-REGEN mode on the OTN-XP Card.

The following sample displays how to configure TTI on a coherent DSP controller port 12 on the OTUCn-REGEN mode.

```
Mon Dec 27 12:03:53.642 UTC
RP/0/RP0/CPU0:ios(config)#controller CoherentDSP 0/3/0/12 tti sent ascii 1234cisco
RP/0/RP0/CPU0:ios(config)#commit
Mon Dec 27 12:03:54.333 UTC
RP/0/RP0/CPU0:ios(config)#end
Mon Dec 27 12:03:55.434 UTC
RP/0/RP0/CPU0:ios(config)#controller CoherentDSP 0/3/0/12 tti expected ascii cisco1234
RP/0/RP0/CPU0:ios(config)#commit
Mon Dec 27 12:03:56.137 UTC
RP/0/RP0/CPU0:ios(config)#end
```

The following sample verifies the TTI configuration on the inverse muxponder configured on the OTUCn-REGEN mode.

```
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/0/0/12
Tue May 24 17:49:14.301 UTC

Port                                           : CoherentDSP 0/0/0/12
Controller State                               : Up
Inherited Secondary State                      : Normal
Configured Secondary State                     : Normal
Derived State                                  : In Service
Loopback mode                                  : None
BER Thresholds                                 : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                         : Enable
Bandwidth                                      : 400.0Gb/s

Alarm Information:
LOS = 0 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 1 TIM = 1
FECMISMATCH = 0 FEC-UNC = 0     FLEXO_GIDM = 0
FLEXO-MM = 0    FLEXO-LOM = 0   FLEXO-RDI = 0
FLEXO-LOF = 0
Detected Alarms                                : None

Bit Error Rate Information
PREFEC  BER                                    : 1.55E-04
```

```
POSTFEC BER                                     : 0.00E+00
Q-Factor                                        : 11.10 dB

Q-Margin                                        : 4.70dB

OTU TTI Sent
     FULL TTI ASCII                             : cisco123
                                                :
     FULL TTI HEX                               : 636973636F31323300000000000000000000
                                                : 00000000000000000000000000000000
OTU TTI Received
     FULL TTI ASCII                             : 123cisco
                                                :
     FULL TTI HEX                               : 313233636973636F0000000000000000
                                                : 00000000000000000000000000000000
OTU TTI Expected
     FULL TTI ASCII                             : 123cisco
                                                :
     FULL TTI HEX                               : 313233636973636F0000000000000000
                                                : 00000000000000000000000000000000
FEC mode                                        : O_FEC

Flexo-Mode                                      : Enable
Flexo Details:
        Tx GID                                  : 1
        TX IID                                  : 1, 2, 3, 4,
        Rx GID                                  : 1
        RX IID                                  : 1, 2, 3, 4,

AINS Soak                                       : None
AINS Timer                                      : 0h, 0m
AINS remaining time                             : 0 seconds


RP/0/RP0/CPU0:ios#
RP/0/RP0/CPU0:ios#show running-config controller coherentDSP 0/0/0/12
Tue May 24 17:49:21.749 UTC
controller CoherentDSP0/0/0/12
tti
  expected ascii 123cisco
  sent ascii cisco123
!
!
```

Configure TTI on Inverse Muxponder Configuration on the OTN-XP Card

The following sample displays how to configure TTI on a coherent DSP controller port 12 on the OTN-XP in inverse muxponder configuration mode.

Note TTI configuration is not supported on the DSP controller port 13.

```
RP/0/RP0/CPU0:ios#configure
Thu Sep 30 14:18:13.288 UTC
RP/0/RP0/CPU0:ios(config)#controller coherentDSP 0/2/0/12
RP/0/RP0/CPU0:ios(config-CoDSP)#tti sent sapi ascii cisco
RP/0/RP0/CPU0:ios(config-CoDSP)#commit
```

The following sample verifies the TTI configuration on the inverse muxponder configured on the OTN-XP Card.

```
RP/0/RP0/CPU0:ios#show controllers coherentDSP 0/2/0/12
Thu Sep 30 14:19:05.367 UTC

Port                                        : CoherentDSP 0/2/0/12
Controller State                            : Up
Inherited Secondary State                   : Normal
Configured Secondary State                  : Maintenance
Derived State                               : Maintenance
Loopback mode                               : Internal
BER Thresholds                              : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                      : Enable
Bandwidth                                   : 200.0Gb/s

Alarm Information:
LOS = 2 LOF = 0 LOM = 0
OOF = 1 OOM = 0 AIS = 1
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0     FLEXO_GIDM = 0
FLEXO-MM = 0    FLEXO-LOM = 0   FLEXO-RDI = 1
FLEXO-LOF = 0
Detected Alarms                             : None

Bit Error Rate Information
PREFEC  BER                                 : 4.11E-09
POSTFEC BER                                 : 0.00E+00
Q-Factor                                    : 14.90 dB

Q-Margin                                    : 8.60dB

OTU TTI Sent
     SAPI  ASCII                            : c i s c o
     SAPI  HEX                              : 00636973636F0000000000000000000000
     DAPI  ASCII                            :
     DAPI  HEX                              :
     OPERATOR SPECIFIC ASCII                :
     OPERATOR SPECIFIC HEX                  :
CDCDCDCDED00DBBE2100000000000000050D9D29AD7F00007603BADC7698BADC
OTU TTI Received
     SAPI  ASCII                            : c i s c o
     SAPI  HEX                              : 00636973636F0000000000000000000000
FEC mode                                    : O_FEC

Flexo-Mode                                  : Enable
Flexo Details:
        Tx GID                              : 1
        TX IID                              : 1, 2,
        Rx GID                              : 1
        RX IID                              : 1, 2,

Flexo Peers Information:
        Controller                          : CoherentDSP0_2_0_13
        OTUCn rate                          : OTUC2


AINS Soak                                   : None
AINS Timer                                  : 0h, 0m
AINS remaining time                         : 0 seconds
```

Enable TIM CA on Path Monitoring Layer

You can enable Trace Identifier Mismatch (TIM) consequent action (CA) on the Path Monitoring (PM) layer using the **pm-tim-ca** command on mapper ODUs for Ethernet controller. The TTI transmit string in the SAPI/DAPI format is not configurable on ODUs that are transparent.

For example, the clients that are supported are ODU4, ODU2, and ODU2E, and lower-order ODUs such as ODU2 or ODU2E.

You can configure **pm-tim-ca** only on mapper ODUs such as ODU2E (10G mapper), ODU4 (100G mapper), and ODU-FLEX (400G mapper).

To configure **pm-tim-ca** on mapper ODU in the 4x100G-MXP-400G-TXP muxponder mode, use the following commands

configure

controller *controller-type R/S/I/P*

pm-tim-ca

commit

Troubleshoot the Trunk Port

Procedure

Step 1 **show controller coherentDSP** *R/S/I/P*

Displays details of the coherent DSP controller.

Example:

```
RP/0/RP0/CPU0:ios# show controller coherentDSP 0/0/0/0
Tue Feb 25 11:26:08.235 UTC


Port                                            : CoherentDSP 0/0/0/0
Controller State                                : Up
Inherited Secondary State                       : Normal
Configured Secondary State                      : Normal
Derived State                                   : In Service
Loopback mode                                   : None
BER Thresholds                                  : SF = 1.0E-5  SD = 1.0E-7
Performance Monitoring                          : Enable
Bandwidth                                       : 50.0Gb/s
Alarm Information:
LOS = 1 LOF = 0 LOM = 0
OOF = 0 OOM = 0 AIS = 0
IAE = 0 BIAE = 0        SF_BER = 0
SD_BER = 0      BDI = 0 TIM = 0
FECMISMATCH = 0 FEC-UNC = 0
Detected Alarms                                 : None
Bit Error Rate Information
PREFEC  BER                                     : 0.00E+00
POSTFEC BER                                     : 0.00E+00
Q-Factor                                        : 0.00 dB
Q-Margin                                        : -5.00dB
```

```
Instantaneous Q_margin                        :  0 dB


TTI :
        Remote IP addr                          : 0.0.0.0
FEC mode                                        : Soft-Decision 15

AINS Soak                                       : None
AINS Timer                                      : 0h, 0m
AINS remaining time                             : 0 seconds
```

In the above output, you can verify the state of the controller and also verify the alarms related to the trunk port.

Step 2 **show controller optics** *R/S/I/P*

Displays details of the optics controller.

Example:

```
RP/0/RP0/CPU0:ios# show controller optics  0/1/0/3
 Thu Feb 21 19:45:41.088 UTC

 Controller State: Up

 Transport Admin State: Automatic In Service

 Laser State: On

 LED State: Green

 Optics Status

         Optics Type:  Grey optics

         Alarm Status:
         -------------
         Detected Alarms: None


         LOS/LOL/Fault Status:

         Alarm Statistics:

         -------------
         HIGH-RX-PWR = 0            LOW-RX-PWR = 0
         HIGH-TX-PWR = 0            LOW-TX-PWR = 0
         HIGH-LBC = 0               HIGH-DGD = 0
         OOR-CD = 0                 OSNR = 0
         WVL-OOL = 0                MEA  = 0
         IMPROPER-REM = 0
         TX-POWER-PROV-MISMATCH = 0

         Performance Monitoring: Enable

         THRESHOLD VALUES
         ----------------

         Parameter                High Alarm  Low Alarm  High Warning  Low Warning
         -----------------------  ----------  ---------  ------------  -----------
         Rx Power Threshold(dBm)          4.9      -12.0           0.0          0.0
         Tx Power Threshold(dBm)          3.5      -10.1           0.0          0.0
         LBC Threshold(mA)                N/A        N/A          0.00         0.00

         LBC High Threshold = 98 %
```

```
         Polarization parameters not supported by optics

        Total TX Power = 6.39 dBm

        Total RX Power = 5.85 dBm

         Lane  Laser Bias    TX Power    RX Power  Output Frequency
         ----  ----------  ----------  ----------  ----------------
           1      75.0 %    0.59 dBm    0.63 dBm  230.43 THz
           2      68.6 %    0.06 dBm   -0.68 dBm  230.43 THz
           3      69.0 %    0.26 dBm   -0.63 dBm  230.43 THz
           4      69.1 %    0.56 dBm   -0.10 dBm  230.43 THz

Transceiver Vendor Details

         Form Factor            : QSFP28
         Name                   : CISCO-FINISAR
         Part Number            : FTLC1152RGPL-C2
         Rev Number             : CISCO-FINISAR
         Serial Number          : FNS22150LEC
         PID                    : QSFP-100G-CWDM4-S
         VID                    : V02
         CISCO-FINISAR
         Date Code(yy/mm/dd)    : 18/04/11
         Fiber Connector Type: LC
         Sonet Application Code: Not Set
         Ethernet Compliance Code: 100GBASE-CWDM4

Transceiver Temperature : 32 Celsius



AINS Soak               : Running
AINS Timer              : 0h, 15m
AINS remaining time     : 771 seconds
```

In the above output, you can verify the state of the controller, LED state, TX power, RX power, OSNR, and the alarms.

Step 3 If there is an LOS alarm on the trunk port, verify the fiber continuity to the port of NCS 1004 and fix the fiber connection.

What to do next

Verify the performance monitoring parameters of the Optics, Ethernet, and coherent DSP controllers. For more information, see #unique_13.

Troubleshoot a Failed Commit Configuration

Use the **show configuration failed** command to get information on why the configuration failed.

```
RP/0/RP0/CPU0:ios(config-hwmod-mxp)#show configuration failed
Fri Nov 26 15:27:22.629 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.
```

```
hw-module location 0/0
 mxponder-slice 0
  client-port-rate 1 client-type 400GE
!!% Total group bandwidth exceeds the limit: Total group bandwidth exceeds the limit
 !
!
end
```

Verify the Performance Monitoring Parameters of Controllers

Performance monitoring (PM) parameters are used by service providers to gather, store, set thresholds for, and report performance data for early detection of problems. The user can retrieve both current and historical PM counters for the various controllers in 15 minutes and 1 day intervals.

Procedure

show controllers *controllertype R/S/I/P* **{ pm { current | history } { 30 sec | 15-min | 24-hour } { optics | ether | fec | otn }** *linenumber* }

The following sample output displays the current performance monitoring parameters of the Optics controller in 15-minute intervals. Client optics have four lanes.

```
RP/0/RP0/CPU0:ios#show controller optics 0/1/0/3 pm current 15-min optics 3


Sat Feb  9 19:33:42.480 UTC

Optics in the current interval [19:30:00 - 19:33:42 Sat Feb 9 2019]

Optics current bucket type : Valid
             MIN       AVG       MAX      Operational      Configured      TCA   Operational
      Configured     TCA
                                          Threshold(min)   Threshold(min)  (min) Threshold(max)
   Threshold(max)  (max)
LBC[% ]       : 0.0       0.0       0.0      0.0               NA              NO   100.0
          NA               NO

OPT[dBm]      : -40.00    -40.00    -40.00   -30.00            NA              NO   63.32
          NA               NO

OPR[dBm]      : -40.00    -40.00    -40.00   -30.00            NA              NO   63.32
          NA               NO

FREQ_OFF[Mhz]: 0          0         0        0                 NA              NO   0
          NA               NO
```

The following sample output displays the current performance monitoring parameters of the Optics controller in 15-minute intervals. Trunk optics have one lane.

```
RP/0/RP0/CPU0:ios#show controller optics 0/2/0/1  pm  current 15-min optics 1


Sat Feb  9 11:19:15.234 UTC

Optics in the current interval [11:15:00 - 11:19:15 Sat Feb 9 2019]
```

```
Optics current bucket type : Valid
            MIN       AVG       MAX      Operational      Configured      TCA   Operational
      Configured     TCA
                                          Threshold(min)   Threshold(min) (min) Threshold(max)
   Threshold(max) (max)
LBC[% ]      : 0.0       0.0       0.0      0.0              NA              NO   100.0
          NA              NO

OPT[dBm]     : -1.51     -1.49     -1.48    -30.00           NA              NO   63.32
          NA              NO

OPR[dBm]     : -9.11     -9.07     -9.03    -30.00           NA              NO   63.32
          NA              NO

CD[ps/nm]    : 13        15        18       -180000          NA              NO   180000
          NA              NO

DGD[ps ]     : 2.00      2.33      3.00     0.01             NA              NO   21474836.46
      NA              NO

SOPMD[ps^2]  : 5.00      33.02     79.00    0.01             NA              NO   21474836.46
      NA              NO

OSNR[dB]     : 31.50     31.97     32.50    0.01             NA              NO   21474836.46
      NA              NO

PDL[dB]      : 0.20      0.34      0.50     0.01             NA              NO   21474836.46
      NA              NO

PCR[rad/s]   : 0.00      19.92     93.00    0.01             NA              NO   21474836.46
      NA              NO

RX_SIG[dBm]  : -9.05     -9.02     -8.99    -30.00           NA              NO   63.32
          NA              NO

FREQ_OFF[Mhz]: -302      -178      -74      -1500            NA              NO   1500
          NA              NO
```

The following sample output displays the current performance monitoring parameters of the Ethernet controller 15-minute intervals.

```
RP/0/RP0/CPU0:ios#show controller HundredGigECtrlr 0/1/0/2 pm current 15-min ether
Fri Aug 30 00:37:53.527 UTC

ETHER in the current interval [00:30:00 - 00:37:53 Fri Aug 30 2019]

ETHER current bucket type : Valid
RX-UTIL[%]                : 100.00              Threshold : 0.00         TCA(enable) : NO
TX-UTIL[%]                : 10.00               Threshold : 0.00         TCA(enable) : NO
RX-PKT                    : 3852414442          Threshold : 0            TCA(enable) : NO
STAT-PKT                  : 0                   Threshold : 0            TCA(enable) : NO
OCTET-STAT                : 5847965122956       Threshold : 0            TCA(enable) : NO
OVERSIZE-PKT              : 0                   Threshold : 0            TCA(enable) : NO
FCS-ERR                   : 0                   Threshold : 0            TCA(enable) : NO
LONG-FRAME                : 0                   Threshold : 0            TCA(enable) : NO
JABBER-STATS              : 0                   Threshold : 0            TCA(enable) : NO
64-OCTET                  : 0                   Threshold : 0            TCA(enable) : NO
65-127-OCTET              : 0                   Threshold : 0            TCA(enable) : NO
128-255-OCTET             : 0                   Threshold : 0            TCA(enable) : NO
256-511-OCTET             : 0                   Threshold : 0            TCA(enable) : NO
512-1023-OCTET            : 0                   Threshold : 0            TCA(enable) : NO
1024-1518-OCTET           : 0                   Threshold : 0            TCA(enable) : NO
```

```
IN-UCAST                  : 0                   Threshold : 0
IN-MCAST                  : 0                   Threshold : 0            TCA(enable) : NO
IN-BCAST                  : 0                   Threshold : 0            TCA(enable) : NO
OUT-UCAST                 : 0                   Threshold : 0            TCA(enable) : NO
OUT-BCAST                 : 0                   Threshold : 0            TCA(enable) : NO
OUT-MCAST                 : 0                   Threshold : 0            TCA(enable) : NO
TX-PKT                    : 7053588067          Threshold : 0            TCA(enable) : NO
OUT-OCTET                 : 451429636288        Threshold : 0            TCA(enable) : NO
IFIN-ERRORS               : 0                   Threshold : 0            TCA(enable) : NO
IFIN-OCTETS               : 0                   Threshold : 0            TCA(enable) : NO
STAT-MULTICAST-PKT        : 0                   Threshold : 0            TCA(enable) : NO
STAT-BROADCAST-PKT        : 0                   Threshold : 0            TCA(enable) : NO
STAT-UNDERSIZED-PKT       : 0                   Threshold : 0            TCA(enable) : NO
IN_GOOD_BYTES             : 5847965122956       Threshold : 0            TCA(enable) : NO
IN_GOOD_PKTS              : 3852414442          Threshold : 0            TCA(enable) : NO
IN_DROP_OTHER             : 0                   Threshold : 0            TCA(enable) : NO
OUT_GOOD_BYTES            : 451429636288        Threshold : 0            TCA(enable) : NO
OUT_GOOD_PKTS             : 7053588067          Threshold : 0            TCA(enable) : NO
IN_PKT_64_OCTET           : 0                   Threshold : 0            TCA(enable) : NO
IN_PKTS_65_127_OCTETS     : 0                   Threshold : 0            TCA(enable) : NO
IN_PKTS_128_255_OCTETS    : 0                   Threshold : 0            TCA(enable) : NO
IN_PKTS_256_511_OCTETS    : 0                   Threshold : 0            TCA(enable) : NO
IN_PKTS_512_1023_OCTETS   : 0                   Threshold : 0            TCA(enable) : NO
IN_PKTS_1024_1518_OCTETS  : 3852414442          Threshold : 0            TCA(enable) : NO
OUT_PKT_64_OCTET          : 7053588067          Threshold : 0            TCA(enable) : NO
OUT_PKTS_65_127_OCTETS    : 0                   Threshold : 0            TCA(enable) : NO
OUT_PKTS_128_255_OCTETS   : 0                   Threshold : 0            TCA(enable) : NO
OUT_PKTS_256_511_OCTETS   : 0                   Threshold : 0            TCA(enable) : NO
OUT_PKTS_512_1023_OCTETS  : 0                   Threshold : 0            TCA(enable) : NO
OUT_PKTS_1024_1518_OCTETS : 0                   Threshold : 0            TCA(enable) : NO
TX_UNDERSIZED_PKT         : 0                   Threshold : 0            TCA(enable) : NO
TX_OVERSIZED_PKT          : 0                   Threshold : 0            TCA(enable) : NO
TX_JABBER                 : 0                   Threshold : 0            TCA(enable) : NO
TX_BAD_FCS                : 0                   Threshold : 0            TCA(enable) : NO
```

The following sample output displays the current performance monitoring parameters of the Coherent DSP controller 15-minute intervals.

```
RP/0/RP0/CPU0:ios#show controller coherentDSP 0/2/0/1 pm current 15-min  fec


Sat Feb  9 11:23:42.196 UTC

g709 FEC in the current interval [11:15:00 - 11:23:42 Sat Feb 9 2019]

FEC current bucket type : Valid
    EC-BITS   : 291612035786            Threshold : 903330                TCA(enable)  :
YES
    UC-WORDS  : 0                       Threshold : 5                     TCA(enable)  :
YES

                MIN       AVG        MAX    Threshold   TCA     Threshold   TCA
                                              (min)    (enable)   (max)    (enable)
PreFEC BER  : 7.1E-03   7.2E-03   8.1E-03     0E-15        NO     0E-15       NO
PostFEC BER :   0E-15     0E-15     0E-15     0E-15        NO     0E-15       NO
```

The following sample output displays the current performance monitoring parameters of the optics controller 10-second intervals as flexi-bin.

```
RP/0/RP0/CPU0:ios#show controllers optics 0/0/0/0 pm current flex-bin optics 1
Thu May 21 07:43:38.964 UTC

Optics in the current interval [07:43:30 - 07:43:38 Thu May 21 2020]
```

```
Flexible bin interval size: 10 seconds

Optics current bucket type : Valid
            MIN       AVG       MAX      Operational      Configured      TCA   Operational
      Configured     TCA
                                          Threshold(min)   Threshold(min) (min) Threshold(max)
   Threshold(max) (max)
LBC[% ]      : 0.0       0.0       0.0      0.0              NA              NO   0.0
          NA              NO
OPT[dBm]     : -0.13     -0.10     -0.06    0.00             NA              NO   0.00
          NA              NO
OPR[dBm]     : -3.01     -2.96     -2.92    0.00             NA              NO   0.00
          NA              NO
CD[ps/nm]    : -3        -2        -1       0                NA              NO   0
          NA              NO
DGD[ps ]     : 1.00      1.67      2.00     0.00             NA              NO   0.00
          NA              NO
SOPMD[ps^2]  : 17.00     37.00     81.00    0.00             NA              NO   0.00
          NA              NO
OSNR[dB]     : 37.60     37.60     37.60    0.00             NA              NO   0.00
          NA              NO
PDL[dB]      : 0.60      0.66      0.70     0.00             NA              NO   0.00
          NA              NO
PCR[rad/s]   : 0.00      29.11     80.00    0.00             NA              NO   0.00
          NA              NO
RX_SIG[dBm]  : -3.49     -3.41     -3.36    0.00             NA              NO   0.00
          NA              NO
FREQ_OFF[Mhz]: 191       241       301      0                NA              NO   0
          NA              NO
SNR[dB]      : 14.50     14.62     14.70    0.00             NA              NO   0.00
          NA              NO
SNR-AX[dB]   : 17.10     17.19     17.30    0.00             NA              NO   0.00
          NA              NO
SNR-AY[dB]   : 11.90     12.06     12.10    0.00             NA              NO   0.00
          NA              NO
SNR-BX[dB]   : 0.00      0.00      0.00     0.00             NA              NO   0.00
          NA              NO
SNR-BY[dB]   : 0.00      0.00      0.00     0.00             NA              NO   0.00
          NA              NO
SOP-S1       : 0.50      0.55      0.59     0.00             NA              NO   0.00
          NA              NO
SOP-S2       : -0.59     -0.52     -0.48    0.00             NA              NO   0.00
          NA              NO
SOP-S3       : -0.67     -0.64     -0.60    0.00             NA              NO   0.00
          NA              NO

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

Using SNMP for Troubleshooting

The supported MIBs in NCS 1004 are documented in the *SNMP* chapter of *Configuration Guide for Cisco NCS 1004*.

Procedure

Use the following commands in EXEC mode to verify and monitor the SNMP for network monitoring and management.

- show snmp — Displays the status of SNMP communications.
- show snmp mib access — Displays the counters per OID that indicate the number of times an operation was done on an OID.
- show snmp mib access time — Displays the timestamp of the last operation on an OID.
- show snmp trace requests — Displays a log of the high level PDU processing trace points.
- debug snmp packet — Displays information about every SNMP packet sent or received by NCS 1004.
- debug snmp requests — Displays information about every SNMP request made by the SNMP manager.

Using Netconf for Troubleshooting

Netconf provides mechanisms to install, manipulate, and delete the configuration of network devices. The Netconf protocol provides a set of operations to manage device configurations and retrieve device state information.

Use the following commands in EXEC mode to retrieve device state information.

Before you begin

- Verify the installation of k9sec package.
- Generate the crypto key for SSH using the **crypto key generate dsa** command.

Note If you access NCS 1004 after regenerating the crypto key, you must remove the **~/.ssh/known_hosts** file as there will be a key mismatch between the host and NCS 1004.

- Configure SSH.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0(config)# ssh server v2
RP/0/RP0/CPU0(config)# ssh server netconf port 830
RP/0/RP0/CPU0(config)# ssh server netconf  vrf default
```

Note Port 830 is the default Netconf port.

- Configure Netconf.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0(config)# netconf-yang agent ssh
```

Procedure

Step 1 show netconf-yang clients

Displays the client details for netconf-yang.

Example:

```
RP/0/RP0/CPU0:ios# show netconf-yang clients
Fri Nov 26 15:28:50.942 UTC
No active netconf sessions found.
```

Step 2 show netconf-yang statistics

Displays the statistical details for netconf-yang.

Example:

```
RP/0/RP0/CPU0:ios# show netconf-yang statistics
Fri Nov 26 15:24:06.612 UTC
Summary statistics
                        # requests|             total time|   min time per request|   max
 time per request|   avg time per request|
other                             0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
close-session                     0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
kill-session                      0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
get-schema                        0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
get                               0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
get-config                        0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
edit-config                       0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
commit                            0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
cancel-commit                     0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
lock                              0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
unlock                            0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
discard-changes                   0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
validate                          0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
xml parse                         0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
netconf processor                 0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
YFW                               0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
pending requests                  0|        0h  0m  0s   0ms|        0h  0m  0s   0ms|
```

```
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
invoke rpc                          0|       0h  0m  0s   0ms|       0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
copy-config                         0|       0h  0m  0s   0ms|       0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
create-subscription                 0|       0h  0m  0s   0ms|       0h  0m  0s   0ms|
 0h  0m  0s   0ms|       0h  0m  0s   0ms|
List is empty.
```

Step 3 **show netconf-yang trace**

Debugs and verifies Netconf.

Example:

```
RP/0/RP0/CPU0:ios# show netconf-yang trace
Fri Nov 26 15:29:31.430 UTC
68703 wrapping entries (203392 possible, 161152 allocated, 0 filtered, 68703 total)
Nov 25 17:05:39.003 netconf/netconf.trace 0/RP0/CPU0 t8790 #61984: TRC:
nc_pxs_ipc_notify_callback_fn:319 IPC_NOTIFY_OPEN
Nov 25 17:05:39.003 netconf/netconf.trace 0/RP0/CPU0 t8790 #61985: TRC:
nc_sm_pxs_notify_callback_fn:7243 New NETCONF SSH proxy client connection: 0x7f4868942c90
Nov 25 17:05:39.005 netconf/netconf.trace 0/RP0/CPU0 t8790 #61986: DBG:
nc_sm_yf_start_session_generate:877 cidl_yfw_request malloced 0x5607192903c0
Nov 25 17:05:39.005 netconf-yfw/brief.trace 0/RP0/CPU0 t8790 #61987: TRC: yfw_trace:3389
ctx=0x5607173dc830,[Server->yfw] new session
Nov 25 17:05:39.005 netconf-yfw/nacm.trace 0/RP0/CPU0 t8790 #61988: TRC:
yfw_nacm_req_author_enforcement:1342 ctx=0x5607173dcc70,[REQ] sess_id: 0, <(null)> is not
supported. Skip checking.
Nov 25 17:05:39.006 netconf-yfw/processor.trace 0/RP0/CPU0 t8790 #61989: DBG:
yfw_request_process:2702 ctx=0x5607173da7a0,cidl_yfw_request 0x5607192903c0
Nov 25 17:05:39.006 netconf-yfw/brief.trace 0/RP0/CPU0 t8790 #61990: TRC:
yfw_request_process:2704 ctx=0x5607173dc830,req cidl_START_SESSION==
Nov 25 17:05:39.006 netconf-yfw/map.trace 0/RP0/CPU0 t8790 #61991: TRC:
yfw_map_transform_request:1719 ctx=0x5607173dd0b0,Start
Nov 25 17:05:39.006 netconf-yfw/map.trace 0/RP0/CPU0 t8790 #61992: TRC:
yfw_map_transform_request:1763 ctx=0x5607173dd0b0,Mapping not required for this request.
Nov 25 17:05:39.006 netconf-yfw/processor.trace 0/RP0/CPU0 t8790 #61993: DBG:
yfw_session_create:174 ctx=0x5607173da7a0,assigned session-id=743885753
Nov 25 17:05:39.006 netconf-yfw/processor.trace 0/RP0/CPU0 t8790 #61994: TRC:
yfw_req_session_start:655 ctx=0x5607173da7a0,ses=0x560719330a50,op=11,yfw session not mdt
743885753
Nov 25 17:05:39.006 netconf-yfw/me.trace 0/RP0/CPU0 t8790 #61995: DBG: me_session_create:33072
 ctx=0x5607173e9390,session create: usr=0x560719344b00,ses=0x560719330a60
Nov 25 17:05:39.006 netconf-yfw/me.trace 0/RP0/CPU0 t8790 #61996: TRC: me_session_create:33093
 ctx=0x5607173e9390,super_user=0
Nov 25 17:05:39.006 netconf-yfw/me.trace 0/RP0/CPU0 t8790 #61997: TRC:
me_session_xpath_hash_init:36053 ctx=0x5607173e9390,session_id 743885753, init successfully
Nov 25 17:05:39.011 netconf-yfw/nacm.trace 0/RP0/CPU0 t8790 #61998: TRC:
yfw_nacm_session_init:1664 ctx=0x5607173dcc70,sess_id: 743885753, aaa_nacm_is_enabled() rc:
 0
Nov 25 17:05:39.011 netconf-yfw/brief.trace 0/RP0/CPU0 t8790 #61999: TRC:
me_session_create:33164 ctx=0x5607173dc830,sess (0x560719290be0), session_id: 743885753
Nov 25 17:05:39.011 netconf-yfw/me.trace 0/RP0/CPU0 t8790 #62000: DBG: me_session_create:33190
 ctx=0x5607173e9390,Update session info: START
Nov 25 17:05:39.015 netconf-yfw/bk.trace 0/RP0/CPU0 t8790 #62001: TRC:
me_bk_sysdb_auth_user_init:561 ctx=0x5607173f7d20,Using authorization methodlist 'default'.
Nov 25 17:05:39.022 netconf-yfw/bk.trace 0/RP0/CPU0 t8790 #62002: TRC:
sysdb_backend_session_create:1715 ctx=0x5607173f7d20,auth user init succeess, caller
ctx=0x560719292570
Nov 25 17:05:39.022 netconf-yfw/bk.trace 0/RP0/CPU0 t8790 #62003: DBG:
sysdb_backend_session_create:1719 ctx=0x5607173f7d20,SysDB backend session successfully
created (0x56071929bb00).
Nov 25 17:05:39.022 netconf-yfw/me.trace 0/RP0/CPU0 t8790 #62004: TRC:
me_noqt_session_create:35378 ctx=0x5607173e9390,creating non-QT backend session(s)
```

```
Nov 25 17:05:39.022 netconf-yfw/calvados.trace 0/RP0/CPU0 t8790 #62005: TRC:
calvados_backend_session_create:1635 ctx=0x5607174650a0,tid=0x7f48e9e83840,calvados enqueued
 session 0x56071929bf40
Nov 25 17:05:39.022 netconf-yfw/calvados.trace 0/RP0/CPU0 t8790 #62006: TRC:
calvados_backend_session_create:1692 ctx=0x5607174650a0,tid=0x7f48e9e83840,calling dm_execute
Nov 25 17:05:39.022 netconf-yfw/me.trace 0/RP0/CPU0 t8790 #62007: TRC: me_session_create:33284
 ctx=0x5607173e9390,Session ref count incremented (1)
Nov 25 17:05:39.022 netconf-yfw/processor.trace 0/RP0/CPU0 t8790 #62008: DBG:
yfw_me_request_result_check:590 ctx=0x5607173da7a0,ses=0x560719330a50,op=11,ME request
success.
Nov 25 17:05:39.022 netconf-yfw/bk.trace 0/RP0/CPU0 t8849 #62009: TRC:
me_bk_sysdb_auth_request_process:366 ctx=0x5607173f7d20,getting authorization taskmap of
user (user ctx=0x56071929bb00).
Nov 25 17:05:39.022 netconf-yfw/bk.trace 0/RP0/CPU0 t8849 #62010: TRC:
me_bk_sysdb_get_user_taskmap_netconf_ssh:107 ctx=0x5607173f7d20,agent_name: netconf
Nov 25 17:05:39.022 netconf-yfw/bk.trace 0/RP0/CPU0 t8849 #62011: TRC:
me_bk_sysdb_get_user_taskmap_netconf_ssh:142 ctx=0x5607173f7d20,Retrieving authorization
taskmap from SSHd child handler, PID: 26449
Nov 25 17:05:39.022 netconf/netconf.trace 0/RP0/CPU0 t8790 #62012: DBG:
nc_sm_ses_timeout_elapsed_check_timer_set:6942 Setting abs and idle timeouts
Nov 25 17:05:39.022 netconf-yfw/confd.trace 0/RP0/CPU0 t8864 #62013: TRC:
calvados_backend_xdm_wait:1001 ctx=0x56071747d3a0,tid=0x7f48694be700,[Calvados XDM threadpool]
 dm_wait returned with 0
Nov 25 17:05:39.022 netconf-yfw/confd.trace 0/RP0/CPU0 t8864 #62014: DBG:
calvados_backend_xdm_dispatch:1012 ctx=0x56071747d3a0,tid=0x7f48694be700,CA_API_GET_INSTANCE
 ref_count:-8
--------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------------------
```

Verify Alarms

You can view the alarm information using the **show alarms** command.

Procedure

show alarms [**brief** [**card** | **rack** | **system**] [**location** *location*] [**active** | **history**] | **detail** [**card** | **rack** | **system**] [**location** *location*] [**active** | **clients** | **history** | **stats**]]

Displays alarms in brief or detail.

Example:

```
RP/0/RP0/CPU0:ios# show alarms brief card location 0/RP0/CPU0 active

Wed Mar  4 06:10:55.959 UTC

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

------------------------------------------------------------------------------------
0/1             Major        FPD_Infra        03/02/2020 07:09:04 UTC    One Or More FPDs
Need Upgrade Or Not In Current State
```

```
0/2             Major        FPD_Infra        03/03/2020 14:27:33 UTC    One Or More FPDs
Need Upgrade Or Not In Current State

0/2             Major        Ethernet         03/03/2020 20:33:33 UTC
HundredGigECtrlr0/2/0/9 - Carrier Loss On The LAN

0/2             Critical     Controller       03/03/2020 20:34:05 UTC    Optics0/2/0/3 -
Improper Removal

0/2             NotAlarmed   OTN              03/03/2020 20:34:08 UTC    ODU40/2/0/0/2 -
OPUK Client Signal Failure

0/2             NotAlarmed   OTN              03/03/2020 20:34:05 UTC    ODU40/2/0/1/2 -
OPUK Client Signal Failure
```

```
RP/0/RP0/CPU0:ios# show alarms brief card location 0/RP0/CPU0 active

Fri May  8 04:46:29.582 UTC

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

------------------------------------------------------------------------------------
0/2             NotReported  OTN              05/07/2020 14:25:05 UTC    ODU20/2/0/0/2/3 -
 Path Monitoring Alarm Indication Signal

0/2             NotReported  OTN              05/07/2020 14:25:05 UTC    ODU2E0/2/0/0/2/4
- Path Monitoring Alarm Indication Signal

0/1             NotReported  OTN              05/07/2020 14:24:41 UTC    ODU20/1/0/0/2/3 -
 Path Monitoring Alarm Indication Signal

0/1             NotReported  OTN              05/07/2020 14:25:03 UTC    ODU20/1/0/1/11/3
- Path Monitoring Alarm Indication Signal

0/1             NotReported  OTN              05/07/2020 14:25:03 UTC    ODU2E0/1/0/1/11/4
 - Path Monitoring Alarm Indication Signal

0/3             NotReported  OTN              05/07/2020 14:24:41 UTC    ODU20/3/0/0/2/3 -
 Path Monitoring Alarm Indication Signal

0/3             NotReported  OTN              05/07/2020 14:24:41 UTC    ODU2E0/3/0/0/2/4
- Path Monitoring Alarm Indication Signal

0/1           Major       Ethernet        05/07/2020 14:24:41 UTC    TenGigECtrlr0/1/0/4/1
 - Remote Fault
```

Note
In the maintenance mode, all the alarms are suppressed and the **show alarms** command will not show the alarms details. Use the **show controllers** *controllertype R/S/I/P* command to view the client and trunk alarms.

Using Onboard Failure Logging

Onboard Failure Logging (OBFL) collects and stores boot, environmental, and critical hardware data in the nonvolatile flash memory of the CPU controller card. This information is used for troubleshooting, testing, and diagnosis if a failure or other error occurs. This data provides improved accuracy in hardware

troubleshooting and root cause isolation analysis. The data collected includes field-replaceable unit (FRU) serial number, OS version, total run time, boot status, temperature and voltage at boot, temperature and voltage history, and other board specific errors.

Procedure

show logging onboard {**fmea** | **inventory** | **temperature** | **uptime** | **voltage**}

Displays OBFL data.

Example:

The following example shows the *uptime* information.

```
sysadmin-vm:0_RP0# show logging onboard uptime

OBFL Uptime Information For : 0/RP0
       * indicates incomplete time-sync while record was written
       ! indicates time reset backwards while system was running
  ---------------------------------------------------------------------------------
       UPTIME CARD INFORMATION
  ---------------------------------------------------------------------------------
       Entity Name               :  Value
  ---------------------------------------------------------------------------------
      Previous Chassis SN         : CAT2311B0C5
      Current Chassis SN          : CAT2311B0CM
      Previous R/S/I              : 0/0/0
      Current R/S/I               : 0/0/0
      Write Interval              : 15 (min)
      First Power On TS           : 07/30/2019 07:33:56
      Last Erase TS               : --/--/---- --:--:--
      Rack Change Count           : 8
      Slot Change Count           : 8

  ---------------------------------------------------------------------------------
       UPTIME INFORMATION
  ---------------------------------------------------------------------------------
   Start Time (UTC)     | End Time (UTC)       | Card Uptime info
   mm/dd/yyyy hh:mm:ss | mm/dd/yyyy hh:mm:ss | Weeks.Days.Hrs.Min.Sec
  ---------------------------------------------------------------------------------
   10/28/2021 12:23:17 | 11/14/2021 21:09:18 | 2.3.8.46.1
   11/14/2021 21:09:18 | 11/18/2021 16:31:15 | 0.3.19.21.57
   11/18/2021 16:31:15 | 11/18/2021 21:10:35 | 0.0.4.39.20
   11/18/2021 21:10:35 | 11/19/2021 12:40:39 | 0.0.15.30.4
   11/19/2021 12:40:39 | 11/19/2021 14:16:10 | 0.0.1.35.31
   11/19/2021 14:16:10 | 11/22/2021 11:49:20 | 0.2.21.33.10
   11/22/2021 11:49:20 | 11/22/2021 22:51:48 | 0.0.11.2.28
   11/22/2021 22:51:48 | 11/23/2021 17:17:41 | 0.0.18.25.53
   11/24/2021 21:22:12 | 11/24/2021 23:11:16 | 0.0.1.49.4
   11/24/2021 23:11:16 | 11/24/2021 23:39:49 | 0.0.0.28.33
   11/24/2021 23:39:49 | 11/25/2021 15:25:32 | 0.0.15.45.43
   11/25/2021 15:25:32 | 11/25/2021 16:10:05 | 0.0.0.44.33
   11/25/2021 16:10:05 | 11/25/2021 16:25:08 | 0.0.0.15.3
   11/25/2021 16:25:08 | 11/25/2021 16:37:18 | 0.0.0.12.10
   11/25/2021 16:37:18 | 11/26/2021 15:08:27 | 0.0.22.31.9


OBFL Uptime Information For : 0/SC0
       * indicates incomplete time-sync while record was written
       ! indicates time reset backwards while system was running
  ---------------------------------------------------------------------------------
```

```
     UPTIME CARD INFORMATION
-------------------------------------------------------------------------------
     Entity Name                :  Value
-------------------------------------------------------------------------------
    Previous Chassis SN         : ------------
    Current Chassis SN          : CAT2311B0CM
    Previous R/S/I              : -/-/-
    Current R/S/I               : 0/1/0
    Write Interval              : 15 (min)
    First Power On TS           : 06/07/2019 08:52:42
    Last Erase TS               : --/--/---- --:--:--
    Rack Change Count           : 0
    Slot Change Count           : 0

-------------------------------------------------------------------------------
     UPTIME INFORMATION
-------------------------------------------------------------------------------
 Start Time (UTC)     | End Time (UTC)       | Card Uptime info
 mm/dd/yyyy hh:mm:ss | mm/dd/yyyy hh:mm:ss | Weeks.Days.Hrs.Min.Sec
-------------------------------------------------------------------------------
 10/24/2021 05:48:29 | 10/24/2021 06:27:51 | 0.0.0.39.22
 10/24/2021 06:27:51 | 10/24/2021 07:05:24 | 0.0.0.37.33
 10/24/2021 07:05:24 | 10/26/2021 23:43:32 | 0.2.16.38.8
 10/26/2021 23:43:32 | 10/26/2021 23:55:49 | 0.0.0.12.17
 10/26/2021 23:55:49 | 10/27/2021 00:09:49 | 0.0.0.14.0
 10/27/2021 00:09:49 | 10/27/2021 00:16:08 | 0.0.0.6.19
 10/27/2021 00:16:08 | 10/27/2021 23:37:51 | 0.0.23.21.43
 10/27/2021 23:37:51 | 10/27/2021 23:50:33 | 0.0.0.12.42
 11/24/2021 21:22:12 | 11/24/2021 23:11:16 | 0.0.1.49.4
 11/24/2021 23:11:16 | 11/24/2021 23:39:49 | 0.0.0.28.33
 11/24/2021 23:39:49 | 11/25/2021 15:25:32 | 0.0.15.45.43
 11/25/2021 15:25:32 | 11/25/2021 16:10:05 | 0.0.0.44.33
 11/25/2021 16:10:05 | 11/25/2021 16:25:08 | 0.0.0.15.3
 11/25/2021 16:25:08 | 11/25/2021 16:37:18 | 0.0.0.12.10
 11/25/2021 16:37:18 | 11/26/2021 15:09:27 | 0.0.22.32.9
```

Capture Logs

Procedure

Step 1 **show logging**

Displays the contents of the logging buffers. You can also view details of FPD upgrade failures.

Example:

```
RP/0/RP0/CPU0:ios# show logging
Fri Nov 26 15:03:48.886 UTC
Syslog logging: enabled (0 messages dropped, 0 flushes, 0 overruns)
    Console logging: Disabled
    Monitor logging: level debugging, 0 messages logged
    Trap logging: level informational, 0 messages logged
    Buffer logging: level debugging, 1025 messages logged

Log Buffer (2097152 bytes):
```

```
RP/0/RP0/CPU0:Nov 25 16:40:28.533 UTC: syslogd[155]: %SECURITY-XR_SSL-6-INFO : XR SSL info:
 Setting fips register
RP/0/RP0/CPU0:Nov 25 16:40:36.323 UTC: cfgmgr-rp[120]: %MGBL-CONFIG-7-INTERNAL : Configuration
 Manager was unable to find subtree for 'sh_p_service_role_daemon' partition.  : cfgmgr-rp
 : (PID=2522) :  -Traceback= 7f1be3f92420 7f1be4bdd0c6 7f1be4bdd208 7f1be4bd74a4 7f1be4bd7e45
 7f1be4bdb972 7f1be4bd7f0e 55e025a46170 55e025a42429 55e025a3168f
RP/0/RP0/CPU0:Nov 25 16:40:36.457 UTC: aib[291]: Registering with IM
RP/0/RP0/CPU0:Nov 25 16:40:36.661 UTC: cma_partner[350]: Packet received on undiscovered
module 160
RP/0/RP0/CPU0:Nov 25 16:40:37.113 UTC: ifmgr[142]: platform_pfi_ifh_get_if_alloc_info:
Setting pic
.............
.............
```

a) **logging buffered** *size*

Configures the size of the logging buffer. The range is from 2097152 to 125000000 bytes.

Example:

```
RP/0/RP0/CPU0:ios(config)#logging buffered 3000000
```

Step 2 **show tech-support ncs1004**

Creates a .tgz file that contains the dump of the configuration and show command outputs. This file provides system information for the Cisco Technical Support.

Example:

```
RP/0/RP0/CPU0:ios# show tech-support ncs1004
Fri Nov 26 15:05:28.996 UTC
++ Show tech start time: 2021-Nov-26.150529.UTC ++
Fri Nov 26 15:05:30 UTC 2021 Waiting for gathering to complete
................................................................................................
Fri Nov 26 15:10:38 UTC 2021 Compressing show tech output
Show tech output available at 0/RP0/CPU0 :
/harddisk:/showtech/showtech-ncs1004-2021-Nov-26.150529.UTC.tgz
++ Show tech end time: 2021-Nov-26.151040.UTC ++
```

Step 3 **show tech-support alarm-mgr**

Collects the Cisco support file for the alarm manager component.

Example:

```
RP/0/RP0/CPU0:ios#show tech-support alarm-mgr
Fri Nov 26 15:06:06.916 UTC
++ Show tech start time: 2021-Nov-26.150607.UTC ++
Fri Nov 26 15:06:08 UTC 2021 Waiting for gathering to complete
.....
Fri Nov 26 15:06:23 UTC 2021 Compressing show tech output
Show tech output available at 0/RP0/CPU0 :
/harddisk:/showtech/showtech-alarm_mgr-2021-Nov-26.150607.UTC.tgz
++ Show tech end time: 2021-Nov-26.150624.UTC ++
```

Step 4 **admin**

Enters system admin EXEC mode.

Example:

```
RP/0/RP0/CPU0:ios#admin
```

Step 5 **show tech ncs1004-admin**

Collects show tech logs that can be copied to IOS XR hard disk.

Example:

```
sysadmin-vm:0_RP0# show tech ncs1004-admin
Thu May  5  15:22:08.520 UTC+00:00
++ Show tech start time: 2022-May-05.152208.UTC ++
Waiting for gathering to complete
......
Compressing show tech output
Show tech output available at
/misc/disk1//showtech/showtech-ncs1004-admin-2022-May-05.152208.UTC.tgz
Please collect show tech-support ctrace in addition to any sysadmin show-tech-support
collection

sysadmin-vm:0_RP0# run
Thu May  5  15:31:54.352 UTC+00:00
[sysadmin-vm:0_RP0:~]$scp
/misc/disk1/showtech/showtech-ncs1004-admin-2022-May-05.152208.UTC.tgz
209.165.200.227:/misc/disk1/
showtech-ncs1004-admin-2022-May-05.152208.UTC.tgz                              100%   13MB
 12.8MB/s   00:00
[sysadmin-vm:0_RP0:~]$exit
```

What to do next

You should gather the above information before calling the Cisco Technical Assistance Center (TAC).

Verify Process Details and Crash Dump

Procedure

Step 1 **show processes**

Displays information about active processes.

Example:

The following example shows the output of the **show processes** command in the EXEC mode.

```
RP/0/RP0/CPU0:ios# show processes
Fri Nov 26 14:59:31.671 UTC
JID    TID  Stack  pri  state        NAME             rt_pri
1      1       0K  20   Sleeping     init             0
66895  1359    0K  20   Sleeping     oom.sh           0
66911  1375    0K  20   Sleeping     cgroup_oom.sh    0
66912  1376    0K  20   Sleeping     oom.sh           0
66932  1396    0K  0    Sleeping     cgroup_oom       0
67172  1636    0K  20   Sleeping     app_config_back  0
67176  1640    0K  20   Sleeping     bash             0
67203  1667    0K  20   Sleeping     inotifywait      0
67205  1669    0K  20   Sleeping     bash             0
67242  1706    0K  20   Sleeping     dbus-daemon      0
67242  1707    0K  20   Sleeping     dbus-daemon      0
67260  1724    0K  20   Sleeping     sshd             0
67271  1735    0K  20   Sleeping     rpcbind          0
.....................................
.....................................
```

The following example shows the output of the **show processes** command in the system admin EXEC mode.

```
sysadmin-vm:0_RP0# show processes all location 0/rp0
Fri Nov  26 15:01:44.450 UTC+00:00
------------------------------------------------------------------------
node:      0/RP0
------------------------------------------------------------------------
LAST STARTED            STATE    RE-     MANDA-  MAINT- NAME(IID) ARGS
                                 START   TORY    MODE
------------------------------------------------------------------------
11/25/2021 16:37:56.000 Run      1                      aaad(0)
11/25/2021 16:39:12.000 Run      1                      ael_mgbl(0)
11/25/2021 16:37:56.000 Run      1                      bh_cardmgr(0) -M 3
11/25/2021 16:37:56.000 Run      1                      bh_esd(0)
11/25/2021 16:37:56.000 Run      1       M              calv_alarm_mgr(0)
11/25/2021 16:37:56.000 Run      1       M              cm(0)
11/25/2021 16:37:56.000 Run      1       M              confd_helper(0) -t token -d -w 400
 -b 30 -p 600 -r 10 -f 10
11/25/2021 16:39:12.000 Run      1                      debug_agent(0)
11/25/2021 16:37:56.000 Run      1       M              debug_client(0)
11/25/2021 16:37:56.000 Run      1                      dr_calv(0) 0
11/25/2021 16:37:56.000 Run      1       M              ds(0) -r
11/25/2021 16:37:56.000 Run      1                      dumper(0)
11/25/2021 16:37:56.000 Run      1       M              envmon(0)
11/25/2021 16:39:12.000 Run      1                      envmon_ui(0)
11/25/2021 16:39:12.000 Run      1                      fit_mgbl(0)
11/25/2021 16:39:12.000 Run      1                      fpdserv(0)
11/25/2021 16:39:12.000 Run      1                      gaspp_mgbl(0)
11/25/2021 16:37:56.000 Run      1       M              inst_agent(0)
11/25/2021 16:39:13.000 Run      1                      inst_mgr(0)
11/25/2021 16:37:56.000 Run      1       M              issu_agt(0)
11/25/2021 16:39:12.000 Run      1                      issu_dir(0)
11/25/2021 16:39:11.000 Run      2                      led_mgr(0)
11/25/2021 16:37:56.000 Run      1                      mediasvr(0)
11/25/2021 16:37:56.000 Run      1                      obfl_mgr(0)
11/25/2021 16:37:56.000 Run      1                      obfl_show(0)
11/25/2021 16:37:56.000 Run      1                      pam_manager(0)
11/25/2021 16:37:56.000 Run      1       M              pm(0)
11/25/2021 16:37:56.000 Run      1       M              rvm_mgr(0)
11/25/2021 16:37:56.000 Run      1       M              sdr_mgr(0)
11/25/2021 16:37:56.000 Run      1                      set_hostname(0)
11/25/2021 16:37:56.000 Run      1       M              shelf_mgr(0)
11/25/2021 16:37:56.000 Run      1       M              ship_server(0)
11/25/2021 16:37:56.000 Run      1                      ssh_key_client(0)
11/25/2021 16:39:12.000 Run      1                      ssh_key_server(0)
11/25/2021 16:37:56.000 Run      1       M              syslogd_helper(0)
11/25/2021 16:37:56.000 Run      1                      syslogd_relay(0)
11/25/2021 16:37:56.000 Run      1                      tacacsd(0)
11/25/2021 16:37:56.000 Run      1                      timezone_config(0)
11/25/2021 16:37:56.000 Run      1       M              vm_manager(0) -W -c -n -v -e
/opt/cisco/qemu-system-x86_64.wrapper
11/25/2021 16:37:56.000 Run      1       M              wd_diskmon(0)
11/25/2021 16:37:56.000 Run      1       M              wd_memmon(0)
11/25/2021 16:37:56.000 Run      1       M              wd_sysmon(0)
11/25/2021 16:37:56.000 Run      1       M              wdmon(0) -q
------------------------------------------------------------------------
Total pcbs: 43
------------------------------------------------------------------------
```

Step 2 **show processes** *process-name*

Displays detailed information about a process.

Example:

```
RP/0/RP0/CPU0:ios#show processes dsr
Fri Nov 26 15:02:55.728 UTC
                  Job Id: 53
                     PID: 2246
            Process name: dsr
         Executable path: /opt/cisco/XR/packages/ncs1004-iosxr-os-1.0.0.0-r751/all/bin/dsr
             Instance #: 1
             Version ID: 00.00.0000
                Respawn: ON
           Respawn count: 1
            Last started: Thu Nov 25 16:40:26 2021
           Process state: Run
           Package state: Normal
                    core: DUMPFALLBACK
               Max. core: 0
                   Level: 11
               Mandatory: ON
           MaintModeProc: ON
               Placement: None
             startup_path:
/opt/cisco/XR/packages/ncs1004-iosxr-os-1.0.0.0-r751/all/init.d/dsr.init
                  Ready: 0.375s
        Process cpu time: 2.050 user, 0.930 kernel, 2.980 total
JID    TID  Stack  pri  state        NAME             rt_pri
53     2246    0K  20   Sleeping     dsr              0
53     2330    0K  20   Sleeping     lwm_service_thr  0
53     2331    0K  20   Sleeping     qsm_service_thr  0
53     2336    0K  20   Sleeping     dsr              0
53     2377    0K  20   Sleeping     dsr              0
53     2378    0K  20   Sleeping     dsr              0
53     2379    0K  20   Sleeping     dsr              0
53     2380    0K  20   Sleeping     dsr              0
------------------------------------------------------------------------------
```

Step 3 **show context**

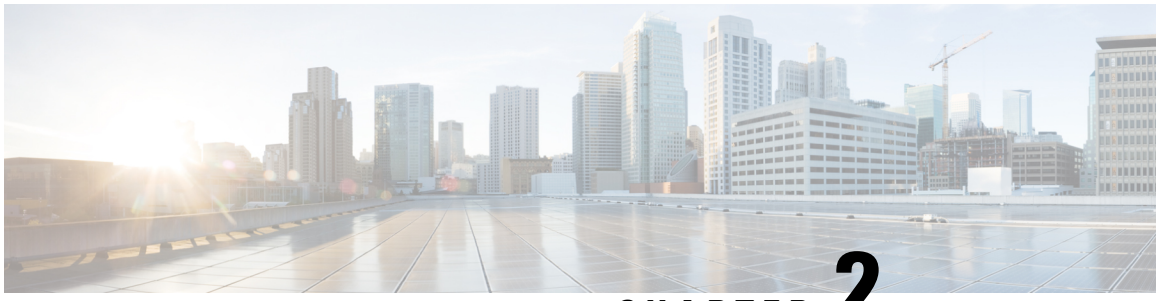
Displays information about process crashes.

Example:

```
RP/0/RP0/CPU0:ios# show context
Fri Nov 26 15:03:26.008 UTC

node: node0_RP0_CPU0
----------------------------------------------------------------
No context
```

The command output is empty during system upgrade.



CHAPTER 2

Alarm Troubleshooting

This chapter provides a description, severity, and troubleshooting procedure for each commonly encountered Cisco NCS 1004 alarm and condition. When an alarm is raised, refer to its clearing procedure.

XGE_EEPROM_ERROR

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

Logical Object: SC

XGE_EEPROM_ERROR is raised when system detects the XGE EEPROM corruption.

Clear the XGE_EEPROM_ERROR Alarm

Procedure

This alarm is cleared after the XGE EEPROM corruption is cleared.

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).

AVST-Failure Alarm

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

Logical Object: LC

An AVST-Failure alarm is raised when the FPGA configuration fails on the line card inserted on any port from 0 to 13.

Clear the AVST-FAILURE Alarm

Copy the **Datapath FPGA** file to the /emmcdata/fpd location 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).

BH-CARD-NOT-SEATED

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

Logical Object: LC

The BH-CARD-NOT-SEATED alarm is raised when the line card is not inserted completely into the chassis.

Clear the BH-CARD-NOT-SEATED Alarm

Procedure

This alarm is cleared when the line card is reinserted properly 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).

BH-CARD-POWER-OFF-STATUS

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

Logical Object: LC

The BH-CARD-POWER-OFF-STATUS alarm is raised in the following conditions: a. When you perform a line card shut operation b. When the line card fails to get the power allocation due to power budget.

Clear the BH-CARD-POWER-OFF-STATUS Alarm

Procedure

This alarm is cleared when line card is reloaded, OIR of the line card, or if the line card is successful in getting the power allocation.

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).

BH-CARD-PWR-ON-TIMEOUT

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

Logical Object: LC

The BH-CARD-PWR-ON-TIMEOUT alarm is raised if there is a delay in getting the PWR_ON request from the shelf_mgr.

Clear the BH-CARD-PWR-ON-TIMEOUT Alarm

Procedure

This alarm is cleared immediately after the PWR_ON request is received from the shelf_mgr.

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).

BH-CPU-CARD-NOT-SEATED

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

Logical Object: RP

The BH-CPU-CARD-NOT-SEATED alarm is raised when the CPU card is not inserted completely into the chassis.

Clear the BH-CPU-CARD-NOT-SEATED Alarm

Procedure

This alarm is cleared when the CPU card is reinserted properly by removing it and reinserting it 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).

BH-INVALID-CARD-SLOT

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

Logical Object: LC

The BH-INVALID-CARD-SLOT alarm is raised when the line card EEPROM is corrupted or when the line card fails to connect within the timeout period of a maximum of two minutes.

Clear the BH-INVALID-CARD-SLOT Alarm

Procedure

This alarm is cleared when the line card is inserted with the proper EEPROM.

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).

BIOS-IMAGE-CORRUPTION

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

Logical Object: RP

The BIOS-IMAGE-CORRUPTION alarm is raised when the BIOS image is corrupted and system is booted with the Golden image.

Clear the BIOS-IMAGE-CORRUPTION Alarm

Procedure

This alarm is cleared after the BIOS corruption is corrected and reloaded.

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).

BP_FPGA-SEU-UNCORRECTED-ERROR

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

Logical Object: SC

The BP_FPGA-SEU-UNCORRECTED-ERROR alarm is raised when the BP detects the corruption of the FPGA.

Clear the BP_FPGA-SEU-UNCORRECTED-ERROR Alarm

Procedure

This alarm is cleared when the hardware corrects the FPGA corruption.

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).

BP-FPGA-ERROR

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

Logical Object: SC

The BP-FPGA-ERROR alarm is raised when the BP FPGA SPI flash is not accesible.

Clear the BP-FPGA-ERROR Alarm

Procedure

This alarm is cleared when the BP FPGA SPI Flash error is corrected.

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).

CD Alarm

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

Logical Object: TRUNK

The Chromatic Dispersion (CD) alarm is raised when the detected chromatic dispersion value is above or below the configured threshold values.

Clear the CD Alarm

Procedure

Configure threshold value within range if CD value is not within the threshold range.

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-FPGA-PCIE-ERROR

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

Logical Object: RP

The CPU-FPGA-PCIE-ERROR alarm is raised when the device goes out of the PCIe tree.

Clear the CPU-FPGA-PCIE-ERROR Alarm

Procedure

This alarm is cleared when the device comes back to the PCIe tree.

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-FLASH-0-ERROR

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

Logical Object: RP

The CPU-FLASH-0-ERROR alarm is raised when the BIOS upgrade flash is not accessible.

Clear the CPU-FLASH-0-ERROR Alarm

Procedure

This alarm is cleared when the BIOS upgrade flash access is restored.

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-FLASH-1-ERROR

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

Logical Object: RP

The CPU-FLASH-1-ERROR alarm is raised when BIOS primary is not accessible.

Clear the CPU-FLASH-1-ERROR Alarm

Procedure

This alarm is cleared when the BIOS primary flash access is restored.

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_SSD_ATA-ERRORS Alarm

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

Logical Object: LC

The CPU_SSD_ATA-ERRORS alarm is raised when the CPU Solid State Disk (SSD) has ATA errors.

Clear the CPU_SSD_ATA-ERRORS Alarm

Procedure

The CPU_SSD_ATA-ERRORS alarm is cleared when the CPU SSD is replaced.

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_SSD-TEMPERATURE_HIGH Alarm

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

Logical Object: LC

The CPU_SSD-TEMPERATURE_HIGH alarm is raised when the CPU SSD temperature is high.

Clear the CPU_SSD-TEMPERATURE_HIGH Alarm Alarm

Procedure

The CPU_SSD-TEMPERATURE_HIGH alarm is cleared when the CPU SSD temperature returns to the normal range.

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).

CRYPTO_HW_FAILURE

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

Logical Object: Shelf

The CRYPTO_HW_FAILURE alarm is raised whenever any one of the line card port related KAT tests fail and the card is locked that prevents any card configurations.

Clear the CRYPTO_HW_FAILURE Alarm

Procedure

If the line card is locked and in failed state due to KAT errors, power-cycle the line card to restart the KAT process again. If it is successful, the system continues its regular operations else contact TAC for further assistance.

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).

CRYPTO-INDEX-MISMATCH

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

Logical Object: OTN

The CRYPTO-INDEX-MISMATCH alarm is raised when the AN# of Rx on the near end node does not match the AN# of Tx on the far end node, or

the AN# of Tx on the near end node does not match with the AN# of Rx on the far end node.

Note The CRYPTO-INDEX-MISMATCH alarm is interchangeably known as OTN-Sec-Association-Mismatch alarm.

Clear the CRYPTO-INDEX-MISMATCH Alarm

Procedure

The alarm is cleared when the index AN numbers match with the peer 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).

CRYPTO-KEY-EXPIRED

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

Logical Object: OTN

The CRYPTO-KEY-EXPIRED alarm is raised when a hardware programmed key expires and there is no new key available for rollover.

Clear the CRYPTO-KEY-EXPIRED Alarm

Procedure

The alarm is cleared after the new sak key is made available.

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).

DISASTER-RECOVERY-DISABLED Alarm

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

Logical Object: SC

The **Disaster recovery is disabled due to corrupted ISO** alarm is raised when the backup ISO image is not properly backed up and is corrupted.

Clear the DISASTER-RECOVERY-DISABLED Alarm

To clear the alarm, 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).

DATAPATH-DEV-FAILURE Alarm

Default Severity: Major (MJ)

Logical Object: LC

The DATAPATH-DEV-FAILURE alarm is raised when the datapath FPGA fails to configure on the line card inserted, which will imapct ports from 0 - 13.

Clear the DATAPATH-DEV-FAILURE Alarm

Reload 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).

DGD Alarm

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

Logical Object: TRUNK

The Differential Group Delay (DGD) alarm is raised when the value of the differential group delay read by the pluggable port module exceeds the configured threshold value.

Clear the DGD Alarm

Procedure

Configure the threshold value within range if DGD value is not within the threshold range.

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).

EQUIPMENT_FAILURE

Default Severity: Major/Minor (MJ/MI), Service-Affecting (SA) / Non Service-Affecting(NSA)

Logical Object: LC

The EQUIPMENT_FAILURE alarm is raised when an optical module, PLL device, CDR device, line card RAM device, line card, FPGA, or line card disk has failed.

Clear the EQUIPMENT_FAILURE Alarm

Procedure

This alarm is cleared when the failed device is recovers.

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).

EQUIPMENT-FAILURE Alarm

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

Logical Object:

The EQUIPMENT-FAILURE alarm is raised because of one of these reasons:

- When the system fails to detect equipment on IO port 12.
- When the system fails to detect equipment on IO port 13.
- When a software sequence failure occurs on any port from 0 - 13, and it fails to turn on the motherboard successfully.

Clear the EQUIPMENT-FAILURE Alarm

Reload 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).

FAN FAIL Alarm

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

Logical Object: ENVMON

The FAN FAIL alarm is raised on the NCS 1004 when one of the three fans fail. When any fan fails, the temperature of the NCS 1004 can rise above its normal operating range. This condition can trigger the TEMPERATURE alarm.

Clear the FAN FAIL Alarm

Procedure

Verify that a fan is correctly inserted. The fan should run immediately when correctly inserted.

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: Environ

The FAN-POWER-ERROR alarm is raised when POWER to FT has failed.

Clear the FAN-POWER-ERROR Alarm

Procedure

This alarm Is cleared when the power failure is recovered or OIR of the FT.

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 SPEED SENSOR 0: OUT OF TOLERANCE FAULT Alarm

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

Logical Object: Environ

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

Replace the 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-TRAY-REMOVAL Alarm

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

Logical Object: Environ

The FAN-TRAY-REMOVAL alarm is raised on the NCS 1004 when all the fan trays are 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).

Flexo-LOF Alarm

Default Severity: Critical

Logical Object: Trunk

Flexo LOF alarm is raised when loss of alignment is detected on the Flexo frame for more than 3ms.

Clear the Flexo-LOF Alarm

Procedure

Identify and correct the underlying cause of mis-alignment. The Flexo LOF (Loss of Frame) alarm is cleared when good alignment is detected on the Flexo frame for more than 3ms.

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).

Flexo-LOM Alarm

Default Severity: Critical

Logical Object: Trunk

Flexo LOM (Loss of Multi-Frame) is raised when loss of multi-frame alignment is detected on the Flexo multi-frame for more than 10ms

Clear the Flexo-LOM Alarm

Procedure

Identify and correct the underlying cause of mis-alignment. The Flexo LOM alarm is cleared when good multi-frame alignment is detected on the Flexo multi-frame.

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).

Flexo MM Alarm

Default Severity: Critical

Logical Object: Trunk

The Flexo MM alarm is raised when the received Flexo Map is not equal to the expected Flexo Map.

Clear the Flexo-MM Alarm

Procedure

The Flexo-MM alarm is cleared when the received Flexo MAP is equal to the expected Flexo MAP. Ensure that the IID programmed on the remote trunk and the local trunk ports match.

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).

GIDM Alarm

Default Severity: Critical

Logical Object: Trunk

The GIDM (Group ID Mismatch) alarm is raised when the received GID is not equal to the expcted GID.

Clear the GIDM Alarm

Procedure

The GIDM alarm is cleared when the received GID is equal to the expected GID on all the flexo group members. Ensure that the GID programmed on the remote trunk and local trunk ports match.

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 Alarm

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

Logical Object: ANY

The FPD IN NEED UPGD alarm is raised when the FPD image is not aligned with the avaliable package version.

Clear the FPD IN NEED UPGD Alarm

Procedure

Upgrade the respective FPD with the **upgrade hw-module location 0/x fpd y** 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).

FPD Infra Alarm

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

Logical Object: ANY

The FPD Infra alarm is raised when LC_CPU_MOD_FW is corrupt and the system is booted with golden copy.

Clear the FPD Infra Alarm

Procedure

You must do FPD upgrade to clear the alarm.

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).

HIBER Alarm

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

Logical Object: CLIENT

The High Bit Error Rate (HIBER) alarm is raised when the client and trunk ports receive 16 or more invalid sync-headers in 125 microseconds.

Clear the HIBER Alarm

Procedure

Step 1 Ensure the card port does not receive a high bit error rate.

Step 2 Clean the optical connectors.

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).

HI-SER Alarm

Default Severity: Major

Logical Object: Client

The High Symbol Error Rate alarm is raised when 5560 or more errored FEC symbols are present in 8000 codewords.

Clear the HI-SER Alarm

Procedure

Identify the cause of high FEC errors and clear them.

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).

HI-LASERBIAS Alarm

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

Logical Object: PPM

The HI-LASERBIAS alarm is raised when the physical pluggable port laser detects a laser bias value beyond the configured high threshold.

Clear the HI-LASERBIAS Alarm

Procedure

Configure the threshold value within range if high laser bias threshold value is not within the threshold range.

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).

HI-RXPOWER Alarm

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

Logical Object: PPM

The HI-RXPOWER alarm occurs on the client optics controller when the measured individual lane optical signal power of the received signal exceeds the default or user-defined threshold. The HI-RXPOWER alarm occurs on the trunk optics controller when the total optical signal power of the received signal exceeds the default or user-defined threshold.

Clear the HI-RXPOWER Alarm

Procedure

Configure the high receive power threshold value in range. If the value is within the range of the high receive power threshold, physically verify, that the optical input power is overcoming the expected power threshold using a standard power meter.

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).

HI-TXPOWER Alarm

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

Logical Object: PPM

The HI-TXPOWER alarm occurs on the client optics controller when the measured individual lane optical signal power of the transmitted signal exceeds the default or user-defined threshold. The HI-TXPOWER alarm occurs on the trunk optics controller when the total optical signal power of the transmitted signal exceeds the default or user-defined threshold.

Clear the HI-TXPOWER Alarm

Procedure

Configure the high transmit power threshold in range. If the value is within the range of the high transmit power threshold, physically verify, that the optical output power is overcoming the expected power threshold using a standard power meter .

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 Alarm

Default Severity: Critical(CR), Service affecting (SA)

Logical Object: LC

The IMPROPRMVL Alarm is raised when the configured line card is physically removed from the chassis.

Clear the IMPROPRMVL Alarm

Procedure

The IMPROPRMVL Alarm is cleared when the line card is re-inserted 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).

IMPROPRMVL Alarm

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

Logical Object: PPM

The Improper Removal (IMPROPRMVL) alarm is raised when a physical pluggable is not present on a service-provisioned port.

Clear the IMPROPRMVL Alarm

Procedure

Insert the appropriate QSFP.

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 Alarm

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

Logical Object: Environ

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

Clear the INSTALL IN PROGRESS Alarm

Procedure

Step 1 Wait until the install operation is over.

Step 2 Perform the "install commit" operation after the "install activate" operation.

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).

BP-FPGA-PCIE-ERROR

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

Logical Object: SC

The BP-FPGA-PCIE-ERROR alarm is raised when the BP device goes out of the PCIe tree.

Clear the BP-FPGA-PCIE-ERROR Alarm

Procedure

This alarm is cleared when the BP device comes back to the PCIe tree.

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).

BP-FPGA-IMAGE-CORRUPTION

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

Logical Object: SC

The BP-FPGA-IMAGE-CORRUPTION alarm is raised when the system detects the BP corruption and boots with the Golden image.

Clear the BP-FPGA-IMAGE-CORRUPTION Alarm

Procedure

This alarm is cleared after the BP corruption is corrected and reloaded.

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).

BP_FPGA_XR_EP-FPGA-PCIE-ERROR

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

Logical Object: SC

The BP_FPGA_XR_EP-FPGA-PCIE-ERROR alarm is raised when the BP device XR end point goes out of the PCIe tree.

Clear the BP_FPGA_XR_EP-FPGA-PCIE-ERROR Alarm

Procedure

This alarm is cleared when BP device XR end point comes back to the PCIe tree.

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).

LCMODE-CONFIG-CHANGED Alarm

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

Logical Object: EQPT

The LCMODE-CONFIG-CHANGED alarm is raised when the LC Mode configuration of the line card is changed.

Note This alarm is specific to OTN-XP line card on NCS 1004. It is not supported for 1.2T card.

Clear the LCMODE-CONFIG-CHANGED Alarm

Delete the existing configuration on the line card and reload the card.

LCMODE-CONFIG-INVALID Alarm

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

Logical Object: EQPT

The LCMODE-CONFIG-INVALID alarm is raised when the LC-MODE configuration is invalid for the chosen line card.

Note This alarm is specific to OTN-XP line card on NCS 1004. It is not supported for 1.2T card.

Clear the LCMODE-CONFIG-INVALID Alarm

Configure the line card with a configuration that is supported on the card.

LCMODE-NOT-CONFIG Alarm

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

Logical Object: EQPT

The LCMODE-NOT-CONFIG alarm is raised when the LC-MODE configuration is not successfully configured for the chosen line card.

Note This alarm is specific to OTN-XP Line card on NCS 1004. It is not supported for 1.2T card.

Clear the LCMODE-NOT-CONFIG Alarm

Configure the line card with a configuration that is supported on the card.

LC_BOOT_TIMEOUT Alarm

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

Logical Object: LC

The LC_BOOT_TIMEOUT Alarm is raised when the line card fails to boot in the expected amount of time or when the line card modules do not boot correctly.

Clear the LC_BOOT_TIMEOUT Alarm Alarm

Procedure

The LC_BOOT_TIMEOUT alarm is cleared when the line card successfully reboots.

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).

LC-CPU-IMAGE-CORRUPTION

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

Logical Object: LC

The LC-CPU-IMAGE-CORRUPTION alarm is raised when the line card is booted with the Golden image.

Clear the LC-CPU-IMAGE-CORRUPTION Alarm

Procedure

This alarm is cleared when the line card boots with a proper CPU image.

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).

LC-DP-IMAGE-CORRUPTION Alarm

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

Logical Object: EQPT

The LC-DP-IMAGE-CORRUPTION alarm is raised when the Datapath FPGA bootup with back up or golden image due to corruption of primary image.

Clear the LC-DP-IMAGE-CORRUPTION Alarm

Perform a force upgrade of DP FPD to load proper image to 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).

TEMPERATURE Alarm

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

Logical Object: Environ

The TEMPERATURE alarm is raised when the temperature is not within the operating range.

Clear the TEMPERATURE Alarm

Procedure

This alarm clears when the temperature falls within the operating range.

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).

LC-DISCONNECTED

Default Severity: Major (MJ)

Logical Object: LC

The LC-DISCONNECTED alarm is raised in IOS XR if the Line Card Application (LCAPP) crashes or restarts.

Clear the LC- DISCONNECTED Alarm

Procedure

The LC-DISCONNECTED alarm is raised until the LCAPP connects back to the line card. The administrator must log in to the line card and verify if the LCAPP is running 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).

LC-OFFLINE-ERROR

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

Logical Object: LC

The LC-OFFLINE-ERROR alarm is raised when the LC app is disconnected due to lcapp crash, restart, or warm reload of lcapp.

Clear the LC-OFFLINE-ERROR Alarm

Procedure

This alarm is cleared if the LC app connects within one minute.

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).

LC-SUDI-CERT-VERIFICATION-FAILURE Alarm

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

Logical Object: LC

The LC-SUDI-CERT-VERIFICATION-FAILURE alarm is raised when the SUDI certificates are not programmed.

Clear the LC-SUDI-CERT-VERIFICATION-FAILURE Alarm

To clear the alarm, 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).

LO-RXPOWER Alarm

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

Logical Object: PPM

The LO-RXPOWER alarm is raised on the client or trunk optics controller when the measured individual lane optical signal power of the received signal falls below the default or user-defined threshold.

Clear the LO-RXPOWER Alarm

Procedure

Step 1 Configure low receive power threshold in range.

Step 2 or

Step 3 Verify that the trunk-rx port is cabled correctly, and clean the fiber connecting the faulty TXP/MXP card to the drop port of the DWDM 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).

LO-TXPOWER Alarm

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

Logical Object: PPM

The LO-TXPOWER alarm is raised on the client or trunk optics controller when the measured individual lane optical signal power of the transmitted signal falls below the default or user-defined threshold.

Clear the LO-TXPOWER Alarm

Procedure

Configure low transmit power threshold in range.

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).

LOCAL-FAULT Alarm

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

Logical Object: CLIENT

The LOCAL-FAULT alarm is raised when a local fault character sequence is received in the incoming MAC stream.

Clear the LOCAL-FAULT Alarm

Procedure

Verify that the port receives proper MAC streams from the far-end router or 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).

LOCAL-DEG-SER Alarm

Default Severity: Major

Logical Object: Client

The Local FEC DEG-SER (Degraded SER) alarm is received from remote end when it detects excessive FEC errors on the receiver side or when it sees AIS on the mapper ODU.

Clear the LOCAL-DEG-SER Alarm

Procedure

This alarm is cleared when you clear the errors at the remote 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).

LOM Alarm

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

Logical Object: TRUNK

The Loss of Multiframe (LOM) alarm is raised when the MFAS overhead field is invalid for more than five frames and persists for more than three milliseconds.

Clear the LOM Alarm

Procedure

Step 1 If the bit error rate (BER) threshold is correct and at the expected level, use an optical test set to measure the power level of the line to ensure it is within guidelines.

Step 2 If the optical power level is good, verify that optical receive levels are within the acceptable range.

Step 3 If the receive levels are good, clean the fibers at both ends according to site practice.

Step 4 If the condition does not clear, verify that a single-mode fiber is used.

Step 5 If the fiber is of the correct type, verify that a single-mode laser is used at the far-end node.

Step 6 Clean the fiber connectors at both ends for a signal degrade according to site practice.

Step 7 Verify that a single-mode laser is used at the far end.

Step 8 If the problem does not clear, the transmitter at the other end of the optical line could be failing and requires replacement.

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).

LOS Alarm

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

Logical Object: CLIENT

The Equipment Low Receive Power alarm is an indicator for the received optical signal power. LOS occurs when the measured optical power of the received signal falls below the threshold value.

In non-Optical Signal to Noise Ratio (OSNR) loaded links, the RX power threshold for LOS condition (as LOS is expected before the actual traffic) goes down approximately to –23 dBm.

Clear the LOS Alarm

Procedure

Step 1 Verify that the client port is configured with the proper wavelength.

Step 2 Verify whether there is a loss of received optical power. Compare the actual power levels with the expected power range.

Step 3 Verify the fiber continuity to the port of NCS 1004 and fix the fiber connection.

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).

MB_SSD_ATA-ERRORS Alarm

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

Logical Object: LC

The MB_SSD_ATA-ERRORS alarm is raised when the chassis SSD has ATA errors.

Clear the MB_SSD_ATA-ERRORS Alarm Alarm

Procedure

The MB_SSD_ATA-ERRORS alarm is cleared when the chassis SSD is replaced.

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).

MB_SSD_FAILURE Alarm

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

Logical Object: Chassis

The MB_SSD_FAILURE alarm is raised when the chassis SSD is damaged and becomes unresponsive to the Linux kernel.

Clear the MB_SSD_FAILURE Alarm

Procedure

This alarm is cleared when the faulty chassis SSD is replaced. To replace the SSD, contact TAC to open a Return Material Authorization (RMA) request.

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: PPM

The Mismatch Equipment Attributes (MEA) alarm for the PPM or QSFP is raised on a pluggable port when there is a mismatch in the configured client data rate and the supported QSFP physical data rate.

The Line-card slot is capable of holding different type of cards supported by the platform. The Mismatch Equipment Attributes (MEA) alarm for Line-card is raised, when you replace the current type of card with a different type of card in the working slot.

Clear the MEA Alarm

Procedure

Step 1 Verify the supported physical data rate of the QSFP on NCS 1004 using the **show inventory** command.

Step 2 Verify the configured client data rate on NCS 1004 using the **show hw-module slice** command.

Step 3 If the above values do not match, insert the appropriate QSFP pluggable or configure the required client data rate.

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).

Note
When you mistakenly insert a different card in a previously configured slot, the solution is to have a new configuration to couple specific slot with card type. The MEA alarm is raised , when the card type inserted is different than the configuration.

The Card-type keywords to be fetched from supported LCs for a given platform.

NODE-OBFL-ERROR

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

Logical Object: RP

The NODE-OBFL-ERROR alarm is raised when there is an OBFL read or write failure for the NODE scope.

Clear the NODE-OBFL-ERROR Alarm

Procedure

This alarm is cleared when the OBFL flash access is restored.

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).

ODU-AIS Alarm

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK-ODU

The ODU-AIS alarm is raised on ODU controllers when there is an alarm on the upstream data.

Clear the ODU-AIS Alarm

Procedure

The ODU-AIS alarm clears when the alarm clears on the upstream data.

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).

ODU-BDI Alarm

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK-ODU

The Optical Data Unit Backward Defect Indication (ODU BDI) alarm is raised when there is a path termination error in the upstream data. This error is read as a BDI bit in the path monitoring area of the ODU controller.

Clear the ODU-BDI Alarm

Procedure

The ODU-BDI alarm clears when the path termination error clears on the upstream data.

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).

ODU-CSF Alarm

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

Logical Object: TRUNK-ODU

The ODU-CSF alarm is raised when there is a failure of the client signal.

Clear the ODU-CSF Alarm

Procedure

This alarm clears when no alarm exists on the client 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).

ODU-IAE/BIAE

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK-ODU

The ODU-IAE/BIAE alarm is raised when there are incoming alignment errors on the upstream data.

Clear the ODU-IAE/BIAE Alarm

Procedure

This alarm is cleared when the alignment errors are cleared on the upstream data.

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).

ODU-LCK

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK-ODU

The Locked (ODU-LCK) signal is raised when an OTN interface is administratively locked out and not available to carry traffic.

Clear the ODU-LCK Alarm

Procedure

This alarm is cleared when the administrator releases the lock out on the OTN interface.

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).

ODU-OCI

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK-ODU

The Open Connection Indication (ODU-OCI) alarm is raised when there is no connection between the client and trunk ports.

Clear the ODU-OCI Alarm

Procedure

This alarm is cleared when the connection is created between the client and trunk 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).

OSNR Alarm

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

Logical Object: TRUNK

The Optical Signal Noise Ratio (OSNR) alarm occurs when the measured OSNR falls below the threshold.

Clear the OSNR Alarm

Procedure

Step 1 Verify the value of the minimum acceptable OSNR value of NCS 1004 using the **show controller optics R/S/I/P** command.

Step 2 If the value is not within the OSNR threshold range, configure the minimum acceptable OSNR value using the **controller optics R/S/I/P osnr-low-threshold** command in the configuration mode. The range is 0 to 4000 (in units of 0.1db).

Step 3 If the value is within the range of the minimum acceptable OSNR, contact TAC .

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).

OTNSEC-LOCALLY-SECURED

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

Logical Object: Software

The OTNSEC-LOCALLY-SECURED alarm is raised when the IKE session goes down and the OTNsec session is locally secured.

Clear the OTNSEC-LOCALLY-SECURED Alarm

Procedure

This alarm is cleared when the respective IKE session is up.

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).

OTUK-AIS

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK

An Alarm Indication Signal (AIS) signal communicates to the receiving node when the transmit node does not send a valid signal. AIS is not an error. The OTUK-AIS alarm is raised by the receiving node on each input when it detects the AIS instead of an actual signal.

Clear the OTUK-AIS Alarm

Procedure

This alarm will be cleared when the signal recovers.

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).

OTUK-BDI Alarm

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK

The Optical Transport Unit Backward Defect Indication (OTUK BDI) alarm is raised when there is a path termination error in the upstream data. This error is read as a BDI bit in the path monitoring area of the digital wrapper overhead.

Clear the OTUK-BDI Alarm

Procedure

Step 1 At the near-end node, use site practices to clean trunk transmitting fiber toward the far-end node and the client receiving fiber.

Step 2 At the far-end node, determine whether any OTUK-AIS condition, is present on the trunk rx port. If yes, inspect the trunk rx side on the near-end card (the one alarmed for OTUK-BDI) because the AIS bit must be inserted in that section.

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).

OTUK-LOF Alarm

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

Logical Object: TRUNK

The Optical Transport Unit Loss of Frame (OTUK-LOF) alarm is raised when a frame loss is detected by an invalid frame alignment in the received frames. This alarm indicates that the card has lost frame delineation on the input data. Loss of frame occurs when the optical transport unit overhead frame alignment (FAS) area is invalid for more than five frames and that the error persists more than three milliseconds.

This alarm is also raised when the FEC settings on the trunk ports of the source and destination cards are different.

Clear the OTUK-LOF Alarm

Procedure

Verify whether the FEC settings on the trunk ports of the source and destination cards are the same.

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).

OTUK-SD Alarm

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

Logical Object: TRUNK

The Optical Transport Unit Signal Degrade (OTUK-SD) alarm is raised when the quality of signal is poor that the bit error rate on the incoming optical line exceeds the signal degrade threshold.

Clear the OTUK-SD Alarm

Procedure

Identify the cause for poor quality signal and resolve. This alarm typically indicates poor incoming signal strength due to bad fiber or dirt in the pluggable or fiber.

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).

OTUK-SF Alarm

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

Logical Object: TRUNK

The Optical Transport Unit Signal Fail (OTUK-SF) is raised on hardware and software when LOS, LOF, and LOM alarms exist.

Clear the OTUK-SF Alarm

Procedure

The alarm is cleared when the LOS, LOF, or LOM alarms are cleared.

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).

OTUK-TIM Alarm

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

Logical Object: TRUNK

The Trail Trace Identifier Mismatch (OTUK-TIM) alarm is raised when the expected TTI string does not match the received TTI string.

Clear the OTUK-TIM Alarm

Procedure

Identify the cause for different expected and received TTI strings and resolve. The TIM mismatch can be caused due to mismatch in fiber connections.

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).

OTN-XP-DP-FPD-PKG-MISSING Alarm

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

Logical Object: EQPT

The OTN-XP-DP-FPD-PKG-MISSING alarm is raised when the user tries to update DP FPD without installing the OTN-XP-DP-FPD software package.

Clear the OTN-XP-DP-FPD-PKG-MISSING Alarm

This alarm is cleared when you download and install the OTN-XP-DP-FPD package.

PEX_SWITCH_ACCESS_FAILURE Alarm

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

Logical Object: LC

The PEX_SWITCH_ACCESS_FAILURE Alarm is raised when the Chassis PEX PCIe switch is not accessible.

Clear the PEX_SWITCH_ACCESS_FAILURE Alarm Alarm

Procedure

The PEX_SWITCH_ACCESS_FAILURE Alarm is cleared when the PEX PCIe switch is accessible again. The chassis needs to be reloaded manually if it does not reload on its own in a few minutes.

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 Alarm

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

Logical Object: PEM

The POWER MODULE OUTPUT DISABLED alarm is raised on the NCS 1004 when the power supply is disabled on the active PEM.

Clear the POWER MODULE OUTPUT DISABLED Alarm

Procedure

Enable the power supply.

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 Alarm

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

Logical Object: PEM

The POWER-MODULE-REDUNDANY-LOST alarm is raised on the NCS 1004 under one of the following conditions.

- When power supply to PSU is removed.
- When PEM is removed from NCS 1004.

Clear the POWER-MODULE-REDUNDANCY-LOST Alarm

Procedure

This alarm clears when the user re-inserts the power supply or when the user connects the power cable again.

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).

PPM FAIL Alarm

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

Logical Object: PPM

The PPM FAIL alarm is raised on the pluggable when a fault is detected in the PPM and the pluggable cannot be accessed.

Clear the PPM FAIL Alarm

Procedure

Replace the pluggable.

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

The Provisioning Failed alarm is raised when invalid configuration is configured on the controller; For example, configuring an invalid CD-min value on the optics 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-INCOMPAT Alarm

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

Logical Object: LC

The PROVISIONING-INCOMPAT alarm is raised when you configure incompatible submarine parameters on 1.2T line card.

Clear the PROVISIONING-INCOMPAT Alarm

Procedure

The alarm is cleared only when valid submarine parameters are provided.

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 or controller.

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>' 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).

RACK-OBFL-ERROR

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

Logical Object: SC

The RACK-OBFL-ERROR alarm is raised when there is an OBFL read or write failure for the RACK scope.

Clear the RACK-OBFL-ERROR Alarm

Procedure

This alarm is cleared when the OBFL flash access is restored.

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).

RDI Alarm

Default Severity: Critical

Logical Object: Trunk

The RDI is inserted by the remote trunk and indicates that the remote trunk detects a fault in the incoming signal.

Clear the RDI Alarm

Procedure

The RDI alarm is cleared when you identify and clear the fault on the remote trunk.

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).

REMOTE-FAULT Alarm

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

Logical Object: CLIENT

The REMOTE-FAULT alarm is raised on the NCS 1004 when a remote fault character sequence is received in the incoming MAC stream.

Clear the REMOTE-FAULT Alarm

Procedure

Step 1 Verify and resolve the client port fault and remote fault errors on the remote or upstream node.

Step 2 Verify and resolve loss of signal synchronization error on the remote or upstream 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).

REMOTE-DEG-SER Alarm

Default Severity: Major

Logical Object: Client

The remote FEC DEG-SER (Degraded SER) alarm is received from the remote Router when it sees Local Degraded SER on the receiver side.

Clear the REMOTE-DEG-SER Alarm

Procedure

This alarm is cleared when you clear the errors at the remote 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).

RUNNING FANS AT MAX SPEED Alarm

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

Logical Object: environ

The RUNNING FANS AT MAX SPEED alarm is raised when one or more line cards are missing or when one or more fans fail or are removed or when the temperature exceeds threshold values.

Clear the RUNNING FANS AT MAX SPEED Alarm

Procedure

Step 1 Insert line card or filler card in all the slots.

Step 2 Insert all the fan trays and ensure all are working.

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).

SIGLOSS Alarm

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

Logical Object: CLIENT

The Signal Loss on Data Interface (SIGLOSS) alarm is raised on the client-side QSFP when there is a loss of ethernet signal.

Clear the SIGLOSS Alarm

Procedure

Step 1 Ensure that the port connection at the near end of the client peer router is operational.

Step 2 Verify fiber continuity to 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).

SQUELCHED Alarm

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

Logical Object: CLIENT

Laser-squelch is configured under the client controller. Laser-squelching occurs on a QSFP pluggable when all the four lanes operating in the 10GE client mode are turned off after the upstream receive facility has experienced a loss of signal such as LOS or LOF.

Clear the SQUELCHED Alarm

Procedure

This alarm will be cleared when optical alarms clear.

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).

SYNCLOSS Alarm

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

Logical Object: CLIENT

The Loss of Synchronization on Data Interface (SYNCLOSS) alarm is raised on the client and trunk ports when there is a loss of signal synchronization on the port. This alarm is demoted by the SIGLOSS alarm.

Clear the SYNCLOSS Alarm

Procedure

Step 1 Ensure that the data port connection at the near end of the ethernet link is operational.

Step 2 Verify the fiber continuity to the port. To do this, follow site practices.

Step 3 For 100 GE, verify that the FEC settings match between the router.

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).

TIM

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

Logical Object: CLIENT

The received trace identifier is different from the expected trace identifier. The optical fiber link is from the wrong source (misconnected). If the fiber connection is correct and as expected, then either the expected trace identifier that is configured on the local interface is incorrect, or the trace identifier that is configured on the remote interface is incorrect.

Clear the TIM Alarm

Procedure

Step 1 Check that the optical fiber link is coming from the correct source.

Step 2 Check and reconfigure the expected trace identifier.

Step 3 Check and reconfigure the trace identifier on the remote interface.

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).

UNC-WORD Alarm

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: TRUNK

The Uncorrected FEC Word (UNC-WORD) condition is raised when the FEC is unable to correct the frame.

Clear the UNC-WORD Alarm

Procedure

Step 1 Ensure that the fiber connector for the card is completely plugged in.

Step 2 Ensure that the ports on the far end and near end nodes have the same port rates and FEC settings.

Step 3 If the BER threshold is correct and at the expected level, use an optical test set to measure the power level of the line to ensure it is within guidelines. For specific procedures to use the test set equipment, consult the manufacturer.

Step 4 If the optical power level is good, verify that the optical receive levels are within the acceptable range.

Step 5 If receive levels are good, clean the fibers at both ends.

Step 6 If the condition does not clear, verify that a single-mode fiber is used.

Step 7 Verify if the fiber is of single-mode type.

Step 8 Clean the fiber connectors at both ends for a signal degrade.

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_OC_1

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

Logical Object: RP

The USB_OC_1 alarm is raised when the over current is observed on USB1.

Clear the USB_OC_1 Alarm

Procedure

This alarm is cleared when the over current is removed for the USB.

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_OC_0

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

Logical Object: RP

The USB_OC_0 alarm is raised when the over current is observed on USB0.

Clear the USB_OC_0 Alarm

Procedure

This alarm is cleared when the over current is removed for the USB.

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 Alarm

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

Logical Object: environ

The VOLTAGE alarm is raised on the NCS 1004 when the voltage is not within the operating range.

Clear the VOLTAGE Alarm

Procedure

This alarm clears when the voltage falls within the operating range.

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).

WVL-OUT-OF-LOCK Alarm

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

Logical Object: TRUNK

The Wavelength Out of Lock (WVL-OUT-OF-LOCK) alarm is raised when the trunk port detects the optical input frequency to be out of range.

Clear the WVL-OUT-OF-LOCK Alarm

Procedure

Step 1 Verify the wavelength configuration.

Step 2 Verify whether the pluggable is inserted properly.

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).

XGE-FLASH-ERROR

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

Logical Object: SC

The XGE-FPGA-ERROR alarm is raised when the XGE FPGA SPI flash is not accesible.

Clear the XGE-FLASH-ERROR Alarm

Procedure

This alarm is cleared when the XGE FPGA SPI Flash error is corrected.

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).

NOT-OPERATIONAL-PRIMITIVE-SEQUENCE

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

Logical Object: FC CLIENT

The NOT-OPERATIONAL-PRIMITIVE-SEQUENCE (NOS) alarm is raised when a NOS sequence is received in the incoming FC stream.

Clear the NOT-OPERATIONAL-PRIMITIVE-SEQUENCE Alarm

Procedure

The NOT-OPERATIONAL-PRIMITIVE-SEQUENCE (NOS) alarm is raised until the sender stops sending NOS ordered set.

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).

Chassis-ACT2LITE-Failure

Default Severity: Major (MJ)

Logical Object: RP

The Chassis-act2lite-Failure alarm is raised when communication with chassis ACT2LITE fails.

Clear the Chassis-ACT2LITE-Failure Alarm

Procedure

To clear the alarm, check with Technical Support.

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- FPGA- Image-Corruption

Default Severity: Major (MJ)

Logical Object: RP

The CPU-FPGA-IMAGE-CORRUPTION alarm is raised when the system detects the CPU corruption and boots with the golden image.

Clear the CPU-FPGA- Image-Corruption Alarm

Procedure

This alarm is cleared after the CPU corruption is corrected and reloaded.

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).

DP-Device-SEU-Error

Default Severity: Critical (CR)

Logical Object: RP

The DP-Device-SEU-Error alarm is raised when the DP detects error in the Unit.

Clear the DP-Device-SEU-Error Alarm

Procedure

To clear the alarm, check with Technical Support.

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).

MB-SSD-Temperature-High

Default Severity: Major (MJ)

Logical Object: RP

The MB-SSD-TEMPERATURE-High alarm is raised when the Chassis SSD Temperature exceeds the threshold.

Clear the MB-SSD-Temperature-High Alarm

Procedure

This alarm gets cleared when the temperature falls within the operating range.

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).

Line Loopback Configured

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

Logical Object: LC

The Line Loopback Configured alarm is raised when the user configures the line or internal loopback.

Note The loopback configuration can only be done when the controller is under maintenance mode.

Clear the Line Loopback Configured Alarm

Procedure

This alarm is cleared when the user removes the line or internal loopback configuration or deletes the datapath at the remote 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).