



Sun Blade™ 6000 10GbE Multi-Fabric Network Express Module User's Guide

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Preface

This guide explains how to install and configure the Sun Blade™ 6000 10GbE Multi-Fabric Network Express Module (NEM) in a Sun Blade 6000 Modular System. These instructions are designed for enterprise system administrators with experience installing network hardware and software.

How This Document Is Organized

[Chapter 1](#) provides an overview of the role the Sun Blade 6000 10GbE Multi-Fabric NEM plays in a Sun Blade 6000 Modular System.

[Chapter 2](#) describes the features of the Multi-Fabric NEM.

[Chapter 3](#) explains how to install and remove the Multi-Fabric NEM, including how to verify that the installation was successful. This chapter also explains how to install and remove optical transceiver modules in the 10GbE ports.

[Chapter 4](#) provides instructions on how to monitor and control Multi-Fabric NEMs (as well as Sun Blade 6000 Disk Module) in an ILOM proxy program.

[Chapter 5](#) describes the Common Array Manager (CAM) software in general. Of particular interest, it explains how to use CAM with disk blades and Multi-Fabric NEMs.

Using UNIX Commands

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

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

<http://docs.sun.com>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

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

Related Documentation

Application	Document
New information about the 10GbE NEM	<i>Sun Blade 10GbE Multi-Fabric Network Express Module Product Notes, 820-4779</i>
Chassis information	<i>Sun Blade 6000 Modular System Product Notes, 820-0055</i> <i>Sun Blade 6000 Modular System Installation Guide, 820-0050</i>
Disk module information	<i>Sun Blade 6000 Disk Module Configuration Guide, 820-6547</i> <i>Sun Blade 6000 Disk Module Administration Guide, 820-1702</i>
Multi-Fabric NEM+ information	<i>Sun Blade 6000 Multi-Fabric Network Express Module User's Guide, 820-1705</i>
System Monitoring and management	<i>Sun Integrated Lights Out Manager (ILOM) 2.0 User's Guide, 820-1188</i> <i>Addendum to the Sun Integrated Lights Out Manager (ILOM) 2.0 User Guide, 820-4198</i>

These documents are available at:

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

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Sun Function	URL
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Sun Blade 6000 10 GbE Multi-Fabric Network Express Module User's Guide, Sun part number: 820-3896-12.

Introduction

The Sun Blade 6000 10GbE Multi-Fabric Network Express Module (NEM) is a multi-purpose connectivity module for the Sun Blade 6000 Modular System. Its primary function is to connect server blades in a Sun Blade 6000 Modular System chassis with disk blades in the same chassis.

In addition, the 10GbE Multi-Fabric NEM supports connection to external devices through 10GbE SPF+ ports and 10/100/1000 twisted-pair Ethernet (TPE) ports.

This chapter contains the following topics:

- [“Terminology” on page 2](#)
- [“Overview of the 10GbE Multi-Fabric NEM” on page 2](#)
- [“Physical Appearance of the 10GbE Multi-Fabric NEM” on page 3](#)

For additional details on the internal server-to-SAS disk interconnect feature, see the *Sun Blade 6000 Disk Module Administration Guide*.

Note – If you haven’t already read the *Sun Blade 6000 Disk Module Configuration Guide*, you should do so before proceeding with this manual.

Terminology

The following terms are used in this document:

chassis	The Sun Blade 6000 Modular System blade enclosure.
disk module (or disk blade)	The Sun Blade 6000 Disk Module. The terms <i>disk module</i> and <i>disk blade</i> are used interchangeably.
server module (or server blade)	Any server module (blade) that will interoperate with a disk module (blade). Examples are the Sun Blade X6220, X6240, X6250, X6440, X6450, T6300, and T6320 server modules. The terms <i>server module</i> and <i>server blade</i> are used interchangeably.
10GbE Multi-Fabric NEM	The Sun Blade 6000 10GbE Multi-Fabric Network Express Module that plugs into a Sun Blade 6000 chassis (abbreviated 10GbE Multi-Fabric NEM).
Multi-Fabric NEM	A generic term that applies to any Network Express Module that provides a variety of interconnect options to server blades in a chassis. The 10GbE Multi-Fabric NEM is one example.
SAS-NEM	A generic term that applies to any Network Express Module that supports SAS connectivity. The subject of this document is one example of a SAS-NEM.
SAS-NEM-10GbE	Another term for the 10GbE Multi-Fabric NEM. It is used by NEM management software to identify instances of this product it has found installed in the chassis.
NEM 0, NEM 1	Terms used by NEM management software to identify Multi-Fabric NEMs occupying NEM slots in the chassis.

Overview of the 10GbE Multi-Fabric NEM

The 10GbE Multi-Fabric NEM can be installed in either one or both of the NEM slots in the Sun Blade 6000 Modular System chassis. It can be installed or removed while power is applied to the chassis.

TABLE 1-1 identifies the connectivity capabilities of the 10GbE Multi-Fabric NEM as well as its system power and cooling specifications.

TABLE 1-1 10GbE Multi-Fabric NEM Connector and Power Specifications

Feature	Quantity
SAS connections between server modules and disk modules	10 (internal)
10GbE SFP+ ports	10
10/100/1000 twisted pair Ethernet (TPE); RJ-45 connectors	10
SAS ports	Not currently used
Power consumption	47 Watts
Cooling	Passive. Directed from modular system chassis fans.

Physical Appearance of the 10GbE Multi-Fabric NEM

FIGURE 1-1 illustrates the physical layout of the 10GbE Multi-Fabric NEM.

FIGURE 1-1 10GbE Multi-Fabric NEM Physical View

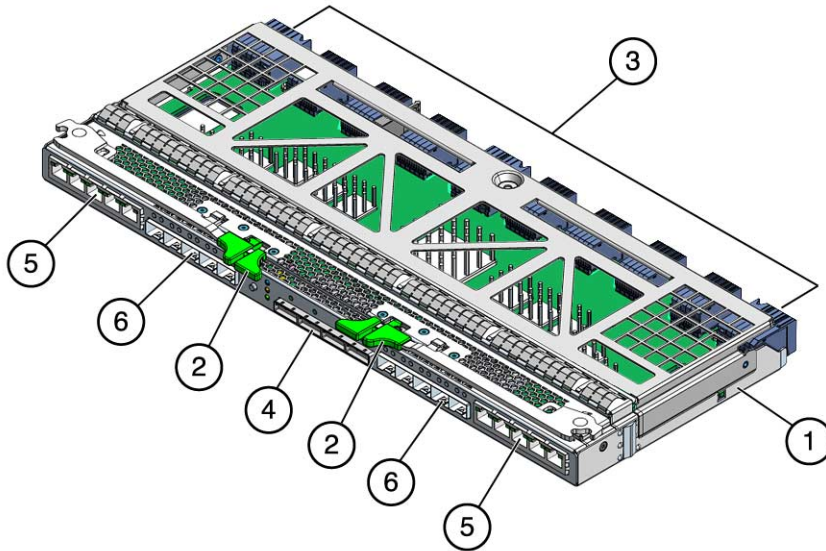


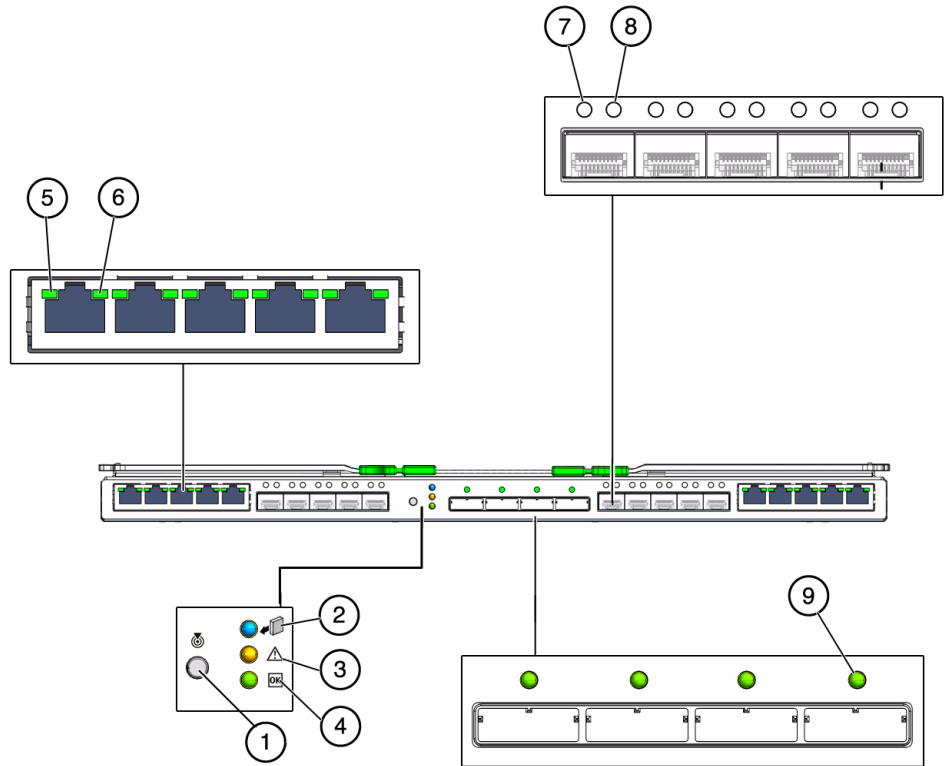
Figure Legend

1	NEM chassis	4	External SAS ports 4 x4 (not currently used)
2	Ejector levers	5	10/100/1000 TPE; RJ-45 connectors (10)
3	Midplane connectors (10)	6	10GbE connectors; SFP+ modules (10)

Front Panel Layout

[FIGURE 1-2](#) shows the front panel of the 10GbE Multi-Fabric NEM, as viewed from the rear of the chassis. Refer to and for descriptions of LED behavior.

FIGURE 1-2 10GbE Multi-Fabric NEM Front Panel



The 10GbE Multi-Fabric NEM LEDs

The four LEDs grouped together near the center of the panel show status information for the 10GbE Multi-Fabric NEM as a whole. They are called out as items 1 through 4 in [FIGURE 1-2](#). Their meaning is explained in [TABLE 1-2](#).

TABLE 1-2 10GbE Multi-Fabric NEM LEDs

LED Name	Description
1 Locate button and LED (white)	Use this button and LED to single out this module in a chassis containing multiple module. <ul style="list-style-type: none"> - To turn on the Locate LED, push and release this button. It will blink for 2. - To turn off the Locate LED, push and release the button. - Hold down the button for 5 seconds to initiate a “push-to-test” mode. This illuminates all LEDs for 15 seconds.
2 Ready-to-Remove LED (blue)	This LED is not used.
3 Module Fault LED (amber)	This LED has two states: <ul style="list-style-type: none"> - Off: No fault. - On: A fault condition has been detected; Service Action is Required.
4 Module Activity LED (green)	This LED has three states: <ul style="list-style-type: none"> - Off: The NEM is offline. - On: The NEM is online. - Slow blinking (1 Hz at 50% duty cycle): The NEM is booting or configuring (a flash update is in progress).

Ethernet Port LEDs

Each Ethernet port has two LEDs. The left LED is green and lights to show that a link has been established. It blinks off randomly whenever there is network activity on that port.

On the RJ-45 connectors, the right LED is bi-color (amber and green) and indicates the speed of connection by the color it displays. When the port is operating at 100 megabits per second, the right LED displays one color. When operating at 1000 megabits per second, it displays the other color. When operating at 10 megabits per second, the right LED is off. The green/amber color scheme varies from one server blade to another. [TABLE 1-3](#) provides a chart for interpreting the Link-speed relationships.

TABLE 1-3 LED Colors for the Link-Speed LEDs for Each Server Blade

Sun Blade Server Model	10 MbE (Right LED)	100 MbE (Right LED)	1000 MbE (Right LED)
X6220	off	Amber	Green
X6250	off	Amber	Green
X6450	off	Amber	Green
T6300	off	Green	Amber
T6320	off	Green	Amber
T6340	off	Amber	Green

When an Ethernet port is connected to an x64 server blade that has been put in Wake-on-LAN (WOL) mode, the Link LED will indicate when the system is in standby mode. It does this by blinking in a repeating, non-random pattern. It flashes ON for 0.1 second and OFF for 2.9 seconds. In standby mode, the system is functioning at a minimal level and is ready to resume full activity.

Note – SPARC-based server blades do not support the WOL mode. When an Ethernet port is connected to a SPARC server blade, the Link LED will behave as described in [TABLE 1-3](#).

Installing a Sun Blade 6000 10GbE Multi-Fabric NEM For the First Time

This chapter explains how to install a Sun Blade 10GbE Multi-Fabric NEM into a Sun Blade 6000 system chassis when it is not replacing another SAS-NEM. It also describes how to install and remove SFP+ optical transceivers in the 10 GbE ports.

Note – Instructions for removing an existing 10GbE Multi-Fabric NEM and installing a replacement module are provided in [Chapter 3](#).

This chapter contains the following sections:

- “Installing a 10GbE Multi-Fabric NEM” on page 9
- “Verifying Installation of the 10GbE Multi-Fabric NEM” on page 11
- “Installing SFP+ Optical Transceiver Modules” on page 14



Caution – Damage to the NEM can occur as the result of careless handling or electrostatic discharge (ESD). Always handle the NEM with care to avoid damage to ESD-sensitive components. To minimize the risk of electrostatic damage, Sun strongly recommends that you use both a workstation antistatic mat and an antistatic wrist strap.

Installing a 10GbE Multi-Fabric NEM

You can install either one or two Multi-Fabric NEMs in the chassis. If you install only one module and both NEM0 and NEM1 are empty, install the module in NEM0.

Ensure that the CMM has the latest ILOM firmware before you install the 10GbE Multi-Fabric NEM. See the Sun Blade 6000 10GbE Multi-Fabric Network Express Module Product Notes for the latest firmware and patch information.

If you are installing the 10GbE Multi-Fabric NEM in an empty chassis slot, it is likely to be covered by a NEM filler panel, which you will need to remove.

Caution – If you are performing a hot-plug installation, do not leave an empty chassis slot uncovered for more than 60 seconds. Whenever an empty NEM or blade slot is left open, airflow within the chassis becomes less efficient. If left in this state for too long, the chassis interior can overheat.

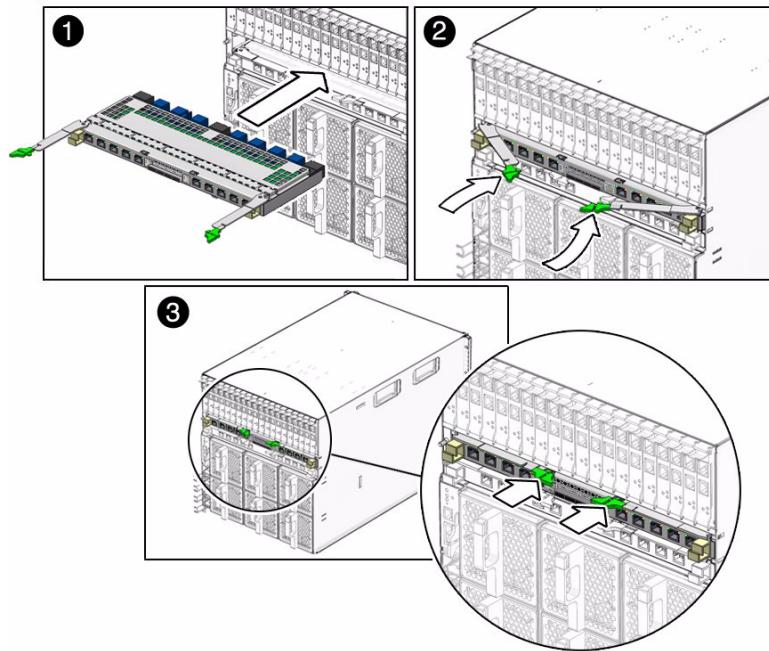
▼ To Install a 10GbE Multi-Fabric NEM

The following steps are illustrated in [FIGURE 2-1](#).

- 1. Unpack the NEM from the box.**
- 2. Align the NEM with the chassis slot and ensure that the following conditions are in effect:**
 - NEM ejector levers are fully opened
 - NEM ejector levers are on the top of the module
- 3. Slide the NEM into the vacant NEM chassis slot until you feel it stop.**

Support the bottom of the NEM with one hand.
- 4. Close the ejector levers to secure the NEM in the chassis.**

FIGURE 2-1 Installing a 10GbE Multi-Fabric NEM



Verifying Installation of the 10GbE Multi-Fabric NEM

You can verify correct installation of the 10GbE Multi-Fabric NEM using the ILOM command-line interface (CLI).

Use either one of the following methods to connect to the ILOM CLI:

- Connect a terminal or PC running a terminal emulator directly to the CMM serial port on your chassis.
- Connect to the chassis Ethernet network management port using a secure shell.

Instructions for setting up and using ILOM are documented in the *Sun Integrated Lights Out Manager 2.0 User's Guide*, and the *Integrated Lights Out Manager Administration Guide for the Sun Blade 6000 Modular System*. A link to this documentation is available at:

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

Note – The 10GbE Multi-Fabric NEM is automatically detected when it is inserted into the chassis.

▼ To Verify Installation Using the ILOM CLI

1. Access the CMM ILOM in a terminal window.
2. When you are logged in, enter either `show /CH/NEM0` or `show /CH/NEM1`, depending on which slot you used when installing the 10GbE Multi-Fabric NEM.

The CLI will display information about the NEM and the NEM Field Replaceable Unit (FRU), as shown here. It will also list commands that can be used in the current context.

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

Properties:
  type = Network Express Module
  fru_name = SUN BLADE 6000 10GBE MULTI-FABRIC NEM
  fru_part_number = 501-7935-02
  fru_serial_number = 0000000-7001C003K

Commands:
  cd
  show
```

3. You can also enter `show /CH/NEM0/SEEPROM` or `show /CH/NEM1/SEEPROM`.

The CLI will display information about the NEM SEEPROM, as shown here.

```
-> show /CM/NEM0/SEEPROM
Targets:

Properties:
  type = PROM
  chassis_part_number = XXX-XXXX-XX
  chassis_serial_number = 0000000-0000000000
  product_name = NETWORK EXPRESS MODULE
  product_part_number = 000-0000-00
  product_serial_number = 0000000000
  product_version = (none)
```

```
product_manufacturer = SUN MICROSYSTEMS
fru_name = SUN BLADE 6000 10GBE MULTI-FABRIC NEM
fru_part_number = 501-7935-02
fru_serial_number = 0000000-7001c003K
```

```
Commands:
  cd
  show
```

4. If the NEM does not appear in ILOM CLI output, verify that the NEM is properly seated in the chassis and verify that you have installed the latest CMM ILOM firmware.

See the *Sun Blade 6000 Disk Module Administration Guide* for information on firmware version and associated patch requirements.

▼ To Verify Installation With the CMM ILOM Web Interface

1. In a web browser, type the IP address of the CMM in the location bar.
2. From the CMM ILOM left navigation bar, select CMM.
The window shows a list of all the components installed in the chassis (see [FIGURE 2-2](#)). The /CH/NEM0 and /CH/NEM1 modules appear near the bottom of the window.
3. Select Components from the second row of tabs.
4. If the NEM you just installed does not appear in ILOM output, verify that it is properly seated in the chassis and verify that you have installed the latest CMM ILOM firmware.

See the *Sun Blade 6000 10GbE Multi-Fabric Network Express Module Product Notes* for information on firmware version and associated patch requirements.

FIGURE 2-2 CMM ILOM Screen for Viewing NEM Information

Sun™ Integrated Lights Out Manager

- Chassis
 - CMM**
 - Blade 0
 - Blade 1
 - Blade 2
 - Blade 3
 - Blade 4
 - Blade 5
 - Blade 6
 - Blade 7
 - Blade 8
 - Blade 9

System Information | **System Monitoring** | **Configuration** | **User Management**

Versions | Session Time-Out | Components | Identification Information

Component Management

View component information from this page. To view further details, click Component Name.

Component Management Status

Component Name	Type
/CH	Chassis
/CH/CMM	Chassis Monitoring Module
/CH/CMM/NET0	Network Interface
/CH/CMM/SP	Service Processor
/CH/CMM/MB	Motherboard
/CH/BL0	Blade
/CH/BL0/SP	Service Processor
/CH/BL0/SEEPROM	PROM
/CH/NEMO	Network Express Module

Installing SFP+ Optical Transceiver Modules

To use a 10GbE port for external connections, you must first equip it with an SFP+ optical transceiver, as described below.

▼ To Install an SFP+ Optical Transceiver Module

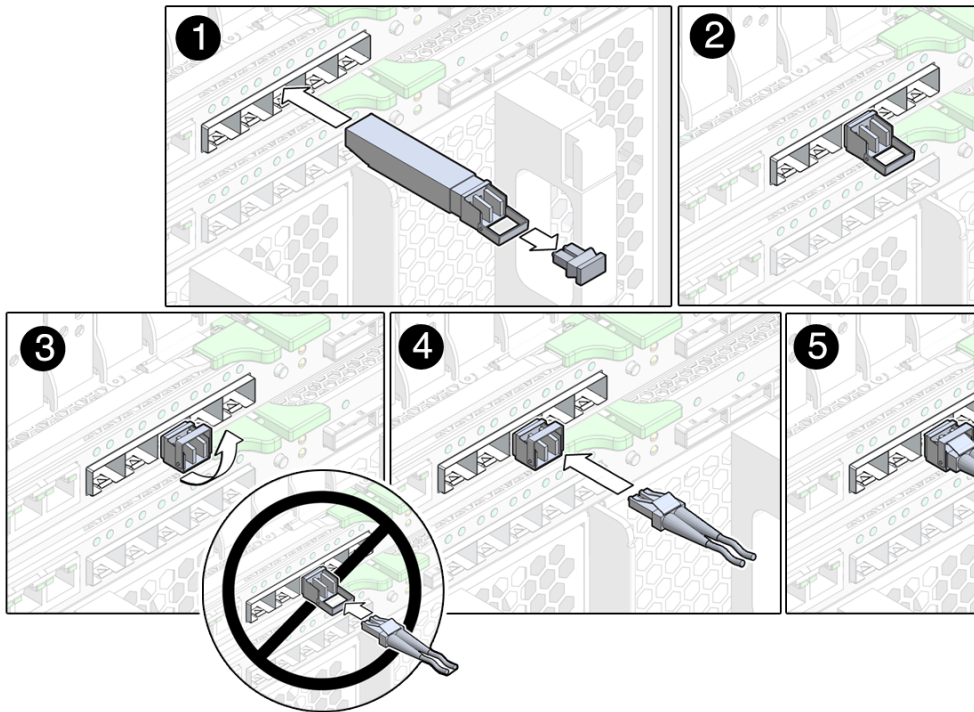
The following steps are illustrated in [FIGURE 2-3](#).

- 1. Pull the optical transceiver module's locking handle into a full horizontal position until you feel the handle click into position.**
Remove the protective end cap from the module.
- 2. Hold the optical transceiver by its edges and align it with the slot in the 10GbE port and slide it into the opening until it is firmly seated.**
- 3. Lift the locking handle up and push it closed. This locks the optical transceiver module in place.**

Note – If you happen to pull the locking handle down when the **optical transceiver module** is installed, you should remove the module entirely and re-install it. The handle operates an internal lock. Pulling the handle down can disconnect the **optical transceiver** module, even though it might appear to be connected.

- 4. Insert the optical cables into the optical transceiver module.**

FIGURE 2-3 Installing SPF+ Modules

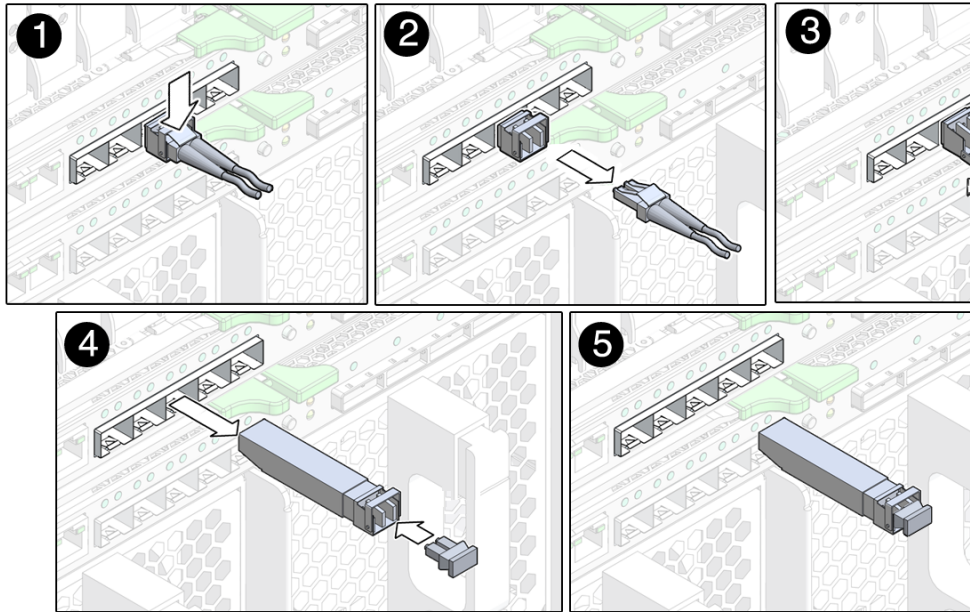


▼ To Remove an SFP+ Optical Transceiver Module

The following steps are illustrated in [FIGURE 2-4](#).

1. Press the optical cable connector latch down and remove the cable.
2. Pull down the optical transceiver's locking handle module into a full horizontal position until you feel the handle click into position.
3. Slide the optical transceiver out of the 10GbE slot.
4. If you plan to store the optical transceiver module, replace its protective end cap.

FIGURE 2-4 Removing an SPF+ Module



Replacing a Sun Blade 6000 10GbE Multi-Fabric NEM

This chapter explains how to remove an existing 10GbE Multi-Fabric NEM and install another in its place.



Caution – Damage to the NEM can occur as the result of careless handling or electrostatic discharge (ESD). Always handle the NEM with care to avoid damage to ESD-sensitive components. To minimize the risk of electrostatic damage, Sun strongly recommends that you use both a workstation antistatic mat and an antistatic wrist strap.

Replacing a 10GbE Multi-Fabric NEM

If an Multi-Fabric NEM fails, you will need to replace it.



Caution – The NEM should be replaced immediately after it fails.

The Multi-Fabric NEM is a Customer Replaceable Unit (CRU). You replace the entire module. There are no subcomponents that you can replace.

You can remove and replace a 10GbE Multi-Fabric NEM from a powered-on chassis using a hot-swap operation, as well as from a powered-off chassis.



Caution – Before you remove the NEM from the chassis, you should pause or shut down any active I/O that passes through the NEM.

Note – The blue Ready to Remove LED on the NEM is not operational. To help identify a NEM that you plan to remove, you can illuminate the white Locate LED using the proxy CLI. For more information, see [“ILOM Proxy Program for the Multi-Fabric NEM”](#) on page 22.

▼ To Replace a 10GbE Multi-Fabric NEM



Caution – If you are replacing the NEM while power is applied to the chassis, be sure to have a NEM filler panel ready for use before you remove the NEM. The NEM slot must not be left uncovered for more than a minute while power is active in the chassis.

1. Label all the cables so you can reconnect them in the same location.
2. Disconnect all cables from the NEM.
3. Press together and hold the ejector buttons on both the right and left ejector levers.
4. Open the ejector levers by extending them outward until they stop.
5. Hold the opened ejector levers and pull the NEM out.
6. Insert the new Multi-Fabric NEM into the chassis.
7. Reconnect all the cables in their original locations.

ILOM for 10GbE Multi-Fabric Network Express Modules

This chapter contains these topics:

- [“ILOM on the CMM” on page 21](#)
- [“Starting the Proxy CLI Program” on page 22](#)
- [“Navigation Within the Proxy Program” on page 24](#)
- [“What You Can See in the Proxy CLI” on page 26](#)
- [“What You Can Set or Change in the Proxy CLI” on page 26](#)
- [“LED Controls With ILOM proxy” on page 27](#)

ILOM on the CMM

A *proxy* ILOM CLI program is provided on the CMM to augment the core ILOM program’s limited ability to manage Multi-Fabric NEMs and disk blades. The following list summarizes the core ILOM program’s capabilities with respect to Multi-Fabric NEMs and disk blades:

- The ILOM graphical user interface recognizes the presence of Multi-Fabric NEMs but does not interact with them.
- The ILOM CLI can retrieve FRU and SEEPROM information from Multi-Fabric NEMs, but does not provide any diagnostic information. Instructions for using ILOM to access FRU and SEEPROM data are given in [“Verifying Installation of the 10GbE Multi-Fabric NEM” on page 11](#).
- ILOM generates logs that record if a Multi-Fabric NEM is inserted, removed, powered up, or powered down.

A log entry is also generated if the SERVICE LED turns on or off. The SERVICE LED is turned on for an over-temperature or over-voltage condition.

The CMM CLI's `show` command allows you to access the CMM log for the Multi-Fabric NEMs, disk blades, or server blades:

```
-> show /CMM/logs/event/list
```

Note – A sudden over-voltage or over-temperature surge powers off the Multi-Fabric NEM. When a module powers off in this way, the SERVICE LED is also turned off. The SERVICE condition is recorded in the log, however.

To take advantage of the module management capabilities offered by the proxy ILOM CLI, verify that you have the latest version of the proxy program installed. Refer to the *Sun Blade 6000 Disk Module Configuration Guide* for details about Multi-Fabric NEM software and firmware requirements.

ILOM Proxy Program for the Multi-Fabric NEM

You start the proxy program through the ILOM CLI. You can connect to the ILOM CLI by either of two methods:

- Connect a terminal or PC running a terminal emulator directly to the CMM serial port on your chassis.
- Connect to the Ethernet network management port using a secure shell (SSH).

Starting the Proxy CLI Program

Prerequisite: To start the proxy CLI, a SAS-NEM-10Gbe module must be installed in the chassis in either NEM slot 0 or NEM slot 1.

Connect to the ILOM CLI and then start the proxy CLI with the `start` command, as shown here:

```
-> start /CH/NEM0/SAS/cli
```

If there are two SAS-NEM-10Gbe modules installed, you can specify the NEM1 slot instead.

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

Note – Proxy CLI commands are case-sensitive.

When you start the proxy CLI, the program returns a list of all the SAS-NEM-10Gbes and disk modules in the system. The list ends with the proxy prompt `->`. This is an example of the list you would see:

```
-> start /CH/NEM0/SAS/cli
Are you sure you want to start /CH/NEM0/SAS/cli (y/n)? y
Found SAS-NEM-10Gbe in NEM slot 0
Found SAS-NEM-10Gbe in NEM slot 1
Welcome to proxy CLI on slot 0
proxy ->
```

The ten blade slots (BL0 through BL9) can be used for both server modules and disk modules. By default, server modules are always installed in even-numbered slots. Each disk blade is paired with a single server blade and is installed in the odd-numbered slot to the right of its server blade.

Note – The proxy CLI program output does not include server blades.

Using the Proxy CLI to Manage SAS-NEM-10Gbe Modules and Disk Modules

The proxy CLI command set enables you to perform the following operations:

- Navigate through a tree consisting of all the SAS-NEM-10Gbe modules and disk modules installed in the chassis
- Start and stop individual SAS-NEM-10Gbes and disk modules
- Set property values for individual SAS-NEM-10Gbes and disk modules
- Get information about the CLI
- Exit the CLI

Note – The components shown in the tree are referred to as *targets*.

TABLE 4-1 Proxy ILOM CLI Command Summary

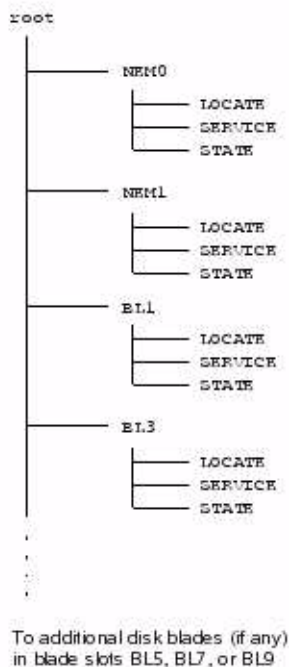
Command	Description
show [<i>target-name</i>]	Use <code>show</code> without an argument to see the contents of the current target. Use <code>show</code> with a target name to see the contents of the specified SAS-NEM-10Gbe or disk module.
ls [<i>target-name</i>]	Same behavior as <code>show</code> .
cd <i>target-name</i>	Use <code>cd</code> to change the current target to the specified SAS-NEM-10Gbe or disk module.
pwd	Use <code>pwd</code> to discover the name of the current target.
start [<i>target-name</i>]	Use <code>start</code> without an argument to power on the current target. Use <code>start</code> with a target name to power on the specified SAS-NEM-10Gbe or disk module.
stop [<i>target-name</i>]	Use <code>stop</code> without an argument to power off the current target. Use <code>stop</code> with a target name to power off the specified SAS-NEM-10Gbe or disk module.
reset [<i>target-name</i>]	Use <code>reset</code> without an argument to power off and then power on the current target. Use <code>reset</code> with a target name to power off and then power on the specified SAS-NEM-10Gbe or disk module.
set <i>property value</i>	Use <code>set</code> to change the value of the specified property.
exit	Use <code>exit</code> to leave the proxy CLI and return to the ILOM CLI.
help	Use <code>help</code> to display the help screen.
version	Use <code>version</code> to print the version of the proxy program.

Navigation Within the Proxy Program

The proxy CLI's navigation commands enable you to navigate through a tree that lists all the SAS-NEM-10Gbes and disk modules contained in the chassis. These commands mimic standard Linux and UNIX commands such as `cd` and `pwd`.

[FIGURE 4-1](#) shows an example of the component tree displayed by the proxy CLI.

FIGURE 4-1 Proxy CLI Tree of Targets



You can use the following commands to navigate through the tree:

- `show` (with no argument) -- Shows contents of “current target.” Lists targets directly beneath the current target, properties of the current target, and available proxy commands.
- `show` (with argument) -- Shows contents of the specified target
- `ls` -- Same as `show` (with or without argument)
- `cd` (with argument) -- Change “current target” to that of the specified target. For example, `cd NEM1` or `cd ../NEM1`
- `pwd` (with no argument) -- Determine where you are in the tree of targets
- `cd /` -- Return to the root of the tree of targets

You can use the following commands on module targets:

- `start` -- Power on the current target or the specified target
- `stop` -- Power off the current target or the specified target
- `reset` -- Power off, then power on the current target or the specified target

You can use the following command on property targets:

- `set` - Change the value of the specified property to the given value

You can use the following commands at any time:

- `exit` -- Leave the proxy CLI and return to the CMM CLI
- `help` -- Show the help screen
- `version` -- Print the version of the proxy program

What You Can See in the Proxy CLI

The proxy CLI allows you to view the following:

- View and navigate Multi-Fabric NEM and Sun Blade 6000 Disk Module chassis locations.
- View the values of the LOCATE and SERVICE LEDs on the Multi-Fabric NEMs and Sun Blade 6000 Disk Modules.
- View the current version of AMI MG9073S firmware on Sun Blade 6000 Disk Modules.
See the Sun Blade 6000 Disk Module documentation for details.
- View the values of the LOCATE and SERVICE LEDs.
- View the state sensor status on the Multi-Fabric-NEMs and Sun Blade 6000 Disk Modules

What You Can Set or Change in the Proxy CLI

This CLI enables you to set or change the following conditions:

- Stop or start the Multi-Fabric NEM or disk blade with the `stop` and `start` commands.

You can achieve the same result by setting the `power_state` property to `off` or `on`.
For example:

```
-> set power_state=off
```

- Reset the Multi-Fabric NEM or disk blade
- Turn the LOCATE LED on and off

When you are done using the proxy CLI, use the `exit` command to return to the CMM CLI prompt.

LED Controls With ILOM proxy

The CLI proxy program controls only one LED directly. You can turn the LOCATE LED on (`set value=fast_blink`) or off (`set value=off`).

The POWER and SERVICE LEDs are both under control of the expander firmware running on the disk blade or SAS-NEM-10Gbe. You can view these LEDs from the CLI proxy program, but you cannot change them directly.

The POWER LED reflects the `power_state` property, and you can change the `power_state` property with the `set` command.

The SERVICE LED is turned on when over-temperature or over-voltage conditions occur.

For more information about LED states see [TABLE 1-2](#) and [TABLE 1-3](#).

Common Array Manager

This chapter contains the following sections:

- [“Enclosure Management Overview” on page 29](#)
- [“CAM Software Overview” on page 30](#)
- [“Obtaining CAM Software” on page 31](#)
- [“Using CAM With Disk Blades and Multi-Fabric NEMs” on page 31](#)

Enclosure Management Overview

Your Sun Blade 6000 Multi-Fabric NEM supports a powerful set of enclosure management features that are accessible from a management client based on SES-2 (SCSI Enclosure Services). These features are available through the management software called the Sun Common Array Manager (CAM), which provides a system administrator with the following capabilities:

- Event and fault monitoring
- Email alert notification
- FRU identification and status
- Enclosure reset
- Enclosure firmware upgrade
- Fault isolation
- Service Advisor wizard for problem resolution
- Sun Auto Service Request (ASR) uses fault telemetry 24/7 to automatically initiate a service request and begin the problem resolution process as soon as a problem occurs

CAM Software Overview

CAM is a software application that allows you to manage SAS-NEM-10Gbe modules and disk blades in a chassis from one central point. It is written in Java so you can run it on any platform.

Note – CAM operates primarily through disk blades. SAS-NEM-10Gbe modules are managed as if they were subcomponents of the disk blades. To use CAM in the Sun Blade 6000 Modular System, you must register the disk blades in the chassis. You cannot register a SAS-NEM-10Gbe. However, if at least one disk blade is registered, the SAS-NEM-10Gbe modules will be visible to CAM and CAM can monitor them and update their expander firmware. This chapter is written around managing a disk blade because that is the way that CAM works. Management of your SAS-NEM-10Gbe modules occurs indirectly through disk blade management.

In a Sun Blade 6000 chassis, one server blade should be chosen to host the CAM software.

CAM Agent

A second piece of software, called the CAM Agent, must be installed on every server blade that connects to a disk blade. The agent software is OS dependent. There are versions for Linux, Solaris, and Windows.

Note – When a server blade connects to a disk blade, an additional CAM Agent plug-in is required for CAM to recognize the disk blade.

The CAM Agent communicates with the disk module through the server blade's SAS host bus adapter. Both LSI and Adaptec controllers are supported.

At the initial release of the Sun Blade 6000 Disk Module, the most important functionality of CAM is firmware management. The CAM Agent can report the current versions of expander firmware and can update the expander firmware on both the disk module and the SAS-NEM-10Gbe module.

The CAM Agent can monitor temperature and voltage on both the disk blade and the SAS-NEM-10Gbe module.

It can also present the topology of your system and report FRU IDs.

Problem Resolution

CAM provides two helpful tools for resolving problems that might occur with the array.

- Auto Service Request (ASR) monitors the array system's health and performance and automatically notifies the Sun Technical Support Center when critical events occur. Critical alarms generate an Auto Service Request case. These notifications enable Sun Service to respond faster and more accurately to critical on-site issues.

To participate in the ASR service, you must provide Sun online account information to enroll your CAM software. After you enroll CAM with ASR, you can choose which arrays you want to be monitored and enable them individually.

- Service Advisor is a troubleshooting wizard that provides information and procedures for replacing array components.

Obtaining CAM Software

Support for the Sun Blade 6000 Disk Module, Sun Blade 6000 Multi-Fabric NEM, and Sun Blade 6000 10GbE Multi-Fabric NEM is available beginning with CAM version 6.1.2. To obtain the latest CAM software and expander firmware, go to the Sun software download site:

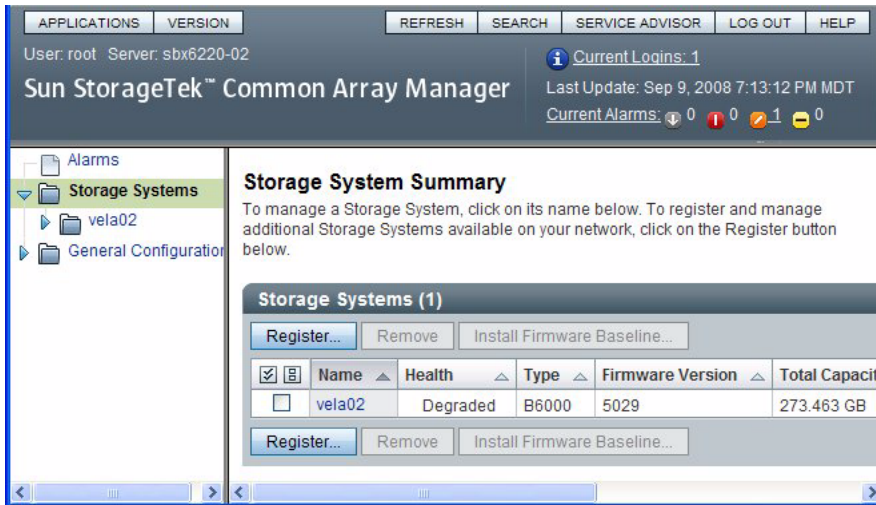
<http://www.sun.com/download/index.jsp>

Click on the tab View by Category, and then choose Systems Administration > Storage Management. Look for the latest version of the StorageTek Common Array Manager (CAM) Software. It must be at least version 6.1.2.

Using CAM With Disk Blades and Multi-Fabric NEMs

CAM provides both a browser and command-line interface. When using the browser interface, you set up user accounts. When an authorized user logs in, information is laid out in pages. A handy navigation tree lists available information. See [FIGURE 5-1](#).

FIGURE 5-1 Example of CAM Storage System Summary and Navigation Tree



You use the navigation tree on the left to move among pages within an application. You can click a link to get details about a selected item (such as alarms, FRUs, events, or array health). You can also sort and filter information displayed on a page. When you place your pointer over a button, tree object, link, icon, or column, a tool tip provides a brief description of the object.

Monitoring Component Health

CAM can monitor voltage and temperature on installed disk blades and Multi-Fabric NEMs and can raise alarms (including notification) when thresholds are exceeded. Choose the Array Health Monitoring item from the navigation tree to learn about this capability.

The monitoring capabilities of CAM are fully documented elsewhere. Refer to the Sun StorageTek Common Array Manager User Guide for the J4000 Array Family. This document can be found at:

<http://docs.sun.com/app/docs/prod/stor.armgr#hic>

Note – CAM also has extensive online documentation that you can access using the Help button in the upper right of the browser interface.

Upgrading Expander Firmware

Both the Sun Blade 6000 Disk Module and the Sun Blade 6000 Multi-Fabric NEM enclosures contain SAS expanders with upgradable firmware. You should keep this firmware at the latest released versions. CAM includes firmware upgrade capabilities for these components.

Note – The Sun Blade 6000 Disk Module, Sun Blade 6000 Multi-Fabric NEM, and Sun Blade 6000 10GbE Multi-Fabric NEM must always be upgraded to the same firmware revision level.

▼ To Upgrade Expander Firmware

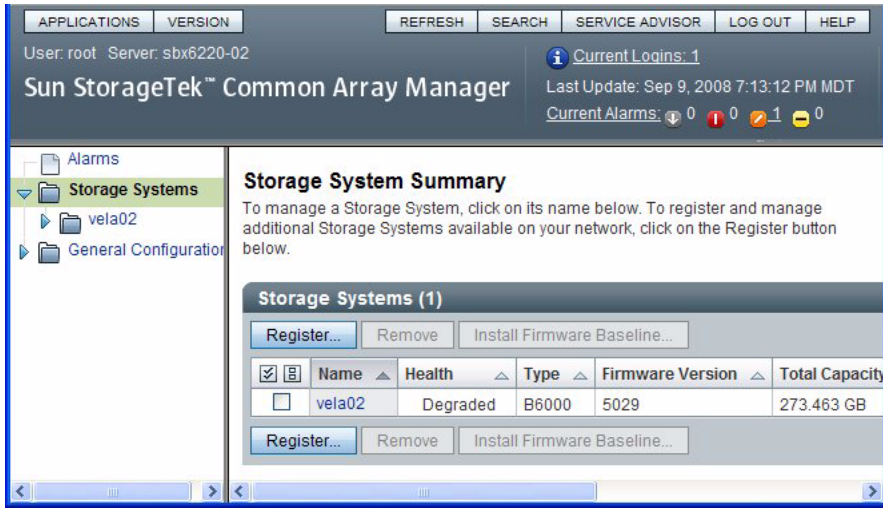
This procedure assumes that you have already registered your disk blades using the CAM interface.

Note – Registering the disk blades automatically makes CAM aware of the Multi-Fabric NEMs.

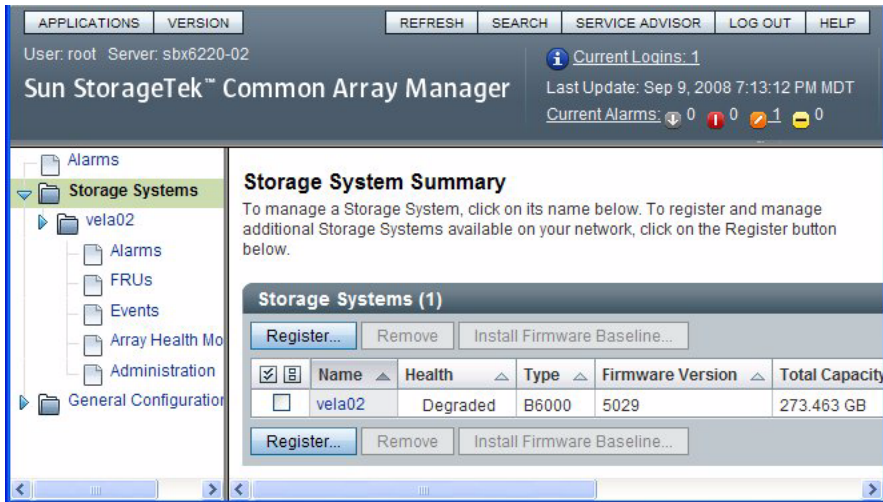
1. Open the CAM browser interface on the server that hosts the CAM software.

You see the registered storage systems listed in the opening summary page. In this example, there is only one registered storage system, a disk blade registered with the name “vela02.”

You can see that vela02’s health is degraded and also that there is a major (orange) alarm in the Current Alarms list.

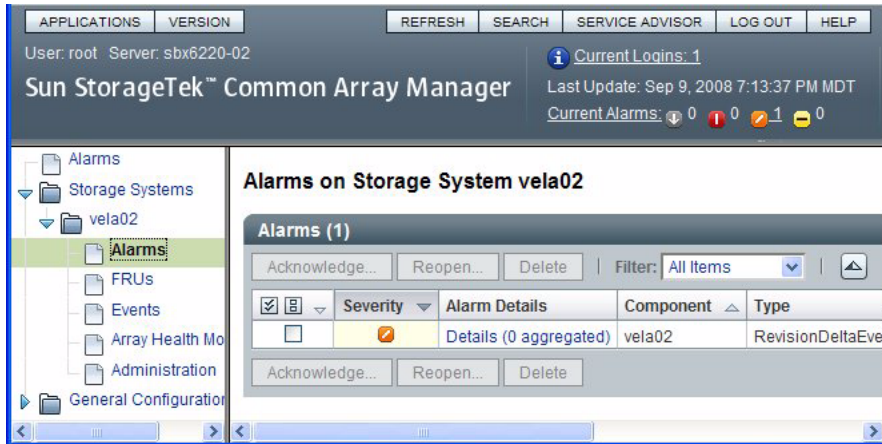


2. Click the arrow to expand **vela02** in the navigation tree.



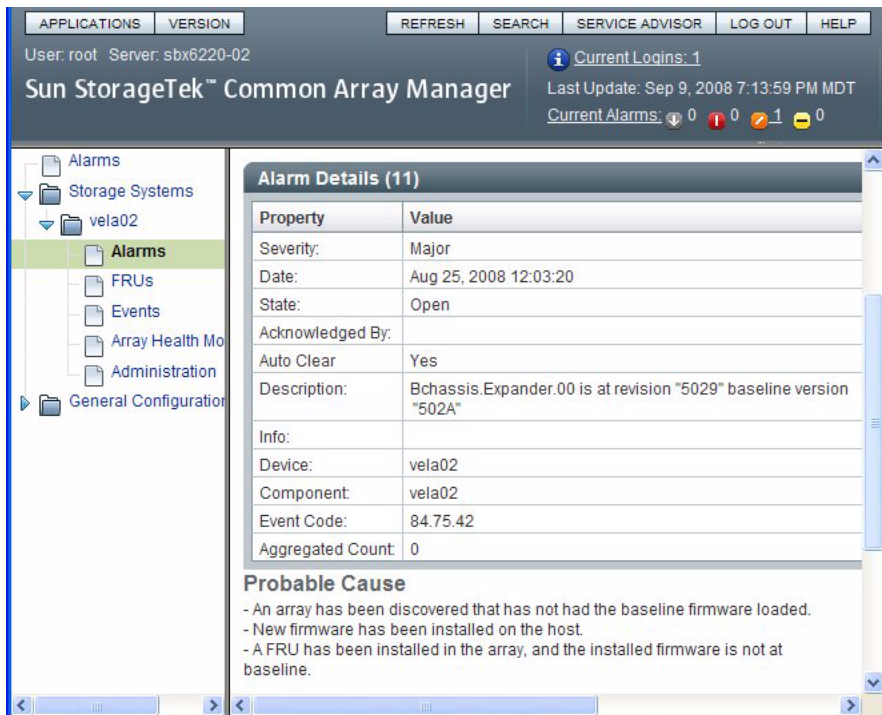
3. Select the **Alarms** item in the **vela02** tree.

The Alarms page for **vela02** opens. You can see one major severity (orange) alarm of type **RevisionDeltaEvent**.



4. Click the link under Alarm Details

The Alarm Details page opens.



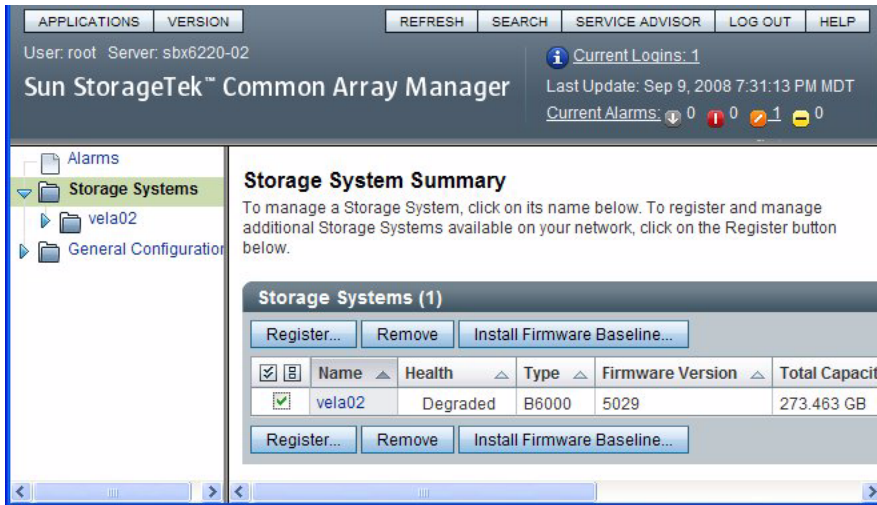
You can see from the description that the installed version of expander firmware (5029) is not up to date. The current released version is 502A.

Note – You will get this same alarm if the firmware on any of the expanders (two on the disk blade and one on each of the Multi-Fabric NEMs) is not current for any reason.

Looking at the Probable Cause, you see various ways that the condition that raised the alarm might have been produced.

5. Return to the Storage System Summary page by choosing Storage Systems in the navigation tree and then check the box to the left of the vela02 name.

This selects the vela02 storage system and enables the firmware update button.



Note – In this example, there is only one registered storage system. If there were more, the buttons would be enabled only for the checked system.

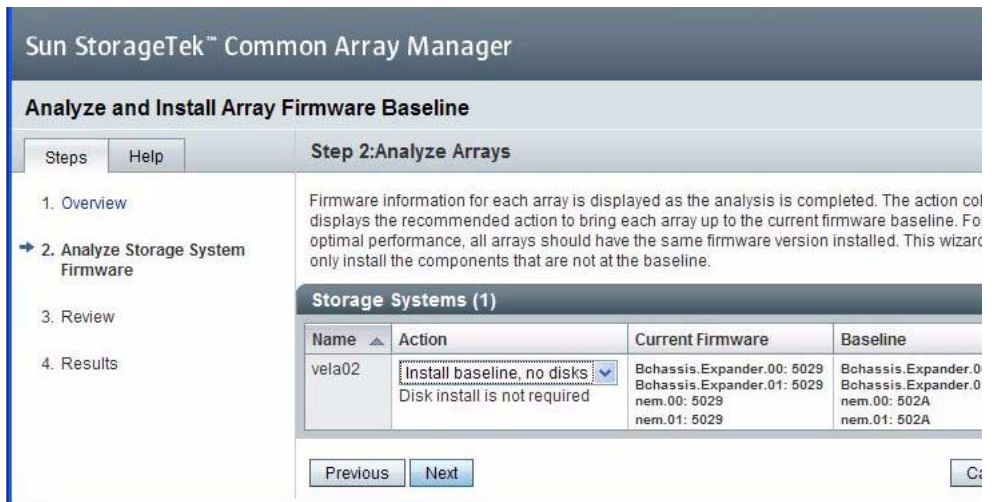
6. Click the Install Firmware Baseline button to update the expander firmware.

The Analyze and Install Array Firmware Baseline wizard opens.



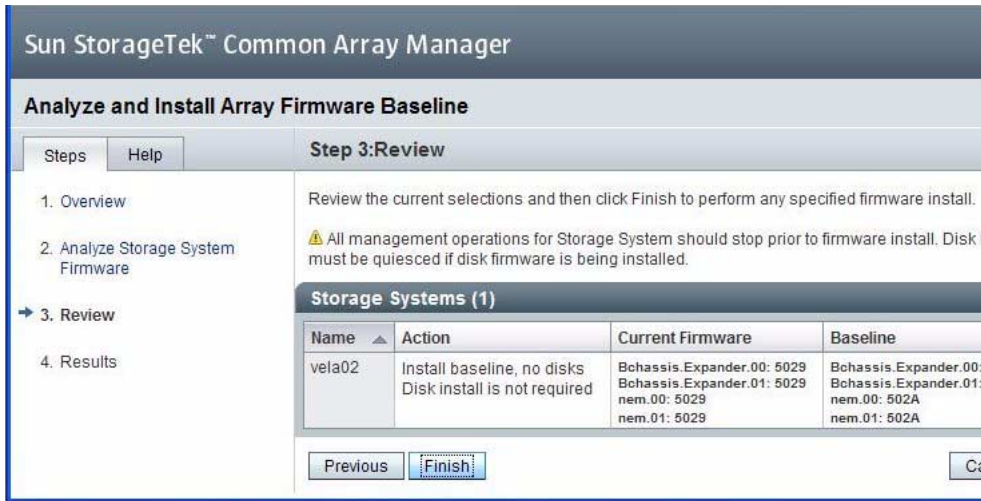
7. Click Next.

The next screen shows the current firmware versions and the baseline (correct) versions for each expander.



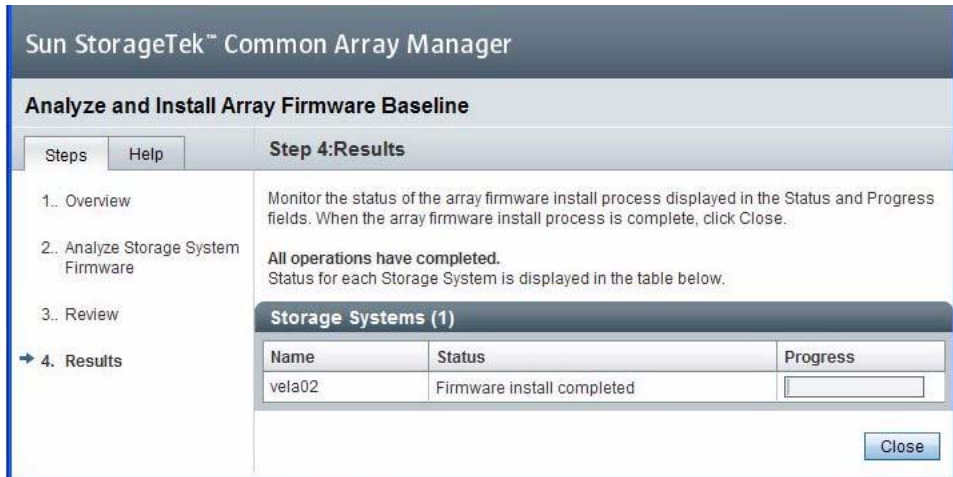
8. Accept the default Action and click Next.

The next screen shows a review of what you have selected.



9. If you need to change the Action, click Previous. Otherwise, click Finish.

A series of screens appear, with the Status field showing the current expander being updated. When the process is completed, the Firmware Install completed message appears in the Status Field.



10. Click Close.

The Storage System Summary page reappears. You can see that the disk blade's Health has changed to OK and the alarm is turned off.

APPLICATIONS VERSION REFRESH SEARCH SERVICE ADVISOR LOG OUT HELP

User: root Server: bl189 [Current Logins: 1](#)
 Last Update: Sep 11, 2008 10:01:38 AM PT
 Current Alarms: 0 0 0 0

Sun StorageTek™ Common Array Manager

Alarms
Storage Systems
 vela02
 General Configuration

Storage System Summary
 To manage a Storage System, click on its name below. To register and manage additional Storage Systems available on your network, click on the Register button below.

Storage Systems (1)

Register... Remove Install Firmware Baseline...

<input checked="" type="checkbox"/>	Name ▲	Health ▲	Type ▲	Firmware Version ▲	Total Capacity
<input type="checkbox"/>	vela02	OK	B6000	502A	410.195 GB

Register... Remove Install Firmware Baseline...

