

Sun Server X2-8 (formerly Sun Fire X4800 M2) Diagnostics Guide



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Using This Documentation

This section provides product information, documentation and feedback links, and a document change history.

- [“Sun Server X2-8 Name Change” on page 5](#)
- [“Product Downloads” on page 5](#)
- [“Documentation and Feedback” on page 6](#)
- [“About This Documentation” on page 7](#)
- [“Change History” on page 7](#)

Sun Server X2-8 Name Change

The Sun Server X2-8 was formerly named the Sun Fire X4800 M2 server. This former name might still appear in the product. The name change does not indicate any change in system features or functionality.

The new name identifies the following:

- X identifies an x86 product.
- The first number, 2, identifies the generation of the server.
- The second number, 8, identifies the number of processors.

Product Downloads

You can find downloads for all Oracle x86 servers and server modules (blades) on Support (MOS). On MOS you can find two type of downloads:

- Software release bundles specific to the rackmount server, server module, modular system (blade chassis), or NEM. These software release bundles include Oracle ILOM, Oracle Hardware Installation Assistant and other platform software and firmware.
- Standalone software common across multiple types of hardware. This includes the Hardware Management Pack and Hardware Management Connectors.

▼ **Get Software and Firmware Downloads**

- 1 Go to <http://support.oracle.com>.
- 2 Sign in to My Oracle Support.
- 3 At the top of the page, click the Patches and Updates tab.
- 4 In the Patch Search box, click Product or Family (Advanced Search).
- 5 In the Product ? is field, type a full or partial product name, for example, Sun Server X2-8 until a list of matches is displayed and select the product of interest.
- 6 In the Release ? is pull-down list, click the Down arrow.
- 7 In the window that appears, click the triangle (>) by the product folder icon to show the choices and then select the release of interest and click Close.
- 8 In the Patches Search box, click Search.
A list of product downloads (listed as patches) appears.
- 9 Select the Patch name of interest, for example, 12684585, for the Sun Server X2-8 1.0 Firmware.
- 10 In the right-side pane that appears, click Download.

Documentation and Feedback

Documentation	Link
All Oracle products	http://www.oracle.com/documentation
Sun Server X2-8	http://docs.oracle.com/cd/E20815_01/index.html
Oracle ILOM 3.0	http://www.oracle.com/technetwork/documentation/sys-mgmt-networking-190072.html#ilom

Provide feedback on this documentation at: <http://www.oracle.com/goto/docfeedback>.

About This Documentation

This documentation set is available in both PDF and HTML. The information is presented in topic-based format (similar to online help) and therefore does not include chapters, appendices, or section numbering.

You can get a PDF that includes all information about a particular topic subject (such as hardware installation or product notes) by clicking the PDF button on the top of the page.

Change History

The following lists the release history of this documentation set:

- July 2011 – Initial publication.
- October 2011 – Revised for SW1.1.
- January 2012 – Revised for SW1.2.
- April 2012 – Revised to add preinstalled Oracle VM, and additional rack mounting instructions.
- June 2012 – Revised to add the preinstalled Solaris 11 operating system.
- July 2012 – Revised to change name and to add 32 Gb DIMMs.

Overview of the Diagnostics Guide

The following topics are covered in this document.

Description	Link
Learn about troubleshooting procedures and diagnostics tools available for the server.	“Introduction to System Diagnostics” on page 11
Troubleshoot system problems.	“Troubleshooting the Server” on page 13
Troubleshoot DIMM problems.	“Troubleshooting DIMM Problems” on page 17
Learn what is tested during BIOS POST.	“BIOS POST” on page 27
Use Oracle ILOM to monitor the host.	“Using Oracle ILOM to Monitor the Host” on page 31
Create a data collector snapshot.	“Creating a Data Collector Snapshot” on page 47
Use SunVTS to diagnose server problems.	“Using SunVTS Diagnostics Software ” on page 51
Use Pc-Check to diagnose server problems.	“Performing Pc-Check Diagnostic Tests” on page 55
Run U-Boot diagnostics.	“U-Boot Diagnostic Start-Up Tests” on page 69

Note – The Sun Server X2-8 was formerly named the Sun Fire X4800 M2 server. This former name might still appear in the product. The name change does not indicate any change in system features or functionality.

Introduction to System Diagnostics

This section contains an introduction to the Oracle Sun Server X2-8 diagnostics and covers the following topics:

- [“Troubleshooting Options” on page 11](#)
- [“Diagnostic Tools” on page 12](#)

Troubleshooting Options

The following table lists the suggested order of troubleshooting procedures when you have an issue with the server.

Step	Troubleshooting Task	Link
1	Gather initial service visit information.	“How to Gather Service Visit Information” on page 13
2	Investigate any power-on problems.	“How to Troubleshoot Power Problems” on page 14
3	Perform external visual inspection and internal visual inspection.	“How to Externally Inspect the Server” on page 14 “How to Internally Inspect the Server” on page 14
4	Troubleshoot DIMM problems.	“Troubleshooting DIMM Problems” on page 17
5	View BIOS event logs and POST messages.	“BIOS POST” on page 27
6	View service processor logs and sensor information.	“Using Oracle ILOM to Monitor the Host” on page 31
7	Collect diagnostics data for Oracle Service.	“Creating a Data Collector Snapshot” on page 47
8	Run SunVTS.	“Using SunVTS Diagnostics Software ” on page 51
9	Run Pc-Check.	“Performing Pc-Check Diagnostic Tests” on page 55

Diagnostic Tools

The following diagnostic tools are available for the Sun Server X2-8.

BIOS POST

From the point that the host subsystem is powered on and begins executing code, BIOS code is executed. The sequence that BIOS goes through, from the first point where code is executed to the point that the operating system booting begins, is referred to as POST (power-on self-test).

POST works in conjunction with other processes to complete initialization and booting. POST focuses on thoroughly testing devices as well as providing meaningful information to users when errors occur. For more information about BIOS POST diagnostics, see [“BIOS POST” on page 27](#).

Service Processor (Oracle ILOM)

You can use the Oracle Integrated Lights Out Manager (ILOM) to diagnose system problems by viewing the following:

- Component information to determine component fault status.
- The Oracle ILOM system event log.

For more information about using the Oracle ILOM to diagnose system issues, see [“Using Oracle ILOM to Monitor the Host” on page 31](#).

SunVTS

SunVTS is the Sun Validation Test Suite, which provides a comprehensive diagnostic tool that tests and validates Sun hardware by verifying the connectivity and functionality of most hardware controllers and devices on Sun platforms. SunVTS software can be tailored with modifiable test instances and processor affinity features.

For more information about using the Sun VTS to diagnose system issues, see [“Using SunVTS Diagnostics Software” on page 51](#).

Pc-Check

The Pc-Check diagnostics can test and detect problems on all motherboard components, drives, ports, and slots. This program can be accessed and executed from the Oracle ILOM. For more information about using Pc-Check, see [“Performing Pc-Check Diagnostic Tests” on page 55](#).

U-Boot Diagnostics

U-Boot diagnostics run automatically when the server is started or booted. However, to see the output, you must connect a serial terminal to the SER MGT port on the SP. U-Boot tests basic hardware functions to ensure that there is enough functionality to boot the SP. For more information, see [“U-Boot Diagnostic Start-Up Tests” on page 69](#).

Troubleshooting the Server

This section covers the following procedures:

- [“How to Gather Service Visit Information” on page 13](#)
- [“How to Troubleshoot Power Problems” on page 14](#)
- [“How to Externally Inspect the Server” on page 14](#)
- [“How to Internally Inspect the Server” on page 14](#)

▼ How to Gather Service Visit Information

The first step in determining the cause of the problem with the server is to gather whatever information you can from the service-call paperwork or the on-site personnel. Use the following general guideline steps when you begin troubleshooting.

1 Collect information about the following items:

- Events that occurred prior to the failure
- Whether any hardware or software was modified or installed
- Whether the server was recently installed or moved
- How long the server exhibited symptoms
- The duration or frequency of the problem

2 Document the server settings before you make any changes.

If possible, make one change at a time to isolate potential problems. In this way, you can maintain a controlled environment and reduce the scope of troubleshooting.

3 Take note of the results of any change you make. Include any errors or informational messages.

4 Check for potential device conflicts, especially if you have added a new device.

5 Check for version dependencies, especially with third-party software.

▼ How to Troubleshoot Power Problems

● If the server does not power on:

- Check that AC power cords are attached firmly to the server's power supplies and to the AC sources.
- Check the PSU Fault LED on the power supplies. If any of them are ON, that power supply is in a faulted state.
- Check that the power OK LED on the server front panel is steady ON. If it is blinking, the server is in standby power mode. For instructions to bring it to full power mode, see: .
“Powering the Server On and Off” in Sun Server X2-8 (formerly Sun Fire X4800 M2) Installation Guide

▼ How to Externally Inspect the Server

1 Inspect the external status indicator LEDs, which can indicate component malfunction.

For the LED locations and descriptions of their behavior, refer to the *Sun Server X2-8 (formerly Sun Fire X4800 M2) Service Manual*.

- ### 2 Verify that nothing in the server environment is blocking air flow or making a contact that could short out power.
- ### 3 If the problem is not evident, continue with “How to Internally Inspect the Server” on page 14.

▼ How to Internally Inspect the Server

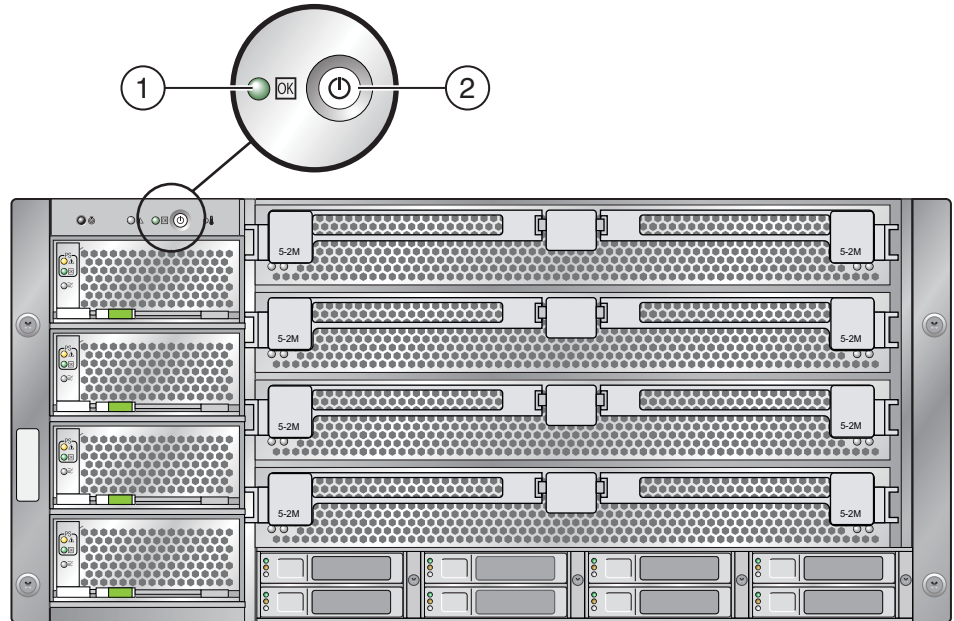
1 Choose a method for shutting down the server from main power mode to standby power mode.

- **Graceful shutdown:** Press and release the recessed Power button on the upper left-hand side of the front panel. This causes Advanced Configuration and Power Interface (ACPI)–enabled operating systems to perform an orderly shutdown of the operating system. Servers not running ACPI–enabled operating systems will shut down to standby power mode immediately.
- **Emergency shutdown:** Press and hold the Power button for four seconds to force main power off and enter standby power mode.
When main power is off, the LED is not lit.



Caution – When you use the Power button to enter standby power mode, power is still directed to the service processor board and power supply fans, indicated when the Power/OK LED is flashing. To completely power off the server, you must disconnect the AC power cords from the back panel of the server.

The following illustration shows the recessed Power button on the upper left-hand side of the system front panel.



Label	Description
1	Power/OK LED
2	Power button

2 Remove one of the CPU modules from the chassis.

For instructions on removing the CPU module, refer to the [Sun Server X2-8 \(formerly Sun Fire X4800 M2\) Service Manual](#).

3 Inspect the internal status indicator LEDs, which can indicate component malfunction.

For the LED locations and descriptions of their behavior, see “[Troubleshooting DIMM Problems](#)” on page 17.

4 Verify that there are no loose or improperly seated components.

- 5 **Verify that all cable connectors inside the system are firmly and correctly attached to their appropriate connectors.**
- 6 **Verify that any after-factory components are qualified and supported.**
For a list of supported PCI cards and DIMMs, refer to the *Sun Server X2-8 (formerly Sun Fire X4800 M2) Service Manual*.
- 7 **Check that the installed DIMMs comply with the supported DIMM population rules and configurations, as described in “Troubleshooting DIMM Problems” on page 17.**
- 8 **Reinstall the CPU module into the server chassis.**
- 9 **Repeat [Step 2](#) through [Step 8](#) for each CPU module that needs to be inspected.**
- 10 **To restore full power mode to the chassis, (all components powered on), press and release the Power button on the server front panel.**
When main power is applied to the full server, the Power/OK LED next to the Power button blinks intermittently until BIOS POST finishes.
- 11 **If the problem with the server is not evident, you can try viewing the power-on self-test (POST) messages and BIOS event logs during system startup.**
Refer to the *Sun Server X2-8 (formerly Sun Fire X4800 M2) Service Manual* for more information about POST and BIOS event logs.

Troubleshooting DIMM Problems

This section contains information about how to troubleshoot DIMM problems.

In this section, the term “CPU module” or CMOD refers to a full CPU blade, including all CPUs and DIMMs on the blade. The term “CPU” refers to a single CPU.

Note – For information about Oracle’s DIMM replacement policy for x86 servers, contact your Oracle Service representative.

This section provides the following procedures:

- [“How to Isolate and Replace Faulty DIMM Pairs” on page 17](#) provides a first-level method of troubleshooting and correcting failed DIMMs.
- [“How to Isolate and Correct Persistent DIMM Errors” on page 21](#) provides instructions for isolating and correcting DIMM-related problems that are not fixed by replacing the DIMM pair.
- [“Additional Tests” on page 22](#) provides alternative procedures for identifying faulty DIMMs.

▼ How to Isolate and Replace Faulty DIMM Pairs

This procedure shows how to isolate and replace faulty DIMMs using the Oracle ILOM.

All DIMMs are configured, identified, and replaced in pairs. When there is a fault in a DIMM, you must replace both the faulty DIMM and the other DIMM in the pair. To identify DIMM pairings, see [“DIMM Hardware” on page 24](#).

Because of the server's architecture, when the server detects a faulty DIMM, it disables other DIMM pairs as well. When the Oracle ILOM displays the faulty DIMMs, it also displays the disabled DIMMs. However, they are clearly identified as disabled, not faulty. When the faulty DIMMs are repaired, the server automatically places the disabled DIMMS back into service.



Caution – Before handling components, attach an antistatic wrist strap to a chassis ground (any unpainted metal surface). The system’s printed circuit boards and hard disk drives contain components that are extremely sensitive to static electricity.

Before You Begin This task requires access to the Oracle ILOM and the ability to remove a CMOD from the server. It also requires that you have a pair of DIMMs to replace the faulty pair.

1 Use the Oracle ILOM CLI or web interface to identify the CMOD and the faulty DIMMs.

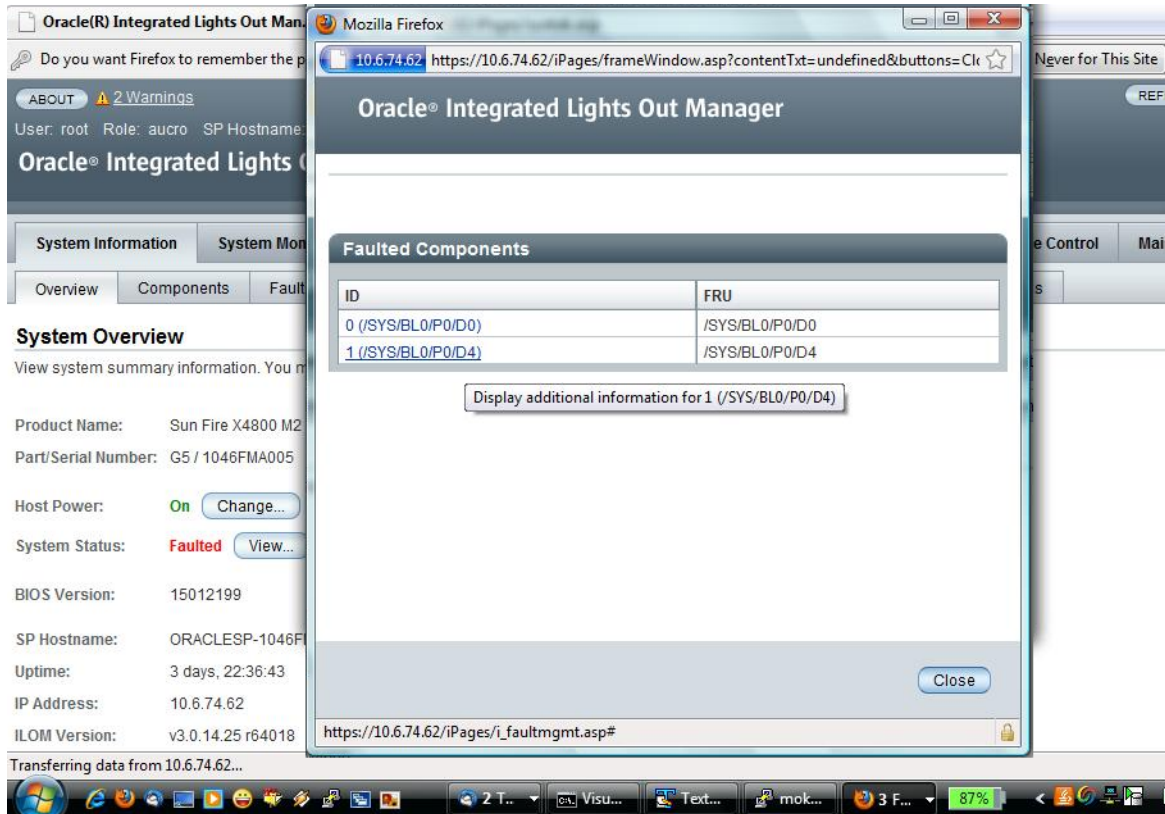
- From the CLI:
Enter the show faulty command.
If the system has detected a faulty DIMM pair, the output contains one or more entries similar to the following:

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/BL0/P0/D0
/SP/faultmgmt/0/ faults/0	class	fault.memory.intel.dimm_ue
... (other information)		
/SP/faultmgmt/1	fru	/SYS/BL0/P0/D4
/SP/faultmgmt/1/	class	fault.memory.intel.dimm_ue

This identifies the faulty pair as DIMM 0 and DIMM 4 on CPU 0 of CMOD 0 (BL0).

Note – This display might include other DIMM pairs that have been temporarily disabled. These are automatically returned to service when the faulty DIMM pair is repaired.

- From the Oracle ILOM web interface:
Click System Information > Fault Management.
The following display identifies the faulty pair as DIMM 0 and DIMM 4 on CPU 0 of CMOD 0 (BL0).



Note – This display might include other DIMM pairs that have been temporarily disabled. These are automatically returned to service when the faulty DIMM pair is repaired.

- 2 Remove the CMOD that has the faulty DIMMs, and then remove the CMOD cover.

Refer to “Adding, Removing, and Installing a CMOD (CRU)” in *Sun Server X2-8 (formerly Sun Fire X4800 M2) Service Manual*.

- 3 Press the Fault Remind button on the CMOD to light the DIMM fault LEDs for any faulty DIMM pairs.

The LEDs on the board adjacent to the DIMM slots light to identify faulty DIMM pairs.

For the locations of DIMM fault LEDs, DIMM pairs, and the fault remind button, see “DIMM Hardware” on page 24.

Note – If the DIMM fault LEDs do not identify the same DIMM pair as the Oracle ILOM, contact Oracle Service.

4 Visually inspect the DIMMs and the DIMM slots for damage or contamination.

- If a DIMM is damaged, replace the DIMM pair.
- If the DIMM slot is cracked or broken, contact Oracle Service.
- If there is dirt or other contamination on the DIMM or on the slot, you might choose to clean it, reseat the DIMMs, and check the system again.

5 Replace the faulty DIMM pair.

A pair is two of the following belonging to the same CPU:

D0, D4	D8, D12
D1, D5	D9, D13
D2, D6	D10, D14
D3, D7	D11, D15

Refer to “[Removing and Installing DIMMs \(CRU\)](#)” in *Sun Server X2-8 (formerly Sun Fire X4800 M2) Service Manual* for additional information.

6 Reinstall the CMOD in the chassis.

7 If the problem persists, run the following Oracle ILOM command sequence for each faulty DIMM:

```
-> set /SYS/MB/Px/Dy clear_fault_action=true
Are you sure you want to clear /SYS/MB/Px/Dx (y/n) y
Set 'clear_fault_action' to true
```

Where *x* is the node number and *y* is the DIMM number.

This command clears the DIMM of random information that might be interpreted as faulty data.

8 If the problem persists, see “[How to Isolate and Correct Persistent DIMM Errors](#)” on page 21.

- See Also**
- “[How to Isolate and Correct Persistent DIMM Errors](#)” on page 21
 - “[DIMM Hardware](#)” on page 24

▼ How to Isolate and Correct Persistent DIMM Errors

This task provides instructions for troubleshooting DIMM errors when the problem persists after swapping the faulty DIMMs as described in [“How to Isolate and Replace Faulty DIMM Pairs” on page 17](#).



Caution – Before handling components, attach an antistatic wrist strap to a chassis ground (any unpainted metal surface). The system’s printed circuit boards and hard drives contain components that are extremely sensitive to static electricity.

Before You Begin

This task requires:

- Assistance of Oracle service personnel
- Access to Oracle ILOM
- The ability to remove a CMOD from the server

- 1 If you have not already done so, shut down the system to standby power mode, remove the CMOD, and remove the cover of the CMOD.**

Refer to [“Adding, Removing, and Installing a CMOD \(CRU\)” in Sun Server X2-8 \(formerly Sun Fire X4800 M2\) Service Manual](#).

- 2 Exchange the DIMM pairs between the two CPU slots. Ensure that they are inserted correctly with the ejector latches secured.**

For example, if the faulty pair is DIMM 0 and DIMM 4 on CPU 0:

- a. Remove the DIMMs from CPU0, slots 0 and 4.
- b. Remove the DIMMs from CPU1, slots 0 and 4.
- c. Install the DIMMs from CPU0 into slots 0 and 4 on CPU1.
- d. Install the DIMMs from CPU1 into slots 0 and 4 on CPU0.

- 3 Power on the server.**

- 4 Run the test that reported the error again.**

- If the error follows the DIMMs, replace them.
- If the error remains in the same location, continue.

- 5 Remove both CPUs.**

Refer to [“Replacing a CPU and Heatsink Assembly \(FRU\)” in Sun Server X2-8 \(formerly Sun Fire X4800 M2\) Service Manual](#).

6 Reinstall each CPUs into the opposite slot.

In other words, switch the positions of the two CPUs.

7 Power on the server.**8 Run the test that reported the original error again.****9 Review the test results.**

- If the error continues to appear in the same DIMM slot, most likely there is an issue with the DIMM slot. Return the board to the Support Center for replacement.
- If the error follows the CPU, replace the CPU and confirm that the memory error does not return.

- See Also**
- [“How to Detect DIMM Errors Using BIOS POST and the Oracle ILOM SEL” on page 22](#)
 - [“How to Detect DIMM Errors Using the CE Log” on page 23](#)
 - [“DIMM Hardware” on page 24](#)

Additional Tests

This section provides two alternative methods of detecting DIMM errors. They include:

- [“How to Detect DIMM Errors Using BIOS POST and the Oracle ILOM SEL” on page 22](#)
- [“How to Detect DIMM Errors Using the CE Log” on page 23](#)

▼ **How to Detect DIMM Errors Using BIOS POST and the Oracle ILOM SEL**

When the server is started or rebooted, the BIOS POST tests memory by performing a write/read test of every location using the pattern 55aa. Then BIOS polls the memory controllers for both correctable and non correctable memory errors, and logs those errors into the SP SEL.

BIOS does not perform this test if Quick Boot is enabled.

For more information about BIOS POST, see [“BIOS POST” on page 27](#).

1 Log in to the Oracle ILOM and access the system event log using the web interface or CLI.

See [“Viewing the Oracle ILOM System Event Log” on page 39](#).

2 Identify the location of the DIMM error.

See the following example:

Event#	Date	Time	Memory	Uncorrectable Error	Asserted	OEM Data-2	0x12	OEM Data-3	0x9d
--------	------	------	--------	---------------------	----------	------------	------	------------	------

- Data-2 contains two nibbles (0x12 is “hex one and hex two” not “hex twelve”)

Consider the data from the preceding sample (0x12). In binary, it is 0001,0010.

- Bits 6-7 = 00. This identifies the error as an ECC memory error. It should not change.
- Bits 4-5 = 01. This identifies the memory branch. This number is unused in this context.
- Bits 0-3 = 0010. Converted to decimal, these identify CPU node 2.

Nodes map to CPUs as follows:

The following table shows the mapping of nodes to CMODs and CPUs. In the physical system, CMOD 0 is on the bottom, and CMOD 3 is on the top.

Node	CMOD	CPU
2	3	0
3		1
6	2	0
7		1
4	1	0
5		1
0	0	0
1		1

In this example, the value 2 identifies CMOD 3, CPU 0.

- Data-3 contains two nibbles (0x9d is “hex nine and hex d” not “hex nine d”). These numbers identify the DIMMs in the pair.

Consider the data from the preceding sample (0x9d). Converted to decimal it identifies DIMMs 9 and 13.

▼ How to Detect DIMM Errors Using the CE Log

This task creates a snapshot of the CE log, then uses the snapshot to locate memory errors.

BIOS updates the CE log every five minutes. After changing something, you must wait five minutes to ensure that the data in the CE log reflects the results of that change.

1 Create a snapshot of the CE log.

- Use the Oracle ILOM web interface or the CLI to create a snapshot, as described in [“Creating a Data Collector Snapshot” on page 47](#).
- The data set should be *normal*. If you are using the web interface, do not select any of the check boxes.

- 2 **Unzip the zip file created by the snapshot.**
The unzip action produces a directory `ilom`.
- 3 **Navigate to the `ilom` directory in the unzipped output.**
- 4 **Search the file `@persist@host_debug_err.log` for uncorrectible errors.**

For example, you can search it for the string `Uncorrectable`.

It should contain lines similar to the following:

```
Mon May  8 02:54:12 2000 ID ffff V ECC No-UE CE Node 2 Branch 0 DIMM Pair(s): D0/D4
Mon May  8 02:54:12 2000 ID ffff : 12 00 02 00 02 00 03 00 00 00 00 00 00 00 00 00
                                16 | 00 00 00 00 00
```

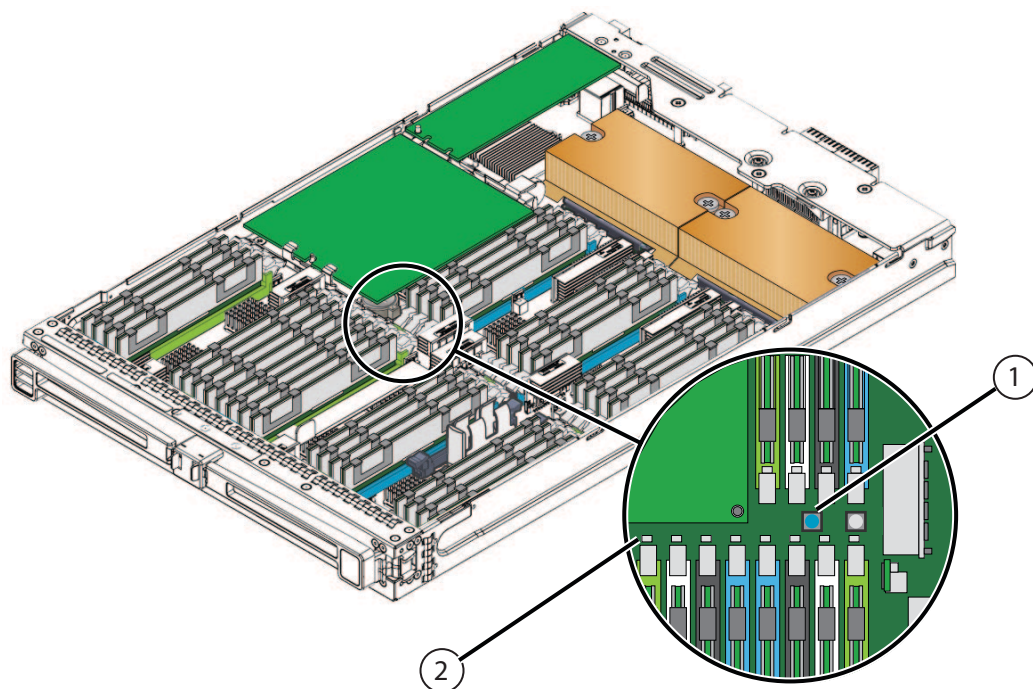
The following table shows the mapping of nodes to CMODs and CPUs. In the physical system, CMOD 0 is on the bottom, and CMOD 3 is on the top.

Node	CMOD	CPU
2	3	0
3		1
6	2	0
7		1
4	1	0
5		1
0	0	0
1		1

The preceding example identifies the faulty DIMM pair as DIMMs 0,3 in CPU 0 of CMOD 2.

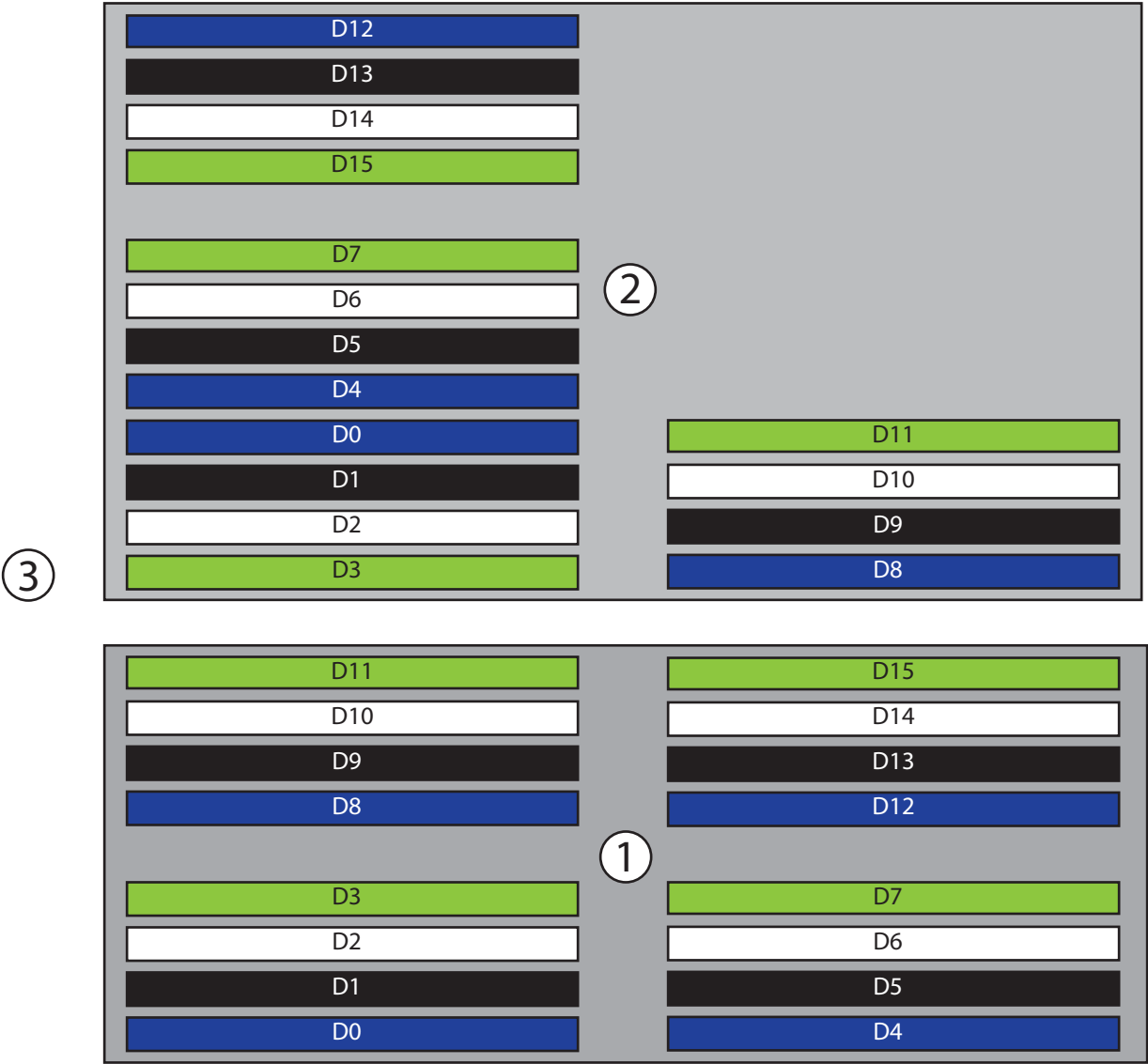
DIMM Hardware

This section shows the locations of DIMM pairs, DIMM fault LEDs, and the fault remind button.



Label	Description
1	Fault Remind button
2	DIMM Fault LEDs

The following illustration shows the mapping of the DIMMs on the CMOD.



Label	Description
1	DIMMs on CPU 0
2	DIMMs on CPU 1
3	Towards front of CMOD

BIOS POST

This section contains information about BIOS POST diagnostics. This section includes the following topics:

- [“Default BIOS Power-On Self-Test \(POST\) Events” on page 27](#)
- [“BIOS POST Errors” on page 28](#)

Default BIOS Power-On Self-Test (POST) Events

At system startup, the BIOS performs a power-on self-test that checks the hardware on your server to ensure that all components are present and functioning properly. The following table identifies the events that can occur during BIOS POST, and specifies whether these event can prevent the host from powering on.

Event	Cause	Boot continues on host?
User password violation	Attempt to enter password fails three times.	No
Setup password violation	Attempt to enter password fails three times.	No
Correctable ECC	Correctable ECC (error correction code) error detected.	Yes
Uncorrectable ECC	Uncorrectable ECC error detected.	Yes
No system memory	No physical memory detected in the system.	No
No usable system memory	All installed memory has experienced an unrecoverable failure.	No
Boot media failure	No removable boot media is found.	Yes
CMOS set to optimal defaults	Load optimal defaults.	Yes
CMOS time and data error	RTC is invalid.	Yes
IOH errors reported	IOH errors.	Yes
CMOS battery low	CMOS battery is low.	Yes
System restart	System boot initiated.	Yes
Initiated by hard reset	Boot process started by hard reset.	Yes

Event	Cause	Boot continues on host?
Memory initialization	Memory sizing is occurring. System firmware progress.	Does not apply
Motherboard initialization	Primary CPU initialization.	Does not apply
Secondary processor initialization	Secondary CPU initialization. System firmware progress.	Does not apply
Initiated by warm reset	Boot process started by warm reset.	Does not apply
Embedded controller management	Management controller initialization.	Does not apply
PCI resource initialization	BIOS initializes PCI resources.	Does not apply
Video initialization	BIOS initializes video.	Does not apply
USB resource configuration	BIOS configures USB resources.	Does not apply
Option ROM initialization	BIOS initializes Option ROMs. System firmware progress.	Does not apply
Not enough option ROM space allocated for device	BIOS cannot copy an option ROMs content to the memory. This is likely due to a large number of EMs (express modules) attached to the system.	Maybe booting over an EM not possible.
User initiated system set up	End user initiated access to BIOS setup utility. System firmware progress.	Does not apply
User initiated boot to OS	System boot initiated. System firmware progress.	Does not apply
No bootable media	Nothing to boot from.	No
PXE server not found	Boot error - PXE server not found.	No
ACPI power state	Soft-off power on (S0) or off (S5).	Does not apply
Not enough IO address space allocated for device	Cannot allocate resources to an on-board device (PEM, REM, FEM), and slot is disabled.	Yes

BIOS POST Errors

Each power-on self-test (POST) diagnostic is a low-level test designed to pinpoint faults in a specific hardware component. If a POST diagnostic discloses an error, it typically reports the following information about the error:

- Type of error detected
- When or where the error occurred

The following table lists some of the error messages that might appear during the POST diagnostics, and provides instructions for resolving the errors.

Note – Contact Oracle Service for information about interpreting and applying the Oracle ILOM log information that you receive on these errors.

BIOS POST Error Message	Error Type	Resolution
Uncorrectable Error Detected on Last Boot:IOH(0) Protocol Error (Please Check SP Log for more Details)	IOH error	Check the SP event log in Oracle ILOM for more details.
Uncorrectable Error Detected on Last Boot:IOH(0) QPI [x] Error (Please Check SP Log for more Details) Note – Where QPI [x] equals 0 for QPI Link 0 or 1 for QPI Link 1.	IOH error	Check the fault management function and the SP event log in Oracle ILOM for more details.
Uncorrectable Error Detected on Last Boot:IOH(0) PCI-E [x] Error (Please Check SP Log for more Details) Note – Where PCI-E [x] port number can range from 1 to 10 depending on the PCI root port on IOH.	IOH error	Check the fault management function and the SP event log in Oracle ILOM for more details.
Uncorrectable Error Detected on Last Boot:IOH(0) ESI Error (Please Check SP Log for more Details)	IOH error	Check the fault management function and the SP event log in Oracle ILOM for more details.
Uncorrectable Error Detected on Last Boot:IOH(0) Thermal Error (Please Check SP Log for more Details)	IOH error	Check the fault management function and the SP event log in Oracle ILOM for more details.
Uncorrectable Error Detected on Last Boot:IOH(0) Miscellaneous Error (Please Check SP Log for more Details)	IOH error	Check the fault management function and the SP event log in Oracle ILOM for more details.
Uncorrectable Error Detected on Last Boot:IOH(0) VT-d Error (Please Check SP Log for more Details)	IOH error	Check the SP event log in Oracle ILOM for more details.
BMC Not Responding	ILOM error	This error message might appear if an internal error occurs during the SP/BIOS communication. This error might require you to restart the SP.
Hard disk error	SAS error	Check the SP event log in Oracle ILOM for more details. Note – These error messages appear when the BIOS is attempting to configure SAS devices in POST.
Bad PBR sig	Hard disk error	This is caused by a corrupted or nonexistent partition table on the disk drive. A disk utility (Oracle Solaris format or Linux fdisk) must be used to format the tables again.

BIOS POST Error Message	Error Type	Resolution
RAM R/W test failed	Memory test failure	<p>Check the SP event log in Oracle ILOM for more details.</p> <p>Note – This type of error typically indicates that the RAM read/write test failed.</p>
CMOS Battery Low	CMOS battery error	<ul style="list-style-type: none">■ Check the SP event log in Oracle ILOM for more details.■ If necessary, replace CMOS battery.
<ul style="list-style-type: none">■ CMOS Checksum Bad■ CMOS Date/Time Not Set	CMOS error	<p>Check the SP event log in Oracle ILOM for more details.</p>
Password check failed	Password check error	<p>Check the SP event log in Oracle ILOM for more details.</p> <p>Note – This type of error indicates that the password entered does not match the password specified in the BIOS setup utility. This condition might occur for both Supervisor and User password verification.</p>

Using Oracle ILOM to Monitor the Host

This section describes how to view server sensor readings and view the system event log.

This section contains the following procedures:

- [“Viewing the Oracle ILOM Sensor Readings” on page 31](#)
- [“Viewing Fault Status” on page 34](#)
- [“Clearing Faults” on page 38](#)
- [“Viewing the Oracle ILOM System Event Log” on page 39](#)
- [“Clearing the System Event Log” on page 43](#)
- [“Interpreting Event Log Time Stamps” on page 45](#)
- [“Resetting the SP” on page 45](#)

Viewing the Oracle ILOM Sensor Readings

The Sun Server X2-8 has multiple sensors to monitor the proper functioning of the server. Sensor types include: temperature, fan speed, voltage, and power supply. The following components have ambient (T_AMB) temperature sensors: CPU modules, power supply units, and the service processor (SP). There is also a system T_AMB, which shows the minimal temperature of all of the preceding sensors.

For more information about the sensors, view the sensor information in your server's ILOM supplement.

This section contains the following procedures:

- [“How to Use the Oracle ILOM Web Interface to View the Sensor Readings” on page 31](#)
- [“How to Use the Oracle ILOM Command-Line Interface to View the Sensor Readings” on page 33](#)

▼ **How to Use the Oracle ILOM Web Interface to View the Sensor Readings**

Before You Begin

This procedure requires Read Only (o) permission.

1 To reach the Oracle ILOM web interface, log in to the SP as Administrator or Operator:

a. Type the IP address of the server's SP into your web browser.

The Oracle Integrated Lights Out Manager Login screen appears.

b. Type your user name and password.

When you first try to access the Oracle ILOM service processor, you are prompted to type the default user name and password:

Default user name: **root**

Default password: **changeme**

2 From the System Monitoring tab, click Sensor Readings.

The sensor readings appear.

System Information	System Monitoring	Power Management	Storage	Configuration	User Management	Remote Control	Maintenance
Sensor Readings	Indicators	Event Logs					
Sensor Readings							
View readings for system sensors. Click on a sensor name for more information, including threshold values.							
Sensor Readings							
Filter: All Sensors							
Name	Type	Reading					
/SYS/SPRT_AMB	Temperature	52.000 degree C					
/SYS/NEMO/PRSNT	Entity Presence	Present					
/SYS/NEMO/STATE	Module	Power Off					
/SYS/NEMO/ERR	OEM	Not Readable					
/SYS/FMO/FD/TACH	Fan	Not Readable					
/SYS/FMO/F1/TACH	Fan	Not Readable					
/SYS/FMO/PRSNT	Entity Presence	Present					
/SYS/FMO/ERR	Fan	Predictive Failure Deasserted					
/SYS/FM1/FD/TACH	Fan	Not Readable					
/SYS/FM1/F1/TACH	Fan	Not Readable					
/SYS/FM1/PRSNT	Entity Presence	Present					
/SYS/FM1/ERR	Fan	Predictive Failure Deasserted					

Note – If the server is powered off, many components will have no readings.

3 In the Sensor Readings screen, do the following:

a. Locate the name of the sensor you want to view.

- b. Click the name of the sensor to view the property values associated with that sensor.



For specific details about the type of discrete sensor targets you can access, as well as the paths to access them, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)*.

- 4 If the problem with the server is not evident after you view the sensor readings information, continue with [“Using SunVTS Diagnostics Software” on page 51](#).

▼ How to Use the Oracle ILOM Command-Line Interface to View the Sensor Readings

Before You Begin This procedure requires Read Only (o) permission.

- 1 Log in to the Oracle ILOM CLI.
- 2 Type the following commands to navigate to the sensor target and then to view the sensor properties:

```
->cd target
```

```
->show
```

where *target* is the sensor that you want to view.

For example, you can specify the following path to view a temperature reading of the system's ambient air intake:

```
->cd /SYS/T_AMB
```

```
->show
```

The properties that describes the sensor target appear. For example:

```
Properties:
  type = Temperature
```

```
ipmi_name = T_AMB
class = Threshold Sensor
value = 18.000 degree C
upper_nonrecov_threshold = 45.000 degree C
upper_critical_threshold = 40.000 degree C
upper_noncritical_threshold = N/A
lower_noncritical_threshold = N/A
lower_critical_threshold = N/A
lower_nonrecov_threshold = N/A
alarm_status = cleared
```

3 To view a discrete sensor reading, type the following commands:

```
->cd target
```

```
->show
```

where *target* is the sensor that you want to view.

The properties that describe the discrete sensor target appear. For example:

- Type = Entity Presence
- Class = Discrete Indicator
- Value = Present

For specific details about the type of discrete or threshold sensor targets you can access, as well as the paths to access them, refer to the [Oracle Integrated Lights Out Manager \(ILOM\) 3.0 Supplement for the Sun Server X2-8 \(formerly Sun Fire X4800 M2\)](#).

Viewing Fault Status

This section covers the following topics:

- [“How to View Fault Status Using the Oracle ILOM Web Interface” on page 35](#)
- [“How to View Fault Status Using the Oracle ILOM Command-Line Interface” on page 36](#)

▼ How to View Fault Status Using the Oracle ILOM Web Interface

Before You Begin To view fault status, you need the Read Only (o) role enabled.

- 1 Log in to the Oracle ILOM web interface.
- 2 There are two ways to view faults through the web interface:
 - Click the Fault Management tab.

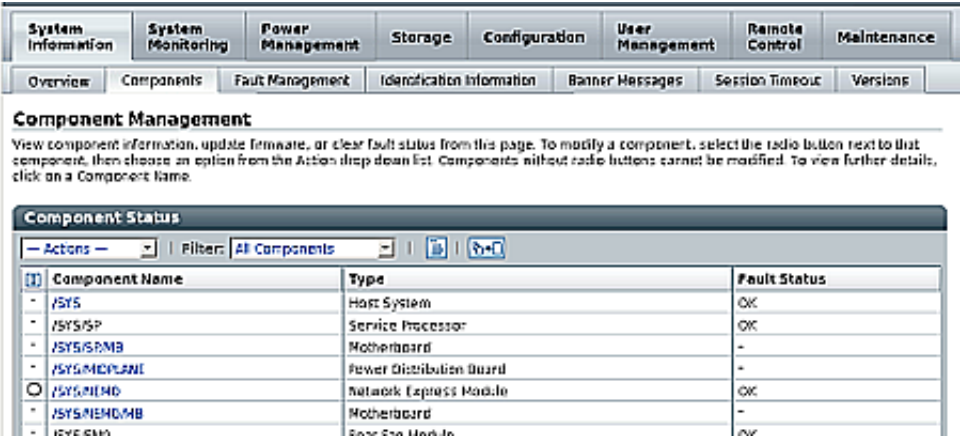
ID	FRU
0 (/SYS/BL0)	/SYS/BL0
1 (/SYS/BL3/NET0)	/SYS/BL3/NET0
2 (/SYS/BL3/NET1)	/SYS/BL3/NET1

The Fault Management screen lists faulted components by ID, FRU, and time stamp. You can access additional information about the faulted component by clicking the faulted component ID.

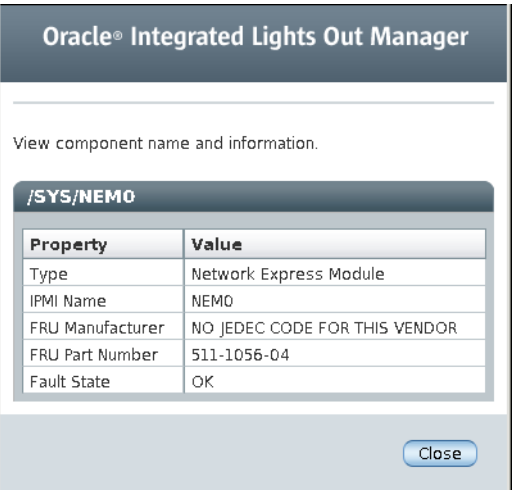
Property	Value
Class	fault.io.pciex.fabric.fatal
Message ID	SPX86-8001-95
UUID	fc537c1f-d757-6255-8bc4-939ec432347b
Timestamp	2010-04-23/13:02:41
FRU Part Number	82575EB
FRU Serial Number	00:21:28:44:DE:9E
Product Serial Number	12345678
Chassis Serial Number	12345678

Close

- Identify the fault status of a component on the Component Management screen.



For more information about an item that has Faulted status, click the component name.



▼ How to View Fault Status Using the Oracle ILOM Command-Line Interface

Before You Begin This procedure requires Read Only (o) permission.

- 1 Log in to the Oracle ILOM CLI.

2 There are two ways to view faults through the CLI:

- **Use the command: -> show /SP/faultmgmt**

You see output similar to the following:

```
-> show /SP/faultmgmt
```

```
/SP/faultmgmt
Targets:
  shell
  0 (/SYS)
  1 (/SYS/BL1)
  2 (/SYS/BL2)

Properties:

Commands:
  cd
  show
```

This output shows the devices that have faults.

- **Use the command: ->show faulty**

The show faulty command is a shortcut for the following Oracle ILOM CLI command string: -> show -o table -level all /SP/faultmgmt. The alias produces the same output as the previous command. Thus, it enables you to view all active faults in the system in a concise, tabular form. For example, it produces output similar to the following:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS
/SP/faultmgmt/0/faults/0	class	fault.chassis.device.missing
/SP/faultmgmt/0/faults/0	sunw-msg-id	SPX86-8000-4S
/SP/faultmgmt/0/faults/0	uuid	8acb45f9-fb70-e5d0-b73c-f8e5ea32c52a
/SP/faultmgmt/0/faults/0	timestamp	2010-02-19/02:58:20
/SP/faultmgmt/0/faults/0	product_serial_number	12345678-abcdefghi
/SP/faultmgmt/0/faults/0	chassis_serial_number	12345678-abcdefghi
/SP/faultmgmt/0/faults/0	power_supply	2
/SP/faultmgmt/0/faults/0	event_key	2

Clearing Faults

You can clear a fault from Oracle ILOM after the fault has been corrected.

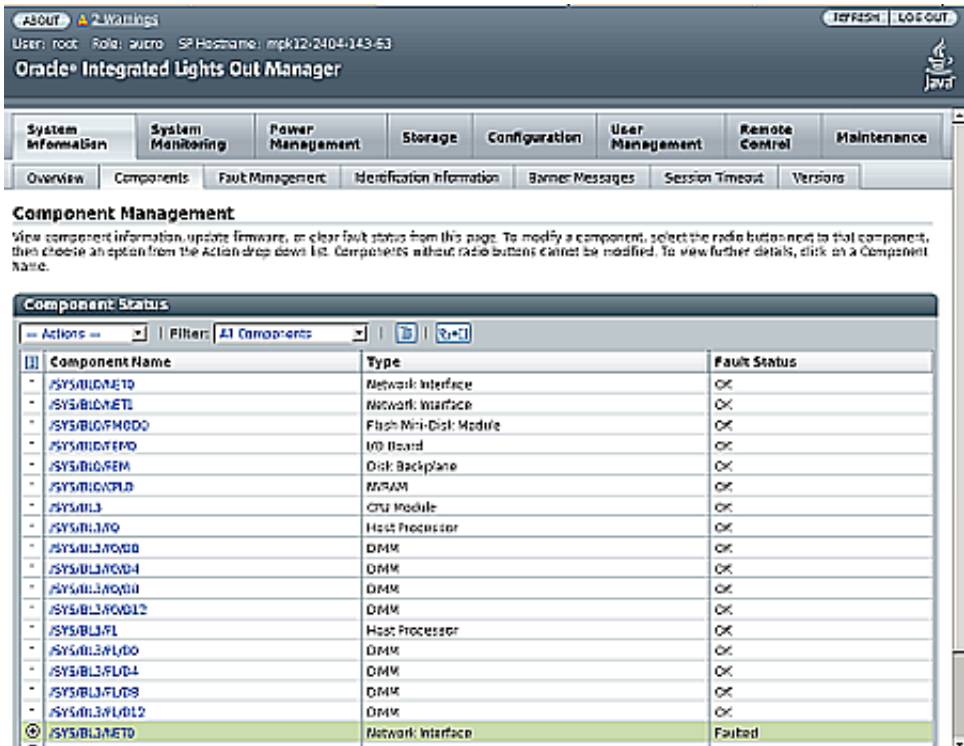
This section covers the following topics:

- “How to Clear Faults Using the Oracle ILOM Web Interface” on page 38
- “How to Clear Faults Using the Oracle ILOM Command-Line Interface” on page 39

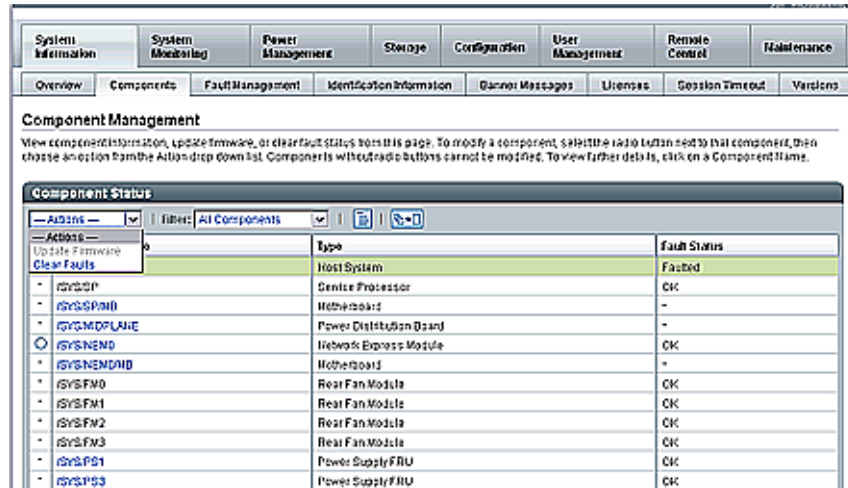
▼ How to Clear Faults Using the Oracle ILOM Web Interface

Before You Begin This procedure requires Administration (a) permission.

- 1 Log in to the Oracle ILOM web interface.
- 2 Click the Components tab under System Information.
- 3 Locate the component that is in the Faulted state and select the radio button to the left of the component name.



- 4 Select Clear Faults from the Actions drop-down list.



▼ How to Clear Faults Using the Oracle ILOM Command-Line Interface

Before You Begin This procedure requires Administration (a) permission.

- 1 Log in to the Oracle ILOM CLI.
- 2 Use the following command to clear the fault for a specific component.

```
->set pathtocomponent clear_fault_action=true
```

where *pathtocomponent* is the path to the component for which you want to clear the fault.

For example:

```
set /SYS/BL0/P0/D0 clear_fault_action=true
```

Viewing the Oracle ILOM System Event Log

This section contains the following procedures:

- “How to View the System Event Log Using the Oracle ILOM Web Interface” on page 39
- “How to View the System Event Log With the Oracle ILOM Command-Line Interface” on page 42

▼ How to View the System Event Log Using the Oracle ILOM Web Interface

Events are notifications that occur in response to some actions. The IPMI system event log (SEL) provides status information about the server’s hardware and software to the Oracle ILOM software, which displays the events in the Oracle ILOM web interface.

1 Log in to the SP as Administrator or Operator to reach the Oracle ILOM web interface:

a. Type the IP address of the server's SP into your web browser.

The Oracle Integrated Lights Out Manager Login screen appears.

b. Type your user name and password.

When you first try to access the Oracle ILOM SP, it prompts you to type the default user name and password:

Default user name: **root**

Default password: **changeme**

2 From the System Monitoring tab, click Event Logs.

The System Event Logs screen appears.

System Information	System Monitoring	Power Management	Storage	Configuration	User Management	Remote Control	Maintenance
Sensor Readings	Indicators	Event Logs					

Event Log

Displays every event for the SP. Click the Clear Log button to delete all current log entries.

Event Log					
Clear Log Filter: All Events [Icons]					
Event ID	Class	Type	Severity	Date/Time	Description
958	Audit	Log	minor	Fri Apr 23 15:03:30 2010	root : Open Session : object = /session/type : value = www : success
957	Fault	Fault	critical	Fri Apr 23 13:02:41 2010	Fault detected at time = Fri Apr 23 13:02:41 2010. The suspect component: /SYS/BL3/NET1 has fault in pciex.fabric.fatal with probability=50. Refer to http://www.sun.com/msg/SPX06-0001-95 for details.
956	Fault	Fault	critical	Fri Apr 23 13:02:41 2010	Fault detected at time = Fri Apr 23 13:02:41 2010. The suspect component: /SYS/BL3/NET0 has fault in pciex.fabric.fatal with probability=50. Refer to http://www.sun.com/msg/SPX06-0001-95 for details.
955	FWI	Log	critical	Fri Apr 23 13:02:38 2010	ID = 1d1 : 04/23/2010 : 13:02:38 : Critical Interrupt : BIOS : PCI SERR: IOH 3 ESI
954	FWI	Log	critical	Fri Apr 23 13:02:38 2010	ID = 1d0 : 04/23/2010 : 13:02:38 : Critical Interrupt : BIOS : PCI SERR: IOH 2 ESI
953	FWI	Log	critical	Fri Apr 23 13:02:38 2010	ID = 1cf : 04/23/2010 : 13:02:38 : Critical Interrupt : BIOS : PCI SERR: IOH 1 ESI
952	Fault	Fault	critical	Fri Apr 23 13:02:37 2010	Fault detected at time = Fri Apr 23 13:02:37 2010. The suspect component: /SYS/BL0 has fault in ioh.esi.device-interr with probability=100. Refer to http://www.sun.com/msg/SPX06-0001-7E for details.
951	FWI	Log	critical	Fri Apr 23 13:02:37 2010	ID = 1ce : 04/23/2010 : 13:02:37 : Critical Interrupt : BIOS : PCI SERR: IOH 0 ESI
950	FWI	Log	critical	Fri Apr 23 13:02:31 2010	ID = 1cd : 04/23/2010 : 13:02:31 : Critical Interrupt : BIOS : PCI SERR: IOH 1 PCI-E

3 View the Event Log screen in one of the following ways:

- Page through entries** – Use the page navigation controls at the top and bottom of the table to navigate forward and back through the available data in the table.

Note – Selecting a greater number of entries might cause the web interface to respond more slowly than if you select fewer entries.

- **View the entries in the display by scrolling through the list** – the following table provides descriptions about each column appearing in the log.

Column Label	Description
Event ID	The number of the event, in sequence from number 1.
Class/Type	<ul style="list-style-type: none"> ■ Audit/ Log – Commands that result in a configuration change. Description includes user, command parameters, and success/fail. ■ IPMI/Log – Any event that is placed in the IPMI SEL is also put in the management log. ■ Chassis/State – For changes to the inventory and general system state changes. ■ Chassis/Action – Category for shutdown events for server module/chassis, hot insert/removal of a FRU, and Reset Parameters button pushed.
Severity	Debug, Down, Critical, Major, or Minor.
Date/Time	The day and time the event occurred. If the Network Time Protocol (NTP) server is enabled to set the Oracle ILOM time, the Oracle ILOM clock uses Universal Coordinated Time (UTC).
Description	A description of the event.

Note – The Oracle ILOM event log accumulates many types of events, including copies of IPMI entries. Clearing the Oracle ILOM event log clears all entries in the log, including the IPMI entries. However, clearing the Oracle ILOM event log entries does not clear the actual entries posted directly to an IPMI log.

▼ **How to View the System Event Log With the Oracle ILOM Command-Line Interface**

Before You Begin This procedure requires Administration (a) permission.

1 Establish a local serial console connection or SSH connection to the server SP.
Refer to *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Server X2-8 (formerly Sun Fire X4800 M2)* for more information.

2 Type the following command to set the working directory:
-> `cd /SP/logs/event`

3 Type the following command to display the event log list:
->`show list`

The contents of the event log appear.

For example:

```
/SP/logs/event/list
Targets:

Properties:

Commands:
  cd
  show
```

ID	Date/Time	Class	Type	Severity
4785	Thu Jan 7 13:58:48 2010	Audit	Log	minor
	root : Open Session : object = /session/type : value = shell : success			
4784	Thu Jan 7 13:58:01 2010	Storage	Log	minor
	Voltage sensor is ok, sun-id=EL:EC:50800200009da03d:19			
4783	Thu Jan 7 13:58:01 2010	Storage	Log	minor
	Voltage sensor is ok, sun-id=EL:EC:50800200009da03d:18			
4782	Thu Jan 7 13:58:01 2010	Storage	Log	minor
	Voltage sensor is ok, sun-id=EL:EC:50800200009da03d:17			
4781	Thu Jan 7 13:58:00 2010	Storage	Log	critical
	Voltage sensor has fallen below the critical threshold, sun-id=EL:EC:5 080 0200009da03d:19			
4780	Thu Jan 7 13:58:00 2010	Storage	Log	critical
	Voltage sensor is at the warning level, sun-id=EL:EC:50800200009da03d: 19			
4779	Thu Jan 7 13:58:00 2010	Storage	Log	critical
	Voltage sensor has fallen below the critical threshold, sun-id=EL:EC:5 080 0200009da03d:18			
4778	Thu Jan 7 13:58:00 2010	Storage	Log	critical
	Voltage sensor is at the warning level, sun-id=EL:EC:50800200009da03d: 18			
4777	Thu Jan 7 13:58:00 2010	Storage	Log	critical
	Voltage sensor has fallen below the critical threshold, sun-id=EL:EC:5 080 0200009da03d:17			
4776	Thu Jan 7 13:58:00 2010	Storage	Log	critical
	Voltage sensor is at the warning level, sun-id=EL:EC:50800200009da03d: 17			

Paused: press any key to continue, or 'q' to quit

- 4 To scroll down the list to view entries, press any key except **q**. The following table provides descriptions about each column appearing in the log.

Column Label	Description
Event ID	The number of the event, in sequence from number 1.
Class/Type	<ul style="list-style-type: none"> ■ Audit/ Log – Commands that result in a configuration change. Description includes user, command parameters, and success/fail. ■ IPMI/Log – Any event that is placed in the IPMI SEL is also put in the management log. ■ Chassis/State – For changes to the inventory and general system state changes. ■ Chassis/Action – Category for shutdown events for server module/chassis, hot insert/removal of a FRU, and Reset Parameters button pushed.
Severity	Debug, Down, Critical, Major, or Minor.
Date/Time	The day and time the event occurred. If the Network Time Protocol (NTP) server is enabled to set the Oracle ILOM time, the Oracle ILOM clock uses Universal Coordinated Time (UTC).
Description	A description of the event.

- 5 To dismiss the event log (stop displaying the log), press the **q** key.

Clearing the System Event Log

This section contains the following procedures:

- [“How to Clear the System Event Log Using the Oracle ILOM Web Interface” on page 44](#)
- [“How to Clear the System Event Log Using the Oracle ILOM Command-Line Interface” on page 44](#)

▼ **How to Clear the System Event Log Using the Oracle ILOM Web Interface**

- 1 Navigate to the Event Log from the Oracle ILOM System Monitoring tab.
- 2 Click the Clear Log button on the bottom of the Event Log screen.



A confirmation dialog box appears.

- 3 Click OK to clear the entries.

▼ **How to Clear the System Event Log Using the Oracle ILOM Command-Line Interface**

- 1 Type the following command:
`cd /SP/logs/event/`
`set clear=true`

A confirmation message appears.

- 2 Type one of the following:
 - To clear the entries, type: `y`
 - To cancel clearing the log, type: `n`

Interpreting Event Log Time Stamps

The time stamps in the event log use the service processor clock settings. If the clock settings change, the change is reflected in the time stamps.

After an SP reboot, the SP clock is changed in these circumstances:

- **Continuously through NTP if NTP is enabled on the SP.** Because NTP uses UTC time, if NTP is enabled, both the SP clock and the event log time stamps use UTC as well. NTP recovers quickly from erroneous updates from the BIOS or user.
- **Through the CLI, Oracle ILOM web interface, and IPMI.**

Resetting the SP

If you need to reset your Oracle ILOM service processor (SP), you can do so without affecting the host OS. However, resetting an SP disconnects your current Oracle ILOM session and renders the SP unmanageable during reset.

This section contains the following procedures:

- [“How to Reset the Oracle ILOM SP Using the Web Interface” on page 45](#)
- [“How to Reset the Oracle ILOM SP Using the Command-Line Interface” on page 46](#)

▼ How to Reset the Oracle ILOM SP Using the Web Interface

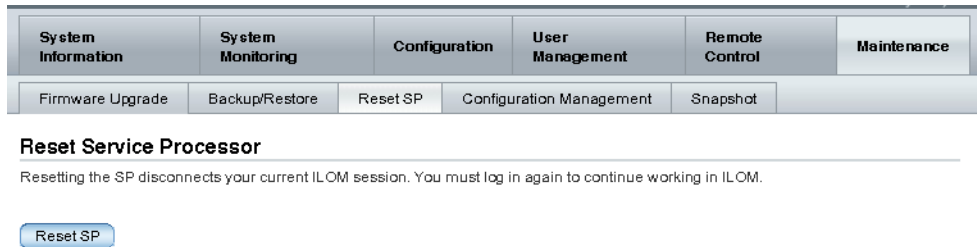
Before You Begin

- This procedure requires Reset and Host Control (r) permission.
- After updating the Oracle ILOM/BIOS firmware, you must reset the Oracle ILOM SP.

- 1 Log in to the Oracle ILOM SP web interface.

2 Select Reset SP from the Maintenance tab.

The Reset Service Processor screen appears.



3 Click the Reset SP button.

Oracle ILOM reboots. The web interface is unavailable while Oracle ILOM reboots.

▼ How to Reset the Oracle ILOM SP Using the Command-Line Interface

Before You Begin

- To reset the SP, you need the Reset and Host Control (r) role enabled.
- After updating the Oracle ILOM/BIOS firmware, you must reset the Oracle ILOM SP.

1 Log in to the Oracle ILOM CLI.

2 Type the following command:

-> **reset /SP**

Oracle ILOM reboots. The command-line interface is unavailable while Oracle ILOM reboots.

Creating a Data Collector Snapshot

The Oracle ILOM Service Snapshot utility is used to collect data for use by Oracle Services personnel, who use the data to diagnose system problems. You should not run this utility unless requested to do so by Oracle Services.

This section contains the following procedures:

- [“How to Create a Snapshot With the Oracle ILOM Web Interface” on page 47](#)
- [“How to Create a Snapshot With the Oracle ILOM Command-Line Interface” on page 49](#)

▼ How to Create a Snapshot With the Oracle ILOM Web Interface



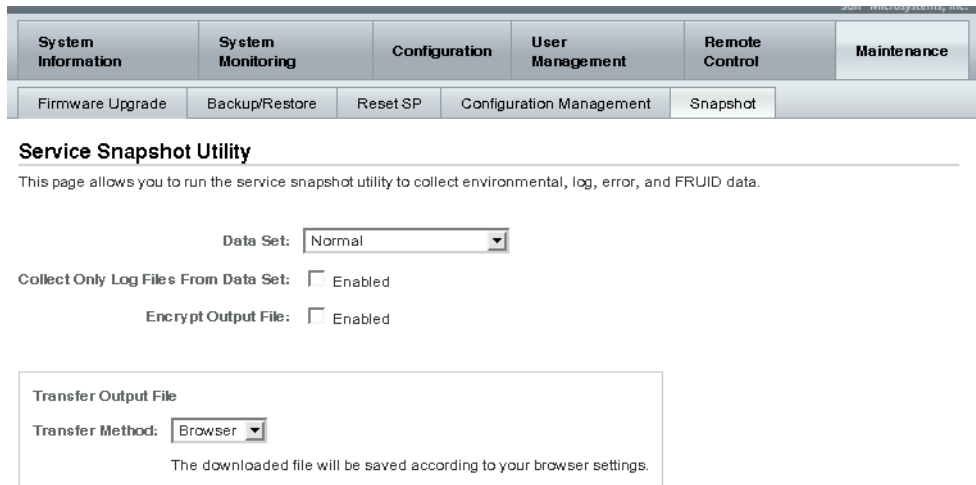
Caution – You should not run this utility unless requested to do so by Oracle Services.

Before You Begin This procedure requires Administration (a) permission.

- 1 Log in to the Oracle ILOM web interface.

2 Select Snapshot from the Maintenance tab.

The Service Snapshot Utility screen appears.



System Information System Monitoring Configuration User Management Remote Control Maintenance

Firmware Upgrade Backup/Restore Reset SP Configuration Management Snapshot

Service Snapshot Utility

This page allows you to run the service snapshot utility to collect environmental, log, error, and FRUID data.

Data Set:

Collect Only Log Files From Data Set: ☐ Enabled

Encrypt Output File: ☐ Enabled

Transfer Output File

Transfer Method:

The downloaded file will be saved according to your browser settings.

3 Select the data set you want: Normal, FRU ID, Full, or Custom.

- Normal – Specifies that Oracle ILOM, operating system, and hardware information is collected.
- FRU ID – Provides FRU ID information.
- Full – Specifies that all data is collected. Selecting Full might reset the system.
- Custom – Allows you to choose one or more of the following data sets:
 - Oracle ILOM data
 - Hardware data
 - Basic OS data
 - Diagnostic data

4 Select the Enabled check box if you want to collect only log files from the data set.

5 Select the Enabled check box if you want to encrypt the output file.

6 Select one of the following methods to transfer the output file:

- Browser
- SFTP
- FTP

- 7 **Click Run.**
A Save As dialog box appears.
- 8 **In the dialog box, specify the directory to which to save the file and the file name.**
- 9 **Click OK.**
The utility places a zip file in the specified directory.
- 10 **Unzip the file to access the data produced by the snapshot.**

▼ **How to Create a Snapshot With the Oracle ILOM Command-Line Interface**



Caution – You should not run this utility unless requested to do so by Oracle Services.

Before You Begin To collect SP data using the Service Snapshot utility, you need the Admin (a) role enabled.

- 1 **Log in to the Oracle ILOM CLI.**
- 2 **Type the following commands:**
->**set /SP/diag/snapshot dataset=data**
->**set /SP/diag/snapshot dump_uri=URI**
where data and URI are one of the following:

Value	Option	Header
data	normal	Specifies that the Oracle ILOM, operating system, and hardware information is collected.
	full	Specifies that all data is collected (“full” collection). Note – Using this option might reset the running host.
	normal-logonly or full-logonly	Specifies that only log files are collected.

Value	Option	Header
URI	Any valid target directory location	<p>Specifies the URI of the target directory. The URI format is as follows:</p> <p><i>protocol://username:password@host/directory</i></p> <p>where <i>protocol</i> can be one of these transfer methods: SFTP or FTP.</p> <p>For example, to store the snapshot information in the directory named <i>data</i> on the host, define the URI as follows:</p> <p><i>ftp://joe:mypasswd@host_ip_address/data</i></p> <p>The directory <i>data</i> is relative to the user login, so the directory would probably be <i>/home/joe/data</i>.</p>

The snapshot places a zip file in the specified URI.

3 Unzip the file to access the data produced by the snapshot.

Using SunVTS Diagnostics Software

The Sun Validation Test Suite (SunVTS) provides a comprehensive diagnostic tool that tests and validates Oracle hardware by verifying the connectivity and functionality of most hardware controllers and devices on Oracle platforms.

This section contains the following topics:

- [“Introduction to SunVTS Diagnostic Test Suite” on page 51](#)
- [“SunVTS Documentation” on page 52](#)
- [“How to Diagnose Server Problems With the Bootable Diagnostics CD” on page 52](#)

Introduction to SunVTS Diagnostic Test Suite

SunVTS is provided with the Oracle Solaris operating system, and can be downloaded for other systems. It can be started from a n Oracle Solaris command line, or booted from an ISO file or CD/DVD using ILOM redirection.

SunVTS provides a comprehensive diagnostic tool that tests and validates Oracle hardware by verifying the connectivity and functionality of most hardware controllers and devices on Oracle platforms.

SunVTS software has a graphical user interface (GUI) that provides test configuration and status monitoring. The user interface can be run on one system to display the SunVTS testing of another system on the network. SunVTS software also provides a TTY-mode interface for situations in which running a GUI is not possible.

The following tests are available in SunVTS:

- Processor
- Memory
- Disk
- Graphics
- Media
- Ioport
- Interconnects
- Network
- Environment

- HBA

SunVTS Log Files

SunVTS software provides access to four different log files:

- **SunVTS test error log** – Contains time-stamped SunVTS test error messages. The log file path name is `/var/sunvts/logs/sunvts.err`. This file is not created until a SunVTS test failure occurs.
- **SunVTS kernel error log** – Contains time-stamped SunVTS kernel and SunVTS probe errors. SunVTS kernel errors are errors that relate to running SunVTS, and not to testing of devices. The log file path name is `/var/sunvts/logs/vtsk.err`. This file is not created until SunVTS reports a SunVTS kernel error.
- **SunVTS information log** – Contains informative messages that are generated when you start and stop the SunVTS test sessions. The log file path name is `/var/sunvts/logs/sunvts.info`. This file is not created until a SunVTS test session runs.
- **Solaris system message log** – A log of all the general Solaris events logged by `syslogd`. The path name of this log file is `/var/adm/messages`.

SunVTS Documentation

For the most up-to-date information about SunVTS, go to:

<http://download.oracle.com/docs/cd/E19719-01/index.html>

▼ How to Diagnose Server Problems With the Bootable Diagnostics CD

1 Use one of the following methods to start SunVTS:

- On a Solaris system, run the command `/usr/sunvts/bin/startsunvts`.

Note – SunVTS is resource-intensive. When running it from the command line, it is advisable to close any non-essential applications on your system.

- On any system:
 - Download the SunVTS ISO file. See your server download page for details.

- After downloading the ISO file, copy it to a local drive or to a CD/DVD, and use Oracle ILOM redirection to boot it. See your Oracle ILOM documentation for information about redirection.

Note – SunVTS can take as long as nine minutes to boot.

2 Press Enter or click the Start button when you are prompted to start the tests.

The test suite runs until it encounters an error or the test is completed.

3 When the test stops, review the log files generated during the test.

For a description of the log files, see [“SunVTS Log Files” on page 52](#).

To view a log file:

a. Click the Log button.

The log file window appears.

b. Specify the log file that you want to view by selecting it from the Log file windows.

The content of the selected log file appears in the windows.

c. Use the three lower buttons to perform the following actions:

- **Print the log file.**

A dialog box appears for you to specify your printer options and printer name.

- **Delete the log file.**

The file remains displayed, but it will be gone the next time you try to display it.

- **Close the log file window.**

The window closes.

Performing Pc-Check Diagnostic Tests

This section describes how to use the Pc-Check diagnostic tests for the Sun Server X2-8, provided through the Oracle Integrated Lights Out Manager (Oracle ILOM).

This section contains the following topics:

- [“Pc-Check Diagnostics Overview” on page 55](#)
- [“How to Run Pc-Check Diagnostics” on page 56](#)
- [“Pc-Check Main Menu” on page 58](#)
- [“System Information Menu” on page 58](#)
- [“Advanced Diagnostics” on page 60](#)
- [“Burn-In Testing” on page 61](#)
- [“Viewing the Pc-Check Results” on page 64](#)

Pc-Check Diagnostics Overview

If you are having a problem with your system, you can use the Pc-Check diagnostic tests to diagnose and possibly solve the problem. The Pc-Check diagnostics can test and detect problems on all motherboard components, drives, ports, and slots.

To run Pc-Check, you can use Oracle ILOM to select one of the following options, then boot the server:

- **Manual** – Runs Pc-Check in manual mode and brings you to a Pc-Check menu.
- **Enabled** – Runs basic diagnostics and takes about 3 minutes.
- **Extended** – Runs detailed diagnostics and takes about 30 minutes.
- **Disabled** – Pc-Check does not run. Use this selection for normal system operation.

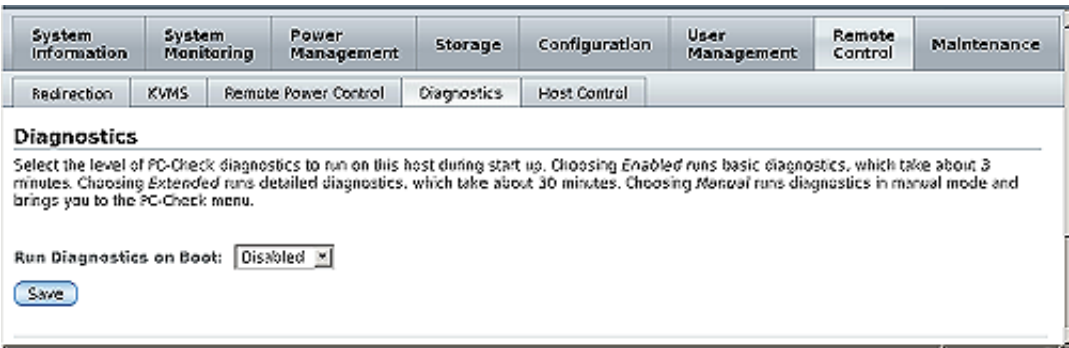
The only way you can see the results of Pc-Check diagnosis is to run Pc-Check in Manual mode. The output is displayed on a monitor or serial console connected to the system. See [“Viewing the Pc-Check Results” on page 64](#). The results of the Enabled and Extended tests are also written to nonvolatile memory on the SP, where Oracle Services can access them.

Note – On some systems with eight Combo GbE/8Gb FC Express Module HBA cards and four Sun Dual 10GbE 12 SFP+ PCIe 2.0 cards, Pc-Check incorrectly reports network card test failures. If this occurs, turn off SR-IOV in BIOS by setting Advanced > I/O Virtualization > SR-IOV > **Disabled**. Be sure to re-enable SR-IOV when you are done.

▼ How to Run Pc-Check Diagnostics

- 1 **Ensure that the host is in standby power mode.**
The Power/OK LED on the front panel should be flashing.
- 2 **Log in to the Oracle ILOM web interface.**
- 3 **Click the Remote Control tab and then the Diagnostics tab.**

The Diagnostics screen appears.



- 4 **From the Run Diagnostics on Boot drop-down list, select the level of Pc-Check diagnostics to be run.**

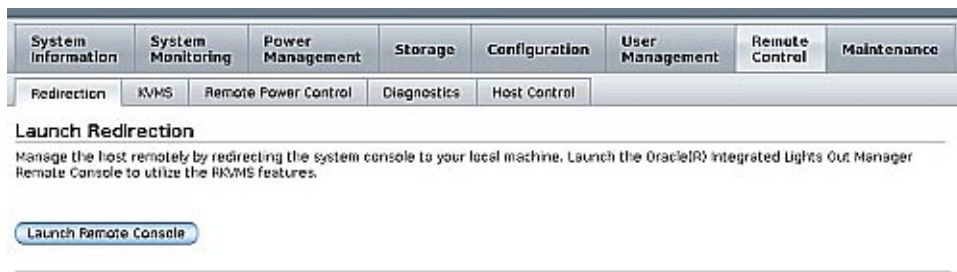
Note – If you select Enabled or Extended, there is no need to perform step 6, step 8, or step 9. No Pc-Check menus will be available. Instead, to view the results of the Pc-Check tests, see [“Viewing the Pc-Check Results” on page 64](#).

- 5 **Click the Save button.**

6 To start redirection, do the following:

a. Click the Redirection tab.

The Launch Redirection screen appears:



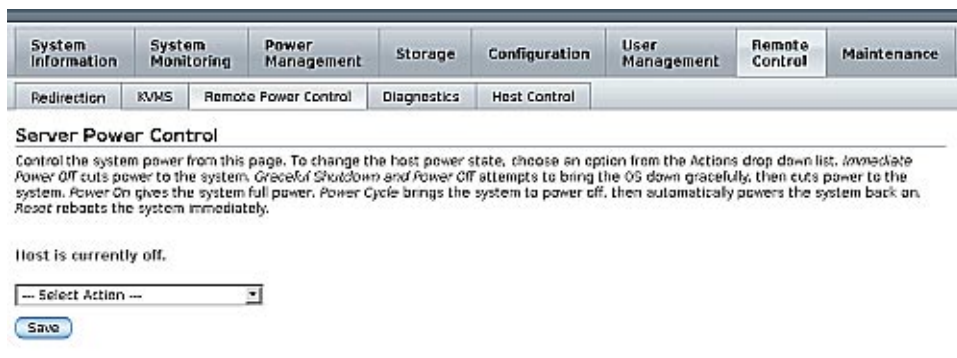
b. Click the Launch Redirection button.

The redirection is established. Because the host is in standby power mode, the view should be empty.

7 Power on the host.

a. Click the Remote Control tab, and then click the Remote Power Control tab.

The Server Power Control window appears.



b. Select Power On from the Select Action drop-down list.

c. Click Save.

The host begins its startup sequence.

8 Click Redirection to return to the redirection view.

The host startup messages appear. After POST, the Pc-Check menu appears.

- 9 Follow the prompts to open the Pc-Check main menu.

Pc-Check Main Menu

In manual mode, the main Pc-Check menu provides the options shown in the following graphic:



The following topics describe how to use the Pc-Check options:

- “System Information Menu” on page 58
- “Advanced Diagnostics” on page 60
- “Burn-In Testing” on page 61
- “Viewing the Pc-Check Results” on page 64

System Information Menu

Select System Information in the Pc-Check main menu to view the System Information menu. Select items in this menu to see detailed information.

The following table describes the System Information menu options.

Option	Description
System Overview Menu	Includes basic information about your system, motherboard, BIOS, processor, memory cache, drives, video, modem, network, buses, and ports.

Option	Description
Component Audit Menu	Enables you to create an XML or .txt document describing your system.
System Management Info	Provides information about the BIOS type, system, motherboard, enclosure, processors, memory modules, cache, slots, system event log, memory array, memory devices, memory device mapped addresses, and system boot.
PCI Bus Info	Includes details about specific devices from pci-config space within the system, similar to the System Management Information section.
PCMCIA/ CardBus Info	Displays information about PCMCIA/CardBus devices.
IDE Bus Info	Displays information about the IDE bus.
Interrupt Vectors	Displays a list of interrupt vectors.
IRQ Routing Info	Shows hardware interrupt assignments.
Device Drivers	Shows device drivers loaded under Open DOS.
APM Info	Enables you to test and configure the Advanced Power Management (APM) capabilities of the system. You can choose to change the power state, view the power status, indicate CPU usage, get a power management event, or change the interface mode.
I/O Port Browser	Shows the I/O port assignment for the hardware devices on the system.
Memory Browser	Enables you to view the mapped memory for the entire system.
Sector Browser	Reads sector information from the hard disks sector by sector.
CPU Freq. Monitor	Tests the processor speed.
CMOS RAM Utilities	Shows the CMOS settings of the system.
SCSI Utils	Provides SCSI device options.
Text File Editor	Opens a file editor.
Start-Up Options	Enables you to set up startup options for diagnostics testing.

Note – The Text File Editor command in the System Information Menu Options is of special importance. You use it to view the results of Pc-Check tests. This is described in [“How to View Pc-Check Files With the Text File Editor” on page 64.](#)

Advanced Diagnostics

Advanced Diagnostics are used to test an individual device on the system. Most of the selections on this menu display information about the corresponding devices, and then offer a menu of testing options. For example, to test CPU 0, you can select Advanced Diagnostics Tests, and then select Processor, and then select CPU0.

Note – If you do not know which device to test, see [“Burn-In Testing” on page 61](#).

The following table gives the name and a brief description of many of the selections in the Advanced Diagnostics Tests menu.

Note – Some of the tests in the table might not be applicable for your server.

Option	Description
Processor	Displays information about the processors and includes a Processor Tests menu.
Memory	Displays information about the memory, and includes tests for the different types of system memory.
Motherboard	Displays information about the motherboard, and includes a Motherboard Tests menu.
Floppy Disks	Not applicable.
Hard Disks	Displays information about the hard disk, and includes a Hard Disk Tests menu.
CD-ROM/DVD	Not applicable.
ATAPI Devices	Not applicable.
TPM	Not applicable.
Serial Ports	Displays information about the serial ports and includes a Serial Port Tests menu.
Parallel Ports	Not applicable.
ATA	Includes an ATA Test menu. Select the serial ATA driver to test.
USB	Displays information about the USB devices on the system and includes a USB Tests menu.
Firewire	Not applicable.

Option	Description
SCSI	Displays information about SCSI devices and includes a SCSI Test menu.
Network	Performs network register controller tests.
System Stress Test	Exercises and checks the CPU, memory, and hard drive.
Keyboard	Includes a Keyboard Test menu with options for performing different tests on the keyboard.
Mouse	Displays information about the mouse and includes a menu to test the mouse on the system.
Audio	Not applicable.
Video	Displays information about the video card. Initially, the monitor might flicker, but then the system brings up a Video Test Options menu that enables you to perform various video tests.
Firmware– ACPI	Displays information about Advanced Configurable Power Interface (ACPI) and includes an ACPI Tests menu.

Burn-In Testing

Burn-in testing enables you to run test scripts and to create new scripts.

The main menu provides two burn-in selections, Immediate Burn-In Testing and Deferred Burn-In Testing.

This section covers the following topics:

- [“Standard Scripts” on page 61](#)
- [“How to Perform Immediate Burn-In Testing” on page 62](#)
- [“How to Create and Save Scripts for Deferred Burn-in Testing” on page 63](#)

Standard Scripts

Oracle provides three ready-made scripts designed to test the general health of the devices on your system. These scripts include:

- `quick.tst`

This script performs a series of tests that require you to interact with the test software. When they require a user interaction, they stop and do not time out. These tests are faster than the `full.tst`, but they are less thorough. For example, they do not run all the tests associated with a DIMM.

- `noinput.tst`

This script performs a non detailed test of most hardware components, excluding those components that require user input (keyboard, mouse, sound, and video). This test does not require user input. It is normally the first test performed for hardware-related problems.

- `full.tst`
This script performs a detailed and comprehensive test on all hardware components, including those that require user input. It includes external port tests and requires loopback connectors on COM ports, parallel ports, and USB ports. You must interact with the test utility to progress through these interactive tests.

▼ How to Perform Immediate Burn-In Testing

- 1 **From the main menu, click Immediate Burn-In Testing.**
The screen displays a list of settings and a Burn-In menu.
- 2 **From the menu, click Load Burn-In Script.**
A text box appears.
- 3 **Type the name of the script you want to run, for example: `quick.tst`, `noinput.tst`, or `full.tst`.**
- 4 **To change any of the options, at the bottom of the screen, click Change Options.**
This opens the Burn-In Options menu, which enables you to modify the options listed in the following table for the currently loaded test script.

Option	Default General	Default Using <code>quick.tst</code> , <code>noinput.tst</code> , or <code>full.tst</code> Script	All Possible Choices
Pass Control	Overall Time	Overall Passes	Individual Passes, Overall Passes, or Overall Time
Duration	01:00	1	Enter any number to choose the time duration of the test
Script File	N/A	<code>quick.tst</code> , <code>noinput.tst</code> , or <code>full.tst</code>	<code>quick.tst</code> , <code>noinput.tst</code> , or <code>full.tst</code>
Report File	None	None	User defined
Journal File	None	D:\ <code>noinput.jrl</code> , D:\ <code>quick.jrl</code> , or D:\ <code>full.jrl</code>	User defined

Option	Default General	Default Using <code>quick.tst</code> , <code>noinput.tst</code> , or <code>full.tst</code> Script	All Possible Choices
Journal Options	Failed Tests	All Tests, Absent Devices, and Test Summary	Failed Tests, All Tests, Absent Devices, and Test Summary
Pause on Fail	N	N	Y or N
Screen Display	Control Panel	Control Panel	Control Panel or Running Tests
POST Card	N	N	Y or N
Beep Codes	N	N	Y or N
Maximum Fails	Disabled	Disabled	1–9999

5 Click Perform Burn-In Tests.

The diagnostics software executes the test script as configured.

▼ How to Create and Save Scripts for Deferred Burn-in Testing

1 From the Pc-Check main menu, choose Deferred Burn-in Testing.

The top portion of the window lists the options described in the table shown in Step 4 of “[How to Perform Immediate Burn-In Testing](#)” on page 62, and the bottom portion of the window lists the Deferred Burn-in menu options.

2 Choose one of the following options:

■ Change Options

Opens the Burn-in Options menu, which enables you to modify the various options listed in the table in “[How to Perform Immediate Burn-In Testing](#)” on page 62 for the currently loaded test script.

■ Select Tests

Opens a listing of all the possible types of tests available for you to run for the currently loaded test script.

3 When you are done, choose Save Burn-in Script and type the name for the new script.

Enter `d:\testname.tst` where *testname* is the name of the script that you have created.

- 4 To run the newly created script, go to Immediate Burn-in Testing and run the script.
See “How to Perform Immediate Burn-In Testing” on page 62.

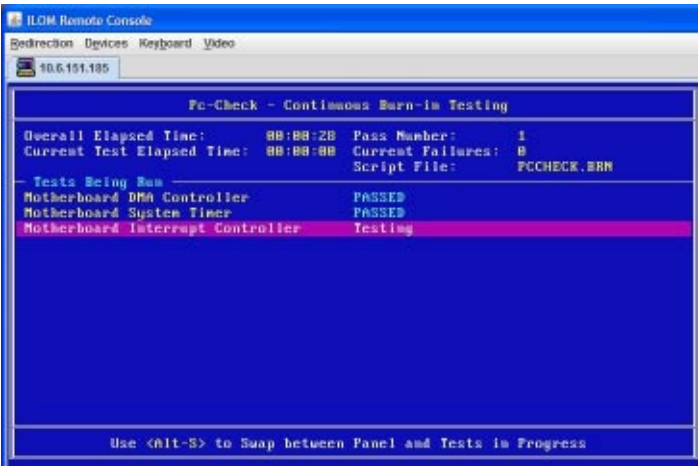
Viewing the Pc-Check Results

There are three different ways that you can view Pc-Check results when you run Pc-Check manually, as described in the following topics:

- “How to View Pc-Check Files With the Text File Editor” on page 64
- “How to View Test Results Using Show Results Summary” on page 65
- “How to Print the Results of Diagnostics Tests” on page 67

▼ How to View Pc-Check Files With the Text File Editor

Before You Begin View the header of the screen where you invoke the test to determine the name of the output file. For example, when you run the continuous burn-in test, the name of the output file is PCCHECK.BRN, as shown in the following figure.



Other files are named PCCHECK.xxx, for example, PCCHECK.JNL or PCCHECK.HII. The .HII file is especially important because it shows the entire host configuration at the time of failure.

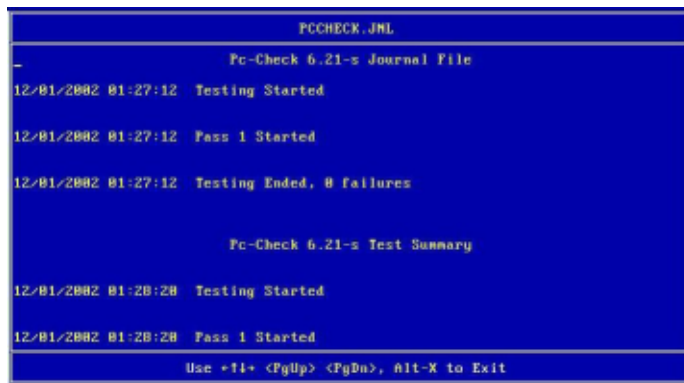
- 1 On the Pc-Check main menu, select System Information Menu and press Enter.

The System Information Menu appears:



- 2 Choose Text File Editor and press Enter.
You are prompted for a file name.
- 3 Type in the file name (for example, PCCHECK.JNL) and press Enter.

The editor opens with the file displayed, as shown here:



▼ How to View Test Results Using Show Results Summary

- From the main menu, choose Show Results Summary to display the tests that have been run and the test results.

Test results can be Pass, Fail, or N/A (not applicable).

- Processor

This section shows the following tests conducted against the processor: Core Processor Tests, AMD 64-Bit Core Tests, Math Co-Processor Tests – Pentium Class FDIV and Pentium Class FIST, MMX Operation, 3DNow! Operation, SSE Instruction Set, SSE2 Instruction Set, and MP Symmetry.

- **Motherboard**

This section shows the following tests conducted against the motherboard: DMA Controller Tests, System Timer Tests, Interrupt Test, Keyboard Controller Tests, PCI Bus Tests, and CMOS RAM/Clock Tests.

- **Memory, Cache Memory, and Video Memory**

This section shows the following tests conducted against the various types of memory: Inversion Test Tree, Progressive Inversion Test, Chaotic Addressing Test, and Block Rotation Test.

- **Input Device**

This section shows the following tests conducted against the input device: Verify Device, Keyboard Repeat, and Keyboard LEDs.

- **Mouse**

This section shows the following tests conducted against the mouse: Buttons, Ballistics, Text Mode Positioning, Text Mode Area Redefine, Graphics Mode Positions, Graphics Area Redefine, and Graphics Cursor Redefine.

- **Video**

This section shows the following tests conducted against the video: Color Purity Test, True Color Test, Alignment Test, LCD Test, and Test Cord Test.

- **Multimedia**

This section shows the following tests conducted against the multimedia components: Internal Speaker Test, FM Synthesizer Test, PCM Sample Test, CD/DVD Drive Read Test, CD/DVD Transfer (KB/Sec), CD/DVD Transfer Rating, CD/DVD Drive Seek Test, CD/DVD Seek Time (ms), CD/DVD Test Disk Read, and CD/DVD Tray Test.

- **ATAPI Devices**

This section shows the following tests conducted against ATAPI devices: Linear Read Test, Non-Destructive Write, and Random Read/Write Test.

- **Hard Disk**

This section shows the following tests conducted against the hard disk: Read Test, Read Verify Test, Non-Destructive Write Test, Destructive Write Test, Mechanics Stress Test, and Internal Cache Test.

- **USB**

This section shows the following tests conducted against the USB: Controller Tests and Functional Tests.

- **Hardware ID**

The compare test is used to determine the machine ID for the system. This test is not available for this server.

▼ **How to Print the Results of Diagnostics Tests**

- 1 Connect the server to a printer through a parallel port.
- 2 Choose the Print Results Report option from the Main Menu to print diagnostic test results.

U-Boot Diagnostic Start-Up Tests

This section describes how to configure the U-Boot diagnostics test mode and how to read the results.

The U-Boot diagnostic tests run automatically when the server is started or rebooted. They test the hardware to ensure that enough functionality is present to allow the SP to boot.

The topics include:

- [“U-Boot Test Options” on page 69](#)
- [“Running the U-Boot Diagnostic Tests and Viewing the Results” on page 70](#)
- [“U-Boot Diagnostic Test Output” on page 71](#)
- [“Sample SP Environmental Variables Showing U-Boot Test Status” on page 76](#)

Note – If any test fails, the SP does not boot.

The tested hardware includes:

- SP memory
- Network devices
- I/O devices
- I2C devices
- USB connections

U-Boot Test Options

U-Boot diagnostic tests run in one of three modes: normal, quick, or extended. Normal mode is the default; quick or extended modes can be selected as described in [“Running the U-Boot Diagnostic Tests and Viewing the Results” on page 70](#).

The tests in each mode include:

TABLE 1 U-Boot Component Tests

U-Boot Component Test	Normal	Quick	Extended	Description
Memory Data Bus Test	X	X	X	Checks for opens/shorts on SP memory data bus.
Memory Address Bus Test	X	X	X	Checks for opens/shorts on SP memory address bus.
Memory Data Integrity Test			X	Checks for data integrity on the SP memory.
Flash Test			X	Checks access to flash.
WatchDog Test			X	Checks the watchdog functionality on the SP.
I2C Probe Tests	X		X	Checks the connectivity to I2C devices on standby power.
Ethernet Test	X	X	X	Verifies ability to read from specified Ethernet port.
Ethernet Link Test	X	X	X	Verifies link on specified PHY.
Ethernet Internal Loopback Test	X		X	Verifies Ethernet functionality by sending and receiving packets.
Real Time Clock Test	X		X	Checks functionality of the real-time clock on the SP.
USB 1.1 Test			X	Checks USB 1.1 functionality.
USB 1.1 BIST	X		X	Runs internal USB 1.1 built-in self-test (BIST).
USB 2.0 Test			X	Checks USB 2.0 functionality.
BIOS Flash ID Test	X		X	Verifies ability to read from the BIOS flash.
Serial Presence Detect (SPD) Access Test			X	Verifies DIMM SPD access along with checksum and prints SPD information.
Power CPLD Test	X	X	X	Verifies the correct power revision of the complex programmable logic device (CPLD).

Running the U-Boot Diagnostic Tests and Viewing the Results

U-Boot diagnostic tests run automatically when the server is started or booted. However:

- You must connect a serial terminal to the serial port on the SP to see the output.
You can read whether the tests passed or failed by looking at the SP environment variables. Refer to your Oracle ILOM documentation, and see [“Sample SP Environmental Variables Showing U-Boot Test Status” on page 76](#) for a sample display.
- Before the tests start, you can select quick or extended mode.

If you do nothing, the tests run in normal mode.

To run the tests, see [“How to Run the U-Boot Diagnostic Tests” on page 71](#).

▼ How to Run the U-Boot Diagnostic Tests

1 Attach a serial terminal to the SER MGT port on the SP.

Refer to [“How to Connect to Oracle ILOM CLI Using the Serial Management Port” in *Sun Server X2-8 \(formerly Sun Fire X4800 M2\) Installation Guide*](#) for details.

2 Power on or restart the server.

Refer to [“Powering the Server On and Off” in *Sun Server X2-8 \(formerly Sun Fire X4800 M2\) Installation Guide*](#) for more details.

3 Watch for the following prompt and do one of the following.

Enter Diagnostics Mode {'q'uick/'n'ormal (default)/e'x'tended}...

- To run in normal mode, type n or let the countdown continue to run.
- To enable Quick U-Boot tests, type q.
- To enable Extended U-Boot component tests, type x.

4 Read the output, as described in [“U-Boot Diagnostic Test Output” on page 71](#).

If any test fails, the test stops at that test, and the SP does not boot. Contact Oracle support.

See Also [“U-Boot Diagnostic Test Output” on page 71](#)

U-Boot Diagnostic Test Output

This topic shows examples of the U-Boot diagnostics tests in normal, quick, and extended mode.

For instructions to run the U-Boot diagnostics test, see [“Running the U-Boot Diagnostic Tests and Viewing the Results” on page 70](#).

U-Boot Output in Normal Test Mode

The following display shows the output from U-Boot in normal test mode.

```
U-Boot 1.1.4
```

```
Custom AST2100 U-Boot 2.0 (Jan 26 2009 - 10:29:26) r41480
DRAM: 119 MB
```

Flash bank 0 at 10000000 has 0x2000000 bytes in 256 sectors (chipSize 1--25, size_ratio 1).

Flash: 32 MB

readonly: ethaddr=00:14:4F:CA:B5:10
readonly: ethladdr=00:14:4F:CA:B5:11

VUART1 already enabled at port 0x03f8, SerIRQ[4] rise

Protecting U-Boot flash sectors; monitor_base=100a0000.
Negating BIOS_TOP_BLOCK_LOCK signal.

H/W: Sun Fire X4800 M2 Service Processor; SOC: AST2100 Rev. 02 ('A3')
PWC_SP_Broken_OD = 0; ARM restart caused by: watch-dog ExtRst# pin
The host is OFF(S5) (hostWantsPwr=0, powerGood=0,
allowPwrOn=0|0, outOfReset=0, fatalError=0).
Reset straps=0x88819180, def. H-PLL=264 MHz, CPU/AHB=2:1, boot CS0# normal speed
PCI w/VGA noVBIOS; DRAM clock is M-PLL: 264 MHz (DDR2-528)
DRAM: 128MB data - 8MB VGA, 32-bit noECC, 2 BA 10 CA, CL=4 BL=4 ap=1, 61440 us refr

Board Revision - cc
Net: faradaynic#0, faradaynic#1
Enter Diagnostics Mode ['q'quick/'n'ormal(default)/e'x'tended(manufacturing mode)]....0

Diagnostics Mode - QUICK

DIAGS Memory Data Bus Test ... PASSED
DIAGS Memory Address Bus Test ... PASSED
DIAGS PHY #0 R/W Test ... PASSED
DIAGS PHY #0 Link Status ... PASSED
DIAGS Testing PowerCPLD version ... PASSED
Booting linux in 3 seconds...

Sample U-Boot Output in Quick Test Mode

The following display shows the output of U-Boot in quick test mode.

U-Boot 1.1.4

Custom AST2100 U-Boot 2.0 (Jan 26 2009 - 10:29:26) r41480
DRAM: 119 MB

Flash bank 0 at 10000000 has 0x2000000 bytes in 256 sectors
(chipSize 1--25, size_ratio 1).

Flash: 32 MB

readonly: ethaddr=00:14:4F:CA:B5:10
readonly: ethladdr=00:14:4F:CA:B5:11

VUART1 already enabled at port 0x03f8, SerIRQ[4] rise

Protecting U-Boot flash sectors; monitor_base=100a0000.
Negating BIOS_TOP_BLOCK_LOCK signal.

H/W: Sun Fire X4800 M2 Service Processor; SOC: AST2100 Rev. 02 ('A3')


```

PWC_SP_Broken_OD = 0; ARM restart caused by: watch-dog ExtRst# pin
The host is OFF(S5) (hostWantsPwr=0, powerGood=0,
    allowPwrOn=0|0, outOfReset=0, fatalError=0).
Reset straps=0x88819180, def. H-PLL=264 MHz, CPU/AHB=2:1, boot CS0# normal speed
PCI w/VGA noVBIOS; DRAM clock is M-PLL: 264 MHz (DDR2-528)
DRAM: 128MB data - 8MB VGA, 32-bit noECC, 2 BA 10 CA, CL=4 BL=4 ap=1, 61440 us refr

Board Revision - cc
Net: faradaynic#0, faradaynic#1
Enter Diagnostics Mode ['q'uick/'n'ormal(default)/e'x'tended(manufacturing mode)]....0

Diagnostics Mode - QUICK

DIAGS Memory Data Bus Test ... PASSED
DIAGS Memory Address Bus Test ... PASSED
DIAGS PHY #0 R/W Test ... PASSED
DIAGS PHY #0 Link Status ... PASSED
DIAGS Testing PowerCPLD version ... PASSED
Booting linux in 3 seconds...

```

Sample U-Boot Output in Extended Test Mode

The following display shows the output of U-Boot in extended test mode.

```

U-Boot 1.1.4

Custom AST2100 U-Boot 2.0 (Jan 26 2009 - 10:29:26) r41480

DRAM: 119 MB
Flash bank 0 at 10000000 has 0x2000000 bytes in 256 sectors(chipSize 1-25,
    size_ratio 1).
Flash: 32 MB

readonly: ethaddr=00:14:4F:CA:B5:10
readonly: ethladdr=00:14:4F:CA:B5:11

VUART1 already enabled at port 0x03f8, SerIRQ[4] rise

Protecting U-Boot flash sectors; monitor_base=100a0000.

Negating BIOS_TOP_BLOCK_LOCK signal.

H/W: Sun Fire X4800 M2 Service Processor; SOC: AST2100 Rev. 02 ('A3')
PWC_SP_Broken_OD = 0; ARM restart caused by: watch-dog ExtRst# pin
The host is OFF(S5) (hostWantsPwr=0, powerGood=0,
    allowPwrOn=0|0, outOfReset=0, fatalError=0).
Reset straps=0x88819180, def. H-PLL=264 MHz, CPU/AHB=2:1, boot CS0#
    normal speed
PCI w/VGA noVBIOS; DRAM clock is M-PLL: 264 MHz (DDR2-528)
DRAM: 128MB data - 8MB VGA, 32-bit noECC, 2 BA 10 CA, CL=4 BL=4 ap=1,
    61440 us refr

Board Revision - cc

Net: faradaynic#0, faradaynic#1
Enter Diagnostics Mode
    ['q'uick/'n'ormal(default)/e'x'tended(manufacturing mode)] 0

```

Diagnostics Mode - EXTENDED(Manufacturing Mode)

DIAGS Memory Data Bus Test ... PASSED
 DIAGS Memory Address Bus Test ... PASSED
 DIAGS Testing 0MB to 24MB (TEXT_BASE - 7 MB) ... PASSED
 DIAGS Testing 32MB (TEXT_BASE + 1MB) to 128MB ... PASSED
 DIAGS Flash ID Test - Flash Bank 1 ... PASSED
 DIAGS Testing Watchdog ... PASSED

I2C Probe Test - Motherboard

Bus	Device	Address	Results
1	Temp. Sensor(LM75) (U3006)	0x90	PASSED
2	Sys FRUID (U3003)	0xA0	PASSED
2	Power CPLD (U3301)	0x4E	PASSED
2	CPU0 Fault LED's (U3001)	0x40	PASSED
2	CPU1 Fault LED's (U3002)	0x42	PASSED
2	PCA9555 (Misc) (U3005)	0x44	PASSED
2	DIMM IMAX (U3102)	0x12	PASSED
6	Bank Panel Led's (U2701)	0xC6	PASSED
6	DS1338(RTC) (U803)	0xD0	PASSED

I2C Probe Test - Chassis (2U)

Bus	Device	Address	Results
PDB Board			
1	PCA9548 Mux (U0202)	0xE0	PASSED
1	PDB FRUID (U0203)	0xAA	PASSED
1	MAX7313 (U0201)	0x40	PASSED

Power Supply 0

Bus	Device	Address	Results
1	0	PS 0 FRUID (-)	0xAC PASSED
1	0	PS 0 CTRL (-)	0x7C PASSED

Power Supply 1

Bus	Device	Address	Results
1	1	PS 1 FRUID (-)	0xAC PASSED
1	1	PS 1 CTRL (-)	0x7C PASSED

Fan Module 1

Bus	Device	Address	Results
1	2	FM 1 FRUID (U0203)	0xAC PASSED
1	2	FM 1 PCA9555 (U0201)	0x42 PASSED
1	2	FM 1 ADT7462 (U0202)	0xB8 PASSED

Fan Module 0

Bus	Device	Address	Results
=====			
1	3	FM 0 FRUID (U0203)	0xAC PASSED
1	3	FM 0 PCA9555 (U0201)	0x42 PASSED
1	3	FM 0 ADT7462 (U0202)	0xB8 PASSED

16 Disk Backplane

Bus	Device	Address	Results
=====			
1	4	BP MAX7313 (U1801)	0x44 PASSED
1	4	BP FRUID (U2102)	0xAC PASSED

Paddle Card

Bus	Device	Address	Results
=====			
1	4	EXP FRUID (U0401)	0xAE PASSED

DIAGS PHY #0 R/W Test ... PASSED
 DIAGS PHY #0 Link Status ... PASSED
 DIAGS ETHERNET PHY #0, Internal Loopback Test ... PASSED
 DIAGSTesting RTC ... PASSED
 DIAGS USB 1.1 Register Test ... PASSED
 DIAGS USB2.0 Register Test ... PASSED
 DIAGS USB 1.1 Test ... PASSED
 DIAGSAccess to BIOS Flash ... PASSED

CPU0 D0 ... Not Present
 CPU0 D1 ... Not Present
 CPU0 D2 ... Present

DIAGS>Verifying DIMM SPD Checksum on CPU0 D2 ... PASSED
 SDRAM DEVICE DDR3 SDRAM
 MODULE TYPE RDIMM
 SDRAM SIZE 2 GB
 NUMBER OF ROWS & COLUMNS 14 Row x 11 Column
 CYCLE TIME DDR3 533Mhz clock(1066data rate)
 MANUFACTURER_JEDEC_ID_CODE Micron
 MANUFACTURED DATE Week 18 of '08
 MODULE SERIAL NUMBER EA09445A
 MODULE_PART_NUMBER 18JSF25672PY-1G1D

CPU0 D3 ... Not Present
 CPU0 D4 ... Not Present
 CPU0 D5 ... Not Present
 CPU0 D6 ... Not Present
 CPU0 D7 ... Not Present
 CPU0 D8 ... Not Present
 CPU1 D0 ... Not Present
 CPU1 D1 ... Not Present
 PU1 D2 ... Present

DIAGSVerifying DIMM SPD Checksum on CPU1 D2 ... PASSED

```
SDRAM DEVICE          DDR3 SDRAM
MODULE TYPE           RDIMM
SDRAM SIZE            2 GB
NUMBER OF ROWS & COLUMNS      14 Row x 11 Column
CYCLE TIME            DDR3 533Mhz clock(1066data rate)
MANUFACTURER_JEDEC_ID_CODE      Micron
MANUFACTURED DATE        Week 18 of '08
MODULE SERIAL NUMBER      EA09445B
MODULE_PART_NUMBER        18JSF25672PY-1G1D

CPU1 D3 ... Not Present
CPU1 D4 ... Not Present
CPU1 D5 ... Not Present
CPU1 D6 ... Not Present
CPU1 D7 ... Not Present
CPU1 D8 ... Not Present

DIAGS Testing PowerCPLD version ... PASSED
Booting linux in 3 seconds...
```

Sample SP Environmental Variables Showing U-Boot Test Status

The status of the U-Boot tests shows in the SP environmental variables output. The following display shows a typical output.

Note – The SP does not boot if the U-Boot test fails, so you will not be able to see the environmental variables until it can be made to pass.

```
preboot- uboot
WARNING: Will reboot after 300 seconds of idle time.
=- showenv
bootcmd=bootpkg
bootdelay=10
loads_echo=1
autoload=no
number_of_loops=1
netretry=no

update_flash=protect off all; erase 100a0000 ${flash_top};
tftp 100a0000 ${bootfile}; setenv preserve_conf no; saveenv
update_uboot=protect off all; erase 100a0000 100ffffff; tftp 100a0000 ${ubootfile}
erase_perm=protect off all; cp.b 10000000 42000000 20000; erase 10000000 1001ffff;
cp.b 42000000 10000000 18000
bootfile=nightly-virgo-rom.flash

netmask=255.255.255.0
ipaddr=10.8.185.77
serverip=129.148.40.42
gatewayip=10.8.185.254
```

```
ubootfile=/tftpboot/sm158724/virgo-u-boot.bin
flash_top=11ffffff
ethact=faradaynic#0
diags_result=Diags .. PASSED
preserve_users=no
preserve_conf=yes
set_factory_defaults=no
serial_is_host=0
upgrade_bios=yes
baudrate=9600
ethaddr=00:14:4F:CA:16:0A
eth1addr=00:14:4F:CA:16:0B
stdin=serial
stdout=serial
stderr=serial
i2c_bus=2
```


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