Sun Fire X4800 Server Diagnostics Guide

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Contents

Using This Documentation

This section describes related documentation, submitting feedback, and a document change history.

Product Information Web Site

For information about the Sun x86 servers, go to `http://www.oracle.com/technetwork/server-storage/sun-x86/overview/index.html`.

For software and firmware downloads for your x86 server product, go to `http://www.oracle.com/technetwork/server-storage/sun-x86/downloads/index.html` page and click on your server model.

Documentation and Feedback

Documentation	Link
All Oracle products	`http://www.oracle.com/documentation`
Sun Fire X4800 server	`http://download.oracle.com/docs/cd/E19140-01/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 (PDF and HTML)

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, appendixes, or section numbering.

A PDF that includes all information on a particular topic subject (such as hardware installation or product notes) can be downloaded by clicking on the PDF button in the upper left corner of the page.

Contributors

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Change History

The following changes have been made to the documentation set.

- April 2010 – Installation Guide released.
- June 2010 – Installation Guide and Getting Started Guide re-released.
- July 2010 – Initial release of other documents.
- August 2010 – Product Notes and Service Manual re-released. ESX Installation Guide added.
- October 2010 – Product Notes re-released.
- December 2010 – Product Notes re-released.
- March 2011 – Documents re-released for SW1.2 including the Installation Guide, the Product Notes, the Linux Installation Guide, the Oracle Solaris Installation Guide, the Windows Installation Guide, and the Service Manual.
- July 2011 – Product Notes and Service Manual re-released.
- January 2012 – Product Notes updated for SW1.4.
- June 2012 – Product Notes, Oracle VM Installation Guide, Oracle Solaris Installation Guide, Oracle ILOM 3.0 Supplement, and the Diagnostics Manual re-released.

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 9
Troubleshoot system problems.	“Troubleshooting the Server” on page 11
Troubleshoot DIMM problems.	“Troubleshooting DIMM Problems” on page 15
Learn what is tested during BIOS POST.	“BIOS POST” on page 23
Use ILOM to monitor the host.	“Using the ILOM to Monitor the Host” on page 27
Create a data collector snapshot.	“Creating a Data Collector Snapshot” on page 43
Use SunVTS to diagnose server problems.	“Using SunVTS Diagnostics Software ” on page 47
Use Pc-Check to diagnose server problems.	“Performing Pc-Check Diagnostic Tests” on page 51

Introduction to System Diagnostics

This section contains an introduction to the Oracle's Sun Fire X4800 server diagnostics and covers the following topics:

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 11
2	Investigate any power-on problems.	"How to Troubleshoot Power Problems" on page 12
3	Perform external visual inspection and internal visual inspection.	"How to Externally Inspect the Server" on page 12 "How to Internally Inspect the Server" on page 12
4	Troubleshoot DIMM problems.	"Troubleshooting DIMM Problems" on page 15
5	View BIOS event logs and POST messages.	"BIOS POST" on page 23
6	View service processor logs and sensor information.	"Using the ILOM to Monitor the Host" on page 27
7	Collect diagnostics data for Oracle Service.	"Creating a Data Collector Snapshot" on page 43
8	Run SunVTS.	"Using SunVTS Diagnostics Software " on page 47

Step	Troubleshooting Task	Link
9	Run Pc-Check.	"Performing Pc-Check Diagnostic Tests" on page 51

Diagnostic Tools

The following diagnostic tools are available for the Sun Fire X4800 server.

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 23 .

Service Processor ILOM

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

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

For more information about using the ILOM to diagnose system issues, see "Using the ILOM to Monitor the Host" on page 27.

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 47.

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 ILOM. For more information about using Pc-Check, see "Performing Pc-Check Diagnostic Tests" on page 51.

Troubleshooting the Server

This section covers the following procedures:

▼ 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 before you add a new device.**

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

How to Troubleshoot Power Problems

- **Do one of the following:**
  - **If the server powers on, skip this section and go to "How to Externally Inspect the Server" on page 12.**
  - **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.**

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 Fire X4800 Server 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 12.**

How to Internally Inspect the Server

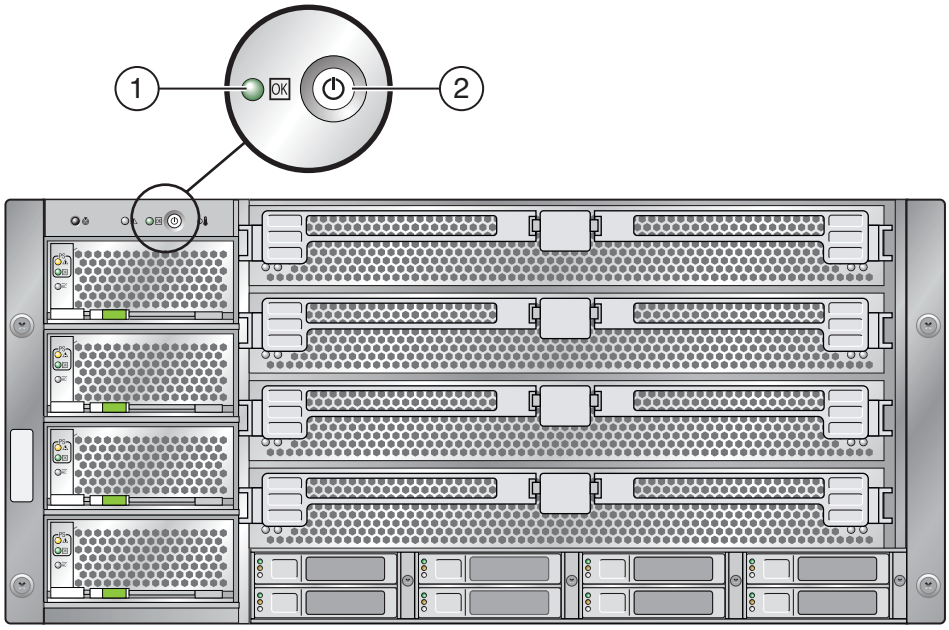
1. **Choose a method for shutting down the server from main power mode to standby power mode.**

   - **Graceful shutdown**: Press and release the Power button on 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.

See the following illustration for the location of the Power button.



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 Fire X4800 Server 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 15.

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 Fire X4800 Server 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 15.**

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 main 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 till 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 Fire X4800 Server 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.

There are two ways to identify DIMM errors:

- View the DIMM LEDs on the CPU modules (CMODs). See "DIMM Fault LEDs" on page 15.
- View the ILOM System Event Log to view errors identified by the BIOS. See "Identifying DIMM Error Messages " on page 17.

See "Correcting DIMM Errors" on page 18 for information on how to correct DIMM errors.

DIMM Fault LEDs

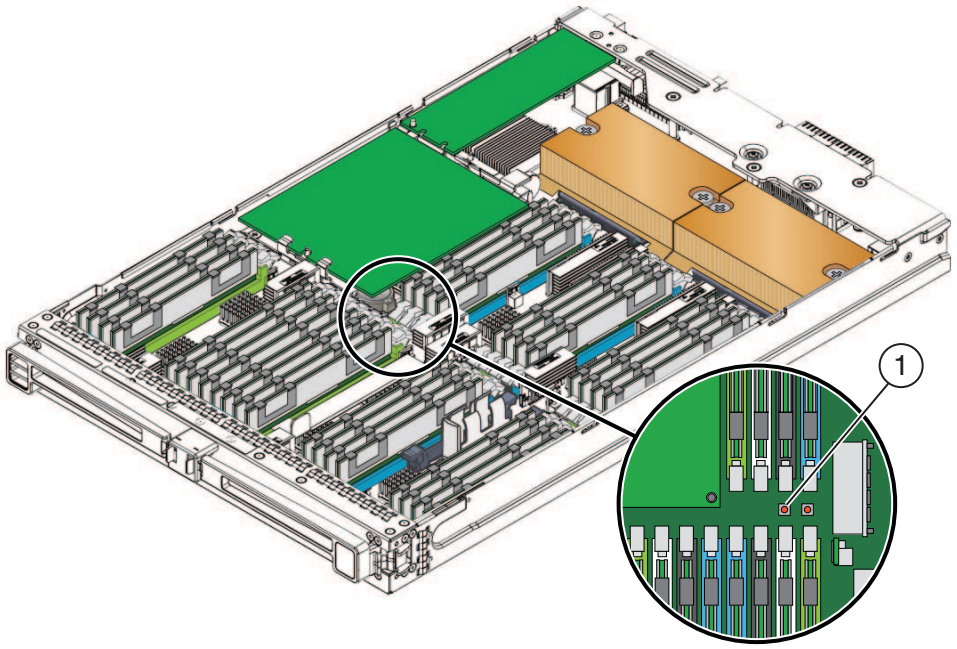
This section covers the following topics:

About DIMM Fault LEDs

In the Sun Fire X4800 server CMODs, 16 DIMM slots are available for each CPU. The DIMM fault LEDs in the DIMM slot ejector levers indicate which DIMM pair has failed. These DIMM fault LEDs can be lit for up to one minute by a capacitor on the CMOD, even though the CMOD is removed from the server.

The DIMM ejector levers contain LEDs that can indicate a faulty DIMM.

The following illustration shows the location of the Fault Remind button.



Label	Description
1	Fault Remind button

How to Read the DIMM Fault LEDs

- **To light the fault LEDs from the capacitor, push the small button on the CMOD labelled "FAULT REMIND BUTTON."**
  - If the DIMM fault LED is off – The DIMM is operating properly.
  - If the DIMM fault LED is on (amber) – The DIMM is faulty and should be replaced.

Note – The Fault Remind button also lights fault LEDs for the CPUs. If CPU lights are lit, refer to the ILOM event log for details on the fault.

Identifying DIMM Error Messages

This section covers the following topics:

How BIOS POST Memory Testing Works

The BIOS POST memory testing is performed as follows:

1. The first megabyte of DRAM is tested by the BIOS before the BIOS code is copied from ROM to DRAM.
2. After exiting DRAM, the BIOS performs a simple memory test (where a write/read of every location with the pattern 55aa55aa is performed).

Note – The simple memory test is performed only if Quick Boot is not enabled from the Boot Settings Configuration screen. Enabling Quick Boot causes the BIOS to skip the memory test.

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3. The BIOS polls the memory controllers for both correctable and non-correctable memory errors and logs those errors into the SP.
4. The following message appears at the end of POST:

   ```
   BMC Responding
   ```

5. See "How to Interpret DIMM Error Messages in the SEL" on page 17 for information about identifying the BIOS DIMM messages in the SEL.

▼ How to Interpret DIMM Error Messages in the SEL

1 Log into ILOM and access the System Event Log using the web interface or CLI.

See "Viewing the ILOM System Event Log" on page 35.

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
```

The Data Byte 2 field contains the following information:

- Bits 6-7 = 00b Indicates data is for ECC Memory Error
- Bits 4-5 = Branch Memory Branch ID

- Bits 0-3 = CPU # Node Number (CPU Package Number)

The Data Byte 3 field contains the following information:

- Bits 4-7 = DIMM 0 of pair
- Bits 0-3 = DIMM 1 of pair

In above example:

- Data-2: 0x12 = 0001,0010 binary = Branch 1 , CPU 2
- Data-3: 0x9d = DIMM9, DIMM13

Correcting DIMM Errors

The following procedure describes how to isolate and correct DIMM ECC errors.

▼ How to Isolate and Correct DIMM ECC Errors

If the ILOM reports an ECC error or a problem with a DIMM, first complete the steps in the following procedure.

Note – This procedure cannot be completed without the assistance of Oracle service personnel. Oracle service assistance is needed to access the sunservice account and remove and install the CPU.

In this example, ILOM reports an error with the DIMM in CMOD 0, CPU0, slot 1. The fault LEDs on CPU0, slots 1 and 0, are lit.

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.

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1. **If you have not already done so, shut down the Sun Fire X4800 system to standby power mode, remove the CMOD, and remove the cover of the CMOD.**

   Refer to the *Sun Fire X4800 Server Service Manual*.

2. **Inspect the installed DIMMs to ensure that they comply with the DIMM population rules in the *Sun Fire X4800 Server Service Manual*.**

3. **Press the Fault Remind button on the CMOD to light the faulty DIMM LEDs.**

   If any of these LEDs are lit, they can indicate the component with the fault.

   See "About DIMM Fault LEDs" on page 15 for the location of the Fault Remind button and DIMM fault LEDs.

4. **If any DIMM fault LEDs are lit, remove the DIMMs from the CMOD.**
   Refer to the *Sun Fire X4800 Server Service Manual*.

5. **Visually inspect the DIMMs for physical damage, dust, or any other contamination on the connector or circuits.**

6. **Visually inspect the DIMM slot for physical damage. Look for cracked or broken plastic on the slot.**

7. **If there was conductive debris in the socket, clean and reseat the DIMMs, then rerun the tests that caused the original memory failure to occur to see if it reoccurs.**
   If there is no obvious damage, continue with the following steps.

8. **Exchange the DIMM pairs between the two CPU slots. Ensure that they are inserted correctly with ejector latches secured. Using the slot numbers from the example:**

   a. **Remove the DIMMs from CPU0, slots 1 and 0.**

   b. **Remove the DIMMs from CPU1, slots 1 and 0.**

   c. **Install the DIMMs from CPU0 into slots 1 and 0 on CPU1.**
      Make sure the that DIMM from CPU0 slot 0 is installed in CPU1 slot 0.

   d. **Install the DIMMs from CPU1 into slots 1 and 0 on CPU0.**

9. **Power on the server and run the test that reported the error again.**

10. **Review the log file.**

    a. **Log on to ILOM using the sunservice account.**

    Note – Contact Oracle service for assistance in logging into ILOM with the sunservice account.

    b. **Access the persist directory (cd /persist)**

    ```
    # cd /persist
    ```

    c. **Search for CEs in the `host_debug_err.log` as shown in the following example:**

    ```
    # grep CE host_debug_err.log

    Mon Mar 13 23:09:25 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
    Pair(s): D10/D14 D11/D15
    Mon Mar 13 23:14:25 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
    Pair(s): D10/D14 D11/D15
    ```

```
Tue Mar 14 00:29:25 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 00:34:25 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 01:29:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 01:49:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 01:54:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 01:59:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 02:04:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 02:09:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 02:14:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 02:54:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 02:59:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 03:04:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
Tue Mar 14 03:09:26 2000 ID ffff V ECC No-UE CE Node 3 Branch 1 DIMM
Pair(s): D10/D14 D11/D15
```

Note – A BIOS SMI is set to run every 5 minutes to check for Memory CEs, so you must to wait at least 5 minutes after testing to see if a CE is detected by the BIOS. Please keep this in mind when determining whether the CEs follow the DIMMs.

- If the error now appears in CPU1, replace the DIMMs in slots 0 and 1.
- If the error still appears in CPU0, , the problem is not related to an individual DIMM. Instead, it might be caused by CPU0 or by the DIMM slot. Continue with the rest of the procedure.

Note – To complete the rest of the procedure, contact Oracle service for assistance with removing and installing the CPUs. The CPUs are field replaceable units (FRUs).

11 Shut down the server again.

12 Remove the CMOD from the system.

13 Remove both CPUs.

14 Reinstall the CPUs into the opposite slot from the original.

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

Refer to the *Sun Fire X4800 Server Service Manual*.

15 **Power on the Sun Fire X4800 system.**

16 **Power on the server and run the test that reported the original error again.**

17 **Review the log file.**

See Step 10 for instructions.

- 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.

BIOS POST

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

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, 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 is set to optimal default	Load optimal default	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 ROM to memory. This is likely due to a large number of PCIe Express modules (PCIe EMs) attached to the system.	Booting over a PCIe EM might not be 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 onboard 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 could appear during the POST diagnostics along with instructions for how to possibly resolve the error reported.

Note – Contact Oracle service for information on interpreting and applying the 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 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 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 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 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 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 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 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 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 (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	Check the SP event log in ILOM for more details. **Note –** This type of error typically indicates that the RAM read/write test failed.
CMOS Battery Low	CMOS battery error	■ Check the SP event log in ILOM for more details. ■ If necessary, replace CMOS battery.
■ CMOS Checksum Bad ■ CMOS Date/Time Not Set	CMOS error	Check the SP event log in ILOM for more details.
Password check failed	Password check error	Check the SP event log in ILOM for more details. **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.

Using the 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 ILOM Sensor Readings

The Sun Fire X4800 server has multiple sensors to monitor the proper functioning of the server. Sensor types are: temperature, fan speed, voltage and power supply. The following components on the Sun Fire X4800 server 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.

View the sensor information in the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Fire X4800 Server* for more information about the sensors.

This section contains the following procedures:

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

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

1 Log in to the SP as Administrator or Operator to reach the 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 is displayed.

b. Type your user name and password.

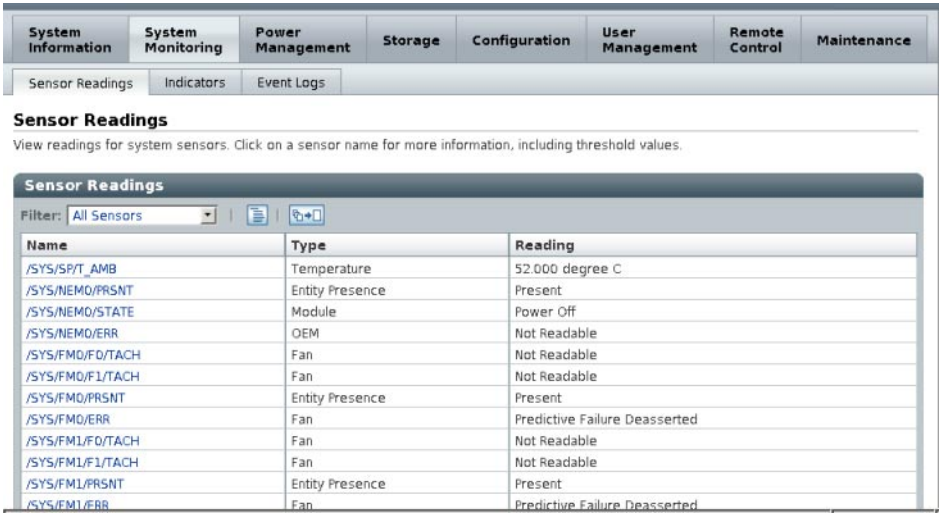
When you first try to access the ILOM service processor, you are prompted to type the default user name and password:

Default user name: **root**

Default password: **changeme**

2 From the System Monitoring tab, select Sensor Readings.

The sensor readings are displayed.

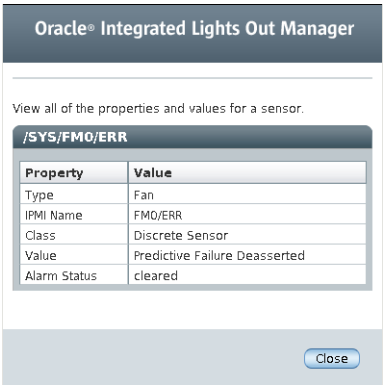


Note – If the server is powered off, many components will have no readings.

3 In the Sensor Readings page, 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 Fire X4800 Server*.

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 47.

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

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

1 Log in to the 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 Fire X4800 Server*.

Viewing Fault Status

This section covers the following topics:

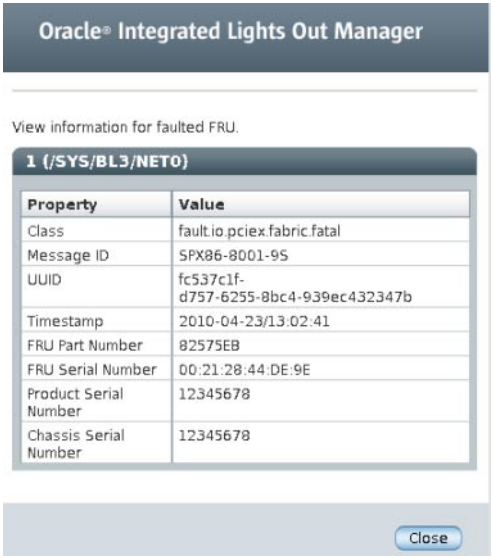
- "How to View Fault Status Using the ILOM Web Interface" on page 31
- "How to View Fault Status With the Command-Line Interface" on page 32

How to View Fault Status Using the ILOM Web Interface

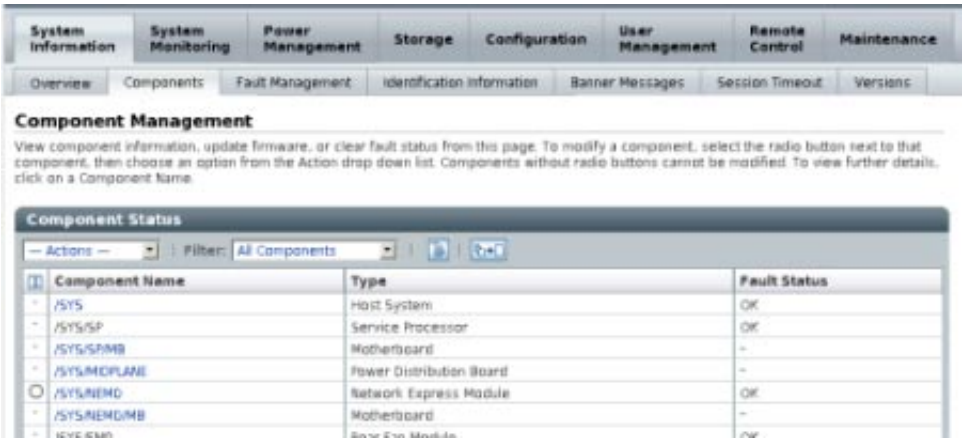
Before You Begin To view fault status, you need the Read Only (o) role enabled.

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

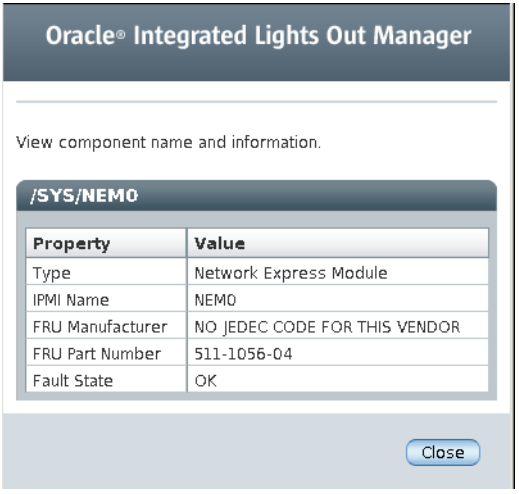
The Fault Management page lists faulted components by ID, FRU, and time stamp. You can access additional information about the faulted component by clicking the faulted component ID.



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



Click on the component name for the item that has Faulted status. Additional information about the faulted component is displayed.



▼ How to View Fault Status With the Command-Line Interface

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

1 **Log in to the 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`**

  `show faulty` is a shortcut for the following 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/    | class                  | fault.chassis.device.missing
 faults/0           |                        |
/SP/faultmgmt/0/    | sunw-msg-id            | SPX86-8000-4S
 faults/0           |                        |
/SP/faultmgmt/0/    | uuid                   | 8acb45f9-fb70-e5d0-b73c-f8e5ea32
 faults/0           |                        | c52a
/SP/faultmgmt/0/    | timestamp              | 2010-02-19/02:58:20
 faults/0           |                        |
/SP/faultmgmt/0/    | product_serial_number  | 12345678-abcdefghi
 faults/0           |                        |
/SP/faultmgmt/0/    | chassis_serial_number  | 12345678-abcdefghi
 faults/0           |                        |
/SP/faultmgmt/0/    | power_supply           | 2
 faults/0           |                        |
/SP/faultmgmt/0/    | event_key              | 2
 faults/0           |                        |
```

Clearing Faults

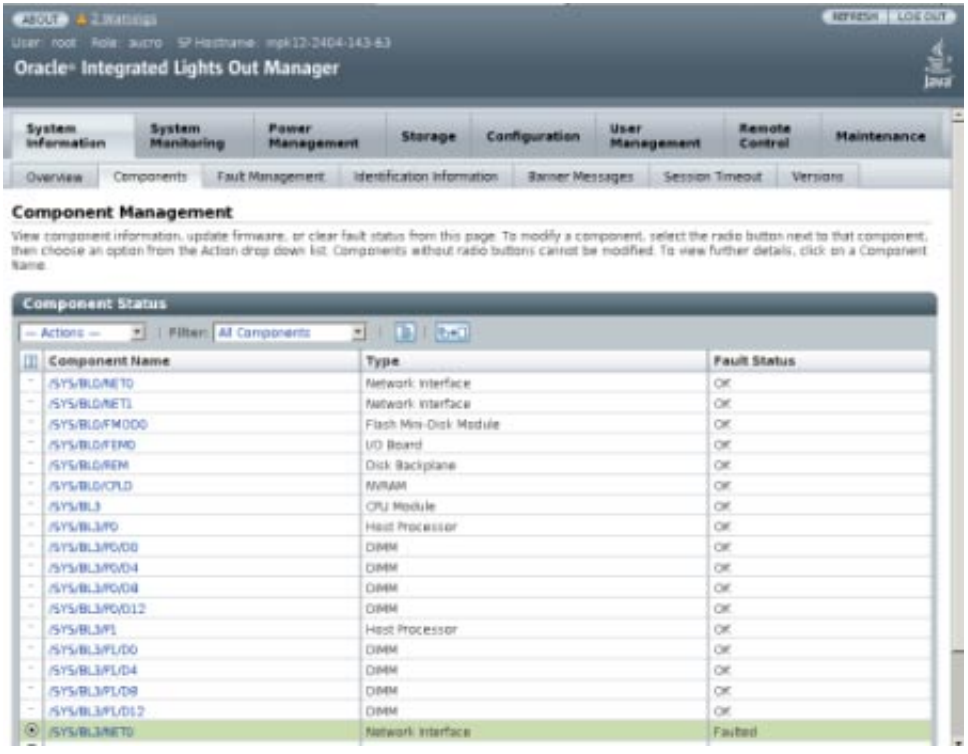
You can clear a fault from ILOM after it has been corrected.

This section covers the following topics:

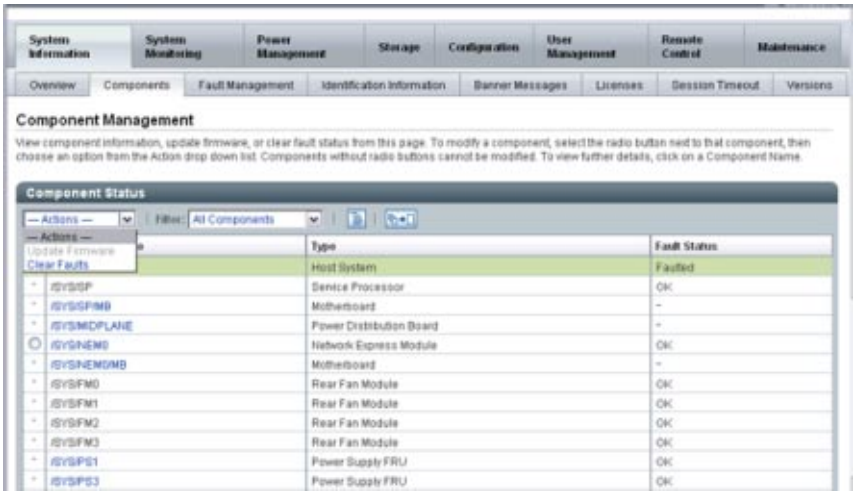
▼ How to Clear Faults in the Web Interface

Before You Begin To clear faults, you need the Administration (a) or above role enabled.

1. **Log in to the ILOM web interface.**
2. **Select the Components sub-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 menu.**



▼ How to Clear Faults Using the Command-Line Interface

Before You Begin To view fault status, you need the Administration (a) or above role enabled.

1. **Log in to the 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 ILOM System Event Log

This section contains the following procedures:

▼ How to View the System Event Log Using the 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 ILOM software, which displays the events in the ILOM web interface. To view event logs:

1 **Log in to the SP as Administrator or Operator to reach the 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 is displayed.

   b. **Type your user name and password.**

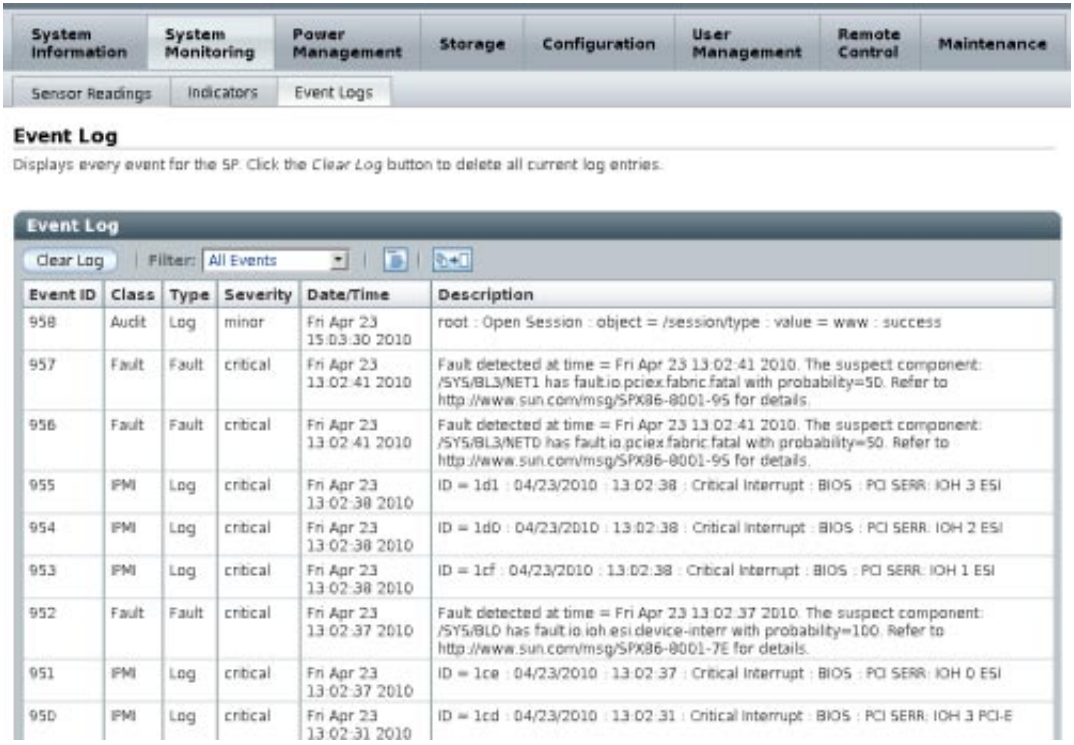
      When you first try to access the ILOM SP, you are prompted to type the default user name and password:

      Default user name: **`root`**

      Default password: **`changeme`**

2 **From the System Monitoring tab, select Event Logs.**

The System Event Logs page is displayed.



3 **View the Event Log page 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 that 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	■ 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 ILOM time, the ILOM clock uses Universal Coordinated Time (UTC).
Description	A description of the event.

Note – The ILOM event log accumulates many types of events, including copies of IPMI entries. Clearing the ILOM event log clears all entries in the log, including the IPMI entries. However, clearing the 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 ILOM Command-Line Interface

Before You Begin To view or clear the event log, you need the Admin (a) role enabled.

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 Fire X4800 Server* 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.

Column Label	Description
Class/Type	■ 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 ILOM time, the 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 ILOM Web Interface" on page 40
- "How to Clear the System Event Log Using the ILOM Command-Line Interface" on page 40

How to Clear the System Event Log Using the ILOM Web Interface

1. **Navigate to the Event Log from the ILOM System Monitoring tab.**
2. **Click the Clear Log button on the bottom of the Event Log page.**

5	Fault	Fault	critical	Wed Jun 30 12:50:15 2010	Fault detected at time = Wed Jun 30 12:50:15 2010. The suspect component: /SYS/BL3/CPLD has fault.chassis.device.mismatch with probability=100. Refer to http://www.sun.com/msg/SPX86-8002-TH for details.
4	Fault	Fault	critical	Wed Jun 30 12:50:15 2010	Fault detected at time = Wed Jun 30 12:50:15 2010. The suspect component: /SYS/BL0/CPLD has fault.chassis.device.mismatch with probability=100. Refer to http://www.sun.com/msg/SPX86-8002-TH for details.
3	Chassis	Action	major	Wed Jun 30 12:49:08 2010	Update inventory starting at node 4S
2	Audit	Log	minor	Wed Jun 30 12:47:55 2010	root : Close Session : object = /session/type : value = shell : success
1	Audit	Log	minor	Wed Jun 30 12:47:39 2010	root : Set : object = /logs/event/clear : value = true : success

Clear Log

A confirmation dialog box appears.

3. **Click OK to clear the entries.**

How to Clear the System Event Log Using the 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 are related to 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**. NTP jumping is enabled to recover quickly from an erroneous update from the BIOS or user. NTP servers provide UTC time. Therefore, if NTP is enabled on the SP, the SP clock is in UTC.
- **Through the CLI, ILOM web GUI, and IPMI.**

Resetting the SP

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

This section contains the following procedures:

- "How to Reset the ILOM SP Using the Web Interface" on page 41
- "How to Reset the ILOM SP Using the Command-Line Interface" on page 42

▼ How to Reset the ILOM SP Using the Web Interface

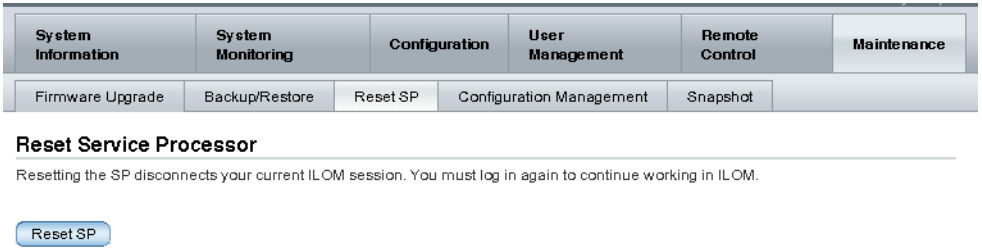
Before You Begin

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

1. **Log in to the ILOM SP web interface.**

2. **Select Reset SP from the Maintenance tab..**

   The Reset Service Processor page appears.



3. **Click the Reset SP button.**

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

▼ How to Reset the 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 ILOM/BIOS firmware, you must reset the ILOM SP.

1 Log in to the ILOM CLI.

2 Type the following command:

-> **`reset /SP`**

The ILOM reboots. The command line interface is unavailable while the ILOM reboots.

Creating a Data Collector Snapshot

The purpose of the ILOM Service Snapshot utility is to collect data for use by Oracle Services personnel 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 ILOM Web Interface

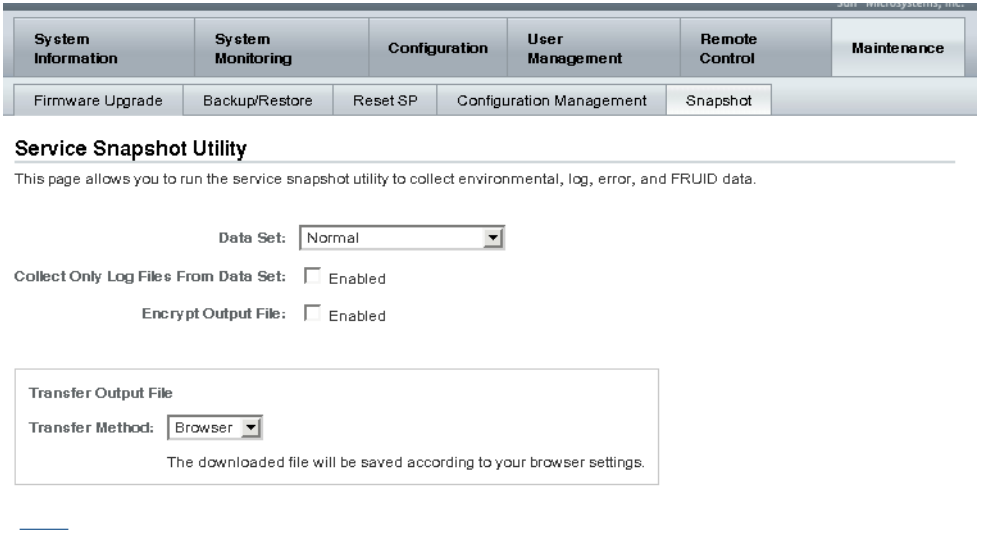
Caution – You should not run this utility unless requested to do so by Oracle Services.

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

1 **Log in to the ILOM web interface.**

2 **Select Snapshot from the Maintenance tab.**

The Service Snapshot Utility page appears.



3 **Select the desired Data Set: Normal, FRU ID Full, or Custom.**

- **Normal - Specifies that 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:**
  - 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 file is saved to the specified directory.

▼ How to Create a Snapshot With the 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 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 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	Specifies the URI of the target directory. The URI format is as follows: *protocol://username:password@host/directory* where *protocol* can be one of these transfer methods: SFTP or FTP. For example, to store the snapshot information in the directory named `data` on the host, define the URI as follows: `ftp://joe:`*mypasswd@host_ip_address*`/data` The directory data is relative to the user login, so the directory would probably be `/home/joe/data`.

Using SunVTS Diagnostics Software

SunVTS is the Sun Validation Test Suite, which 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

The servers are shipped with a Bootable Diagnostics CD that contains Sun VTS software.

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 can be tailored with modifiable test instances and processor affinity features.

The following tests are available in SunVTS:

- Processor
- Memory
- Disk
- Graphics
- Media
- Ioports
- Interconnects
- Network
- Environment
- HBA

SunVTS software has a sophisticated graphical user interface (GUI) that provides test configuration and status monitoring. The user interface can be run on one system to display the Sun VTS 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.

SunVTS Documentation

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

http://www.sun.com/oem/products/vts/index.html

▼ How to Diagnose Server Problems With the Bootable Diagnostics CD

SUNVTS.7.0ps8 or later software is preinstalled with Oracle Solaris 10 Operating System on the server. The server is also shipped with the Bootable Diagnostics CD. This CD is designed so that the server boots from the CD. This CD boots the Solaris operating system and starts SunVTS software. Diagnostics tests run and write output to log files that the service technician can use to determine the problem with the server.

Before You Begin You must have a USB DVD drive, keyboard, and mouse, and as well as a monitor attached to the server for booting over the CD locally. For booting over a Remote Console, see the instructions in the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Fire X4800 Server* for setting up the remote console.

1. **With the server powered on, insert the Bootable Diagnostics CD into the DVD-ROM drive.**
2. **Do one of the following:**
   - **To run SunVTS one time only, press F8 during the reboot and select the DVD-ROM drive as the boot device.**
   - **To change the boot device to the DVD-ROM in the BIOS:**
     a. **Press F2 during the start of the reboot so that you can change the BIOS setting for boot-device priority.**
     b. **When the BIOS Main menu appears, navigate to the BIOS Boot menu.**
        Instructions for navigating within the BIOS screens are available on the BIOS screens.
     c. **On the BIOS Boot menu screen, select Boot Device Priority.**
        The Boot Device Priority screen appears.
     d. **Select the DVD-ROM drive to be the primary boot device.**
     e. **Save and exit the BIOS screens.**

f. Reboot the server.

When the server reboots from the CD in the DVD-ROM drive, the Solaris OS boots, and the SunVTS software starts and opens its first GUI window.

3 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.

Note – The CD takes approximately nine minutes to boot.

---

4 When the test is completed, review the log files generated during the test.

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`.

To view a log file:

a. Click the Log button.

The log file window is displayed.

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 is displayed 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.

Note – To save the log files, you must save them to another networked system or a removable media device. When you use the Bootable Diagnostics CD, the server boots from the CD. Therefore, the test log files are not on the server hard disk drive, and they are deleted when you power cycle the server.

Performing Pc-Check Diagnostic Tests

This section describes how to use the Pc-Check diagnostic tests for Oracle's Sun Fire X4800 server, provided through the Integrated Lights Out Manager (ILOM).

This section contains the following topics:

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. You can access and execute this program from ILOM.

There are three options for running Pc-Check:

- **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.

The default for Run Diagnostics on Boot is Disabled, which means that Pc-Check does not run when you boot the server. The other Pc-Check levels, Enabled, Extended, and Manual, will run Pc-Check automatically when the server boots.

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 59. The results of the automatic tests are also written to nonvolatile memory on the SP, where Oracle Services can access them.

▼ How to Run Pc-Check Diagnostics

1. **Ensure that the host power is off.**

2. **Log in to the 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 is displayed.

   b. **Type your user name and password.**

      When you first try to access the ILOM Service Processor Module, you are prompted to type the default user name and password:

      Default user name: **`root`**

      Default password: **`changeme`**

3. **Select the Remote Control tab and then the Diagnostics tab.**

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

   To access the Pc-Check menu, select Manual.

5. **Click the Save button.**

6. **Power on the host.**

   The host boots up to Pc-Check.

7 **Click the Redirection tab.**

The Launch Redirection screen appears:

8 **Click the Launch Redirection button.**

9 **When redirection is established, return to the ILOM web interface (Remote Control tab) and select the Remote Power Control tab.**

10 **Select Power On from the Select Action drop-down list box .**

11 **Click the Save button.**

The system reboots to the Pc-Check main menu.

12 **Return to the Redirection screen and follow the prompts to open the Pc-Check main menu.**

Pc-Check Main Menu

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 54
- "Advanced Diagnostics" on page 55
- "Burn-In Testing" on page 57
- "Viewing the Pc-Check Results" on page 59

System Information Menu

Click 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.

TABLE 1 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.
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.

TABLE 1 System Information Menu Options *(Continued)*

Option	Description
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.

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 57.

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.

TABLE 2 Advanced Diagnostics Test Menu Options

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.
SCSI	Displays information about SCSI devices and includes a SCSI tests 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.

TABLE 2 Advanced Diagnostics Test Menu Options *(Continued)*

Option	Description
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 57
- "How to Perform Immediate Burn-In Testing" on page 58
- "How to Create and Save Scripts for Deferred Burn-in Testing" on page 59

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, select Immediate Burn-In Testing.**

   The screen displays a list of settings and a Burn-In menu.

2. **From the menu, select 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, select 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 `quick.tst`, `noinput.tst`, or `full.tst` 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	`quick.tst`, `noinput.tst`, or `full.tst`	quick.tst, noiniput.tst, or full.tst
Report File	None	None	User defined
Journal File	None	`D:\noinput.jrl`, `D:\quick.jrl`, or `D:\full.jrl`	User defined
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. **Select 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 58 and the bottom portion of the window lists the Deferred Burn-in menu options.

2 **Select one of the following options:**

- **Change Options**

  Opens the Burn-in Options menu, which enables you to modify the various options listed in TABLE 3-3 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, select 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.**

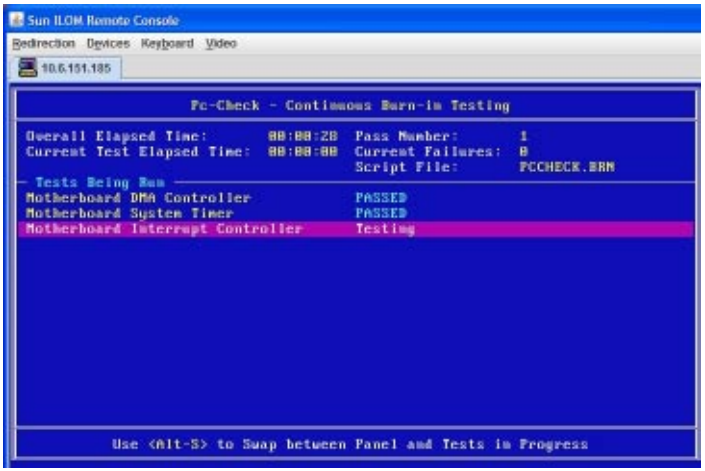
See "How to Perform Immediate Burn-In Testing" on page 58.

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

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 **Select the System Information Menu option on the Pc-Check main menu and press Enter.**

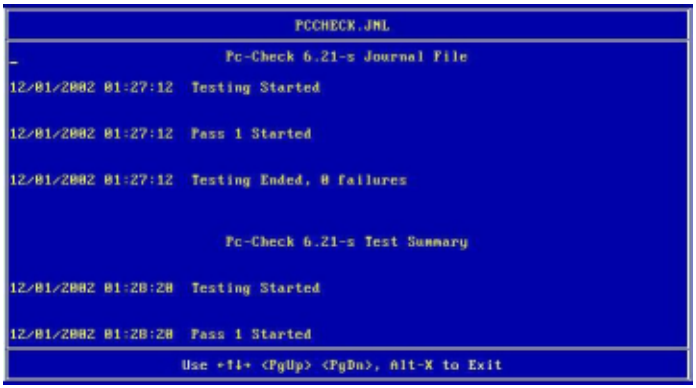
The System Information Menu appears, as shown here:

2 **Select the 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

- **Select Show Results Summary from the main menu 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 Select the Print Results Report option from the Main Menu to print diagnostic test results.

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