

# **Sun Blade Storage Module M2 Administration Guide**



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# Preface

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

- [“Related Books” on page 5](#)
- [“About This Documentation \(PDF and HTML\)” on page 6](#)
- [“Documentation Comments” on page 6](#)
- [“Change History” on page 6](#)

## Product Information Web Site

For information about the Sun Blade Storage M2 module, go to the product site:

<http://www.oracle.com/goto/storagemodulem2>.

At that site, you can find links to the following information and downloads:

- Product information and specifications
- Software and firmware downloads

## Related Books

The following is a list of documents related to Oracle's Sun Blade Storage Module M2. These and additional support documents are available on the web at:

<http://docs.sun.com/app/docs/prod/blade.storm2#hic>

Document	Description
Sun Blade Storage Module M2 Product Documentation	Integrated HTML version of all starred (*) documents, including Search and Index.
<i>Sun Blade Storage Module M2 Getting Started Guide</i>	Setup quick reference.
<i>Sun Blade Storage Module M2 Installation Guide*</i>	How to install the storage module into a blade chassis and interpret operation LEDs.

Document	Description
<i>Sun Blade Storage Module M2 Product Notes*</i>	Important late-breaking information about the storage module.
<i>Sun Blade Storage Module M2 Administration Guide*</i>	How to assign storage to hosts and manage your storage module.
<i>Sun Blade Storage Module M2 Service Manual*</i>	How to service and maintain your storage module.
<i>Sun Blade Storage Module M2 Safety and Compliance Guide</i>	Safety and compliance information about your storage module.

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

## About This Documentation (PDF and HTML)

This documentation set is available in both PDF and HTML. The information is presented in topic-based format (similar to online help) and therefore does not include chapters, appendices or section numbering.

## Documentation Comments

Oracle is interested in improving the product documentation and welcome your comments and suggestions. You can submit comments at <http://www.oracle.com/goto/docfeedback>.

## Change History

The following lists the release history of this documentation set:

- July 2010, initial publication.
- August 2010, information added for Sun Blade Storage Module M2 software release 1.0.1. This includes support for connecting a Sun Blade X6270 M2 server module with a Sun Storage 6Gb SAS REM HBA (SGX-SAS6-REM-Z) to the storage module.
- November 2010, information added for Sun Blade Storage Module M2 software release 1.1. Added new OS support, CR 6981082, fix for CR 6971532.
- December 2010, flash module (FMod) support removed from product (including 24 FMod slots on main board).

- July 2011, information added for Sun Blade Storage Module M2 software release 1.2. Added new OS support. Added support for the Sun Blade T3–B1 server module. Mention of SSD support removed.





# Assigning Storage to Hosts

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Before your server can see the Sun Blade Storage Module M2, you must assign its storage on a per-host basis using the blade chassis Sun Blade Zone Manager, a feature of the CMM (Chassis Monitoring Module) Integrated Lights Out Manager (ILOM). This section describes how to assign storage module storage to supported hosts in the blade chassis, topics include:

- [“SAS Device Access to the Chassis SAS–2 Domain” on page 9](#)
- [“Host Access to Storage Module Resources Using the Sun Blade Zone Manager” on page 11](#)
- [“System Requirements” on page 13](#)
- [“How to Assign Storage to Hosts Using the CMM ILOM Web Interface” on page 14](#)
- [“How to Assign Storage to Hosts Using the CMM ILOM CLI” on page 30](#)

## SAS Device Access to the Chassis SAS–2 Domain

The internal chassis SAS-2 domain is managed by the CMM. The CMM detects SAS devices (such as NEMs, REMs, and the storage modules) that are connected to the chassis midplane and allows them to access the SAS-2 domain as follows:

- In order to establish the SAS-2 domain, the chassis must have at least one SAS-2 NEM and **no** SAS-1 NEMs.
- Only supported SAS-2 devices (such as supported SAS-2 REMs and the Sun Blade Storage Module M2) are allowed access.
- SAS-1 devices, such as SAS-1 REMs or a Sun Blade 6000 Disk Module (a SAS-1 device) are denied access. However, a server module with a SAS-1 REM can still access its own internal disks, its chassis PCIe ExpressModules (PEMs), and can also access the networking portion of a SAS-2 NEM.

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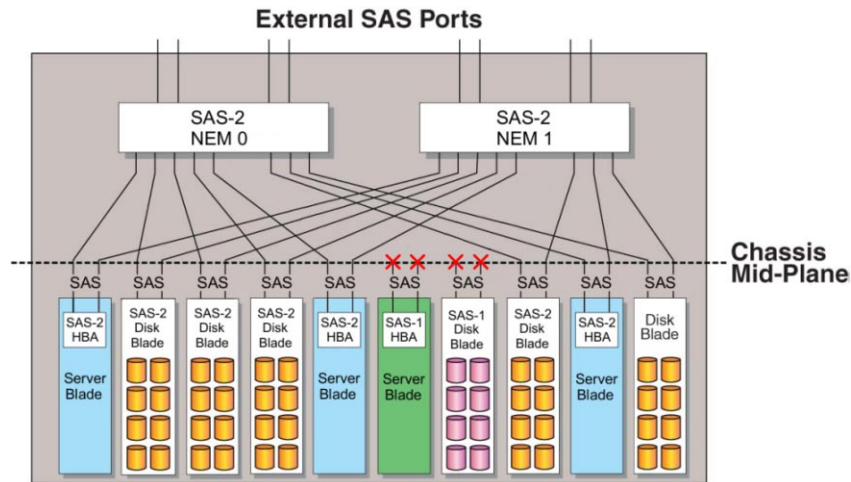
**Note** – The CMM ILOM will deny SAS-1 devices access to the chassis SAS-2 domain. However, the CMM ILOM does not manage SAS-1 devices.

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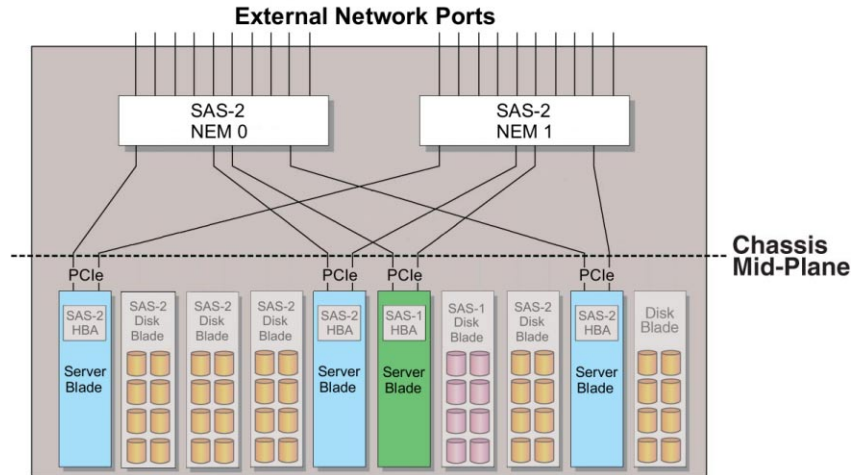
The CMM in conjunction with the SAS-2 NEM determines whether a SAS device is allowed access to the SAS-2 domain. A SAS-2 NEM has two components: the SAS component and the network component.

The following illustration shows how different SAS components within the chassis are allowed access. Note that SAS-1 devices are not allowed to access the SAS-2 domain.

**Note** – In the example below, a SAS-1 disk blade would not be accessible by any server module in the chassis.



Although SAS-1 devices cannot participate in the SAS-2 domain, the networking portion is not affected. A server module with SAS-1 devices can still access the networking component of a SAS-2 NEM, as shown in the following illustration.



See also:

- [“Host Access to Storage Module Resources Using the Sun Blade Zone Manager” on page 11](#)

## Host Access to Storage Module Resources Using the Sun Blade Zone Manager

Having components allowed to participate in the chassis SAS-2 domain (see [“SAS Device Access to the Chassis SAS-2 Domain” on page 9](#)) is the first stage in accessing the resources of your Sun Blade Storage Module M2. The next step is to assign storage module disks to specific server modules in the chassis. In SAS-2, this is accomplished using the Sun Blade Zone Manager feature of the CMM ILOM.

The Sun Blade Zone Manager allows you to define zone groups that include host server modules and the storage module drives they can access.

---

**Note** – Until per-host assignment of storage module resources is completed, the server modules in the chassis will not see the storage module drives.

---

Examples of zoning include:

- Assigning all of the storage to one host.
- Splitting up the storage in a module among several hosts. Where each host has exclusive ownership of its assigned storage.
- Splitting up the storage across several storage modules among several hosts. Where each host has exclusive ownership of its assigned resources across several storage modules.

- Sharing the same storage with two hosts. This is only supported in specific scenarios (such as clustering) where special software is used to coordinate host access to storage. At the release of this document, sharing the same storage with two hosts is *not* supported.

**Note** – The assignment of storage module resources using the Sun Blade Zone Manager does not extend to server module internal disks; it only works at the chassis SAS-2 domain level (which includes storage modules and SAS-2 NEM external SAS ports). At the release of this document, there is no support for connecting external SAS storage to a SAS-NEM's external SAS ports. Refer to the NEM *Product Notes* for the latest information on support for the external SAS ports.

The following illustration shows a typical example of host-to-storage assignment using the CMM Sun Blade Zone Manager interface. Note that zone group information is color-coded, where the assigned storage matches the host color.

Quick Setup

Select how you would like all chassis storage resources allocated and click 'Save'.

☐ 1. Assign per individual disks.

☒ 2. Assign per adjacent individual disks.

☐ 3. Assign per storage blade.

☐ 4. Assign per adjacent storage blade.

Save

SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_core\_illom

Slot 0 Server Blade Sun Blade X6270 M2	Slot 1 Server Blade Sun Blade X6270 M2	Slot 2 Storage Blade Sun Blade Storage Module M2	Slot 3 Server Blade Sun Blade X6270 M2	Slot 4 Server Blade Sun Blade X6270 M2	Slot 5 Storage Blade Sun Blade Storage Module M2	Slot 6 Storage Blade Sun Blade Storage Module M2	Slot 7 Server Blade Sun Blade X6270 M2	Slot 8 Storage Blade Sun Blade Storage Module M2	Slot 9 Storage Blade Sun Blade Storage Module M2
		<div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div>			<div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div>	<div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div>		<div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div>	<div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div>
		<div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div>			<div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div>	<div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div>		<div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div>	<div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div>

NEM Slot 0

SAS NEM

NEM-2

EXT 0EXT 1EXT 2EXT 3

NEM Slot 1

SAS NEM

NEM-2

EXT 0EXT 1EXT 2EXT 3

NAC name:

JCH/BL9/FMOD1

Disk type:

SAS

WWN:

80205010:33333336 80205010:33333337

---

**Note** – Empty slots mean that there is nothing installed. When viewed in the Sun Blade Zone Manager, the Sun Blade Storage Module M2 shows 8 HDD slots which are configurable when a supported drive is installed, it also shows 24 empty slots below the HDD slots that are not used and cannot be configured.

---

Once configurations are saved from the CMM Sun Blade Zoning Manager interface, a host REM will be able to see (discover) all of its assigned storage. Drives within the assigned zone will appear as individual physical drives to the host.

---

**Note** – Sun Blade Zone Manager configurations only affect host-to-storage access, not the actual saved data on disks. These configurations are saved with CMM ILOM information when you do a CMM ILOM backup. If host-to-storage configurations are lost, they can be recovered by restoring a backup of your CMM ILOM configurations.

---

See also:

- “System Requirements” on page 13
- “How to Assign Storage to Hosts Using the CMM ILOM Web Interface” on page 14
- “How to Assign Storage to Hosts Using the CMM ILOM CLI” on page 30

## System Requirements

- Your Sun Blade 6000 Modular System must have a PCIe 2.0 compliant midplane. For more information on determining this, refer to the *Sun Blade 6000 Modular System Product Notes*.
- Your Sun Blade 6000 Modular System must have CMM ILOM firmware that supports the Sun Blade Storage Manager M2 and the servers that will use it. For a list of the minimum CMM ILOM firmware requirements to support SAS-2 and the CMM ILOM Sun Blade Zone Manager, refer to “Supported Firmware, Hardware and Software” in *Sun Blade Storage Module M2 Product Notes*. The latest firmware can be downloaded from <http://www.oracle.com/goto/blades>.
- You must have already installed your SAS-2 supported components (server module with SAS-2 REM, SAS-2 NEMs, and SAS-2 storage modules).
- Your SAS-2 NEM must be at a firmware version level that supports zoning. Check your NEM *Product Notes* for version information and available updates.
- You must have already performed initial setup and configuration of your CMM ILOM and planned your connection method (web browser or CLI) as described in the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide*.

To assign storage module resources to hosts, see:

- “How to Assign Storage to Hosts Using the CMM ILOM Web Interface” on page 14
- “How to Assign Storage to Hosts Using the CMM ILOM CLI” on page 30

## ▼ How to Assign Storage to Hosts Using the CMM ILOM Web Interface

### Before You Begin

- The chassis must be powered on and all SAS-2 devices (hosts, NEMs, and storage modules) must be running in order to assign storage resources to hosts.

---

**Note** – You might have to wait as much as five minutes after all SAS-2 devices are powered-on before they are recognized by the CMM. Then you can assign storage module resources. This time allows the CMM zmgtd daemon to discover the new devices and bring them into the SAS-2 fabric.

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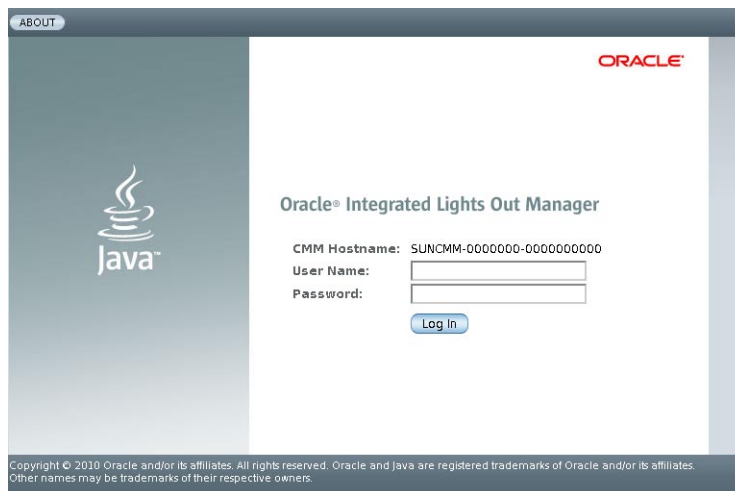
- These instructions assume a network connection to the CMM ILOM.
- These instructions describe how to initially set up, or add, host-to-storage assignments using the Sun Blade Zone Manager. For complete information on using the Sun Blade Zone Manager feature of the CMM ILOM, refer to the *Oracle Integrated Lights Out Manager (ILOM) CMM Administration Guide for Sun Blade 6000 and 6048 Modular Systems*.

### 1 Open a web browser and log in to the CMM ILOM by entering the following url:

**http://chassis\_sp\_ipaddress/**

Where *chassis\_sp\_ipaddress* is the IP address of your chassis service processor.

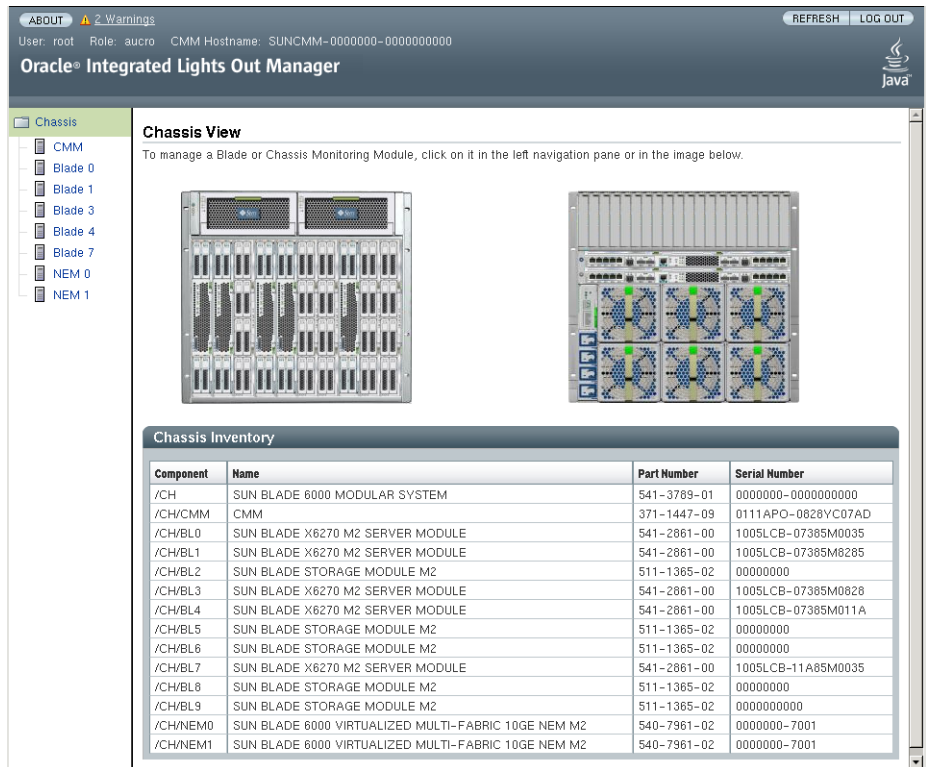
The ILOM login page will appear.



## 2 Login.

You must login using an account with administrator privileges.

The Chassis View page appears.



**Chassis View**

To manage a Blade or Chassis Monitoring Module, click on it in the left navigation pane or in the image below.

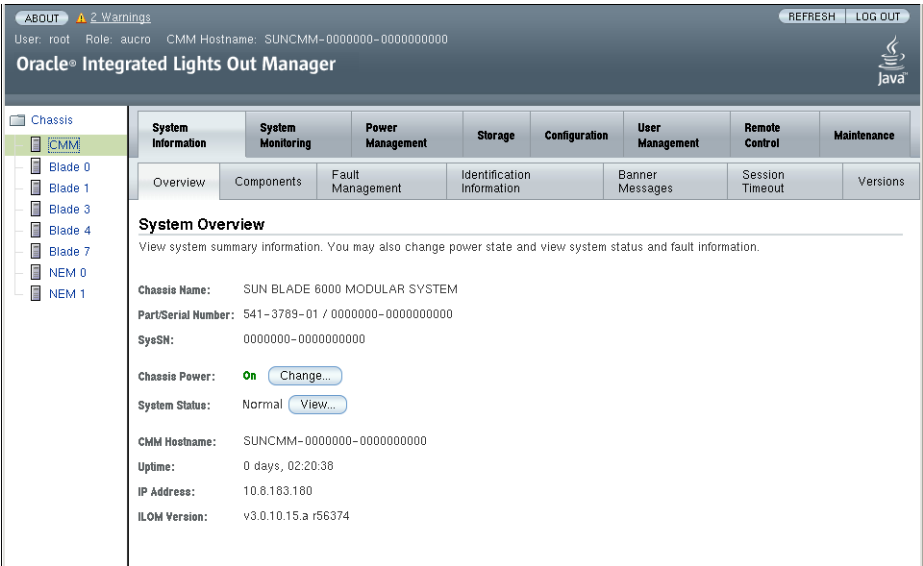
**Chassis Inventory**

Component	Name	Part Number	Serial Number
/CH	SUN BLADE 6000 MODULAR SYSTEM	541-3789-01	0000000-0000000000
/CH/CMM	CMM	371-1447-09	0111APO-0828YC07AD
/CH/BL0	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M0035
/CH/BL1	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M8285
/CH/BL2	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL3	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M0828
/CH/BL4	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M011A
/CH/BL5	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL6	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL7	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-11A85M0035
/CH/BL8	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL9	SUN BLADE STORAGE MODULE M2	511-1365-02	0000000000
/CH/NEM0	SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2	540-7961-02	0000000-7001
/CH/NEM1	SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2	540-7961-02	0000000-7001

**Note** – In the left pane, installed server blades are listed, but not installed storage modules. This is because the CMM ILOM controls storage module *Integrated Lights Out Management* functions.

- 3 Click on CMM in the left pane and then click the System Information tab. From the Overview sub-tab, check to see that you have the minimum required CMM ILOM firmware version necessary to support zoning.

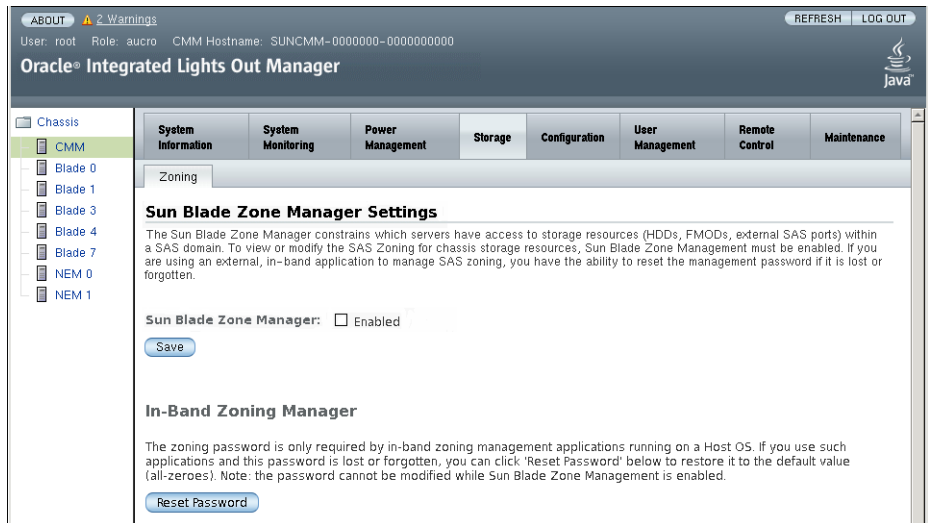
Refer to the “[System Requirements](#)” on page 13. If you do not have the minimum version required, update the CMM ILOM firmware before continuing.





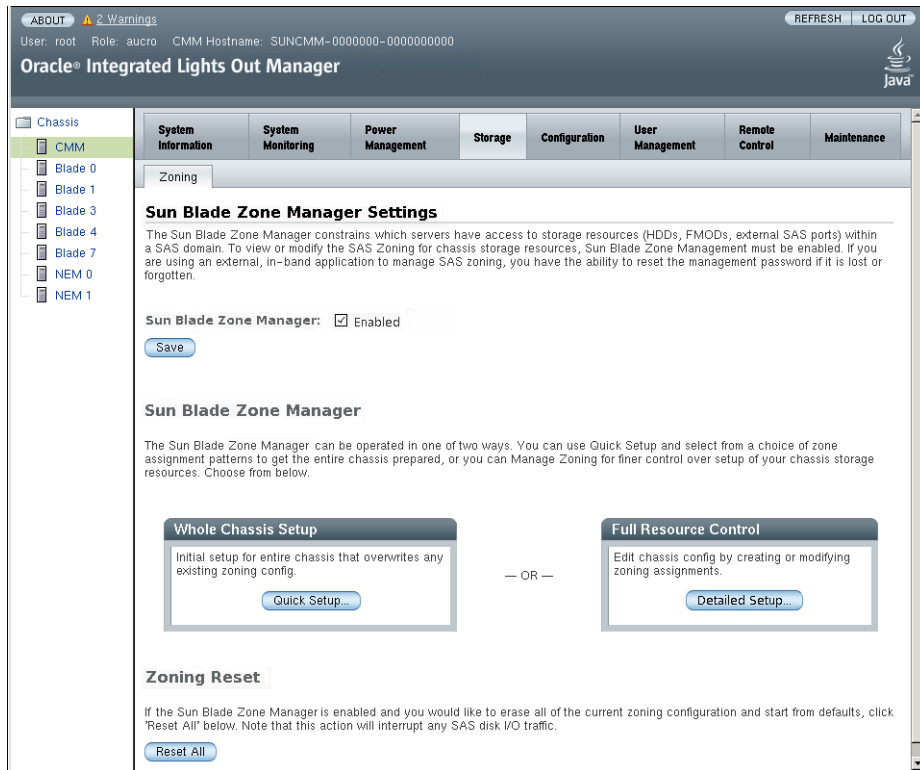
- 4 With CMM selected in the left pane, click the Storage tab.

The SAS Zoning sub-page is displayed.



- 5 **Enable the Sun Blade Zone Manager by placing a check in the Enabled checkbox and then clicking the Save button.**

The options for zoning appear. You can now create, view and manage zone settings using the Sun Blade Zone Manager.



- 6 **Choose one of the following methods for configuring host-to-storage access using the Sun Blade Zone Manager:**

- **Whole Chassis Setup using the Quick Setup tool.**

Use this method if there are **no** existing host-to-storage assignments in the chassis, or if you want to erase **all** existing assignments and start fresh. Quick Setup allows you to use optimized automated templates to configure assignments. Proceed to [Step 7](#).

- **Full Resource Control using the Detailed Setup tool.**

Use this method if you want more control in customizing your host-to-storage assignments, or if you have existing assignments in the chassis that you want to add storage to or modify. Proceed to [Step 8](#).

**7 To perform a Whole Chassis Setup, do the following:**

- a. Under the Sun Blade Zone Manager section, click the Quick Setup button under Whole Chassis Setup.**

Quick Setup provides easy-to-use automated templates that optimize your host-to-storage assignments based on your need. If you are assigning storage resources in the chassis for the first time (no other assignments have been set), you should use Quick Setup.



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**Caution** – Using the Quick Setup templates will overwrite any existing assignments. Quick Setup is best for initial host-to-storage access configuration, or if you want to erase all assignments and start over.

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**Note** – After creating your initial host-to-storage assignments using Quick Setup, you can later modify assignments using Full Resource Control. Complete instructions for using the CMM Sun Blade Zone Manager can be found in the *Oracle Integrated Lights Out Manager (ILOM) CMM Administration Guide for Sun Blade 6000 and 6048 Modular Systems*.

---

A diagram of the chassis components is displayed.

Quick Setup

Select how you would like all chassis storage resources allocated and click 'Save'.

☐ 1. Assign per individual disks.

☐ 2. Assign per adjacent individual disks.

☐ 3. Assign per storage blade.

☐ 4. Assign per adjacent storage blade.

Save

SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_core\_ilom

Slot 0 Server Blade Sun Blade X6270 M2	Slot 1 Server Blade Sun Blade X6270 M2	Slot 2 Storage Blade Sun Blade Storage Module M2	Slot 3 Server Blade Sun Blade X6270 M2	Slot 4 Server Blade Sun Blade X6270 M2	Slot 5 Storage Blade Sun Blade Storage Module M2	Slot 6 Storage Blade Sun Blade Storage Module M2	Slot 7 Server Blade Sun Blade X6270 M2	Slot 8 Storage Blade Sun Blade Storage Module M2	Slot 9 Storage Blade Sun Blade Storage Module M2
		<div><div>HDD 6HDD 7</div><div>HDD 4HDD 5</div><div>HDD 2HDD 3</div><div>HDD 0HDD 1</div></div>			<div><div>HDD 6HDD 7</div><div>HDD 4HDD 5</div><div>HDD 2HDD 3</div><div>HDD 0HDD 1</div></div>	<div><div>HDD 6HDD 7</div><div>HDD 4HDD 5</div><div>HDD 2HDD 3</div><div>HDD 0HDD 1</div></div>		<div><div>HDD 6HDD 7</div><div>HDD 4HDD 5</div><div>HDD 2HDD 3</div><div>HDD 0HDD 1</div></div>	<div><div>HDD 6HDD 7</div><div>HDD 4HDD 5</div><div>HDD 2HDD 3</div><div>HDD 0HDD 1</div></div>
		<div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div></div>			<div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div></div>	<div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div></div>		<div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div></div>	<div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div><div>emptyempty</div></div>

NEM Slot 0

SAS NEM NEM-2

EXT 0EXT 1EXT 2EXT 3

NEM Slot 1

SAS NEM NEM-2

EXT 0EXT 1EXT 2EXT 3

NAC name: /CH/BL6/FMOD22

Disk type: SAS

WWN: 80205010:33333336 80205010:33333337

**Note** – The term HDD in the CMM ILOM web interface refers to an HDD physical slot, regardless of whether a hard disk drive or solid-state drive is present in the slot.

- b. Click the radio button to apply one of the zoning templates as follows:
- **Option 1: Assign per individual disks.** This option uses a round-robin algorithm to assign disks to hosts. Ownership of disks is spread evenly across available storage modules. This option is best for fault tolerance where the failure or removal of a single storage module will not bring down a RAID volume.
  - **Option 2: Assign per adjacent individual disks.** This option looks for servers (starting at slot 0) and assigns an equal number of disks from the closest storage module. All servers will be assigned as close to an equal number of adjacent disks as possible.

Quick Setup

Select how you would like all chassis storage resources allocated and click 'Save'.

☒ 1. Assign per individual disks.
 ☐ 2. Assign per adjacent individual disks.
 ☐ 3. Assign per storage blade.
 ☐ 4. Assign per adjacent storage blade.

Save

SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_core\_1lom

<div>Slot 0</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 1</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 2</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 3</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 4</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 5</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 6</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 7</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 8</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 9</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>
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NEM Slot 0

SAS NEM NEM-2

EXT 0

EXT 4

EXT 2

EXT 3

NEM Slot 1

SAS NEM NEM-2

EXT 0

EXT 1

EXT 2

EXT 3

NAC name:

/CH/BL9/FMOD1

Disk type:

SAS

WWN:

80205010:33333336 80205010:33333337

d. When ready, click the Save button.

The host-to-storage assignments will be saved. Progress is displayed with green check marks as resources are successfully assigned. You can also view details by scrolling to the bottom of the window to view the Pending Assignments table. Do not close the Quick Setup window until the process is complete. Depending on the number of storage devices and servers, this can take up to 15 minutes.



**Caution** – It is important that you do not hot plug or power off any components that have been designated as part of the zoning configuration during the save operation.

Quick Setup

Select how you would like all chassis storage resources allocated and click 'Save'.

☐ 1. Assign per individual disks.

☐ 2. Assign per adjacent individual disks.

☐ 3. Assign per storage blade.

☐ 4. Assign per adjacent storage blade.

Save

Setting zoning assignments - please wait...

SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_core\_1lom

<div>Slot 0</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div> <div>✓</div>	<div>Slot 1</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div> <div>✓</div>	<div>Slot 2</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 2</div> <div>HDD 3</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div>	<div>Slot 3</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div> <div>✓</div>	<div>Slot 4</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div> <div>✓</div>	<div>Slot 5</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div>HDD 6</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 3</div> <div>HDD 1</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div>	<div>Slot 6</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 1</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div>	<div>Slot 7</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div> <div>✓</div>	<div>Slot 8</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 3</div> <div>HDD 1</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div>	<div>Slot 9</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 5</div> <div>HDD 3</div> <div>HDD 1</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div>
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NEM Slot 0

SAS NEM NEM-2

EXT 0

EXT 1

EXT 2

EXT 3

NEM Slot 1

SAS NEM NEM-2

EXT 0

EXT 1

EXT 2

EXT 3

NAC name:

JCH/BL9/FMOD1

Disk type:

SAS

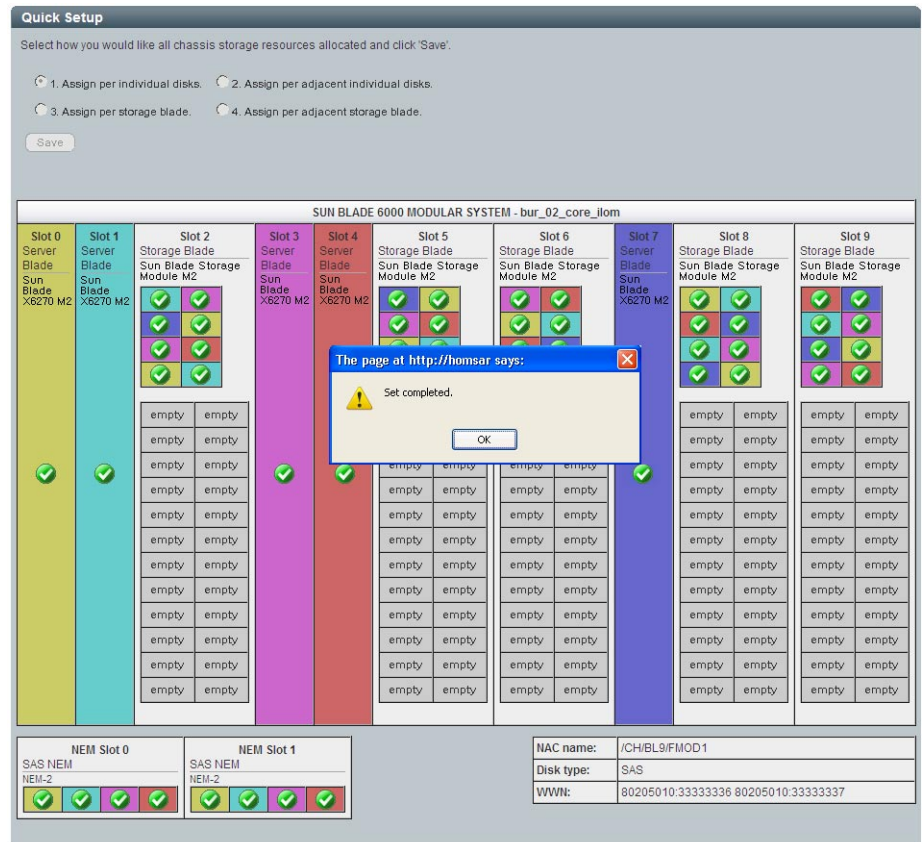
WWN:

80205010:33333336 80205010:33333337

**Note** – If the Quick Setup window is closed before all of the assignments have been completely saved, only the assignments for devices with a green check mark will be saved. You will then need to return to the Zoning page and click **Detailed Setup** under **Full Resource Control** and finish assigning devices that have not been assigned to a host.

e. **Once configurations have been saved, click OK at the Set Complete dialog box.**

This saves your new host-to-storage assignments in the CMM and the SAS domain expanders.



f. **Close the Quick Setup window.**

After assignments have been saved, you must next create a backup copy of your CMM ILOM configurations to ensure that if assignments are ever lost, you can recover them by restoring your saved CMM ILOM configurations.

Proceed to [Step 9](#).

**8 To add storage to an existing zone configuration, do the following:**

a. Click the Detailed Setup button under Full Resource Control.

A diagram of the chassis components is displayed. In this example, a storage module has been added to the chassis. In order for it to be seen by a host, it must be either added to an existing zone group, or made part of a new host-to-storage group.

In this example, the new unassigned storage [2] will be added to an existing host [1] zone group.

### Zoning Config

The current access permission assignments are displayed below. Click 'New Assignments' to make new access groupings. Or, click on any component to select all those to which it has access assigned, then click 'Modify Group' to make changes to that selected group.

New Assignments
Modify Group

**SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_core\_11om**

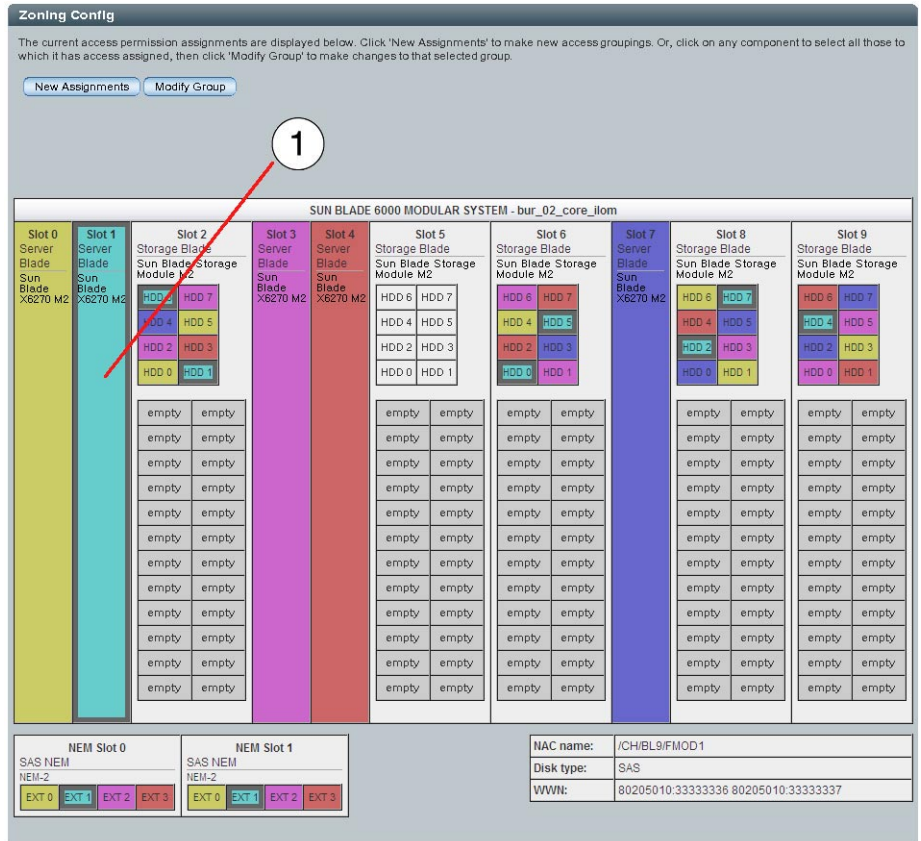
Slot 0	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot 8	Slot 9
Server Blade Sun Blade X6270 M2	Server Blade Sun Blade X6270 M2	Storage Blade Sun Blade Storage Module M2	Server Blade Sun Blade X6270 M2	Server Blade Sun Blade X6270 M2	Storage Blade Sun Blade Storage Module M2	Storage Blade Sun Blade Storage Module M2	Server Blade Sun Blade X6270 M2	Storage Blade Sun Blade Storage Module M2	Storage Blade Sun Blade Storage Module M2
		HDD 6 HDD 7 HDD 4 HDD 5 HDD 2 HDD 3 HDD 0 HDD 1			HDD 6 HDD 7 HDD 4 HDD 5 HDD 2 HDD 3 HDD 0 HDD 1	HDD 6 HDD 7 HDD 4 HDD 5 HDD 2 HDD 3 HDD 0 HDD 1		HDD 6 HDD 7 HDD 4 HDD 5 HDD 2 HDD 3 HDD 0 HDD 1	HDD 6 HDD 7 HDD 4 HDD 5 HDD 2 HDD 3 HDD 0 HDD 1
		empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty			empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty	empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty		empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty empty	

**NEM Slot 0**  
SAS NEM  
NEM-2  
EXT 0 EXT 1 EXT 2 EXT 3

**NEM Slot 1**  
SAS NEM  
NEM-2  
EXT 0 EXT 1 EXT 2 EXT 3

**NAC name:** /CH/BL9/FMOD1  
**Disk type:** SAS  
**WWN:** 80205010:33333336 80205010:33333337





c. Click the **Modify Group** button.

In modify mode, the selected host and all storage currently assigned to it have their outlines highlighted in dark gray.

Modify Group

Indicated below is your selected group of components that currently have assigned access. Click on those within the group that you would like to remove access to. Click on any components outside the group that you want added. When you are ready to apply the changes, click 'Save'.

Save

Cancel

SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_core\_ilom

Slot 0

Server Blade

Sun Blade X6270 M2

Slot 1

Server Blade

Sun Blade X6270 M2

Slot 2

Storage Blade

Sun Blade Storage Module M2

HDD 6

HDD 7

HDD 4

HDD 5

HDD 2

HDD 3

HDD 0

HDD 1

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

Slot 3

Server Blade

Sun Blade X6270 M2

Slot 4

Server Blade

Sun Blade X6270 M2

Slot 5

Storage Blade

Sun Blade Storage Module M2

HDD 6

HDD 7

HDD 4

HDD 5

HDD 2

HDD 3

HDD 0

HDD 1

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

Slot 6

Storage Blade

Sun Blade Storage Module M2

HDD 6

HDD 7

HDD 4

HDD 5

HDD 2

HDD 3

HDD 0

HDD 1

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

Slot 7

Server Blade

Sun Blade X6270 M2

Slot 8

Storage Blade

Sun Blade Storage Module M2

HDD 6

HDD 7

HDD 4

HDD 5

HDD 2

HDD 3

HDD 0

HDD 1

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

Slot 9

Storage Blade

Sun Blade Storage Module M2

HDD 6

HDD 7

HDD 4

HDD 5

HDD 2

HDD 3

HDD 0

HDD 1

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

empty

NEM Slot 0

SAS NEM

NEIM-2

EXT 0

EXT 1

EXT 2

EXT 3

NEM Slot 1

SAS NEM

NEIM-2

EXT 0

EXT 1

EXT 2

EXT 3

NAC name:

/CH/BL9/FMOD1

Disk type:

SAS

WWN:

80205010:33333336 80205010:33333337

- Each selected storage device [2] that will be assigned to the current zone group has its outline highlighted in light green.

Modify Group

Indicated below is your selected group of components that currently have assigned access. Click on those within the group that you would like to remove access to. Click on any components outside the group that you want added. When you are ready to apply the changes, click 'Save'.

Save

Cancel

2

SUN BLADE 6000 MODULAR SYSTEM - bur\_02\_comp\_11om

<div>Slot 0</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 1</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 2</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 3</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 4</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 5</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 6</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 7</div> <div>Server Blade</div> <div>Sun Blade X6270 M2</div>	<div>Slot 8</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>	<div>Slot 9</div> <div>Storage Blade</div> <div>Sun Blade Storage Module M2</div> <div> <div>HDD 6</div> <div>HDD 7</div> <div>HDD 4</div> <div>HDD 5</div> <div>HDD 2</div> <div>HDD 3</div> <div>HDD 0</div> <div>HDD 1</div> </div> <div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> <div>empty</div> </div>
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NEM Slot 0

SAS NEM

NEM-2

EXT 0

EXT 1

EXT 2

EXT 3

NEM Slot 1

SAS NEM

NEM-2

EXT 0

EXT 1

EXT 2

EXT 3

NAC name:

/CH/BL9/FMOD1

Disk type:

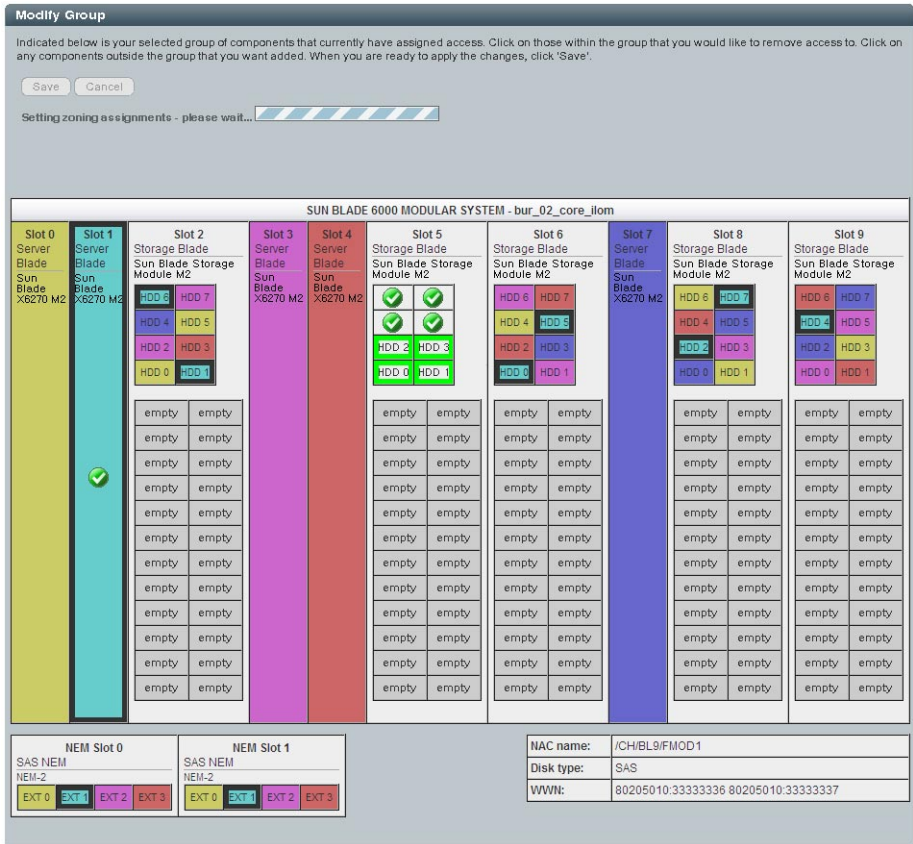
SAS

WWN:

80205010:33333336 80205010:33333337

f. Click OK at the warning dialog box.

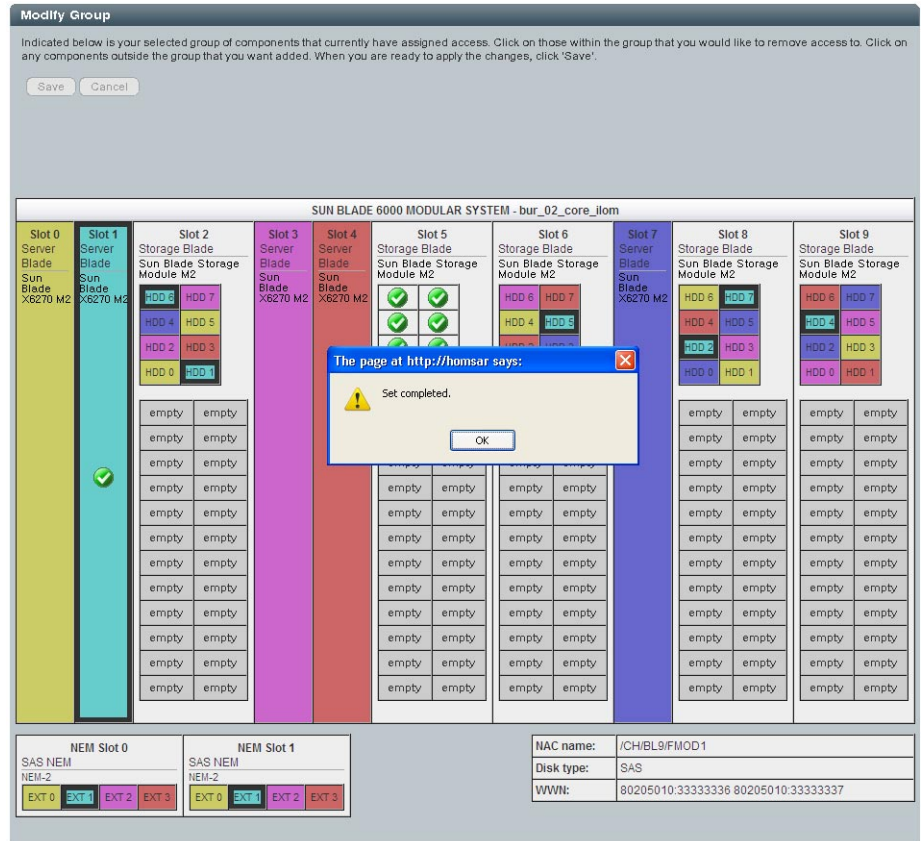
The selected storage will be added to the current zone group. Progress is displayed with green check marks.



**Note** – Do *not* close the zone manager window during the save operation. If the zoning window is closed before the zoning configuration has been completely saved, only the configuration assignments for devices with a green check mark will be saved. You will then need to return to the SAS Zoning Settings page and click **Manage Zoning** under **Full Resource Control** and finish configuring devices that have not been assigned to a host.

**g. Once configurations have been saved, click OK at the Set Complete dialog box.**

This saves your new zoning configurations in the CMM and the storage module SAS expanders.



**h. Close the Manage Zoning window.**

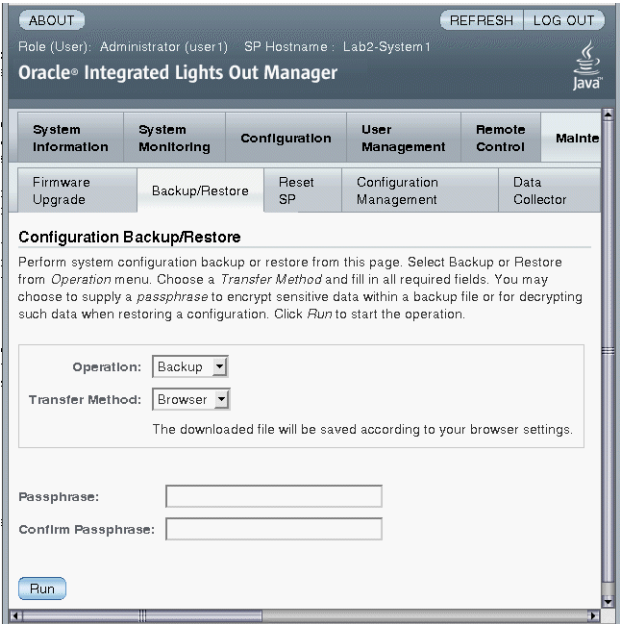
After zoning configurations have been saved, you should create a backup to ensure you can recover the current zoning configurations in the event they are lost.

**9 Save your CMM ILOM configurations to a backup file. Click the Maintenance tab for the CMM.**

The CMM maintenance sub-tabs are displayed.

**10 Click the Backup/Restore tab.**

The Backup/Restore page is displayed.



**11 Select Backup from the Operation drop-down list.**

Fill out the information on the page to create your backup file. For complete instructions on using ILOM Backup/Restore, refer to your *Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide*.

Once you have backed-up your CMM ILOM configurations, proceed to your host(s) to format and create volumes for host-assigned disks.

- See Also**
- [“How to Assign Storage to Hosts Using the CMM ILOM CLI” on page 30](#)
  - [“Managing Storage” on page 37](#)

**▼ How to Assign Storage to Hosts Using the CMM ILOM CLI**

- Before You Begin**
- All SAS-2 devices (hosts, NEMs, and storage modules) must be powered on and functioning correctly in order to be properly discovered and made available for zoning configuration.

---

**Note** – You must wait at least five minutes after all SAS-2 devices are powered-on before attempting to assign storage module resources. This allows the CMM zmgtd daemon to discover all SAS-2 devices installed in the chassis.

---

- These instructions assume a network connection to the CMM ILOM.
- You must log in to the CMM ILOM CLI as a user assigned the Admin, User Management, Console, Reset and Host Control, and Read Only roles (a,u,c,r,o). These roles are required in order to perform a complete backup of the CMM ILOM configuration.

**1 Open a terminal window and establish an ssh connection to the CMM by entering the following command:**

```
# ssh -l accountname cmm_ip
```

Where *accountname* is the name of a user account with Administrator privileges (such as root) and *cmm\_ip* is the IP address of the CMM.

The login prompt is displayed.

**2 Login.**

For example:

```
/hostname/login: accountname
```

```
password: yourpassword
```

After you have successfully logged in, the prompt will be displayed:

```
->
```

**3 Confirm that you have the minimum CMM ILOM firmware version required for zoning (as described in [“System Requirements” on page 13](#)) by entering the command:**

```
-> version
```

Example output might look like:

```
version SP firmware version: 3.0.10.15.a
SP firmware build number: 201022
SP firmware date: Mon Mar 29 10:39:46 EST 2010
SP filesystem version: 0.1.9
```

If you do not have the minimum version required, update the CMM ILOM firmware before continuing.

**4 Change directories to `sas_zoning` by entering the command:**

```
-> cd /STORAGE/sas_zoning/
```

**5 Check to see if `sas_zoning` is enabled by entering the command:**

```
-> show
```

Example output might look like:

```
/STORAGE/sas_zoning
Targets:
```

```
Properties:
  zone_management_state = disabled
  reset_password_action = (Cannot show property)
  reset_access_action = (Cannot show property)
```

```
Commands:
  cd
  set
  show
```

->

## 6 If zone\_management\_state = disabled, enable zoning by entering:

-> set zone\_management\_state=enabled

You will see a warning. You must enter **y** when prompted to enable zoning.

\*\*\*\*\* WARNING \*\*\*\*\*

Enabling CMM zone management will result in the clearing of all zoning configuration in the installed chassis SAS hardware, and any SAS I/O in progress will be interrupted.

Are you sure you want to enable CMM zone management (y/n)? y  
Set 'zone\_management\_state' to 'enabled'

->

## 7 Identify your SAS-2 server modules, NEMs and storage modules by entering:

-> show -level all

You will see a listing of all blades and SAS-2 domain storage resources in the chassis. Make a note of where devices and hosts are and decide how you will divide your storage resources. The following examples will help you interpret the list.

- The first listing is an example of what's actually in the chassis (blades and NEMs). BL and NEM numbers represent physical slot numbers in the chassis. Empty chassis blade slots will not be shown:

```
/STORAGE/sas_zoning
Targets:
  BL0
  BL1
  BL2
  BL3
  BL4
  BL5
  BL6
  BL7
  BL8
  BL9
  NEM0
  NEM1
```

```
Properties:
  zone_management_state = enabled
  reset_password_action = (Cannot show property)
  reset_access_action = (Cannot show property)
```



- Example listing for a host blade:

```
/STORAGE/sas_zoning/BL0
```

```
Targets:
```

```
Properties:
```

```
add_storage_access = (Cannot show property)
```

```
remove_storage_access = (Cannot show property)
```

---

**Note** – Storage internal to the server module, or connected to the server's PCIe ExpressModule accessory slots will not be shown and cannot be zoned using the CMM ILOM utility.

---

- Example listing for a storage module. HDD numbers represent physical slot numbers in the storage module. Empty HDD slots will not be shown:

---

**Note** – HDD applies to either mechanical or solid-state disk drives.

---

```
/STORAGE/sas_zoning/BL2
```

```
Targets:
```

```
HDD0
```

```
HDD1
```

```
HDD2
```

```
HDD3
```

```
HDD4
```

```
HDD5
```

```
HDD6
```

```
HDD7
```

```
Properties:
```

- Example listing for a storage module hard disk drive:

```
/STORAGE/sas_zoning/BL2/HDD0
```

```
Targets:
```

```
Properties:
```

```
type = Hard Disk
```

```
disk_type = SAS
```

```
wwn = 0x5000c50003d3a765, 0x5000c50003d3a766
```

```
sas_speed = 6.0 Gbps
```

```
add_host_access = (Cannot show property)
```

```
remove_host_access = (Cannot show property)
```

- Example listing for a NEM. The NEM number represents the physical NEM slot number in the chassis:

```
/STORAGE/sas_zoning/NEM0
```

```
Targets:
```

```
SAS
```

```
Properties:
```

- Example listing for a SAS-NEM's external SAS ports:

```
/STORAGE/sas_zoning/NEM0/SAS
Targets:
  PORT0
  PORT1
  PORT2
  PORT3
```

Properties:

- Example listing for one of the external ports of a SAS-NEM. PORT number represents external physical SAS-NEM port labeling:

```
/STORAGE/sas_zoning/NEM0/SAS/PORT0
Targets:

Properties:
  connected = false
  wwn = (none)
  sas_speed = (none)
  add_host_access = (Cannot show property)
  remove_host_access = (Cannot show property)
```

**Note** – At the release of this document, there is no support for connecting external SAS storage to a SAS-NEM's external SAS ports. Refer to the NEM *Product Notes* for the latest information on support for the external SAS ports.

**8 Assign storage to a host. Assignment is done on an individual storage device basis. Choose a method described in the following examples:**

**Note** – Access assignment is mutual. You can assign a storage device to a host, or a host to a storage device. The result is the same.

- **Method 1—Command examples for assigning storage module devices to a server module:**

cd STORAGE/sas_zoning/BL0	Use the cd command to access the host server module that will be assigned storage.
set add_storage_access=/CH/BL2/HDD0	Assign HDD0 of the storage module in blade slot 2 to the current host.
set add_storage_access=/CH/BL2/HDD0,/CH/BL2/HDD1	Or, assign multiple devices in a single command line. Use the full path to the device and separate each device with a comma (no space).

<pre>show  /STORAGE/sas_zoning/BL0 Targets:   0      (/CH/BL2/HDD0)   1      (/CH/BL2/HDD1)</pre>	Use the show command to confirm assigned devices to the current host.
---	---

■ **Method 2—Command examples for assigning a server module to storage module devices:**

<pre>cd /STORAGE/sas_zoning/BL2/HDD0</pre>	Use the cd command to access the storage module device (in this case HDD0).
<pre>set add_host_access=/CH/BL0</pre>	Assign the current device (HDD0) of the storage module to the host in blade slot 0.
<pre>show  /STORAGE/sas_zoning/BL2/HDD0 Targets:   0      (/CH/BL0)</pre>	Use the show command to confirm assignment of the current device.

Removing storage can be done using the methods described above and changing the add\_storage\_access or add\_host\_access commands to remove\_storage\_access or remove\_host\_access.

**9 Save your CMM ILOM configurations to a backup file. Change to the /SP/config directory.**

-> **cd /SP/config**

**10 If you want sensitive data, such as user passwords, SSH keys, certificates, and so forth, to be backed up, you must provide a passphrase.**

-> **set passphrase=passphrase**

**11 To initiate the Backup operation, enter the command:**

-> **set dump\_uri=**

*transfer\_method://username:password@ipaddress\_or\_hostname/directorypath/filename.config*

Where:

- *transfer\_method* can be tftp, ftp, sftp, scp, http, or https.
- *username* is the name of the user account on the remote system. (*username* is required for scp, sftp, and ftp. *username* is not used for TFTP, and it is optional for HTTP and HTTPS.)
- *password* is the password for the user account on the remote system. (*password* is required for SCP, SFTP, and FTP. *password* is not used for TFTP, and it is optional for HTTP and HTTPS.)
- *ipaddress\_or\_hostname* is the IP address or the host name of the remote system.

- *directorypath* is the storage location on the remote system.
- *filename* is the name assigned to the backup file.

For complete instructions on using ILOM Backup/Restore, refer to your *Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide*.

Once you have backed-up your CMM ILOM configurations, proceed to your host(s) to format and create volumes for host-assigned disks.

- See Also**
- [“How to Assign Storage to Hosts Using the CMM ILOM Web Interface” on page 14](#)
  - [“Managing Storage” on page 37](#)

# Managing Storage

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Management of your storage module is done at two levels: disk management and enclosure management.

- Disk management involves tasks performed through a server's RAID Expansion Module (REM) utilities to create volumes, disk spares, view logged disk errors, mount and unmount disks, and replace faulty disks.
- Enclosure management involves tasks performed through the Chassis Monitoring Module (CMM) to configure host-based storage zoning, upgrade module firmware, monitor module status, obtain FRU information and perform a storage module reset.

If the REM management software supports SES, enclosure management features such as module status (temperature, voltage, LEDs) and FRU information might also be available in addition to disk management features.

Topics discussed in this section include:

- [“Management Term Definitions” on page 37](#)
- [“Overview of Storage Module Management” on page 39](#)
- [“Management Options Using the CMM ILOM” on page 39](#)
- [“Management Options Using the Sun Storage 6Gb SAS REM RAID HBA \(SGX-SAS6-R-REM-Z\)” on page 40](#)
- [“Management Options Using the Sun Storage 6Gb SAS REM HBA \(SGX-SAS6-REM-Z\)” on page 41](#)

## Management Term Definitions

There are several terms used in this section that you will need to become familiar with to better understand storage module management.

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<b>In-Band</b>	In-Band management uses the primary data path (the SAS link) between a host and storage device for management traffic.
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<b>Out-of-Band</b>	Out-Of-Band management occurs over an Ethernet network outside of the primary data path between the host and storage device. Other types of out-of-band management would include using the CMM ILOM to perform tasks such as module firmware upgrades, or using module LED indicators for component fault isolation.
<b>SES</b>	SCSI Enclosure Services. SES is a command set that is used to manage and sense the state of non-SCSI components installed in a SAS enclosure (such as voltage and temperature sensors, and module indicators), as well as power on/off or light module LEDs. Management software that supports SES can be used to monitor and issue commands to the storage module using the in-band SAS connection. SES processes run on the expanders and execute diagnostic commands from the management software. The Sun Blade Storage Module M2 supports SES-2.
<b>SMP</b>	SMP (Serial Management Protocol). In addition to SES, SMP allows management software to perform storage module management functions in-band over the SAS links. It provides for management of the storage module including, zoning, hard disk and chassis LEDs, temperature and voltage sensors.
<b>Polling</b>	The duration of time between component status updates to the management client.
<b>Alert (or event)</b>	A change in the state of a device (hard disks, enclosure temperature, etc.). Alerts include a severity level to describe informational, non-critical, critical and unrecoverable device status. Alerts are displayed on the management client or an alert notification may be received by email.
<b>FRU</b>	Field Replaceable Unit. These are replaceable parts, such as hard disk drives, that may be monitored for faults. If they fail, these parts can be replaced. Note that all FRUs (except for the storage module itself) are also CRUs (Customer Replaceable Units).
<b>Disk management</b>	Tasks done through the REM to create volumes, view logged disk errors, mount and unmount disks, replace faulty disks.
<b>Enclosure management</b>	Tasks done through the CMM to configure host-based zoning, monitor storage module status, obtain FRU information, update firmware and reset the module.

## Overview of Storage Module Management

Your Sun Blade Storage Module M2 supports a powerful set of enclosure management features accessible from the CMM or a management client that supports SES-2 (SCSI Enclosure Services) and SMP (Serial Management Protocol). Some or all of these features are available through supported management software, such as the Sun Blade Zone Manager feature of the CMM, or the LSI MegaRAID Storage Manager software. These features provide a system administrator the following capabilities:

- Monitor the storage module status (on/off line status, component health)
- Be alerted to a change in state of the storage module environment (voltage and temperature)
- Identify and locate storage module components
- Obtain Field Replaceable Unit (FRU) identification and status of hard disks
- Prepare hard disks for removal
- Reset the storage module
- Upgrade storage module expander firmware
- Receive event alerts and view event logs to aid in troubleshooting

## Management Options Using the CMM ILOM

The Sun Blade 6000 Modular System chassis includes its own Service Processor called the Chassis Management Module (CMM) Integrated Lights Out Manager (ILOM). The CMM ILOM is used to manage components in the chassis. software and includes a browser-based web interface and a Command Line Interface. Your management options using the CMM ILOM include:

Option/Task	Web Interface	CLI
Assign storage to hosts (zoning)	X	X
Save/restore CMM and storage zoning configurations	X	X
View storage module component status	X	X
View events (storage device)	X	X
Upgrade storage module expander firmware	X	X
Set storage module locate indicator	X	X
Reset storage module	X	X

Complete information for using the CMM to perform storage module tasks is included in the *Oracle Integrated Lights Out Manager (ILOM) CMM Administration Guide for Sun Blade 6000 and 6048 Modular Systems* on the Oracle web site at:

<http://docs.sun.com/app/docs/prod/blade.6000mod>

# Management Options Using the Sun Storage 6Gb SAS REM RAID HBA (SGX-SAS6-R-REM-Z)

The Sun Storage 6Gb SAS REM RAID HBA (SGX-SAS6-R-REM-Z) is a SAS-2 RAID Expansion Module based on LSI MegaRAID technology. Includes LSI MegaRAID Storage Manager (MSM) software, a command line interface (using MegaCli or the pre-boot environment pci), and a BIOS-based utility (WebBIOS Configuration Utility). Basic management options include (refer to the MegaRAID documentation for a complete list):

Option/Task	WebBIOS	MSM	CLI
Create/Delete RAID configuration (support for RAID levels 0, 1, 5, 6, 00, 10, 50, and 60).	X	X	X
Set a boot device	X		X
Display and/or change status of a controller, its battery, an enclosure or a drive	X	X	
Locate a drive	X	X	X
Migrate storage to different RAID level	X	X	X
Import foreign configurations (to reactivate existing virtual drives, see note below)	X	X	X
Upgrade REM firmware		X	X
Save configurations to a file		X	X
Check data consistency	X	X	X
Disk Encryption Security	X	X	X



Option/Task	WebBIOS	MSM	CLI
View events (disks and storage module voltage/temperature events)	X	X	X
Command scripting			X
Remote management		X	X

**Note** – If your REM fails, but the drives are good, you can install an identical replacement REM and import the existing virtual drive configurations. For information about importing existing virtual drives, see “[Importing Existing Virtual Drives to a Replacement REM](#)” on page 65.

Complete information for using the MegaRAID Storage Management software to perform storage module tasks is included in the *LSI MegaRAID SAS Software User's Guide*. This manual is available on the LSI support site at:

<http://www.lsi.com/support/sun/>

## Management Options Using the Sun Storage 6Gb SAS REM HBA (SGX-SAS6-REM-Z)

The Sun Storage 6Gb SAS REM HBA (SGX-SAS6-REM-Z) is a SAS-2 RAID Expansion Module based on the LSI Fusion-MPT IR (Integrated RAID) technology. Includes LSI MegaRAID Storage Manager (MSM) software, a command line interface (using SAS2IRCU or the BIOS-based LSI Configuration Utility). Basic management options include (refer to the MegaRAID documentation for a complete list):

Option/Task	LSI BIOS Config	MSM	CLI
Create/Delete RAID configuration (support for RAID levels 0, 1, and 10).	X	X	X
Set a boot device	X		
Display and/or change status of a controller, an enclosure or a drive	X	X	Display status only

Option/Task	LSI BIOS Config	MSM	CLI
Activate IR volume (reactivate existing virtual drives, see note below)	X		X
Locate a drive	X	X	X
Upgrade REM firmware		X	X (SAS2Flash)
Save configurations to a file		X	
Check data consistency	X	X	X
View events (disks and storage module voltage/temperature events)	X	X	X
Command scripting			X
Remote management		X	X

**Note** – If your REM fails, but the drives are good, you can install an identical replacement REM and import the existing virtual drive configurations. For information about importing existing virtual drives, see “[Importing Existing Virtual Drives to a Replacement REM](#)” on page 65.

Complete information for using the REM management software to perform storage module tasks is included in the LSI *MegaRAID SAS Software User's Guide*. This manual is available on the LSI support site at:

<http://www.lsi.com/support/sun/>

# Performing Maintenance and Hot Plug Actions

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This section describes maintenance and hot plug actions for the storage module. The following topics are discussed:

- [“Preparing for Hot Plug Actions” on page 43](#)
- [“Hot Plug Actions and Outcomes” on page 44](#)
- [“Recovering Zoning Configurations” on page 54](#)
- [“Upgrading Storage Module Firmware” on page 59](#)

## Preparing for Hot Plug Actions

When performing hot plug actions on components, ensure that all I/O activity to the component has been stopped before proceeding with the hot plug action. If not, this could lead to interrupted service or data loss.

Hot plug actions can be performed on the following components related to storage:

- **Hard disk drives.** Before performing hot plug actions, use the HBA management software or OS utilities to isolate a storage module drive and take it offline. If supported, the blue Ready-to-Remove light on the drive will be lit when the drive is ready to be removed.
- **Storage module.** There is no way to isolate all drives in the storage module at once. Drives must be isolated individually using the HBA management software or OS utilities. Planning for server downtime is the easiest way to prevent accidental data loss.
- **SAS-2 NEM.** The best way to ensure there is no interruption in service or accidental data loss when a SAS-2 NEM is removed is to have two SAS-2 NEMs installed in the chassis. Additionally, ensure that the appropriate multipath drivers are installed if your servers are not using a hardware RAID solution. Specific instructions for performing hot plug actions with a SAS-2 NEM are included in the NEM documentation.
- **Server module.** Planning for server downtime is the safest way to prevent accidental data loss when hotplugging a server module.

**Note** – As a precaution, you should always back up your data before performing hot plug actions. Also, ensure that you have a back up of the most recent host-to-storage assignments which is stored in your CMM ILOM configuration backup file (see [“Assigning Storage to Hosts” on page 9](#) for more information).

# Hot Plug Actions and Outcomes

Since information about how the Sun Blade Storage Module M2 is configured is stored internally (on the SAS expanders), removal and replacement activities can affect saved host-to-storage access configurations. This section describes the implications of certain hot plug actions, and how they can be safely performed.



**Caution** – When performing hot plug actions, you must wait for each action that causes a change in state to the chassis (such as the insertion or removal of storage module, NEMs or server blades) to be acknowledged by the CMM. Depending on the device, this can take a minute or two. Detailed information about hot plug events are logged in the CMM ILOM event log. For more about viewing events, see [“Viewing the CMM ILOM Event Log” on page 79](#).

**Note** – If your chassis has only one NEM, it must be installed in NEM 0. Operating a chassis without a NEM in NEM 0 is not supported.

The following table describes possible hot plug actions and expected outcomes for the storage module and various SAS devices.

Action	Outcome	User Intervention
Insert a new storage module into an empty slot in chassis.	SAS zoning configurations on the storage module expanders are deleted. The storage module is then automatically registered with the CMM so that any future saved configurations will remain unchanged if the storage module is removed and reinserted in the same slot.	<ul style="list-style-type: none"><li>■ Use the CMM zoning utility to assign storage module resources to SAS-2 server blades.</li><li>■ Use the host REM management software to configure virtual drives.</li></ul>

Action	Outcome	User Intervention
Remove and insert a previously zoned storage module into the same chassis slot.	Since the storage module is already registered with the CMM, storage module zoning configurations will remain unchanged.	The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i> . For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i> .
Remove and insert a previously zoned storage module into a different chassis slot.	<p>Upon insertion into the chassis, SAS zoning configurations on the storage module expanders are deleted. The storage module is then automatically registered with the CMM so that any future saved configurations will remain unchanged if the storage module is removed and reinserted in the same slot.</p> <p><b>Note</b> – Although existing zoning information is deleted, actual data on the disks in the storage module are preserved.</p>	<ul style="list-style-type: none"> <li>■ Restore zoning configurations from a backup of CMM configurations. —Or—</li> <li>■ Use CMM zoning utility to re-assign storage module resources to SAS-2 server blades.</li> <li>■ The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</li> </ul>

Action	Outcome	User Intervention
Replace a failed storage module and move the previously zoned storage to the replacement storage module (replacing disks from the failed module into identical slots of the replacement module).	<p>Upon insertion into the chassis, SAS zoning configurations on the storage module expanders are deleted. The storage module is then automatically registered with the CMM so that any future saved configurations will remain unchanged if the storage module is removed and reinserted in the same slot.</p> <p><b>Note</b> – Although the failed module's zoning information is lost, actual data on the disks in the storage module are preserved.</p>	<ul style="list-style-type: none"> <li>■ Restore zoning configurations from a backup of CMM configurations. —Or—</li> <li>■ Use CMM zoning utility to re-assign storage module resources to SAS-2 server blades.</li> <li>■ The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</li> </ul>
Insert a new hard disk into an empty storage module slot that has never been occupied or assigned to a server module.	The new drive will be seen by the CMM as unassigned storage.	<ul style="list-style-type: none"> <li>■ Use the CMM zoning utility to assign the new drive to a SAS-2 server module.</li> <li>■ Use the host REM management software to add the drive to a virtual drive or as a hot spare. Refer to the <i>LSI MegaRAID SAS Software User's Guide</i> for details.</li> </ul>

Action	Outcome	User Intervention
Insert a hard disk into a previously occupied slot in the storage module that is currently assigned to a server module.	The CMM will reserve the drive slot host assignment. If the drive is a replacement, it will be discovered by the assigned host REM and be rebuilt into the current RAID configuration if no hot spare was available.	<ul style="list-style-type: none"> <li>■ If the drive is a replacement drive and the original drive was not assigned to a RAID configuration, the replacement drive will be available to the OS for partitioning.</li> <li>■ If the drive is the same drive that was removed, and the virtual drive it was removed from had no hot spare, the host REM might identify the drive as a foreign configuration. A foreign configuration can be imported using the REM management software. Refer to the <i>LSI MegaRAID SAS Software User's Guide</i> for details.</li> </ul>
Insert a second SAS-2 NEM into an empty chassis slot.	<p>The SAS-2 NEM is automatically registered with the CMM. The second SAS-2 NEM obtains zoning configurations from the first SAS-2 NEM. Any future saved configurations will remain unchanged if the SAS-2 NEM is removed and reinserted in the same slot.</p> <p><b>Note</b> – The NEM external SAS port host assignments will need to be manually reconfigured.</p>	<ul style="list-style-type: none"> <li>■ When using a SAS-2 REM configured for RAID, dual path support to storage will automatically be enabled.</li> <li>■ When using a SAS-2 REM not configured for RAID, dual path support might need to be configured at the OS level. Check your OS documentation for information on enabling SAS multipath support.</li> <li>■ Use the Sun Blade Zone Manager component of the CMM ILOM to assign host access to the external NEM SAS ports.</li> </ul>

Action	Outcome	User Intervention
Remove and insert a SAS-2 NEM into the same chassis slot.	Since the SAS-2 NEM is already registered with the CMM, NEM zoning configurations will remain unchanged.	The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i> . For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i> .



Action	Outcome	User Intervention
Remove and insert a SAS-2 NEM into a different chassis slot.	<p>Upon insertion into the chassis, SAS zoning configurations on the SAS-2 NEM expanders are deleted. The SAS-2 NEM is automatically registered with the CMM. Any future saved configurations will remain unchanged if the SAS-2 NEM is removed and reinserted in the same slot.</p> <p><b>Note</b> – The NEM external SAS port host assignments will need to be manually reconfigured.</p>	<ul style="list-style-type: none"> <li>■ Restore zoning configurations from a backup of CMM configurations. —Or—</li> <li>■ Use the CMM zoning utility to re-assign storage module resources to SAS-2 server blades.</li> <li>■ The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</li> <li>■ Use the Sun Blade Zone Manager component of the CMM ILOM to assign host access to the external NEM SAS ports.</li> </ul>

Action	Outcome	User Intervention
Replace a failed SAS-2 NEM.	<ul style="list-style-type: none"> <li>■ If there are two SAS-2 NEMs, upon insertion into the chassis, the replacement SAS-2 NEM is automatically registered with the CMM. The replacement SAS-2 NEM will obtain zoning configurations from the first SAS-2 NEM. Any future saved configurations will remain unchanged if the SAS-2 NEM is removed and reinserted in the same slot.</li> </ul> <p><b>Note</b> – The NEM external SAS port hosts assignments will need to be manually reconfigured.</p> <ul style="list-style-type: none"> <li>■ If there was only one SAS-NEM, upon insertion into the chassis all the SAS zoning configurations in the entire chassis are deleted. The SAS-2 NEM is automatically registered with the CMM. Any future saved configurations remain unchanged if the SAS-2 NEM is removed and reinserted into the same slot.</li> </ul>	<ul style="list-style-type: none"> <li>■ If there were two SAS-NEMs, use the Sun Blade Zone Manager component of the CMM ILOM to assign host access to the external NEM SAS ports.</li> <li>■ If there was only one SAS-NEM, restore zoning configurations from a backup of CMM configurations. —Or—</li> <li>■ If there was only one SAS-NEM, use the CMM zoning utility to re-assign storage module resources to SAS-2 server blades.</li> <li>■ If there was only one SAS-NEM, the host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</li> </ul>
Connect a SAS-2 JBOD to the SAS-2 NEM external SAS ports.	Not currently supported.	Do not connect external SAS storage to the SAS-NEM external SAS ports.

Action	Outcome	User Intervention
Insert a new SAS-2 server module into an empty slot in chassis.	<p>The server module is automatically registered with the CMM. The server module can be assigned storage module resources. Any saved host-to-storage zoning configurations remains unchanged if the server module is removed and reinserted in the same slot.</p> <p><b>Note</b> – The stored configurations persist indefinitely. If a slot previously contained a SAS-2 server module but is currently empty, see the action for replacing a server module with a new server module.</p>	<ul style="list-style-type: none"> <li>■ Use the CMM zoning utility to assign storage module resources to SAS-2 server blades.</li> <li>■ Use the host REM management software to configure virtual drives.</li> </ul>
Remove and insert a previously zoned server module into the same chassis slot.	<p>Since the server module is already registered with the CMM, host-to-storage zoning configurations will remain unchanged.</p>	<p>The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</p>

Action	Outcome	User Intervention
Remove and insert a previously zoned server module into a different slot in the chassis.	<p>Upon insertion into the chassis, host-to-storage zoning configurations on the storage module expanders are deleted for that server module. The server module is then automatically registered with the CMM so that any future saved configurations will remain unchanged if the server module is removed and reinserted in the same slot.</p> <p>If you move a server module to a different slot then return it to its original slot, the zoning information from the original slot will be gone.</p> <p><b>Note</b> – Although existing zoning information is deleted, actual data on the disks in the storage module are preserved.</p>	<ul style="list-style-type: none"><li>■ Restore zoning configurations from a backup of CMM configurations. —Or—</li><li>■ Use CMM zoning utility to re-assign storage module resources to SAS-2 server blades.</li><li>■ The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</li></ul>

Action	Outcome	User Intervention
Replace a server module with a new server module.	<p>Upon insertion into the chassis, host-to-storage zoning configurations on the storage module expanders for the old server module are deleted. The new server module is then automatically registered with the CMM so that any future saved configurations will remain unchanged if the server module is removed and reinserted in the same slot.</p> <p><b>Note</b> – Although the failed module's zoning information is lost, actual data on the disks in the storage module are preserved.</p>	<ul style="list-style-type: none"> <li>■ Restore zoning configurations from a backup of CMM configurations. —Or—</li> <li>■ Use CMM zoning utility to re-assign storage module resources to SAS-2 server blades.</li> <li>■ The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</li> </ul>
<p>Remove a previously zoned server module for servicing (such as CPU, memory, or REM replacement), after servicing, reinsert the server module into the same chassis slot.</p> <p><b>Note</b> – While servicing the server module, a slot filler can be placed in the slot to maintain proper chassis cooling. Do not use another server module.</p>	<p>Since the server module is already registered with the CMM, host-to-storage zoning configurations will remain unchanged.</p>	<p>The host REM might identify the storage module virtual drives as a foreign configuration (MegaRAID), or inactive (Fusion-MPT IR). A foreign or inactive configuration can be recovered using the REM management software. For MegaRAID, use the import feature described in the <i>LSI MegaRAID SAS Software User's Guide</i>. For Fusion-MPT IR, use the activate feature described in the <i>LSI SAS2 Integrated RAID User's Guide</i>.</p>

# Recovering Zoning Configurations

This section describes how to recover host-to-storage zoning configurations that might have been lost by accident or due to hardware replacement.

- [“How to Recover Zoning Configurations Using the CMM ILOM Web Interface” on page 54](#)
- [“How to Recover Zoning Configurations Using the CMM ILOM CLI” on page 57](#)

## ▼ How to Recover Zoning Configurations Using the CMM ILOM Web Interface

**Before You Begin** You must have previously created a backup CMM ILOM configuration file that contains the zoning configurations you want to restore.

---

**Note – For advanced users or Sun technicians:** The CMM ILOM configuration backup file is an XML file. If you have multiple CMM ILOM configuration backup files and the latest version does not have the zoning configurations you need, you have the option of copying the storage assignments section of one file and pasting it another. For this to work, your storage modules and server blades must be in the same physical slots for the zoning configurations you want to restore. For more information on performing this procedure, refer to the Sun ILOM documentation.

---

- 1 **Open a web browser and log in to the CMM by entering the following url:**

**http://chassis\_sp\_ipaddress/**

Where *chassis\_sp\_ipaddress* is the IP address of your chassis service processor.

The ILOM login page will appear.

ABOUT

ORACLE

Oracle® Integrated Lights Out Manager

CMM Hostname: SUNCMM-0000000-0000000000

User Name:

Password:

Log In

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## 2 Log in.

You must login using an account with administrator privileges.

The CMM ILOM main page is displayed.

ABOUT 2 Warnings

User: root Role: auro CMM Hostname: SUNCMM-0000000-0000000000

REFRESH LOG OUT

Oracle® Integrated Lights Out Manager

Chassis

CMM

Blade 0

Blade 1

Blade 3

Blade 4


Blade 7

NEM 0

NEM 1

Chassis View

To manage a Blade or Chassis Monitoring Module, click on it in the left navigation pane or in the image below.



Chassis Inventory

Component	Name	Part Number	Serial Number
/CH	SUN BLADE 6000 MODULAR SYSTEM	541-3789-01	0000000-0000000000
/CH/CMM	CMM	371-1447-09	0111APO-0828YC07AD
/CH/BL0	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M0035
/CH/BL1	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M8285
/CH/BL2	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL3	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M0828
/CH/BL4	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M011A
/CH/BL5	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL6	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL7	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-11A85M0035
/CH/BL8	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL9	SUN BLADE STORAGE MODULE M2	511-1365-02	0000000000
/CH/NEM0	SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2	540-7961-02	0000000-7001
/CH/NEM1	SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2	540-7961-02	0000000-7001

**Note** – In the left pane, installed server blades are listed, but not installed storage modules. This is because the CMM ILOM controls storage module *Integrated Lights Out Management* functions.

3 With CMM selected in the left pane, click the Maintenance tab for the CMM.

The CMM maintenance sub-tabs are displayed.



#### 4 Click the Backup/Restore tab.

The Backup/Restore page is displayed.

ABOUT REFRESH LOG OUT

Role (User): Administrator (user1) SP Hostname: Lab2-System1

Oracle® Integrated Lights Out Manager

System Information System Monitoring Configuration User Management Remote Control Maintenance

Firmware Upgrade Backup/Restore Reset SP Configuration Management Data Collector

### Configuration Backup/Restore

Perform system configuration backup or restore from this page. Select Backup or Restore from *Operation* menu. Choose a *Transfer Method* and fill in all required fields. You may choose to supply a *passphrase* to encrypt sensitive data within a backup file or for decrypting such data when restoring a configuration. Click *Run* to start the operation.

Operation: Backup

Transfer Method: Browser

The downloaded file will be saved according to your browser settings.

Passphrase:

Confirm Passphrase:

Run

#### 5 Select Restore from the Operation drop-down list.

#### 6 Fill out the information on the page to restore your backup file.

For complete instructions on using ILOM Backup/Restore, refer to your *Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide*.

#### 7 To initiate the Restore operation, click Run.

The Restore operation executes.

---

**Note** – While the Restore operation is executing, sessions on the ILOM SP will be momentarily suspended. The sessions will resume normal operation once the Restore operation is complete. A Restore operation typically takes two to three minutes to complete.

---

## ▼ How to Recover Zoning Configurations Using the CMM ILOM CLI

### Before You Begin

You must have previously created a backup CMM ILOM configuration file that contains the zoning configurations you want to restore.

---

**Note – For advanced users or Sun technicians:** The CMM ILOM configuration backup file is an XML file. If you have multiple CMM ILOM configuration backup files and the latest version does not have the zoning configurations you need, you have the option of copying the storage assignments section of one file and pasting it another. For this to work, your storage modules and server blades must be in the same physical slots for the zoning configurations you want to restore. For more information on performing this procedure, refer to the Oracle *Integrated Lights Out Management* documentation.

---

- 1 **Open a terminal window and establish an ssh connection to the CMM by entering the following command:**

```
# ssh -l accountname cmm_ip
```

Where *accountname* is the name of a user account with Administrator privileges (such as root) and *cmm\_ip* is the IP address of the CMM.

The login prompt is displayed.

- 2 **Log in.**

For example:

```
/hostname/login: accountname
```

```
password: yourpassword
```

After you have successfully logged in, the prompt will be displayed:

```
—>
```

- 3 **Change to the /SP/config directory.**

```
-> cd /SP/config
```

- 4 **To initiate the Restore operation, enter the command:**

```
-> set load_uri=
```

```
transfer_method://username:password@ipaddress_or_hostname/directorypath/filename.config
```

Where:

- *transfer\_method* can be TFTP, FTP, SFTP, SCP, HTTP, or HTTPS.
- *username* is the name of the user account on the remote system. (*username* is required for SCP, SFTP, and FTP. *username* is not used for TFTP, and it is optional for HTTP and HTTPS.)
- *password* is the password for the user account on the remote system. (*password* is required for SCP, SFTP, and FTP. *password* is not used for TFTP, and it is optional for HTTP and HTTPS.)
- *ipaddress\_or\_hostname* is the IP address or the host name of the remote system.

- *directorypath* is the storage location on the remote system.
- *filename* is the name assigned to the backup file.

The Restore operation executes.

---

**Note** – While the Restore operation is executing, sessions on the ILOM SP will be momentarily suspended. The sessions will resume normal operation once the Restore operation is complete. A Restore operation typically takes two to three minutes to complete.

---

## Upgrading Storage Module Firmware

Storage module SAS expander firmware is upgraded through the CMM ILOM. You can upgrade your storage module firmware in two ways: by using the ILOM web or ILOM CLI interface.

---

**Note** – For upgrading disk drive firmware, use Oracle's Server Hardware Management Pack (2.01 or later), found on the Oracle download site: <http://www.sun.com/systemmanagement/managementtools.jsp>

---

- “How to Upgrade Firmware Using the CMM ILOM Web Interface” on page 59
- “How to Upgrade Firmware Using the CMM ILOM CLI” on page 63

### ▼ How to Upgrade Firmware Using the CMM ILOM Web Interface

**Before You Begin** Download storage module firmware from the Sun software download site:

<http://wikis.sun.com/display/SystemsComm/Sun+Blade+Systems+-+Firmware+Downloads>

- Select the **View by Category** tab.
- Select the **Storage** link.
- Search the page for **Sun Blade Storage Module M2**.
- Download the latest firmware package and extract it to an accessible HTTP server folder on the network.

#### 1 Open a web browser and log in to the CMM by entering the following url:

**http://chassis\_sp\_ipaddress/**

Where *chassis\_sp\_ipaddress* is the IP address of your chassis service processor.

The ILOM login page will appear.

ABOUT

ORACLE

Oracle® Integrated Lights Out Manager

CMM Hostname: SUNCMM-0000000-0000000000

User Name:

Password:

Log In

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## 2 Log in.

You must login using an account with administrator privileges.

The CMM ILOM main page is displayed.

ABOUTWarnings

User: rootRole: auroCMM Hostname: SUNCMM-0000000-0000000000

REFRESHLOG OUT

Oracle® Integrated Lights Out Manager

Chassis

CMM

Blade 0

Blade 1

Blade 3

Blade 4


Blade 7

NEM 0

NEM 1

Chassis View

To manage a Blade or Chassis Monitoring Module, click on it in the left navigation pane or in the image below.



Chassis Inventory

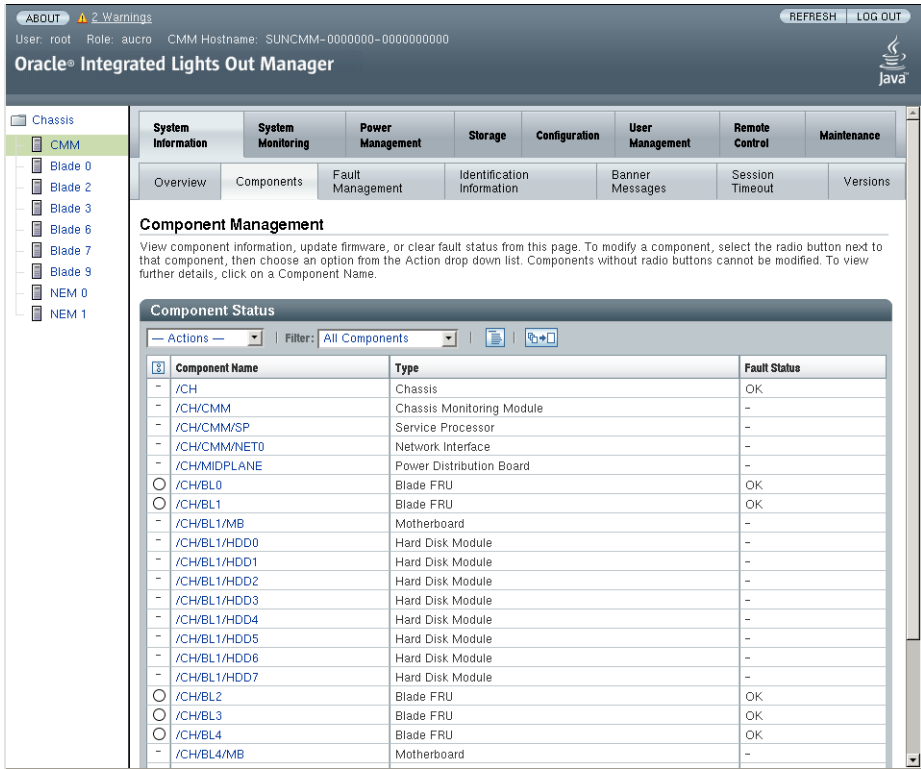
Component	Name	Part Number	Serial Number
/CH	SUN BLADE 6000 MODULAR SYSTEM	541-3789-01	0000000-0000000000
/CH/CMM	CMM	371-1447-09	0111APO-0828YC07AD
/CH/BL0	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M0035
/CH/BL1	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M8285
/CH/BL2	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL3	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M0828
/CH/BL4	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-07385M011A
/CH/BL5	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL6	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL7	SUN BLADE X6270 M2 SERVER MODULE	541-2861-00	1005LCB-11A85M0035
/CH/BL8	SUN BLADE STORAGE MODULE M2	511-1365-02	00000000
/CH/BL9	SUN BLADE STORAGE MODULE M2	511-1365-02	0000000000
/CH/NEM0	SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2	540-7961-02	0000000-7001
/CH/NEM1	SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2	540-7961-02	0000000-7001

**Note** – In the left pane, installed server blades are listed, but not installed storage modules. This is because the CMM ILOM controls storage module *Integrated Lights Out Management* functions.

- 3
- With CMM selected in the left pane, click the System Information tab if it is not already selected. The CMM System Information page and sub-tabs are displayed.

#### 4 Select the Components sub-tab.

The Components page appears.



#### 5 Click the radio button for the storage module to be upgraded.

#### 6 In the –Actions– drop-down menu, select Firmware Upgrade.

#### 7 Enter the path to the *firmware-version.pkg* image file in the Select Image File to Upload field or click Browse to locate and select the file.

#### 8 Click Upload.

After a short pause, a Firmware Verification screen appears that shows the current firmware version and the requested upgrade version.

#### 9 Click Start Upgrade.

The process can take several minutes.

## ▼ How to Upgrade Firmware Using the CMM ILOM CLI

**Before You Begin** Download storage module firmware from the Sun software download site:

[http://wikis.sun.com/  
display/SystemsComm/Sun+Blade+Systems+-+Firmware+Downloads](http://wikis.sun.com/display/SystemsComm/Sun+Blade+Systems+-+Firmware+Downloads)

- Select the **View by Category** tab.
- Select the **Storage** link.
- Search the page for **Sun Blade Storage Module M2**.
- Download the latest firmware package and extract it to a accessible folder on an HTTP server on the network.

- 1 Open a terminal window and establish an ssh connection to the CMM by entering the following command:**

```
# ssh -l accountname cmm_ip
```

Where *accountname* is the name of a user account with Administrator privileges (such as root) and *cmm\_ip* is the IP address of the CMM.

The login prompt is displayed.

- 2 Log in.**

For example:

```
/hostname/login: accountname
```

```
password: yourpassword
```

After you have successfully logged in, the prompt will be displayed:

```
->
```

- 3 Change directories to the blade slot containing the storage module to be upgraded:**

```
-> cd /CH/BLx
```

Where BLx is chassis blade slot number of the storage module to be upgraded.

- 4 Enter the following command:**

```
-> load -source http://http_server_ipaddress/firmware-version.pkg
```

Where *http\_server\_ipaddress* is the domain name or IP address of your HTTP server where you copied the image file, and *firmware-version* is the name of the .pkg file.

- 5 When the process completes, ensure that the proper firmware version was installed. Enter the following command:**

```
-> show /CH/BLx
```

The output might look like:

```
/CH/BL7
Targets:
  MB
  HDD0
  HDD1
  HDD2
  HDD3
  HDD4
  HDD5
  HDD6
  HDD7
  PRSNT
  STATE
  ERR
  OK
  SERVICE
  OK2RM
  LOCATE

Properties:
  type = Blade
  ipmi_name = BL7
  fru_name = SUN BLADE STORAGE MODULE M2
  fru_part_number = 511-1365-02
  fru_serial_number = 00000000
  fru_extra_1 = SAS0 5.3.5.0, SAS1 5.3.5.0  <- firmware version
  fault_state = OK
  load_uri = (none)
  clear_fault_action = (none)
  power_state = On

Commands:
  cd
  load
  reset
  set
  show
```

---

**Note** – The storage module contains two SAS expanders. Both of the expanders listed in fru\_extra\_1 (SAS0 and SAS1) must be at the same revision level.

---



# Importing Existing Virtual Drives to a Replacement REM

---

At the release of this document, the importing of virtual drives from one SAS-2 REM to another is only supported if you are replacing a failed REM with an identical REM. For example, if you have a Sun Storage 6Gb SAS REM HBA (SGX-SAS6-REM-Z) connected to the Sun Blade Storage Module M2 and the REM fails (but the drives are good), you can import the existing virtual drives to a replacement Sun Storage 6Gb SAS REM HBA (SGX-SAS6-REM-Z).



---

**Caution** – Importing virtual drives between different technology REMs, such as importing IR virtual drives created using an LSI Fusion-MPT IR REM (SGX-SAS6-REM-Z) to an LSI MegaRAID REM (SGX-SAS6-R-REM-Z), is not supported. This is because a mismatch in metadata size can cause an import operation to fail and data to be lost. To migrate virtual disk data from one type of REM to another, first do a full backup. Next, attach the drives to the new REM. Then, clear the existing virtual drive configuration and create a new virtual drive using the new REM. Once that is done, the data can be restored from backup to the new virtual drive.

---

Perform one of the following procedures:

- “Replacing a REM on a SPARC System” on page 65
- “Replacing a REM on an x86 System” on page 67

## Replacing a REM on a SPARC System

When replacing a host REM on a SPARC system, you will need to take the following actions depending on whether or not your storage module contains the host boot disk.

---

**Note** – These steps assume you have a saved configuration file from the REM that was replaced in order to retrieve virtual drive configurations. It is also assumed you have installed the new REM. Instructions for saving a configuration file are described in the *LSI MegaRAID SAS Software User's Guide*.

---

### If the Storage Module Contains the Host Boot Disk

The following outlines the steps necessary when replacing a host REM that uses a disk on the storage module for OS boot.

---

**Note** – In depth instructions for performing the steps listed here are described in the appropriate *Sun Storage 6Gb SAS REM HBA Installation Guide*.

---

1. Enter the OBP (OpenBoot PROM) environment on the host.
2. Use the `show-devs` command to list available HBAs.
  - The Fusion-MPT SAS controllers (such as the Sun Storage 6Gb SAS REM HBA) will end with `LSI,sas@number`.
  - The MegaRAID SAS controllers (such as the Sun Storage 6Gb SAS REM RAID HBA) will end with `LSI,mrsas@number`.
3. Use the `show-disks` command to select the storage module disk with the bootable OS installed on it.
4. Boot from the bootable disk by using the `boot device-name` command.

Where *device-name* is the existing alias name for the boot drive (for example: `/pci@1e,600000/pci@0/pci@3/LSI,sas@0/disk`). You can also assign an alias to the device using the `nvalias` command.
5. Once the OS has booted, run the MegaRAID Storage Manager software.
6. Select the controller icon in the left panel of the MegaRAID Storage Manager window for the new REM.
7. On the menu bar, select **Operations->Configuration->Add Configuration from file**.
8. As prompted, open the saved configuration file and apply the configurations.

### If the Storage Module Does Not Contain the Host Boot Disk

The following outlines the steps necessary when replacing a host REM that controls disks on the storage module.

---

**Note** – In depth instructions for performing the steps listed here are described in the *LSI MegaRAID SAS Software User's Guide*.

---

1. From the host, run the MegaRAID Storage Manager software.
2. Select the controller icon in the left panel of the MegaRAID Storage Manager window for the new REM.
3. On the menu bar, select **Operations->Configuration->Add Configuration from file**.
4. As prompted, open the saved configuration file and apply the configurations.

## Replacing a REM on an x86 System

When replacing a host REM on an x86 system, you will need to take the following actions depending on whether or not your storage module contains the host boot disk.

---

**Note** – These steps assume you have saved configuration file from the REM that was replaced in order to retrieve virtual drive configurations. It is also assumed you have installed the new REM.

---

### If the Storage Module Contains the Host Boot Disk

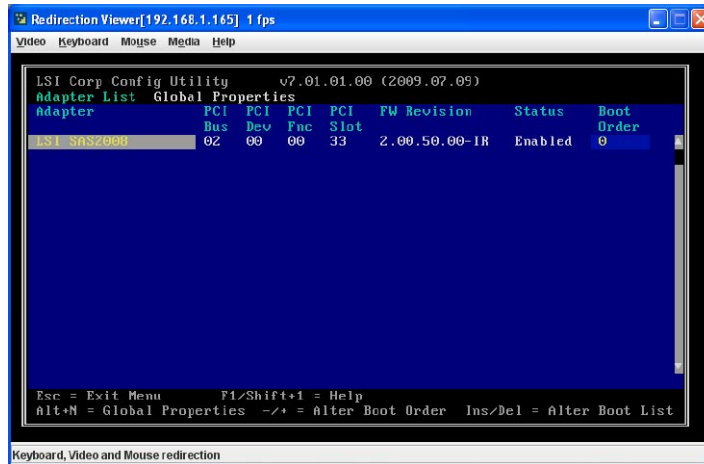
The following outlines the steps necessary when replacing a host REM that uses a disk on the storage module for OS boot.

---

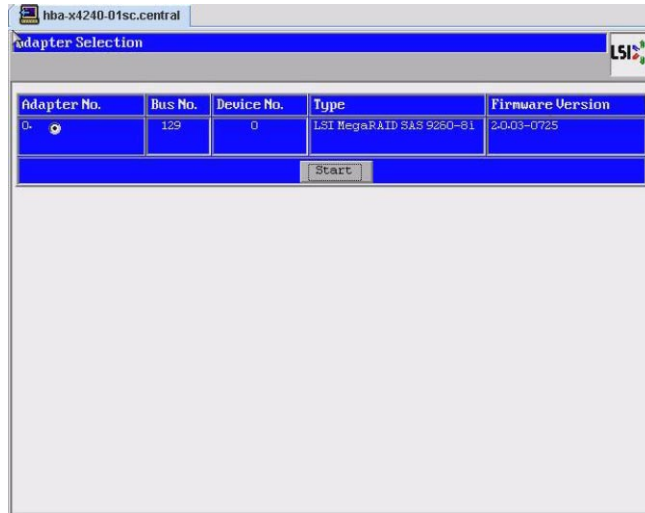
**Note** – In depth instructions for performing the steps listed here are described in the appropriate *Sun Storage 6Gb SAS REM HBA Installation Guide*.

---

1. Boot the host.
2. Enter the HBA BIOS configuration utility using one of the following methods:
  - The Fusion-MPT SAS controllers (such as the Sun Storage RAID Expansion Module 6Gb/s SAS HBA) press **Ctrl+C** when prompted during boot. Described in Step 3.
  - The MegaRAID SAS controllers (such as the Sun Storage RAID Expansion Module 6Gb/s SAS RAID HBA) press **Ctrl+H** when prompted during boot. Described in Step 4.
3. If you are replacing a Fusion-MPT SAS-2 REM, do the following to activate the existing logical drives:
  - a. In the Adapter List screen, use the arrow keys to select a SAS adapter and press **Enter**.

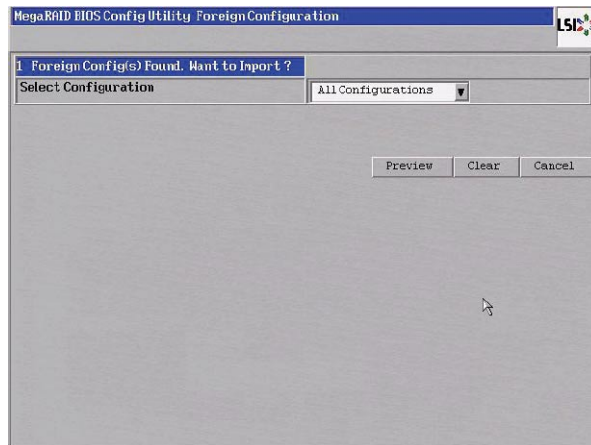


- b. Select **RAID Properties**, and press Enter
  - c. Select **View Existing Volume**.  
Pressing Alt+N will switch to another volume on this adapter.
  - d. Select **Manage Volume**.
  - e. From the **Manage Volume** screen, select **Activate Volume**.
  - f. Press **Y** to activate the volume that contains the boot disk.  
The volume becomes active.
  - g. Press **Esc** to go back to the Adapter List.
  - h. If an adapter is currently configured as the boot device, the **Boot Order** column on the screen lists the number 0.  
You can change the boot order by using the +/- keys.
  - i. Save and exit the utility.  
You next need to reapply other saved configurations for the array using the MegaRAID Storage Manager software. Proceed to Step 5.
4. If you replacing a MegaRAID SAS-2 REM, do the following to import the existing virtual drive configuration:
    - a. If the host has multiple HBAs, select the replacement REM In the Adapter List screen and click **Start**.



- b. The WebBIOS utility should detect a foreign configuration and display the import screen.

In this case, the foreign configuration are the existing virtual drives configured through the old REM.



- c. Click the **Preview** button.

The right panel shows the virtual drive properties of the foreign configuration. The left panel shows the drives that comprise the foreign configuration.



---

**Caution** – Clicking the **Clear** option at this screen will erase all data on the disks.

---

- d. Click **Import** to use the foreign configuration and re-establish the existing virtual drive(s) on this controller.

---

**Note** – If the virtual drive configurations you are importing have a security lock, refer to the importing instructions in the “Selecting Full Disk Encryption Security Options” section of the *LSI MegaRAID SAS Software User's Guide*.

---

- e. Save and exit the utility.  
You next need to reapply other saved configurations for the array using the MegaRAID Storage Manager software run from the host OS.
5. From the host OS, run the MegaRAID Storage Manager software.
6. Select the controller icon in the left panel of the MegaRAID Storage Manager window for the new REM.
7. On the menu bar, select **Operations->Configuration->Add Configuration from file**.
8. As prompted, open the saved configuration file and apply the configurations.

# Storage Module Sensors and Indicators

---

The storage module includes several sensors and indicators that report on hardware conditions. Many of the sensor readings can trigger events, such as illuminating system indicator LEDs, shutting down the module for temperature and over-voltage conditions, and powering off the storage module.

---

**Note** – For information about how to obtain sensor readings or to determine the state of system indicators in CMM ILOM, refer to the *Oracle Integrated Lights Out Manager (ILOM) CMM Administration Guide for Sun Blade 6000 and 6048 Modular Systems* found in the Sun Blade 6000 Modular System documentation (<http://docs.sun.com/app/docs/prod/blade.6000mod-blade6000ilom#hic>)

---

The following sections describe the sensors and indicators that the CMM ILOM monitors for the Sun Blade Storage Module M2. Device-specific examples (hard disks, sensors and indicators) are shown using the CMM ILOM CLI.

- “Types of Sensors” on page 71
- “Displaying Sensor and Indicator Information Using the CMM ILOM Web Interface” on page 72
- “Displaying Sensor and Indicator Information Using the CMM ILOM CLI” on page 73
- “Hard Disk Drive Sensors” on page 75
- “System Sensors” on page 76
- “System Indicators” on page 77

## Types of Sensors

There are two types of CMM sensors:

- Discrete sensors display information about storage module components.
- Threshold sensors show analog values, such as temperature readings or voltage levels.

### Discrete Sensors

Discrete sensors display a single value from a set of possible values.

Discrete sensors are displayed in the following format:

```

/PATH/TO/SENSOR
Targets:
    ${POSSIBLE_SUB_SENSORS}
Properties:
    type = ${SENSOR_TYPE}
    class = Discrete
    value = ${SENSOR_VALUE}
    alarm_status = ${SENSOR_STATUS}
    
```

Where the following variables are used:

- *POSSIBLE\_SUB\_SENSORS*: A list of sensors below this sensor. Examples include fault or warning sensors. Using the `cd` command, you can navigate to the sub-sensor node.
- *SENSOR\_TYPE*: The type of sensor.
- *SENSOR\_VALUE*: The sensor value.
- *SENSOR\_STATUS*: The sensor alarm status (asserted, deasserted, cleared, severity).

## Threshold Sensors

The storage module manages the following environmental threshold sensors internally:

- Voltage (3.3V, 1.8V, 12V, 1V)
- Ambient and expander temperature
- Total current draw

While these sensors are not viewable through the CMM ILOM, if any of them exceed the factory thresholds the storage module fault light will illuminate and an error will be reported in the CMM ILOM event log describing the slot with the fault. If the fault exceeds the critical level, the storage module will power off. You will then need to remove the storage module and correct the fault. Once the problem has been corrected, you can power on the storage module by reinserting it into the chassis.

# Displaying Sensor and Indicator Information Using the CMM ILOM Web Interface

All sensors for the storage module are located under the CMM namespace in the CMM ILOM web interface.

To display the sensors using the CMM ILOM, select **CMM** from the left pane and then select the **System Monitoring** tab. Sub-tabs for sensors, indicators and events are available. To display information for a specific storage module, the identifier *BLx* refers to the blade slot in the chassis in which the storage module is installed.

Click on an item for more information, or select the radio button (if available) and use the **–Action–** drop-down menu for supported actions.



The screenshot shows the Oracle Integrated Lights Out Manager (ILOM) web interface. The top navigation bar includes links for ABOUT, 2 Warnings, User: root, Role: auro, CMM Hostname: SUNCMM-0000000-000000000, REFRESH, and LOG OUT. The main menu on the left lists Chassis, CMM, and various blades (Blade 0, Blade 2, Blade 3, Blade 6, Blade 7, Blade 9, NEM 0, NEM 1). The main content area is divided into tabs: System Information, System Monitoring, Power Management, Storage, Configuration, User Management, Remote Control, and Maintenance. Under System Monitoring, there are sub-tabs for Sensor Readings, Indicators, and Event Logs. The Sensor Readings section displays a table of sensor data.

Name	Type	Reading
/CH/CMM/T_AMB	Temperature	30.000 degree C
/CH/BL0/PRSNT	Entity Presence	Present
/CH/BL0/STATE	Module	Running
/CH/BL0/ERR	OEM	Predictive Failure Deasserted
/CH/BL0/VPS	Power Unit	110.000 Watts
/CH/BL1/PRSNT	Entity Presence	Present
/CH/BL1/STATE	Module	Running
/CH/BL1/ERR	OEM	Predictive Failure Deasserted
/CH/BL2/PRSNT	Entity Presence	Present
/CH/BL2/STATE	Module	Power Off
/CH/BL2/ERR	OEM	Predictive Failure Deasserted
/CH/BL2/VPS	Power Unit	10.000 Watts
/CH/BL3/PRSNT	Entity Presence	Present
/CH/BL3/STATE	Module	Power Off
/CH/BL3/ERR	OEM	Predictive Failure Deasserted
/CH/BL3/VPS	Power Unit	0.000 Watts
/CH/BL4/PRSNT	Entity Presence	Present
/CH/BL4/STATE	Module	Running
/CH/BL4/ERR	OEM	Predictive Failure Deasserted
/CH/BL5/PRSNT	Entity Presence	Present
/CH/BL5/STATE	Module	Running
/CH/BL5/ERR	OEM	Predictive Failure Deasserted

## Displaying Sensor and Indicator Information Using the CMM ILOM CLI

All sensors for the storage module are located in the `/CH/BLx` namespace. Where `BLx` refers to the blade slot in the chassis in which the storage module is installed.

To display the sensors using the CMM ILOM CLI, separate the fields into targets and navigate using the `cd` and `show` commands. For example, to show all components in the storage module installed in chassis blade slot 7, enter the following command at the CMM ILOM CLI prompt:

```
-> show /CH/BL7
```

The output might look like:

```
/CH/BL7
Targets:
  MB
  HDD0
  HDD1
```

HDD2  
HDD3  
HDD4  
HDD5  
HDD6  
HDD7  
PRSNT  
STATE  
ERR  
OK  
SERVICE  
OK2RM  
LOCATE

Properties:  
  type = Blade  
  ipmi\_name = BL7  
  fru\_name = SUN BLADE STORAGE MODULE M2  
  fru\_part\_number = 511-1365-02  
  fru\_serial\_number = 00000000  
  fru\_extra\_1 = SAS0 5.3.5.0, SAS1 5.3.5.0  
  fault\_state = OK  
  load\_uri = (none)  
  clear\_fault\_action = (none)  
  power\_state = On

Commands:  
  cd  
  load  
  reset  
  set  
  show

The following commands can be used to navigate to supported storage module targets. Each target supports its own list of allowable commands—not all commands in the table below work for all targets.

Command	Description
show	<ul style="list-style-type: none"><li>■ With no argument: shows contents of the current target. Lists targets directly beneath the current target, properties of the current target, and available commands.</li><li>■ With argument: shows contents of the target specified. For example: -&gt; show CH/BL3</li></ul>
cd	Changes current target to that of target specified. Examples:  -> cd HDD1  -> cd ../CH/BL3/HDD2
pwd	Determines where you are in the tree of targets.
load	Loads a firmware image file to the current target.

Command	Description
set	Sets the state of an indicator.
reset	Powers off, then powers on the current target or the given target.



**Caution** – The reset command does not check for host activity. You should only use these commands if you are sure that the device is not in use.

## Hard Disk Drive Sensors

This section describes hard disk drive sensors.

**Note** – HDD applies to both mechanical and solid-state disk drives.

Syntax (enter target HDD):

-> /CH/BLx/HDDx

Output:

```
/CH/BL7/HDD6
Targets:
  SERVICE

Properties:
  type = Hard Disk
  disk_type = SAS
  wwn = 0x5000c5000f7d7ce9, 0x5000c5000f7d7cea
  sas_speed = 6.0 Gbps

Commands:
  cd
  show
```

Sensor Name	Sensor Type	Description
/CH/BLx/HDDx	Presence	Where <i>x</i> for HDD represents the module front slot number (0–7). If the HDD number is not listed, the drive is not installed.

Sensor Name	Sensor Type	Description
/CH/BLx/HDDx/SERVICE	Indicator	<ul style="list-style-type: none"><li>■ If off, the disk is performing normally.</li><li>■ If on, the disk has failed and the hard disk drive fault indicator seen from the front panel will be lit.</li></ul>

## System Sensors

This section describes system indicators for the storage module.

Syntax:

→ **show /CH/BL7/system\_sensor**

Possible *system\_sensors* are: MB, PRSNT, STATE and ERR.

Sensor Name	Sensor Type	Description
/CH/BLx/MB	Motherboard	Describes storage module motherboard and FRU information.
/CH/BLx/PRSNT	Presence	<ul style="list-style-type: none"><li>■ The storage module is present in the chassis.</li><li>■ The storage module is not present in the chassis.</li></ul>
/CH/BLx/STATE	Module	<ul style="list-style-type: none"><li>■ The storage module is running.</li><li>■ The storage module is powered off.</li><li>■ The storage module is in a degraded or failed state.</li></ul>
/CH/BLx/ERR	OEM	<ul style="list-style-type: none"><li>■ If deasserted, the storage module is performing normally.</li><li>■ If asserted, the storage module has failed. The storage module fault indicator seen from the front panel will be lit.</li></ul>

---

**Note** – Additional environmental sensor events (such as temperature and voltage over/under conditions) can be captured in the event log of an HBA management tool that supports SES (SCSI Enclosure Services).

---

## System Indicators

This section describes system indicators for the storage module.

Syntax:

→ **show** /CH/BL7/*indicator*

Possible *indicators* are: SERVICE, OK2RM, LOCATE, and OK.

Sensor Name	Sensor Type	Description
/CH/BLx/SERVICE	Indicator	<ul style="list-style-type: none"><li>■ If deasserted, the storage module fault LED is off.</li><li>■ If asserted, the storage module has failed. The storage module fault indicator seen from the front panel will be lit.</li></ul>
/CH/BLx/OK2RM	Indicator	This indicator is not supported for the storage module.
/CH/BLx/LOCATE	Indicator	<ul style="list-style-type: none"><li>■ If deasserted, the storage module front panel white locate LED is off.</li><li>■ If asserted, the storage module front panel white locator LED is on.</li></ul>
/CH/BLx/OK	Indicator	Shows the state of the power indicator for the storage module.



# Troubleshooting

---

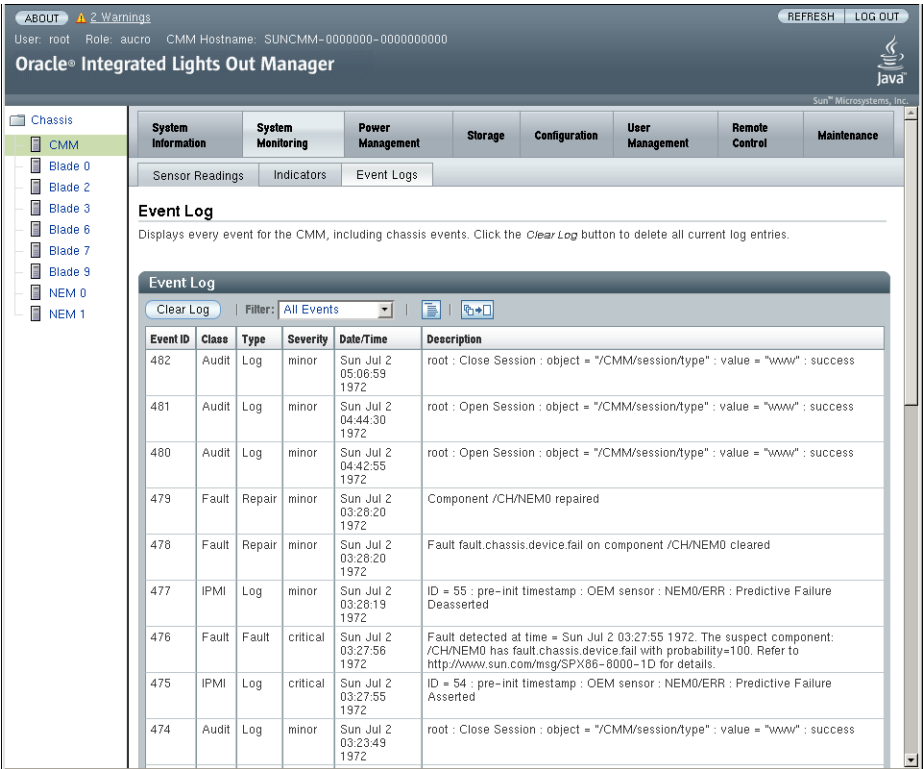
This section describes procedures and steps you can take to troubleshoot problems with your Sun Blade Storage Module M2.

- [“Viewing the CMM ILOM Event Log” on page 79](#)
- [“Sun Blade Zone Manager Issues” on page 81](#)
- [“Storage Module Issues” on page 89](#)
- [“NEM Issues” on page 97](#)

## Viewing the CMM ILOM Event Log

The CMM ILOM provides a method for logging events and checking storage module status (sensors and indicators).

From a web browser, log in to the CMM ILOM and click the **System Monitoring** tab. Events can be filtered by type, date and severity.



When using the CMM ILOM CLI, log in to the CMM ILOM and enter the command:

**cd /CMM/logs/event**

Example output might look like:

```
ID      Date/Time                Class    Type      Severity
-----
578     Wed Jun 11 06:39:47 2008  Audit    Log        minor
      user1 : Open Session : object = /session/type : value = shell : success
577     Wed Jun 11 06:34:53 2008  Audit    Log        minor
      user1 : Set : object = /clients/activedirectory/userdomains/3/domain :
      value =joe.customer.example.sun.com : success
576     Wed Jun 10 11:22:31 2008  Fault    Repair     minor
      Component /CH/NEM0 repaired
575     Wed Jun 10 11:10:02 2008  Fault    Repair     minor
      Fault fault.chassis.device.fail on component /CH/NEM0 cleared
```

For more on using CMM ILOM to view events, sensor information, or to check on storage module component status using the Web interface or CLI, refer to the *Oracle Integrated Lights Out Manager (ILOM) CMM Administration Guide for Sun Blade 6000 and 6048 Modular Systems*.



# Sun Blade Zone Manager Issues

This section describes common Sun Blade Zone Manager issues and their resolutions.

- “Sun Blade Zone Manager Not Ready” on page 81
- “Missing SAS–2 Components Error” on page 82
- “Server Module Not SAS–2 Capable Error” on page 85
- “Newly Inserted NEM is Not Discovered” on page 86

## Sun Blade Zone Manager Not Ready

When CMM ILOM starts, it can take several minutes for all the ILOM services to come online. The amount of time it take depends on how many devices are installed in the chassis. If you attempt to perform zone management actions before the all ILOM services are online, you will see a “not ready” error message.

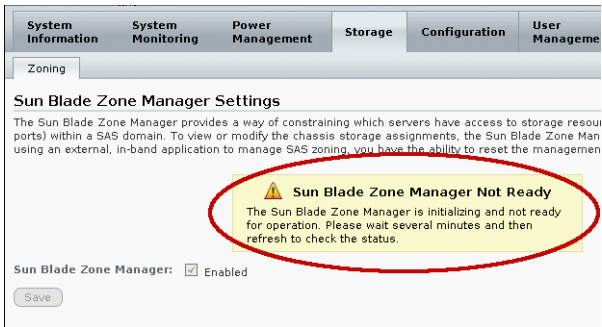
**What to look for:**

If you attempt to use the Sun Blade Zone Manager before the services are online, what you see depends on whether you are using the web interface or the CLI.

**Note** – The “not ready” message could appear whether zoning is enabled or disabled.

CMM ILOM      Sun Blade Zone Manager Not Ready

Web interface      In CMM->Storage->Zoning.



CMM ILOM	Sun Blade Zone Manager Not Ready
CLI	<pre>&gt; show  /STORAGE/sas_zoning Targets:  Properties:   zone_management_state = disabled   zone_management_status = initializing   reset_password_action = (Cannot show property)   reset_access_action = (Cannot show property)  Commands:   cd   set   show  -&gt; set zone_management_state=enabled set: The Sun Blade Zone Manager is initializing and not ready for operation. Please wait several minutes and try again.  -&gt; set reset_access_action=true set: The Sun Blade Zone Manager is initializing and not ready for operation. Please wait several minutes and try again.  -&gt; set reset_password_action=true set: The Sun Blade Zone Manager is initializing and not ready for operation. Please wait several minutes and try again.</pre>

**Actions to perform:**

If you encounter this issue, wait an additional five minutes and then try again. You need to close and reopen, or refresh the page if you are in the CMM ILOM web interface.

**Missing SAS–2 Components Error**

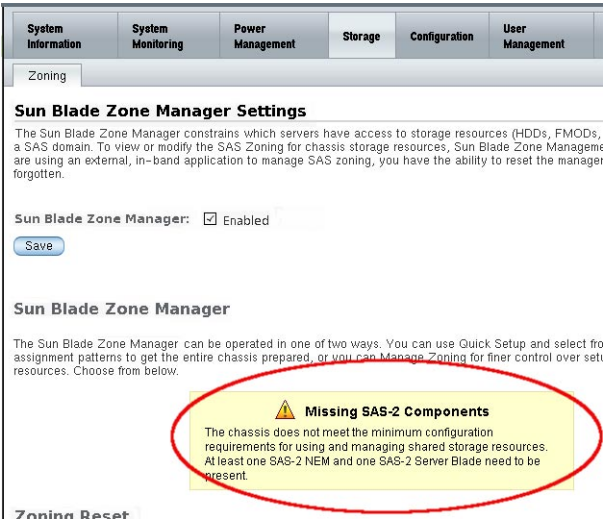
The chassis SAS-2 fabric is made of interconnected SAS-2 components (REMs, NEMs and storage modules). If a SAS-1 component is in place of a required SAS-2 component, the fabric itself will be incomplete and will display an error when you attempt to assign storage module resources from the CMM ILOM.

**What to look for:**

The following table provides examples of how the web interface and CLI might look like when the SAS-2 fabric is missing required components.

CMM ILOM      If SAS-2 Components are Missing from the Fabric

Web interface      In CMM->Storage->Zoning.



CLI

-> ls

/STORAGE/sas\_zoning

Targets:

<---No targets are listed.

Commands:

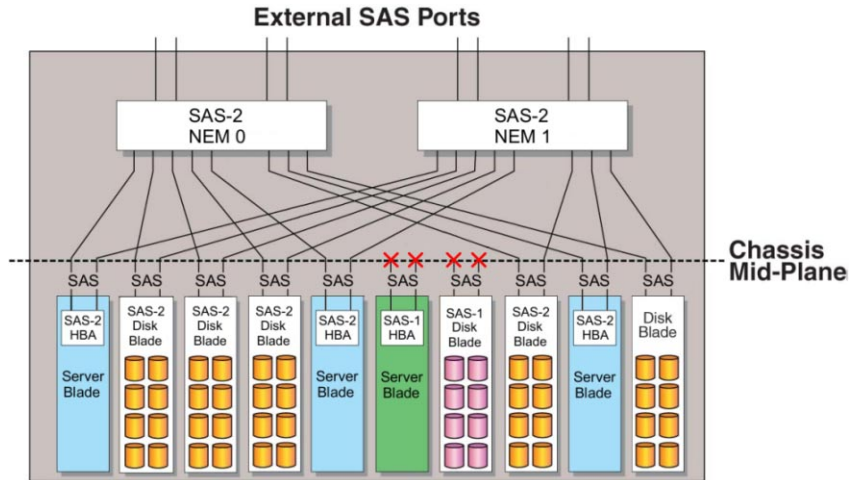
cd

set

show

Things to check:

An example of a complete chassis SAS-2 fabric looks like the following (note that SAS-1 components are automatically excluded):



A supported SAS-2 chassis fabric must have the following chassis components:

- At least one SAS-2 NEM. For path redundancy you need two SAS-2 NEMs. Refer to “[Storage Module Hardware Compatibility](#)” in *Sun Blade Storage Module M2 Installation Guide*.

---

**Note** – You can only have SAS-2 NEMs, you cannot mix SAS-2 and SAS-1 NEMs in the chassis.

---

- A server module with a SAS-2 REM. Refer to “[Storage Module Hardware Compatibility](#)” in *Sun Blade Storage Module M2 Installation Guide*.

---

**Note** – You can have server modules with SAS-1 REMs, but they will only be able to access their own internal disks. They will not be able to access storage modules or NEM external SAS ports.

---

- Optionally, one or more Sun Blade Storage Module M2s (which is a SAS-2 device).
- To properly establish a chassis SAS-2 fabric, you **must not** have SAS-1 NEMs installed in the chassis. SAS-1 NEMs include:
  - Sun Blade 6000 Multi-Fabric Network Express Module (X4212A)
  - Sun Blade 6000 10GbE Multi-Fabric Network Express Module (X4236A)
  - Sun Blade 6000 Virtualized Multi-Fabric 10GbE Network Express Module (X4238)
- The chassis CMM excludes SAS-1 server modules and disk modules from accessing the chassis SAS-2 fabric. SAS-1 server modules and disk modules include:
  - Sun Blade 6000 Disk Module (B18-AA)

- Server modules with SAS-1 integrated disk controllers or REMs (though the server will still be able to access its internal disks).

**Actions to perform:**

- Ensure that you have the proper SAS-2 components to establish a complete (server REM to disk) SAS-2 fabric.
- Check that the chassis is powered on. If it is not, power it on, wait five minutes, and try again.
- If the components are present and powered-on and the condition persists, call your Oracle service representative.

## Server Module Not SAS–2 Capable Error

If you are trying to assign storage module resources to a server module that does not have a SAS-2 REM, you will see a “Not SAS-2 Capable” error listed in the Sun Blade Zone Manager.

**What to look for:**

The following table provides examples of how the web interface and CLI might look like when you have servers that are not SAS-2 capable.

**CMM ILOM**

**If Server Blade is Not SAS-2 Capable**

Web interface In Sun Blade Zone Manager configuration window.

The screenshot shows the Sun Blade Zone Manager configuration window. At the top, there are four radio button options for assigning storage resources: '1. Assign per individual disks.', '2. Assign per adjacent individual disks.', '3. Assign per storage blade.', and '4. Assign per adjacent storage blade.'. Below these options is a 'Save' button. The main part of the window displays a table for the 'SUN BLADE 6000 MODULAR SYSTEM - m1'. The table has columns for Slot 0, Slot 1, Slot 2, Slot 3, Slot 4, Slot 5, and Slot 6. Slot 0 is highlighted with a red circle and contains the text '(Not SAS-2 capable) SUN BLADE X6270 M2 SERVER MODULE'. Slot 1 is labeled 'Storage Blade SUN BLADE STORAGE MODULE M2' and contains a grid of HDDs: HDD 6, HDD 7, HDD 4, HDD 5, HDD 2, HDD 3, HDD 0, and HDD 1. Slots 2 through 6 are labeled '(empty)'.

Slot 0	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
(Not SAS-2 capable) SUN BLADE X6270 M2 SERVER MODULE	Storage Blade SUN BLADE STORAGE MODULE M2	(empty)	(empty)	(empty)	(empty)	(empty)
	HDD 6 HDD 7					
	HDD 4 HDD 5					
	HDD 2 HDD 3					
	HDD 0 HDD 1					
	empty empty					
	empty empty					

CMM ILOM	If Server Blade is Not SAS-2 Capable
CLI	<pre>-&gt; show -level all  /STORAGE/sas_zoning Targets:   BL1   BL2   BL3      &lt;-- Note: only SAS-2 capable blades   BL7      (servers, storage modules) are shown.   BL8   NEM0   NEM1  Properties:   zone_management_state = enabled   reset_password_action = (Cannot show property)   reset_access_action = (Cannot show property)</pre>

**Actions to perform:**

- Only server modules with a SAS-2 REM can be assigned storage module resources.
- Check that the server module ILOM service processor has the latest supported ILOM firmware.
- Check that the server module REM has the latest supported firmware.

## Newly Inserted NEM is Not Discovered

A newly inserted NEM in the chassis does not appear in the Sun Blade Zone Manager web interface, or is not present in the CLI under /STORAGE/sas\_zoning.

**What to look for:**

The following table provides examples of how the web interface and CLI might look like if you installed a second NEM for dual path support and wanted to check that the second NEM was seen by the Sun Blade Zone Manager.

CMM ILOM If NEM is Not Discovered

Web interface In Sun Blade Zone Manager configuration window.

Zoning Config

The current access permission assignments are displayed below. Click 'New Assignments' to make new assignments. Click 'Modify Group' to make changes to that selected group.

New Assignments

Modify Group

SUN BLADE 6000 MODULAR SYSTEM - mp

Slot 0	Slot 1	Slot 2	Slot 3	Slot 4
Storage Blade SUN BLADE STORAGE MODULE M2	Storage Blade SUN BLADE STORAGE MODULE M2	Storage Blade SUN BLADE STORAGE MODULE M2	Storage Blade SUN BLADE STORAGE MODULE M2	Server SUN BLADE X6270 SERVE MODULE
<div> <div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div> </div> <div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> </div>	<div> <div>emptyempty</div> <div>emptyHDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div> </div> <div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> </div>	<div> <div>emptyempty</div> <div>emptyempty</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div> </div> <div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> </div>	<div> <div>HDD 6HDD 7</div> <div>HDD 4HDD 5</div> <div>HDD 2HDD 3</div> <div>HDD 0HDD 1</div> </div> <div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> <div>emptyempty</div> </div>	

NEM Slot 0

SAS NEM

SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GbE NEM M2

PORT 0

PORT 1

PORT 2

PORT 3

Slot 1

(Cannot be zoned)

SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GbE NEM M2

CMM ILOM	If NEM is Not Discovered
CLI	<pre>-&gt; show -level all  /STORAGE/sas_zoning   Targets:     BL0     BL1     BL2     BL3     BL4     BL5     BL6     BL7     BL8     BL9     NEM0    &lt;-- Only one NEM is listed.    Properties:     zone_management_state = enabled     reset_password_action = (Cannot show property)     reset_access_action = (Cannot show property)</pre>

---

The above example does not list the second NEM, even though it was installed.

**Things to check:**

Check the CMM ILOM event log (see [“Viewing the CMM ILOM Event Log” on page 79](#)) for messages relating to the NEM.

**Actions to perform:**

- If no messages about the newly installed NEM have been logged, wait 5 minutes for the CMM to properly discover and integrate the new NEM into the SAS-2 fabric. Use the CMM ILOM web interface or CLI to run the Sun Blade Zone Manager again.
- Either press the NEM Attention button, or perform a return\_to\_service action.
- If you see “/CH/NEMx failed to join SAS2 fabric” (where x is the slot number of the NEM), do the following:
  1. Pull out the failed NEM.
  2. Wait until the removal is processed.

You will see that the removal is processed when a "Hot removal of /CH/NEMx" message (where x is the slot number of the NEM) is logged.
  3. Once the removal message is seen, it is safe to reinsert the NEM.



- If you see "/CH/NEMx successfully added to SAS2 fabric" (where x is the slot number of the NEM), this means that the NEM is now ready to be configured by the Sun Blade Zone Manager. Use the CMM ILOM web interface or CLI to run the Sun Blade Zone Manager again.

## Storage Module Issues

This section describes general issues with the storage module. Problems with a storage module can cause disks assigned to a host to become inaccessible.

- [“Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/fault\\_state is "Faulted"” on page 89](#)
- [“Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/STATE is "Degraded"” on page 94](#)
- [“Storage Module Fault LED is On” on page 97](#)
- [“The Storage Module Powers Off” on page 97](#)

### Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/fault\_state is "Faulted"

If the storage module becomes inaccessible at the host and shows a faulted condition (storage module front panel module Fault LED is on, or the fault state is viewed in CMM ILOM), there might be an issue with storage module power or SAS expander state.

#### What to look for:

- The storage module front panel amber fault LED is on.
- The CMM ILOM shows the storage module is in a “faulted” state.

The following table provides examples of how the web interface and CLI might look like when the storage module is in a fault state.

CMM ILOM      Storage Module is Faulted

Web interface      In CMM->System Information->Components.

System InformationSystem MonitoringPower ManagementStorageConfigurationUser Manager

OverviewComponentsFault ManagementIdentification InformationBanner Messages

Component Management

View component information, prepare to install or remove a component, update firmware, or clear its component, select the radio button next to that component, then choose an option from the Action dropdown. Radio buttons cannot be modified. Choosing the Prepare to Remove action shuts down the selected component. To view further details, click on a Component Name.

Component Status

ActionsFilter: Fault Status: Faulted

Component Name	Type	Fault Status	Read
/CH/BL0	Blade FRU	Faulted	-
/CH/PS0	Power Supply FRU	Faulted	-

Actions

CMM ILOM	Storage Module is Faulted
CLI	<pre>-&gt; show /CH/BL2 Targets:   MB   HDD0   HDD1   HDD2   HDD3   HDD4   HDD5   HDD6   HDD7   PRSNT   STATE   ERR   OK   SERVICE   OK2RM   LOCATE  Properties:   type = Blade   ipmi_name = BL7   fru_name = SUN BLADE STORAGE MODULE M2   fru_part_number = 511-1365-02   fru_serial_number = 00000000   fru_extra_1 = SAS0 5.3.5.0, SAS1 5.3.5.0 --&gt; <b>fault_state = Faulted</b>   load_uri = (none)   clear_fault_action = (none)   power_state = On  Commands:   cd   load   reset   set   show</pre>

Things to check:

- Is the storage module powered off? This can be confirmed by either looking at the storage module front panel LEDs, checking to see if storage module components are listed in ILOM, or using the CH/BLx/OK command in the ILOM CLI. For example, in the ILOM CLI example in the table above, if you see HDDs listed, then the storage module has power.

- If the storage module is powered on, is the fault state expander related? This can be confirmed by viewing the fault itself. In the CMM ILOM CLI, enter the following commands:

1. Log into the CMM with administrator privileges.
2. Enter the command:  
-> **cd /CMM/faultmgmt**
3. Find the faulted target device by entering the command:  
-> **ls**

Output might look like:

```
/CMM/faultmgmt
Targets:
  shell
  0 (/CH/BL2)
```

Properties:

```
Commands:
  cd
  show
```

4. View logged faults by entering the command:

-> **show /CMM/faultmgmt/0/faults**

Where 0 is the target device that is experiencing the fault, and faults is the directory that contains the logged faults.

Look for:

```
/CMM/faultmgmt/0/faults
Targets:
  0 (fault.chassis.sas.comm.fail)
```

Properties:

```
Commands:
  cd
  show
```

#### **Actions to perform:**

- If the storage module is powered off, there might have been a hardware failure or an over-temperature event. Check that the chassis is being properly cooled (air-conditioning is functioning and all disk and chassis slot fillers are in place), then reinsert the blade after all cooling conditions are repaired. If the storage module does not power back on after insertion into the chassis, contact Oracle service.
- If the storage module is still powered on, use CMM ILOM to perform a "reset" of the storage module, as follows:
  1. Log into the CMM with administrator privileges.
  2. Enter the command:

-> **cd /CH/BLx**

Where *x* is the number of the blade slot for the storage module.

3. Then, enter the command:

-> **reset**

4. Wait for at least 2 minutes, then check the state of the storage module:

-> **show /CH/BLx/STATE**

Where output might look like:

```
/CH/BL2/STATE
Targets:

Properties:
  type = Module
  ipmi_name = BL2/STATE
  class = Discrete Sensor
-->  value = Running
      alarm_status = cleared

Commands:
  cd
  show
```

5. If the reset does not change the STATE sensor to “Running”, then remove and reinsert the storage module into the same chassis slot. If this does not change the storage module STATE to “Running”, then contact Oracle service.
- If the STATE sensor goes back to “Running”, but the storage module is still unresponsive after a reset, there might still be an issue with how the CMM interprets the state of the storage module SAS expander. Clear the fault by issuing the following CLI commands:

1. Log into the CMM with administrator privileges.
2. Enter the command:

-> **cd /CH/BLx**

Where *x* is the number of the blade slot for the storage module.

3. Then, enter the command:

-> **set clear\_fault\_state=true**

4. Then perform a CMM reset.

-> **cd /CMM**

5. Enter the command:

-> **reset**

This should restore the state.

# Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/STATE is "Degraded"

The storage module can be in a degraded condition if it powers off.

**What to look for:**

The following table provides examples of how the web interface and CLI might look like when the storage module is in a degraded state.

CMM ILOM

Storage Module is Degraded

Web interface

In CMM->System Monitoring->Sensor Readings.

System Information	System Monitoring	Power Management	Storage	Configuration	User Management
Sensor Readings Indicators Event Logs					
Sensor Readings					
View readings for system sensors. Click on a sensor name for more information, including threshold values.					
Sensor Readings					
Filter: All Sensors					
Name	Type	Reading			
/CH/CMM/T_AMB	Temperature	25.000 degree C			
/CH/BL0/PRSNT	Entity Presence	Present			
/CH/BL0/STATE	Module	Power Off			
/CH/BL0/ERR	OEM	Predictive Failure Deasserted			
/CH/BL0/VPS	Power Unit	10.000 Watts			
/CH/BL1/ESMERR	OEM	Predictive Failure Deasserted			
/CH/BL1/PRSNT	Entity Presence	Present			
/CH/BL1/STATE	Module	Degraded			
/CH/BL1/ERR	OEM	Predictive Failure Deasserted			
/CH/BL2/PRSNT	Entity Presence	Present			

CLI

-> show /CH/BL2/STATE

/CH/BL2/STATE

Targets:

Properties:

type = Module

ipmi\_name = BL2/STATE

class = Discrete Sensor

--> value = Degraded

alarm\_status = cleared

Commands:

cd

show

**Things to check:**

- Is the storage module powered off? This can be confirmed by either looking at the storage module front panel LEDs, or checking to see if storage module components are listed in ILOM. For example, in the ILOM CLI example in the table above, if you see HDDs listed, then the storage module has power.
- If the storage module is powered on, is the fault state expander related? This can be confirmed by viewing the fault itself. In the CMM ILOM CLI, enter the following commands:

1. Log into the CMM with administrator privileges.
2. Enter the command:  
-> **cd /CMM/faultmgmt**
3. Find the faulted target device by entering the command:  
-> **ls**

Output might look like:

```
/CMM/faultmgmt
Targets:
  shell
  0 (/CH/BL2)
```

Properties:

```
Commands:
  cd
  show
```

4. View logged faults by entering the command:  
-> **show /CMM/faultmgmt/0/faults**

Where 0 is the target device that is experiencing the fault, and faults is the directory that contains the logged faults.

Look for:

```
/CMM/faultmgmt/0/faults
Targets:
  0 (fault.chassis.sas.comm.fail)
```

Properties:

```
Commands:
  cd
  show
```

#### **Actions to perform:**

- If the storage module is powered off, there might have been a hardware failure or an over-temperature event. Check that the chassis is being properly cooled (air-conditioning is functioning and all slot fillers are in place), then reinsert the blade after all cooling conditions are repaired. If the storage module does not power back on after insertion into the chassis, contact Oracle service.

- If the storage module is still powered on, use CMM ILOM to perform a "reset" of the storage module, as follows:

1. Log into the CMM with administrator privileges.

2. Enter the command:

```
-> cd /CH/BLx
```

Where *x* is the number of the blade slot for the storage module.

3. Then, enter the command:

```
-> reset
```

4. Wait for at least 2 minutes, then check the state of the storage module:

```
-> show /CH/BLx/STATE
```

Where output might look like:

```
/CH/BL2/STATE
Targets:

Properties:
  type = Module
  ipmi_name = BL2/STATE
  class = Discrete Sensor
-->  value = Running
      alarm_status = cleared

Commands:
  cd
  show
```

5. If the reset does not change the STATE sensor to "Running", then remove and reinsert the storage module into the same chassis slot. If this does not change the storage module STATE to "Running", then contact Oracle service.

- If the STATE sensor goes back to "Running", but the storage module is still unresponsive after a reset, there might still be an issue with how the CMM interprets the state of the storage module SAS expander. Clear the fault by issuing the following CLI commands:

1. Log into the CMM with administrator privileges.

2. Enter the command:

```
-> cd /CH/BLx
```

Where *x* is the number of the blade slot for the storage module.

3. Then, enter the command:

```
-> set clear_fault_state=true
```

4. Then perform a CMM reset.

```
-> cd /CMM
```

5. Enter the command:

```
-> reset
```



This should restore the state.

## Storage Module Fault LED is On

If the storage module fault LED comes on, check the following:

- An over-temperature might have occurred. Refer to “Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/fault\_state is "Faulted"” on page 89.
- The storage module might have failed. Refer to “Diagnosing Faults With LEDs and Indicators” in *Sun Blade Storage Module M2 Service Manual*.

## The Storage Module Powers Off

If the storage module powers off, check the following:

- An over-temperature might have occurred. Refer to “Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/fault\_state is "Faulted"” on page 89.
- There might be an internal error causing the storage module to power off and show as “degraded”. Refer to “Storage Module Becomes Inaccessible at Host and ILOM /CH/BLx/STATE is "Degraded"” on page 94.

## NEM Issues

This section describes general issues with the NEM. Since the NEM is an integral part of the SAS-2 fabric, problems with NEMs can cause storage devices or paths to storage devices to become inaccessible at the host.

- “SAS Path Disappears and ILOM /CH/NEMx/fault\_state is "Faulted"” on page 98
- “NEM Fault LED is On” on page 102
- “NEM STATE (/CH/NEMx/STATE) is Not “Running”” on page 102
- “NEM /CH/NEMx/OK Indicator is in Standby Blink” on page 106

---

**Note** – If your chassis has only one NEM, it must be installed in NEM 0. Operating a chassis without a NEM in NEM 0 is not supported.

---

# SAS Path Disappears and ILOM /CH/NEMx/fault\_state is "Faulted"

The effect of an absent SAS path depends on the number of NEMs present:

- If one NEM is present, the host cannot see its assigned storage.
- If two NEMs are present, the chassis loses its SAS path redundancy.

**What to look for:**

- The NEM amber fault LED is on.
- The CMM ILOM shows the storage module is in a “faulted” state.

The following table provides examples of how the web interface and CLI might look like when the NEM is in a fault state.

CMM ILOM

NEM is Faulted

Web interface



In CMM->System Information->Components.


System Information	System Monitoring	Power Management	Storage	Configuration	User Manager
Overview	Components	Fault Management	Identification Information	Banner Messages	






### Component Management

View component information, prepare to install or remove a component, update firmware, or clear f component, select the radio button next to that component, then choose an option from the Action di radio buttons cannot be modified. Choosing the *Prepare to Remove* action shuts down the selecte to Remove LED. To view further details, click on a Component Name.

#### Component Status

— Actions — | Filter: Fault Status: Faulted |  

 Component Name	Type	Fault Status	Read
<input checked="" type="radio"/> /CH/NEM0	Network Express Module	Faulted	
<input type="radio"/> /CH/PS0	Power Supply FRU	Faulted	-

— Actions — |     

CMM ILOM	NEM is Faulted
CLI	<pre> -&gt; show /CH/NEM1 Targets:   MB   SAS   SP   PRSNT   STATE   ERR   OK   SERVICE   OK2RM   LOCATE  Properties:   type = Network Express Module   ipmi_name = NEM1   system_identifier = SUNSP-0000000000   fru_name = SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2   fru_version = FW 3.0.10.16, SAS 5.3.5.0   fru_part_number = 540-7961-02   fru_extra_1 = FW 3.0.10.16, SAS 5.3.5.0 --&gt; <b>fault_state = Faulted</b>   load_uri = (none)   clear_fault_action = (none)   prepare_to_remove_status = NotReady   prepare_to_remove_action = (none)   return_to_service_action = (none)  Commands:   cd   load   reset   set   show </pre>

### Things to check:

View the fault for more information. In the CMM ILOM CLI, enter the following commands:

1. Log into the CMM with administrator privileges.
2. Enter the command:  

```
-> cd /CMM/faultmgmt
```
3. Find the faulted target device by entering the command:  

```
-> ls
```

Output might look like:

```
/CMM/faultmgmt
Targets:
  shell
  0 (/CH/NEM1)

Properties:

Commands:
  cd
  show
```

4. View logged faults by entering the command:

-> **show /CMM/faultmgmt/0/faults**

Where 0 is the target device that is experiencing the fault, and faults is the directory that contains the logged faults.

Look for:

```
/CMM/faultmgmt/0/faults
Targets:
  0 (fault.chassis.sas.comm.fail)

Properties:

Commands:
  cd
  show
```

The fault.chassis.sas.comm.fail fault indicates an expander issue.

### Actions to perform:

- In a situation where you have two NEMs, try resynchronizing the expanders on the NEMs. Do the following:
  1. Use the Sun Blade Zone Manager to remove any host assignments to the faulted NEM after first making notes on the current assignments. For more on using the Sun Blade Zone Manager, refer to [“Assigning Storage to Hosts” on page 9](#).
  2. Remove the faulted NEM. To remove a NEM, refer to the NEM documentation to ensure the NEM is properly configured for removal.
  3. Reinstall the faulted NEM. You must install the faulted NEM into the same slot from which it was removed. Refer to the NEM documentation to ensure the NEM is properly reactivated.

Upon reactivation, the NEM expanders will be resynchronized.

  4. Rerun the Sun Blade Zone Manager to reassign NEM ports based on their previous host assignments.
- You can also try performing a "reset" of the NEM, as follows:
  1. Log into the CMM with administrator privileges.

2. Enter the command:

```
-> cd /CH/BLx
```

Where  $x$  is the number of the blade slot for the storage module.

3. Then, enter the command:

```
-> reset
```

4. Wait for at least 2 minutes, then check the state of the NEM:

```
-> show /CH/NEMx/STATE
```

Where output might look like:

```
/CH/NEM0/STATE
/CH/NEM0/STATE
Targets:

Properties:
  type = Module
  ipmi_name = NEM0/STATE
  class = Discrete Sensor
  value = Running
  alarm_status = cleared
```

```
Commands:
  cd
  show
```

The NEM STATE should be returned to “Running.”

- If, after performing a reset, the STATE sensor goes back to “Running,” but the NEM is still unresponsive, there might still be an issue with how the CMM interprets the state of the NEM SAS expander. Clear the fault by doing the following:

1. Enter the command:

```
-> cd /CH/NEMx
```

Where  $x$  is the number of the blade slot for the NEM.

2. Then, enter the command:

```
-> set clear_fault_state=true
```

3. Then perform a CMM reset.

```
-> cd /CMM
```

4. Enter the command:

```
-> reset
```

This should restore the state.

# NEM Fault LED is On

If you lose access to the storage module from the host and the NEM fault LED comes on, check the following:

- An over-temperature might have occurred. Check to ensure the chassis has proper cooling:
  - That data center air conditioning is on and chassis fans are functioning.
  - That all PCIe EM slots contain either a filler or a PCIe EM card.
  - That all chassis slots have either a blade or filler panel installed.
- An internal component, such as the SAS expander, might be in an error state. Refer to [“SAS Path Disappears and ILOM /CH/NEMx/fault\\_state is “Faulted””](#) on page 98.

## NEM STATE (/CH/NEMx/STATE) is Not “Running”

Under normal circumstances the STATE sensor of the NEM will report that the NEM is “Running.” If the NEM is in another state, you might see that one of the SAS paths to storage module resources is missing (two NEMs are required for a dual path connection to disks).

### What to look for:

The following table provides examples of how the web interface and CLI might look like when the NEM is not in the “Running” state.

CMM ILOM

NEM State is On Line

Web interface

In CMM—>System Monitoring->Components.

System Information

System Monitoring

Power Management

Storage

Configuration

User Management

Sensor Readings

Indicators

Event Logs

### Sensor Readings

View readings for system sensors. Click on a sensor name for more information, including threshold values.

Sensor Readings

Filter: All Sensors

Name	Type	Reading
/CH/NEM0/PRSNT	Entity Presence	Present
/CH/NEM0/STATE	Module	Running
/CH/NEM0/ERR	OEM	Predictive Failure Deasserted
/CH/NEM1/PRSNT	Entity Presence	Present
/CH/NEM1/STATE	Module	On Line
/CH/NEM1/ERR	OEM	Predictive Failure Deasserted
/CH/FM0/F0/TACH	Fan	3700.000 RPM
/CH/FM0/F1/TACH	Fan	3800.000 RPM
/CH/FM0/ERR	Fan	Predictive Failure Deasserted
/CH/FM1/F0/TACH	Fan	3600.000 RPM
/CH/FM1/F1/TACH	Fan	3700.000 RPM

---

CMM ILOM	NEM State is On Line
CLI	<pre> -&gt; show show /CH/NEM1/STATE  /CH/NEM1/STATE Targets:  Properties:   type = Module   ipmi_name = NEM1/STATE   class = Discrete Sensor --&gt;  value = On Line       alarm_status = cleared  Commands:   cd   show </pre>

---

### Things to check:

Confirm that the prepare\_to\_remove\_status is "Not Ready". The NEM should only be in the ready to remove state during a hot plug action. Do the following in the CMM ILOM CLI:

1. Log into the CMM with administrator privileges.
2. Enter the command:  

```
-> cd /CH/NEMx
```

Where *x* is the slot number of the NEM.
3. Check the prepare\_to\_remove\_status by entering the command:

```
-> ls
```

Output might look like:

```

/CH/NEM1
Targets:
  MB
  SAS
  SP
  PRSNT
  STATE
  ERR
  OK
  SERVICE
  OK2RM
  LOCATE

Properties:
  type = Network Express Module
  ipmi_name = NEM1
  system_identifier = SUNSP00212829EE4A

```

```

    fru_name = SUN BLADE 6000 VIRTUALIZED MULTI-FABRIC 10GE NEM M2
    fru_version = FW 3.0.10.16, SAS 5.3.5.0
    fru_part_number = 540-7961-02
    fru_extra_1 = FW 3.0.10.16, SAS 5.3.5.0
    fault_state = OK
    load_uri = (none)
    clear_fault_action = (none)
--> prepare_to_remove_status = NotReady
    prepare_to_remove_action = (none)
    return_to_service_action = (none)

Commands:
    cd
    load
    reset
    set
    show

```

### Actions to perform:

If the `prepare_to_remove_status` is "Ready", the NEM is offline and in a state for hot plug removal. What you do depends on how it got into that state. Bring the NEM back to its "Running" state by doing one of the following:

- If you put the NEM into the "Ready" state by running **prepare\_to\_remove action=true**:
  1. Remove the NEM from the chassis.
  2. Wait 10 seconds or more.
  3. Re-insert the NEM into the chassis.
  4. Press the Attention button.

- If not:

1. Log into the CMM with administrator privileges.
2. Enter the command:
 

```
-> cd /CH/NEMx
```

Where *x* is the slot number of the NEM.
3. Return the NEM to service by entering the command:
 

```
-> set return_to_service_action=true
```
4. Then check that the state has returned to "Running" by entering the command:
 

```
-> show /CH/NEMx
```

It takes several minutes for the state to return to "Running".

Where *x* is the slot number of the NEM. Output might look like:

```

/CH/NEM1/STATE
Targets:

Properties:
    type = Module
    ipmi_name = NEM1/STATE

```



```

-->      class = Discrete Sensor
        value = Running
        alarm_status = cleared

```

```

Commands:
  cd
  show

```

- If the prepare\_to\_remove\_status is "NotReady", but the CH/NEMx/STATE is "On Line". In the CMM ILOM CLI, enter the following commands:

1. Press the Attention button on the NEM and verify that the state is returned to Running, as described above.

Instead, you can enter the command:

```

-> set return_to_service_action=true

```

2. If that does not change the NEM state to "Running", log into the CMM with administrator privileges.

3. Enter the command:

```

-> cd /CH/NEMx

```

Where *x* is the slot number of the NEM.

4. Set the prepare\_to\_remove state to "true" by entering the command:

```

-> set prepare_to_remove_action=true

```

5. Set the return\_to\_service state to "true" by entering the command:

```

-> set return_to_service_action=true

```

This power cycles the NEM and returns the /CH/NEMx/STATE to "Running".

6. To check that the state has returned to "Running", enter the command:

```

-> show /CH/NEMx/STATE

```

Where *x* is the slot number of the NEM.

---

**Note** – It can take several minutes for this action to take effect.

---

The output might look like this:

```

/CH/NEM1/STATE
Targets:

Properties:
  type = Module
  ipmi_name = NEM1/STATE
  class = Discrete Sensor
-->  value = Running
    alarm_status = cleared

Commands:

```

```
cd
show
```

- If there are two NEMs, then the state of this NEM may be inconsistent with the other NEM in the system. To make the NEMs consistent, refer to [“SAS Path Disappears and ILOM /CH/NEMx/fault\\_state is 'Faulted'” on page 98](#).

## NEM /CH/NEMx/OK Indicator is in Standby Blink

Under normal circumstances the STATE sensor of the NEM will report that the NEM is “Running.” If the NEM is in standby mode, you might see that one of the SAS paths to storage module resources is missing (two NEMs are required for a dual path connection to disks).

### Things to check:

If the NEM has just been inserted, check that it has been returned to service. If not, it will not be in the “Running” state.

### Actions to perform:

- Return the NEM to service by pressing the Attention button. Refer to your NEM documentation to locate the Attention button.
- Return the NEM to service by changing the state of “return\_to\_service\_action” to “true” as follows:

1. Log into the CMM with administrator privileges.
2. Enter the command:

```
-> cd /CH/NEMx
```

Where *x* is the slot number of the NEM.

3. Set the return\_to\_service state to “true” by entering the command:

```
-> set return_to_service_action=true
```

This should return the /CH/NEMx/STATE to “Running”.

4. To check that the state has returned to “Running”, enter the command:

```
-> show /CH/NEMx/STATE
```

Where *x* is the slot number of the NEM. Output might look like:

```
/CH/NEM1/STATE
```

```
Targets:
```

```
Properties:
```

```
type = Module
```

```
ipmi_name = NEM1/STATE
```

```
class = Discrete Sensor
```

```
--> value = Running
```

```
alarm_status = cleared
```

Commands :  
cd  
show



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---

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