Viewing and Responding to Alarms

Cisco MGX switches display alarm information about the switch cards and store this information inside the switch. This chapter describes how to interpret the alarm LEDs on the switch and how to obtain alarm reports through the CLI.

Viewing and Responding to Alarms Using Physical Switch Controls

All cards have LEDs for viewing alarm status and switches for responding to alarms. The "Illustrated Card List" chapter in the *Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, Cisco MGX 8830, and Cisco MGX 8880 Hardware Installation Guide, Releases 2 Through 5* describes the LEDs for all cards that can be installed in the Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 switches.

Note Although there are LEDs for critical, major, and minor alarms on the PXM45 and PXM1E cards, only one of these LEDs is set to "on" when multiple alarms are active. The switch always displays the status of the most severe alarm. Critical alarms are the most severe, and minor alarms are the least severe. If there were 2 major alarms and 10 minor alarms, the switch would set the major alarm LED to on.

Displaying Alarm Reports in the CLI

You can use a CLI session to view the status of node alarms. Alarms are reported in the following categories:

- Node alarms
- Clock alarms
- Switching alarms (On Cisco MGX 8850 (PXM45) and Cisco MGX 8950 switches only)
- Environment alarms
- Card alarms
- License alarms

The sections that follow describe how to display the different types of alarm reports.

Note The procedures in the following sections can be completed by users at all access levels.

Displaying Node Alarms

A node alarm report displays a summary report of all alarms on the node. To display node alarms, enter the following command:

```
M8830_CH.1.PXM.a > dspndalms
```

The following example shows the node alarm report display.

```
M8830_CH.1.PXM.a > dspndalms
Node Alarm Summary

Alarm Type                    Critical        Major          Minor
----------                    --------       -------        -------
Clock Alarms                         0             0              0
Switching Alarms                     0             0              0
Environment Alarms                   0             0              0
Card Alarms                          3             2              0
Node License Alarm                   0             0              0
```

Typically, you would start investigating alarms by displaying the node alarms. Once you have identified the area that is producing the alarms, you would enter additional commands to display detailed information on those alarms. The following sections describe how to display these detailed reports.

Displaying Clock Alarms

Cisco MGX switches monitor the quality of the clock sources. If the timing for a clock source strays beyond the tolerance thresholds, an alarm is reported. To view the clock alarms, enter the following command:

```
mgx8850a.2.PXM.a> dspclkalms
```

The following is an example clock alarm report:

```
mgx8850a.2.PXM.a> dspclkalms
mgx8850a                          System Rev: 03.00   May. 06, 2002 22:47:36 GMT
MGX8830                                                Node Alarm: MINOR
Clock Manager Alarm Summary
----------------------------
NETWORK CLOCK ALARM : STANDBY LOST PRIMARY REFERENCE : MINOR
NETWORK CLOCK ALARM : STANDBY LOST SECONDARY REFERENCE : MINOR
Critical       Major          Minor
000            000            002
```

Displaying Switching Alarms

Switching alarms identify problems with the switching components within the switch. Cisco MGX 8850 (PXM45) and Cisco MGX 8950 support several commands that allow you to display switching alarms.

Note PXM1E do not support switching alarms. Therefore, the commands in this section do not apply to Cisco MGX 8850 (PXM1E) and Cisco MGX 8830 switches.

To display a report of all switching alarms, enter the following command:

```
M8850_LA.8.PXM.a > dspswalms
```

The following example is a sample report showing no switching alarms.

```
M8850_LA.8.PXM.a > dspswalms

             XBAR SWITCHING FABRIC ALARMS SUMMARY

            Xbar Core Alarm          Xbar Port Alarm      Xbar Slot B/W alarm
Slot No.  Critical Major Minor   Critical Major Minor   Critical Major Minor
-------   -------- ----- -----   -------- ----- -----   -------- ----- -----
  01           0     0     0        0     0     0        0     0     0
  02           0     0     0        0     0     0        0     0     0
  03           0     0     0        0     0     0        0     0     0
  04           0     0     0        0     0     0        0     0     0
  05           0     0     0        0     0     0        0     0     0
  06           0     0     0        0     0     0        0     0     0
  07          --    --    --       --    --    --       --    --    --
  08           0     0     0        0     0     0        0     0     0
  09          --    --    --       --    --    --       --    --    --
  10           0     0     0        0     0     0        0     0     0
  11           0     0     0        0     0     0        0     0     0
  12           0     0     0        0     0     0        0     0     0
  13          --    --    --       --    --    --       --    --    --
  14          --    --    --       --    --    --       --    --    --
```

To display additional information on switch alarms, enter the following commands:

- **dspXbarPlaneAlms**
- **dspxbarslotbwalms**

To display a report for xbar alarms, enter the following command:

```
M8850_NY.7.PXM.a > dspdevalms XBARCORE -pslot *
```

The following display is an example xbar alarm report.

```
M8850_LA.8.PXM.a > dspdevalms XBARCORE -pslot *
M8850_LA                          System Rev: 05.00   Apr. 13, 2004 18:24:37 GMT
MGX8850                                               Node Alarm: MAJOR

             XBAR CORE ALARM SEVERITY INFO SUMMARY
                   Fabric Slot / Plane
Slot    7/0   7/1   7/2     8/0   8/1   8/2
----    ----  ----  ----    ----  ----  ----
 01     --    --    --      --    --    --
 02     --    --    --      --    --    --
 03     --    --    --      --    --    --
 04     --    --    --      --    --    --
 05     --    --    --      --    --    --
 06     --    --    --      --    --    --
 07     --    --    --      --    --    --
 08     --    --    --      --    --    --
 09     --    --    --      --    --    --
 10     --    --    --      --    --    --
 11     --    --    --      --    --    --
 12     --    --    --      --    --    --
 13     --    --    --      --    --    --
 14     --    --    --      --    --    --
```

When the switch reports xbar alarms, you can use the troubleshooting commands in Table 11-1 to collect more information.

Table 11-1 Crossbar Alarm Troubleshooting Commands

Command	Purpose
dspxbar <*slot*> <*plane*>	Displays the following general information about the configuration of a switch plane (or switching fabric or crossbar): • Number of the slot where the crossbar ASIC resides (7 or 8 for a Cisco MGX 8850 (PXM1E) node, 9, 10, 25, or 26 for a Cisco MGX 8950 node). • Selected switch plane or ASIC number. The range is 0 to 3. If you do not specify a plane with this command, the default value of 0 is used. • Revision number of the ASIC. • Status of the ASIC.The status is either failed or OK. If the status is failed, the other ASICs must carry the switching load, and the throughput of the switch falls below the maximum. In this case, Cisco Systems recommends you replace the card. The cell grant mode is always “Multicast Preferred.” • The “Resent Sframe Tic” is the rising edge of the clock. “Sframe” refers to a switch frame.
dspdeverrhist XBARCORE -pslot *	Displays a historical count of errors.
dspdeverr XBARCORE -pslot *	Displays the current count of errors.

Table 11-1 Crossbar Alarm Troubleshooting Commands (continued)

Command	Purpose
dspxbarerrthresh	Displays the thresholds for crossbar errors. The following items that make up a threshold are as follows: • Duration of the error state • Number of errors during that time period • Upper and lower error counts within a particular alarm severity (minor, major, and critical) Thresholds are displayed for the following errors: • Loss of synchronization (LossOfSync) • Transceiver error (TranscieverErr) • DisparityErr—an accumulation of five ASIC-level errors • ParityErr—a parity error in the switch frame as a whole • HeaderCRCErr—a CRC error for the switch frame header • PayloadCRCErr—a CRC error for the switch frame payload • RemapTwiceErr • RemapRecurrErr • Backpressure parity error (B.P.ParityErr)—a parity error in the signaling for backpressure
dspxbarmgmt	Displays details about the load sharing configuration for the node.
dspxbarstatus	Displays status of each slot for a crossbar.

For more information on these commands, refer to the *Cisco MGX 8850 (PXM45/PXM1E), Cisco MGX 8950, Cisco MGX 8830, and Cisco MGX 8880 Command Reference, Release 5*.

Displaying Environment Alarms

An environmental alarm report displays the alarm status and operating statistics for the switch power supplies and cooling fans. To display the environmental alarm report, enter the **dspenvalms** command as shown in the following example:

```
mgx8830a.2.PXM.a > dspenvalms

Type <CR> to continue, Q<CR> to stop:
mgx8830a                        System Rev: 03.00   May 06, 2002 23:40:57 GMT
MGX8830                                             Node Alarm: MINOR
ENVIRONMENTAL ALARM STATE INFO   ^Notification Disabled
   Alarm Type      Unit   Threshold      DataType   Value       State
 ----------------  ---- --------------   -------- ---------- -------------
 Top Fan Tray       6    >= 2000          RPM       3654     Normal
 Top Fan Tray       7    >= 2000          RPM       3576     Normal
 Top Fan Tray       8    >= 2000          RPM       3468     Normal
 Top Fan Tray       9    >= 2000          RPM       3492     Normal
```

```
 Bottom Fan Tray    1    >= 2000          RPM       0        Missing
 Bottom Fan Tray    2    >= 2000          RPM       0        Missing
 Bottom Fan Tray    3    >= 2000          RPM       0        Missing
 Bottom Fan Tray    4    >= 2000          RPM       0        Missing
 Bottom Fan Tray    5    >= 2000          RPM       0        Missing
 Bottom Fan Tray    6    >= 2000          RPM       0        Missing
 Bottom Fan Tray    7    >= 2000          RPM       0        Missing
 Bottom Fan Tray    8    >= 2000          RPM       0        Missing
 Bottom Fan Tray    9    >= 2000          RPM       0        Missing

 +5V Input             4.850^ to 5.150^   VoltsDC   5.036    Informational
 +3.3V Input           3.200^ to 3.400^   VoltsDC   3.298    Informational

Type <CR> to continue, Q<CR> to stop:
MGX8830                                                Node Alarm: MINOR
ENVIRONMENTAL ALARM STATE INFO   ^Notification Disabled
   Alarm Type      Unit   Threshold      DataType   Value       State
 ----------------  ---- --------------   -------- ---------- -------------
 Fan Tray           6    >= 2000          RPM       2766     Normal
 Fan Tray           7    >= 2000          RPM       2676     Normal
 Fan Tray           8    >= 2000          RPM       2610     Normal

 +5V Input             4.850^ to 5.150^   VoltsDC   4.997    Informational
 +3.3V Input           3.200^ to 3.400^   VoltsDC   3.259    Informational
 Calibration VDC        0x7e^ to 0x82^    Other     0x80     Informationall
```

Displaying Card Alarms

A card alarm report can display the alarm status of all the cards within the node or the alarm status of a single card. To display card alarms, enter the following command at the PXM45 or PXM1E switch prompt:

```
mgx8830a.2.PXM.a> dspcdalms [slot]
```

Replace [*slot*] with the number of the card for which you want to display alarms. If you omit the slot number, the switch displays the alarms for all cards in the node as shown in the following example:

```
M8830_CH.1.PXM.a > dspcdalms
Card Alarm Summary

Slot  Critical   Major     Minor    ||  Slot  Critical   Major     Minor
----  --------  -------   -------   ||  ----  --------  -------   -------
 1          1        0         0    ||   8          0        0         0
 2          0        0         0    ||   9          0        0         0
 3          0        0         0    ||  10          0        0         0
 4          0        0         0    ||  11          0        0         0
 5          0        0         0    ||  12          2        2         0
 6          0        0         0    ||  13          0        0         0
 7          0        0         0    ||  14          0        0         0

Use dspcdalms <slot> to see more detail.
```

The next example shows a card alarm report for an MPSM-T3E3-155 card in slot 12:

```
M8830_CH.1.PXM.a > dspcdalms 12
Card Alarm Summary


Alarm Type                    Critical        Major          Minor
----------                    --------       -------        -------
Hardware Alarm                     0             0              0
Card State Alarm                   0             0              0
Disk Alarm                         0             0              0
Diag Alarm                         0             0              0
License Alarm                      0             0              0
Resource Alarm                     0             0              0
SRM Alarm                          0             0              0
IMA Alarm                          0             0              0
Line Alarm                         0             0              0
Path Alarm                         2             0              0
Port Alarm                         0             0              0
LMI Alarm                          0             0              0
Channel Alarm                      0             2              0
SAR Alarm                          0             0              0
```

Table 11-2 lists commands that you can enter to display additional information about alarms that appear in the **dspcdalms** report.

Table 11-2 Card Alarm Information Commands

Alarm Type	Commands
Hardware	**dspHwAlms**
Card state	**dspcd** <slot>
License	**dsplicalms**
Resource	**dsprmalms**
IMA	**dspimagrpalms** **dspimalnkalms**
Feeder	**dspfdrs** **dspfdr**
Line	**dspalms** **dsplns** **dspln** **dspapslns** **dspapsln**
Port	**dspports** **dsppnports**
Channel or Connection	**dspconalarms** **dspcons** **dspcon**
SAR	**dspsaralms**

Displaying Line Alarms on Service Modules

The service modules generate line alarms when a loss of signal (LOS) alarm occurs.

Table 11-3 lists commands that you can enter to display information about line alarms on service modules.

Table 11-3 Line Alarm Information Commands

Alarm Type	Description
dspalm	Display the active alarms associated with a specific line on the current service module. Enter the command without parameters to view the command syntax.
dspalmcnf	Display the alarm configuration and thresholds for a specific line on the current service module. Enter the command without parameters to view the command syntax.
dspalmcnt	Display the alarm counters for a line on the current service module. The alarm counters indicate how many times each type of active alarm has occurred since the counters were last reset. Enter the command without parameters to view the command syntax.
dspalms	Display a summary of the active line alarms on the current service module. This command does not require parameters.

For detailed information about line alarms on specific service modules, refer to that service module's configuration guide. The service module configuration guides are listed in Table 1-1.

Displaying IMA Alarms

Enter the **dspimagrpalms** command to display alarm state information for all IMA groups on the current PXM1E-16-T1E1 or AXSM-32-T1E1-E, as shown in the following example:

```
Unknown.7.PXM.a > dspimagrpalms

Group  Number                 : 2.1
Alarm  State                  : StartUp Fe

Group  Number                 : 2.2
Alarm  State                  : Other Failure
```

Enter the **dspimagrpalm** <*bay.group*> command to display alarm state information for a specific IMA group. Replace bay with the number *1* to specify the lower bay, or *2* to specify the lower bay. Replace *group* with the IMA group whose alarm status you want to view.

In the following example, the user displays alarm information for the IMA group 2 in the lower bay.

```
Unknown.7.PXM.a > dspimagrpalm 2.2

Group  Number                 : 2.2
Alarm  State                  : Other Failure
```

Enter the **dspimalnkalms** command to display alarm state information for all IMA links on the current PXM1E-16-T1E1 or AXSM-32-T1E1-E, as shown in the following example.

```
Unknown.7.PXM.a > dspimalnkalms

Link  Number           : 2.5
Alarm State            : Lif Fail
```

Enter the **dspimalnkalm <***bay.line***>** command to display alarm state information for a specific IMA link. Replace bay with the 2 to specify the lower bay. Replace *line* with number of the line whose alarm status you want to view.

Note On the PXM1E, the bay number is always 2.

In the following example, the user displays alarm information for the IMA group 5 in the lower bay.

```
Unknown.7.PXM.a > dspimalnkalm 2.5
Link  Number           : 2.5
Alarm State            : Lif Fail
```

Note The commands in this section apply to the AXSM-32-T1E1-E and the PXM1E-16-T1E1 only. For information on the commands used to display alarms on AUSM-8-T1E1/B cards, refer to the *Cisco ATM Services (AUSM/MPSM) Configuration Guide and Command Reference for MGX Switches, Release 5*.

Displaying License Alarms

Enter the **dsplicalms** command to display alarm state information for MPSM feature licenses. For example:

```
M8830_CH.1.PXM.a > dsplicalms
M8830_CH                          System Rev: 04.09   Mar. 08, 2004 09:31:25 GMT
MGX8830                                               Node Alarm: CRITICAL
Slot  Critical   Major     Minor    ||  Slot  Critical   Major     Minor
----  --------  -------   -------   ||  ----  --------  -------   -------
 1          0        0         0    ||   8          0        0         0
 2          0        0         0    ||   9          0        0         0
 3          0        0         0    ||  10          0        0         0
 4          0        0         0    ||  11          0        0         0
 5          0        0         0    ||  12          0        0         0
 6          0        0         0    ||  13          0        0         0
 7          0        0         0    ||  14          0        0         0
```

To display license information on all cards, enter the **dspliccds** command as shown in the following example:

```
M8830_CH.1.PXM.a > dspliccds
M8830_CH                          System Rev: 04.09   Mar. 08, 2004 09:33:59 GMT
MGX8830                                               Node Alarm: CRITICAL
                         Card Lic  Prov     License      Allocated
Slot  Card Type          Alarm     Allowed  Type         Licenses
----  -----------------  --------  -------  -----------  ---------
3     --                 --        --       --           0
4     --                 --        --       --           0
5     --                 --        --       --           0
6     --                 --        --       --           0
7     --                 --        --       --           0
8     --                 --        --       --           0
9     --                 --        --       --           0
10    --                 --        --       --           0
11    --                 --        --       --           0
12    MPSM-T3E3-155      No        Yes      MultiSrvc    1
                                              Channelize   1
                                              RateControl  1
13    --                 --        --       --           0
14    --                 --        --       --           0
```

To display license information on a specific card, enter the **dspliccd** command as shown in the following example:

```
M8830_CH.1.PXM.a > dspliccd 12
M8830_CH                           System Rev: 04.09   Mar. 08, 2004 09:34:12 GMT
MGX8830                                                Node Alarm: CRITICAL
Card License Alarm:             None
Service Module Type:            MPSM-T3E3-155
Service Module Serial Number:   SAD073504CT
Provisioning Allowed:           Yes

=========================================================
Allocated License Type      Quantity
--------------------        --------
MultiSrvc                   1
Channelize                  1
RateControl                 1

=========================================================
Programmed License Type     Quantity
--------------------        --------

=========================================================
Programmed License Registered          : N/A
License Registeration Node             : --
License Registeration Chassis Serial No: --
```

Displaying Log File Information

Log files record switch events such as operator login and command entry. To view the contents of the current log, enter the following command at the PXM1E or PXM45 switch prompt:

```
mgx8830a.2.PXM.a> dsplog [-log <number>] [-mod moduleName] [-sev <number>] [-sl <slot>]
[-task <taskName>] [-tge <MM/DD/YYYY-HH:MM:SS>] [-tle <MM/DD/YYYY-HH:MM:SS>]
```

To display a list of archived log files, enter the following command:

```
mgx8830a.2.PXM.a> dsplogs
```

The log files are stored in the C:/LOG directory.