Troubleshoot "Auto Ampli Control Disabled Alarm" in NCS1K

Contents

Introduction

This document describes how to troubleshoot the low transmit power from the amplifier by clearing the "Auto ampli control disabled" alarm.

Troubleshoot "Auto Ampli Control Disabled Alarm" in NCS1K

You see low transmit power and low gain from the Erbium Doped Fiber Amplifier (EDFA) since the Auto Ampli control is disabled.

show controller ots 0/x/0/x:

Amplifier performance values

Alarm on the node

The "Auto Ampli Control Disabled" alarm raises if the power level difference between two channels exceeds the delta value configured.

In this case, the Delta value was 5dB but the difference between the channels was more than 5dB,

show hw-module slot x channel-trail-view active :


```
RP/0/RP0/CPU0:optp10-101.sin2#show hw-module slot 3 channel-trail-view active
Fri Aug 13 18:17:09.395 PDT

  Channel Trail View - Active
===========================================
                                            0/COM - BST - 1/LINE        1/LINE - PRE - 0/COM
     Och Name          Wavelength    Frequency    Rx Power      Tx Power      Rx Power      Tx Power
-----------------------------------------------------------------------------------------------------
Ots-Och0_3_0_0_1       1528.77 nm    196.10 THz   -13.40 dBm    -4.00 dBm     -4.50 dBm     1.00 dBm
Ots-Och0_3_0_0_3       1529.55 nm    196.00 THz   -13.00 dBm    -3.80 dBm     -3.90 dBm     1.50 dBm
Ots-Och0_3_0_0_5       1530.33 nm    195.90 THz   -12.90 dBm    -3.90 dBm     -5.90 dBm     -0.50 dBm
Ots-Och0_3_0_0_7       1531.12 nm    195.80 THz   -13.40 dBm    -4.40 dBm     -4.50 dBm     0.80 dBm
Ots-Och0_3_0_0_9       1531.90 nm    195.70 THz   -14.80 dBm    -5.90 dBm     -8.10 dBm     -2.70 dBm
Ots-Och0_3_0_0_11      1532.68 nm    195.60 THz   -14.80 dBm    -5.90 dBm     -6.60 dBm     -1.20 dBm
Ots-Och0_3_0_0_13      1533.46 nm    195.50 THz   -13.50 dBm    -4.60 dBm     -6.80 dBm     -1.50 dBm
Ots-Och0_3_0_0_15      1534.25 nm    195.40 THz   -15.80 dBm    -6.80 dBm     -6.20 dBm     -1.00 dBm
Ots-Och0_3_0_0_17      1535.04 nm    195.30 THz   -15.50 dBm    -6.30 dBm     -4.00 dBm     1.10 dBm
Ots-Och0_3_0_0_19      1535.82 nm    195.20 THz   -15.40 dBm    -6.10 dBm     -4.00 dBm     1.10 dBm
Ots-Och0_3_0_0_21      1536.61 nm    195.10 THz   -18.40 dBm    -9.10 dBm     -3.80 dBm     1.30 dBm
Ots-Och0_3_0_0_23      1537.40 nm    195.00 THz   -15.00 dBm    -5.50 dBm     -6.30 dBm     -1.00 dBm
Ots-Och0_3_0_0_25      1538.19 nm    194.90 THz   -14.50 dBm    -5.00 dBm     -6.40 dBm     -0.90 dBm
Ots-Och0_3_0_0_27      1538.98 nm    194.80 THz   -14.80 dBm    -5.40 dBm     -3.90 dBm     1.50 dBm
Ots-Och0_3_0_0_29      1539.77 nm    194.70 THz   -13.80 dBm    -4.40 dBm     -7.10 dBm     -1.50 dBm
Ots-Och0_3_0_0_31      1540.56 nm    194.60 THz   -14.70 dBm    -5.30 dBm     -3.80 dBm     1.70 dBm
Ots-Och0_3_0_0_33      1541.35 nm    194.50 THz   -16.70 dBm    -7.30 dBm     -3.80 dBm     1.70 dBm
Ots-Och0_3_0_0_35      1542.14 nm    194.40 THz   -13.60 dBm    -4.30 dBm     -4.40 dBm     1.10 dBm
Ots-Och0_3_0_0_37      1542.94 nm    194.30 THz   -13.80 dBm    -4.40 dBm     -6.50 dBm     -0.90 dBm
Ots-Och0_3_0_0_39      1543.73 nm    194.20 THz   -13.60 dBm    -4.30 dBm     -3.90 dBm     1.70 dBm
```

channel power view

Here some channels receive power as -12.xx and channel no 21 receives power as -18.xx, so the difference is 6dB which is more than the Delta value.

When the difference is more than the delta value, the Amplifier control is disabled. You still see the output power but the gain regulation does not happen as per design.

To check the delta value:show controler ots 0/x/0/x

Sample Output:

```
controller State: Up
Transport Admin State: In Service
Port Type: Line

Laser State: On
 Optics Status::
       Alarm Status:

       -------------
       Detected Alarms:
               AUTO-AMPLI-CTRL-DISABLED
       Alarm Statistics:
       -----------------
       LOW-RX-PWR = 0
        LOW-TX-PWR = 0
       RX-LOS-P = 5
       RX-LOC = 1
       AMPLI-GAIN-DEG-LOW = 0
       AMPLI-GAIN-DEG-HIGH = 0
       AUTO-LASER-SHUT = 5
       AUTO-POW-RED = 5
       AUTO-AMPLI-CTRL-DISABLED = 5
       AUTO-AMPLI-CFG-MISMATCH = 0
       SWITCH-TO-PROTECT = 0
       AUTO-AMPLI-CTRL-RUNNING = 2
       Parameter Statistics:
       ---------------------
       TX Power = 3.80 dBm
       RX Power = -9.70 dBm
       Ampli Gain = 19.50 dB
       Ampli Tilt = 0.00
       Total TX Power = 4.09 dBm
```

```
Total RX Power = -8.50 dBm
Ampli Gain Range = Normal
Ampli Safety Control mode = auto
Osri = OFF
TX Enable = Enabled
RX Enable = Enabled
RX Span Loss = N/A
TX Span Loss = N/A
Rx Low Threshold Current = -25.0 dBm
Back Reflection = -27.30 dBm
Configured Parameters:
-------------
Rx Low Threshold = -25.0 dBm
Tx Low Threshold = -20.0 dBm
Ampli Gain = 1.00 dB
Ampli Tilt = 0.00
Ampli Channel power = 3.00 dBm
Channel Power Max Delta = 3.00 dBm
Ampli Channel Psd = 31.250 nW/MHz
Rx Low Threshold Psd = 0.099 nW/MHz
Ampli Control mode = Automatic
Ampli Safety Control mode = auto
Osri = OFF
TX Enable = Enabled
RX Enable = Enabled
```

Here the delta value is 3dB and the difference between the channels was 6dB.

Permanent Solution:

Check the patchpanel for the channels that have less power.

Clean/replace the patch cords if required in order to improve the channel power.

Once the power becomes equal to or less than the delta value, the alarm clears and the output power gets regulated as required.

Workaround:

A temporary workaround is to increase the delta value with these configuration changes to restore the traffic:

```
config ter

controller ots 0/x/0/x

channel-power-max-delta 80 (change delta to 8)
```

Ensure to revert the configuration to the default delta value once the permanent solution gets implemented.