Sun™ Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Fire™ X4170, X4270, and X4275 Servers

Sun Microsystems, Inc.
www.sun.com

Part No. 820-7959-11
September 2009, Revision A

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Preface

The *Sun Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers* contains information about ILOM 3.0 that is specific to the Sun Fire X4170, X4270, and X4275 Servers.

For a complete discussion of ILOM 3.0 firmware and its capabilities, along with user procedures, see the ILOM 3.0 Documentation Collection listed in "Related Documentation" on page v.

Product Updates

For product updates that you can download for the Sun Fire™ X4170, X4270, and X4275 Servers, visit the following web site:

`http://www.sun.com/download/index.jsp`

Find the Hardware Drivers section and click x64 Servers & Workstations. The Sun Fire X4170, X4270, and X4275 Servers sites contain updates for firmware and drivers, as well as CD-ROM `.iso` images.

Related Documentation

The related documents listed in the following table are available online at:

`http://docs.sun.com/app/docs/prod/sf.x4170#hic`
`http://docs.sun.com/app/docs/prod/sf.x4270#hic`
`http://docs.sun.com/app/docs/prod/sf.x4275#hic`

Title	Content	Part Number	Format
Sun Fire X4170, X4270, and X4275 Servers Product Notes	Late-breaking information about the server	820-5831	PDF HTML
Sun Fire X4170, X4270, and X4275 Servers Getting Started Guide	Basic installation information for setting up the server	820-5833	PDF Print
Sun Fire X4170, X4270, and X4275 Servers Installation Guide	Detailed installation information for setting up the server	820-5827	PDF HTML Print option
Sun Fire X4170, X4270, and X4275 Servers Linux, VMware, Solaris, and OpenSolaris Operating Systems Installation Guide	Installation instructions for the Linux, VMware, and Solaris operating systems	820-5828	PDF HTML
Sun Fire X4170, X4270, and X4275 Servers Windows Operating System Installation Guide	Installation instructions for the Windows Server operating system	820-5829	PDF HTML
Sun Installation Assistant for Windows and Linux User's Guide	Instructions for using the Sun Installation Assistant to install the Windows and Linux operating systems	820-3357	PDF HTML
Sun Fire X4170, X4270, and X4275 Servers Service Manual	Information and procedures for maintaining and upgrading the server	820-5830	PDF HTML
Sun x64 Servers Diagnostics Guide	Information for diagnosing and troubleshooting the server	820-6750	PDF HTML
x64 Servers Utilities Reference Manual	Information for using applications and utilities common to x64 servers	820-1120	PDF HTML
Sun Integrated Lights Out Manager (ILOM) 3.0.6 Feature Update and Release Notes	ILOM 3.0 software release notes	820-7329	PDF
Sun Integrated Lights Out Manager (ILOM) 2.0 User's Guide Procedures Guide	ILOM 2.0 features and tasks that are common to servers and server modules that support ILOM.	820-1188	PDF HTML

Title	Content	Part Number	Format
Sun Integrated Lights Out Manager (ILOM) 2.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers	ILOM 2.0 information that is specific to the Sun Fire X4170, X4270, and X4275 Servers	820-7629	PDF HTML
Sun Integrated Lights Out Manager 3.0 Documentation Collection	These documents cover ILOM features and tasks that are common to servers and server modules that support ILOM 3.0.	820-5523 820-6410 820-6411 820-6412 820-6413	PDF HTML
Sun Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers	ILOM 3.0 information that is specific to the Sun Fire X4170, X4270, and X4275 Servers	820-7959	PDF HTML
Sun Fire X4170, X4270, and X4275 Servers Safety and Compliance Guide	Hardware safety and compliance information for the server	820-5832	PDF
Important Safety Information for Sun Hardware Systems	Multilingual hardware safety and compliance information for all Sun hardware system	816-7190	Print

Translated versions of some of these documents are available at the web site described above in French, Simplified Chinese, and Japanese. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

Documentation, Support, and Training

Sun Function	URL
Sun documentation	http://docs.sun.com
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Training	http://www.sun.com/training/

Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:

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Typographic Conventions

Typeface*	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, enter `rm` *filename*.

* The settings on your browser might differ from these settings.

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CHAPTER 1

ILOM 3.0 Feature Sets

This chapter provides a brief overview about ILOM, as well as defines the purpose of ILOM's common and platform features offered in ILOM 3.0. The following topics are discussed in this chapter:

- "ILOM Overview" on page 2
- "Supported Platform Firmware" on page 2
- "ILOM Features Supported" on page 3
- "ILOM Platform-Specific Features" on page 4

ILOM Overview

Integrated Lights Out Manager (ILOM) is system management firmware that is preinstalled on all x64-based servers. ILOM enables you to actively manage and monitor components installed in your server. ILOM provides a browser-based interface and a command-line interface, as well as SNMP and IPMI interfaces. For general information about ILOM's use and capabilities, see the ILOM Documentation Collection, which comprises the following documents:

- *Sun Integrated Lights Out Manager (ILOM) 3.0.6 Feature Updates and Release Notes* (820-7329)
- *Sun Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide* (820-6410)
- *Sun Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide* (820-6411)
- *Sun Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide* (820-6412)
- *Sun Integrated Lights Out Manager (ILOM) 3.0 SNMP and IPMI Procedures Guide* (820-6413)

These documents are available online at:
`http://docs.sun.com/app/docs/prod/int.lights.mgr30#hic`

For information about establishing a first time connection to ILOM on your server's service processor (SP), see "Setting Up ILOM" in the Sun Fire X4170, X4270, and X4275 Servers Installation Guide (820-5827).

Supported Platform Firmware

TABLE 1-1 identifies the supported ILOM and BIOS firmware versions supported on the servers.

TABLE 1-1 Supported Platform Firmware

ILOM SP Version	Host BIOS Version	Applicable Hardware
3.0.6.10	07.06.02.15	Sun Fire X4170, X4270, and X4275 Servers

ILOM Features Supported

This section describes the ILOM features supported in this release of ILOM. The following topics are discussed here:

- "Supported ILOM 3.0 Feature Set" on page 3
- "New ILOM 3.0.6 Features Supported in this Release" on page 3

Supported ILOM 3.0 Feature Set

The Sun Fire X4170, X4270, and X4275 Servers support the entire ILOM feature set provided in ILOM 3.0.

For information about the use of the ILOM 3.0 feature set, see the ILOM Documentation Collection listed in the "ILOM Overview" on page 1-2.

New ILOM 3.0.6 Features Supported in this Release

The Sun Fire X4170, X4270, and X4275 Servers support the new features included in the 3.0.6 release of ILOM. For a detailed description of these new features, refer to the *Sun Integrated Lights Out Manager (ILOM) 3.0.6 Feature Updates and Release Notes* (820-7329). The following sections list the new features included in ILOM 3.0.6.

- "Storage Monitoring for HDDs and RAID Controllers" on page 3
- "New or Enhanced Power Management Features" on page 4

Storage Monitoring for HDDs and RAID Controllers

As of version 3.0.6, ILOM supports additional storage monitoring functions for viewing and monitoring storage details that are associated with system hard disk drives (HDDs) and RAID controllers. These enhanced storage property details are available in ILOM from the ILOM CLI.

Note – For the storage monitoring functions to work on your server, you must have the Management Pack v1.2 installed. For more information on the Management Pack, see the *Sun Server Hardware Management Pack Users Guide* (820-7621).

This feature provides the following capabilities:

- Storage Properties Shown for HDDs and RAID Controllers
- RAID Status Definitions for Physical and Logical Drives
- View and Monitor Storage Details for HDDs and RAID Controllers

New or Enhanced Power Management Features

As of version 3.0.6, ILOM supports the following new or enhanced common power management features:

- Component Allocation Power Distribution
- Power Budget
- Power Supply Redundancy for CMM Systems
- Platform Specific CMM Power Metrics

ILOM Platform-Specific Features

ILOM 3.0 operates on many platforms, supporting features that are common to all platforms. Some ILOM 3.0 features belong to a subset of platforms and not to all. This Supplement describes the features that belong to the Sun Fire X4170, X4270, and X4275 Servers, augmenting the set of common features described in the ILOM 3.0 documentation.

Chapter 2 of this Supplement provides detailed information about the ILOM platform-specific features supported on the Sun Fire X4170, X4270, and X4275 Servers.

CHAPTER 2

ILOM Platform Features for the Sun Fire X4170, X4270, and X4275 Servers

This chapter provides platform-specific information related to ILOM 3.0 running on the Sun Fire X4170, X4270, and X4275 Servers. For ILOM 3.0, the same additional platform-specific features are supported as were supported for ILOM 2.0. These features are described in this chapter.

The following topics are covered in this chapter:

- "ILOM Sideband Management" on page 5
- "Switch Serial Port Output Between SP and Host Console" on page 12
- "Clear Server Faults" on page 14
- "Server Chassis Intrusion Sensors" on page 15
- "Sensors Reference Information" on page 17

Note – The features described in this chapter are supported in addition to the common ILOM 3.0 features supported for all x64 servers.

ILOM Sideband Management

By default, you connect to the server's service processor (SP) using the out-of-band network management port (NET MGT). The ILOM sideband management feature enables you to select either the NET MGT port or one of the server's Gigabit Ethernet ports (NET 0, 1, 2, 3), which are in-band ports, to send and receive ILOM commands to and from the server SP. In-band ports are also called sideband ports.

The advantage of using a sideband management port to manage the server's SP is that one less cable connection and one less network switch port is needed. In configurations where a great number of servers are being managed, such as data centers, sideband management can represent a significant savings in hardware and network utilization.

You can configure sideband management using either the web interface, the command-line interface (CLI), the BIOS, or IPMI. For special considerations and configuration instructions, see the following sections:

- "Special Considerations for Sideband Management" on page 6
- "Configure Sideband Management Using the Web Interface" on page 7
- "Configure Sideband Management Using the CLI" on page 8
- "Configure Sideband Management Using the Host BIOS Setup Utility" on page 9

Special Considerations for Sideband Management

When sideband management is enabled in ILOM, the following conditions might occur:

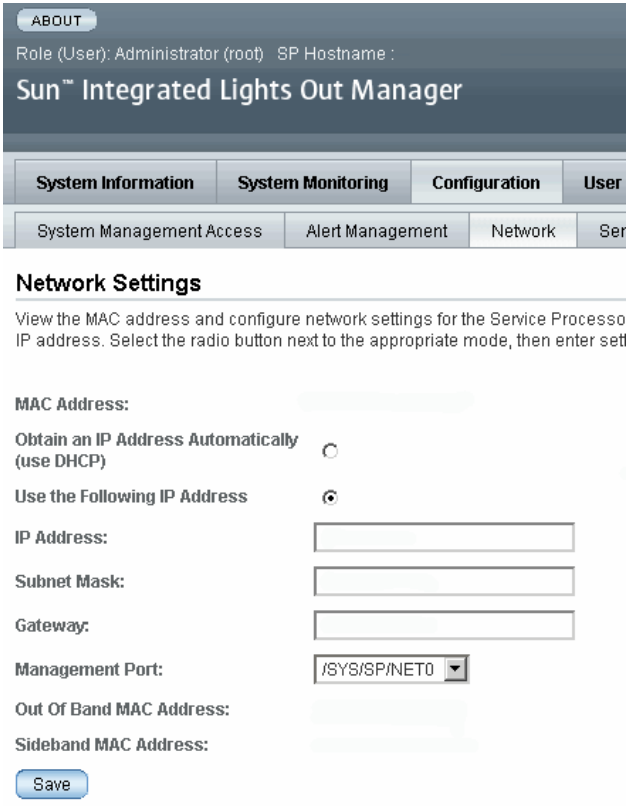
- Connectivity to the server SP might be lost when the SP management port configuration is changed while you are connected to the SP using a network connection, such as SSH, web, or Sun ILOM Remote Console.
- In-chip connectivity between the SP and the host operating system might not be supported by the on-board host Gigabit Ethernet controller. If this condition occurs, use a different port or route to transmit traffic between the source and destination targets instead of using L2 bridging/switching.
- Server host power cycles might cause a brief interruption of network connectivity for server Gigabit Ethernet ports (NET 0, 1, 2, 3) that are configured for sideband management. If this condition occurs, configure the adjacent switch/bridge ports as host ports.

Note – If the ports are configured as switch ports and participate in the Spanning Tree Protocol (STP), you might experience longer outages due to spanning tree recalculation.

▼ Configure Sideband Management Using the Web Interface

1. **Log in to the ILOM web interface.**
2. **Select Configuration -> Network.**

   The Network Settings page appears.



3. **In the Network Settings page, do the following:**

   a. **Select DHCP to acquire the IP address automatically or specify the appropriate IP address.**

   b. **To select a sideband management port, click the Management Port drop-down list and select the desired management port.**

      The drop-down list enables you to change to any one of the four Gigabit Ethernet ports, `/SYS/MB/NET`*n*, where *n* is 0 to 3. The SP NET MGT port, `/SYS/SP/NET0`, is the default.

   c. **Click Save for the changes to take effect.**

▼ Configure Sideband Management Using the CLI

1. **Log in to ILOM using the CLI.**

Note – Using a serial connection for this procedure eliminates the possibility of losing connectivity during sideband management configuration changes.

---

2. **If you logged in using the serial port, you can assign a static IP address.**

   For instructions, see "Use the Serial Connection to Change the ILOM SP IP Address" in the *Sun Fire X4170, X4270, and X4275 Servers Installation Guide* (820-5827).

3. **To show the current port settings, type:**

   -> **show /SP/network**

   The network properties appear. For example:

```
/SP/network
    Targets:
    Properties:
        commitpending = (Cannot show property)
        dhcp_server_ip = none
        ipaddress = xx.xx.xx.xx
        ipdiscovery = static
        ipgateway = xx.xx.xx.xx
        ipnetmask = xx.xx.xx.xx
        macaddress = 11.11.11.11.11.86
        managementport = /SYS/SP/NET0
        outofbandmacaddress = 11.11.11.11.11.86
        pendingipaddress = xx.xx.xx.xx
        pendingipdiscovery = static
        pendingipgateway =  xx.xx.xx.xx
        pendingipnetmask =  xx.xx.xx.xx
        pendingmanagementport = /SYS/SP/NET0
        sidebandmacaddress = 11.11.11.11.11.87
        state = enabled
```

   In the above output the current active `macaddress` is the same as the SP's `outofbandmacaddress` and the current active `managementport` is set to the default (`/SYS/SP/NET0`).

4. **To set the SP management port to a sideband port, type the following commands:**

   -> **set /SP/network pendingmanagementport=/SYS/MB/NET***n*

   Where *n* equals 0, 1, 2, or 3.

   -> **set commitpending=true**

5. **To view the change, type:**

   -> **show /SP/network**

   The network properties appear and show that the change has taken effect. For example:

```
/SP/network
    Targets:
    Properties:
        commitpending = (Cannot show property)
        dhcp_server_ip = none
        ipaddress = xx.xx.xx.xx
        ipdiscovery = static
        ipgateway = xx.xx.xx.xx
        ipnetmask = xx.xx.xx.xx
        macaddress = 11.11.11.11.11.87
        managementport = /SYS/MB/NETn
        outofbandmacaddress = 11.11.11.11.11.86
        pendingipaddress = xx.xx.xx.xx
        pendingipdiscovery = static
        pendingipgateway =  xx.xx.xx.xx
        pendingipnetmask =  xx.xx.xx.xx
        pendingmanagementport = /SYS/MB/NETn
        sidebandmacaddress = 11.11.11.11.11.87
        state = enabled
```

In the above output the `macaddress` matches the `sidebandmacaddress`, and the `managementport` matches the `pendingmanagementport`.

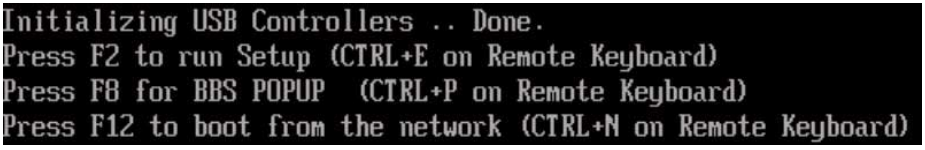
▼ Configure Sideband Management Using the Host BIOS Setup Utility

You can access the BIOS Setup utility screens from the following interfaces:

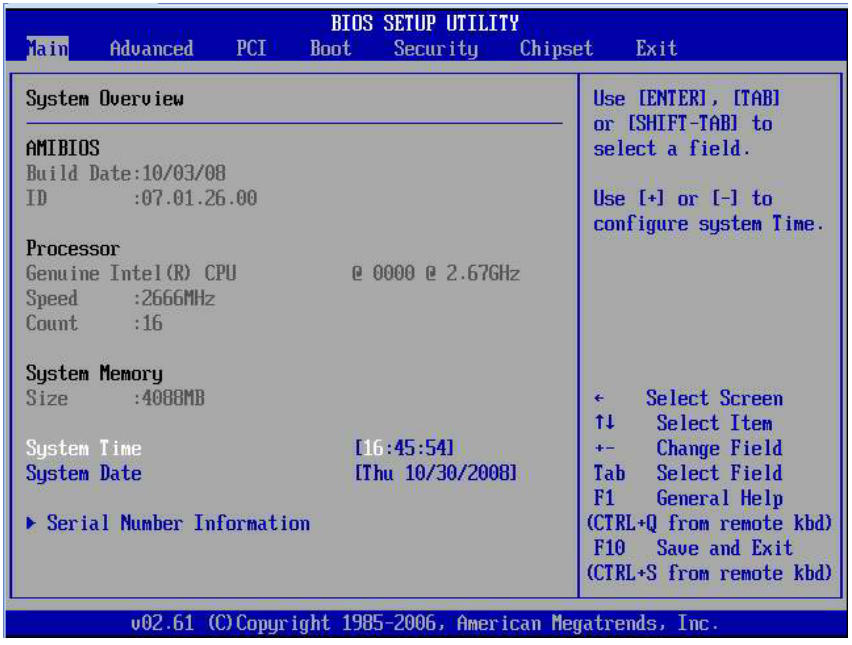
- Use a USB keyboard, mouse, and VGA monitor connected directly to the server.
- Use a terminal (or terminal emulator connected to a computer) through the serial port on the back panel of the server.
- Connect to the server using the Sun ILOM Remote Console.

To configure sideband management using the host BIOS Setup utility, perform the following steps:

1. **Power on or power cycle the server.**
2. **To enter the BIOS Setup utility, press the F2 key while the system is performing the power-on self-test (POST).**

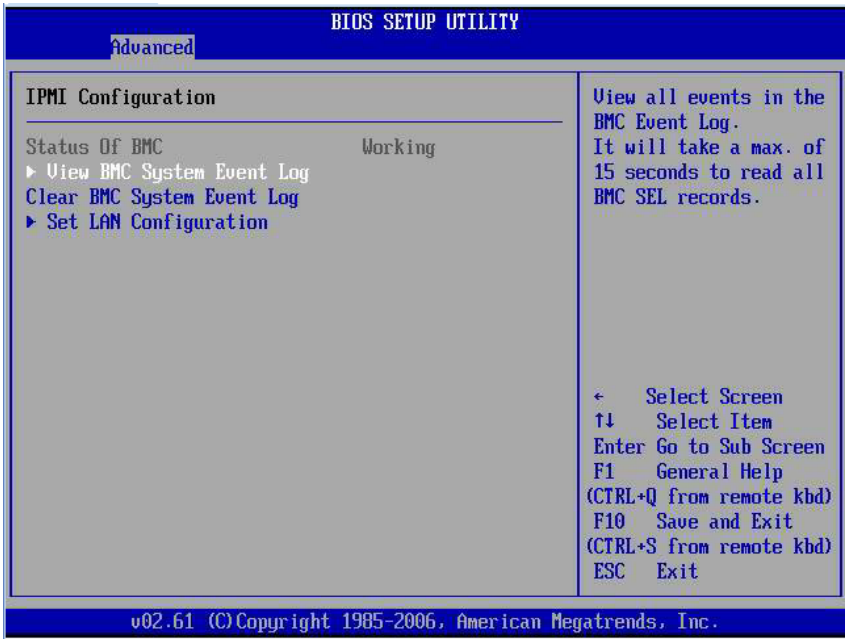


When BIOS is started, the main BIOS Setup utility top-level screen appears. This screen provides seven menu options across the top of the screen.



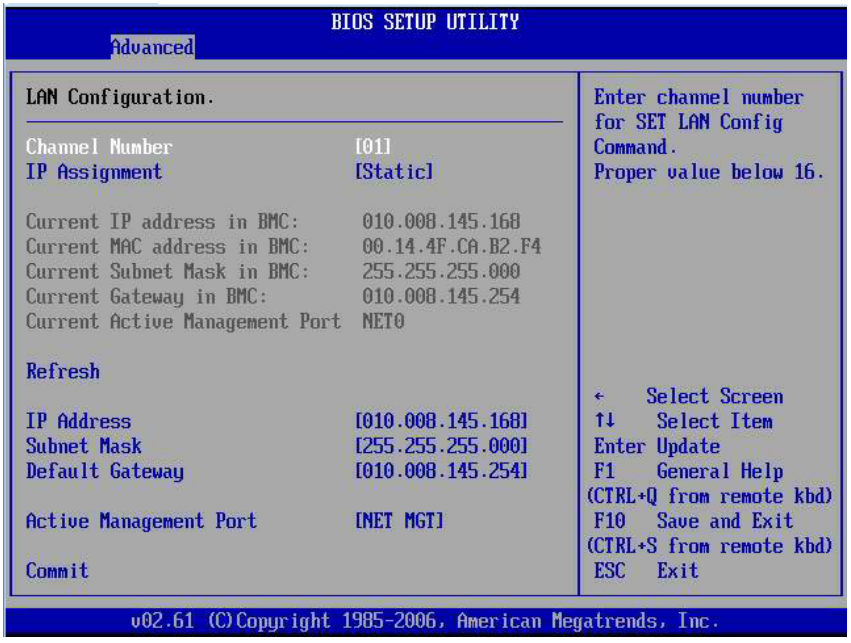
3. **In the main screen, select Advanced --> IPMI Configuration.**

   The IPMI Configuration screen appears.



4. **In the IPMI Configuration screen, select the Set LAN Configuration option.**

   The LAN Configuration screen appears.



5. **In the LAN Configuration screen, do the following:**

   a. **Use the left and right keys to select the IP Assignment option and set it to DHCP.**

   b. **Use the left and right keys to select the Active Management Port option and set the port to a sideband management port (NET0, NET1, NET2, NET3).**

      The NET MGT port is the default.

   c. **Select Commit for the change to take effect.**

Switch Serial Port Output Between SP and Host Console

You can switch the serial port output of the Sun Fire X4170, X4270, and X4275 Servers between the SP console (SER MGT) and the host console (COM1). By default, the SP console is connected to the system serial port. This feature is beneficial for Windows kernel debugging, as it enables you to view non-ASCII character traffic from the host console.

You can switch serial port output using either the ILOM web interface or the ILOM command-line interface (CLI). For instructions, see the following sections:

- "Switch Serial Port Output Using the Web Interface" on page 13
- "Switch Serial Port Output Using the CLI" on page 14

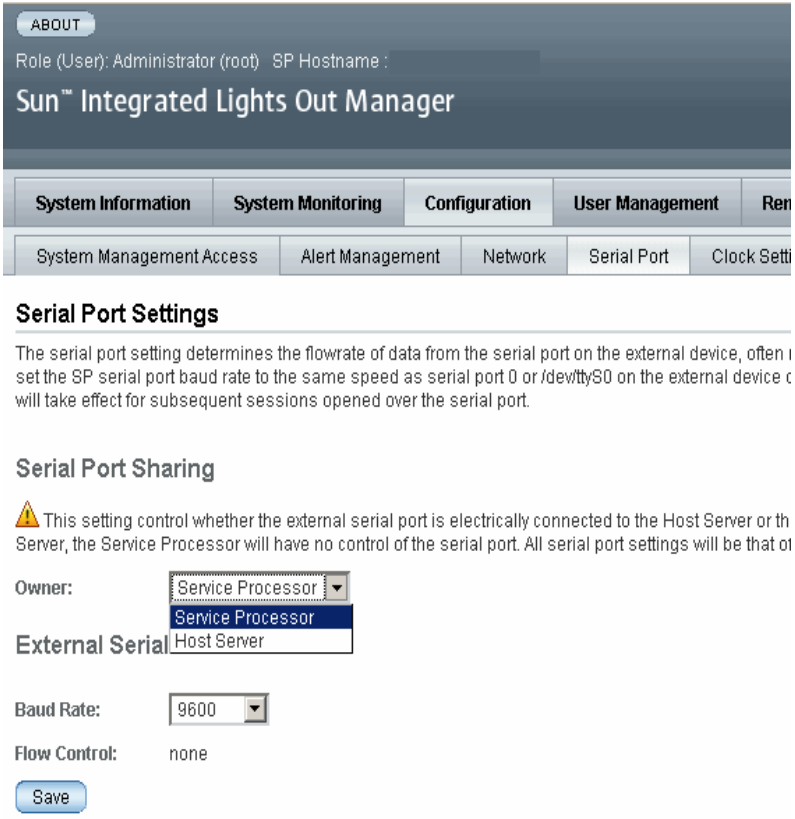
Caution – You should set up the network on the SP before attempting to switch the serial port owner to the host server. If a network is not set up, and you switch the serial port owner to the host server, you will be unable to connect using the CLI or web interface to change the serial port owner back to the SP. To change the serial port owner back to the SP, you must use the ILOM Preboot Menu to restore access to the serial port over the network. For instructions, refer to "Restoring Access to the Serial Console" in the *Sun Fire X4170, X4270, and X4275 Servers Service Manual* (820-5830).

▼ Switch Serial Port Output Using the Web Interface

To switch the serial port output using the ILOM web interface, perform the following steps:

1. **Log in to the ILOM web interface.**
2. **In the ILOM web interface, select Configuration --> Serial Port.**

   The Serial Port Settings page appears.



3. **To select a serial port owner, click the Owner drop-down list and select the desired serial port owner.**

   The drop-down list enables you to select either `Service Processor` or `Host Server`.

   By default, `Service Processor` is selected.

4. **Click Save for your change to take effect.**

▼ Switch Serial Port Output Using the CLI

1. **Log in to the ILOM CLI.**
2. **To set the serial port owner, type:**

   -> **set /SP/serial/portsharing/owner=host**

   By default, `owner=SP`.

Clear Server Faults

When a server component fails, the server generates a component-specific fault that is captured by the ILOM SP. Some faults are cleared automatically when the failed component is replaced, but faults generated for components that are *not* hot-serviceable have to be cleared manually. You can use either the ILOM web interface or the command-line interface (CLI) to manually clear faults.

For the Sun Fire X4170, X4270, and X4275 Servers, the following types of faults must be cleared manually after the faulty component is replaced:

- DIMM faults
- CPU faults
- Motherboard faults (when motherboard is not replaced)
- PCIe faults

In addition, the following fault does not require replacement of a faulty part; however, user action is needed to clear it:

- `fault.security.integrity-compromised@/sys/sp`

  This fault is generated when the server's top cover is removed while the AC power cords are still connected to the power supply, that is, power is not completely removed from the server.

Caution – If the `fault.security.integrity-compromised@/sys/sp` fault is not cleared, the server SP will operate in a degraded mode and the server's ability to determine DIMM inventory and diagnose DIMM faults accurately is compromised. For more information on the effects on the server when this fault is not cleared, see the *Sun Fire X4170, X4270, and X4275 Servers Service Manual* (820-5830).

When clearing faults, give consideration to the following:

- When clearing faults for memory DIMMs, note that the DIMM faults can be either system wide (`/SYS/MB`) or on a per DIMM basis (`/SYS/MB/P`*n*`/D`*n*).
- PCIe faults can cover one or more of the following components: `/SYS/MB/NET`*n* and `/SYS/MB/RISER`*n*`/PCIE`*n*.

The procedure for clearing a fault differs depending on the type of fault:

- To clear the `fault.security.integrity-compromised@/sys/sp` fault, replace the server's top cover and either reboot the server's SP or remove the AC power cords, and then reconnect the cords.
- To clear DIMM, CPU, motherboard, and PCIe faults, access the server's ILOM SP and clear the fault for the failed component. For information on how to use the ILOM web interface or the CLI to clear server faults, see the *Sun Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide* (820-6412) and *Sun Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide* (820-6411).

Server Chassis Intrusion Sensors

The `/SYS/INTSW` sensor and the `/SYS/SP/SP_NEEDS_REBOOT` sensor are asserted when the server's top cover is removed while power is being applied to the server. This is an improper service action so these sensors serve to alert you to any unauthorized and inadvertent removal of the server's cover. Thus, these sensors enable system administrators to have confidence that the physical integrity of the server has not been violated. This is particularly beneficial when the server is in a remote or uncontrolled location.

How the `/SYS/INTSW` Sensor Works

The `/SYS/INTSW` sensor is asserted when the chassis intrusion switch trips while the server is powered-on. If the AC power cords are connected to the server, power is being applied to the server. Even when you shut down the server's host, power is still being applied to the server. The only way to remove power from the server completely is to disconnect the server's AC power cords.

The chassis intrusion switch will trip if the server's cover has been removed, the switch itself is misaligned, or the cover is not properly seated. This sensor is de-asserted when the integrity of the server's chassis is restored, that is, when the removed cover is properly reinstalled returning the chassis intrusion switch to its closed state.

Caution – Removing the server's top cover while the power cord is connected to the system is not an authorized service action. Proper service action requires that host and SP shutdown operations be observed and that the power cord be disconnected from the system before the cover is opened. If proper service actions are taken, you should not see either the `/SYS/INTSW` or `/SYS/SP/SP_NEEDS_REBOOT` sensors asserted unless there are other issues, such as a misaligned chassis intrusion switch.

How the `/SYS/SP/SP_NEEDS_REBOOT` Sensor Works

Like the `/SYS/INTSW` sensor, the `/SYS/SP/SP_NEEDS_REBOOT` sensor is asserted when the server's chassis intrusion switch is tripped while power is being applied to the server. Shutting down the server's host or shutting down the server by pressing the Power button does not shut down the SP because the SP continues to run when the server's power is placed in Standby mode. The only way to remove power from the SP is to disconnect the AC power cords. To clear this sensor, you must replace the server's cover and either reboot or power cycle the SP.

Assertion of the `/SYS/SP/SP_NEEDS_REBOOT` sensor indicates that the SP has been placed in a degraded mode of operation. In degraded more, ILOM stops taking DIMM inventory. This action is taken as a safety precaution because the SP has no way of knowing the real configuration of the server's memory. For example, some of the DIMMs could have been removed while the server's cover was improperly removed. To protect against such an occurrence, the SP is placed in the degraded mode.

Note – If the chassis intrusion switch is not properly aligned or the server's cover has not been properly seated, both the `/SYS/INTSW` and `/SYS/SP/SP_NEEDS_REBOOT` sensors will be asserted and the SP will operate in a degraded mode.

TABLE 2-1 shows how the /SYS/INTSW sensor and the /SYS/SP/SP_NEEDS_REBOOT sensor work together to indicate the state of the server.

TABLE 2-1 Server Condition as Indicated by the /SYS/INTSW and /SYS/SP/SP_NEEDS_REBOOT Sensors

/SYS/INTSW	/SYS/SP/SP_NEEDS_REBOOT	Server Condition
De-asserted	De-asserted	Normal system state.
Asserted	Asserted	The server's top cover was opened while the SP was running. The server's DIMM inventory can no longer be considered valid so the SP is placed in a degraded mode of operation. This condition can also be caused by a misaligned chassis intrusion switch or an improperly seated cover.
De-asserted	Asserted	The server's top cover has been replaced, but the SP was not subsequently rebooted. The server's DIMM inventory can no longer be considered valid so the SP is placed in a degraded mode of operation. The SP needs to be rebooted while the host power is held off before the DIMM inventory will be valid. **Note -** The server's host can be powered on in this state.

Sensors Reference Information

The server includes several of sensors that report on hardware conditions. Many of the sensor readings are used to adjust the fan speeds and perform other actions, such as illuminating LEDs and powering off the server.

This section describes the sensors that ILOM monitors for the Sun Fire X4170, X4270, and X4275 Servers.

The following types of sensors are described:

- "Temperature Sensors" on page 18
- "Power Supply Fault Sensors" on page 18
- "Fan and Security Sensors" on page 19
- "Power Supply Unit Current, Voltage, and Power Sensors" on page 20
- "Entity Presence Sensors" on page 20

Note – For information about how to obtain sensor readings or to determine the state of system indicators in ILOM, see the *Sun Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide* (820-6412) and *Sun Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide* (820-6411).

Temperature Sensors

TABLE 2-2 describes the environmental sensors.

TABLE 2-2 Temperature Sensors

Sensor Name	Sensor Type	Description
/SYS/MB/T_AMB	Temperature	Motherboard ambient temperature sensor **Note -** This sensor is located on the front end of the motherboard directly behind the storage drives.
/SYS/T_AMB	Temperature	System ambient temperature sensor **Note -** This sensor is located on the underside of the fan board.

Power Supply Fault Sensors

TABLE 2-3 describes the power supply fault sensors. In the table, *n* designates the numbers 0-1.

TABLE 2-3 Power Supply Sensors

Sensor Name	Sensor Type	Description
/SYS/PS*n*/PWROK	Fault	Power supply *n* DC power OK
/SYS/PS*n*/VINOK	Fault	Power supply *n* input voltage OK
/SYS/PS*n*/CUR_FAULT	Fault	Power supply *n* current fault
/SYS/PS*n*/VOLT_FAULT	Fault	Power supply *n* voltage fault
/SYS/PS*n*/FAN_FAULT	Fault	Power supply *n* fan fault
/SYS/PS*n*/TEMP_FAULT	Fault	Power supply *n* temperature fault

Fan and Security Sensors

TABLE 2-4 describes the fan and security sensors. In the table, *n* designates numbers 0, 1, 2, etc.

TABLE 2-4 Fan and Security Sensors

Sensor Name	Sensor Type	Description
/SYS/FB*n*/FM*n*/F*n*/TACH	Fan speed	Fan board *n*; Fan module *n*; Fan *n* tachometer
/SYS/INTSW	Physical security	This sensor tracks the state of the chassis intrusion switch. If the server's top cover is opened while the AC power cords are still connected so that power is being applied to the server, this sensor asserts. If the top cover is subsequently replaced, this sensor is de-asserted. For more information, see "Server Chassis Intrusion Sensors" on page 15.
/SYS/SP/SP_NEEDS_REBOOT	Physical security	This sensor asserts when the server's cover is removed while the AC power cords are still connected so that power is being applied to the server. However, this sensor is not cleared by merely replacing the cover. This sensor indicates a server fault that must be cleared; otherwise, the SP will operate in a degraded mode. To clear this fault, replace the server's top cover, power down the server's host, and reboot the server's SP. For more information, see "Server Chassis Intrusion Sensors" on page 15.

Power Supply Unit Current, Voltage, and Power Sensors

TABLE 2-5 describes the power supply unit current, voltage, and power sensors. In the table, *n* designates numbers 0-1.

TABLE 2-5 Power Supply Unit Current, Voltage, and Power Sensors

Sensor Name	Sensor Type	Description
/SYS/PS*n*/V_IN	Voltage	Power supply unit *n* AC input voltage sensor
/SYS/PS*n*/I_IN	Current	Power supply unit *n* AC input current sensor
/SYS/PS*n*/V_OUT	Voltage	Power supply unit *n* DC output voltage sensor
/SYS/PS*n*/I_OUT	Current	Power supply unit *n* DC output current sensor
/SYS/PS*n*/INPUT_POWER	Power	Power supply unit *n* input power sensor
/SYS/PS*n*/OUTPUT_POWER	Power	Power supply unit *n* output power sensor
/SYS/VPS	Power	Server total input power consumption sensor

Entity Presence Sensors

TABLE 2-6 describes the entity presence sensors. In the table, *n* designates numbers 0-n.

TABLE 2-6 Presence Sensors

Sensor Name	Sensor Type	Description
/SYS/DBP/HDD*n*/PRSNT	Entity presence	Hard drive device present monitor
/SYS/DBP/PRSNT	Entity presence	Disk backplane present monitor
/SYS/FB*n*/FM*n*/PRSNT	Entity presence	Fan board *n*; Fan module *n* present monitor
/SYS/FB*n*/PRSNT	Entity presence	Fan board present monitor
/SYS/MB/P*n*/PRSNT	Entity presence	Motherboard; CPU*n* present monitor

TABLE 2-6 Presence Sensors *(Continued)*

Sensor Name	Sensor Type	Description
/SYS/MB/P*n*/D*n*/PRSNT	Entity presence	Motherboard; CPU*n*; Memory DIMM *n* present monitor
/SYS/MB/RISER*n*/PRSNT	Entity presence	PCIe riser *n* present monitor
/SYS/MB/RISER*n*/*PCIen*/PRSNT	Entity presence	PCIe card *n* present monitor
/SYS/PS*n*/PRSNT	Entity presence	Power supply *n* present monitor
/SYS/SAS_EXP/PRSNT	Entity presence	SAS Expander Card present monitor **Note -** This card connects to the disk drive cage backplane and the SAS cable connects to it. **Note -** This sensor is only supported on the Sun Fire X4275 Server.

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