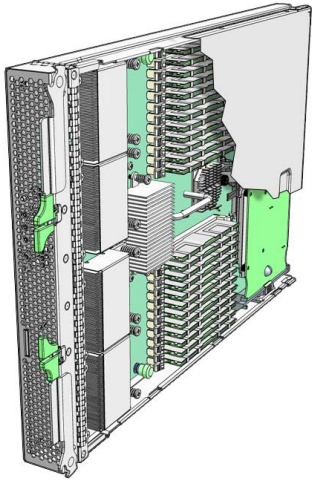
Sun Blade X6450 Server Module Embedded Lights Out Manager Administration Guide



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Preface

The *Sun Blade X6450 Embedded Lights Out Manager Administration Guide* provides instructions for using the Sun Blade X6450 Server Module service processor's Embedded Lights Out Manager (ELOM).

How This Document Is Organized

Chapter 1 provides an overview of the ELOM and lists the tasks that can be accomplished with the management software.

Chapter 2 details how to connect to and communicate with your server module.

Chapter 3 describes how to use the ELOM's web GUI to monitor your server and view server-specific information.

Chapter 4 provides information about using the web GUI to manage, configure, and maintain the server module.

Chapter 5 describes how to use the remote console through a web browser.

Chapter 6 describes how to manage your server using the ELOM's command-line interface (CLI).

Chapter 7 describes how to use the CLI to configure, manage, and maintain the server.

Chapter 8 describes how to use the Intelligent Platform Management Interface (IPMI), independent of the operating system, to manage field replaceable units (FRUs) and monitor the health of your system.

Chapter 9 helps you understand the basics of the Simple Network Management Protocol (SNMP).

Appendix A gives you a quick reference to CLI commands.

Appendix B provides a U.S. keyboard map to help you translate the key combinations described in this manual.

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-specific documentation
- Solaris™ Operating System documentation, which is at `http://docs.sun.com.`

Typographic Conventions

Typeface*	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; onscreen computer output.	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with onscreen 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 a superuser to do this. To delete a file, enter `rm` *filename*.

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

Related Documentation

For the most up-to-date information about the Sun Blade X6450 server module, navigate to your blade server document collection at:

http://docs.sun.com/

Translated Documentation

After the product's world-wide release date, translated versions of some of these documents might be available at docs.sun.com. To access translated documentation, select a language from the drop-down list, and navigate to the Sun Blade X6450 Server Module document collection using the High-End Servers and Blade Servers category link. Available translations for the Sun Blade X6450 server module include Simplified Chinese, Traditional Chinese, French, Japanese, and Korean

The English documentation is revised more frequently, and therefore might be more up-to-date than the translated documentation.

Sun Support, and Training

Sun Function	URL
Support	http://www.sun.com/support/
Training	http://www.sun.com/training/

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CHAPTER 1

Sun Blade X6450 Server Module Embedded Lights Out Manager Overview

This chapter serves as an overview to the Sun Blade X6450 Server Module Embedded Lights Out Manager (ELOM).

ELOM Features

The ELOM provides a dedicated system of hardware and supporting software that allows you to manage your Sun server independently of the operating system (OS) and through several interfaces. The following sections describe some of the features of the Sun Blade X6450 Server Module service processor's ELOM:

Embedded Lights Out Manager Common Tasks

TABLE 1-1 shows common tasks and the management interfaces used to perform each task.

TABLE 1-1 Common Tasks

Task	IPMI	Web GUI	CLI	SNMP
Redirect the system graphical console to a remote client web browser.	-	Yes	-	-
Connect a remote drive to the system as a virtual drive.	-	Yes	-	-
Connect a remote CD/DVD drive to the system as a virtual CD-ROM drive.	-	Yes	-	-
Monitor system fans, temperatures, and voltages remotely.	Yes	Yes	Yes	Yes
Monitor system BIOS messages remotely.	Yes	Yes	Yes	-
Monitor system operating system messages remotely.	Yes	Yes	Yes	-
Interrogate system components for their IDs and serial numbers.	Yes	-	Yes	Yes
Redirect the system serial console to a remote client.	Yes	-	Yes	-
Monitor system status (health check) remotely.	Yes	Yes	Yes	Yes
Interrogate system network interface cards remotely for MAC addresses.	Yes	Yes	Yes	-
Manage user accounts remotely.	Yes	Yes	Yes	-
Manage system power status remotely (power on, power off, power reset).	Yes	Yes	Yes	-
Monitor and manage environmental settings for key system components (CPUs, motherboards, and fans).	Yes	Yes	Yes	Monitor only

Sun Blade X6450 Server Module Default Settings

Sun has configured the service processor (SP) controller and SP firmware on your server to reflect the most common default settings used in the field. It is unlikely that you will need to change any of these defaults (see TABLE 1-2.)

TABLE 1-2 Default Settings

System Component	Default Status	Action Required
Service Processor card	Preinstalled	None
Service Processor firmware	Preinstalled	None
IPMI interface	Enabled	None
Web-based interface	Enabled	None
Command-line interface (CLI)	Enabled	None
SNMP interface	Enabled	None

About the Preconfigured Administrator Account

The ELOM is shipped with one preconfigured administrator account. The preconfigured administrator account, known as root, cannot be deleted. You can only change the account password. The root account offers built-in administrative privileges (read and write access) to all service processor features and commands. The user name and password for root are:

User name: **`root`**
Password: **`changeme`**

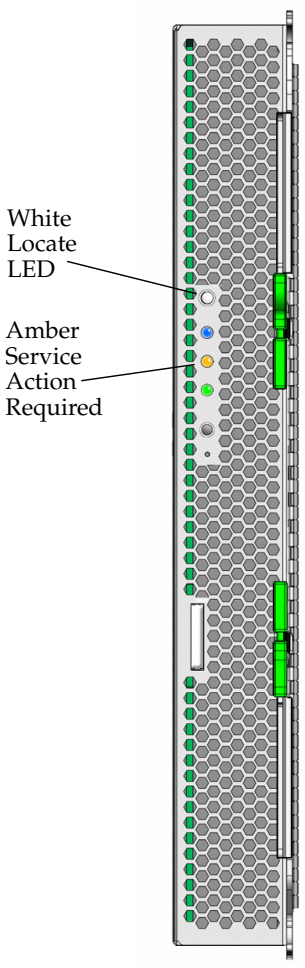
Tip – To increase security, change the default password to a new, unique password, as soon as possible. See Chapter 5 for details.

Note – The Chassis Management Module (CMM), also known as the Chassis Monitoring Module, Integrated Lights Out Manager (ILOM) is shipped with an identical preconfigured administrator account, with user name `root` and the default password set to `changeme`.

About the Front Panel LEDs

The front panel of the Sun Blade X6450 server module has two LEDs that you can use when troubleshooting server issues, the System Indicator LED and the Service Action Required LED (see FIGURE 1-1). For information about troubleshooting and servicing server hardware, see the *Sun Blade X6450 Server Module Service Manual*.

FIGURE 1-1 The White Locate and Amber Service Action Required LEDs.



About the System Indicator LED

The System Indicator LED (also called the Locator LED) is user controlled. You can turn on a server module's System Indicator LED so that you can locate that server module from among many other server modules in a chassis. You manage the System Indicator LED from the ELOM (see "Managing the Locator Indicator and Fault LED" on page 58).

About the Service Action Required LED

The front panel of your server module has an amber-colored Service Action Required LED which indicates the status of your server. The LED has the following three states:

1. Off (not lit) – Server is operating normally, and no system service is required.
2. On (solidly lit) – A critical error has occurred, and the system requires immediate service.
3. Blinking – A noncritical event has occurred, and the system requires service.

Responding to the Front Panel Service Action Required LED

When the Service Action Required LED is lit or blinking, the server is in need of service. When the LED is blinking, you should access the ELOM to view the event log and the status of the server's components. When the LED is solidly lit (not blinking) you need to power off the server module, remove it from the chassis, and access the motherboard to locate the failed component. Additionally, you can use the ELOM to investigate the error further. Use the following procedures to respond to the Service Action Required LED based on its state:

▼ To Respond to a Solidly Lit Service Action Required LED

1. **If the amber LED on the front panel is solidly lit, power off the server module, and remove it from the chassis.**

Caution – To remove the server module from the chassis, follow the procedures detailed in the *Sun Blade X6450 Server Module Service Manual*.

2. **Open the unit, and locate the blue Remind push button on the motherboard.**

   For the location of the blue push button, see the *Sun Blade X6450 Server Module Service Manual*.

3. **Press the Remind button.**

   When you press the Remind button, on board failure indicators LEDs will light up near either a memory slot or one of the four CPU locations. The lit LED identifies the failed component. For more information about replacing failed components, see the *Sun Blade X6450 Server Module Service Manual*.

▼ To Respond to a Blinking Service Action Required LED

1. **(Optional) Power off the server module.**

   A blinking Service Action Required LED indicates that a noncritical event has occurred. It is not necessary to power off the server to troubleshoot a noncritical event.

2. **Log in to the ELOM using an account with administrator privileges.**

   For connection and login information, see Chapter 2.

3. **From the ELOM main menu, click the System Monitoring tab.**

   The System Monitoring submenu appears.

4. **Click either the Sensor Reading or the Event Logs tab to determine the cause of the noncritical event.**

   For more information on using the System Monitoring submenu screens, see "Monitoring the System" on page 28. For more information on troubleshooting noncritical events, see the *Sun Blade X6450 Server Module Service Manual*.

CHAPTER 2

Connecting to the ELOM

This chapter details the ways to connect to and communicate with your Sun Blade X6450 server module ELOM.

Note – You must have already installed your server and determined the IP address of the service processor. See the *Sun Blade X6450 Server Module Installation Guide.*

Connection Methods

These are the ways to connect to the server module's SP ELOM:

- "Connecting to the Server Module's SP ELOM Using Ethernet" on page 7
- "Connecting to Server Module's SP CLI ELOM Using the Serial Port" on page 10
- "Connecting to the Server Module's SP ELOM Through the CMM" on page 11

Connecting to the Server Module's SP ELOM Using Ethernet

Ethernet connectivity provides full access to both the ELOM command-line interface (CLI) and the ELOM web GUI. Both options allow you to manage, maintain, and configure the server. This section contains the following Ethernet connection procedures:

- "To Connect to the Server Module's SP CLI ELOM Using Ethernet and SSH" on page 8
- "To Connect to the Server Module's SP Web GUI ELOM Using Ethernet and a Browser" on page 9.

Note – You will need the IP address of your ELOM, which you obtained during the setup and installation of your server module (see the *Sun Blade X6450 Server Module Installation Guide).*

▼ To Connect to the Server Module's SP CLI ELOM Using Ethernet and SSH

Be sure that you have connected a LAN to the NET MGT 0 port on the chassis.

1. **Start your SSH client, and access a system prompt.**

   If this is the first time that you have logged in to the ELOM, you must use the preconfigured account called, root (see "About the Preconfigured Administrator Account" on page 3).

2. **To log in to the ELOM CLI, enter the following command at the system prompt:**

   $ **ssh** *username***@***ipaddress*

   username An ELOM user name

   ipaddress The IP address of the ELOM

   If you are using the preconfigured account, use the following infromation:

   - User name – **root**
   - Password – **changeme**

   The default user name and password are in lowercase characters.

3. **Enter your password when prompted.**

   When you are logged in, the CLI prompt appears:

   –>

   For example:

```
   $ ssh root@10.6.72.114
root@10.6.72.114's password:


Sun Microsystems Embedded Lights Out Manager
Copyright 2008 Sun Microsystems, Inc. All rights reserved.
Firmware Version: 4.0.16
SMASH Version: v1.0.0
Hostname: SUNSP001B24DFE56B
IP address: 10.6.72.114
MAC address: 00:1B:24:DF:E5:6B
 ->
```

   For information about managing the server using the CLI, see Chapter 7.

To Log out of the CLI:

- **Enter the following command:**

  –> **exit**

▼ To Connect to the Server Module's SP Web GUI ELOM Using Ethernet and a Browser

1. **Connect an Ethernet cable to the CMM Net 0 port on the back of the chassis.**

   Your chassis may already be configured with an Ethernet cable.

2. **Enter the IP address of the ELOM in the address bar on your web browser.**

   The login screen appears.

3. **Enter your user name and password.**

   If this is the first time that you have logged in to the ELOM, you must use the preconfigured account called, root (see "About the Preconfigured Administrator Account" on page 3).

   If you are using the preconfigured account, use the following information:

   - User name – **`root`**
   - Password – **`changeme`**

   The default user name and password are in lowercase characters.

4. **Click Log In.**

   Chapter 3 shows how to use the web GUI.

To Log Out of the Web GUI:

- **Click Log Out at the top right of the web GUI screen.**

  The login screen appears.

Connecting to Server Module's SP CLI ELOM Using the Serial Port

This section describes how to log-in to the service processor from the serial port using a terminal device. You will need the multi-port dongle cable and a terminal device.

▼ To Connect to the Server Module's SP CLI ELOM Using the Serial Port

1. **Configure your terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
   - 8, N, 1: eight data bits, no parity, one stop bit
   - 9600 baud
   - Disable flow control
2. **Connect the single end of the the multi-port dongle cable to the UCP connector to the front of the server module.**
3. **Connect your terminal device to the multi-port dongle cable using either the DB9 (4-port cable only) or the RJ45 (3-port cable only) serial connector.**

Note – Do *not* use the RJ45 connector on the 4-port cable.

An RJ45-to-DB9 cable is included with your chassis.

4. **Press the Enter key on the terminal device to establish a connection to the SP.**

   An SP prompt appears. For example:

   ```
   SP ->SUNSP0016364A9934 login:
   ```

Note – If you do not see output on your serial device, check to see if the console output has been redirected to the video port.

5. **Log in to the SP and enter the user name and password.**

   If this is the first time that you have logged in to the ELOM, you must use the preconfigured account called, root (see "About the Preconfigured Administrator Account" on page 3).

   If you are using the preconfigured account, use the following information:

   - User name – **`root`**
   - Password – **`changeme`**

   The default user name and password are in lowercase characters.

   When you are logged in to the ELOM CLI the command prompt appears:

   ```
   ->
   ```

Connecting to the Server Module's SP ELOM Through the CMM

You can connect to the server module's SP through the chassis' Chassis Monitoring Module (CMM) using Ethernet or a serial terminal. When you connect to the CMM ILOM, you must navigate to the server module's SP ELOM to start the SP, before you can view server-specific information, and manage the server module.

The CMM uses an integrated lights out manager (ILOM) that has both a CLI and a web GUI. The CMM ILOM web GUI and CLI are similar to the server module's ELOM web GUI and CLI. However, use the relevant *Integrated Lights Out Manager User's Guide* for your chassis as a reference when using the CMM's ILOM web GUI or CLI.

This section contains the following CMM connection procedures:

- "To Connect to the Server Module's SP CLI ELOM Through the CMM Using Ethernet and SSH" on page 12

- "To Connect to the Server Module's SP Web GUI ELOM Through the CMM Using Ethernet and a Browser" on page 14
- "To Connect to the Server Module's SP CLI ELOM Through the CMM Using the Chassis Serial Connector" on page 14

For more information about the CMM ILOM, see the relevant *Integrated Lights Out Manager User's Guide* for your chassis.

▼ To Connect to the Server Module's SP CLI ELOM Through the CMM Using Ethernet and SSH

Note – To use this procedure you must know the position number of the server module in the chassis.

---

1. **Connect an Ethernet cable to the CMM Net 0 port on the back of the chassis.**

   Your chassis may already be configured with an Ethernet cable.

2. **From a computer on the same network, start an SSH application, open a terminal window, and enter the following command:**

   ssh username@*cmm-ip-address*

   username The user name of a CMM ILOM account with administrator privileges.

   cmm-ip-address The IP address of the CMM ILOM.

   The preconfigured CMM ILOM account is root.

   When connected, the ILOM prompts you for the password for the login account.

   The preconfigured password for root is changeme.

3. **Enter the password.**

   The CMM ILOM prompt appears.

Note – The password for the preconfigured CMM ILOM root account might have been changed. Contact your system administrator for account login information.

---

4. **At the CMM ILOM prompt, navigate to and display the namespace for the server module by entering the following commands:**

   –> **`cd /CH/BL`***`n`***`/SP/cli`**

   n The position number within the chassis of the Sun Blade X6450 server module.

   –> **`show`**

   The Targets, Properties, and Commands for the cli namespace appears followed by the CLI prompt.

5. **Enter the command:**

   –> **start**

   A confirmation prompt appears.

6. **Type Y and press Enter.**

   The `start` command executes, and a password prompt appears.

7. **Enter the password for the user name that you used in Step 2 to log in to the CMM.**

   The CLI prompt appears.

   For information about the ILOM CLI command set and command syntax, see the relevant *Integrated Lights Out Manager User's Guide* for your chassis.

   The following example shows a sample CMM session that includes the commands to navigate to the server module's CLI, display targets, properties, and commands, and execute the `start` command:

```
-> cd /CH/BL9/SP/cli
-> show
/CH/BL9/SP/cli
   Targets:

   Properties:
     type = Blade CLI
     user = root

   Commands:
     cd
     set
     show
     start
     stop

-> start
Are you sure you want to start /CH/BL9/SP.cli (y/n)? y
start:  Connecting to /CH/BL9/SP/cli as user root
start:  Change the "user" property to connect as a different
user
root@10.6.72.137's password:
```

8. **To end the session, exit the ELOM CLI by entering:**

   –> exit

   The SP ELOM exits and the chassis ILOM prompt appears.

9. **To exit the chassis ILOM CLI, enter the following command:**

   –> exit

   The chassis ILOM session ends.

▼ To Connect to the Server Module's SP Web GUI ELOM Through the CMM Using Ethernet and a Browser

---

Note – To use this procedure you must know the position number of the server module in the chassis.

---

1. **Connect an Ethernet cable to the CMM Net 0 port on the back of the chassis.**

   Your chassis may already be configured with an Ethernet cable.

2. **From a computer on the same network, open a web browser, and enter the CMM ILOM IP address in the browser's address bar:**

   The CMM ILOM login screen appears.

3. **Type in a user name and password for an account with administrator privileges, and click Login.**

   You can use the preconfigured account, root to log in:

   user name: **`root`**
   password: **`changeme`**

Note – The password for the preconfigured CMM ILOM root account might have been changed. Contact your system administrator for account login information.

   The ILOM main screen appears.For information about the ILOM we GUI, see the relevant *Integrated Lights Out Manager User's Guide* for your chassis.

▼ To Connect to the Server Module's SP CLI ELOM Through the CMM Using the Chassis Serial Connector

1. **Verify that your terminal, laptop, or terminal server is operational.**

2. **Configure the terminal device or the terminal emulation software to use the following settings:**
   - 8,N,1 (eight data bits, no parity, one stop bit)
   - 9600 baud (default, can be set to any standard rate up to 57600)
   - Disable software flow control (XON/XOFF)

3. **Connect a serial cable from the serial port on the CMM to the terminal device.**

   Refer to the chassis documentation for the location of the chassis serial port.

4. **Press Enter on the terminal device.**

   This action establishes the connection between the terminal device and the CMM ILOM.

   The CMM ILOM displays its login prompt:

   `SUNCMM`*`nnnnnnnnnn`* `login:`

   The first string in the prompt is the default host name. It consists of the prefix SUNCMM and the CMM ILOM's MAC address. The MAC address for each service processor is unique.

5. **Log in to the CLI using a user name with administrator privileges:**

   You can use the preconfigured account, root to log in:

   user name: **`root`**
   password: **`changeme`**

Note – The password for the preconfigured CMM ILOM root account might have been changed. Contact your system administrator for account login information.

   Once you have successfully logged in, the CMM ILOM displays the command prompt:

   `->`

   You are now connected to the CMM ILOM CLI. For information about the ILOM CLI command set and command syntax, see the relevant *Integrated Lights Out Manager User's Guide* for your chassis.

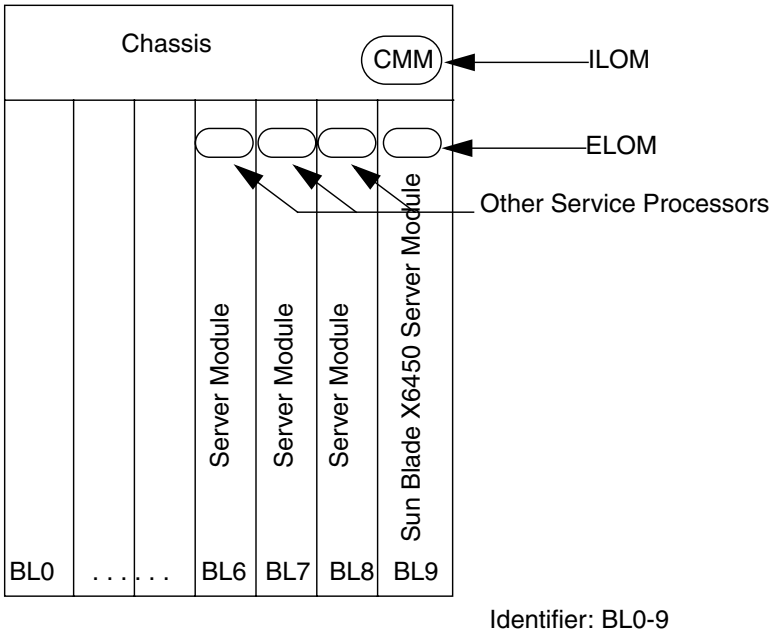
6. **To navigate to the server module ELOM enter the command:**

   `->` **`cd /CH/BL`***`n`***`/SP/cli`**

   n The position number of the server module in the chassis.

   Use FIGURE 2-1 to assist you in determining the server module number, and to understand the relationship between the CMM and different server module service processors.

FIGURE 2-1 Chassis and Server Module ELOM Address Identifiers



7. **To start the SP, enter the command:**

   `-> start`

   The following confirmation prompt appears:

   ```
   Enter Y to continue or N to cancel.
   ```

8. **Enter `Y` to continue.**

   If you enter **`N`**, the server module will return you to the CMM CLI prompt.

9. **Enter the password when prompted.**

   The default is **`changeme`**.

   The server module ELOM prompt appears. For information about managing and maintaining the server module, see Chapter 7.

To log out of the SP CLI:

- **Enter the command:**

  `-> exit`

  The CMM CLI prompt appears.

The following example shows a sample CMM session that includes the commands to navigate to the server module's CLI, display targets, properties, and commands, execute the `start` command, and exit the CMM ILOM:

```
->  cd /CH/BL9/SP/cli
->  show
/CH/BL9/SP/cli
   Targets:

   Properties:
     type = Blade CLI
     user = root

   Commands:
     cd
     set
     show
     start
     stop

->  start
Are you sure you want to start /CH/BL9/SP.cli (y/n)? y
start:  Connecting to /CH/BL9/SP/cli as user root
start:  Change the "user" property to connect as a different user
root@10.6.72.137's password:

Sun(TM) Integrated Lights Out Manager

Version N.N

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Warning: password is set to factory default.

-> exit              Enter this command to exit the CMM ILOM.
Connection to 10.6.122.33 closed.
```

CHAPTER 3

Monitoring the Server Module Using the ELOM Web GUI

This chapter provides information about how to use the ELOM web GUI and the Sun Blade X6450 Server Module software to monitor your server.

See the following sections:

Using the Web GUI

The web GUI allows you to monitor and manage, configure and maintain local and remote systems, using a browser. For information about managing, configuring and maintaining the server using the web GUI, see Chapter 4.

You can also monitor and manage, configure and maintain the server remotely by redirecting the server's console to a remote workstation or laptop. For information about remote configuration, see Chapter 5.

Web GUI Tasks

Some of the common tasks you can perform using the web GUI include:

Configure Connection Methods:

- Connect remote storage to the system as a virtual device.
- Connect a remote CD/DVD drive or CD-ROM image to the system.
- Redirect the system's graphical console to a remote client browser.

Monitor and Manage:

- Monitor the status of system fans, temperatures, and voltages remotely.
- Monitor the BIOS power-on self-test (POST) progress log remotely.
- Manage system event logs (view, save, and clear).
- Examine component information, including CPUs, DIMMs, and network interface cards (NIC).
- Power on, power off, and reset the server module remotely.
- Reset SP

Manage and Modify System Variables:

- Manage user accounts locally and remotely.
- Update BIOS, SP, and CPLD firmware.

Browser and Software Requirements

The web GUI has been tested successfully with recently released Mozilla™ Firefox, and Internet Explorer browsers, and may be compatible with other browsers.

The ELOM product is preinstalled on the Sun server. However, you need Java™ software on the client to perform redirection as described in Chapter 10.

Accessing the System Using a Browser

The ELOM boots automatically when the server module is inserted into a powered chassis. This usually occurs within one minute. However, if the management Ethernet is not connected, or if the ELOM's Dynamic Host Configuration Protocol (DHCP) process fails due to the absence of a DHCP server on the management network, the ELOM might take a few minutes longer to boot.

Note – Disabling the use of the browser proxy server (if one is used) for access to the management network might speed up the response time.

▼ To Access the System Using a Browser

1. **To access the web GUI, enter the IP address of the ELOM in your browser.**

   The login screen appears.

2. **Enter an ELOM user name and password.**

   Only a user account with administrator privileges has access to all the ELOM menus and screens. If this is the first log-in, use the default user account:

   username: **`root`**
   password: **`changeme`**

3. **Click Log In.**

   The main menu screen appears.

To log out of the web GUI:

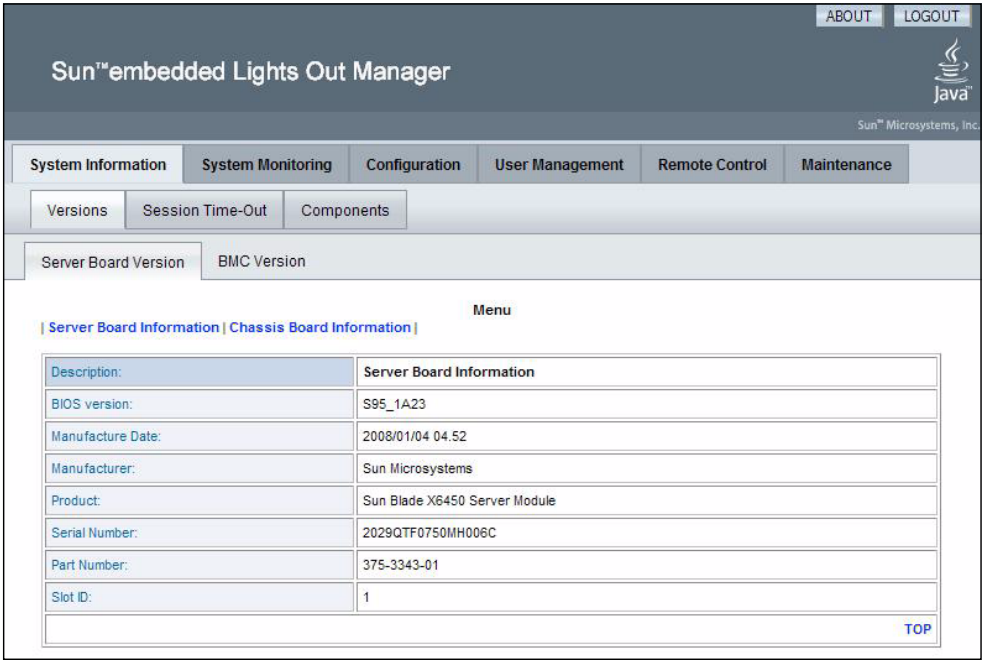
- **Click the Log Out button.**

  The Log Out button is located at the top right of the interface screen.

Viewing the System From the Web GUI

When logged in to the ELOM, you use the web GUI to access screens that allow you to monitor and manage the server module. FIGURE 3-1 FIGURE 3-1 shows the web GUI's main screen.

FIGURE 3-1 ELOM System Information Screen



The six main menu tabs and the submenu screens are listed in TABLE 3-1:

TABLE 3-1 ELOM Tab Detail Choices

Main Tab	Sub-level Tab		Where to Find Details
System Information			"Viewing System Information" on page 24
	Versions		"Viewing System Information" on page 24
		Server Board	
		BMC Version	
	Session Time-Out		"Setting Session Timeout" on page 65
	Components		"Viewing Component Information" on page 26
		CPU	

TABLE 3-1 ELOM Tab Detail Choices *(Continued)*

Main Tab	Sub-level Tab		Where to Find Details
		Memory	
		NIC	
System Monitoring			
	Sensor Reading		"Monitoring the System" on page 28
		Summary	
		Temperature	
		Voltage	
		Chassis Status	
	Event Logs		"Viewing and Managing the Event Log" on page 31
		View Event Logs	
		Save Event Logs	
		Clear Event Logs	
	Locator Indicator		"Managing the Locator Indicator and Fault LED" on page 58
	Fault LED		Refer to your service manual
Configuration			
	Network		"To View NIC Information" on page 28
	Email Notification		"Configuring Email Notification" on page 35
	Platform Event Filter		"Setting the Time" on page 40
	Set Time		"" on page 66
	SSL Certificate		"Configuring the SSL Certificate" on page 40
	SNMP		"Configuring SNMP" on page 41
User Management			
	User Account		"To Add a User" on page 46
	ADS Configuration		"Configuring ADS" on page 48
Remote Control			"Starting the Remote Console Application" on page 70
	Remote Power Control		"Controlling Server Power" on page 59
	Hotkey Setup		Chapter 5

TABLE 3-1 ELOM Tab Detail Choices *(Continued)*

Main Tab	Sub-level Tab	Where to Find Details
Maintenance		
	Firmware Upgrade	"Updating the Firmware" on page 61
	Reset BMC	"Resetting the Baseboard Management Controller" on page 60

The following section describes how to monitor the server using the browser and the Embedded Lights Out Manager software.

Viewing System Information

The System Information tab provides information about server board and system components, such as the service processor (SP), the CPUs, the memory, and the network interface card (NIC). Details are found in the Versions and Components submenu tabs.

Note – The service processor (SP) is also referred to as the baseboard management controller or BMC. Wherever BMC is mentioned, consider it different terminology for the SP.

▼ To View System Information

- **On the main menu, click the System Information tab.**

  The System Information submenu appears, allowing you to view the Versions, Session Time-Out, and Components submenu tabs.

Viewing Version Information

The Version screen allows you to view information about the server board, the chassis board and the BMC (SP). Using the Version submenu screen, you can view board-specific information for the server and chassis boards, such as manufacturer, manufacture date, serial numbers, and part numbers. Using the BMC version information screen, you can view information related to the SP, such as device ID, firmware revision, and IPMI and CPLD version numbers.

▼ To View Server and Chassis Board Information

- **From the Versions submenu, select the Server Board Version tab.**

  The Server Board Version screen appears. The screen displays information about the server board and the chassis board. TABLE 3-2 shows a sample of the server board information:

TABLE 3-2 Sample Server Board Information

Description	Server Board Information
BIOS Version:	1ADP1017
Manufacture Date:	2008/05/11 09:12
Manufacturer:	Sun Microsystems, Inc.
Product:	Sun Blade X6450 Server Module
Serial Number:	qtfmcs7060094
Part Number:	375-3343-01
Slot ID:	8

TABLE 3-3 Sample Chassis Board Information

Description	Chassis Board Information
Product Part Number:	123-4567-8
Product Serial Number:	012345678
Product Asset Tag:	44
Chassis Serial Number:	12345678-12345678
Chassis Part Number	333-4444-1

▼ To View BMC Version Information

- **From the Versions submenu, select the BMC Version tab.**

  The BMC Version screen appears. The screen displays information about the BMC installed in the system, and presents the information in a tabular format. For example, TABLE 3-4 shows a sample of the BMC version information:

TABLE 3-4 Sample BMC Version Screen

Description	BMC Board Information
Device ID	5
Device Revision	0
Firmware Revision	4.0.11
IPMI Revision	2.0
CPLD version	5041

Viewing Component Information

The Component Information submenu tab contains the screens that you can use to monitor and troubleshoot the server module's critical components. Using these screens you can view the status of the CPUs and DIMMs. Use these screens in conjunction with the Service Action Required LED to further investigate service-related issues.

▼ To View CPU Information

- **From the System Information menu, click the Components submenu tab, and then select CPU.**

  The CPU information screen appears. The CPU information is presented in a tabular format (see TABLE 3-5). A separate table of information is available for each of the server's CPU locations, regardless if a CPU is installed or not.

TABLE 3-5 Sample CPU Information

Description:	**CPU Information**
CPU	0
Status:	Enable
Socket:	CPU0

TABLE 3-5 Sample CPU Information

Description:	CPU Information
Manufacturer:	Intel
Model:	E7340
Frequency:	2400 MHz

▼ To View Memory Information

- **From the System Information menu, click the Components submenu tab, and then select Memory.**

  The Memory submenu screen appears. The screen displays information about each of the DIMMs installed in your server. The memory information is presented in a tabular format (see TABLE 3-6).

TABLE 3-6 Sample Memory Information

Description	Memory Information
Memory Module	1
Status:	Ok
Socket:	DIMM_A0
Module Size:	2048MB
Type:	FBDIMM
Frequency	533MHz

▼ To View NIC Information

- **From the System Information menu, click the Components submenu tab, and then select NIC.**

  The NIC submenu screen appears. The screen displays information about the network interface card installed in your server. The NIC information is presented in a tabular format (see TABLE 3-7).

TABLE 3-7 Sample of NIC Information

Description:	Network Interface Card 0 Information
Manufacturer:	Intel
Product Name:	ESB Dual Port GbE NIC
Product Part Number:	6312
Product Serial Number:	00:16:36:F1:67:34
Port Number:	02
MAC Address 1:	00:16:36:F1:67:34
MAC Address 2:	00:16:36:F1:67:35

Monitoring the System

Sensors placed throughout the system provide information about the state of critical server hardware. The sensors allow the system to monitor temperature, voltage, and operational status. Using the System Monitoring submenu screens you can view the these sensors, and monitor the health of your server's critical components. For example, you can check the temperature of each CPU and the voltage level of the system's DC voltage lines.

The System Monitoring submenu screens also allow you to view and manage the system log, the System Indicator LED, and the Fault LED. For information about the System Indicator LED and the Fault LED, see Chapter 4.

▼ To Monitor the System

- **On the main menu, click System Monitoring.**

  The System Monitoring submenu appears, allowing you to view the Sensor Reading, Event Logs, System Indicator, and Fault LED tabs.

Reading Sensors

The Sensor Reading Tab provides viewing and monitoring access to the Sensor Summary, the Temperature, Voltage, and Chassis Status screens.

▼ To Read Sensors

- **From the System Monitoring tab, click the Sensor Reading Tab.**

  The Sensor Reading tab allows you to select the Summary, Temperature, Voltage, and Chassis Status tabs.

▼ To View a Sensor Summary

- **From the Sensor Reading submenu tab, select the Summary tab.**

  The Summary screen appears. It provides an overview of the status of the system sensors. The screen provides the status of the Fault LED, the server's power status, the temperature status of all critical components, and the status of each of the monitored voltage lines.

▼ To Monitor Temperatures

- **From the Sensor Reading submenu tab, select the Temperature tab.**

  The Temperature screen appears. The screen provides the status, the actual temperature, and the upper critical and non-critical temperature thresholds for each system-critical component. The Temperature submenu screen displays the information in a tabular format. It provides a separate table for each component. TABLE 3-8 shows a sample of the temperature monitoring readings for CPU 0.

TABLE 3-8 Sample Temperature Monitor Readings

Description:	CPU Temp
Upper noncritical threshold is readable:	93.0
Upper critical threshold is readable:	95.0
Sensor Reading:	54.0
Status:	ok

A similar panel is repeated for each monitored entity.

▼ To Monitor Voltages

- **From the Sensor Reading submenu, select the Voltage tab.**

  The Voltage screen appears. The screen provides the status, the actual voltage reading, and the upper critical and non-critical voltage thresholds for each of the monitored voltage lines. The Voltage submenu screen displays this information in a tabular format. TABLE 3-9 shows a sample of this information for P_VCCP0.

TABLE 3-9 Sample of Voltage Information

Description	P_VCCP0
Lower non-critical threshold is readable:	0.000
Lower critical threshold is readable:	0.000
Upper non-critical threshold is readable:	1.342
Upper critical threshold is readable:	1.342
Sensor Reading:	1.147
Status:	ok

▼ To Monitor the Chassis Status

- **From the Sensor Reading submenu, select the Chassis Status tab.**

  The Chassis Status submenu screen appears, showing the actual senor readings for the critical components of the chassis. These components include the chassis fans (RPM), the power supplies (voltage, current, and power), and the chassis cabinet (ambient temperature). The information is presented a tabular format showing the name, the reading, and the unit of measurement. TABLE 3-10 shows a sample of the information presented in the Chassis Status screen.

TABLE 3-10 Sample of the Chassis Status Information

Name	Reading	Unit
fm0.f0.speed	2900.000	RPM
ps0.t_amb	24.000	degrees
ps0.V12V	12.008	Volts
ps1.fan_speed	11940.000	RPM
ps1.l12V_0	34.173	Amps
ch.tamb_0	26.000	degrees

Viewing and Managing the Event Log

The Event Log screen allows you to view and manage the System Event Log (SEL). The SEL is a record of event occurrences. To record events in the SEL, you must have previously determined which events require logging. See "Setting the Time" on page 40.

▼ To View and Manage the Event Log

- **From the System Monitoring tab on the main menu, click the Event Logs submenu tab.**

  The Event Logs submenu screen appears, and the View Event Logs, Save Event Logs, and Clear Event Logs submenus become available.

▼ To View the Event Logs

- **From the Event Logs submenu, select View Event Logs.**

  The system event log appears. Each entry in the log represents an action that occurred on the system. The system lists each action, rating the action's severity, providing time-stamp, and describing the event. The information is presented in a tabular format.

▼ To Save the Event Log

You may want to save the event log for administrative or diagnostic purposes.

1. **From the Event Logs submenu, click the Save Event Logs tab.**

   The Save Event Log screen appears.

2. **Click the Save Event Log button to prompt the browser to ask you where to save a copy of the event log.**

▼ To Clear the Event Log

The Event Log may need to be cleared to signify a fresh procedure, or to identify system performance under load.

1. **From the Event Log menu, choose Clear Event Log.**
2. **Click the Clear Event Log button to start a fresh event log.**

CHAPTER 4

Configuring, Managing, and Maintaining the Server Using the Web GUI

This chapter provides information about how to use the web GUI and the Sun Blade X6450 Server Module software to configure, manage, and maintain your server.

This chapter is divided into the following sections:

This chapter addresses your local system. For information about how to redirect your commands to a remote system, see Chapter 5.

For information about connecting to the ELOM see Chapter 2.

Configuring the System

The Configuration submenu tabs allow you to configure the operation of the server. This section contains the following server configuration procedures:

- "Configuring ADS" on page 48
- "Configuring ADS on Windows" on page 48

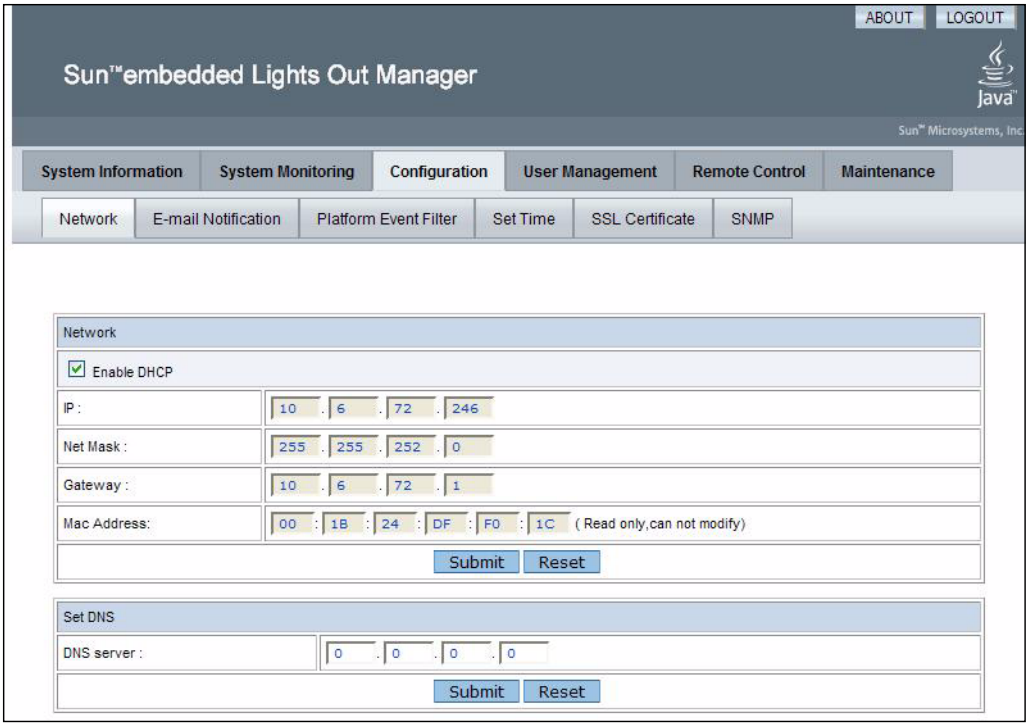
Note – The service processor (SP) is also referred to as the BMC. Wherever BMC is mentioned, consider it different terminology for the SP.

▼ To Configure the Server

- **On the ELOM main menu, click the Configuration tab.**

  The Configuration submenu tabs appear (see FIGURE 4-1). You are now able to access the Network, E-mail Notification, Platform Event Filter, Set Time, SSL Certificate, and SNMP tabs.

FIGURE 4-1 The Configuration submenu Tabs



▼ To Configure Network Settings

- **From the Configuration submenu, click the Network tab.**

  The Network configuration screen appears (see FIGURE 4-1). Use this screen to enable or disable DHCP and set DNS. If you disable DHCP, you must manually supply the IP address, the netmask, and the gateway.

Note – The MAC address is hardware encoded and unique to each system. It cannot be modified.

Configuring Email Notification

The E-mail Notification screen enables you to configure the email recipients for any ELOM generated events. The system allows you to designate up to 10 recipients. Email Notification is used in conjunction with Platform Event Filters (PEF). PEFs are event traps that allow you to associate an action, or a set of actions, with the occurrence of a specific event. One such action is mail notification. The Send Mail action is enabled in the Platform Event Filter screen, and configured in the E-mail Notification screen.

▼ To Configure Email Notification

- **From the Configuration submenu, click the E-mail Notification tab.**

  The Enable E-mail Notification screen appears. You must supply the name of the SMTP server and the Sender, and designate the receiver email addresses.

Configuring Traps with the Platform Event Filter

To capture the event messages for the system logs and email notification, you must define the system generated events that you want to trap and the actions you want to allow. The Platform Event Filter (PEF) screen allows you to activate this feature, configure PEF parameters, and define traps by creating event filters.

▼ To Configure Traps with the Platform Event Filter Screen

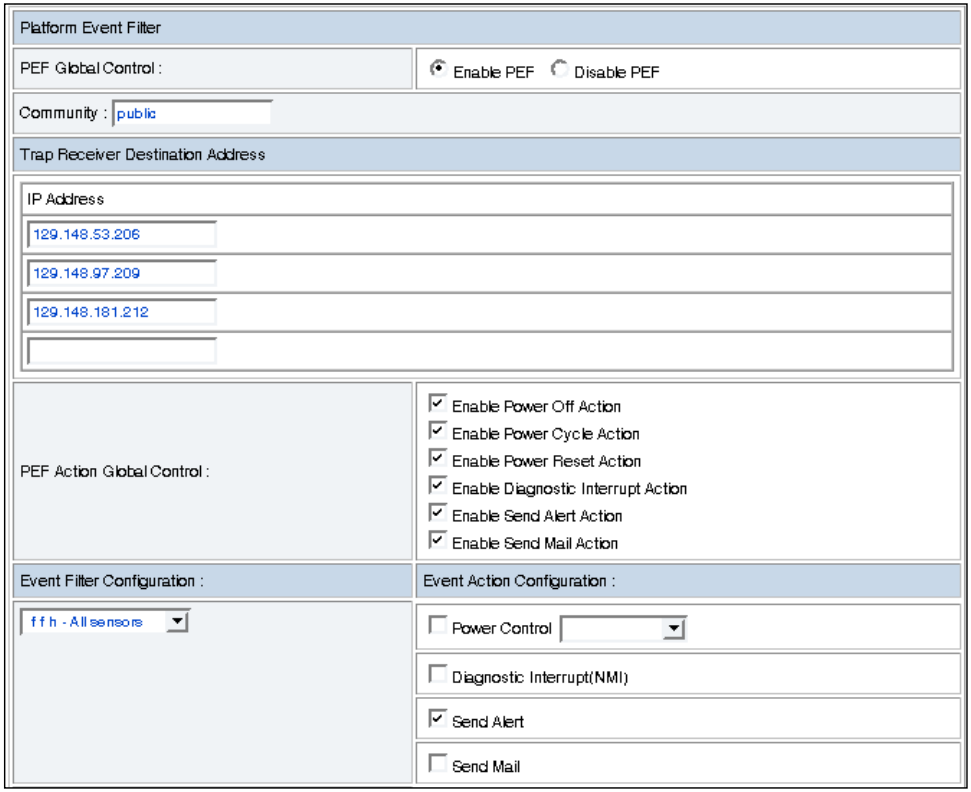
1. **Click the Configuration tab.**

   The Configuration submenu tabs appear.

2. **Click the Platform Event Filter tab.**

   The Platform Event Filter screen appears (see FIGURE 4-2).

FIGURE 4-2 The Platform Event Filter screen



The PEF screen is divided into Four sections:

- The Platform Event Filter section
- The Trap Receiver Destination Address section
- The PEF Action Global Control section
- The Event Filter and Event Action Configuration section

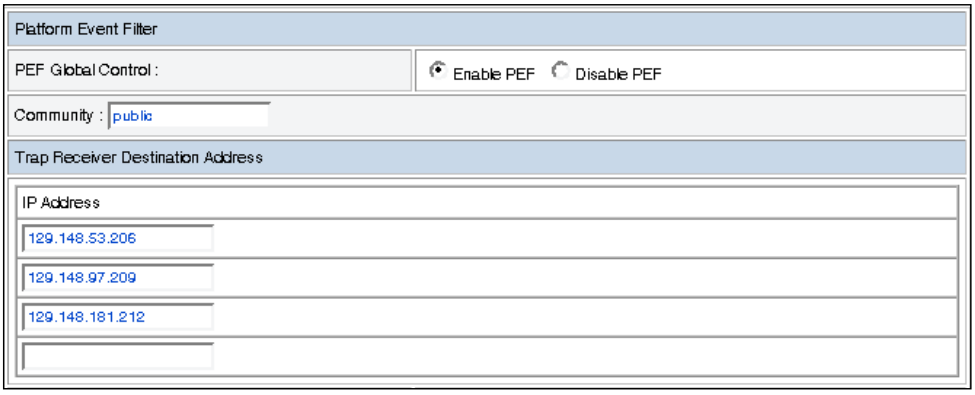
3. **Click the Enable PEF radio button in the Platform Event Filter section (see FIGURE 4-3).**

FIGURE 4-3 The Platform Event Filter Section

4. **Enter the IP of the servers receiving the trapped system event messages in the Trap Receiver Destination Address section (see FIGURE 4-4).**

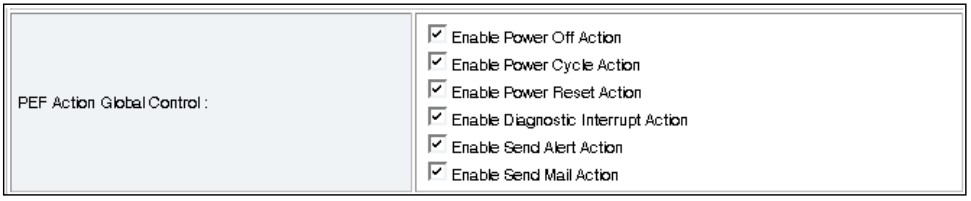
   You can designate up to four servers.

FIGURE 4-4 The Platform Event Filter and Trap Receiver Destination Address sections of the Platform Event Filter screen.



5. **Select the PEF Global Actions by clicking the check box for each of the actions you want to enable (see FIGURE 4-5).**

FIGURE 4-5 The PEF Action Global Control Section



There are six possible PEF Global Actions. TABLE 4-1 lists and describes the actions.

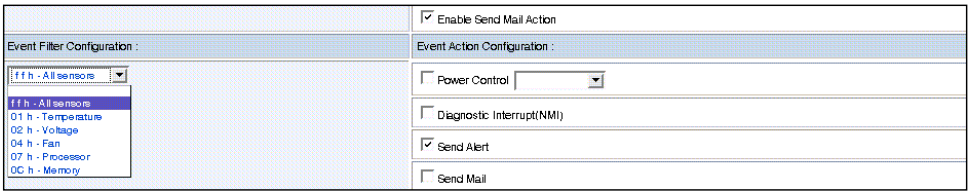
TABLE 4-1 PEF Actions and Descriptions

Action	Description
`Enable Power Off Action`	The system is powered off by this action.
`Enable Power Cycle Action`	The system power is cycled (turned off and turned on) by this action.
`Enable Power Reset Action`	Power reset enabled.
`Enable Diagnostic Interrupt Action`	Enables diagnostic information dump.
`Enable Send Alert Action`	Alerts are sent to the trap receiving server by this action.
`Enable Send Mail Action`	Email notification is enabled by this action.

When you select an action you are enabling that function globally. For example, if you select all three power-related actions, you are enabling the functionality of those actions, and you will be able to select them in the Configure Event Filter section.

6. **Select the sensor you want to filter from the Configure Event Filter drop-down list (see FIGURE 4-6).**

FIGURE 4-6 The Event Filter and Event Action Configuration Sections



The drop-down list has the following six sensor options:

Drop-Down List Options
ffh - All sensors
01h - Temperature
02h - Voltage
04h - Fan
07h - Processor
0Ch - Memory

Each option corresponds to the sensors associated with that component/subsystem. The Event Filter Configuration and Event Action Configuration sections allow you to configure each of these six options separately.

7. **Select all the actions that apply for the sensor by clicking the corresponding check boxes in the Event Action Configuration section (see** FIGURE 4-6**). The four check box options are:**

Check Box Options
Power Control
Diagnostic Interrupt(NMI)
Send Alert
Send Mail

The Power Control option has a drop-down list with three power-related actions: Power Cycle, Power Off, and Power Reset. If you select the Power Control action, you must also select one of the three actions.

8. **Repeat step 6 and step 7 for each sensor you want to configure.**

9. **Click the Submit button to save your settings.**

Setting the Time

▼ To Set Time

1. **From the Configuration submenu, click the Set Time tab.**

   The Set Time screen appears.

2. **Use the radio buttons to manually input the date and time, or to use an NTP server. For the latter, you will have to input the IP address of the server.**

Configuring the SSL Certificate

This screen allows you to either create the certificate required for the Certificate Signing Request (CSR) or upload an existing certificate. A certificate is necessary when using a browser to access a secure (HTTPS) site. The HTTPS scheme requires that a digitally signed certificate is installed at the applicant's site.

- "To Generate a New CSR" on page 40
- "To Upload an Existing Certificate" on page 41

▼ To Generate a New CSR

1. **From the Configuration submenu, click the SSL Certificate tab.**

   The SSL Configuration screen appears.

2. **In the drop-down list, select CSR.**
3. **Click the Select button.**
4. **Fill in the open fields, and click the Generate button.**

▼ To Upload an Existing Certificate

1. **From the Configuration submenu, click the SSL Certificate tab.**

   The SSL Configuration screen appears.

2. **In the drop-down list, select Certificate.**
3. **Click the Select button.**
4. **Click Browse, and select the SSL Certificate.**
5. **Click Upload.**

Configuring SNMP

▼ To Configure SNMP

- **From the Configuration submenu, click the SNMP tab.**

  The SNMP screen appears, and the SNMP Settings, SNMP Communities, and SNMP User Settings submenu tabs become available.

▼ To Configure SNMP Settings

1. **From the SNMP submenu click the SNMP Settings tab.**

   The SNMP Settings screen appears. On this screen you can designate the port, set requests, and select versions of SNMP protocols to be permitted.

   See Chapter 9 for a description of the meaning of those choices.

2. **Select the Set Request check box to set one or more SNMP variables.**

   This check box acts as a global override for the user and community read/write permissions. For example, if you disable Set Requests, a member of the private community accessing your Sun server module or stand-alone system via the SNMP interface cannot set sysContact despite having write permission.

3. **To override the delivered system default, select the check box beside the preferred version of SNMP protocols.**
4. **Click Submit, or to clear your entries, click Reset.**

▼ To Configure SNMP Communities

1. **From the SNMP tab, choose SNMP Communities.**

   The SNMP Communities screen appears. This screen allows you to add, modify, and delete SNMP Communities.

2. **To add, modify, or delete a community, click the radio button for the row that you would like to configure.**

3. **In the same row, click the appropriate Operation button.**
   - The Add and Modify buttons take you to screens, where you have the option to name the community and configure the community permission. The two permission options are read-only (ro) or read/write (rw).
   - The Delete button deletes the community *without* a confirmation prompt.

4. **Click Submit to save your changes.**

   You can also click Reset to cancel without saving.

▼ To Configure SNMP Users

1. **From the SNMP submenu, click SNMP User Settings.**

   The SNMP User Settings screen appears. This screen allows you to add a new user, and edit an existing user's settings.

2. **To add, edit, or delete a user, select the radio button at the head of the row in which you would like to work.**

3. **In the same row, click the appropriate Operation button.**
   - Clicking the Delete button deletes the user *without* a confirmation.
   - Clicking the Add and Edit buttons take you to the User Setting screen where you can enter the user name and password, and set the user permission. The two permission options are read-only (ro) or read/write (rw).

4. **Click Submit to save your changes.**

   You can also click Reset to cancel without saving.

Managing the System

This section contains the following system management procedures:

Managing User Accounts

The User Management tab provides access to the User Account screen, which lists current users by privilege and status, and enables the administrator to add, delete, modify and enable or disable user accounts.

The ELOM supports up-to 10 user accounts. One of the user accounts is root, which is set by default and cannot be removed. Therefore, you can configure nine additional accounts. Each user account consists of a user name, a password, and a permission.

User privileges extend to both the web GUI and the CLI.

The privileges that a user can be assigned include:

- **Administrator** – Enables read and write access to all ELOM software features, functions, and commands.
- **Operator** (default)– Enables read-only access to a limited number of ELOM software features, functions, and commands, plus management access to Indicator and Fault LEDs.
- **User and Callback**– Enable read-only access to a limited number of ELOM software features, functions, and commands.

TABLE 4-2 shows the user permission levels and the access each level has to the ELOM menus and screens.

TABLE 4-2 User Permission Levels and Menu Access

Main Level Tabs	Sub-level 1	Sub-level 2	Administrator	Operator	User	Callback
System Information			Yes	Yes	Yes	Yes
	Versions		Yes	Yes	Yes	Yes
		Server Board Version	Yes	Yes	Yes	Yes
		BMC Version	Yes	Yes	Yes	Yes
	Session Time-Out		Yes	–	–	–
	Components		Yes	Yes	Yes	Yes
		CPU	Yes	Yes	Yes	Yes
		Memory	Yes	Yes	Yes	Yes
		NIC	Yes	Yes	Yes	Yes
System Monitoring			Yes	Yes	Yes	Yes
	Sensor Reading		Yes	Yes	Yes	Yes
		Summary	Yes	Yes	Yes	Yes
		Fan	Yes	Yes	Yes	Yes
		Temperature	Yes	Yes	Yes	Yes
		Voltage	Yes	Yes	Yes	Yes
		Chassis Status	Yes	Yes	Yes	Yes
	Event Logs		Yes	Yes	Yes	Yes
		View Event Logs	Yes	Yes	Yes	Yes
		Save Event Logs	Yes	–	–	–
		Clear Event Logs	Yes	–	–	–
	Locator Indicator		Yes	Yes	–	–
	Fault LED		Yes	Yes	–	–
Configuration			Yes	–	–	–
	Network		Yes	–	–	–
	E-mail Notification		Yes	–	–	–
	Platform Event Filter		Yes	–	–	–
	Set Time		Yes	–	–	–

TABLE 4-2 User Permission Levels and Menu Access *(Continued)*

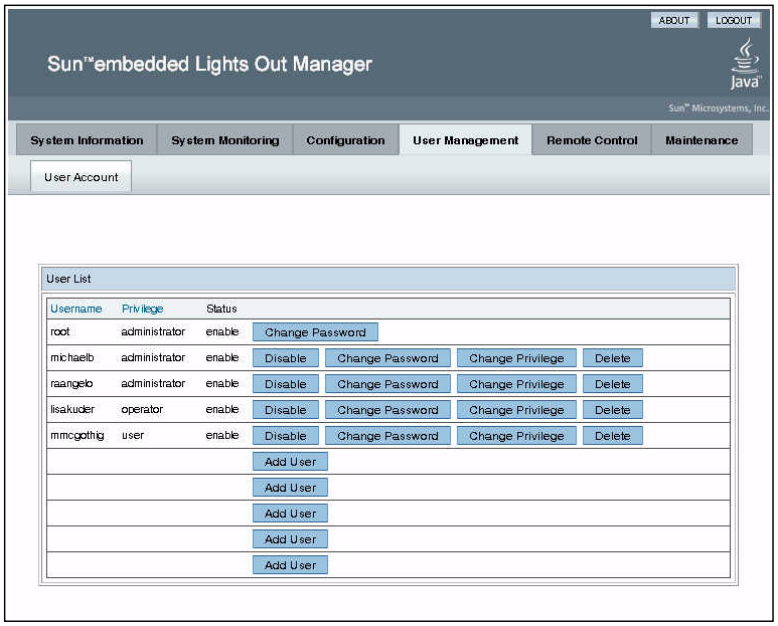
Main Level Tabs	Sub-level 1	Sub-level 2	Administrator	Operator	User	Callback
	SSL Certificate		Yes	-	-	-
	SNMP		Yes	–	–	–
User Management			Yes	–	–	–
	User Account		Yes	–	–	–
	ADS Configuration		Yes	–	–	–
Remote Control			Yes	–	–	–
	Redirection		Yes	–	–	–
	Remote Power Control		Yes	–	–	–
	Hotkey Setup		Yes	–	–	–
Maintenance			Yes	–	–	–
	Firmware Upgrade		Yes	–	–	–
	Reset BMC		Yes	–	–	–

▼ To Manage User Accounts

1. **From the main menu, click the User Management tab.**

   The User Account screen appears (see FIGURE 4-7). The User Account screen shows the User List, which allows you to add or delete a user, change a user password and privilege, and enable or disable a user's status.

FIGURE 4-7 The User Account Screen Showing the User List



▼ To Add a User

Note – Only accounts with Administrator privileges are allowed to add, modify, or delete user accounts.

1. **From the User Management main menu, click the User Account tab.**

   The User List screen appears.

2. **In User List screen, click any available Add User button.**

   The Manage User Account screen appears.

Note – If all nine user account slots are configured, you must delete an existing user account before you can add a new user account. See "To Delete a User Account" on page 47.

3. **Enter a user name and password in their respective fields.**

   TABLE 4-3 summarizes the acceptable user name and password length and character set.

TABLE 4-3 User Name and Password Length and Character Set

	Length	Characters
User Name	4-16 Characters	a-z, A-Z, 0-9
Password	8-20 Characters	a-z, A-Z, 0-9

   Do *not* include spaces in user names and passwords.

4. **Enter the password again in the Confirm Password field.**
5. **Select either Administrator, Operator, User, or Callback for the user role.**
6. **Click Submit to create the user.**

▼ To Delete a User Account

1. **In the User List, locate the user name of the account you want to delete.**
2. **Click the Delete button for the account.**

   The system will *not* prompt for a confirmation.

▼ To Change a User Account Password or Privilege

1. **From the User Management main menu, click the User Account tab.**

   The User List screen appears.

2. **In the User List screen, click the Change Password or Change Privilege button for the appropriate user account.**

   The Manage User Account screen appears.

3. **In the Manage User Account screen, make the necessary changes, and click Submit.**

▼ To Enable or Disable a User Account

1. **From the User Management main menu, click the User Account tab.**

   The User List screen appears.

2. **To disable or enable a user account, click the Disable or Enable button for that account.**

Configuring ADS

▼ To Configure ADS

1. **From the User Management submenu, click the ADS Configuration tab.**

   The ADS Configuration screen appears. The ADS Configuration screen allows you to locate and upload a certificate from Active Directory Service (ADS) for a Microsoft Windows environment. Using ADS can simplify administration tasks by allowing the monitoring of several machines in one node.

2. **Click Browse... to locate the ADS certificate.**
3. **Enter the Primary, Secondary DNS, and Root Domain addresses**
4. **Click Submit, or click Reset to clear your changes.**

Configuring ADS on Windows

The ADS Configuration screen enables you to browse and upload a certificate from Active Directory Service (ADS) for a Microsoft Windows environment. Administrators can simplify their tasks by monitoring multiple machines in one node using ADS.

▼ To Configure ADS on Windows

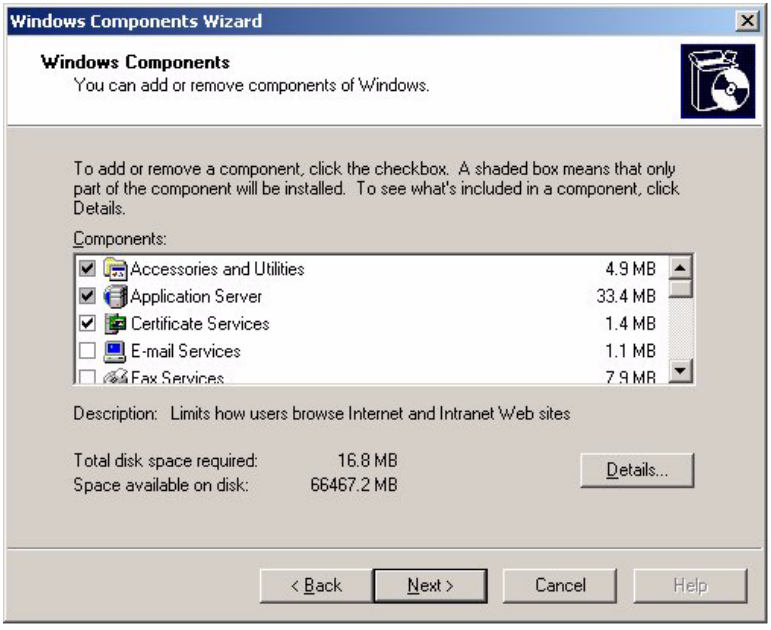
1. **Install Windows 2003 and make it the Domain Controller in an Active Directory environment.**
2. **Create and configure the DNS server.**
3. **Add a new user and set privilege level (administrator or user) on the ADS server.**

4. **Use Control Panel to access Add or Remove Programs, and click Add/Remove Windows Components.**

   The Windows Components Wizard appears.

5. **In the list of components, in the Windows Components screen, click the check box to enable Certificate Services (see** FIGURE 4-8**).**

FIGURE 4-8 Windows Components Screen

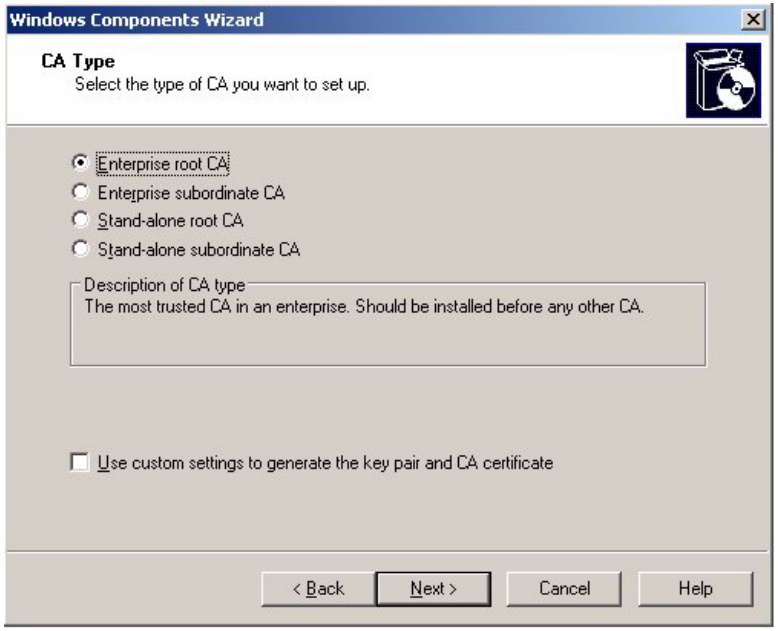


6. **Click Next to begin the Create CA Root Domain Certificate process.**

   This will require IIS to be installed also.

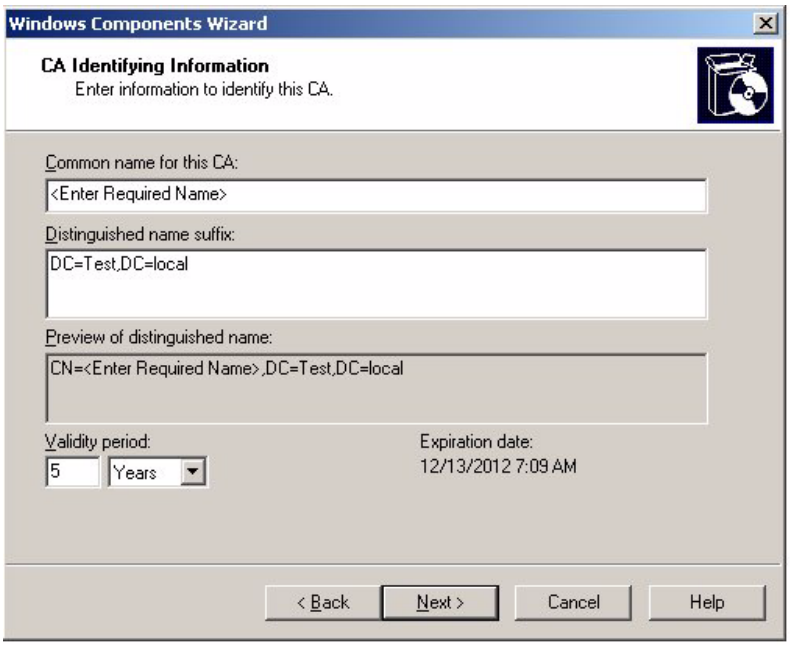
7. **In the CA Type screen of the Windows Components Wizard, select the type of CA you want to set up (see** FIGURE 4-9**).**

FIGURE 4-9 CA Type Windows Components Wizard Screen



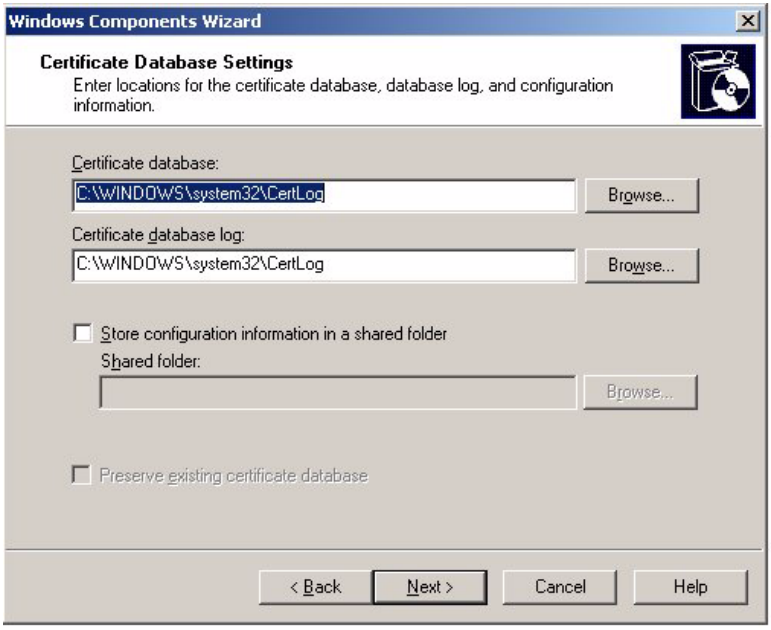
8. **Click Next.**
9. **In the CA Identifying Information screen, enter the necessary information to identify this CA (**FIGURE 4-10**), and click Next.**

FIGURE 4-10 CA Identifying Information Windows Components Wizard Screen



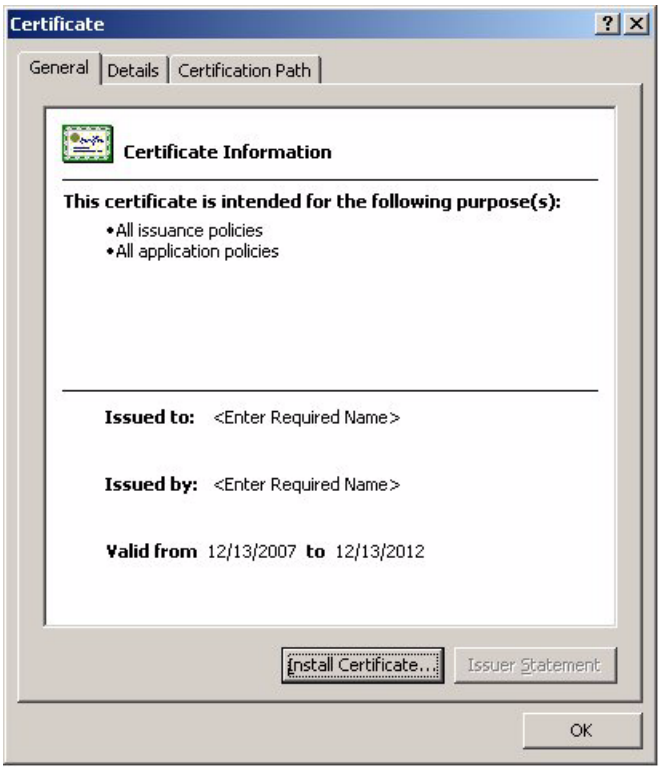
10. **In the Certificate Database Settings screen, enter the locations for the certificate database, database log, and configuration information (see** FIGURE 4-11**).**

FIGURE 4-11 Certificate Database Settings Windows Components Wizard Screen



11. **To finish the Create CA Root Domain Certificate process, click Next.**
12. **To export the AD certificate, locate the net certificate for your Domain.**
    You will see a certificate called, `C:/`*`xxx`*`.crt`.
13. **Double-click the Certificate.**
    The certificate screen appears.

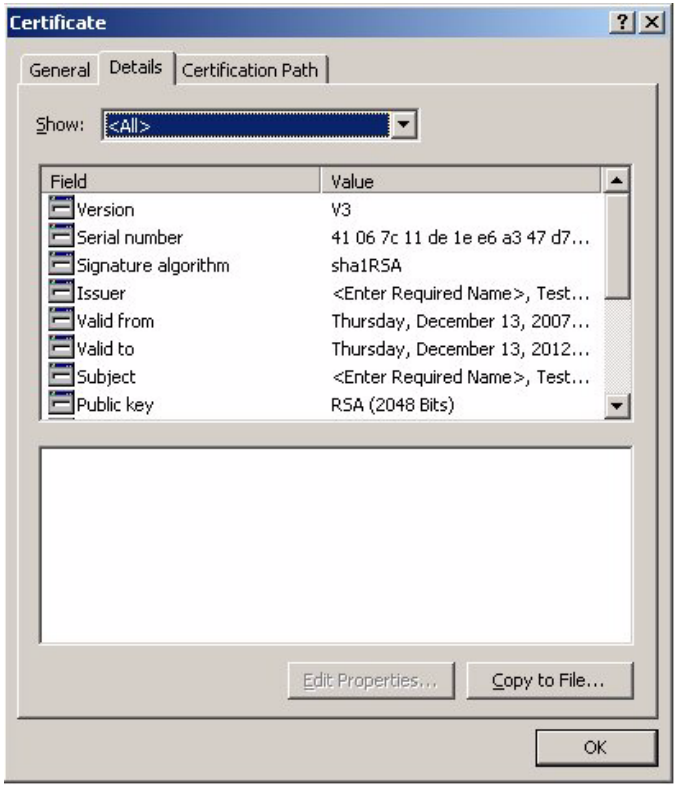
FIGURE 4-12 The Certificate Information Screen



14. **Click the Details tab.**

    The Certificate Details screen appears (see FIGURE 4-13).

FIGURE 4-13 The Certificate Details Screen



15. **Click the Copy to File... button.**

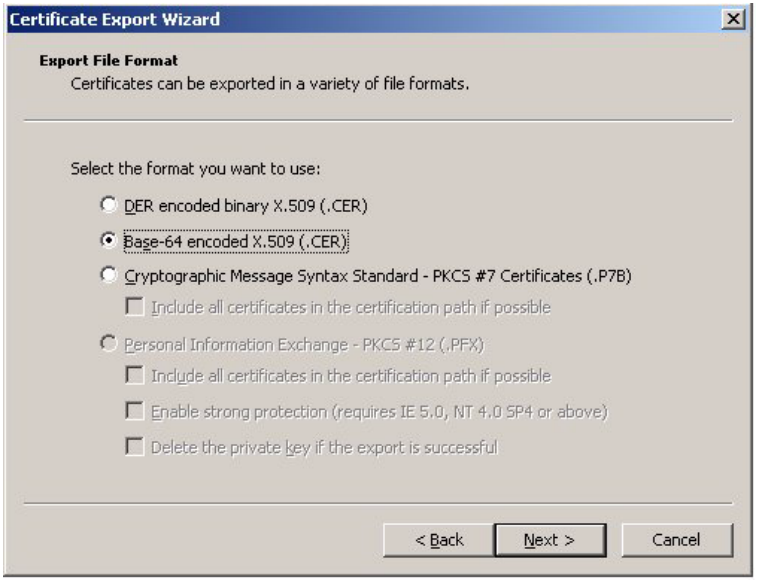
    The Certificate Export Wizard screen appears (see FIGURE 4-14).

FIGURE 4-14 The Certificate Export Wizard Screen

16. **Click Next.**

    The Export File Format screen appears.

FIGURE 4-15 The Export File Format

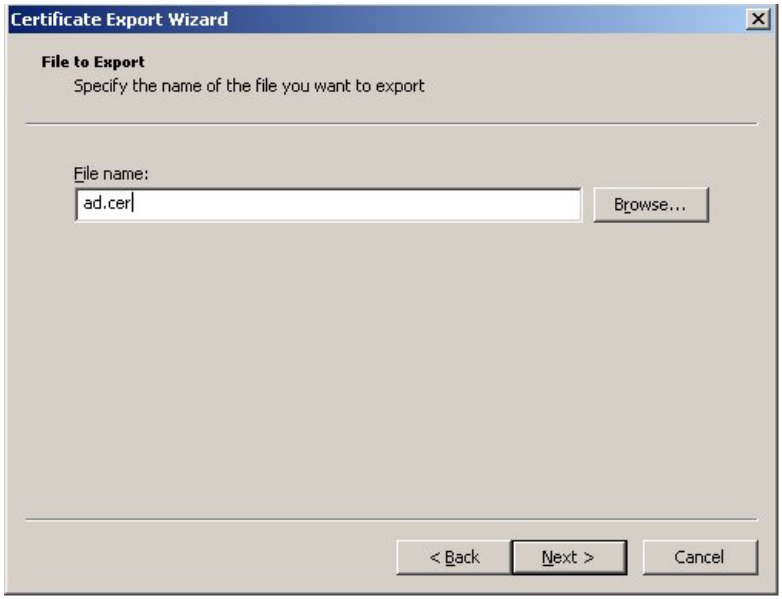


17. **Under the heading Select the format that you want to use:, click the radio button for the second option, Base–64 Encoded X.509 (.CER).**

18. **Click Next.**

    The File to Export screen appears (see FIGURE 4-16)

FIGURE 4-16 The File to Export Screen



19. **Name the file,** `ad.cer`**.**

Note – DNS resolution issues might occur if the filename is incorrect.

Store this exported certificate in a shared folder of your choice.

20. **Click Next.**

    The `ad.cer` file is exported to the shared folder.

21. **To set the Certificate server to respond to the CA request automatically, open Default Domain Controller Security Settings.**

22. **Expand Public Key Policies, and in the Automatic Certificate Request Settings, create a new Computer entry from the supplied entry list.**

23. **Use a browser to connect to an SP ELOM web GUI.**

    Enter the URL of the SP in the address bar.

24. **Log in as root, or as a user with administrator privileges.**

25. **Click the User Management tab, and click the ADS Configuration submenu tab.**

    The ADS Configuration screen appears.

26. **Upload the `ad.cer` file from the share network folder.**

27. **Enter the Primary, Secondary DNS and the Root Domain addresses.**

28. **Click Submit to save the configuration.**

29. **Log out of the web GUI.**

    Click the Logout button.

    To test your configuration, log in as the new user created in the Active Directory structure.

Managing and Maintaining the Server

This section contains the following server management and maintenance procedures:

Managing the Locator Indicator and Fault LED

The System Indicator (Locator) LED is located on the front of the server. You can activate the indicator LED in the ELOM. By activating the indicator LED for a particular server, you can identify that server from the many other servers installed

in a chassis. Similarly, the Fault LED allows you to quickly identify a server that is in a fault state. You can see the state of the Fault LED, and control the state of the System Indicator LED from the ELOM System Monitoring screens.

▼ To Control the State of the System Indicator LED

1. **From the main menu, Click the System Monitoring tab.**

   The System Monitoring submenu tabs appear.

2. **Click the Locator Indicator submenu tab.**

   The System Indicator LED screen appears.

3. **Select the appropriate radio button to either turn the LED on or turn it off.**

4. **Click Submit to change the state of the LED.**

▼ To View the State of the Fault LED

1. **In the main menu, click the System Monitoring tab.**

   The System Monitoring submenu tabs appear.

2. **Click the Fault LED submenu tab.**

   The Fault LED Control screen appears. The current status of the LED is displayed as either On or Off.

Controlling Server Power

You can control power to the server you are logged-in to by using the Remote Power Control submenu screen. The Remote Power Control screen allows you to power the server off, reset the server, boot to the BIOS setup, or boot to Pc-Check.

▼ To Control Server Power

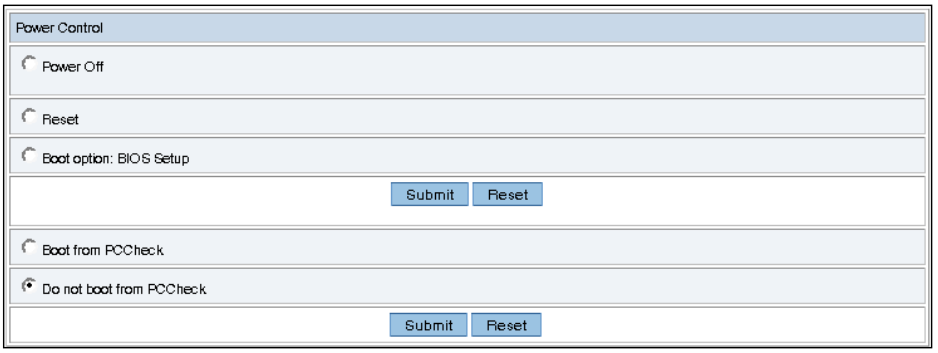
1. **From the main menu, click the Remote Control tab.**

   The Redirection, Remote Power Control, and Hotkey Setup submenu tabs appear.

2. **Click the Remote Power Control submenu tab.**

   The Power Control screen appears (see FIGURE 4-17).

FIGURE 4-17 The Power Control Screen



3. **Click the radio button for the power control option that you need.**

   The power control choices are:

   - Power Off
   - Reset
   - Boot option: BIOS Setup
   - Boot from PCCheck
   - Do not boot from PCCheck

4. **Click Submit to initiate the power control option.**

Resetting the Baseboard Management Controller

Resetting the BMC is a hard reset. If you are logged in, when the BMC is reset, you will be logged off. You will need to wait a couple of minutes before you can log in again.

▼ To Reset the BMC

1. **From the main menu, click the Maintenance tab.**

   The Maintenance submenu tabs appear.

2. **Click the Reset BMC tab.**

   The Reset BMC screen appears.

3. **Click the Reset BMC button.**

   The following message appears:

   "Please wait for BMC reset then reconnect."

Updating the Firmware

There are multiple ways to update the SP firmware:

- Use the CLI's `tftpupdate`. See "To Update the Firmware" on page 94.
- Use the web GUI Firmware Update screen. See the next section, "To Update the Firmware Using the Web GUI" on page 61.

You can also update the common programmable logic device (CPLD):

- Use the web GUI Firmware Update screen. See "To Update CPLD Using the Web GUI" on page 62.

▼ To Update the Firmware Using the Web GUI

1. **Power off the server.**

   Before you can update the service processor firmware, you must first power off the server. To power off the server using the web GUI, see "Controlling Server Power" on page 59.

2. **From the main menu, click the Maintenance tab.**

   The Maintenance submenu tabs appear.

3. **Click the Firmware Upgrade tab.**

   The Firmware Upgrade screen appears. If you have powered off the server, the Firmware Upgrade screen will appear as shown in FIGURE 4-18.

FIGURE 4-18 the Firmware Upgrade Screen

4. **Click the Enter Upgrade Mode button, and follow the upgrade instructions.**

Updating the CPLD Using the Web GUI

The following procedure is rarely used, and should not be done unless instructed by Sun Service personnel. In this procedure you will update the CPLD, using the Firmware Upgrade screen in the web GUI. You will need the latest Tools and Drivers CD or CD ISO image.

▼ To Update CPLD Using the Web GUI

1. **Download the Tools and Driver CD ISO image from:**
   `http://www.sun.com/servers/blades/downloads.jsp`
2. **Burn a CD from the ISO image, or mount the ISO image.**
3. **Locate the combined firmware image file** `firmware/bmc/CPLD_V*.jbc`**.**
4. **Save the CPLD_V*.jbc file to a location on your hard drive.**
5. **Ensure that the host operating system is shut down.**
6. **Login to the ELOM web GUI.**
7. **From the main menu, click the Remote Control tab.**
   The submenu tabs appear.

8. **Click Remote Power Control submenu tab.**

   The Remote Power Control submenu screen appears.

9. **Select the Power Off radio button, and click Submit.**

10. **From the main menu, click the Maintenance tab.**

    The Maintenance submenu screen appears.

11. **Click the Firmware Upgrade tab.**

    The Firmware Upgrade screen appears (see FIGURE 4-18).

12. **Click Enter Upgrade Mode.**

13. **Click Browse and select the CPLD_V*.jbc file.**

    where * is the file version number.

14. **Click the Upgrade CPLD button to start the upgrade process.**

15. **Wait until the upgrade is finished.**

16. **Power cycle or reset the server to enable the new CPLD to take effect.**

Note – You need to apply AC power to the server for the new CPLD to take effect. Remove and insert the server.

Recovering from a Corrupt Service Processor

Should the service processor (BMC) software become corrupted, you can reinstall the default image from the CD. You will need to remove the server from the chassis, and short the connections on jumper block J19 and J44 on the motherboard.

To perform this procedure, you have must have a bootable USB flash device to load files and boot the server module, jumper caps to short the pins on jumper blocks J19 and J44, and a KVM attached to the server module to monitor the recovery process and respond to system prompts.

▼ To Recover from a Corrupt Service Processor

1. **Copy all BMC files from the Tools and Drivers CD to a bootable USB flash device.**

   The BMC files are located in the `/firmware/bmc` directory, on the Tools and Drivers CD. They consist of:

- SOCFLASH.EXE
- DOS4GW
- BMC Binary *(SP Binary file)*

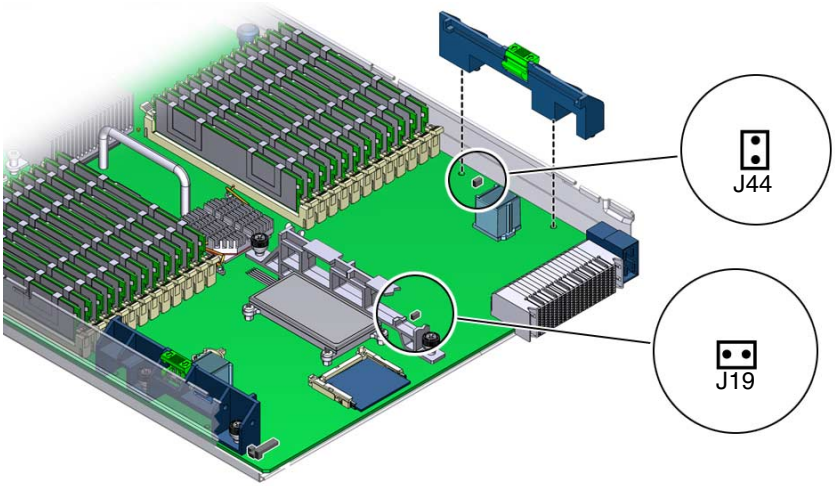
2. **Power off the server gracefully.**

Note – Do not attempt to flash the system while it is still powered on. An unrecoverable error may occur.

---

3. **Remove the server module from the chassis.**
4. **Place the server module on an anti-static mat, and remove the top cover.**
5. **Put on the ESD wrist strap, and attach the grounding cord to the chassis' bare metal or the chassis grounding post.**
6. **Locate jumper block J19 and jumper block J44, and use a jumper cap to short the pins (see** FIGURE 4-19**).**

FIGURE 4-19 Location of Jumpers J19 and J44 on the Motherboard.



See the *Sun Blade X6450 Server Module Service Manual* for the location of jumper blocks J19 and J44.

7. **With the pins on jumper block J19 and J44 shorted, remove the wrist strap grounding cord from the chassis, and replace and secure the top cover.**
8. **Insert the server module into the chassis.**
9. **Insert the bootable USB flash drive into the USB port.**

10. **Power on the system.**

    A message appears on the video console stating that the BMC was not found.

    The system takes up to three minutes to boot.

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

12. **Set the USB flash device as the primary boot device, and save and exit.**

    The server module boots from the USB flash device.

13. **When the server finishes booting, run the following command:**

    `socflash.exe` *SP binary backup file*

    For example:

    `socflash.exe x6450bmc.bin nbackup.bin`

14. **After a successful flash, remove the server module from the chassis, and remove the jumper caps from jumper blocks J19 and J44.**

15. **Insert the server module into the chassis, leaving the system powered off for at least 30 seconds.**

16. **Power on the system; watch the display, and when prompted, press F2 to enter the BIOS Setup Utility.**

17. **Verify the status of the BMC and the BMC version in the BIOS Setup Utility under the Server screen.**

    For more information about the BIOS Setup Utility, see the *Sun Blade X6450 Server Module Service Manual*.

18. **Exit the BIOS Setup Utility.**

    Press Esc or F10 to exit.

Setting Session Timeout

The Session Time-Out is an inactivity timer. If an open session enters a state of inactivity that exceeds the preset timer, the system will close (log out) the session. This function prevents unauthorized access to the system by providing an automated log-out function. You can also disable the Session Time-Out.

▼ To Set the Session Timeout

1. **From the main menu, click the System Information tab.**

   The Versions, Session Time-Out, and Components submenu tabs appear.

2. **Select the Session Time-Out tab.**

   The Session Time-Out screen appears.

3. **Click the Enable Timeout radio button.**

   a. **To disable the timeout function, click the Disable Timeout radio button and go to** Step 5**.**

4. **Select a session time from the Session Time drop-down list.**

   The options are 15 minutes (default), 30 minutes, 1-hour, and 2 hours.

5. **Click the Submit button to set the session timeout.**

CHAPTER 5

Using the Remote Console Application

This chapter describes how to use the remote console application. It includes the following sections:

Accessing the Remote Console From the Web GUI

The remote console application, which is started using the web GUI, enables you to control your server's operating system (OS) remotely using the screen, mouse and keyboard, and to redirect storage devices and ISO image CD/DVD as if they were connected directly to the server.

Installation Requirements

A compatible browser and a minimum of JRE™ 1.6.0 are required to operate the remote console application. See TABLE 5-1.

Note – You do not need to install any OS-specific drivers or helper applications on client systems to run the remote console application.

TABLE 5-1 Client Installation Requirements

Client OS	Java Runtime Environment Including Java Web Start	Browsers
Microsoft Windows XP Pro	JRE 1.6 (Java 6.0 or later)	Internet Explorer 6.0 and later Mozilla 1.7.5 or later Mozilla Firefox 1.0
Red Hat Linux 4.0 or later Desktop and Workstation Editions	JRE 1.6 (Java 6.0 or later)	Mozilla 1.7.5 or later Mozilla Firefox 1.0
Solaris 9	JRE 1.6 (Java 6.0 or later)	Mozilla 1.7.5
Solaris 10	JRE 1.6 (Java 6.0 or later)	Mozilla 1.7.5
SUSE Linux 9.2	JRE 1.6 (Java 6.0 or later)	Mozilla 1.7.5

Note – You can download the JRE 1.6 at `http://java.com`.

Redirecting Local Storage

When you redirect the local storage (including an ISO image) to a remote host server, the following rules apply:

- In all cases, the local storage appear to be plugged in to the host.
- If you do not redirect local storage, the host will act as if there is no medium unless there is a CD/DVD in the host CD/DVD drive. If there is a CD/DVD in the host CD/DVD drive, the host accesses it normally.

The information in TABLE 5-2 describes different case scenarios in which the remote console application and local storage redirection operate.

TABLE 5-2 Remote Console Operation With DVD Drive and Diskette Drive

Case	Status	CD/DVD As Seen by Host
1	Remote console application not started or remote console started but CD/DVD/diskette redirection not started.	Local storage present. No medium indication is sent to the host from the ELOM whenever the hosts asks.
2	Remote console application started with no medium present in the drive.	Local storage present. Whenever the host asks, which may be automatic or when you access the storage on the host, the remote client sends a status message. In this case since there is no medium, the status is no medium.
3	Remote console application started with no medium, then medium is inserted.	Local storage present. Whenever the hosts asks (automatic or manual), the remote client sends a status message as medium present and also indicates the medium change.
4	Remote console application started with medium inserted.	Same as 3.
5	Remote console application started with medium present, then medium is removed.	Next command from the host will get a status message indicating medium not present.
6	Remote console application started with image redirection.	Same as 3.
7	Remote console application started with image, but redirection is stopped (which is the only way to stop ISO redirection).	Driver knows local storage redirection stopped, so it sends a medium absent status on the next host query.
8	Network failure.	The software has a keepalive mechanism. The software will detect keepalive failure since there is no communication and will close the socket, assuming the client is unresponsive. Driver will send a no medium status to the host.
9	Client crashes.	Same as 8.

Starting the Remote Console Application

Use this procedure to start the remote console application from the web GUI. You may be presented with a series of questions. In each case, select Run.

Note – Each new ELOM system is delivered with DHCP set as the default. If an IP address is not found within 5 seconds, the system will default to the IP address `192.168.1.2` to allow instant web access.

▼ To Start the Remote Console Application

1. **Open your browser.**
2. **In the address bar, enter the IP address of the SP that you obtained in:** "To Set Up the Service Processor with the WebGUI" on page 23**.**

   The login screen appears.
3. **Enter the default user name and password.**

   `Username:` **`root`**

   `Password:` **`changeme`**
4. **Click Login.**

   The ELOM main menu appears.
5. **Click the Remote Control tab.**
6. **Select Redirection.**

   The screen displays a Launch Redirection button.
7. **Click Launch Redirection.**

   A screen identifies your current host name, IP address, and user name. The Launch button opens the remote console.
8. **Click Launch.**

Note – For systems using Firefox and Mozilla browsers, the required version of JRE must be at least version 1.6 or later.

The browser downloads the embedded remote control application automatically, and the Remote Console screen appears.

If the remote console does not display, it might be blocked by browser security controls. Reduce security configuration to allow the remote console to display.

Installing an OS on a Remote Server

This method involves using a CD/DVD drive, or ISO image of the OS, on a remote networked system to install the operating system, for example, onto the Sun Blade X6450 server module.

Requirements for Remote KMVS Over IP installation include:

- Remote system connected to the network
- CD/DVD drive connected to the remote system
- Media for installing the operating system of your choice
- SP of the server set up as instructed in the *Sun Blade X6450 Server Module Installation Guide*.

▼ To Install an OS on a Remote Server Using a Virtual CD/DVD

1. **On your laptop or local terminal, open a browser, and enter the IP address of the Sun Blade X6450 Server Module's service processor for the target system.**

   This is the server module on which you want to install the operating system.

2. **Enter the user name and password in the login screen.**
3. **In the main ELOM screen, click the Remote Control tab, then click Launch Redirect to open a remote console screen.**
4. **Insert the OS CD/DVD into your laptop or local CD/DVD drive.**
5. **In the remote console screen, choose Storage –>Mount devices.**

   The Device Configuration screens appears.

6. **Under Storage 1, in the drop-down list, select the local CD/DVD that you will be using for the installation.**
7. **Click Submit.**
8. **Reboot the server.**

9. **See the** *Sun Blade X6450 Server Module Operating System Installation Guide* **for your specific OS installation instructions.**

Other Remote Access Options

Command-line options that are available to address many of these tasks include IPMI tools (Chapter 8), CLI (Chapter 7), and SSH (Secure Shell).

CHAPTER 6

Accessing and Monitoring the Server Using the ELOM CLI

This chapter provides information about how to use the command-line interface (CLI) and the Sun Blade X6450 Server Module software to monitor your server.

See the following sections:

Accessing the CLI

To view and monitor the server module's SP ELOM, use one of the methods listed below to access the CLI. The recommended method is to access the server module's SP directly using an Ethernet connection and SSH. You can also connect to the Chassis Monitoring Module (CMM) using Ethernet and SSH. You can also use a serial terminal and connect directly to the server module's SP, using the multi-port

dongle cable and the UCP connector on the front panel of the server module, or connect to the serial connector on the chassis to access the CMM. TABLE 6-1 describes these methods and points to the relevant connect procedure.

TABLE 6-1 Methods for Accessing the CLI

Method	Description	Procedure
Serial port	Connect to the CLI using a serial terminal, the multi-port dongle cable, and the UCP connector on the front of the server module.	"Connecting to Server Module's SP CLI ELOM Using the Serial Port" on page 10
SSH-to-CLI *(Recommended)*	Connect to the CLI using an Ethernet connection and secure shell (SSH). SSH connections are enabled by default.	"Connecting to the Server Module's SP ELOM Using Ethernet" on page 7
SSH-to-CMM	Connect to the Chassis Monitoring Module (CMM) using an Ethernet connection, and navigate to the SP CLI.	"Connecting to the Server Module's SP ELOM Through the CMM" on page 11

Logging In to the CLI

You must log in to the CLI by supplying a user name and password. When you first access the CLI, and you have not set up any other user accounts (using the web interface), you must log in using the preconfigured administrator user account called root. This account has full read and write privileges, and will enable you monitor, manage and configure the ELOM. Telnet connections to the ELOM are not supported. For more information about the preconfigured administrator account, see "About the Preconfigured Administrator Account" on page 3.

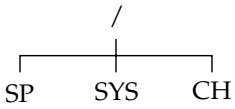
Using the CLI

The CLI enables you to monitor, manage and configure the ELOM (for a list of common tasks that you can perform with the CLI, see TABLE 1-1, in the section, "Embedded Lights Out Manager Common Tasks" on page 2). To use the CLI, you enter commands at the CLI prompt. The CLI has a structure and the command set has a syntax. The CLI structure and command syntax are discussed in the next section.

CLI Structure and Command Syntax

The CLI architecture is a hierarchical namespace that contains every managed object in the system. The top of the hierarchical structure is designated by /. The namespace targets directly below are /SP, /SYS, and /CH (see FIGURE 6-1).

FIGURE 6-1 The Top Levels of the CLI Namespace



Within each namespace, you can do the following:

/SP – Manage, maintain, and configure the server.

/SYS – Manage the server and view server system information.

/CH – View chassis information.

Syntax

The syntax of a command is:

command [*options*] **target** [*propertyname=value*]

For more information on the CLI command line, see Appendix A.

User Accounts and Permissions Levels

To use the CLI, you must have a user account. Every user account must have an assigned permission level. The permission level sets the ELOM read and write limitations for the account. ELOM permissions for user accounts define user limitations. For example:

- **Administrator** – Enables unlimited (read and write) access to all ELOM features, functions, and commands.
- **Operator** (default)– Enables read-only access to a limited number of ELOM software features, functions, and commands, plus management access to Indicator and Fault LEDs.
- **User and Callback**– Enable read-only access to a limited number of ELOM software features, functions, and commands.

TABLE 4-2, in Chapter 4, shows the user permission levels and the access each level has to the ELOM menus and screens. For information about how to create a user account, see "Managing User Accounts" on page 89.

Monitoring Server System Information

You can use the CLI to navigate the /SYS namespace to view the following server system information:

1. Server module-specific information
2. Server module sensor information
3. Chassis and midplane information

The following is a list of the specific information that is available for viewing in the /SYS namespace:

/SYS Namespace	Description	Section/Procedure
/SYS/BoardInfo	Board level information: Manufacturer, manufacture date and time, BIOS version and board name, serial number, and part number	"Viewing Server Module-Specific Information" on page 77
/SYS/ProductInfo	Product level information: Manufacturer, name, part number, serial number, and asset tag	"Viewing Server Module-Specific Information" on page 77
/SYS/CtrlInfo	Power control information: Power status, power control, boot control, Id LED control, Fault LED status, and Fault LED control	"Viewing Server Module-Specific Information" on page 77
/SYS/CPU	CPU information: Socket designation, manufacturer, name, speed, status	"Viewing Server Module-Specific Information" on page 77
/SYS/Memory	Memory module information: Designation, type, speed, size, status	"Viewing Server Module-Specific Information" on page 77
/SYS/NICInfo0	NIC information: Manufacturer, name, part number, serial number	"Viewing Server Module-Specific Information" on page 77

/SYS Namespace	Description	Section/Procedure
/SYS/Temperature	Temperature sensor information: Designation, status, sensor reading, low warning threshold, low critical threshold, upper warning threshold, upper critical threshold	"Viewing Server Module Sensor Information" on page 82
/SYS/Voltage	Voltage sensor information: Designation, status, sensor reading, low warning threshold, low critical threshold, upper warning threshold, upper critical threshold	"Viewing Server Module Sensor Information" on page 82
/SYS/ChassisInfo	Chassis level information: Type, part number, serial number	"Viewing Chassis and Midplane Information" on page 86
/SYS/MIDPlane	Chassis midplane information: Part number, serial number, asset tab, chassis serial number, and chassis part number	"Viewing Server Module Sensor Information" on page 82

For information about available targets, command verbs, and properties for System Information, see Appendix A and the section, "System Information" on page 151.

Viewing Server Module-Specific Information

You can use the CLI to view server module-specific information, such as serial numbers, part numbers, component parameters, and threshold settings. This information is accessible in the following /SYS namespace:

- BoardInfo
- ProductInfo
- CtrlInfo
- CPU
- Memory
- NicInfo0
- SP Version (accessible from any namespace)

The following procedure describes how to view server module-specific information using the CLI:

▼ To View Server Module-Specific Information

1. **Navigate to the /SYS namespace, and enter the following commands:**

   –> **`cd /SYS`**

   –> **`show`**

Example:

```
 -> cd /SYS
/SYS

 -> show

  /SYS
    Targets:
        BoardInfo
        ProductInfo
        ChassisInfo
        CtrlInfo
        CPU
        Memory
        NICInfo0
        Temperature
        Voltage
        MIDPlane

    Properties:

    Target Commands:
        show
        cd
        start
        stop
        reset
 ->
```

The above example shows the available targets in the /SYS namespace.

Note – When additional targets (namespace levels) are available, you can navigate to a target and execute the `show` command to view the target, properties, and commands for that target. For more information about namespace levels and targets, see Appendix A and the section, "Namespace Levels and Targets" on page 138.

---

a. **To view board information, enter the following commands:**

   –> **cd /SYS/BoardInfo**

   –> **show**

b. **To view product information, enter the following commands:**

   –> **cd /SYS/ProductInfo**

   –> **show**

c. **To view power status infomation, enter the following commands:**

```
-> cd /SYS/CtrlInfo
-> show
```

Example:

```
 -> cd /SYS/CtrlInfo
/SYS/CtrlInfo

 -> show

  /SYS/CtrlInfo
    Targets:
        FaultLed

    Properties:
        PowerStatus = on
        PowerCtrl = (Could not show property)
        BootCtrl = regular
        IdLedCtrl = off

    Target Commands:
        show
        cd
        set
->
```

The above example shows the available targets for the /SYS/CtrlInfo namespace. This namespace contains some configuration capabilities (note the availability of the `set` command). For information about managing the /SYS/CtrlInfo namespace, see "Managing the Power State of the Server" on page 104.

d. To view CPU information, enter the following commands:

–> **cd /SYS/CPU**

–> **show**

Example:

```
-> cd /SYS/CPU
/SYS/CPU

 -> show

  /SYS/CPU
    Targets:
        CPU0
        CPU1
        CPU2
        CPU3

    Properties:

    Target Commands:
        show
        cd
 ->
```

The above example shows the available targets for the /SYS/CPU namespace.

e. To view individual CPU information, enter the following commands:

–> **cd /SYS/CPU**[*0...3*]

where *0...3* is the CPU number.

–> **show**

f. To view memory module information, enter the following commands:

–> **cd /SYS/Memory**

–> **show**

Example:

```
 -> cd /SYS/Memory
/SYS/Memory

 -> show

  /SYS/Memory
    Targets:
        DIMM_A0
        DIMM_A1
        DIMM_A2
        DIMM_A3
        DIMM_A4
        DIMM_A5
        DIMM_B0
        DIMM_B1
        DIMM_B2
        DIMM_B3
        DIMM_B4
        DIMM_B5
        DIMM_C0
        DIMM_C1
        DIMM_C2
        DIMM_C3
        DIMM_C4
        DIMM_C5
        DIMM_D0
        DIMM_D1
        DIMM_D2
        DIMM_D3
        DIMM_D4
        DIMM_D5

    Properties:

    Target Commands:
        show
        cd
->
```

The above example shows the available targets for the /SYS/Memory namespace.

g. To view indivdual memory module information, enter the following commands:

–> **cd /SYS/Memory/DIMM**_*module_number*
where *module_number* is the specific memory module number.
–> **show**

h. To view NIC0 information, enter the following commands:

–> **cd /SYS/NICInfo0**
–> **show**

i. To view SP version information, enter the following command:

-> **version**

Example:

```
 -> version
SM CLP Version v1.0.0
SM ME Addressing Version v1.0.0
 ->
```

Viewing Server Module Sensor Information

You can use the CLI to view server module temperature and voltage sensor information for system critical components, such as the CPUs and DIMMs. This information is accessible in the following /SYS namespaces:

- Temperature
- Voltage

The following procedure describes how to view server module sensor information using the CLI:

▼ To View Server Module Sensor Information

1. To navigate to the /SYS namespace, enter the following commands:

–> **cd /SYS**

–> **show**

Example:

```
 -> cd /SYS
/SYS

 -> show

  /SYS
    Targets:
        BoardInfo
        ProductInfo
        ChassisInfo
        CtrlInfo
        CPU
        Memory
        NICInfo0
        Temperature
        Voltage
        MIDPlane

    Properties:

    Target Commands:
        show
        cd
        start
        stop
        reset
 ->
```

The above example shows the available targets in the /SYS namespace.

Note – When additional targets (namespace levels) are available, you can navigate to a target using the `cd` command, and execute the `show` command to view the target, properties, and commands for that target. For more information about namespace levels and targets, see Appendix A and the section, "Namespace Levels and Targets" on page 138..

---

a. To view temperature information, enter the following commands:

–> **`cd /SYS/Temperature`**

–> **`show`**

Example:

```
-> show

 /SYS/Temperature
   Targets:
        CPU_0_TEMP
        CPU_1_TEMP
        CPU_2_TEMP
        CPU_3_TEMP
        VRD_0_TEMP
        VRD_1_TEMP
        VRD_2_TEMP
        VRD_3_TEMP
        DIMM_0_TEMP
        DIMM_1_TEMP
        PROCESSOR_0_HOT
        PROCESSOR_1_HOT
        PROCESSOR_2_HOT
        PROCESSOR_3_HOT

   Properties:

   Target Commands:
        show
        cd
```

The above example shows the available targets for this namespace.

Note – When additional targets (namespace levels) are available, you can navigate to a target using the `cd` command, and execute the `show` command to view the target, properties, and commands for that target. For more information about namespace levels and targets, see Appendix A and the section, "Namespace Levels and Targets" on page 138.

---

b. To view voltage information, enter the following commands:

```
-> cd /SYS/Voltage
-> show
```

Example:

```
-> cd /SYS/Voltage
/SYS/Voltage

-> show

 /SYS/Voltage
   Targets:
       P_VCCP0
       P_VCCP1
       P_VCCP2
       P_VCCP3
       P1V2_VTT
       P1V5_MCH
       P1V5_ESB
       P1V8_B0
       P1V8_STB
       P1V2_NIC
       P12V_CPU1
       P12V_CPU0
       P12V
       P3V3_SUS
       P3V3
       P5V
       P1V25_VTT_STB
       P1V5_B0
       P1V5_B1
       P2V5_STB
       P1V8_B1
       P0V9_B0
       P0V9_B1
       P12V_CPU3
       P12V_CPU2
       P1V8_NIC
       P3V3_SUS
       VCC5_SUS
       HOST_PWR
       STBY_PWR

   Properties:

   Target Commands:
       show
       cd
->
```

The above example shows the available targets for this namespace.

Note – When additional targets (namespace levels) are available, you can navigate to a target using the `cd` command, and execute the `show` command to view the target, properties, and commands for that target. For more information about namespace levels and targets, see Appendix A and the section, "Namespace Levels and Targets" on page 138.

Viewing Chassis and Midplane Information

You can use the CLI to view information about the chassis and chassis midplane. This information is accessible in the following /SYS namespace:

- Temperature
- Voltage

The following procedure describes how to view server module sensor information using the CLI:

▼ To View Chassis and Midplane Information

1. **To navigate to the /SYS namespace, enter the following commands:**

   –> **cd /SYS**

   –> **show**

   a. **To view chassis information, enter the following commands:**

      –> **cd /SYS/ChassisInfo**
      –> **show**

   b. **To view midplane information, enter the following commands:**

      –> **cd /SYS/MIDPlane**
      –> **show**

CHAPTER 7

Configuring and Managing the Server Using the CLI

This chapter describes how to use the Embedded Lights Out Manager (ELOM) command-line interface (CLI) to configure, manage, and maintain the server. The sections in this chapter:

Configuration and Management Tasks

The majority of the CLI configuration and management tasks are located in the following /SP namespaces:

/SP Namespace	Tasks	Section
/SP/Timeout	Change the session timeout.	"Setting the CLI Timeout" on page 89
/SP/users /SP/users/username	Create, delete users, change user status, permission and password.	"Managing User Accounts" on page 89
/SP/network	Configure MAC address, IP address, netmask, gateway, DNS, DHCP or static, and host name.	"Managing ELOM Network Settings" on page 91
/SP/clock	Set date and time, enable/disable NTP, designate IP address of NTP server, and view timezone list.	"Managing the Clock" on page 93
/SP/TftpUpdate	Configure server IP address, designate update file, and intiatre update process.	"Updating the Firmware" on page 93
/SP/AgentInfo/PEF] /SP/AgentInfo/PET	Configure platform event filters and traps.	"Managing Alerts" on page 95
/SP/AgentInfo/SEL	Clear event log.	"Managing the System Event Log" on page 102
/SP/AgentInfo/Console	Start and stop the console.	"Managing the Console" on page 103
/SP/AgentInfo/Mail	Configure SMTP settings and receiver email addresses.	"Managing Mail" on page 103
/SP/AgentInfo/SNMP	Configure settings, community, and users	"Configuring SNMP on the ELOM" on page 116 and "Managing SNMP User Accounts" on page 117

Power control configuration and management tasks are available in the following /SYS namespace:

/SYS Namespace	Tasks	Section
/SYS/CtrlInfo	Control power, control boot and display boot status, control ID LED, and control Fault LED	"Managing the Power State of the Server" on page 104

For information about using the CLI, see Appendix A.

Setting the CLI Timeout

The CLI has a timeout function that you can change. The default timeout is 300 seconds.

▼ To Set the CLI Timeout

- **To set the CLI timeout, enter the following command:**

  –> **`set /SP/Timeout=`***time_in_seconds*

Managing User Accounts

This section describes how to add, delete, view, and configure user accounts using the CLI.

The ELOM supports up to 10 user accounts. One of those, root, is predefined and cannot be removed. Therefore, you can configure up to 9 additional accounts.

Each user account consists of a user name, a password, and a permission. For more information about user permissions, see "User Accounts and Permissions Levels" on page 75. TABLE 7-1 summarizes acceptable user name and password length and character set.

TABLE 7-1 User Name and Password Length and Character Set

	Length	Characters
User Name	4-16 Characters	a-z, A-Z, 0-9
Password	8-20 Characters	a-z, A-Z, 0-9

Do *not* include spaces in user names and passwords.

▼ To Add a User Account

- **Enter the following commands:**

  –> **`cd /SP/users`**
  –> **`create`** *username*

username The name that the new user will use to log in to the ELOM. The system will then prompt you for a password (8-16 characters in length).

▼ To Delete a User Account

- **Enter the following command:**

```
-> cd /SP/users
-> delete username
```

▼ To View User Accounts

- **Enter the following command:**

```
-> cd /SP/users
-> show
```

▼ To Configure User Accounts

- **Use the `set` command to change passwords and permissions for configured user accounts.**

Note – You must have administrator privileges to change user properties.

Syntax

`set target` *[propertyname=value]*

Targets, Properties, and Values

These targets, properties, and values are valid for local user accounts.

Target	Property	Value	Default
`/SP/users/username`	permission password	administrator | operator | user | callback *string* 8-16 characters in length	operato r

Examples:

When changing the permissions for user1234 from administrator to operator, enter:

```
-> cd /SP/users/user1234
-> set permssion=operator
```

To change password for user1234, enter:

```
-> cd /SP/users/user1234
-> set /SP/users/user1234 password=password
```

Managing ELOM Network Settings

You can display or configure the ELOM network settings from the CLI.

▼ To Display network Settings

- **Enter the following command:**

  -> **cd /SP/network**

  –> **show**

  The above command displays the seven network properties:

  - MACaddress,
  - IPAddress
  - Netmask
  - Gateway
  - DNS
  - IPSource
  - Hostname.

  To display individual network settings, enter:

  –> **show** *property*

  property One of the seven network properties.

▼ To Configure Network Settings

- **Use the** `set` **command to change a property's value.**

Tip – Ensure that the same IP address is always assigned to an ELOM by either assigning a static IP address to your ELOM after initial setup, or configuring your DHCP server to always assign the same IP address to an ELOM. This enables the ELOM to be easily located on the network.

Syntax

set target *[propertyname=value]*

Targets, Properties, and Values

These targets, properties, and values are valid for ELOM network settings.

Target	Property	Value
/SP/network	IPAddress	*ipaddress* | *none*
	Netmask	*xxx.xxx.xxx.xxx*
	Gateway	*IP address*
	DNS	*x.x.x.x*
	IPSource	*dhcp* | *static*

Examples

Note – Changing the IP address will disconnect your active session if you are connected to the ELOM via a network.

To change the IP address for the ELOM, enter:

-> **cd /SP/network**

-> **set IPAddress=***xxx.xxx.xxx.xxx*

To set the Gateway address for the ELOM, enter:

-> **cd /SP/network**

-> **set Gateway=***xxx.xxx.xxx.xxx*

To change the network settings from static to DHCP settings, enter:

-> **cd /SP/network**

```
-> set IPSource=dhcp
```

Managing the Clock

You can set the date and time and configure an NTP server using the CLI.

▼ To Manage the Clock

1. **Enter the following commands:**

   ```
   -> cd /SP/clock
   -> show
   ```

   a. **To set the date, enter the following command:**

      -> **set Date=***mm/dd/yyyy*

      Where *mm/dd/yyyy* is the two-digit month, two-digit day, and four-digit year, respectively.

   b. **To set the time, enter:**

      -> **set Time=***hh:mm:ss*

      Where *hh:mm:ss* is the two-digit hour, two-digit minute, and two-digit seconds, respectively.

   c. **To enable or disable NTP, enter:**

      -> **set NTPStatus=[enable|disable]**

   d. **To set the IP address of the NTP server, enter:**

      -> **set NTPServer=***ip_address*

      Where *ip_address* is the IP address of the NTP server.
      This setting is only effective if NTPStatus is set to enable (Step c).

Updating the Firmware

You can use CLI to update the SP firmware. Updating the ELOM from the command line enables you to update both the firmware, and the BIOS at the same time.

▼ To Update the Firmware

Caution – Power interruptions during the update process could leave the SP in a unbootable or nonrecoverable state. Before upgrading your firmware, ensure that you have reliable power and protect against accidental power interruptions.

Caution – The file system could become corrupted if the host OS is not shut down before the update process begins. If the OS is running when the update process starts, the SP shuts the host down ungracefully, which could cause file system corruption.

Note – The upgrade takes about 5 minutes to complete, depending on network traffic. During this time, no other tasks can be performed in the Embedded Lights Out Manager software.

1. **Copy the combined** `bios/bmc` **image to your Tftp server.**
2. **If the server OS is running, perform a graceful shutdown.**
3. **Log in to the CLI, and navigate to the TftpUpdate directory. Enter:**

   -> **`cd /SP/TftpUpdate`**

Note – A network failure during the file upload will result in a timeout. This causes the SP to reboot with the prior version of the firmware.

4. **To set the IP address of the TFTP server, enter the following command:**

   -> **`set ServerIPAddress=`***tfp-server-ip-address*

   tfp-server-ip-address The IP address of the tftp server.

5. **To set the file name of the combined** `bmc.bios` **image, enter the following command:**

   -> **`set Filename=`***filename*

   a. **To set the update method to overwrite existing settings, enter:**

      -> **`set Update=action`**

      This is the default method. It clears the CMOS, and overwrites all customized BIOS settings.

b. **To set the update method to preserve existing settings, enter:**

```
-> set SaveFlag=yes
```

This method preserves the CMOS settings.

6. **Start the tftp download:**

```
-> set Update=action
```

7. **Select Yes to continue, or select No to exit.**

Example:

```
-> cd /SP/TftpUpdate
-> set ServerIPAddress=129.148.53.204
-> set FileName=filename
-> set Update=action
getting image...
getting image successfully.
prepare to update...
Prepare OK!
Update Successful
starting update...
```

Managing Alerts

The system is equipped with sensors that read several system critical parameters, such as voltages and temperatures (for imformation about how to view these sensors, see "Viewing Server Module Sensor Information" on page 82). The system monitors these sensors and creates an alert when a sensor reading crosses an upper or lower critical threshold level.

You can manage these alerts, by using the CLI to create filters that trap alerts based on the sensor type. You can then have the filters perform various preconfigured actions in response to the alert. Configuring alerts with the CLI is a two step process:

1. **Configure a destination IP address in the PET.**
2. **Configure a platform event filter (PEF) to enable and perform various alert-triggered actions.**

You manage alerts from the /SP/AgentInfo namespace, using the `show` and `set` commands. The `show` command allows you to display current alert property and value settings. The `set` command allows you to configure alert property and value settings.

Displaying Alerts

Use the show command to display PET and PEF targets, properties, and values.

▼ To Display Alerts

- **To display targets, properties, and target commands for PET, enter the following command:**

  –> **show /SP/AgentInfo/PET**

- **To display targets, properties, and target commands for PEF, enter the following command:**

  –> **show /SP/AgentInfo/PEF**

  Before configuring alerts, you might want to display a target's current settings. This allows you to examine the current status of alerts. Use the `cd` command and the `show` command, respectively, to navigate to targets and display property values. For example:

  –> **cd /SP/AgentInfo/PET**

  –> **show**

  The output of the show command appears:

```
–> show
/SP/AgentInfo/PET
    Targets:
        Destination1
        Destination2
        Destination3
        Destination4

    Properties:

    Target Commands:
        show
        cd
        set
```

Displaying PET Target Properties

Use the `show` command to view PET target properties.

▼ To Display PET Target Properties

To display properties, enter the following commands:

–> **cd Destination1**

–> **show**

The result of executing the `show` command for the target, Destination1 appears:

```
–> show
/SP/AgentInfo/PET/Destination1
     Targets:

     Properties:
        IPAddress = 10.5.157.112

     Target Commands:
        show
        set
```

Configuring Alerts

The first step to configuring alerts is to configure the PET IP address. After you configure the IP address, you need to configure the individual PEF filter tables. Filter tables are where you designate the specific alert-triggered actions

Use the set command to configure alerts in PET and PEF:

Syntax

set *target propertyname*=*value*

Targets, Properties, and Values

This target, property, and value is valid when using the `set` command to set the IPMI PET IP address:

Target	Property	Value	Default
/SP/AgentInfo/PET/[Destination1...Destination4]	IPAddress	ipaddress	(None)

Configuring the PET IP Address

▼ To Configure the PET IP Address

To set the IP address for Destination1, enter the following commands:

–> **cd /SP/AgentInfo/PET/Destination1**

–> **set IPAddress=***xxx.xxx.xxx.xxx*

xxx.xxx.xxx.xxx The IP address.

Repeat the above `set` command to configure the IP address for additional destination targets.

Configuring the PEF Global Controls

PEF Global Controls allow you to enable PEF actions globally. These settings override settings in the PEF filter table. These targets and properties are valid for configuring the global PEF controls:

Target	Property
/SP/AgentInfo/PEF/PEFGlobalCtrl	= enable | disable (default)
/SP/AgentInfo/PEF/PEFActionGlobalCtrlPowerOff	= enable | disable (default)
/SP/AgentInfo/PEF/PEFActionGlobalCtrlPowerCycle	= enable | disable (default)
/SP/AgentInfo/PEF/PEFActionGlobalCtrlPowerReset	= enable | disable (default)
/SP/AgentInfo/PEF/PEFActionGlobalCtrlAlert	= enable | disable (default)
/SP/AgentInfo/PEF/PEFActionGlobalCtrlMail	= enable | disable (default)
/SP/AgentInfo/PEF/PEFActionGlobalCtrlInterrupt	= enable | disable (default)

▼ To Configure the PEF Global Controls

1. **To configure the PEF global controls, you must first enable global control by entering the following commands:**

   –> **cd /SP/AgentInfo/PEF**

   –> **set PEFGlobalCtrl=enable**

   After enabling global control, you can enable global control for specific actions.

2. **To enable global PEF control for a specific action, enter the following commands for each PEFActionGlobalCtrl that you want to enable:**

   This example shows how to enable the power reset PEF global action:

   –> **cd /SP/AgentInfo/PEF**

   –> **set PEFActionGlobalCtrlPowerReset=enable**

Configuring the Event Filter Tables

The event filter table is where you designate the specific alert-triggered actions. You can configure up to six event filter tables. These targets, properties, and values are valid for setting the PEF:

Target	Property
/SP/AgentInfo/PEF/EventFilterTable[1-6]/status	enable | disable
/SP/AgentInfo/PEF/EventFilterTable[1-6]/sensortype	All, Memory, Processor, Temperature, Voltage, Fan
/SP/AgentInfo/PEF/EventFilterTable[1-6]/powercrtl	enable | disable
/SP/AgentInfo/PEF/EventFilterTable[1-6]/diagnosticinterrupt	enable | disable
/SP/AgentInfo/PEF/EventFilterTable[1-6]/sendalert	enable | disable
/SP/AgentInfo/PEF/EventFilterTable[1-6]/sendmail	enable | disable

▼ To Configure the Event Filter Tables

1. **To configure a PEF EventFilterTable target, enter the following commands:**

–> **cd /SP/AgentInfo/PEF**

–> **show**

The result of executing the show command appears:

```
-> show
/SP/AgentInfo/PEF
    Targets:
        EventFilterTable1
        EventFilterTable2
        EventFilterTable3
        EventFilterTable4
        EventFilterTable5
        EventFilterTable6

    Properties:
        PEFGlobalCtrl = enable
        PEFActionGlobalCtrlPowerOff = enable
        PEFActionGlobalCtrlPowerCycle = enable
        PEFActionGlobalCtrlPowerReset = enable
        PEFActionGlobalCtrlAlert = enable
        PEFActionGlobalCtrlMail = enable
        PEFActionGlobalCtrlInterrupt = enable

    Target Commands:
        show
        cd
        set
```

By examining the output of the `show` command, you can view the current global control configuration. If necessary use the `cd` and `show` commands to navigate to and examine the individual event filter table targets. You will need to decide which table you are going to configure.

2. **When you have decided which EventFilterTable to configure, enable the table by entering the following commands:**

   This example uses EventFilterTable1:

   -> **cd EventFilterTable1**

   -> **set status=enable**

3. **To display EventFilterTable1, enter the following command:**

   –> **show**

   The result of executing the show command appears:

```
–> show

/SP/AgentInfo/PEF/EventFilterTable1
    Targets:

    Properties:
        Status = enable
        SensorType = All
        PowerCtrl = disable
        DiagnosticInterrupt = disable
        SendAlert = disable
        SendMail = disable

    Target Commands:
        show
        set
```

   Next, set the sensor type. There are six values for the sensor type:

All
Memory
Processor
Temperature
Voltage
Fan

4. **Use the** `set` **command to configure the sensor type:**

   –> **set** *sensortype*=*value*

   For example, to set the temperature sensor, enter:

   –> **set sensortype=Temperature**

5. **Use the** `set` **command to enable (or disable) actions.**

   For example, to set the sendalert and sendmail actions, enter:

   –> **set sendalert=enable**

   –> **set sendmail=enable**

6. **When you are finished, use the** `show` **command to verify the PEF configuration:**

   –> **show**

   The output from the command appears:

```
–> show
/SP/AgentInfo/PEF/EventFilterTable1
    Targets:

    Properties:
        Status = enable
        SensorType = temperature
        PowerCtrl = disable
        DiagnosticInterrupt = disable
        SendAlert = enable
        SendMail = enable

    Target Commands:
        show
        set
```

   In the example above, EventFilterTable1 is enabled to activate the SendAlert and SendMail actions, based on temperature related alerts.

Managing the System Event Log

You can use the CLI to view and clear the System Event Log (SEL).

▼ To Manage the System Event Log

1. **To view the SEL, navigate to the SEL namespace and execute the** `show` **command:**

   –> **cd /SP/AgentInfo/SEL**
   –> **show**

   The content of SEL appears.

2. **To clear the SEL, navigate to the SEL namespace and use the set command and the ClearEventlog property:**

   –> **cd /SP/AgentInfo/SEL**
   –> **set ClearEventlog=**

Managing the Console

You can manage the console by using the `start` and `stop` commands.

▼ To Manage the Console

To start a session to the server console, enter this command:

–> **`start /SP/AgentInfo/Console`**

Note – After running the `start` command, no output will be displayed until the server is rebooted.

To revert to CLI once the console has been started, press **`Esc-Shift-9`** (**`Esc-(`**).

Note – Key combinations in this manual are based on the U.S. keyboard, which might differ from other keyboards. For a U.S. keyboard map, see Appendix B.

Enter this command to terminate a server console session started by another user:

–> **`stop /SP/AgentInfo/Console`**

Managing Mail

You can use the CLI to configure mail parameters, including up to 10 email recipients.

▼ To Manage Mail

1. **Navigate to the Mail namespace:**

   –> **`cd /SP/AgentInfo/Mail`**

2. **Use the set command to configure the IP address of the SMTP server and the sending server:**

   –> **`set SMTPServer=`***xxx.xxx.xxx*
   –> **`set Sender=`***xxx.xxx.xxx*

   xxx.xxx.xxx The IP addresses of the SMTP and sending servers.

3. **Setup a email recipient:**

   –> **cd receiver**[*1-10*]

   1-10 One of the 10 recipients

   –> **set EmailAddress=***xxx.xxx.xxx*

   xxx.xxx.xxx The IP address of the receiving server.

Managing the Power State of the Server

You can use the CLI to change the server's state and to access the host console.

▼ To Manage the Power State of the Server

1. **Navigate to the /SYS/CtrlInfo namespace:**

   –> **cd /SYS/CtrlInfo**

   –> **show**

Example:

```
 -> cd /SYS/CtrlInfo
/SYS/CtrlInfo

 -> show

  /SYS/CtrlInfo
    Targets:
        FaultLed

    Properties:
        PowerStatus = on
        PowerCtrl = (Could not show property)
        BootCtrl = regular
        IdLedCtrl = off

    Target Commands:
        show
        cd
        set

 ->
```

The above example shows the available targets and properties.

a. To power on the server module, enter:

-> set /SYS/CtrlInfo PowerCtrl=on

b. To power off the server module gracefully, enter:

-> set PowerCtrl=gracefuloff

c. To power off the host, enter the following command:

-> set PowerCtrl=off

d. To reset the server module, enter:

-> set PowerCtrl=reset

e. To reboot the server module and enter BIOS automatically, enter:

-> set BootCtrl=BIOSSetup

f. To reboot the server module, and boot using PXE, enter:

-> set BootCtrl=PXE

g. To reboot and enter the Pc-Check diagnostic utility, enter:

-> set BootCtrl=PCCheck_enable

h. **To disable the option to reboot into Pc-Check, and boot normally, enter the following commands:**

```
-> set BootCtrl=PCCheck_disable
-> set BootCtrl=regular
```

CHAPTER 8

Using IPMI

This chapter describes the Intelligent Platform Management Interface (IPMI) functionality and lists the supported IPMI commands. It includes the following sections:

About IPMI

The Intelligent Platform Management Interface (IPMI) is an open-standard hardware management interface specification that defines a specific way for embedded management subsystems to communicate. IPMI information is exchanged through a baseboard management controller (BMC), which is located on a IPMI-compliant hardware component, such as the service processor (SP). Using low-level hardware intelligence instead of the operating system has two main benefits: first, this configuration allows for out-of-band server management, and second, the operating system is not burdened with transporting system status data.

You can manage your server with the IPMI v.1.5/2.0 on your server module or stand-alone server, which runs a daemon to do the following:

- Support low pin count (LPC) host interface in two modes:
  - KCS Mode (3 channels)
  - BT Mode (1 channel with 32 bytes of FIFO)
- Support dedicated NIC or shared lights out management (LOM)
- Support Serial-On-LAN (SOL)
- Customize FRU/Sensor Data Record data (firmware independent)
- Provide KVM over IP (remote access to the server)
- Enable the user interface (UI) for hot key definitions (for example Ctrl-Alt-Del)

- Provide full screen display switch
- Set dynamic video scaling (4x4 Video Scalar)

Your Sun Blade X6450 server module is IPMI v2.0 compliant. You can access IPMI functionality through the command line with the IPMItool utility either in-band or out-of-band. Additionally, you can generate an IPMI-specific trap from the web interface or manage the server's IPMI functions from any external management solution that is IPMI v1.5 or v2.0 compliant. For more information about the IPMI v2.0 specification, go to
http://www.intel.com/design/servers/ipmi/spec.htm#spec2

IPMItool

IPMItool is a simple command-line interface that is useful for managing IPMI-enabled devices. You can use this utility to perform IPMI functions with a kernel device driver or over a LAN interface. IPMItool enables you to manage system field-replaceable units (FRUs), monitor system health, and monitor and manage system environmentals, independent of the operating system.

Download this tool from http://ipmitool.sourceforge.net/, or locate IPMItool and its related documentation on your server Resource CD.

When IPMItool is installed, it includes a man page. To view it, enter:

```
man ipmitool
```

If your client machine has a default installation of Solaris 10, you can find a preinstalled version of IPMItool in the following directory:`/usr/sfw/bin`. The binary file is called `ipmitool`.

Sensors

Your server includes a number of IPMI-compliant sensors that measure things such as voltages, temperature ranges, and security latches that detect when the enclosure is opened. For a complete list of sensors, see your platform supplement.

The sensors can activate system fault lights, and register events in the system event log (SEL). To see the system event log from the IPMItool, at the prompt, enter the following command:

`ipmitool -H` *ipaddress of the SP* **`-U root -P`** *password* **`sel list`**

Depending on where IPMItool is installed from, the `-P` option might be missing. In such a case, do not type the `-P` from the previous command, and enter the password when prompted.

Supported IPMI 2.0 Commands

TABLE 8-1 lists the supported IPMI 2.0 commands.

For details on individual commands, see the IPMI Intelligent Platform Management Interface Design Specification, v2.0. A copy is available at:

`http://www.intel.com/design/servers/ipmi/spec.htm`

TABLE 8-1 Supported IPMI 2.0 Commands

Supported IPMI 2.0 Commands
General Commands
Get Device ID
Cold Reset
Warm Reset
Get Self Test Results
Set/Get ACPI Power State
Reset/Set/Get Watchdog Timer
Set/Get BMC Global Enables
Clear/Get Message Flags
Enable Message Channel Receive
Get/Send Message
Read Event Message Buffer
Get Channel Authentication Capabilities
Get Session Challenge
Activate/Close Session
Set Session Privilege Level
Get Session Info
Set/Get Channel Access
Get Channel Info

TABLE 8-1 Supported IPMI 2.0 Commands *(Continued)*

Supported IPMI 2.0 Commands *(Continued)*
Set/Get User Access
Set/Get User Name
Set User Password
Master Write-Read
Set/Get Chassis Capabilities
Get Chassis Status
Chassis Control
Chassis Identify
Set Power Restore Policy
Get System Restart Cause
Set/Get System Boot Options
Set/Get Event Receiver IPMI
System Interface Support
KCS
BT
Serial Over LAN
RCMP
• Multiple Payloads
• Enhanced Authentication
• Encryption
PEF and Alerting Commands
Get PEF Capabilities
Arm PEF Postpone Timer
Set/Get PEF Configuration Parameters
Set/Get Last Processed Event ID
Alert Immediate
PET Acknowledge
Sensor Device Commands
Get Sensor Reading Factors

TABLE 8-1 Supported IPMI 2.0 Commands *(Continued)*

Supported IPMI 2.0 Commands *(Continued)*
Set/Get Sensor Hysteresis
Set/Get Sensor Threshold
Set/Get Sensor Event Enable
Get Sensor Reading
Set Sensor Type
FRU Device Commands
Get FRU Inventory Area Info
Read/Write FRU Data SDR Device
Get SDR Repository Info
Get SDR Repository Allocation
Reserve SDR Repository
Get/Add SDR
Partial Add SDR
Clear SDR Repository
Get SDR Repository Time
Enter/Exit SDR Repository Update
Run Initialization Agent
SEL Device Commands
Get SEL Info
Get SEL Allocation Info
Reserve SEL
Get/Add SEL Entry
Clear SEL
Set/Get SEL Time
LAN Device Commands
Get LAN Configuration Parameters
Suspend BMC ARPs

TABLE 8-1 Supported IPMI 2.0 Commands *(Continued)*

Supported IPMI 2.0 Commands *(Continued)*
Serial/Modem Device Commands
Set/Get Serial Modem Configuration
Set Serial Modem MUX
Get TAP Response Codes
Serial/Modem Connection Active
Callback
Set/Get User Callback Options
Event Commands
Get Event Count
Set/Get Event Destination
Set/Get Event Reception State
Send ICMB Event Message

CHAPTER 9

Using Simple Network Management Protocol

This chapter describes how to use Simple Network Management Protocol (SNMP). It includes the following sections:

About SNMP

The Sun server supports the Simple Network Management Protocol (SNMP) interface, versions 1, 2c, and 3. SNMP is an open technology that enables the management of networks and devices, or nodes, connected to the network. SNMP messages are sent over IP using the User Datagram Protocol (UDP). Any management application that supports SNMP can manage your server.

How SNMP Works

Utilizing SNMP requires two components, a network management station and a managed node (in this case, the ELOM). Network management stations host management applications, which monitor and control managed nodes.

Managed nodes are any number of devices, including servers, routers, and hubs that host SNMP management agents responsible for carrying out the requests from management stations. The management station monitors nodes by polling management agents for the appropriate information using queries. Managed nodes can also provide unsolicited status information to a management station in the form of a trap. SNMP is the protocol used to communicate management information between the management stations and agents.

The SNMP agent is preinstalled and runs on the ELOM, so all SNMP management of the server should occur through the ELOM. To utilize this feature, your operating system must have an SNMP client application. See your operating system vendor for more information.

The SNMP agent on your ELOM provides inventory management and sensor and system state monitoring capabilities.

SNMP MIB Files

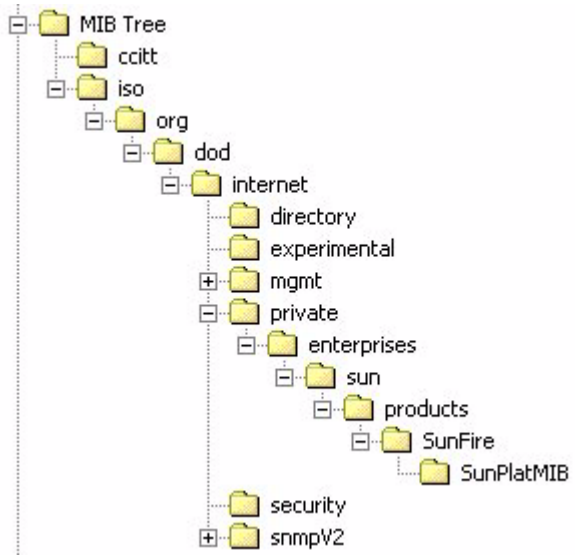
The base component of an SNMP solution is the management information base (MIB). MIB is a text file that describes a managed node's available information and where it is stored. When a management station requests information from a managed node, the agent receives the request and retrieves the appropriate information from the MIBs. The Sun server supports the following SNMP classes of management information base (MIB) files. Download and install the product-specific MIB files from your Resource CD or the Tools and Drivers CD for your platform.

- The system group and SNMP group from RFC1213 MIB
- SNMP-FRAMEWORK-MIB
- SNMP-USER-BASED-MIB
- SNMP-MPD-MIB SUN-PLATFORM-MIB
- ENTITY-MIB

MIBs Integration

Use the MIBs to integrate the management and monitoring of the server into SNMP management consoles. The MIB branch is a private enterprise MIB, located at MIB object iso(1).org (3). dod (6) .internet (1) .private (4) .enterprises (1) .sun (42) .products (2). See FIGURE 9-1. The standard SNMP port, 161, is used by the SNMP agent on the ELOM.

FIGURE 9-1 Sun Server MIB Tree



SNMP Messages

SNMP is a protocol, not an operating system, so you need an application to use SNMP messages. Your SNMP management software might provide this functionality, or you can use an open-source tool like net-SNMP, which is available at http://net-snmp.sourceforge.net/.

Both management stations and agents use SNMP messages to communicate. Management stations can send and receive information. Agents can respond to requests and send unsolicited messages in the form of a trap. There are five functions that management stations and agent, use:

- Get
- GetNext
- GetResponse
- Set
- Trap

By default, port 161 is used for SNMP messages, and port 162 is used to listen for SNMP traps.

Configuring SNMP on the ELOM

The ELOM has a preinstalled SNMP agent that supports trap delivery to an SNMP management application.

To use this feature, you must integrate the platform-specific MIBs into your SNMP environment, tell your management station about your server, then configure the specific traps.

▼ To use SNMP on the SP

This example shows how to use SNMP with a third-party MIB browser.

1. **From the Manager Preferences menu, choose Load/Unload MIBS: SNMP.**
2. **Locate and select the** `SUN-PLATFORM-MIB.mib` **file.**

   The `SUN-PLATFORM-MIB` file is available on your Resource CD.
3. **Click Load.**
4. **Specify the directory where server MIBs are placed and click Open.**
5. **Repeat the above steps to load other MIBs.**
6. **Exit the Manager Preferences menu.**
7. **Open an SNMP MIB browser.**

   The SNMP standard tree appears in the MIB browser.
8. **Locate the Sun branch located under private\enterprises.**

   Verify that the SUN-PLATFORM_MIB is integrated.

Adding Your Server to Your SNMP Environment

Add your Sun server as a managed node using your SNMP management application. See your SNMP management application documentation for further details.

Configuring Receipt of SNMP Traps

Configure a trap in your ELOM. See "Managing Alerts" on page 95, or "Configuring Email Notification" on page 35.

Managing SNMP User Accounts

You can create, set permissions, delete, and modify SNMP user accounts from the CLI. By default, SNMP v3 is enabled, and SNMP v1 and v2c are disabled.

▼ To Create an SNMP User Account

This procedure details the creation of an SNMP user account. TABLE 9-1 shows the both the value and the default values for the user account properties.

1. **To navigate to the SNMP user directory, enter the following command:**

   –> **`cd /SP/AgentInfo/SNMP/user`**

2. **To create a user, enter:**

   –> **`create`** *username*

   username The login name of the user account.

   The above steps are used to create an SNMP v3 read-only user account. To create an SNMP v1/v2c user account enter:

   `create /SP/AgentInfo/SNMP/communities/`*communityname*

   communityname The name of the SNMP community you are creating.

3. **When prompted, supply the values for the following properties:**

   Applicable values are shown in TABLE 9-1.

   `AuthProtocol`
   `AuthPassword` (the system requires you to confirm the password)
   `PrivacyProtocol` (if you enter the DES protocol, you will be prompted to supply a privacy password)
   `PrivacyPassword` (the system requires you to confirm the password)

Note – If you enter an incorrect value, the create user process will fail, and you will need to start over.

After supplying values for the above properties a success message appears indicating the end of the create user process.

▼ To Set Permission for a User Account

This procedure details setting the permission level for an SNMP user account.

1. **To navigate to the user directory, enter the following command:**

   –> **cd /SP/AgentInfo/SNMP/user**

2. **To list users, enter:**

   –> **show**

   The show command allows you to indentify all users.

3. **Navigate to the user's directory:**

   –> **cd** *username*

   username The name of the user identified in Step 2.

4. **To change the permission for a user account, use the set command. Enter:**

   –> **set Permssion=***value*

   value It is either `ro` (read-only) or `rw` (read/write).

▼ To Delete a User Account

This procedure details deleting an SNMP user account.

1. **From the root position, enter the following command at the CLI prompt:**

   –> **cd /SP/AgentInfo/SNMP/user**

2. **To list users, enter:**

   –> **show**

   The show command allows you to indentify all users.

3. **To delete a user enter the following command:**

   –> **delete** *username*

   username The name of the user identified in step 2.

   The above steps are used to delete an SNMP v3 read-only user account. To create an SNMP v1/v2c user account enter:

   –> **delete /SP/AgentInfo/SNMP/communities/***communityname*

   communityname The name of the SNMP community that you want to delete.

Modifying User Accounts

Use the `set` command to configure SNMP user accounts.

Syntax

set target *[propertyname=value]*

Targets, Properties, and Values

These targets, properties, and values are valid for SNMP user accounts.

TABLE 9-1 SNMP Targets, Properties, and Values

Target	Property	Value	Default
/**SP/AgentInfo/SNMP**/communities/communityname	Permissions	ro|rw	ro
/**SP/AgentInfo/SNMP/user**/username	AuthProtocol	MD5|SHA	MD5
	AuthPassword	*string*	(Null string)
	Permission	ro|rw	ro
	PrivacyProtocol	none|DES	None*
	PrivacyPassword	*string*	(Null string)

* If the PrivacyProtocol property has a value other than none, then PrivacyPassword must be set.

Examples

When changing the parameters of SNMP user, you must set values for all of the properties, even if you are not changing all of the values. For example, to change a user's PrivacyProtocol property to DES you must enter:

-> **set /SP/AgentInfo/SNMP/user/***username* **PrivacyProtocol=DES PrivacyPassword=***password* **AuthProtocol=SHA AuthPassword=***password*

Your changes would be invalid if you entered only:

-> **set /SP/AgentInfo/SNMP/user/al PrivacyProtocol=DES**

Note – You can change SNMP user permissions without resetting the privacy and authentication properties.

To show an SNMP user's properties, enter this command from the user's directory at /SP/AgentInfo/SNMP/user/*username*:

-> **show**

The result appear as follows:

```
/SP/AgentInfo/SNMP/user/username
     Targets:
Properties:
          Permission = ro
          AuthProtocol = SHA
          AuthPassword = (Cannot show property)
          PrivacyProtocol = DES
          PrivacyPassword = (Cannot show property)

     Target Commands:
          show
          set

/SP/AgentInfo/SNMP/user/username ->
```

APPENDIX **A**

Command-Line Interface Reference

This chapter contains the most common Embedded Lights Out Manager (ELOM) commands used to administer your Sun server from the command-line interface (CLI). This chapter contains the following sections:

CLI Command Quick Reference

The following tables provide a quick reference to the most common ELOM CLI commands.

TABLE A-1 Command Syntax and Usage

Content	Typeface	Description
Your input	**`Fixed-width bold`**	Text that you type at the computer. Enter it in exactly as shown.
Onscreen output	`Fixed-width regular`	Text that the computer displays.
Variable	*Italic*	Replace these with a name or value you choose.
Square brackets, [ ]		Text in square brackets is optional.
Vertical bars, |		Text separated by a vertical bar represents the only available values. Select one.

TABLE A-2 General Commands

Description	Command
Log out of the CLI.	`exit`
Display the version of the ELOM firmware running on the SP.	`version`
Display information about commands and targets.	`help`
Display information about a specific command.	`help` *command or target*

TABLE A-3 User Commands

Description	Command
Add a local user.	**`create /SP/users/`***username* (user names must be between 8-16 characters in length)
Set or change password.	**`set /SP/users/`***username* **`password=`***xxxxxxxx* (passwords must be between 8-16 characters in length)
Set or change permission.	**`set /SP/users/`***username* **`permission=`** **`[`**operator | administrator | callback | user**`]`** (the default is operator)
Delete a local user.	**`delete /SP/users/`***username*
Change a local user's properties.	**`set /SP/users/`***username* **`permission=operator`**
Display information about all local users.	**`show -display [`**targets | properties | all**`]`** **`-level [`***value* | *all***`] /SP/users`**

TABLE A-4 Network and Serial Port Setting Commands

Description	Command
Display network configuration information.	**`show /SP/network`**
Change network properties for the ELOM. Changing certain network properties, like the IP address, will disconnect your active session. You cannot change the MACaddress.	**`set /SP/network`** **`IPAddress`**=*xxx.xxx.xxx.xxx* **`Netmask=`***xxx.xxx.xxx.xxx* **`Gateway=`***xxx.xxx.xxx.xxx*
Set DHCP or change to static settings.	**`set /SP/network IPSource=[`***dhcp* | *static***`]**

TABLE A-5 Alert Commands

Description	Command
Display information about PET alerts.	**show /SP/AgentInfo/PET/Destination**[*1...4*]
Change alert configuration.	**set /SP/AgentInfo/PET/ Destination**[*1...4*] **IPAdress=** *ipaddress*

TABLE A-6 SNMP Commands

Description	Command
Display information about SNMP settings. By default, the SNMP port is 161, and v3 is enabled.	**show /SP/AgentInfo/SNMP**
	show /SP/AgentInfo/SNMP port=*snmpportnumber* **snmpset=***enabled* | *disabled*
Display SNMP users.	**show /SP/AgentInfo/SNMP/user**
Add an SNMP user.	**create /SP/AgentInfo/SNMP/user/***snmpusername* **authpassword=***password* **authprotocol=**[MD5|SHA] **permission=**[rw|ro] **privacypassword=***password* **privacyprotocol=**[none|DES]
Delete an SNMP user.	**delete /SP/services/SNMP/user/***snmpusername*
Display information about SNMP public (read-only) communities.	**show /SP/AgentInfo/SNMP/communities/public**
Add this device to an SNMP public community.	**create /SP/AgentInfo/SNMP/communities/ public/***comm1*
Delete this device from an SNMP public community.	**delete /SP/AgentInfo/SNMP/communities/ public/***comm1*

TABLE A-6 SNMP Commands

Description	Command
Display information about SNMP private (read-write) communities.	**show /SP/AgentInfo/SNMP/communities/private**
Add this device to an SNMP private community.	**create /SP/AgentInfo/SNMP/communities/private/***comm2*
Delete this device from an SNMP private community.	**delete /SP/sAgentInfo/NMP/communities/private/***comm2*

TABLE A-7 System Start and Stop Commands

Description	Command
Start the host system.	**set /SP/SYS/CtrlInfo PowerCtrl=on**
Stop the host system gracefully.	**set /SP/SYS/CtrlInfo PowerCtrl=gracefuloff**
Stop the host system forcefully.	**set /SP/SYS/CtrlInfo PowerCtrl=forceoff**
Reset the host system.	**set /SP/SYS/CtrlInfo PowerCtrl=reset**
Start a session to connect to the host console.	**start /SP/AgentInfo/console**
Stop the session connected to the host console.	**stop /SP/AgentInfo/console**

CLI Commands and Syntax Reference

This section provides reference information about the CLI commands.

Command Verbs

TABLE A-8 lists the CLI command verbs, and points to the relevant section.

TABLE A-8 CLI Command Verbs

Command	Description	Section
`cd`	Navigates the object namespace.	"cd" on page 129
`create`	Sets up an object in the namespace.	"create" on page 130
`delete`	Removes an object from the namespace.	"delete" on page 131
`exit`	Terminates a session to the CLI.	"exit" on page 132
`help`	Displays Help information about commands and targets.	"help" on page 132
`reset`	Resets the target's state.	"reset" on page 137
`set`	Sets target properties to the specified value.	"set" on page 133
`show`	Displays information about targets and properties.	"show" on page 134
`start`	Starts the target.	"start" on page 136
`stop`	Stops the target.	"stop" on page 136
`version`	Displays the version of ELOM firmware that is running.	"version" on page 138

Executing Commands

You can execute a command by including the full path to the target (one command), or by navigating to the namespace and then executing the command from there (two commands).

Note – CLI commands are case-sensitive.

For example:

```
–> show /SYS/CPU/CPU0

-> show SYS/CPU/CPU0
/SYS/CPU/CPU0
    Targets:

    Properties:
        Designation = CPU 0
        Manufacturer = Intel
        Name = Tigerton
        Speed = 2400MHz
        Status = enabled

    Target Commands:
        show
```

The above `show` command produces the same result as the following two commands:

```
–> cd /SYS/CPU/CPU0

–> show

-> cd SYS/CPU/CPU0
/SYS/CPU/CPU0

 -> show

  /SYS/CPU/CPU0
    Targets:

    Properties:
        Designation = CPU 0
        Manufacturer = Intel
        Name = Tigerton
        Speed = 2400MHz
        Status = enabled

    Target Commands:
        show
```

Options

The CLI supports the following options. However, not all options are supported for all commands. The only option that works with all commands is `-help`. Refer to a specific command section in this document for available options, or use the `-help` option to list the options that are valid for a particular command. See the following example for using the `-help` option with the show command:

```
 -> show -help
The show command is used to display information about targets
and their properties and associated commands.

Usage: show [-d|-display targets|properties|commands|all] [-l|-level
1|2|3...|a ll] [<target>] [<property> <property> ...]

Available options for this command:
-help : display help message of this command
-display (-d) : specify the information to be displayed
-level (-l) : specify the relative level in the target hierarchy to
which the a ction will apply

 ->
```

TABLE 0-1 lists the CLI command options.

TABLE 0-1 CLI Options

Option Long Form	Short Form	Description
`-default`		Causes the verb to perform only its default functions.
`-destination`		Specifies the destination for data.
`-display`	`-d`	Shows the data you want to display.
`-examine`	`-x`	Examines the command but does not execute it.
`-force`	`-f`	Causes an immediate action instead of an orderly shutdown.
`-help`	`-h`	Displays Help information.
`-keep`	`-k`	Establishes a holding time for command job ID and status.
`-level`	`-l`	Executes the command for the current target and all targets contained through the level specified.
`-output`	`-o`	Specifies the content and form of command output.

TABLE 0-1 CLI Options

Option Long Form	Short Form	Description
`-resetstate`		Indicates to what target-specific state to reset the target.
`-script`		Skips warnings or prompts normally associated with the command.
`-source`		Indicates the location of a source image.

Targets

Every object in your namespace is a target for a command. Not all targets are supported for all commands. Each command section lists the valid targets for that command. The example below shows the available targets when executing the `show` command from the highest level in the CLI namespace, `/`:

```
-> show

 /
   Targets:
       SP
       SYS
       CH

   Properties:

   Target Commands:
       show
       cd

->
```

Properties

Properties are the configurable attributes specific to each target. A target can have one or more properties. Use the `show` command to list the valid properties for each target. The example below shows the properties for the user, root.

```
-> show

 /SP/users/root
   Targets:

   Properties:
       status = enable
       permission = administrator
       password = (Could not show property)

   Target Commands:
       show
       set

->
```

cd

Use the `cd` command to navigate the namespace. When you use `cd` to change to a target location, that location then becomes the default target for all other commands.

Using the - `default` option with no target returns you to the top of the namespace. Entering just `cd` displays your current location in the namespace. Entering `help targets` displays a list of all targets in the entire namespace.

Syntax

cd *target*

Options

[-h|help]

Targets and Properties

Any location in the namespace.

Examples

To create a user named newuser1, use `cd` to change to `/SP/users`, then execute the `create` command with `/SP/users` as the default target.

-> **`cd /SP/users`**

-> **`create newuser1`**

To return to the root position, enter:

-> **`cd /`**

create

Use the `create` command to set up an object in the namespace. Unless you specify properties with the `create` command, they are empty.

Syntax

`create [`*`options`***`] target [`***`propertyname=value`***`]`**

Options

`[-h|help]`

Targets, Properties, and Values

TABLE A-9 Create command Targets, Properties, Values, and Defaults

Valid Targets	Properties	Values	Default
`/SP/users/`*username*	password	*string*	(None)
	role	[administrator | operator | user | callback]	operator
`/SP/AgentInfo/SNMP/communities/`*communityname*	permissions	[ro | rw]	ro
`/SP/AgentInfo/SNMP/user/`*username*	authenticationprotocol	MD5	MD5
	authenticationpassword	*string*	(Null string)
	permissions	[ro | rw]	ro
	privacyprotocol	[none | DES]	DES
	privacypassword	*string*	(Null string)

Example

```
-> create /SP/users/susan role=administrator
```

delete

Use the `delete` command to remove an object from the namespace. You are not prompted to confirm a `delete` command.

Syntax

delete [*options***]** *target*

Options

[-h|help]

Targets

TABLE A-10 `delete` Command Targets

Valid Targets
/SP/users/*username*
/SP/AgentInfo/SNMP/communities/*communityname*
/SP/AgentInfo/SNMP/user/*username*

Example

```
-> delete /SP/users/basicuser
```

exit

Use the `exit` command to terminate a session to the CLI.

Syntax

exit [*options***]**

Options

[-h|help]

help

Use the `help` command to display Help information about commands and targets. Using the `-output terse` option displays usage information only. The **-**`output verbose` option displays usage, description, and additional information including examples of command usage. If you do not use the `-output` option, usage information and a brief description of the command are displayed.

Specifying `command` targets displays a complete list of valid targets for that command from the fixed targets in `/SP`. Fixed targets are targets that cannot be created by a user.

Syntax

help *command*

Options

[-h|help]

Commands

cd, create, delete, exit, help, load, reset, set, show, start, stop, version

Example

-> **help load**

```
The load command is used to transfer a file from a server and update
a target.
Usage: load -source URL targets
Available options for this command:
-help : display help message of this command
```

set

Use the `set` command to change the value of a property associated with a target.

Syntax

set [target] property=value [*propertyname***=***value***]**

Options

[-h help]

TABLE A-11 `set` Command Targets, Properties, and Values

Valid Targets	Properties	Values	Default
`/SP/users/`*username*	password	*string*	(None)
	permission	[administrator | operator | user | callback]	operator
`/SP/clock`	Date	MM/DD/CCYY	/SP/clock
	Time	hh/mm/ss	
	NTPStatus	[enabled | disabled]	
	NTPServer	i*paddress*	
`/SP/AgentInfo/SNMP`	port	*decimal*	161
	snmpset	[enabled | disabled]	disabled
	version1	[enabled | disabled]	disabled
	version2c	[enabled | disabled]	disabled
	version3	[enabled | disabled]	enabled
`/SP/AgentInfo/SNMP communities/`*communityname*	Permissions	[ro | rw]	ro
`/SP/AgentInfo/SNMP/user /`*username*	AuthProtocol	[MD5 | SHA]	MD5
	AuthPassword	*string*	(Null string)
	Permission	[ro | rw]	ro
	PrivacyProtocol	[none | DES]	DES
	PrivacyPassword	*string*	(Null string)
/`SP/network`	IPAddress	[*IP address* | none]	(None)
	Netmask	[*IP address* | none]	255.255.255.255
	Gateway	[*IP address* | none]	(None)
	DNS	*[IP address* | none]	(None)
	IPSource	[dhcp | static]	(None)
	Hostname	*STRING*	

Example

```
-> set /SP/users/basicuser permission=administrator
```

show

Use the `show` command to display information about targets and properties.

The `show` command is used to display information about managed elements. It can be used to view information about a single managed elements, a tree of managed elements, or managed elements matching a property value filter.

The `-level` option controls the depth of the `show` command, and it applies to all modes of the `-display` option. Specifying `-level 1` displays the level of the namespace where the object exists. Values greater than 1 return information for the target's current level in the namespace and the *specified value* levels below. If the argument is `-level all`, it applies to the current level in the namespace and everything below.

Syntax

show [options] [-display targets|properties|commands|all] [-ll -level 1|2|3...|all] [target] [*property property...***]**

Options

[-d|display] [-h|-help] [-l|level]

Targets and Properties

TABLE A-12 `show` Command Targets and Properties

Valid Targets	Properties
/SP/network	`MACaddress`
	`IPAddress`
	`Netmask`
	`Gateway`
	`DNS`
	`IPSource`
	`Hostname`

Examples

```
->show /SP/network
```

```
   /SP/network

Targets:
    Target Commands:
        show
        set
```

start

Use the `start` command to turn on the target or to initiate a connection to the host console.

Syntax

`start [options] target`

Options

`[-h|help]`

Targets

TABLE A-13 `start` Command Target

Valid Target	Description
/SP/AgentInfo/Console	Starts an interactive session to the console stream.

Examples

`->` **`start /SP/AgentInfo/Console`**

stop

Use the `stop` command to shut down the target or to terminate another user's connection to the host console.

Syntax

stop [options] target

Options

[-h|help]

Targets

TABLE A-14 `stop` Command Target

Valid Target	Description
`/SP/AgentInfo/Console`	Terminate another user's connection to the host console.

Examples

-> **stop /SP/AgentInfo/Console**

reset

Use the `reset` command to reset the target's state. This command can be used with and without options.

Syntax

reset [*target***]**

Options

[-h|help]

Example

-> **reset /system3**

version

Use the `version` command to display ELOM version information.

Syntax

`version`

Options

`[-h|help]`

Example

```
-> version
SM CLP Version v1.0.0
SM ME Addressing Version v1.0.0
```

Namespace Levels and Targets

This section provides a list of the CLI targets (namespaces). TABLE A-15 shows the three level 1 targets (SP, SYS, and CH) and the levels beneath each.

TABLE A-15 CLI Namespace Levels and Targets

Top Level	Level 1 Targets	Level 2 Targets	Level 3 Targets	Level 4 Targets	Level 5 Targets
/					
	/CH				
	/SP				
	/SP	users			
	/SP	network			
	/SP	clock	TimeZoneList		
	/SP	AgentInfo			
			PEF		

TABLE A-15 CLI Namespace Levels and Targets

Top Level	Level 1 Targets	Level 2 Targets	Level 3 Targets	Level 4 Targets	Level 5 Targets
				EventFilterTable1	
				EventFilterTable2	
				EventFilterTable3	
				EventFilterTable4	
				EventFilterTable5	
				EventFilterTable6	
			PET		
				Destination1	
				Destination2	
				Destination3	
				Destination4	
			SEL		
			Console		
			Mail		
				receiver1	
				receiver2	
				receiver3	
				receiver4	
				receiver5	
				receiver6	
				receiver7	
				receiver8	
				receiver9	
				receiver10	
			SNMP		
				communities	
					public
					private
				user	
	/SP	TftpUpdate			

TABLE A-15 CLI Namespace Levels and Targets

Top Level	Level 1 Targets	Level 2 Targets	Level 3 Targets	Level 4 Targets	Level 5 Targets
	/SP	CPLDUpdate			
	/SYS				
	/SYS	BoardInfo			
	/SYS	ProductInfo			
	/SYS	ChassisInfo			
	/SYS	CtrlInfo			
			FaultLed		
	/SYS	CPU			
			CPU0		
			CPU1		
			CPU2		
			CPU3		
	/SYS	Memory			
			DIMM_A0		
			DIMM_A1		
			DIMM_A2		
			DIMM_A3		
			DIMM_A4		
			DIMM_A5		
			DIMM_B0		
			DIMM_B1		
			DIMM_B2		
			DIMM_B3		
			DIMM_B4		
			DIMM_B5		
			DIMM_C0		
			DIMM_C1		
			DIMM_C2		
			DIMM_C3		
			DIMM_C4		

TABLE A-15 CLI Namespace Levels and Targets

Top Level	Level 1 Targets	Level 2 Targets	Level 3 Targets	Level 4 Targets	Level 5 Targets
			DIMM_C5		
			DIMM_D0		
			DIMM_D1		
			DIMM_D2		
			DIMM_D3		
			DIMM_D4		
			DIMM_D5		
	/SYS	MIDPlane			
	/SYS	NICInfo0			
	/SYS	Temperature			
			CPU_0_TEMP		
			CPU_1_TEMP		
			CPU_2_TEMP		
			CPU_3_TEMP		
			VRD_0_TEMP		
			VRD_1_TEMP		
			VRD_2_TEMP		
			VRD_3_TEMP		
			DIMM_0_TEMP		
			DIMM_1_TEMP		
			PROCESSOR_0_HOT		
			PROCESSOR_1_HOT		
			PROCESSOR_2_HOT		
			PROCESSOR_2_HOT		
	/SYS	Voltage			
			P_VCCP0		
			P_VCCP1		
			P_VCCP2		
			P_VCCP3		
			P1V2_VTT		

TABLE A-15 CLI Namespace Levels and Targets

Top Level	Level 1 Targets	Level 2 Targets	Level 3 Targets	Level 4 Targets	Level 5 Targets
			P1V5_MCH		
			P1V5_ESB		
			P1V8_B0		
			P1V8_STB		
			P1V2_NIC		
			P12V_CPU1		
			P12V_CPU0		
			P12V		
			P3V3_SUS		
			P3V3		
			P5V		
			P1V25_VTT_STB		
			P1V5_B0		
			P1V5_B1		
			P2V5_STB		
			P1V8_B1		
			P0V9_B0		
			P0V9_B1		
			P12V_CPU3		
			P12V_CPU2		
			P1V8_NIC		
			P3V3_SUS		
			VCC5_SUS		
			HOST_PWR		
			STBY_PWR		

Properites and Values for Targets

This section contains details about the targets, properties and values available to you when using the command-line interface (CLI). The information is divided into three subsections based on the three namespaces, Service Processor Information (/SP). System Information (/SYS), and and Chassis Information (/CH). Each subsection contains tables showing all the relative targets and supported verbs and all the property names with their valid values, access type, and description.

Service Processor Information

The service processor namespace, /SP, contains targets that you can use to configure and manage the server. These targets allow you to configure and manage network settings, user accounts, firmware updates, and platform event filters and traps.

Targets and Verbs

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	Set	show	start	stop	reset	version
/	x	x	x				x	x				x
/SP/	x	x	x	x			x	x			x	x

/SP

The top level of the /SP namespace allows you to view firmware and CPLD versions and the server module's slot ID. You can also set the session timeout.

Property Name	Valid Value	Access	Description
Firmwareversion	N/A	R	Firmware version
Timeout	N/A	R/W	Timeout value of CLI session
CPLDVersion	N/A	R	CPLD Version
SlotID	N/A	R	Slot ID in chassis

User

The User target allows you to manage user accounts.

Targets and Verbs

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	set	show	start	stop	reset	version
/SP/user	x	x	x		x	x		x				x
/SP/user/username	x	x	x				x	x				x

/SP/users/*username*

Where *username* is the name of the user account.

Property Name	Valid Value	Access	Description
status	enable, disable	R/W	status of this user
permission	administrator, operator, user, callback	R/W	permission of this user
password	STRING	W	password of this user

Network

The network target allows you to configure your server's network settings.

Targets and Verbs

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	set	show	start	stop	reset	version
/SP/network	x	x	x				x	x				

/SP/network

Property Name	Valid Value	Access	Description
MACAddress	N/A	R	Agent ethernet MAC address
IPAddress	IP ADDRESS	B/W	Configuration of the agent IP address
Netmask	IP ADDRESS	R/W	Configuration of the agent IP subnet mask
Gateway	IP ADDRESS	R/W	Configuration of the agent IP gateway address
DNS	IP ADDRESS	R/W	Configuration of the agent IP address source
IPsource	static, dhcp	R/W	Configuration of the agent IP address source
Hostname	STRING	R/W	Configuration of the agent hostname

Clock

The Clock target allows you to configure the system clock. You can configure the system clock manually, or you can designate an NTP server.

Targets and Verbs

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	set	show	start	stop	reset	version
/SP/clock	x	x	x				x	x				x

/SP/clock

Property Name	Valid Value	Access	Description
Date	MM/DD/YYYY	R/W	Date of agent
Time	hh:mm:ss	R/W	Time of agent
NTPstatus	enable, disable	R/W	Synchronize time using NTP
NTPserver	IP ADDRESS	R/W	IP address of NTP server

TftpUpdate

Use the TftpUpdate target to perform firmware updates.

/SP/TftpUpdate

Property Name	Valid Value	Access	Description
ServerIP	IP ADDRESS	R/W	Setting of an IP address for the TFTP server.
Filename	STRING	R/W	Setting of a file name for the image.
SaveFlag	yes, no	R/W	The option to save current settings.
Update	action	W	Start update

Management Agent Information

The Management Agent Information target provides several options to configure and display parameters of the management agent, such as SNMP, SMTP parameters.

Targets and Verbs

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	set	show	start	stop	reset	version
/SP/AgentInfo	x	x	x				x	x	x	x		x
/SP/AgentInfo/PEF	x	x	x				x	x				x
/SP/AgentInfo/PEF/EventFilterTable[1:6]	x	x	x				x	x				x
/SP/AgentInfo/PET	x	x	x				x	x				x
/SP/AgentInfo/SEL	x	x	x				x	x				x
/SP/AgentInfo/Console	x	x	x						x	x		x
/SP/AgentInfo/Mail	x	x	x				x	x				x
/SP/AgentInfo/Mail/receiver[1:10]	x	x	x				x	x				x
/SP/AgentInfo/SNMP	x	x	x				x	x				x
/SP/AgentInfo/SNMP/communities	x	x	x		x	x	x	x				x
/SP/AgentInfo/SNMP/users	x	x	x		x	x	x	x				x

/SP/AgentInfo/PEF

Property Name	Valid Value	Access	Description
PEFGlobalCtrl	enable, disable	R/W	PEF global control switch
PEFActionGloblCtrlPowerOff	enable, disable	R/W	PEF action global control–power
PEFActionGloblCtrlPowerCycle	enable, disable	R/W	PEF action global control–power
PEFActionGloblCtrlPowerReset	enable, disable	R/W	PEF action global control–power

Property Name	Valid Value	Access	Description
PEFActionGloblCtrlAlert	enable, disable	R/W	PEF action global control–alert
PEFActionGloblCtrlMail	enable, disable	R/W	PEF action global control–mail
PEFActionGlobalCtrlInterrupt	enable, disable	R/W	PEF action global control–interrupt

/SP/AgentInfo/PEF/EventFilterTbl[1:6]

Property Name	Valid Value	Access	Description
Status	enable, disable	R/W	Enable/disable this table
SensorType	all, voltage, temperature. memory	R/W	Event filter sensor type
PowerCtrl	PowerDown, Reset, PowerCycle	R/W	Event action–power
DiagnosticInterrupt	enable, disable	R/W	Event action–interrupt
SendAlert	enable, disable	R/W	Event action–alert
SendMail	enable, disable	R/W	Event action–mail

/SP/AgentInfo/SEL/

Property Name	Valid Value	Access	Description
ClearEventlog	action	R/W	Clear event logs

/SP/AgentInfo/Mail/

Property Name	Valid Value	Access	Description
SMTPServer	IP ADDRESS	R/W	Set SMTP server IP address
Sender	STRING	R/W	Set Mail notification sender
ClearSMTPServer	action	W	Clear SMTP server IP address
ClearSender	action	W	Clear Sender name

/SP/AgentInfo/Mail/receiver[1:10]

Property Name	Valid Value	Access	Description
EmailAddress	MAIL ADDRESS	R/W	Receiver mail address
ClearReceiver	action	W	Clear the mail address

/SP/AgentInfo/SNMP/

Property Name	Valid Value	Access	Description
port	INTEBER(0-65535)	R/W	SNMP daemon port
snmpset	enable, disable	R/W	SNMP management information settable
version1	enable, disable	R/W	SNMP protocol version 1 support
version2c	enable, disable	R/W	SNMP protocol version 2 support
version3	enable, diaable	R/W	SNMP protocol version 3 support

/SP/AgentInfo/SNMP/communities/public

Property Name	Valid Value	Access	Description
Permission	ro, rw	R/W	SNMP community permission

/SP/AgentInfo/SNMP/communities/private

Property Name	Valid Value	Access	Description
Permission	ro, rw	R/W	SNMP community permission

/SP/AgentInfo/SNMP/user

Property Name	Valid Value	Access	Description
Permission	ro, rw	R/W	SNMP user pernission
AuthProtocol	MD5, SHA	R/W	SNMP v3 user authentication protocol
AuthPassword	STRING	W	SNMP v3 user authentication password
PrivacyProtocol	none, DES	R/W	SNMP v3 user privacy protocol
PrivacyPassword	STRING	W	SNMP v3 privacy password

System Information

The System Information contains board, product, chassis, CPU, memory module, and health informaiton. It also provides power state control.

Targets and Verbs

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	set	show	start	stop	reset	version
/SYS	x	x	x					x				x
/SYS/BoardInfo	x	x	x					x				x
/SYS/ProductInfo	x	x	x					x				x
/SYS/ChassisInfo	x	x	x					x				x
/SYS/CtrlInfo	x	x	x					x				x
/SYS/CPU	x	x	x					x				x
/SYS/CPU/CPU[1:N]	x	x	x					x				x
/SYS/Memory/DIMM[A0:D5]	x	x	x					x				x
/SYS/MemModule/MemModule[1:N]	x	x	x					x				x
/SYS/NICInfo0	x	x	x					x				x
/SYS/Temperature	x	x	x					x				x
/SYS/Temperature/Temperature[1:N]	x	x	x					x				x
/SYS/Voltage	x	x	x					x				x
/SYS/Voltage[1:N]	x	x	x					x				x

/SYS/BoardInfo

Property Name	Valid Value	Access	Description
BIOSVersion	-	R	Display the BIOS version.
BoardManufacturer	-	R	Displays the name of the manufacturer of the management board.
BoardMfgDateTime	-	R	Displays the date of manufacture for the management board.
BoardProductName	-	R	Displays the product name of the management board.
BoardSerialNumber	-	R	Displays serial part number of the management board.

/SYS/ProductInfo

Property Name	Valid Value	Access	Description
ProductManufacturer	-	R	Displays product manufacturer
ProductProductName	-	R	Displays name of the product.
ProductPartNumber	-	R	Displays product part number.
ProductSerialNumber	-	R	Displays product serial number.
AssetTag	-	R	Displays product asset tag.

/SYS/ChassisInfo

Property Name	Valid Value	Access	Description
ChassisType	-	R	Displays the chassis type.
ChassisPartNumber	-	R	Displays the chassis part number.
ChassisSerialNumber	-	R	Displays the status of chassis.

/SYS/CtrlInfo

Property Name	Valid Value	Access	Description
PowerStatus	-	R	Displays the power status.
PowerCtrl	on, off, reset	W	Control power.
BootCtrl	regular, PXE, BIOSSetup, PCCheck_enable, PCCheck_disable	R/W	Control boot and display boot status.
IdLedCtrl	on, off	R/W	Control IdLed and display IdLed status

/SYS/CtrlInfo/FaultLed

Property Name	Valid Value	Access	Description
FaultLedStatus	-	R	Displays fault LED status.
FaultLedCtrl	-	W	Control fault LED.

/SYS/CPU/CPU[1:N]

Property Name	Valid Value	Access	Description
SocketDesignation	-	R	Displays the CPU socket designation.
Manufacturer	-	R	Displays the CPU manufacturer.
Name	-	R	Displays the CPU name.
Speed	-	R	Displays the CPU speed.
Status	-	R	Displays the CPU status.

/SYS/MemModule/Memory/DIMM[A0:D5]

Property Name	Valid Value	Access	Description
Designation	-	R	Displays the memory module designation.
Type	-	R	Displays the memory module type.
Speed	-	R	Displays the memory module speed.
Size	-	R	Displays the memory module size.
Status	-	R	Displays the memory module status.

/SYS/Temperature/Temperature[1:N]

Property Name	Valid Value	Access	Description
Designation	-	R	Displays the temperature designation.
Status	-	R	Displays the temperature status.
SensorReading	-	R	Displays the temperature current value.
LNCT	-	R	Displays the temperature lower warning threshold.

Property Name	Valid Value	Access	Description
LCT	-	R	Displays the temperature lower critical threshold.
UNCT	-	R	Displays the temperature upper warning threshold.
UCT	-	R	Displays the temperature upper critical threshold.

/SYS/Voltage[1:N]

Property Name	Valid Value	Access	Description
Designation	-	R	Displays the voltage designation.
Status	-	R	Displays the voltage status.
SensorReading	-	R	Displays the voltage current value.
LNCT	-	R	Displays the voltage lower warning threshold.
LCT	-	R	Displays the voltage lower critical threshold.
UNCT	-	R	Displays the voltage upper warning threshold.
UCT	-	R	Displays the voltage upper critical threshold.

/SYS/NICInfo0

Property Name	Valid Value	Access	Description
Manufacturer	-	R	Displays the NIC manufacturer.
Name	-	R	Displays the NIC name.
PartNumber	-	R	Displays the NIC part number.
SerialNumber	-	R	Displays the NIC serial number.

Property Name	Valid Value	Access	Description
PortNumber	-	R	Displays NIC port number.
MACAddress1	-	R	Displays the NIC MAC address 1.
MACAddress2	-	R	Displays the NIC MAC address 2.

/SYS/MIDPlane

Property Name	Valid Value	Access	Description
productPartNo	-	R	Displays the midplane part number.
productSerialNo	-	R	Displays the midplane serial number.
productAssetTag	-	R	Displays the midplane asset tag number.
chassisSerialNo	-	R	Displays the chassis serial number.
chassisPartNo	-	R	Displays the chassis part number.

Chassis Information

The Sun Blade X6450 server module's ELOM also allows you to monitor chassis component sensor information using the CLI. Use the /CH namespace to view the output from the chassis' sensors.

/CH

Relative Targets	Supported Verbs											
	cd	exit	help	load	create	delete	set	show	start	stop	reset	version
/CH	-	-	x	-	-	-	-	x	-	-	-	x

Property Name	Valid Value	Access	Description
fm0.f0.speed	-	R	Sensor reading of fan speed
fm0.f1.speed	-	R	Sensor reading of fan speed
fm1.f0.speed	-	R	Sensor reading of fan speed
fm1.f1.speed	-	R	Sensor reading of fan speed
fm2.f0.speed	-	R	Sensor reading of fan speed
fm2.fo.speed	-	R	Sensor reading of fan speed
fm3.f0.speed	-	R	Sensor reading of fan speed
fm3.f1.speed	-	R	Sensor reading of fan speed
fm4.f0.speed	-	R	Sensor reading of fan speed
fm5.f0.speed	-	R	Sensor reading of fan speed
fm5.f1.speed	-	R	Sensor reading of fan speed
ps0.t_amb	-	R	Ambient temperature reading of power supply
ps0.fan_speed	-	R	Sensor reading of power supply fan speed
ps0.V12V	-	R	Voltage reading of 12V power supply
ps0.V3_3V	-	R	Voltage reading of 3B power supply
ps0.I12V_0	-	R	Current reading of 12V power supply
ps0.I3_3V	-	R	Current reading of 3.3V power supply
ps1.t_amb	-	R	Ambient temperature reading of power supply
ps1.fan_speed	-	R	Sensor reading of power supply fan
ps1.V12V	-	R	Voltage reading of 12V power supply
ps1.V3_3V	-	R	Voltage readin of 3.3V power supply
ps1.I12V_0	-	R	Current reading of 12V power supply
ps1.I12V_1	-	R	Current reading of 12V power supply
ps1.I3_3V	-	R	Current reading of 3.3V power supply
ch.t_amb_o	-	R	Ambient temperature reading of the chassis
ch.t_amb_1	-	R	Ambient temperature reading of the chassis
ps0.dc_watts	-	R	Power calculation of DC power supply
ps0.ac_watts	-	R	Power calculation of AC power supply
ps0.peff	-	R	Unspecified

Property Name	Valid Value	Access	Description
ps1.dc_watts	-	R	Power calculation of DC power supply
ps1.ac_watts	-	R	Power calculation of DC power supply
ps1.peff	-	R	Unspecified
ch.dc_watts	-	R	Power calculation of chassis DC power supply
ch.ac_watts	-	R	Power calculatoin of chassis AC power supply

APPENDIX **B**

U.S. Keyboard Map

Use these U.S. keyboard map figures to convert key combinations.

FIGURE B-1 U.S. Keyboard (Detail)

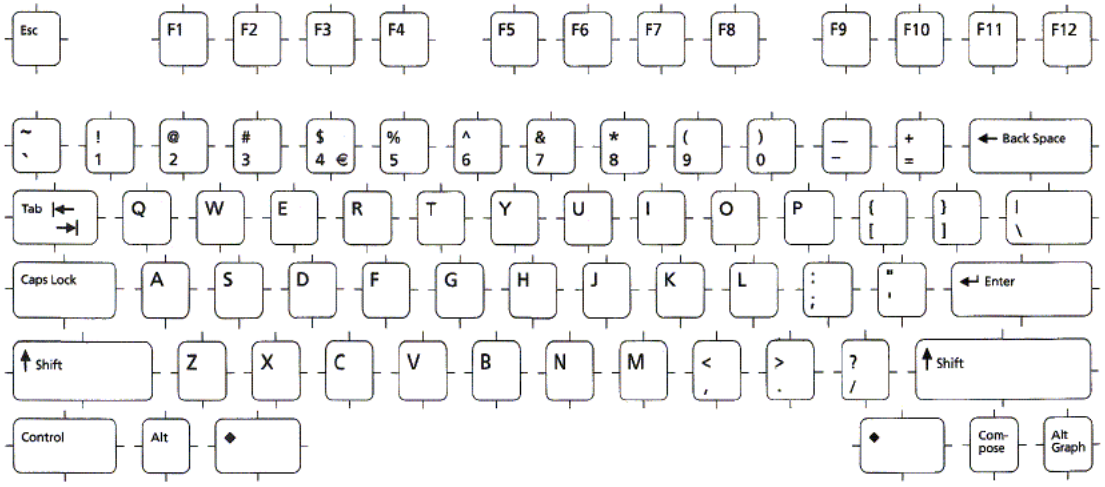
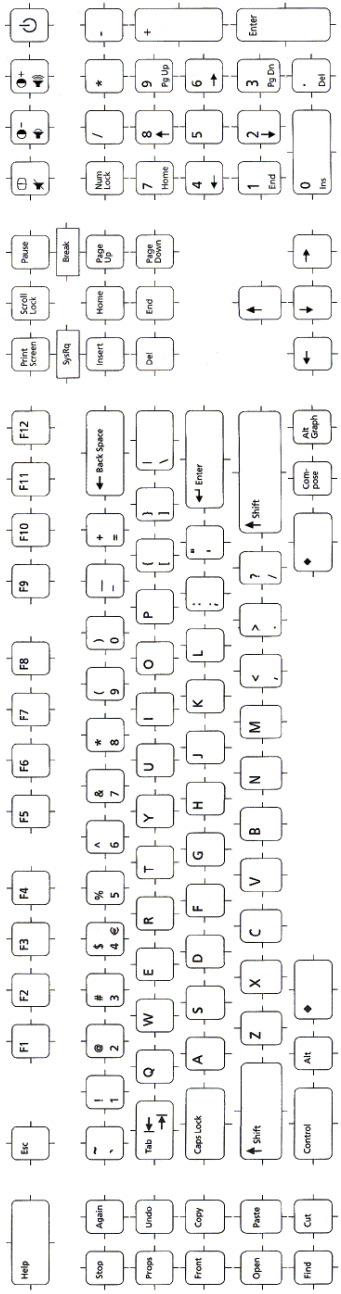


FIGURE B-2 U.S. Keyboard (Full)



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