



## APPENDIX **G**

# Reliability, Availability, and Serviceability

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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:

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- Step 1** Observe card alarms.  
`MGX8850.7.PXM.a>dspndalms`
- Step 2** Observe hardware or diagnostic alarms and slot numbers  
`MGX8850.7.PXM.a>dspcdalms`
- Step 3** If there are hardware alarms, change card to appropriate slot .  
`MGX8850.7.PXM.a>cc slot`
- Step 4** Display alarms to identify the device.  
`MGX8850.7.PXM.a>dsphwalms`
- Step 5** Display errors on device.  
`MGX8850.7.PXM.a>dspdeverr device`
- Step 6** If there are diagnostic alarms, change card to appropriate slot  
`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**

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

## Diagnostics Examples

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

```
MGX8850.7.PXM.a> dspdiagresults
```

```

-----
                Online Diagnostics Test Summary
-----
Id   Name                En   #Att  #Fail  #Pass  Alarm  Result
--   ---                --   ---   ---    ---    ---    ---
 1   Data Path            Y    2868   0     2868   None   Pass
 2   Trap Freq Monitor   Y    1434   0     1434   None   Pass
 3   Memory Access       Y    2868   0     2868   None   Pass
 4   Atlas Reg Access    Y    2868   0     2868   None   Pass
 5   Atlas Sram Access   Y    2868   0     2868   None   Pass
 6   Framer/LIU Access   Y    2868   0     2868   None   Pass
 7   Elmer Access        Y    2868   0     2868   None   Pass
 8   Flash CheckSum     Y    2868   0     2868   None   Pass

```

9	Ethernet Ping	Y	2868	0	2868	None	Pass
10	QE RAM Access	Y	2868	0	2868	None	Pass
11	HDsk PCI Access	Y	2868	0	2868	None	Pass
12	HDsk Rd/Wr	Y	95	0	95	None	Pass
13	CBC RAM Access	Y	2868	0	2868	None	Pass
14	BRAM checksum	Y	2868	0	2868	None	Pass
15	Control Path	Y	28680	0	28680	None	Pass

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

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

-----
Power On Self Test Results
-----
Test Name          Result          Description
-----
BRAM Checksum      PASS
QE RAM             PASS
CBC RAM           PASS
Ethernet Reg       NOT DONE       Test Not Required
PCI-IDE Reg        PASS
Clock Mux          PASS
Framer 1 Access    PASS
Framer 2 Access    PASS
Framer 3 Access    PASS
Framer 4 Access    PASS
ATLAS 1 RAM        PASS
Hard Disk Access   PASS
```

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

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

Device      Alarms
-----
DISK 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)
-----
Error Type          Total Errors
-----
Rx HW Err           0
DTE ProcErr         0
RAM ERR             0

CURRENT ERROR COUNT FOR DEVICE QE1210 (0) (Alarm : None)
```

```

-----
Error Type      Total Errors
-----
Rx HW Err       0
DTE ProcErr     0
RAM ERR         0

```

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, PXM45, and MPSM-155.

## 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

## Hardware Monitoring on MPSM-155 Card

The following devices are monitored on a MPSM-155 card.

- APOX FPGA
- CBC-155 FPGA
- SUNI-IMA-84
- Winpath Network Processor