



Fabric Module Error Monitoring

This chapter provides information about Fabric Module Error Monitoring (XbarErrorMonitor) and how to configure it.

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Feature History for Fabric Module Error Monitoring

| Feature Name | Releases | Feature Information |
|---|----------|-----------------------------|
| Fabric Module Error Monitoring (XbarErrorMonitor) | 9.3(1) | This feature is introduced. |

About Fabric Module Error Monitoring

The fabric modules of Cisco MDS are commonly called Xbars. There are two versions of these fabric modules: Fabric 1 and Fabric 3. Frames that are received by an FC port with CRC error are dropped and not forwarded further. As frames move from component to component and module to module errors may possibly occur. Frames are CRC checked at several places along the switching path. Once a frame is detected as an error it is dropped as soon as possible.

The existing 'Internal CRC Detection and Isolation' feature can detect and take corrective action when these internal CRC errors occur. However, fabric modules can experience other errors that are not, strictly speaking, internal CRC errors. The Fabric Module Error Monitoring (XbarErrorMonitor) feature, introduced in Cisco MDS Release 9.3(1), complements the 'Internal CRC Detection and Isolation' feature, and is designed to detect and take corrective action in the presence of these errors. This feature enables you to monitor certain specific hardware counters in Fabric 1 and Fabric 3 modules that might cause I/O problems in the network setup.

XbarErrorMonitor is a python script that utilizes the MDS scheduler feature to check for these internal errors. It works by having the scheduler execute it periodically (default 120 seconds). Each time it executes it issues a 'show hardware internal errors' command and records the specific counters monitored for the specific fabric module type present in the switch. It then sleeps (suspends) for an amount of time (default 30 seconds), issues another 'show hardware internal errors' command and compares each specific counter to the previous value.

If one or more of the monitored counters is greater than or equal to the threshold value (default 50) then the action specified (default 'log-only') is performed.

Guidelines and Limitations of Fabric Module Error Monitoring

- This feature supports only Cisco MDS 9700 series switches.
- This feature gets automatically enabled when you upgrade to Cisco MDS Release 9.3(1). This feature has the default values - Scheduling interval is 120 seconds, Sleep time is 30 seconds, counter threshold is 50, and default action is log-only.
- This feature monitors the following error counters in a switch:
 - Fabric 1 module counters
 - INTERNAL_ERROR_CNT
 - HIGH_XT_DROP_CNT
 - SAC_XTIMEOUT_INTR_HI
 - Fabric 3 module counters
 - packets dropped destined to port
 - packets drop on receive port
 - double bit ecc error



Note These counters can be seen (if they are non-zero) using the **show hardware internal errors** command.

- By default, this feature monitors the Fabric module 1 and Fabric module 3 counters every two minutes. If a counter crosses the default threshold value of 50, it displays a syslog saying that there is a fault in the respective spine. For example:

```
2022 Jun 28 14:10:38 sw9706-89 %USER-2-SYSTEM_MSG:
xbarErrorMonitor: counter threshold exceeded for xbar 3 for
counter packets dropped destined to port. (Before: 0, After: 128, Delta 128).
```

- If XbarErrorMonitor was started with a certain set of parameters then ensure that when changing any parameter all non-default parameters are specified. For example:

```
xbarErrorMonitor -si 180 enable
xbarErrorMonitor -a log-and-out-of-service enable
```

- When you use the xbarErrorMonitor log-and-out-ofservice enable command, the scheduling interval will be changed back to default 120 second as the si parameter don't get passed.
- Enabling xbarErrorMonitor creates a scheduler job named xbarErrorMonitor_job and a scheduler schedule named XbarErrorMonitor_Schedule. These should not be deleted or xbarErrorMonitor will cease to function.

Configuring Fabric Module Error Monitoring

Procedure

| | Command or Action | Purpose |
|---------------|----------------------------------|---|
| Step 1 | switch# xbarErrorMonitor enable | Enables the XbarErrorMonitor feature on the switch. |
| Step 2 | switch# xbarErrorMonitor disable | (Optional) Disables the XbarErrorMonitor feature. |
| Step 3 | switch# xbarErrorMonitor -h | <p>Modifies the error monitoring parameters.</p> <p>Note The help option provides a list of parameters that you can modify so that the monitoring can be done based on the selected parameter. See the 'Configuration Examples' section for a sample usage of this option.</p> |
| Step 4 | switch# xbarErrorMonitor show | Verifies the status of xbar error monitoring. |

Configuration Examples

The following example shows how to check the status of the XbarErrorMonitor feature:

```
switch# xbarErrorMonitor show
xbarErrorMonitor 1.0

Status: Enabled
Scheduler Interval: 120
Sleep Time: 30
Counter Threshold: 50
Action: log-only
Counters Monitored:
  packets dropped destined to port
  packets drop on receive port
  double bit ecc error
```

The following example shows how to modify the error monitoring parameters:

```
Switch(config)# xbarErrorMonitor --help
usage: xbarErrorMonitor [-h] [-v] [-si] [-st] [-t] [-a]
                        {enable,disable,show,forScheduler} ...

Enable/Disable xbar error monitor on the switch

positional arguments:
  {enable,disable,show,forScheduler}
  enable                Enable xbarErrorMonitor feature
  disable               Disable xbarErrorMonitor feature
  show                  Show current status of xbarErrorMonitor feature
```

```
forScheduler      This option is for scheduler only, DO NOT USE THIS
                  MANUALLY

optional arguments:
-h, --help        show this help message and exit
-v, --version     show program's version number and exit
-si, --scheduler-interval scheduler interval time, value should be between 120s
                  to 3600s. Default value is 120s.
-st, --sleep-time sleep time between getting error counters, value
                  should be between 30s to 90s. Default value is 30s.
-t, --counter-threshold counter threshold value beyond which action will be
                  taken, value should be between 50 to 500. Default
                  value is 50.
-a, --action      action that needs to be taken when counter breaches
                  the threshold value. 'log-only': Shows only a syslog,
                  'log-and-out-of-service': Shows a syslog as well as
                  puts the xbar out-of-service. Default action is log-
                  only.
```