Tech Note on FC Port Down due to "Error disabled - bit error rate too high"

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Introduction

This document describes the reasons why a Fibre Channel (FC) port on a Multilayer Director Switch (MDS) or Nexus FC capable switch is brought down due to "Error disabled - bit error rate too high".

A detailed description of Error Disabled states can be found here:

Troubleshooting FC Ports

Verify

Step 1. Use the show interface command to verify that the switch detected a problem and disabled the port.

Verify the ErrDisable State Using the CLI:

show interface

fc3/1 is down (Error disabled - bit error rate too high)

Step 2. Use the show interface fcX/Y transceiver detail command to view information about the signal levels on the Small Form-Factor Pluggable (SFP) transceiver.

If the port is currently down, you may have to bring it up first:

switch# config ; interface fc3/1 ; no shut ; sh interface fc3/1 transceiver detail

fc3/1 sfp is present
Name is CISCO-AVAGO
Manufacturer's part number is SFBR-5780APZ-CS2
Revision is G2.3
Serial number is AGD16348ETR
Cisco part number is 10-2418-01
Cisco pid is DS-SFP-FC8G-SW
FC Transmitter type is short wave laser w/o OFC (SN)
FC Transmitter supports short distance link length
Transmission medium is multimode laser with 62.5 um aperture (M6)
Supported speeds are - Min speed: 2000 Mb/s, Max speed: 8000 Mb/s
Nominal bit rate is 8500 Mb/s
Link length supported for 50/125um OM2 fiber is 50 m
Link length supported for 62.5/125um fiber is 21 m
Link length supported for 50/125um OM3 fiber is 150 m
Cisco extended id is unknown (0x0)

No tx fault, no rx loss, in sync state, diagnostic monitoring type is 0x68
SFP Diagnostics Information:

<table>
<thead>
<tr>
<th></th>
<th>Alarms</th>
<th></th>
<th>Warnings</th>
<th></th>
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<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Temperature</td>
<td>27.73 C</td>
<td>75.00 C</td>
<td>-5.00 C</td>
<td>70.00 C</td>
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<tr>
<td>Voltage</td>
<td>3.30 V</td>
<td>3.63 V</td>
<td>2.97 V</td>
<td>3.46 V</td>
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<td>Current</td>
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<td>10.50 mA</td>
<td>2.00 mA</td>
<td>10.50 mA</td>
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<tr>
<td>Tx Power</td>
<td>-2.52 dBm</td>
<td>1.70 dBm</td>
<td>-14.00 dBm</td>
<td>-1.30 dBm</td>
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<tr>
<td>Rx Power</td>
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<td>3.00 dBm</td>
<td>-17.30 dBm</td>
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<tr>
<td>Transmit Fault Count</td>
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</tbody>
</table>

Note: ++ high-alarm; + high-warning; -- low-alarm; - low-warning

switch#

Above indicates signal levels are within specification.

Troubleshoot

A description of Error Disabled states can be found here:

Bit Error Threshold

Bit Error Thresholds

The Bit Error Rate (BER) threshold is used by a switch to detect an increased error rate before performance degradation seriously affects traffic.

Bit errors occur because of these reasons:

- Faulty or bad cable.
- Faulty or bad GBIC or SFP.
- GBIC or SFP is specified to operate at 1 Gbps but is used at 2 Gbps.
- GBIC or SFP is specified to operate at 2 Gbps but is used at 4 Gbps.
- Short haul cable is used for long haul or long haul cable is used for short haul.
- Momentary sync loss.
- Loose cable connection at one or both ends.
- Improper GBIC or SFP connection at one or both ends.

A BER threshold is detected when 15 error bursts occur in a 5-minute period. By default, the switch disables the interface when the threshold is reached. Use the shutdown and no shutdown command sequence to re-enable the interface.

Rule out faulty physical equipment by replacing cable/s, GBICs/SFPs and also by pass patch-panel a step at a time.
You can configure the switch to not disable an interface when the threshold is crossed. By default, the threshold disables the interface.

```
no switchport ignore bit-errors
```

**Note:** It is not advisable to leave above setting on indefinitely, rather to be used during troubleshooting sessions.

**Note:** Regardless of the setting of the switchport ignore bit-errors command, a switch generates a syslog message when the BER threshold is exceeded.

The creditmon process also monitors bit errors.

```
show process creditmon credit-loss-event-history
```

For the N5K and N6K, the command is

```
show platform software fcpc event-history errors
```

Event:E_DEBUG, length:102, at 571407 usecs after Tue Jan 5 05:33:02 2016
   [102] CREDITMON_EVENT_ERR_COUNT, if_index 1105000: cur=0x2acfd01e76de prev=0x2acfd01e76dd occurrences=3

Once the problem hardware has been identified and addressed, a **no shutdown** of the interface may be required to bring the port up and the bit errors should not be seen thereafter.

**Caveats**

Be aware of these 2 defects that disables the port/s when 15 bursts of bit errors occur within 5 hours instead of 5 minutes.

It's still a physical layer issue and needs to be addressed.

FC interface disabled due to 'bit error rate too high' when rate is low

Nexus: Cisco BugID [CSCux76712](https://bugs.cisco.com/bugzilla/show_bug.cgi?id= CSCux76712)

MDS: Cisco BugID [CSCuo56792](https://bugs.cisco.com/bugzilla/show_bug.cgi?id= CSCuo56792)