Sun Blade 6000 Ethernet Switched NEM 24p 10GbE

User's Guide

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Contents

Using This Documentation

This guide describes how to install and configure the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE from Oracle in a powered-on Sun Blade 6000 Modular System.

These instructions are designed for enterprise system administrators with experience installing network hardware and software.

- "Related Documentation" on page vii
- "CLI Command Modes" on page viii
- "Feedback" on page viii
- "Support and Accessibility" on page ix

Related Documentation

Documentation	Links
All Oracle products	http://oracle.com/documentation
Sun Blade 6000 Ethernet Switched NEM 24p 10GbE	http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE
Sun Network 10GbE Switch 72p	http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p
Sun Blade 6000 modular system	http://www.oracle.com/pls/topic/lookup?ctx=sb6000
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	http://www.oracle.com/pls/topoc/lookup?ctx=ilom30

For detailed information about the commands and options described in this document, refer to the *Sun Ethernet Fabric Operating System CLI Base Reference Manual*.

CLI Command Modes

The following table lists the configuration modes used in this document with their access and exit methods.

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Access SEFOS from Oracle ILOM with read-only rights (privilege level 1).	`SEFOS>`	Use the `logout` or `exit` command to return to the Oracle ILOM prompt.
Privileged EXEC	Access SEFOS from Oracle ILOM with full administrative rights (privilege level 15).	`SEFOS#`	Use the `logout` or `exit` command to return to the Oracle ILOM prompt.
Global Configuration	From User EXEC mode, use the `enable` command.	`SEFOS(config)#`	Use the `end` command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the `interface interface-type interface-id` command.	`SEFOS(config-if)#`	Use the `exit` command to return to Global Configuration mode, or use the `end` command to return to Privileged EXEC mode.

Feedback

Provide feedback on this documentation at:

http://www.oracle.com/goto/docfeedback

Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	http://support.oracle.com For hearing impaired: http://www.oracle.com/accessibility/support.html
Learn about Oracle's commitment to accessibility	http://www.oracle.com/us/corporate/accessibility/index.html

Understanding the Switched NEM

The Sun Blade 6000 Ethernet Switched NEM 24p 10GbE is a multipurpose connectivity module for the Sun Blade 6000 modular system. The Switched NEM supports connection to external devices through 10GbE SFP+ ports and QSFP ports. The Switched NEM connects server modules (blades) in a Sun Blade 6000 modular system chassis with disk modules in the same chassis.

These topics describe the Switched NEM:

Switched NEM Features Overview

Feature	Specifications
Management	• MPC8547E processor (service processor) • 1 GB DDR2 SDRAM SORDIMM, 512 MB NOR Flash memory and 2 GB NAND Flash memory
Management interfaces	• 10/100BASE-T Ethernet port across the chassis midplane • I^2C across the chassis midplane
Ports	• Four external x4 mini-SAS ports • One serial management (RJ-45) port • Two SFP+ ports that support the SFP+ SR, LR, and LR-M modules • Three QSFP ports that support twelve 10 Gbps interfaces
Server module interfaces (per blade)	• One XAUI interface to a switch port • Two SAS2 interfaces to SAS2 expander

Feature	Specifications
SAS2 x36 expander	• Internal ARM9S processor • 4 MB SRAM • 8 MB Flash memory
SAS expander management	• In-band and through I^2C • Expander Ethernet port to MPC8547E (Ethernet port 3)
Indicators/controls	• QSFP 10Gbps Ethernet Link Status/Activity (bifunctional) • SFP+ 10Gbps Ethernet Link Status/Activity (bifunctional) • Front panel LEDs, Locate button • Mini-SAS LED that is bifunctional for link and activity
Health	• Voltage monitoring • Temperature monitoring • Fault detection and reporting
Power supplies	• 3.3 VAUX from chassis midplane • 12 V from chassis midplane
Cooling	Front-to-back forced air
Environmental	Operating: • Humidity: 10-90% noncondensing • Temperature: 0 to 35°C • Altitude: 0-10000 ft (3048 meters) Nonoperating: • Humidity: 5-95% noncondensing • Temperature: -40 to 70°C • Altitude: 0-39370 ft (12000 meters)

Related Information

- "Switched NEM External Ports" on page 2
- "Switched NEM Internal Ports" on page 5

Switched NEM External Ports

This figure shows the external ports on the Switched NEM, viewed from the back of the chassis.

FIGURE: Switched NEM Ports

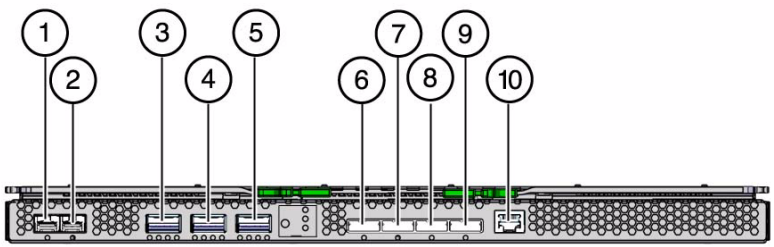


TABLE: Switched NEM Components

Label	Description	Notes
1	10GbE SFP+ port 1	Requires SFP+ transceivers.
2	10GbE SFP+ port 2	Requires SFP+ transceivers.
3	10GbE QSFP port 3-6	Requires QSFP transceivers.
4	10GbE QSFP port 7-10	Requires QSFP transceivers.
5	10GbE QSFP port 11-14	Requires QSFP transceivers.
6	SAS port 3	Not supported at this time.
7	SAS port 2	Not supported at this time.
8	SAS port 1	Not supported at this time.
9	SAS port 0	Not supported at this time.
10	Serial management port	
	Midplane connectors (10) (not shown)	

SFP+ Ports

Two SFP+ ports provide two 10 gigabit ethernet connections to external devices or a switch. The SFP+ ports support the following types of cables:

- 10 Gbyte/1 Gbyte dual speed fiber
- 1 Gbyte RJ-45 copper
- 10 Gbps direct attach copper

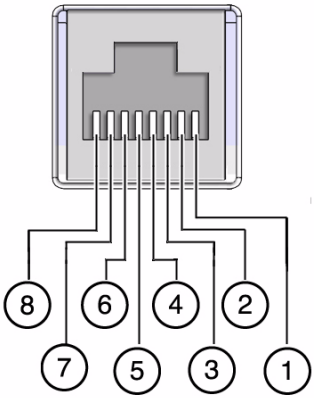
QSFP Ports

Three QSFP ports provide twelve 10 gigabit ethernet connections to external devices or a switch (four 10 gigabit ethernet connections for each port). The QSFP ports support the following types of cables:

- 4x10 Gbyte fiber SR
- 4x10 Gbyte to 4 SFP+ 10 Gbyte fiber SR
- 4x10 Gbyte direct attach copper
- 4x10 Gbyte to 4 SFP+ 10 Gbyte direct attach copper

Serial Management Port

A single RJ-45 serial management port provides connections to a system console.



The following table lists the pinout of the serial management connector.

Pin	Signal
1	RTS
2	DTR
3	TXD
4	GND
5	GND
6	RXD

Pin	Signal
7	DSR
8	CTS

Related Information

- "Switched NEM Internal Ports" on page 5

Switched NEM Internal Ports

Ten 10GbE internal ports provide connections to the ten server modules installed in the chassis (internal ports 15-24). The server blades must have a supported 10GbE FEM and a corresponding networking driver (or kernel module) installed to establish 10GbE links to these ports. The internal ports cannot be part of any Ethernet link aggregation group.

TABLE: Internal Port to Server Module Mapping

Internal Port	Server Module Slot
15	0
16	1
17	2
18	3
19	4
20	5
21	6
22	7
23	8
24	9

Related Information

- "Install the Fabric Expansion Module in the Server Blade" on page 16

Switched NEM LEDs

This figure shows the Switched NEM LEDs, viewed from the back of the chassis. The table describes the LED behavior.

FIGURE: Switched NEM LEDs and Buttons

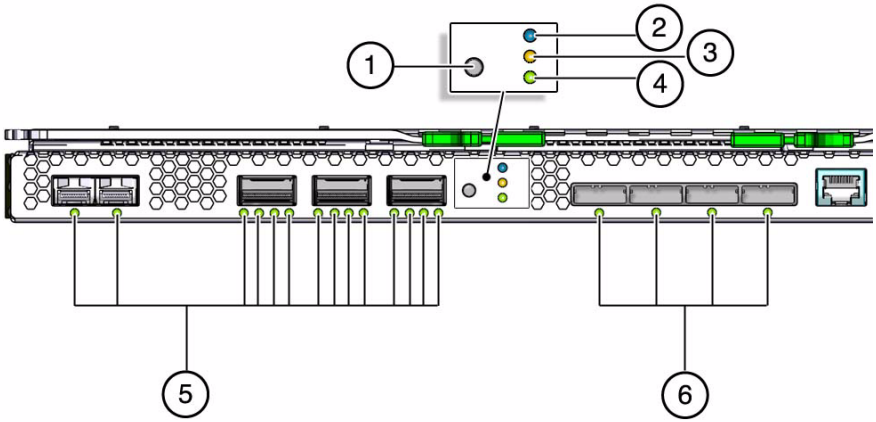


TABLE: Switched NEM LED Descriptions

	LED/Button Name	Description
1	Locate button and LED (white)	Helps locate each Switched NEM. • Push and release to make the Locate LED blink. • If the LED is blinking, push and release this button to stop the blinking. • Push and hold down the button for 5 seconds to initiate a "push-to-test" mode. This mode illuminates LEDs 1 through 4 for 15 seconds. The LED can be enabled remotely.
2	OK to Remove LED (blue)	Not used at this time. The Switched NEM can be removed from a powered-on system without referring to this LED.
3	Module Fault LED (amber)	Has two states: • Off: No fault. • On: An event has been acknowledged, and service action is required.

TABLE: Switched NEM LED Descriptions *(Continued)*

	LED/Button Name	Description
4	Module Activity (Power/OK) LED (green)	Has two states: • Off: Module is powered off. • On: Module is powered on.
5	Ethernet Link Status/Activity for 10GbE connection (green)	Has three states: • Off: No link or activity on the SFP+ or QSFP port. • On: A link has been established on the SFP+ or QSFP port. • Blinking: There is activity on the SFP+ or QSFP port.
6	SAS Link/Activity (green)	Not supported at this time.

Related Information

- "Switched NEM External Ports" on page 2
- "Install the Switched NEM" on page 9
- "Remove a Switched NEM" on page 23
- "Replace a Switched NEM" on page 25
- "Installing or Removing SFP+ or QSFP Optical Transceiver Modules" on page 17

Installing or Replacing the Switched NEM

These topics describe how to replace a Sun Blade 6000 Ethernet Switched NEM 24p 10GbE in a powered-on Sun Blade 6000 Series chassis.

Caution – Damage to the Switched NEM can occur as the result of careless handling or ESD. Always handle the Switched NEM with care to avoid damage to electrostatic-sensitive components. To minimize the possibility of ESD-related damage, Oracle strongly recommends using both an antistatic mat and an ESD wrist strap. You can get an ESD wrist strap from any reputable electronics store or from Oracle as part number 250-1007.

▼ Install the Switched NEM

This procedure is for installing a Switched NEM into an empty slot. If you are replacing a Switched NEM, see "Replace a Switched NEM" on page 25.

Note – Refer to the *Sun Blade 6000 Ethernet Switched NEM 24p 10GbE Product Notes* for any system limitations before installing the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE.

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1. **Ensure that the CMM has the latest ILOM firmware before you install the Switched NEM.**

   Refer to the *Sun Blade 6000 Ethernet Switched NEM 24p 10GbE Product Notes* for the latest firmware and patch information.

2. **Determine the NEM slot where you will be installing the Switched NEM.**

   You can insert either one or two Switched NEMs in the Sun Blade 6000 chassis. If you insert only one Switched NEM, place it in the lower slot (NEM 0). Before installing your Switched NEM, remove the NEM filler panel in the slot you plan to use.

3. **Determine if you need the dongle to connect to the serial management port.**

   See "Switched NEM External Ports" on page 2 for the pinouts of the serial management port.

   - If you do not need the dongle to connect to the serial management port, go to Step 4.
   - If you need the dongle to connect to the serial management port, follow these steps:

   a. **Locate the serial cable and serial cable dongle that shipped with the Switched NEM.**

   b. **Connect the dongle to the serial management port on the Switched NEM.**

      See "Switched NEM External Ports" on page 2 for the location of the serial management port on the Switched NEM.

4. **Connect one end of the serial cable to the serial management port or the dongle installed in the serial management port on the Switched NEM.**

   See "Switched NEM External Ports" on page 2 for the location of the serial management port on the Switched NEM.

5. **Connect the other end of the serial cable to a serial console terminal.**

6. **Set the baud rate on the serial console terminal to 9600 baud.**

7. **Align the Switched NEM with the vacant NEM slot.**

   Ensure that:

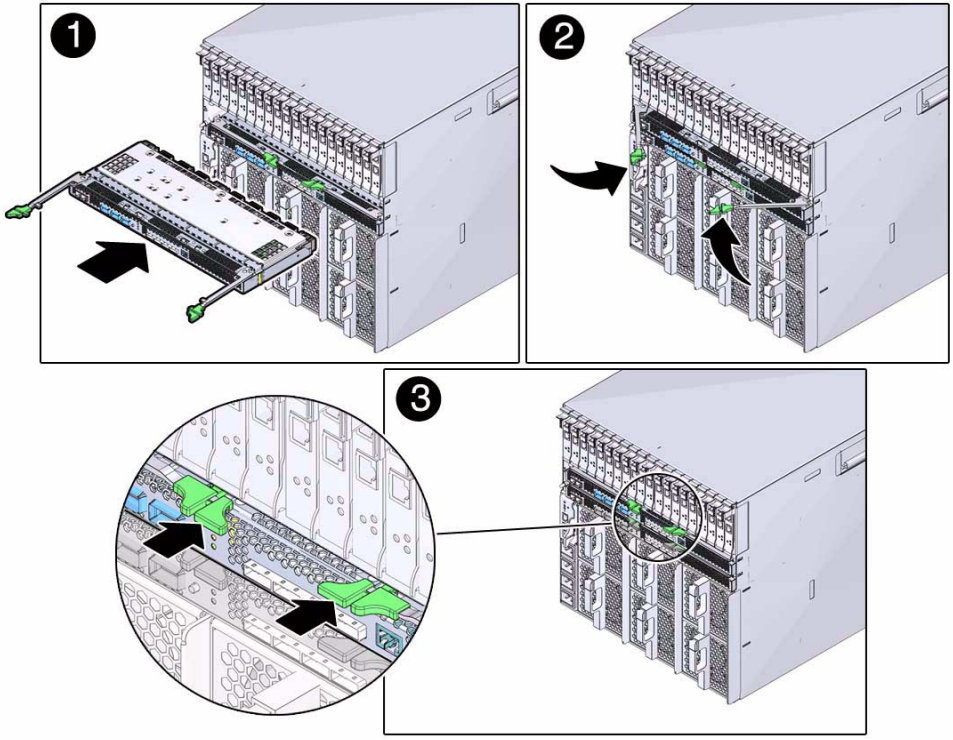
   - The NEM ejector levers are fully opened.
   - The NEM ejector levers are on the top of the module.

8. **Slide the Switched NEM into the vacant NEM chassis slot until you feel it stop.**

   Support the weight of the Switched NEM with one hand at the bottom of the NEM.

9. **Complete the installation by closing the ejector levers to secure the Switched NEM in the chassis.**

   This figure shows how to install the Switched NEM. The green Power OK LED will light on the NEM when it is properly installed. See "Switched NEM LEDs" on page 6 for the location of that LED.



Related Information

- "Verifying the Switched NEM Installation" on page 12
- "Finish the Switched NEM Installation" on page 16
- "Remove a Switched NEM" on page 23
- "Replace a Switched NEM" on page 25
- "Install the Fabric Expansion Module in the Server Blade" on page 16
- "Install an SFP+ or QSFP Optical Transceiver Module" on page 17

Verifying the Switched NEM Installation

The following topics describe how to verify installation:

- "Verify Installation With the CMM ILOM Web Interface" on page 12
- "Verify Installation With the CMM ILOM CLI" on page 14

▼ Verify Installation With the CMM ILOM Web Interface

The Switched NEM is automatically detected when the chassis is powered on.

See "Managing the NEM Remotely (ILOM)" on page 27 for the different ways that you can connect to the NEM ILOM. This procedure assumes you are connecting to the NEM ILOM through the CMM ILOM (Ethernet and Web Interface).

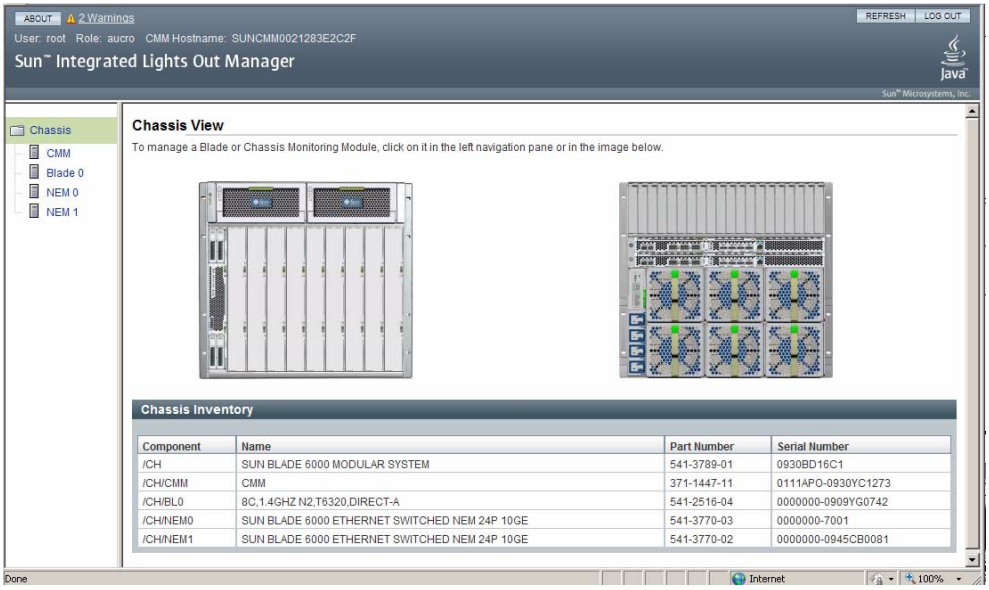
1. **In a web browser, type the IP address of the CMM in the location bar.**

   The ILOM login screen appears.

2. **Enter the user name and password, then select** `Log In`**.**

   The default user is `root` and the default password is `changeme`.

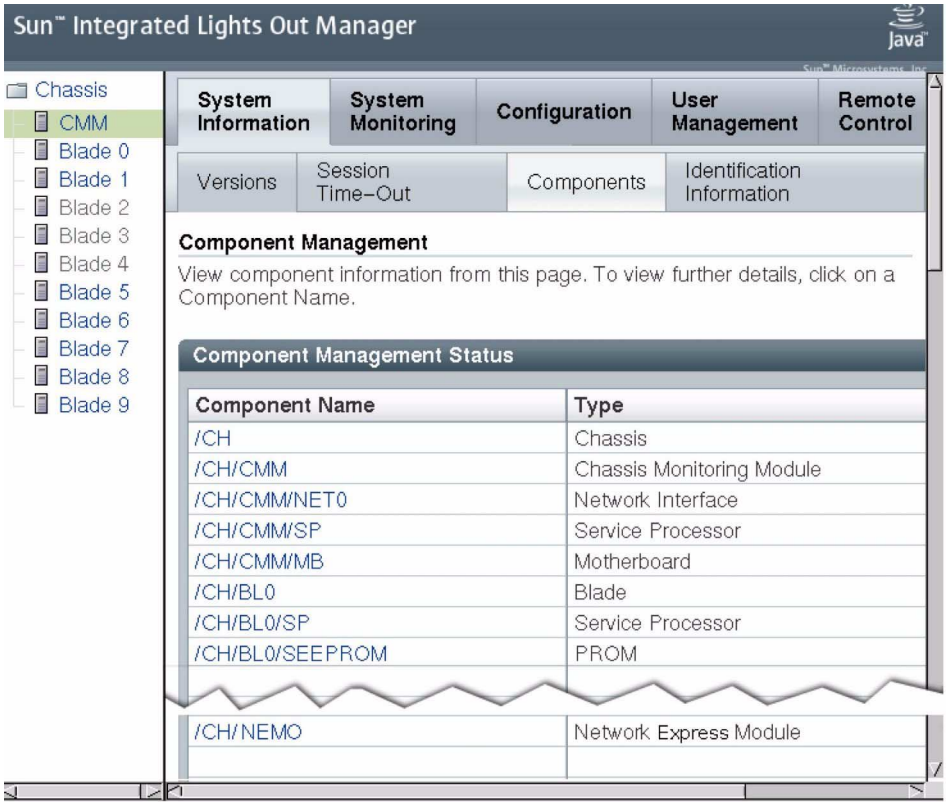
   The chassis view appears.



3. **From the CMM ILOM left navigation bar, select CMM.**

4. **Select Components from the second row of tabs.**

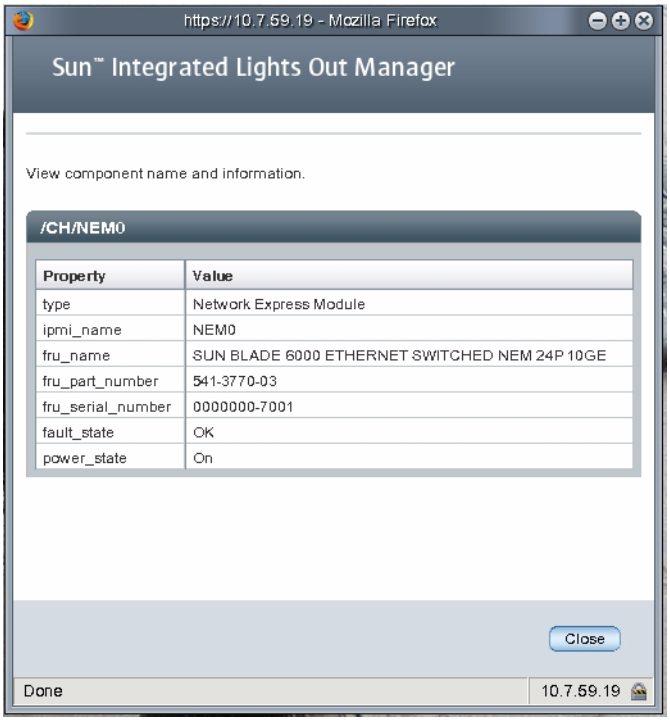
   The Component Management page appears.



5. **Select /CH/NEM*n*, where *n* is 0 through 1 for NEMs 0 or 1, respectively.**

6. **Verify that the Switched NEM appears in ILOM.**

   If the Switched NEM does not appear in ILOM, verify that the NEM is properly seated in the chassis.



Related Information

- "Install the Switched NEM" on page 9
- "Verify Installation With the CMM ILOM CLI" on page 14
- "Finish the Switched NEM Installation" on page 16

▼ Verify Installation With the CMM ILOM CLI

The Switched NEM is automatically detected when the chassis is powered on.

See "Managing the NEM Remotely (ILOM)" on page 27 for the different ways that you can connect to the NEM ILOM. This procedure assumes you are connecting to the NEM ILOM through the CMM ILOM (Ethernet and CLI).

Note – The examples in this section refer to NEM0. If you are installing NEM1, replace the "0" in these examples with "1".

---

1. Get the IP address of the CMM.

2. **Start your SSH client and log in to the CMM ILOM:**

```
$ ssh ipaddress -l root
```

where *ipaddress* is the address of the CMM.

3. **Type your password when prompted.**

The default is `changeme`.

The CLI command prompt appears:

```
->
```

4. **Access the CMM ILOM.**

The NEM and the NEM FRU information appears in the CLI.

```
-> show /CH/NEM0
 Targets:
SEEPROM
SP

Properties:
type = Network Express Module
fru_name = SUN BLADE 6000 ETHERNET SWITCHED NEM 24p 10GbE
fru_part_number = 501-7935-02
fru_serial_number = 0000000-7001C003K

Commands:
cd
show
```

5. **If the Switched NEM does not appear in ILOM, verify that the NEM is properly seated in the chassis and that you have installed the latest CMM ILOM firmware.**

For more information about using CMM ILOM, see the ILOM documentation, at: (http://docs.sun.com/app/docs/prod/blade.6000mod#hic)

Related Information

- "Install the Switched NEM" on page 9
- "Verify Installation With the CMM ILOM Web Interface" on page 12
- "Finish the Switched NEM Installation" on page 16

▼ Finish the Switched NEM Installation

1. **Connect to ILOM.**

   See "Managing the NEM Remotely (ILOM)" on page 27 for instructions on connecting to ILOM.

2. **Configure the Sun Ethernet Fabric Operating System software.**

   Refer to the *Sun Blade 6000 Ethernet Switched NEM 24p 10GbE Software Configuration Guide* for instructions on configuring the Sun Ethernet Fabric Operating System software.

3. **Install SFP+ or QSFP optical transceivers and connect cables, as needed.**

   See "Installing or Removing SFP+ or QSFP Optical Transceiver Modules" on page 17 for those instructions.

4. **Use the Sun Ethernet Fabric Operating System to perform any other necessary networking tasks.**

   Refer to the appropriate Sun Ethernet Fabric Operating System software manual for those instructions.

Related Information

- "Install the Switched NEM" on page 9
- "Verifying the Switched NEM Installation" on page 12
- "Managing the NEM Remotely (ILOM)" on page 27
- "Installing or Removing SFP+ or QSFP Optical Transceiver Modules" on page 17

▼ Install the Fabric Expansion Module in the Server Blade

1. **Verify that a supported fabric expansion module has been installed in one of the server blades in the Sun Blade 6000 modular system.**

   In order to use the 10GbE functionality on the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE, you must install certain fabric expansion modules on the server blade in the Sun Blade 6000 modular system. Refer to the *Sun Blade 6000 Ethernet*

Switched NEM 24p 10GbE Product Notes for information on the server blades and fabric expansion modules that are supported with the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE.

If a supported fabric expansion module has not been installed in one of the server blades in the Sun Blade 6000 modular system, follow the instructions that came with the module to do that now, then return here.

2. **Verify that the latest driver has been installed for the fabric expansion module that you installed in one of the server blades in the Sun Blade 6000 modular system.**

   Refer to the documentation that came with the module for more information.

Related Information

- "Install the Switched NEM" on page 9
- "Verifying the Switched NEM Installation" on page 12

Installing or Removing SFP+ or QSFP Optical Transceiver Modules

The Switched NEM requires an SFP+ or QSFP transceiver in at least one port to create a 10GbE connection.

- "Install an SFP+ or QSFP Optical Transceiver Module" on page 17
- "Remove an SFP+ or QFSP Optical Transceiver Module" on page 20

▼ Install an SFP+ or QSFP Optical Transceiver Module

Note – The figures in this topic show how to install and cable a SFP+ transceiver module. Some QSFP transceiver modules have a similar design, where the module and the cable are two separate components. For that type of QSFP transceiver module, the installation of the QSFP transceiver module is the same as for the SFP+ transceiver module, but the cable that attaches to the QSFP transceiver module looks different.

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1. **Determine if you are installing a dual-part module or a single-part module.**

   Some optical transceiver modules are dual-part modules, where the module and the cable are two separate pieces. Other transceiver modules are single-part modules, where the transceiver and the cable are a single combined unit.

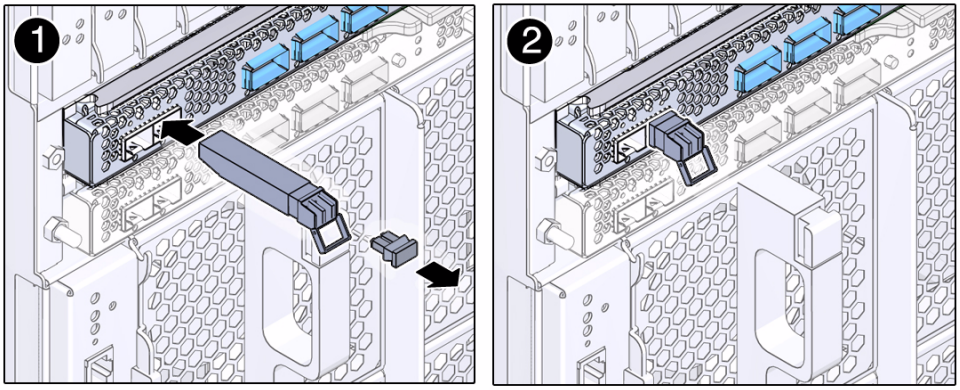
   - If you are installing a dual-part module, continue to Step 2.
   - If you are installing a single-part module, go to Step 8.

2. **Remove the protective end cap from the module.**

3. **If you are installing an SFP+ transceiver module, pull the locking handle into the fully horizontal position until you feel the handle click into position.**

4. **Verify that you have the transceiver module in the correct alignment before inserting it into the slot.**

   The following figure shows the correct alignment for the transceiver module.

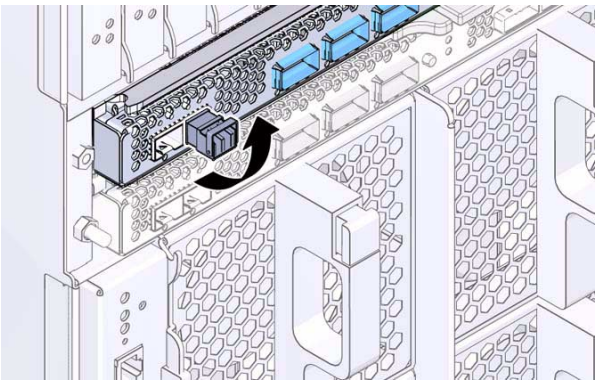


5. **Holding the optical transceiver module by the edges, align the optical transceiver module with the slot in the Switched NEM and slide it into the opening.**

6. **Applying even pressure at both corners of the optical transceiver module, push the module until it is firmly seated in the slot.**

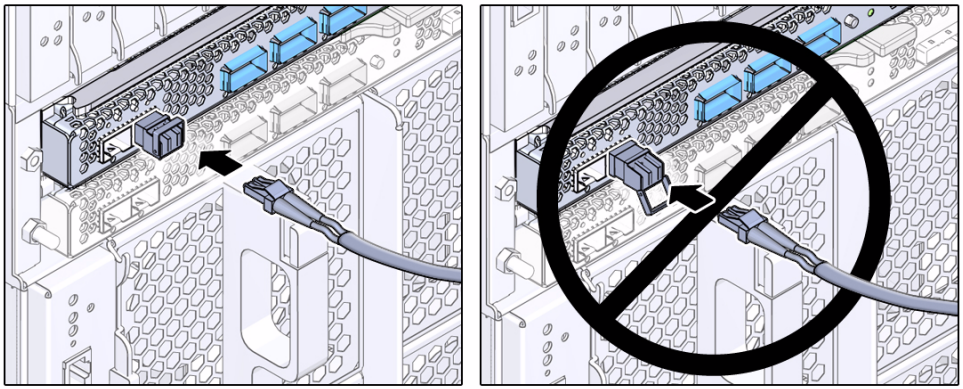
7. **Push the handle closed to lock the optical transceiver module in place.**

Note – If you pull the locking handle down when the SFP+ or QSFP optical transceiver module is installed, remove the optical transceiver module entirely and reinstall it. The handle operates an internal lock. Pulling the handle down can disconnect the module, even though it might appear to be connected.

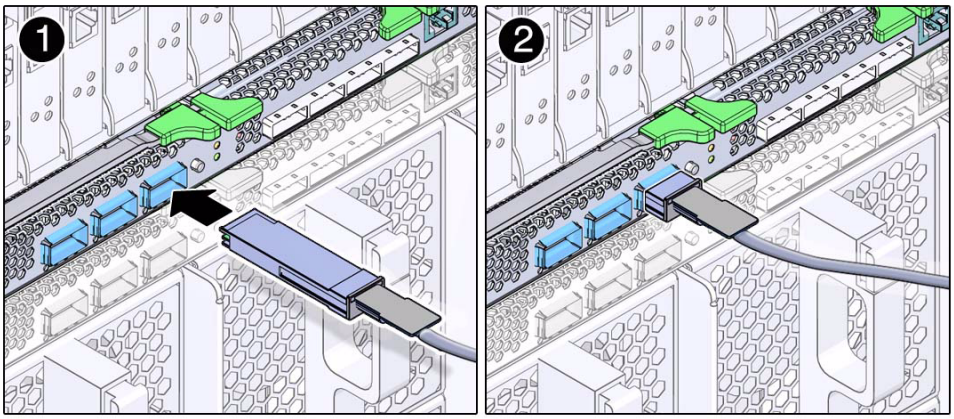


8. **Plug the cable into the connector.**

   - If you are plugging in a dual-part module, verify that the handle is in the locked position and connect the cable to the optical transceiver. If the handle is in the unlocked position, you must push it up into the locked position before attaching the cable.



   - If you are plugging in a single-part module, plug the module into the slot in the Switched NEM.

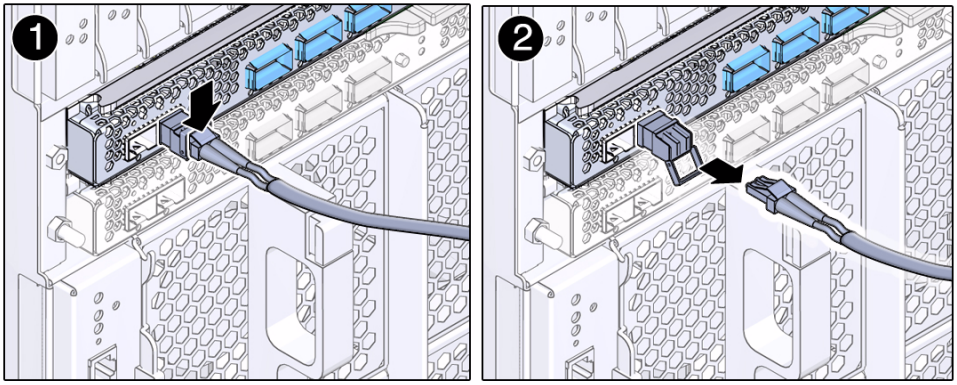


Related Information

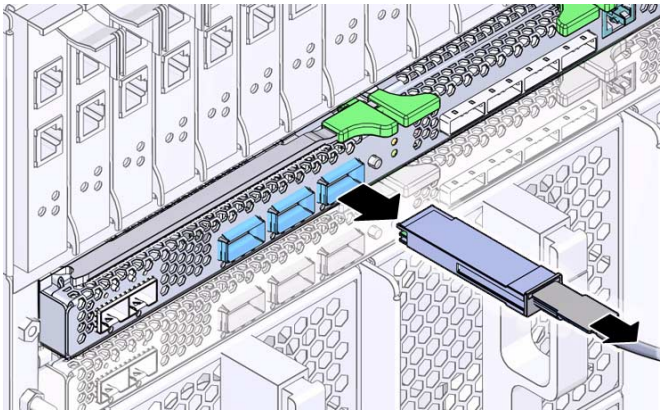
- "Remove an SFP+ or QFSP Optical Transceiver Module" on page 20
- "Switched NEM External Ports" on page 2
- "SFP+ Cabling Guidelines" on page 22
- "QSFP Cabling Guidelines" on page 23

▼ Remove an SFP+ or QFSP Optical Transceiver Module

1. **Disconnect the cable from the transceiver module.**
   - For a dual-part module assembly, press the optical cable connector latch down and gently pull out the optical cable. Go to Step 2.



- For a single-part module assembly, use one hand to pull the tab straight back and use your other hand to gently pull out the cable. You have finished removing the module.

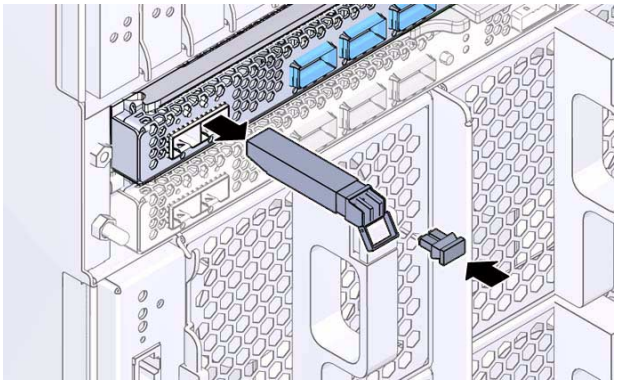


2. **For a dual-part module assembly, remove the optical transceiver module from the slot.**

   a. **Pull down the SFP+ or QSFP optical transceiver module latch into the open position.**

   b. **Slide out the optical transceiver module.**

   c. **Replace the protective end cap if you plan to store the module.**



Related Information

- "Install an SFP+ or QSFP Optical Transceiver Module" on page 17
- "Switched NEM External Ports" on page 2
- "SFP+ Cabling Guidelines" on page 22
- "QSFP Cabling Guidelines" on page 23

SFP+ Cabling Guidelines

The following SFP+ cables are supported on the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE:

- 10 Gbyte/1 Gbyte dual speed fiber
- 1 Gbyte RJ-45 copper
- 10 Gbps direct attach copper

The following table shows the OM MMF and SMF cabling options available for the Switched NEM SFP+ connectors.

SFP+ Connector Type	Cable type	Reach
SR	OM 1 MMF	33 meters
	OM 2 MMF	50 meters
	OM 3 MMF	300 meters
LR	SMF	10 kilometers
LR-M	SMF	10 kilometers

Note – The optical transceiver for the Switched NEM uses a LC. The connection on the other side of the cable might use a different connector type.

Caution – Avoid putting unnecessary stress on the connection. Do not bend or twist the cable near the connectors, and avoid sharp cable bends of more than 90 degrees.

Related Information

- "Install an SFP+ or QSFP Optical Transceiver Module" on page 17
- "Remove an SFP+ or QFSP Optical Transceiver Module" on page 20
- "Switched NEM External Ports" on page 2
- "QSFP Cabling Guidelines" on page 23

QSFP Cabling Guidelines

The following QSFP cables are supported on the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE:

- 4x10 Gbyte fiber SR
- 4x10 Gbyte to 4 SFP+ 10 Gbyte fiber SR
- 4x10 Gbyte direct attach copper
- 4x10 Gbyte to 4 SFP+ 10 Gbyte direct attach copper

Related Information

- "Install an SFP+ or QSFP Optical Transceiver Module" on page 17
- "Remove an SFP+ or QFSP Optical Transceiver Module" on page 20
- "Switched NEM External Ports" on page 2
- "SFP+ Cabling Guidelines" on page 22

▼ Remove a Switched NEM

This procedure is for removing a Switched NEM if you do not plan to replace it. If you plan to replace a NEM, see "Replace a Switched NEM" on page 25.

1. **In the rear of the chassis, locate the Switched NEM that you want to remove.**
2. **If you are removing a Switched NEM from a powered-on chassis, use the ILOM** CLI **to prepare the Switched NEM for removal:**

```
-> stop /CH/NEMn
```

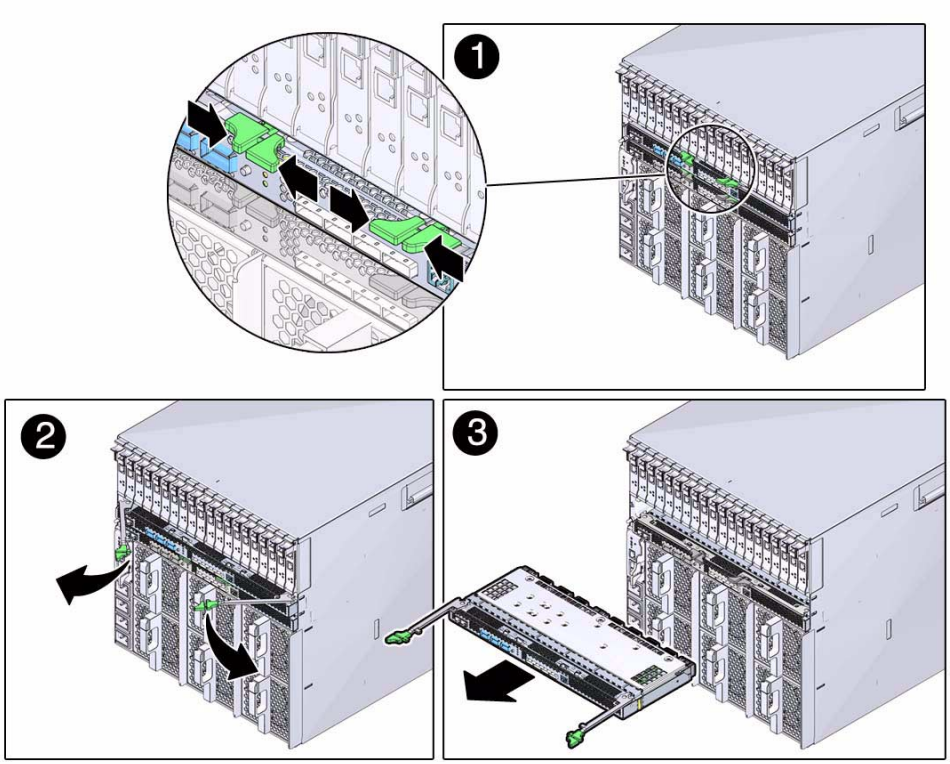
where n is 0 through 1 for NEMs 0 or 1, respectively. For example:

```
-> stop /CH/NEM1
```

See "Managing the NEM Remotely (ILOM)" on page 27 for more information on connecting to ILOM.

3. **Remove all cables from the NEM.**

4. **Press together and hold the buttons on both the right and left ejector levers.**



5. **To unlatch the NEM from the chassis, open the ejector levers by extending them outward.**

6. **Holding the open ejector levers, pull the NEM toward you until you can pull the rest of the module out by hand.**

   Support the weight of the NEM with one hand at the bottom of the NEM.

Related Information

- "Install the Switched NEM" on page 9
- "Verifying the Switched NEM Installation" on page 12
- "Install the Fabric Expansion Module in the Server Blade" on page 16
- "Replace a Switched NEM" on page 25

▼ Replace a Switched NEM

If a Switched NEM fails, you must replace it. The server modules must be informed if you are replacing a nonredundant NEM.

Caution – If the chassis is powered on and you are not replacing the NEM within 60 seconds, install an NEM filler panel to ensure proper system operation.

1. **If you are removing a Switched NEM from a powered-on chassis, use the ILOM CLI to prepare the Switched NEM for removal:**

```
-> stop /CH/NEMn
```

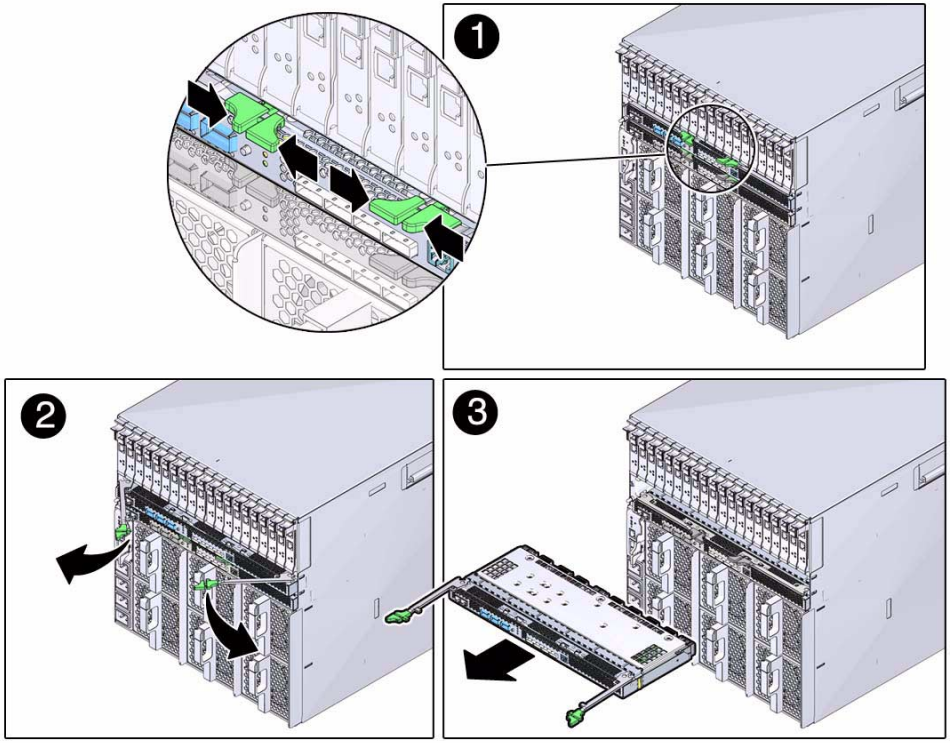
   where n is 0 through 1 for NEMs 0 or 1, respectively. For example:

```
-> stop /CH/NEM1
```

   See "Managing the NEM Remotely (ILOM)" on page 27 for more information on connecting to ILOM.

2. **Label the cables so that you can install them in the same location, then remove all cables from the NEM.**

3. **Press together and hold the buttons on both the right and left ejector levers.**



4. **To unlatch the NEM from the chassis, open the ejector levers by extending them outward.**

5. **Holding the open ejector levers, pull the NEM toward you until you can pull the rest of the module out by hand.**

   Support the weight of the NEM with one hand at the bottom of the NEM.

6. **Insert the new NEM into the chassis.**

   See "Install the Switched NEM" on page 9 for those instructions.

Related Information

- "Install the Switched NEM" on page 9
- "Verifying the Switched NEM Installation" on page 12
- "Install the Fabric Expansion Module in the Server Blade" on page 16
- "Remove a Switched NEM" on page 23

Managing the NEM Remotely (ILOM)

These topics describe how to use ILOM with the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE.

ILOM Overview

The ILOM tool enables you to actively manage the NEM, providing the same management look and feel found on Sun servers.

- Remotely control the power state of the NEM
- Connect to SEFOS
- View the current status of sensors and indicators on the system
- Determine the hardware configuration of your system
- Receive generated alerts about system events in advance by using IPMI PETs, email alerts, and SNMP traps
- Provides user management
- Upgrade firmware for all components on the NEM through either the CLI or the Web interfaces
- Configure standard ILOM services, such as the following:

- Clock/NTP
- Serial port
- Network
- Syslog
- SNMP
- Web server
- SSH
- IPMI
- CLI
- DNS
- RADIUS

Related Information

- "ILOM Documentation" on page 28
- "ILOM Product Updates" on page 29
- "ILOM Features Not Supported" on page 29
- "Connecting to ILOM" on page 30

ILOM Documentation

ILOM documentation falls into three categories:

- ILOM information that is common to all platforms, located here:

  `http://docs.sun.com/app/docs/prod/int.lights.mgr#hic`
- Information specific to the Switched NEM
- Information specific to the Sun Blade 6000 modular system. The *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Blade 6000 and 6048 Modular System* (820-7603) contains ILOM information specific to the Sun Blade 6000 modular system. See "Connecting to ILOM" on page 30 for more information.

Related Information

- "ILOM Overview" on page 27
- "ILOM Product Updates" on page 29
- "ILOM Features Not Supported" on page 29

- "Connecting to ILOM" on page 30

ILOM Product Updates

For ILOM updates that you can download for the Switched NEM, see the following Web site:

`http://www.sun.com/downloads`

This site contains updates for firmware and drivers, as well as CD-ROM `.iso` images.

Related Information

- "ILOM Overview" on page 27
- "ILOM Documentation" on page 28
- "ILOM Features Not Supported" on page 29
- "Connecting to ILOM" on page 30

ILOM Features Not Supported

Among the ILOM features supported on other products, ILOM does not support the following features on the Sun Blade 6000 Ethernet Switched NEM 24p 10GbE from Oracle:

- Advanced user account management features:
  - LDAP
  - LDAP-SSL
  - Active directory
- Server-oriented features, such as:
  - Power management
  - Storage redirection
  - Remote console

Related Information

- "ILOM Overview" on page 27
- "ILOM Documentation" on page 28
- "ILOM Product Updates" on page 29
- "Connecting to ILOM" on page 30

Connecting to ILOM

Note – The Sun Blade 6000 Modular System chassis has its own instance of ILOM, called chassis monitoring module (CMM) ILOM, which is a separate entity from the NEM ILOM. The CMM ILOM is described in the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Blade 6000 and 6048 Modular System*.

You can connect to the ILOM on your NEM using one of the following methods.

Note – The CMM ILOM in the chassis has an Ethernet switch that supports connections to the Switched NEMs and their respective ILOMs.

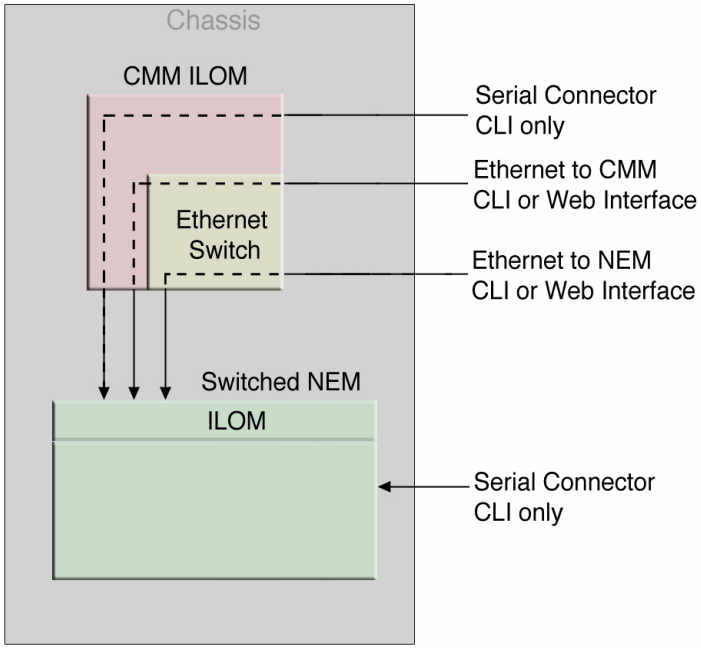
- "ILOM Connection Options" on page 30
- "Configuring an Externally Accessible IP Address on the NEM" on page 31
- "Connecting to the NEM ILOM" on page 40
- "Connecting to the NEM ILOM Through the CMM ILOM" on page 43

Related Information

- "ILOM Overview" on page 27
- "ILOM Documentation" on page 28
- "ILOM Product Updates" on page 29
- "ILOM Features Not Supported" on page 29

ILOM Connection Options

This figure shows a graphical representation of the ILOM connection options.



Configuring an Externally Accessible IP Address on the NEM

The procedures in this topic are necessary only if you are connecting to the NEM ILOM using one of the following connection methods:

- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41

You do not have to configure an externally accessible IP address on the NEM if you are connecting to the NEM ILOM using any other connection method.

Note that you will also need to configure an externally accessible IP address on the Switched NEM to use SNMP. Refer to the following documentation for more information on using SNMP with the Switched NEM:

- *Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide*
- *Sun Blade 6000 Ethernet Switched NEM 24p 10GbE Software Configuration Guide*

The following topics describe the different methods for configuring an externally accessible IP address:

- "Configure an Externally Accessible IP Address on the NEM (Serial Connection and CLI)" on page 32
- "Configure an Externally Accessible IP Address on the NEM (Ethernet and CLI)" on page 35
- "Configure an Externally Accessible IP Address on the NEM (Ethernet and Web Interface)" on page 38

▼ Configure an Externally Accessible IP Address on the NEM (Serial Connection and CLI)

1. **Verify that the terminal or terminal emulator has the correct settings.**

   The terminal device can be an actual terminal, a laptop running a terminal emulator, or a terminal server. The terminal device must be set to the following:

   - 8N1: 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)

   The cable requires the following pin assignments.

Pin	Signal Description
1	Request To Send (RTS)
2	Data Terminal Ready (DTR)
3	Transmit Data (TXD)
4	Ground
5	Ground
6	Receive Data (RXD)
7	Data Set Ready (DSR)
8	Clear To Send (CTS)

2. **Connect a terminal or terminal emulator to the serial management port on the Switched NEM.**

   See "Switched NEM External Ports" on page 2 for the location of the serial management port on the Switched NEM.

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

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

   The ILOM login prompt appears.

```
SUNSPnnnnnnnnnn login:
```

4. **Enter the user name and password when prompted.**

   The default user is `root` and the default password is `changeme`.

   The ILOM prompt appears:

```
->
```

5. **Change directories to the `network` directory:**

```
-> cd SP/network
```

6. **Configure an externally accessible IP address on the Switched NEM:**

   a. **Set the pending IP address:**

```
-> set pendingipaddress=n.n.n.n
Set 'pendingipaddress' to 'n.n.n.n'
```

   For example:

```
-> set pendingipaddress=10.7.59.97
Set 'pendingipaddress' to '10.7.59.97'
```

   b. **Set the pending IP gateway:**

```
-> set pendingipgateway=n.n.n.n
Set 'pendingipgateway' to 'n.n.n.n'
```

   For example:

```
-> set pendingipgateway=10.7.59.254
Set 'pendingipgateway' to '10.7.59.254'
```

c. Set the pending IP netmask:

```
-> set pendingipnetmask=n.n.n.n
Set 'pendingipnetmask' to 'n.n.n.n'
```

For example:

```
-> set pendingipnetmask=10.7.59.254
Set 'pendingipnetmask' to '10.7.59.254'
```

d. Commit the changes:

```
-> set commitpending=true
Set 'commitpending' to 'true'
```

e. Set the state to enabled:

```
-> set state=enabled
Set 'state' to 'enabled'
```

7. Verify the configuration information that you entered:

```
-> show
```

The CLI displays information about the Switched NEM, including its IP address. For example:

```
-> show

 /SP/network
    Targets:

    Properties:
        type = Network Configuration
        commitpending = (Cannot show property)
        ipaddress = 10.7.59.97
        ipdiscovery = static
        ipgateway = 10.7.59.254
        ipnetmask = 255.255.255.0
        macaddress = 00:14:4f:6C:5D:E8
        pendingipaddress = 10.7.59.97
        pendingipdiscovery = static
        pendingipgateway = 10.7.59.254
        pendingipnetmask = 255.255.252.0
```

```
        state = enabled

    Commands:
        cd
        set
        show

->
```

8. **When you are done, exit the ILOM:**

```
-> exit
```

Related Information

- "Configure an Externally Accessible IP Address on the NEM (Ethernet and CLI)" on page 35
- "Configure an Externally Accessible IP Address on the NEM (Ethernet and Web Interface)" on page 38
- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41

▼ Configure an Externally Accessible IP Address on the NEM (Ethernet and CLI)

1. **Get the IP address of the CMM.**

2. **Start your SSH client and log in to the CMM ILOM:**

```
$ ssh ipaddress -l root
```

   where *ipaddress* is the address of the CMM.

3. **Type your password when prompted.**

   The default is `changeme`.

   The CLI command prompt appears:

```
->
```

4. **Start the NEM ILOM:**

```
-> start /CH/NEMn/SP/cli
```

where *n* is 0 through 1 for NEMs 0 or 1, respectively. For example:

```
-> start /CH/NEM1/SP/cli
```

5. **Change directories to the** `network` **directory:**

```
-> cd SP/network
```

6. **Configure an externally accessible IP address on the NEM:**

   a. **Set the pending IP address:**

```
-> set pendingipaddress=n.n.n.n
Set 'pendingipaddress' to 'n.n.n.n'
```

For example:

```
-> set pendingipaddress=10.7.59.97
Set 'pendingipaddress' to '10.7.59.97'
```

   b. **Set the pending IP gateway:**

```
-> set pendingipgateway=n.n.n.n
Set 'pendingipgateway' to 'n.n.n.n'
```

For example:

```
-> set pendingipgateway=10.7.59.254
Set 'pendingipgateway' to '10.7.59.254'
```

c. **Set the pending IP netmask:**

```
-> set pendingipnetmask=n.n.n.n
Set 'pendingipnetmask' to 'n.n.n.n'
```

For example:

```
-> set pendingipnetmask=10.7.59.254
Set 'pendingipnetmask' to '10.7.59.254'
```

d. **Set the commit pending to true:**

```
-> set commitpending=true
Set 'commitpending' to 'true'
```

e. **Set the state to enabled:**

```
-> set state=enabled
Set 'state' to 'enabled'
```

7. **Verify the configuration information that you entered:**

```
-> ls
```

The CLI displays information about the NEM, including its IP address.

For example:

```
-> ls

 /CH/NEM/SP/network
    Targets:
         test

    Properties:
        commitpending = (Cannot show property)
        dhcp_server_ip = none
        ipaddress = 10.7.59.97
        ipdiscovery = static
        ipgateway = 10.7.59.254
        ipnetmask = 255.255.255.0
        macaddress = 00:14:4f:6C:5D:E8
        pendingipaddress = 10.7.59.97
        pendingipdiscovery = static
        pendingipgateway = 10.7.59.254
```

```
        pendingipnetmask = 255.255.252.0
        state = enabled

    Commands:
        cd
        set
        show

->
```

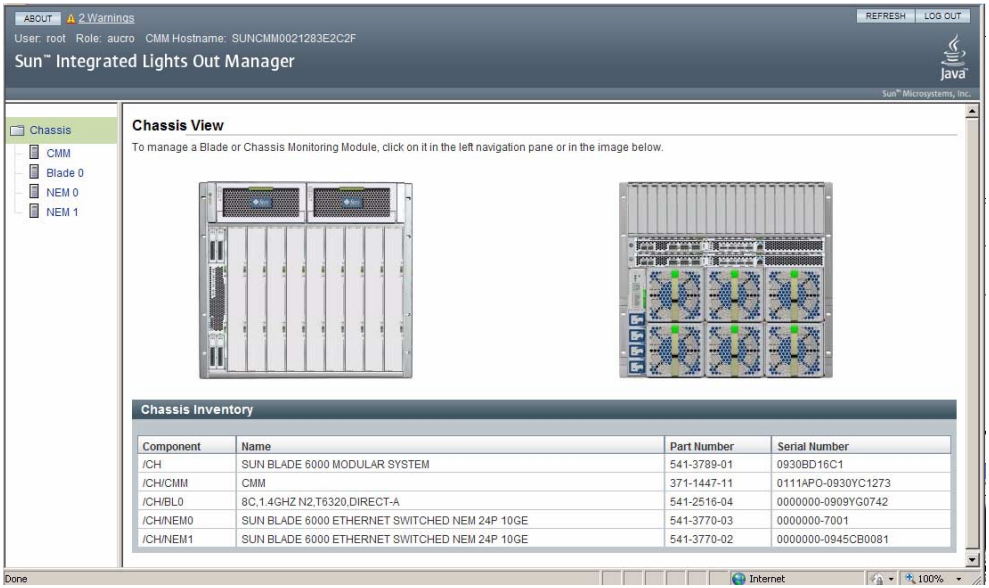
Related Information

- "Configure an Externally Accessible IP Address on the NEM (Serial Connection and CLI)" on page 32
- "Configure an Externally Accessible IP Address on the NEM (Ethernet and Web Interface)" on page 38
- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41

▼ Configure an Externally Accessible IP Address on the NEM (Ethernet and Web Interface)

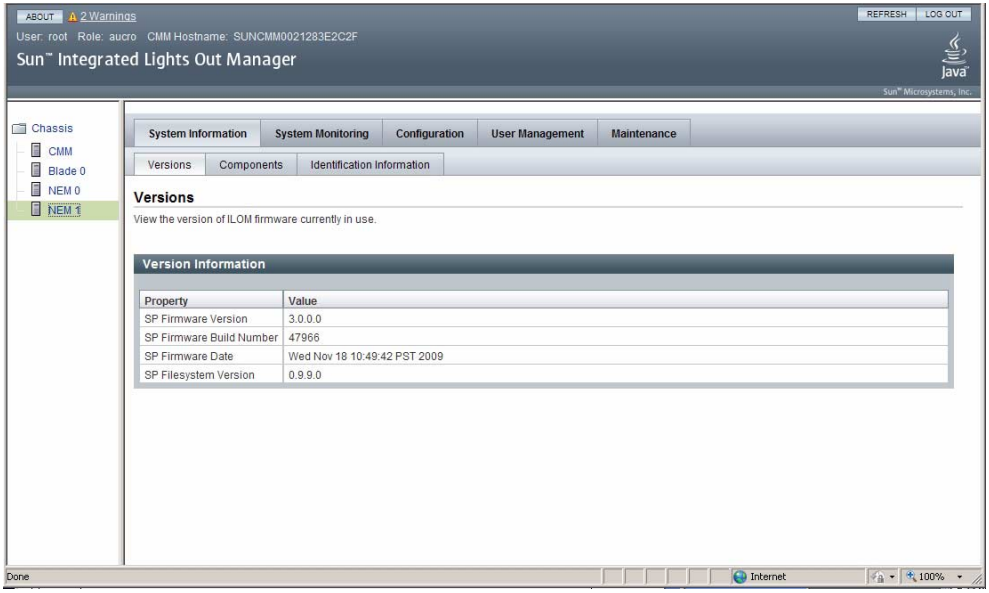
1. **In a web browser, type the IP address of the CMM in the location bar.**

   The chassis view appears.



2. **Connect to the NEM ILOM using either of the following methods:**
   - From the left navigation bar, select the NEM that you want to connect to.
   - Scroll over the graphical representation of the chassis and select the NEM that you want to connect to.

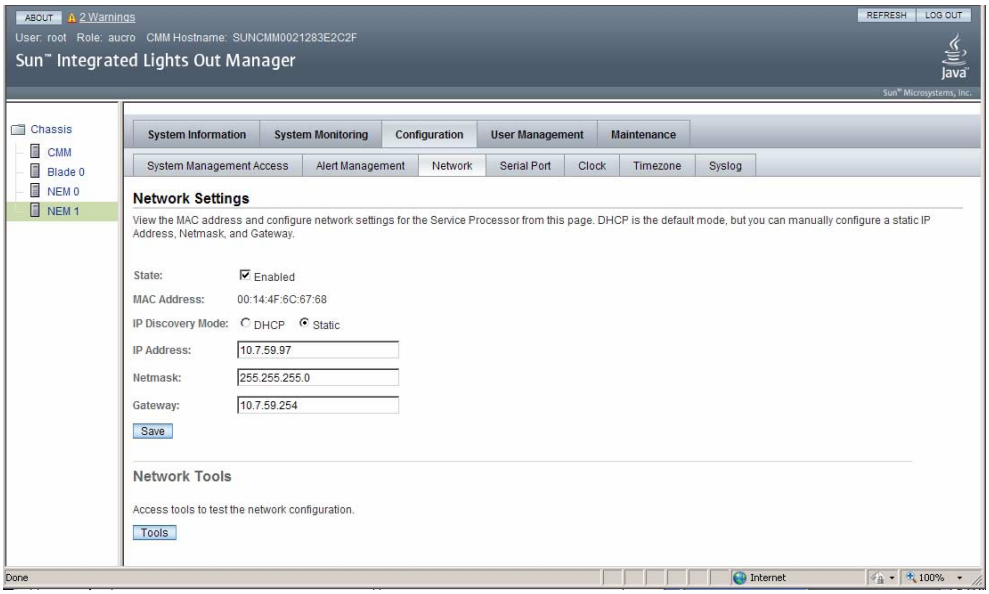
   The NEM ILOM for that NEM appears.



3. **Select Configuration from the first row of tabs.**

4. **Select Network from the second row of tabs.**

   The Network Settings page for the NEM appears.



5. **Configure the network settings for the NEM:**
   - In the State field, select Enabled.
   - In the IP Discovery Mode field, select Static.
   - Enter the IP Address, Netmask, and Gateway information in the appropriate fields.
6. **Click on the Save button.**

Related Information

- "Configure an Externally Accessible IP Address on the NEM (Serial Connection and CLI)" on page 32
- "Configure an Externally Accessible IP Address on the NEM (Ethernet and CLI)" on page 35
- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41

Connecting to the NEM ILOM

You can connect to the NEM ILOM in one of the following ways.

- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41

- "Connect to the NEM ILOM (Serial Connection and CLI)" on page 42

Related Information

- "Connecting to the NEM ILOM Through the CMM ILOM" on page 43

▼ Connect to the NEM ILOM (Ethernet and Web Interface)

1. **Configure an externally accessible IP address on the Switched NEM.**
   - If you have already done so, go to Step 2.
   - If you have not, perform the appropriate task described in "Configuring an Externally Accessible IP Address on the NEM" on page 31. Then go to Step 2.
2. **Type the IP address of the Switched NEM into your web browser.**

   The login screen appears.
3. **Type your user name and password.**

   When you first try to access the web interface, it prompts you to type the default user name and password. The default user name and password are:
   - Default user name: `root`
   - Default password: `changeme`

     The default user name and password are in lowercase characters.
4. **Click Log In.**

   The web interface appears.

Related Information

- "Configuring an Externally Accessible IP Address on the NEM" on page 31
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41
- "Connect to the NEM ILOM (Serial Connection and CLI)" on page 42

▼ Connect to the NEM ILOM (Ethernet and CLI)

1. **Configure an externally accessible IP address on the Switched NEM.**
   - If you have already done so, go to Step 2.
   - If you have not, perform the appropriate taste described in "Configuring an Externally Accessible IP Address on the NEM" on page 31. Then go to Step 2.
2. **Start your SSH client.**

3. **Log in to the Switched NEM ILOM:**

```
$ ssh ipaddress -l root
```

where *ipaddress* is the IP address of the Switched NEM.

4. **Type your password when prompted.**

The default is `changeme`.

The CLI command prompt appears:

```
->
```

5. **Access SEFOS.**

Go to "Connect to SEFOS" on page 49 for those instructions.

Related Information

- "Configuring an Externally Accessible IP Address on the NEM" on page 31
- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Serial Connection and CLI)" on page 42
- "Connect to SEFOS" on page 49

▼ Connect to the NEM ILOM (Serial Connection and CLI)

1. **Verify that the terminal or terminal emulator has the correct settings.**

The terminal device can be an actual terminal, a laptop running a terminal emulator, or a terminal server. The terminal device must be set to the following:

- 8N1: 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)

The cable requires the following pin assignments.

Pin	Signal Description
1	Request To Send (RTS)
2	Data Terminal Ready (DTR)
3	Transmit Data (TXD)
4	Ground

Pin	Signal Description
5	Ground
6	Receive Data (RXD)
7	Data Set Ready (DSR)
8	Clear To Send (CTS)

2. **Connect a terminal or terminal emulator to the serial management port on the Switched NEM.**

   See "Switched NEM External Ports" on page 2 for the location of the serial management port on the Switched NEM.

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

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

   The ILOM login prompt appears:

```
SUNSPnnnnnnnnnn login:
```

4. **Enter the user name and password when prompted.**

   The default user is `root` and the default password is `changeme`.

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

```
->
```

5. **Access SEFOS.**

   Go to "Connect to SEFOS" on page 49 for those instructions.

Related Information

- "Connect to the NEM ILOM (Ethernet and Web Interface)" on page 41
- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41
- "Connect to SEFOS" on page 49

Connecting to the NEM ILOM Through the CMM ILOM

You can connect to the NEM ILOM through the CMM ILOM in one of these ways.

- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and Web Interface)" on page 44
- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and CLI)" on page 45
- "Connect to the NEM ILOM Through the CMM ILOM (Serial Connection and CLI)" on page 47

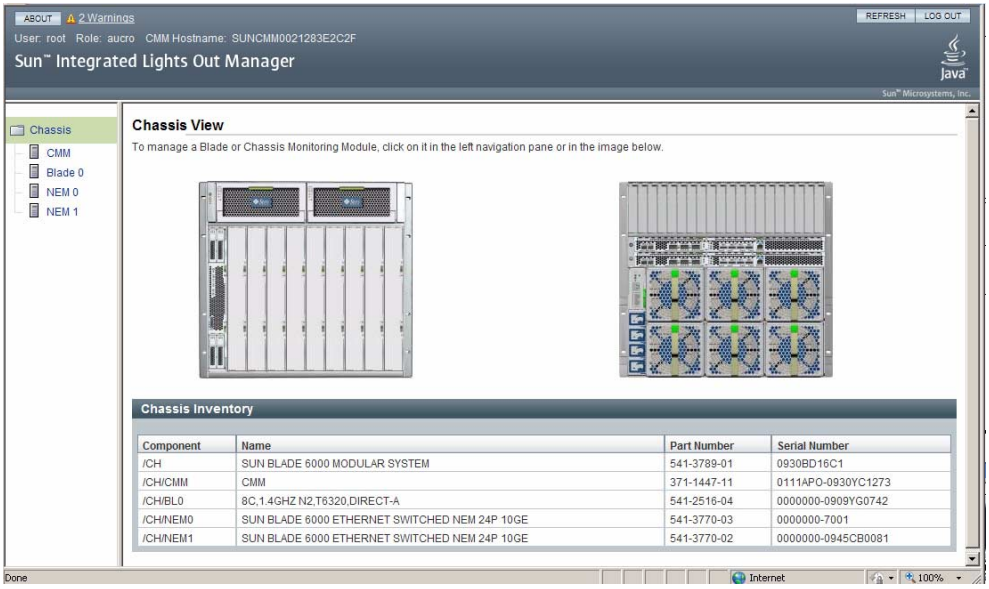
Related Information

- "Connecting to the NEM ILOM" on page 40

▼ Connect to the NEM ILOM Through the CMM ILOM (Ethernet and Web Interface)

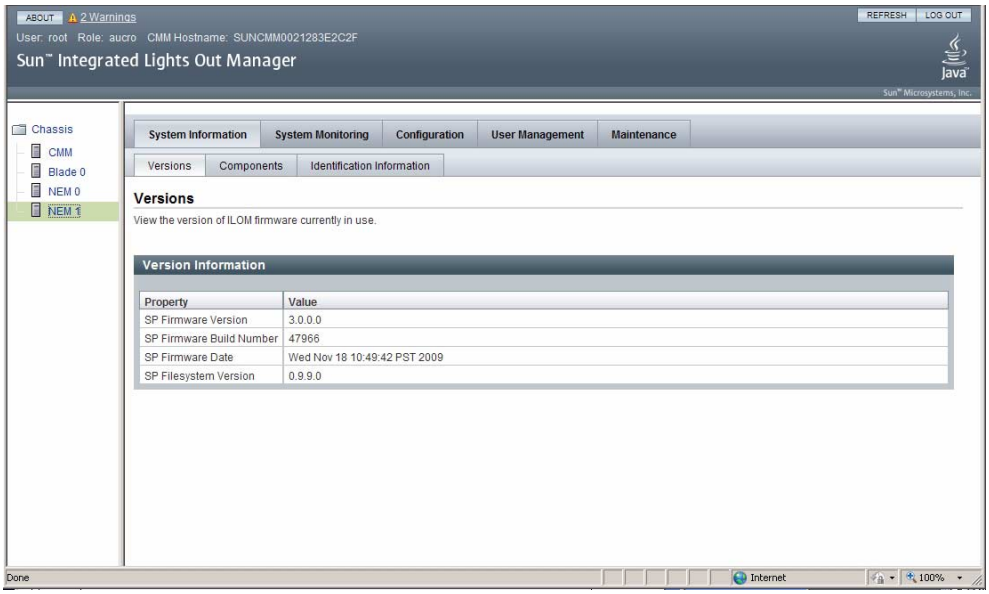
1. **In a web browser, type the IP address of the CMM in the location bar.**

   The chassis view appears.



2. **Connect to the NEM ILOM using either of the following methods:**
   - From the left navigation bar, select the NEM that you want to connect to.
   - Scroll over the graphical representation of the chassis and select the NEM that you want to connect to.

   The NEM ILOM for that NEM appears.



Related Information

- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and CLI)" on page 45
- "Connect to the NEM ILOM Through the CMM ILOM (Serial Connection and CLI)" on page 47

▼ Connect to the NEM ILOM Through the CMM ILOM (Ethernet and CLI)

1. **Get the IP address of the CMM.**
2. **Start your SSH client.**
3. **Log in to the CMM ILOM:**

```
$ ssh ipaddress -l root
```

where *ipaddress* is the address of the CMM.

4. **Type your password when prompted.**

   The default is `changeme`.

   The CLI command prompt appears:

```
->
```

5. **Start the NEM ILOM:**

```
-> start /CH/NEMn/SP/cli
```

   where *n* is 0 through 1 for NEMs 0 or 1, respectively. For example:

```
-> start /CH/NEM1/SP/cli
```

6. **Enter `y` at the prompt to start the CMM ILOM:**

```
Are you sure you want to start /CH/NEM1/SP/cli (y/n)? y
start: Connecting to /CH/NEM1/SP/cli using Single Sign On

Sun(TM) Integrated Lights Out Manager (Fabric Component Edition)

Version 3.0.0.0

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Warning: password is set to factory default.

->
```

7. **Access SEFOS.**

   Go to "Connect to SEFOS" on page 49 for those instructions.

Related Information

- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and Web Interface)" on page 44
- "Connect to the NEM ILOM Through the CMM ILOM (Serial Connection and CLI)" on page 47
- "Connect to SEFOS" on page 49

▼ Connect to the NEM ILOM Through the CMM ILOM (Serial Connection and CLI)

You must connect to the serial connector on the chassis CMM in order to connect to the chassis CMM ILOM. The CMM ILOM provides a command to connect to the NEM ILOM.

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

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

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

   The CMM ILOM login prompt appears.

```
SUNCMMnnnnnnnnnn login:
```

3. **Log in to the CMM ILOM.**

   The default user is `root` and the default password is `changeme`.

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

```
->
```

4. **Change directory to** `/CH/NEMn/SP/cli`**.**

   where *n* is 0 through 1 for NEMs 0 or 1, respectively.

5. **Type the command** `start`**.**

   A prompt appears.

6. **Type** `y` **to continue or** `n` **to cancel.**

   If you typed `y`, the NEM ILOM prompts for its password.

Note – The CMM ILOM logs on to the NEM ILOM using the username in `/CH/NEMn/SP/cli/user` (where *n* is the NEM number). The default is `root`.

---

7. **Type the ILOM password.**

   The NEM ILOM's CLI interface appears. You are now connected to the NEM ILOM.

8. **Access SEFOS.**

   Go to "Connect to SEFOS" on page 49 for those instructions.

Related Information

- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and Web Interface)" on page 44
- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and CLI)" on page 45
- "Connect to SEFOS" on page 49

Connecting With SEFOS

These topics describe how to use SEFOS to connect to the switch and how to configure SEFOS CLI user privileges.

- "SEFOS Overview" on page 48
- "Connect to SEFOS" on page 49
- "Configure SEFOS User Privileges" on page 50
- "Special Considerations for RADIUS Users" on page 51
- "Configure User Privileges for RADIUS Users" on page 52

SEFOS Overview

SEFOS is a full-featured fabric and switch management software package for configuring and monitoring the switch's network infrastructure.

When creating ILOM user accounts, an ILOM user with user management privileges can select which fabric/switch privilege level to give that user account. The `fs_privilege` attribute determines which administrative tasks that user can perform from the SEFOS CLI. The privilege levels are currently 1 and 15. Level 1 allows read only and Level 15 allows full administrative rights.

You can explicitly declare the `fs_privilege` attribute when you create a user account, or a root user can change the attribute at any time. By default, a new ILOM user account is given an `fs_privilege` level of 1.

Related Information

- "Connect to SEFOS" on page 49
- "Configure SEFOS User Privileges" on page 50

▼ Connect to SEFOS

1. **Connect to the ILOM CLI.**

   You can connect to the ILOM CLI using any of the following methods:

   - "Connect to the NEM ILOM (Ethernet and CLI)" on page 41
   - "Connect to the NEM ILOM (Serial Connection and CLI)" on page 42
   - "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and CLI)" on page 45
   - "Connect to the NEM ILOM Through the CMM ILOM (Serial Connection and CLI)" on page 47

2. **Access SEFOS using one of the following methods.**

   - Enter the following commands to connect to the NEM SEFOS:

```
-> cd /NEM/fs_cli/
```

   If the ILOM user with privilege level 15, user has full administrative rights. The SEFOS# prompt will appear. For example:

```
-> cd /NEM/fs_cli/
cd: Connecting to Fabric Switch CLI

SEFOS#
```

   If the ILOM user with privilege level 1, user has read only rights. The SEFOS> prompt will appear. For example:

```
-> cd /NEM/fs_cli/
cd: Connecting to Fabric Switch CLI

SEFOS>
```

   - Enter the following command to connect to the CLI:

```
-> start /NEM/fs_cli/
Are you sure you want to start /NEM/fs_cli (y/n?) y
start: Connecting to Fabric Switch CLI

SEFOS#
```

   You can now configure SEFOS. Refer to the *Sun Blade 6000 Ethernet Switched NEM 24p 10GbE Software Configuration Guide* for instructions.

3. **When you are finished using SEFOS, type** `exit` **to return to the ILOM prompt.**

   For example:

```
SEFOS# exit
Connection closed by foreign host.
cd: The session with /NEM/fs_cli has ended.

->
```

4. **When you are finished with ILOM, exit the ILOM:**

```
-> exit
```

Related Information

- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41
- "Connect to the NEM ILOM (Serial Connection and CLI)" on page 42
- "Connect to the NEM ILOM Through the CMM ILOM (Ethernet and CLI)" on page 45
- "Connect to the NEM ILOM Through the CMM ILOM (Serial Connection and CLI)" on page 47

▼ Configure SEFOS User Privileges

1. **Connect to the ILOM CLI.**

   See "Connecting to the NEM ILOM" on page 40.

2. **Create a user and set the user** `fs_privelege` **attribute upon creation:**

```
-> create user15 fs_privilege=15
Creating user...
Enter new password: ********
Enter new password again: ********
Created /SP/users/user15

-> ls user2

 /SP/users/user15
   Targets:
     ssh
   Properties:
     role = o
     password = *****
```

```
      fs_privilege = 15

   Commands:
     cd
     set
     show

->
```

3. **Change a user privilege level for an exiting user:**

```
-> set fs_privilege=15
Set 'fs_privilege' to '15'

-> ls
 /SP/users/user2
   Targets:
        ssh
   Properties:
        role = o
        password = *****
        fs_privilege = 15
    Commands:
        cd
        set
        show
->
```

Related Information

- "Connect to the NEM ILOM (Ethernet and CLI)" on page 41
- "Connect to the NEM ILOM (Serial Connection and CLI)" on page 42

Special Considerations for RADIUS Users

In addition to the typical ILOM settings, `/SP/clients/radius/fs_privilege` has been added to allow and control SEFOS access by RADIUS users. This new attribute sets the default `fs_privilege` setting for all RADIUS users and supports the same values as can be set when creating an ILOM user account (`1` for read only or 15 for full administrative privileges).

```
-> show /SP/clients/radius/

/SP/clients/radius
   Targets:
```

```
    Properties:
        address = 10.7.57.118
        defaultrole = Operator
        fs_privilege = 1
        port = 1812
        secret = *****
        state = enabled

    Commands:
        cd
        set
        show
```

The switch supports per-user settings for RADIUS users through Vendor Specific Attributes (VSA). Both the SEFOS administrative privilege level and the ILOM role can be set using per-user VSAs configured on the RADIUS server.

▼ Configure User Privileges for RADIUS Users

The following example shows how to configure the FreeRADIUS server to support a RADIUS client on the switch. The actual syntax might differ depending on the RADIUS server you use.

1. **Add a file called** `dictionary.oracle` **to** `/usr/local/share/freeradius/`**. The following contents must be in** `dictionary.oracle` **in order to configure the** `fs_privilege` **setting on a per-RADIUS user basis.**

```
# -*- text -*-
#
#       Oracle VSA
#
#       $Id$
#
VENDOROracle        111

BEGIN-VENDOROracle

ATTRIBUTESefos-Fs-Privilege       225     integer
ATTRIBUTEIlom-Role                226     string

END-VENDOROracle
```

Generally, the server must ensure that the `fs_privilege` setting for a user is sent to the client in the `Access-Accept` message in the following format:

```
Type = 26
Length= 12
Vendor-Id = 111
Type = 225
Length= 6
Value= <Sefos-Fs-Privilege value from raddb/users file>
Type = 26
Length= 21
Vendor-Id= 111
Type = 226
Length= 15
Value= <Ilom-Role value from raddb/users file>
```

2. **Add users to the users file in** `/usr/local/etc/raddb/` **as follows:**

```
user-john
    Sefos-Fs-Privilege = 15,
    Ilom-Role = "Operator"

user-doe
   Sefos-Fs-Privilege = 1
   Ilom-Role = "u"
```

The `fs_privilege` values that are provided in this file must be integers.

The ILOM Role values must be strings, even if they are single character role values. Also, to combine more than one ILOM role values, single letter designations must be used. For example, `Ilom-Role = "auc", Ilom-Role = "aucro"`, etc. In such cases, using the full form of roles is not allowed. For example, Ilom-Role = "Administrator,User,Console" is not allowed.

3. **Add the following entries to the** `dictionary` **file in** `/usr/local/etc/raddb/` **as follows:**

```
user-john
#       Place additional attributes or $INCLUDEs here.  They will
#      over-ride the definitions in the pre-defined dictionaries.
#
#       See the 'man' page for 'dictionary' for information on
#       the format of the dictionary files.
$INCLUDE        /usr/local/share/freeradius/dictionary.oracle
```

Note – Refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide* for more information about configuring your system for RADIUS.

Backing Up and Restoring the ILOM and SEFOS Configuration

The standard ILOM configuration backup/restore interfaces (WEB and CLI) will handle SEFOS configuration data as well. Refer to the *Oracle Integrated Lights Out Manager (ILOM 3.0 CLI Procedures Guide* for information about the CLI.

Note – To backup/restore the SEFOS portion of the configuration data, you must set a passphrase.

Understanding Sensors and Indicators

The NEM includes a number of sensors that generate entries in the SEL when the sensor crosses a threshold. Many of these readings are used to adjust the fan speeds and perform other actions, such as illuminating LEDs and powering off the NEM.

You can also configure these sensors to generate IPMI PET and SNMP traps, as described in the *Oracle Integrated Lights Out Manager (ILOM) CLI Procedures Guide*.

Caution – Do not use any interface other than the ILOM CLI or web interface to alter the state or configuration of any sensor or LED. Doing so could void your warranty.

- "Presence Sensors" on page 55
- "Switched NEM Indicators" on page 56
- "Fan Threshold Sensors" on page 58
- "Temperature Sensors" on page 58
- "Voltage Sensors" on page 59

Related Information

- *Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide*
- *Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide*

Presence Sensors

This topic provides information on the presence sensors.

`nem/cmm/prsnt` Sensor

This sensor indicates whether CMM ILOM is present.

Reading	State	Event	Description	Action
Absent	Device Absent	Yes	CMM ILOM is absent.	None
Present	Device Present	Yes	CMM ILOM is present.	None

`slotid` Sensor

This sensor identifies the slot where the Switched NEM is installed. The value can be `0` or `1`.

Related Information

- "Switched NEM Indicators" on page 56
- "Fan Threshold Sensors" on page 58
- "Temperature Sensors" on page 58
- "Voltage Sensors" on page 59

Switched NEM Indicators

These topics describe the front LED indicators on the Switched NEM. See "Switched NEM LEDs" on page 6 for the location of each of the LED indicators.

`nem/locate` Indicator

This LED indicator sensor shows the immediate state of the Locate LED on the Switched NEM. This LED helps you to locate each Switched NEM. This LED can be lit either from the CMM or by pressing the Locate button on the Switched NEM. This sensor does not generate any events.

Status	Event	Description
Off	No	The indicator has been turned off, either through the CMM or NEM software, or by pressing the Locate button on the Switched NEM.
On	No	The indicator has been activated, either through the CMM or NEM software, or by pressing the Locate button on the Switched NEM.
Fast blink	No	The indicator has been activated, either through the CMM or NEM software, or by pressing the Locate button on the Switched NEM.

`nem/ok` Indicator

This LED indicator sensor shows the power state of the NEM. This sensor does not generate any events.

Status	Event	Description
Off	No	The NEM is powered off.
On	No	The NEM is powered on.

`nem/ok2rm` Indicator

This LED indicator is not being used at this time.

`nem/service` Indicator

This LED indicator sensor shows the immediate state of the `nem/service` LED on the Switched NEM. This indicator is used to determine if there is a fault present in the Switched NEM. This sensor does not generate any events.

Status	Event	Description
Off	No	No faults are detected in the NEM.
On	No	A fault event has been acknowledged, and service action is required.

Related Information

- "Presence Sensors" on page 55
- "Fan Threshold Sensors" on page 58
- "Temperature Sensors" on page 58
- "Voltage Sensors" on page 59

Fan Threshold Sensors

Each fan is monitored by a sensor that generates an alarm when the value of RPM falls below the set threshold values. If all the fans are operating normally, they will each run at a relatively low RPM. If one or more fans fail, then the remaining fans will go to full speed.

Threshold	Event	Description	Action
Lower Non-Critical	Yes	RPM has decreased below lower noncritical threshold.	No action necessary
Lower Non-Recoverable	Yes	RPM has decreased below lower nonrecoverable threshold.	Remaining fans go to full speed.

Related Information

- "Presence Sensors" on page 55
- "Switched NEM Indicators" on page 56
- "Temperature Sensors" on page 58
- "Voltage Sensors" on page 59

Temperature Sensors

Three temperature sensors are installed on the motherboard.

These sensors monitor the ambient temperature from the internal temperature sensor on the mainboard.

- `MB/T_AMB` represents ambient temperature as measured on the motherboard.
- `MB/T_SAS2` represents SAS-2 ambient temperature.
- `MB/T_SWITCH` represents Switched NEM ASIC ambient temperature.

These temperature sensors are monitored, but are not used as inputs to the fan control algorithm and are not used to turn off system power when they are nonrecoverable. No event will be generated for these sensor readings.

Related Information

- "Presence Sensors" on page 55
- "Switched NEM Indicators" on page 56
- "Fan Threshold Sensors" on page 58
- "Voltage Sensors" on page 59

Voltage Sensors

All mainboard voltage sensors are configured to generate the same events, and faults are handled in the same way.

`mb.v_+12v_DIV` Sensor

This sensor monitors the voltage coming out of the 12V divider.

`mb.v_+12v_FUSED` Sensor

This sensor monitors the first fuse-protected input voltage coming from the chassis into the Switched NEM.

`mb.v_+12v_FUSED2` Sensor

This sensor monitors a second fuse-protected input voltage coming from the chassis into the Switched NEM.

`mb.v_+1v` Sensor

This sensor monitors the 1V main input that is active when the power is on.

`mb.v_+1v1` Sensor

This sensor monitors the 1.1V main input that is active when the power is on.

`mb.v_+1v2` Sensor

This sensor monitors the 1.2V main input that is active when the power is on.

`mb.v_+1v25` Sensor

This sensor monitors the 1.25V main input that is active when the power is on.

mb.v_+1v5 Sensor

This sensor monitors the 1.5V main input that is active when the power is on.

mb.v_+1v8 Sensor

This sensor monitors the 1.8V main input that is active when the power is on.

mb.v_+2v5 Sensor

This sensor monitors the 1.25V main input that is active when the power is on.

mb.v_+3v3 Sensor

This sensor monitors the 3.3V main input that is active when the power is on.

mb.v_+3v3_FUSED Sensor

This sensor monitors the 3.3V main input that is active when the power is on.

mb.v_+5v Sensor

This sensor monitors the 5V core input that is active when the power is on.

Related Information

- "Presence Sensors" on page 55
- "Switched NEM Indicators" on page 56
- "Fan Threshold Sensors" on page 58
- "Temperature Sensors" on page 58

Glossary

10

10GbE 10 Gigabit Ethernet.

C

chassis The Sun Blade 6000 modular system blade enclosure.

CLI Command-line interface.

D

disk module/disk blade The Sun Blade 6000 disk module. The terms *disk module* and *disk blade* are used interchangeably.

E

ESD Electrostatic discharge.

F

FEM Fabric expansion module. The FEM is installed on a server blade in the Sun Blade 6000 modular system.

FRU Field-replaceable unit.

I

ILOM Integrated Lights Out Manager. ILOM provides advanced server processor hardware and software to manage and monitor servers.

L

LC Long connector.

LR Long-range. A type of SFP+ module.

LR-M Long-range multimode. A type of SFP+ module.

M

MMF Multimode fiber.

N

NEM Network express module. The NEM is installed in NEM slot in the Sun Blade 6000 Series chassis to provide connectivity for FEMs (Fabric Expansion Modules) with the server blades installed in the Sun Blade 6000 Series chassis.

NEM 0, NEM 1 Terms used by NEM management software to identify multi-fabric NEMs occupying NEM slots in the chassis.

O

OM Optical module.

Q

QSFP Quad small form-factor, pluggable. A transceiver specification for 4x 10GbE modules.

R

RPM Revolutions per minute.

S

server module/server blade Any server module (blade) that can interoperate with a disk module (disk blade). Examples are the Sun Blade X6220, X6240, X6250, X6440, X6450, T6300, and T6320 server modules. The terms *server module* and *server blade* are used interchangeably.

SAS NEM A generic term that applies to any network express module that supports SAS connectivity. The Switched NEM is one example of a SAS NEM.

SEFOS Sun Ethernet Fabric Operating System. A full-featured fabric and switch management software package for configuring and monitoring the Switched NEM's network infrastructure.

SEL System event log.

SFP+ Small form-factor, pluggable. A transceiver module specification for several physical layer technologies. In this document, SFP+ refers to Gigabit Ethernet, or 10GbE, modules.

SMF	Single-mode fiber.
SR	Short-range. A type of SFP+ module.
Sun Blade 6000 Ethernet Switched NEM 24p 10GbE	The Switched NEM that plugs into a Sun Blade 6000 chassis.

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