Reliability, Availability, and Serviceability

Both the PXM45 and the PXM1E support the following reliability, availability, and serviceability (RAS) features:

- Power On Self Test (POST)
- Hardware Monitoring Module (HMM)
- Online diagnostics
- Offline diagnostics
- Enhanced alarm reporting

The POST and HMM features are transparent to the user. However, the `dsppostresults` command can be used to display the POST results. POSTs are a set of tests that run at boot-up time. POSTs cannot be disabled.

Diagnostics

Diagnostics commands can be used to isolate or troubleshoot problems. The following procedure shows the steps for identifying problems or failures:

**Step 1** Observe card alarms.

```bash
MGX8850.7.PXM.a> dsppndalms
```

**Step 2** Observe hardware or diagnostic alarms and slot numbers

```bash
MGX8850.7.PXM.a> dspcdalms
```

**Step 3** If there are hardware alarms, change card to appropriate slot.

```bash
MGX8850.7.PXM.a> cc slot
```

**Step 4** Display alarms to identify the device.

```bash
MGX8850.7.PXM.a> dsphwalms
```

**Step 5** Display errors on device.

```bash
MGX8850.7.PXM.a> dspdeverr device
```

**Step 6** If there are diagnostic alarms, change card to appropriate slot

```bash
MGX8850.7.PXM.a> cc slot
```
Step 7  Display diagnostics results.

MGX8850.7.PXM.a> **dspdiagresults**

Table G-1 shows some of the other commands that can be used to isolate and troubleshoot problems. For details about these commands refer to the Cisco MGX 8800/8900 Series Command Reference, Release 5.2.

Table G-1  RAS-Related Diagnostics, Alarm, and POST Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cnfdiag</td>
<td>Configures (enables/disables) online diagnostics and schedules offline diagnostics for a specific slot.</td>
</tr>
<tr>
<td>cnfdiagall</td>
<td>Configures (enables/disables) online diagnostics and schedules offline diagnostics for all slots.</td>
</tr>
<tr>
<td>dspdiagcnf</td>
<td>Displays the configuration of online and offline diagnostics</td>
</tr>
<tr>
<td>dspdiagstatus</td>
<td>Displays the status of online and offline diagnostics on all slots and indicates whether diagnostics is ready to be enabled or not.</td>
</tr>
<tr>
<td>dspdiagstat</td>
<td>Displays the statistics of online and offline diagnostics execution for a specific slot.</td>
</tr>
<tr>
<td>dspdiagerr</td>
<td>Displays errors of online and offline diagnostics execution on all slots.</td>
</tr>
<tr>
<td>dspdiagtests</td>
<td>Displays a list of all diagnostics tests.</td>
</tr>
<tr>
<td>clrdiagstat</td>
<td>Clears the statistics of executed online and offline diagnostics for a specific slot.</td>
</tr>
<tr>
<td>clrdiagerr</td>
<td>Clears the errors reported by online and offline diagnostics for a specific slot.</td>
</tr>
<tr>
<td>dspdeverr</td>
<td>Displays the error types and error counts for a specific device in a slot.</td>
</tr>
<tr>
<td>abortofflinediag</td>
<td>Stops the currently running offline diagnostics test.</td>
</tr>
<tr>
<td>dspdeverrhist</td>
<td>Displays the history of error types and error counts for a specific device in a slot.</td>
</tr>
<tr>
<td>dspdiagresults</td>
<td>Displays the diagnostics test results and alarm conditions for a specific slot.</td>
</tr>
<tr>
<td>dsphwalms</td>
<td>Displays a summary of errors and alarms for all devices in a slot.</td>
</tr>
<tr>
<td>dsppostresults</td>
<td>Displays the Power on Self Test (POST) results.</td>
</tr>
</tbody>
</table>

Diagnostics Examples

The following example shows the display output for the **dspdiagresults** command:

MGX8850.7.PXM.a> **dspdiagresults**

<table>
<thead>
<tr>
<th>Id</th>
<th>Name</th>
<th>En</th>
<th>#Att</th>
<th>#Fail</th>
<th>#Pass</th>
<th>Alarm</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data Path</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>2</td>
<td>Trap Freq Monitor</td>
<td>Y</td>
<td>1434</td>
<td>0</td>
<td>1434</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>3</td>
<td>Memory Access</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>4</td>
<td>Atlas Reg Access</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>5</td>
<td>Atlas Sram Access</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>6</td>
<td>Framer/LIU Access</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>7</td>
<td>Elmer Access</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
<tr>
<td>8</td>
<td>Flash CheckSum</td>
<td>Y</td>
<td>2868</td>
<td>0</td>
<td>2868</td>
<td>None</td>
<td>Pass</td>
</tr>
</tbody>
</table>
The following example shows the display output for the `dsppostresults` command:

```
MGX8850.7.PXM.a> dsppostresults
```

```
Power On Self Test Results

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Result</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAM Checksum</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>QE RAM</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>CBC RAM</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Ethernet Reg</td>
<td>NOT DONE</td>
<td>Test Not Required</td>
</tr>
<tr>
<td>PCI-IDE Reg</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Clock Mux</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Framer 1 Access</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Framer 2 Access</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Framer 3 Access</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Framer 4 Access</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>ATLAS 1 RAM</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Hard Disk Access</td>
<td>PASS</td>
<td></td>
</tr>
</tbody>
</table>
```

The following example shows the display output for the `dsphwalms` command:

```
MGX8850.7.PXM.a>dsphwalms
```

```
Device       Alarms
-------      ------
DISK None    None
ATLAS (1)    None
ATLAS (0)    None
NILE4        None
CBC (0)      None
CBC (1)      None
QE1210 (1)   None
QE1210 (0)   None
```

Use `dspdeverr <device>` to see more detail.

The following example shows the display output for the `dspdeverr` command:

```
MGX8850.7.PXM.a> dspdeverr QE1210
```

```
PXM               System Rev: 04.00   Dec. 19, 1999 07:32:33 GMT
MGX8850          Node Alarm: CRITICAL

CURRENT ERROR COUNT FOR DEVICE QE1210 (1) (Alarm : None)

<table>
<thead>
<tr>
<th>Error Type</th>
<th>Total Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--------------</td>
</tr>
<tr>
<td>Rx HW Err</td>
<td>0</td>
</tr>
<tr>
<td>DTE ProcErr</td>
<td>0</td>
</tr>
<tr>
<td>RAM ERR</td>
<td>0</td>
</tr>
</tbody>
</table>

CURRENT ERROR COUNT FOR DEVICE QE1210 (0) (Alarm : None)
```
The following example shows the display output for the `dspdeverrhist` command:

```
MGX8850.7.PXM.a> dspdeverrhist QE1210
PXM System Rev: 04.00  Dec. 19, 1999 07:32:33 GMT
MGX8850 Node Alarm: CRITICAL

HISTORY ERROR COUNT FOR DEVICE QE1210  (1)
----------------- ----- ---- --- ------ --------------
Error Type      Total Errors
----------------- ------- ------
Rx HW Err       0
DTE ProcErr     0
RAM ERR         0

HISTORY ERROR COUNT FOR DEVICE QE1210  (0)
----------------- ----- ---- --- ------ ------------------------------------------
Error Type       Total Errors
---------------  ------- ------
Rx HW Err        0
DTE ProcErr      0
RAM ERR          0
```

```
MGX8850.8.PXM.a> dspdiagtests
-------------------------------------------
Online Diagnostic Tests
Id TestName
-- --------
1 Utopia Test
2 Path Test
3 Xbar Test
4 Trap Freq Monitor
5 Memory Access
6 Elmer Access
7 Flash Checksum
8 Ethernet Ping
9 QE RAM Access
10 HDD PCI Access
11 HDD R/W
12 CBC RAM Access
13 BRAM Checksum
```

```
MGX8850.8.PXM.a >
```
Diagnostics Tests

This section lists the diagnostics tests for the PXM1E and PXM45.

PXM1E Diagnostics Tests

The following tests are valid on the PXM1E.

PXM1E Power On Self-Tests (POST)
- BRAM checksum
- QE RAM
- CBC RAM
- Ethernet Register Access
- PCI/IDE Register Access
- Clock Mux Validation
- Framer Access
- Atlas1 RAM Access
- Atlas2 RAM Access
- Hard Disk Access

PXM1E Path tests
- Data Path
- Control Path

PXM1E Device Tests
- Atlas Register Access
- Atlas SRAM Access
- Framer/LIU Access
- Trap Frequency Monitor
- Elmer Access
- Flash Checksum
- Ethernet Ping
- QE RAM Access
- HDD PCI Access
- HDD R/W
- CBC RAM Access
- BRAM checksum
- Memory Access
**PXM45 Diagnostics Tests**

The following tests are valid on the PXM45.

**PXM45 Power On Self-Tests (POST)**
- BRAM Checksum
- QE RAM
- CBC RAM
- Ethernet Register
- PCI/IDE Register Access
- Clock Mux Validation
- Hard Disk Access

**PXM45 Path Tests**
- Utopia Loopback
- Path Test
- Crossbar test
- Device Tests
- QE RAM Access
- CBC RAM Access
- Flash Checksum
- HDD R/W
- HDD PCI Access
- Trap Frequency Monitor
- Ethernet Ping
- BRAM checksum
- Memory Access