# Sun Integrated Lights Out Manager 3.0 Supplement for Sun Blade™ X6450 Server Module

Sun Microsystems, Inc.
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# Contents

# Preface

The *Sun Integrated Lights Out Manager 3.0 Supplement for Sun Blade X6450 Server Module* contains information about Integrated Lights Out Manager (ILOM) 3.0 that is specific to the Sun Blade™ X6450 server module.

For a complete discussion of ILOM 3.0 and its capabilities along with user procedures, see the ILOM 3.0 documentation collection and the *Sun Blade X6450 Server Module Product Notes*.

## Related Documentation

The document set for the Sun Blade X6450 server module is described in the *Where To Find Sun Blade X6450 Server Module Server Documentation* sheet that is packed with your system. You can also find the documentation at `http://docs.sun.com`.

Translated versions of some of these documents are available at `http://docs.sun.com`. Select a language from the drop-down list and navigate to your document collection using the Product category link. Available translations include Simplified Chinese, French, and Japanese.

English documentation is revised more frequently and might be more up-to-date than the translated documentation. For all Sun documentation, go to `http://docs.sun.com`.

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CHAPTER 1

# Introduction

This supplement provides platform-specific information related to ILOM 3.0 running on the Sun Blade X6450 server module.

The following topics are covered in this supplement:

- Chapter 2, Firmware Update Procedures
- Chapter 3, Sensor Definitions

## ILOM 3.0 Features Supported

The Sun Blade X6450 server module supports the entire ILOM 3.0 feature set except the following:

- Features specific to rack-mounted systems. For example, there is no intrusion detection.
- For ILOM 3.0.3 it does not support:
  - Power consumption history.
  - Clear faults after replacement of faulted component.
- For ILOM 3.0.6, it does not support storage monitoring for HDDs and RAID controllers (also known as Storage Viewer).

Please refer to your ILOM documentation collection for information about ILOM features:

http://docs.sun.com/app/docs/coll/ilom3.0

CHAPTER 2

# Firmware Update Procedures

## Overview

This chapter provides procedures for updating (flashing) the firmware that resides on:

- The server itself (BIOS)
- The server's Service Processor (ILOM)

It also provides procedures for recovering the BIOS or ILOM images.

TABLE 2-1 shows the tasks, the methods used, and the sections that describe them.

**TABLE 2-1** Tasks, Methods, and Sections

| To Do This Task | Use This Method | Described in This Section |
|---|---|---|
| BIOS Upgrade | SP CLI or web GUI | "Using the SP to Update Firmware" on page 4 |
| BIOS Recovery | DOS boot with `Afudos` (updates BIOS only) | "Recovering the BIOS Firmware" on page 5 for Afudos |
| ILOM Upgrade | SP CLI or web GUI | "Using the SP to Update Firmware" on page 4 |
| ILOM Recovery | `SOCFLASH` | "Recovering the ILOM Firmware" on page 6 |

**Note –** The ILOM is also known as the service processor (SP), and it is sometimes referred to in the user interface as the BMC.

To ensure proper operation, it is recommended that you synchronize your firmware updates, so that if you update one, you should update the others as well.

- Using the SP (ILOM) updates both the ILOM and BIOS firmware, and the CPLD.
- If you recover the ILOM using `SOCFLASH`, or if you recover the BIOS using `Afudos`, after the recovery, you should run the SP update procedure to synchronize the ILOM and the BIOS firmware.

# Using the SP to Update Firmware

This section describes how to use the service processor to update the ILOM, the BIOS, and the CPLD. This section can be used when you need to:

- Recover the BIOS
- Update the BIOS
- Update the ILOM

**Caution –** ILOM enters a special mode to load new firmware. No other tasks can be performed in ILOM until the firmware upgrade is complete and the ILOM is reset. To ensure a successful update, do *not* attempt to modify the ILOM configuration, or use other ILOM Web, CLI, SNMP, or IPMI interfaces, during the update process. Wait until after the update succeeds before making further ILOM configuration changes. The update requires a system server and takes about 20 minutes.

**Note –** You can also use the Sun xVM Ops Center if it is available. Online documentation for Sun xVM Ops Center can be found at:
`http://wikis.sun.com/display/xvmOC1dot1/Home`

The procedures for updating the ILOM, BIOS, and CPLD are provided in the ILOM 3.0 documentation collection. The following manuals contain variations on these procedures:

- *Sun Integrated Lights out Manager (ILOM) 3.0 Getting Started Guide*
- *Sun Integrated Lights out Manager (ILOM) 3.0 Web Interface Procedures Guide*
- *Sun Integrated Lights out Manager (ILOM) 3.0 CLI Procedures Guide*

## Clearing CMOS Settings (Optional)

If you cannot get output to your serial console after the upgrade, you might have to clear CMOS settings. This is because your default CMOS settings might have been changed by the new BIOS upgrade.

To clear CMOS settings, use the following commands (in this example, the default username, `root`, and the default password, `changeme`, are used):

```
ipmitool -U root -P changeme -H SP-IP chassis power off
ipmitool -U root -P changeme -H SP-IP chassis bootdev disk clear-cmos=yes
```

where *SP-IP* is the IP address of the service processor.

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**Note –** The -P option might not be available on the Windows and Solaris versions of IPMItool. Instead, IPMItool prompts for a password.

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# Recovering the BIOS Firmware

Use the following procedure to recover the BIOS firmware, for example if the BIOS image becomes corrupt, or if the update process fails..

1. **Copy the following files to a bootable USB flash device.**

   `Afudos.exe`

   `S95-3B16.ROM`

2. **Connect the USB flash device to the USB connector on the dongle.**
3. **Reset the server module.**
4. **Press F8 to enter display a list of bootable devices.**
5. **Select the USB flash device from the list.**
6. **Fun the following command from the DOS prompt.**

   **`Afudos S95-3B16.ROM /P /B /K /C /X`**

   The BIOS is updated and the server module restarts.

# Recovering the ILOM Firmware

Use the following procedure to recover the ILOM firmware, for example, if the upgrade fails, or if the firmware image becomes corrupt.

1. **Copy all the files from the Sun Download area, or Tools and Drivers CD, to a bootable USB flash device.**

   The files are located in the `BMCrecovery` directory, on the Tools and Drivers CD. They consist of:

   - `SOCFLASH.EXE`
   - `DOS4GW`
   - `ilom.X6450-`*number*`.bin`

     Where *number* is a build number, for example `2.0.3.6-r36158`.

---

**Note –** Use the binary (`.bin`) file, not a `.pkg` file.

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2. **Set up your server module to respond to POST messages and boot prompts.**
3. **Remove AC power from the system to be flashed.**
4. **Insert the bootable flash drive into the USB port.**
5. **Connect AC power, and power on the system.**

   a. **A message appears stating that the BMC was not found.**

      The system takes up to five minutes to boot.

   b. **Press F8 to get a list of boot devices.**

   c. **Choose the flash device to boot from.**

6. **Once the flash device is booted, run the following commands:**

   **`socflash -p 1 -f`** *sp-binary-file*

7. **After a successful flash use the -r option to reset the SP:**

   **`socflash -r`**

8. **Access the BIOS Setup Utility to confirm that the BIOS does not report that the BMC was not found.**

   Notes:

   - If the backup is selected (-b *backup-filename*), sufficient free space to store the SP binary backup file must be present on the USB flash device.

- The BIOS is not upgraded by this emergency recovery procedure. Perform a second ILOM-based flash upgrade to update the BIOS version.
- This emergency flash recovery procedure returns the SP to the default configuration.
- The ILOM `SPBIOS.pkg` file format (for example, `ilom.X6450-2.0.3.6-r36158.pkg`) cannot be used for emergency recovery. Use the `ilom2026.bin` recovery image instead.

CHAPTER 3

# Sensor Definitions

This chapter lists and describes the Sun Blade X6450 server module sensors for a server module equipped with ILOM 3.0.

Instructions for displaying the sensors are in the ILOM 3.0 documentation collection.

## *Server Module and System Sensors*

The sensors display information about the server module and the chassis.

- The server module sensors appear in "Server Module Sensors" on page 10.
- The system sensors appear in "System Sensors" on page 12. They include information about:
  - Other server modules or storage modules – See "Server Modules by Slot ID (BLn)" on page 13.
  - Chassis Management Module – See "Chassis Management Module Sensors" on page 13.
  - Fans – See "Fan Sensors" on page 14.
  - Network Expansion Modules (NEMs) and PCIe Express Modules – See "Network Expansion Modules and PCIe Express Modules" on page 14.
  - Power Supplies – See "Power Supply Sensors" on page 15.

## *Asserted or Deasserted Readings*

Some sensors are *asserted* or *deasserted*. For example PRSNT sensors are asserted if the device is present and deasserted if it is not. ERR sensors are asserted if an error condition is present, and deasserted if it is not. The readings for these sensors are:

- 0x0001 = State Deasserted
- 0x0002 = State Asserted

# Server Module Sensors

The sensors in TABLE 3-1 and TABLE 3-2 display information about conditions on the server module.

**TABLE 3-1** Server Module Sensors

| Sensor | Description |
|---|---|
| HOT | Temperature sensor on server module. |
| SYS/PWRCTLSTATE | Deasserted when the server module can be powered-on. |
| SYS/SLOTID | The slot where the server module resides:<br>• 0 through 9 for Sun Blade 6000 chassis<br>• 0 through 11 for Sun Blade 6048 chassis |
| SYS/VPS | Server module power consumption in Watts. |
| MB/* | Various motherboard sensors. See TABLE 3-2. |

**TABLE 3-2** Server Module Motherboard Sensors

| Sensor | Description |
|---|---|
| MB/MCH/D*Ln*/PRSNT | DIMM presence<br>*L* = A to D, where:<br>• A - CPU 0<br>• B - CPU 1<br>• C - CPU 2<br>• D - CPU 3<br>*n* = The number of DIMMs configured for each CPU. A CPU can have between 1 and 6 DIMMs numbered 0 to 5. |
| MB/P*n*/PRSNT | Indicates CPU presence. *n* is 0 through 3. |
| MB/P*n*/V_VCC | Identifies the voltage level for P0 through P3. |
| | **IPMI-only sensors.**<br>The following three sensors are only visible through the IPMI interface. |
| MB/P*n*/TCCAT | *n* is 0 or 1. This is the PECI reading from CPU core. |
| ACPI | The host ACPI status.<br>• 0x1 - host in S0/G0 (working) state.<br>• 0x20 host in S5/G2 (soft-off) state. |

**TABLE 3-2** Server Module Motherboard Sensors *(Continued)*

| Sensor | Description |
|---|---|
| NMIBTN | NMI button status (log only sensor). When the NMI button is pressed, this sensor logs a NMI/Diag Interrupt. |
| | **DIMMs 0 through 1** |
| MB/T_DIMM*n* | Reports the temperature of the DIMMs.<br>• upper_critical_threshold - 75.000° C<br>• upper_noncritical_threshold - 72.000° C |
| | **Thermal Overload** |
| MB/THERMOVRD | Server module is requesting 100% fan speed from the chassis to cool itself down. This is not logged. |
| | **Ambient Temperature Sensors 0 through 3** |
| MB/T_VRD*n* | Ambient temperature sensors. If the value exceeds the upper nonrecoverable threshold value, the host powers down.<br>Only MB/T_VRD1 has thresholds.<br>upper critical threshold - 60° C<br>upper nonrecoverable threshold - 65° C |
| | **Motherboard Voltage Sensors** |
| MB/V_+0V9B*n*<br>*n* = 0 or 1 | upper critical threshold - 0.989 Volts<br>lower critical threshold - 0.806 Volts |
| MB/V_+12VCPU*n*<br>*n* = 0 or 1 | upper critical threshold - 13.167 Volts<br>lower critical threshold - 10.773 Volts |
| MB/V_+12V | upper nonrecoverable threshold - 14.427 Volts<br>upper critical threshold - 13.167 Volts<br>lower critical threshold - 10.773 Volts<br>lower nonrecoverable threshold - 9.513 Volts |
| MB/V_+1V25STBY | upper critical threshold - 1.373 Volts<br>lower critical threshold - 1.096 Volts |
| MB/V_+1V2NIC | upper critical threshold - 1.312 Volts<br>lower critical threshold - 1.074 Volts |
| MB/V_+1V5B*n*<br>*n* = 0 or 1 | upper critical threshold - 1.646 Volts<br>lower critical threshold - 1.349 Volts |
| MB/V_+1V5 | upper critical threshold - 1.646 Volts<br>lower critical threshold - 1.349 Volts |
| MB/V_+1V8B*n*<br>*n* = 0 or 1 | upper critical threshold - 1.978 Volts<br>lower critical threshold - 1.617 Volts |

**TABLE 3-2** Server Module Motherboard Sensors *(Continued)*

| Sensor | Description |
|---|---|
| MB/V_+1V8STBY | upper critical threshold - 1.978 Volts<br>lower critical threshold - 1.617 Volts |
| MB/V_+1V9NIC | upper critical threshold - 2.083 Volts<br>lower critical threshold - 1.709 Volts |
| MB/V_+2V5STBY | upper critical threshold - 2.743 Volts<br>lower critical threshold - 2.249 Volts |
| MB/V_+3V3STBY*n*<br>*n* = 0 or 1 | MB/V_+3V3STBY0<br>• upper critical threshold - 3.667 Volts<br>• lower critical threshold - 2.993 Volts<br>MB/V_+3V3STBY1<br>• upper critical threshold - 3.642 Volts<br>• lower critical threshold - 2.975 Volts |
| MB/V_+3V3 | upper critical threshold - 3.616 Volts<br>lower critical threshold - 3.958 Volts |
| MB/V_+5V | upper critical threshold - 5.483 Volts<br>lower critical threshold - 4.488 Volts |
| MB/V_VTT | upper nonrecoverable threshold - 1.449 Volts<br>upper critical threshold - 1.386 Volts<br>lower critical threshold - 1.027 Volts |

# System Sensors

These sensors appear on the server module's sensor list, but they provide information about conditions elsewhere in the chassis.

They include:


- "Server Modules by Slot ID (BLn)" on page 13
- "Chassis Management Module Sensors" on page 13
- "Fan Sensors" on page 14
- "Network Expansion Modules and PCIe Express Modules" on page 14
- "Power Supply Sensors" on page 15

# Server Modules by Slot ID (BL*n*)

These sensors provide information about the other server modules in the chassis.

If a slot number is missing from this list, it means either:

- The slot is empty.
- The slot contains the current server module.

  To see the slot ID of the current server module, see SYS/SLOTID in TABLE 3-1.

The slots ID numbers in TABLE 3-1 are represented by the variable *n*, where:

- *n* = 0 to 9 for a Sun Blade 6000 chassis
- *n* = 0 to 11 for a Sun Blade 6048 chassis

**TABLE 3-3** Other Server Modules

| Sensor | Description |
|---|---|
| BL*n*/ERR | Asserted if an error is detected in the server module or storage module. |
| BL*n*/PRSNT | Asserted if a server module or storage module is present. |
| BL*n*/STATE | Availability state:<br>• Running<br>• In Test<br>• Power Off<br>• On Line<br>• Off Line<br>• Off Duty<br>• Degraded<br>• Power Save<br>• Install Error |

# Chassis Management Module Sensors

These sensors report on the condition of the Chassis Management Module (CMM).

**TABLE 3-4** Server Module Sensors

| Sensor | Description |
|---|---|
| CMM/ERR | Predictive failure for CMM |
| CMM/PRSNT | CMM is present |

## Fan Sensors

These sensors show the state of the system fans.

- The chassis has six or eight fan modules, FM0 through FM*n*. They appear in TABLE 3-5 as FM*n*, where *n* is:
  - 0 through 5 in a Sun Blade 6000 chassis
  - 0 through 7 in a Sun Blade 6048 chassis
- Each fan module has two fans. They appear in TABLE 3-5 as F*x*, where *x* is 0 or 1.

**TABLE 3-5** Fan Sensors

| Sensor | Description |
|---|---|
| FM*n*/ERR | Predictive failure asserted |
| FMn/Fx/TACH | Fan speed in RPMs |

## Network Expansion Modules and PCIe Express Modules

These sensors show the condition of Network Expansion Modules (NEMs) and PCIe Express Modules.

- The system supports one or two NEMs. These appear in TABLE 3-6 as NEM*n*, where *n* is 0 or 1.

- The system supports either 20 or 24 PCIe Express Modules. These appear in TABLE 3-6 as PEM*n*.

**TABLE 3-6** NEM and PCIe Express Module Sensors

| Sensor | Description |
|---|---|
| NEM*n*/PRSNT | Asserted when NEM is present. *n* is 0 or 1. |
| NEM*n*/STATE | Availability state:<br>• Running<br>• In Test<br>• Power Off<br>• On Line<br>• Off Line<br>• Off Duty<br>• Degraded<br>• Power Save<br>• Install Error |
| NEM*n*/ERR | Asserted when a failure is detected |
| PEM*n*/PRSNT | Asserted when PCIe Express Module is present<br>*n* is 0 through 1 for a Sun Blade X6450 Server Module |

# Power Supply Sensors

These sensors provide information about the chassis power supplies.

The chassis has two power modules. These appear in TABLE 3-7 as PS*n*, where *n* is 0 or 1.

Each power module has two or three sides. These appear in TABLE 3-7 as S*x* where *x* is:

- 0 or 1 in a Sun Blade 6000 chassis.
- 0 through 2 in a Sun Blade 6048 chassis

**TABLE 3-7** Power Supply Sensors

| Sensor | Description |
|---|---|
| PS*n*/PRSNT | Asserted when power module *n* is present |
| PS*n*/S*x*/V_IN_ERR | Asserted to indicate PS*n*/S*x* voltage input error |
| PS*n*/S*x*/V_OUT_OK | Asserted to indicate PS*n*/S*x* voltage output is OK |

# Fabric Expansion Modules Sensor and Raid Expansion Module Sensors

These sensors show the condition of Fabric Expansion Modules (FEMs) and Raid Expansion Modules (REMs).

**TABLE 3-8** Power Supply Sensors

| Sensor | Description |
|---|---|
| MB/FEM/PRSNT | Asserted when fabric expansion module is present |
| MB/REM/PRSNT | Asserted when raid expansion module is present |