Sun Blade 6000 Modular System

Overview

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Using This Documentation

This guide provides an overview of the Sun Blade 6000 modular system.

This guide is written for system installers and administrators who are familiar with rackmounting systems and installing computer hardware.

The following topics are covered:

- "Documentation and Feedback" on page v
- "About This Documentation" on page vi

Documentation and Feedback

TABLE P-1

Documentation	Link
All Oracle Products	http://www.oracle.com/documentation
Sun Blade 6000 modular system	http://www.oracle.com/goto/SB6000/docs
Oracle ILOM	http://www.oracle.com/goto/ILOM/docs

Provide feedback on this documentation at:
http://www.oracle.com/goto/docfeedback

About This Documentation

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.

A PDF that includes all information on a particular topic subject (such as hardware installation or product notes) can be generated by clicking on the PDF button in the upper left corner of the page.

About System Features and Components

This section describes the components that make up the Sun Blade 6000 system.

Note – The lists of supported modules in this topic set are current as of the date this topic set was published; however, new modules will be added as they are developed. For an up-to-date list, see `http://oracle.com/goto/blades`.

The following topics are included in this section:

- "System Features" on page 1
- "Chassis" on page 3
- "Server and Storage Modules" on page 4
- "Network Express Modules" on page 10
- "PCIe EMs" on page 12
- "Power Supplies and Front Fan Modules" on page 15
- "Rear Fan Modules" on page 16
- "Chassis Monitoring Module and Service Processor" on page 16

System Features

Oracle's Sun Blade 6000 chassis is uniquely designed to support a range of application environments by integrating Oracle's x86 and SPARC server modules (blades) with high-capacity networking and storage blades. This extremely eco-efficient and flexible blade enclosure provides a solid foundation for the most demanding traditional and virtualized applications.

The Sun Blade 6000 modular system provides the following advantages:

- Industry-leading chassis bandwidth for peak performance and investment protection

- Reduces power and cooling costs and conserves data center space
- No-cost, full-featured, single-systems management toolset that reduces administration complexity
- Simplifies the data center by consolidating heterogeneous workloads into a single hardware platform

The system features are summarized in the following table. System components are described later in this document. Additional system specifications can be found in the *Sun Blade 6000 Modular System Site Planning Guide*.

Feature	Description
Chassis dimensions	• 10U rackmountable chassis • 17.25 x 17.5 x 27.25 inch (H x W x D) • 438.15 x 444.5 x 692.15 mm (H x W x D)
Front modules	• Up to 10 server or storage modules (blades) • Two power supply modules • Front indicator LED module (FIM) • Two front fan modules located in power supplies
Rear modules	• Up to 20 PCIe ExpressModules (2 per server module) • Up to two NEMs providing Ethernet and SAS connectivity • One chassis monitoring module (CMM) • Six high-performance fan modules to cool the server modules
System Management	Chassis monitoring module (CMM) provides: • Connection to the system-wide management network • 10/100/1000 Base-T external connections • Serial port access to CMM • Oracle Integrated Lights Out Manager (ILOM) firmware

Chassis

The following topics describe the Sun Blade 6000 modular system chassis.

- "Chassis Description" on page 3
- "Identifying Chassis Models" on page 3

Chassis Description

The chassis is the physical enclosure that contains the system components. It is designed for rackmounting and can be mounted into 19-inch EIA-310D cabinets with a depth of 35.4 to 39.4 inches (90.0 to 100.1 cm). The chassis can accommodate corresponding front-to-back, rail-to-rail spacing of 26.77 inches (68.0 cm) to 34.25 inches (87.0 cm).

Caution – The chassis requires clear airflow from front to back. If doors are installed on the rack, they must be properly vented. Also, all blade slots must be occupied by either a blade or a blank filler panel.

Additional chassis specifications are available in the *Sun Blade 6000 Modular System Site Planning Guide*.

Identifying Chassis Models

The *A90-D* chassis contains the following components that are updated from the A90-A and B chassis models: CMM, midplane, rear fans, and power supplies.

The *7105379* chassis and associated components are functionally equivalent to A90-D and meet the requirements for EU Directive 2011/65/EU. The 7105379 chassis contains an updated CMM and midplane assembly.

Make sure that you know which chassis that you have. Some replaceable components are not interchangeable between the chassis.

Refer to *Sun Blade 6000 Modular System Service Manual* for additional methods for identifying which model of the chassis that you have.

Server and Storage Modules

Server and storage modules (blades) form the backbone of the system. The system holds 10 blade modules in slots 0 through 9.

Blade modules come in two categories: server modules and storage modules. Most server modules are complete, autonomous servers, although some of them have no hard drives and must be attached to external storage. Storage modules provide additional storage for the server modules.

The following sections have more information about server and storage module:

- "Server Modules and On-Board Modules" on page 4
- "Storage Modules" on page 9

Server Modules and On-Board Modules

- "Server Modules" on page 4
- "RAID Expansion Modules" on page 5
- "Fabric Expansion Modules" on page 7

Server Modules

To make sure that a server module is supported with a particular chassis or component, refer to the server module documentation. This information is usually located in the server module product notes.

The following table lists the blade server modules and provides the location of the server module documentation:

Module	CPU Type	Documentation Web Site
Sun Blade X6220	AMD Opteron	http://docs.oracle.com/cd/E19045-01/index.html
Sun Blade X6240	AMD Opteron	http://download.oracle.com/docs/cd/E19045-01/blade.x6240/index.html
Sun Blade X6250	Intel Xeon	http://docs.oracle.com/cd/E19045-01/index.html
Sun Blade X6270	Intel Xeon	http://download.oracle.com/docs/cd/E19658-01/index.html
Sun Blade X6270 M2	Intel Xeon	http://download.oracle.com/docs/cd/E19474-01/index.html

Module	CPU Type	Documentation Web Site
Sun Blade X3-2B (formerly Sun Blade X6270 M3)	Intel Xeon	http://docs.oracle.com/cd/E20881_01/index.html
Sun Blade X6275	Intel Xeon	http://download.oracle.com/docs/cd/E19464-01/index.html
Sun Blade X6275 M2	Intel Xeon	http://download.oracle.com/docs/cd/E19962-01/index.html
Sun Blade X6440	AMD Opteron	http://docs.oracle.com/cd/E19045-01/index.html
Sun Blade X6450	Intel Xeon	http://docs.oracle.com/cd/E19045-01/index.html
Sun Blade X4-2B	Intel Xeon	http://docs.oracle.com/cd/E37035_01/index.html
Sun Blade T6300	SPARC	http://docs.oracle.com/cd/E19076-01/index.html
Sun Blade T6320	SPARC	http://download.oracle.com/docs/cd/E19745-01/index.html
Sun Blade T6340	SPARC	http://download.oracle.com/docs/cd/E19826-01/index.html
SPARC T3-1B	SPARC	http://download.oracle.com/docs/cd/E19332-01/index.html
SPARC T4-1B	SPARC	http://docs.oracle.com/cd/E22735_01/index.html
SPARC T5-1B	SPARC	http://docs.oracle.com/cd/E35199_01/index.html

RAID Expansion Modules

RAID expansion modules (REMs) provide host bus adapter (HBA) functionality on some blade servers. They mount to a REM connector on the blade motherboard and are supported as follows:

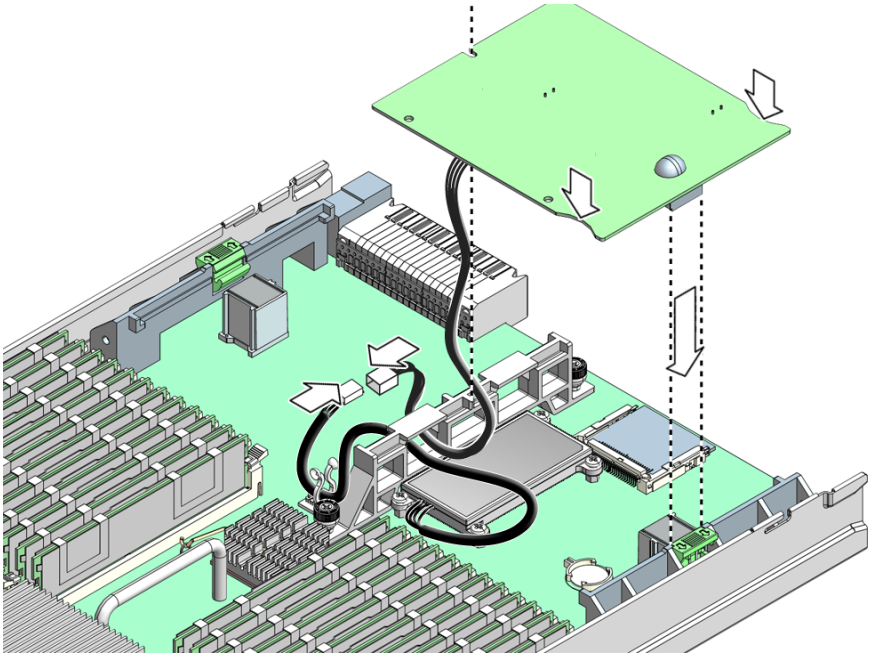
- **SAS-1 REMs** provide up to 3 Gb/sec data transfer rate and are supported for use with server module internal disks and disks in a SAS-1 disk blade when used in a chassis with SAS-1 NEMs.

  When used in a chassis with SAS-2 NEMs, they are supported for use only with a server module's internal disks.

- **SAS-2 REMs** provide up to 6 Gb/sec data transfer rate and are supported for use with server module internal disks and disks in a SAS-2 storage blade when used in a chassis with SAS-2 NEMs. When used in a chassis with SAS-1 NEMs, they are supported for use only with a server module's internal disks (note that other SAS-1 devices in the chassis might require a firmware upgrade to support this configuration).

SAS-2 REMs are required for a server module to work in a SAS-2 chassis environment. Refer to the server module documentation to determine whether or not SAS-2 REMs are supported.

The following illustration shows a REM being installed on a Sun Blade X6450 server module.



The following table lists the REMs and links to the available REM documentation. The REMs listed here were available at the time this topic set was last updated.

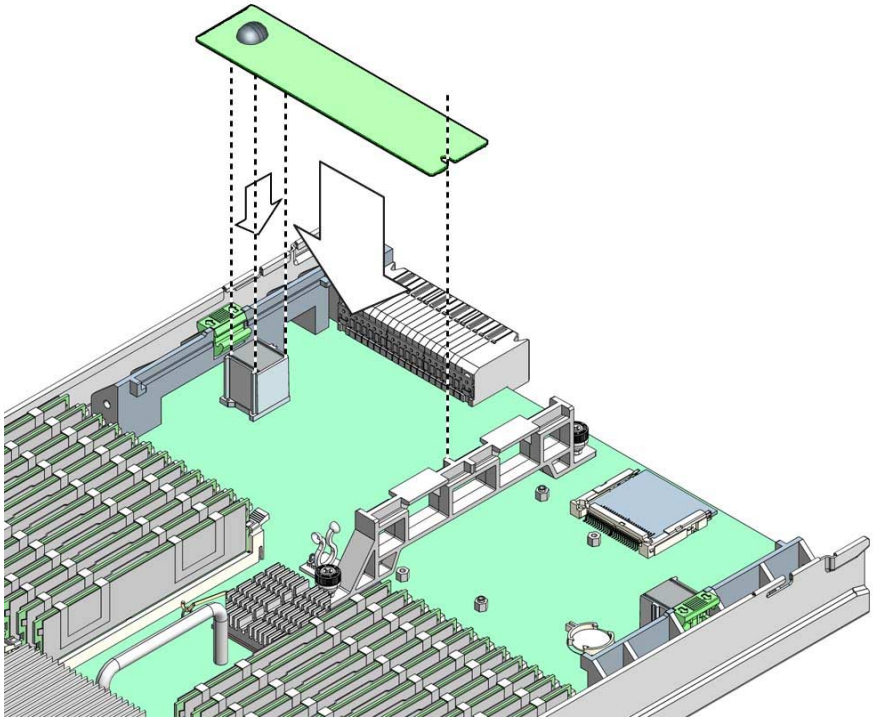
REM	Part Number	Documentation Web Site
Sun Blade RAID 5 Expansion Module	X4620A	This REM is documented within the documentation of the server modules that support the REM.
Sun Blade RAID 0/1 G2 Expansion Module	X4607A	http://download.oracle.com/docs/cd/E19645-01/index.html
Sun Storage 6 Gb SAS REM HBA	SGX-SAS6-REM-Z	http://download.oracle.com/docs/cd/E19946-01/index.html
Sun Storage 6 Gb SAS RAID REM HBA	SGX-SAS6-R-REM-Z	http://download.oracle.com/docs/cd/E19418-01/index.html

Fabric Expansion Modules

Fabric expansion modules (FEMs) allow blade servers to use the 10GbE connections provided by certain NEMs. These NEMs and the corresponding FEMs operate as a matched set. For example, a blade must have a Sun Dual 10GbE FEM to use the 10GbE functionality on a Sun Blade 6000 10GbE Multi-Fabric NEM.

FEMs are installed on the FEM connector on the blade motherboard.

The following illustration shows a fabric expansion module on a Sun Blade X6450 server module.



The following table shows the supported FEMs and links to available FEM documentation. The FEMs listed here were available at the time this document was last updated.

FEM	Part Number	Documentation Web Site
Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module	X4822A	http://download.oracle.com/docs/cd/E19956-01/index.html
Sun Blade T63X0 PCIe Pass-Through Fabric Expansion Module	X4835A	http://download.oracle.com/docs/cd/E19134-01/index.html
Sun Dual 10GbE Fabric Expansion Module	X1029A	http://download.oracle.com/docs/cd/E19781-01/index.html
Pass-Thru PCI Express Fabric Expansion Module	X4681A	This FEM is documented in the documentation of the server modules that support it.
Sun Dual 10GbE PCIe 2.0 Fabric Expansion Module	X4871A	http://download.oracle.com/docs/cd/E19539-01/index.html
Sun InfiniBand Dual Port 4x DDR PCIe Fabric Expansion Module	X4239A	http://download.oracle.com/docs/cd/E19244-01/index.html
Pass-Thru Expansion Module for Sun Blade Server	X4263A	This FEM is documented in the documentation of the server modules that support it.
Pass-Thru Expansion Module for Sun Blade Server	X4278A	This FEM is documented in the documentation of the server modules that support it.
PCIe-2 Pass Through FEM	7100283 7100633	This FEM is documented in the documentation of the server modules that support it.

Storage Modules

Storage modules provide additional storage for server modules. There are currently two types of storage modules supported:

- **Sun Blade 6000 Disk Module** – This storage module is SAS-1 capable and can work with SAS-1 NEMs and a SAS-1 REM installed on a server module.

  In a SAS-1 configuration, a disk module is slot-paired to a server module, with the controlling server module in an even-numbered slot and the disk module installed in the adjacent odd-numbered slot to the right of the controlling server, as viewed from the front of the chassis (for example, 0+1, 2+3).

- **Sun Blade Storage Module M2** – This storage module is SAS-2 capable and can work only in a Sun Blade 6000 modular system chassis with a PCIe 2.0 midplane (chassis model A90-B, A90-D, or 7105379) and SAS-2 NEMs installed.

  Controlling server modules must have a SAS-2 REM installed. The storage devices available on this storage module must be assigned to server modules using the Oracle ILOM CMM Sun Blade Zone Manager. Refer to the Oracle ILOM documentation for more information.

The following table lists the blade storage modules and provides the location of the storage module documentation:

Module	Documentation Web Site
Sun Blade 6000 Disk Module	http://docs.oracle.com/cd/E19045-01/index.html
Sun Blade Storage Module M2	http://download.oracle.com/docs/cd/E19452-01/index.html

Network Express Modules

Network express modules (NEMs) offer systemic connectivity to the blades in the chassis. Each NEM connects to all 10 blade slots. The basic NEM provides a 10/100/1000 Ethernet connection for each blade. Other NEMs can provide SAS-1 or SAS-2 connectivity to disk blades and 10GbE Ethernet ports, in addition to the 10/100/1000 Ethernet connection for each blade.

The chassis provides two NEM slots. Adding a second NEM provides a second set of 10/100/1000 Ethernet connections for each blade. For NEMs with SAS connectivity, adding a second NEM provides a redundant connection to SAS disks.

Note – If there is no NEM in the chassis, a PCIe EM can be used to provide server blades with Ethernet connectivity. See "PCIe EMs" on page 12 for information about PCIe EMs.

Most NEMs are hot-swappable or hot-pluggable.

- You can remove and replace hot-swappable components without shutting down any system component.
- You can remove hot-pluggable components without shutting down the system; however, administrators must prepare the system first. Usually this requires idling or turning off the component to be hot plugged.

The type of connectivity depends on the NEM.

Note – Most NEM functions, other than the 10/100/1000 Ethernet port, require a matching REM or FEM mounted on the blade motherboard before the blade server can use that function. See "RAID Expansion Modules" on page 5 or "Fabric Expansion Modules" on page 7 for more information.

The following table shows the supported NEMs and links to available NEM documentation. The NEMs listed here were available at the time this topic set was last updated.

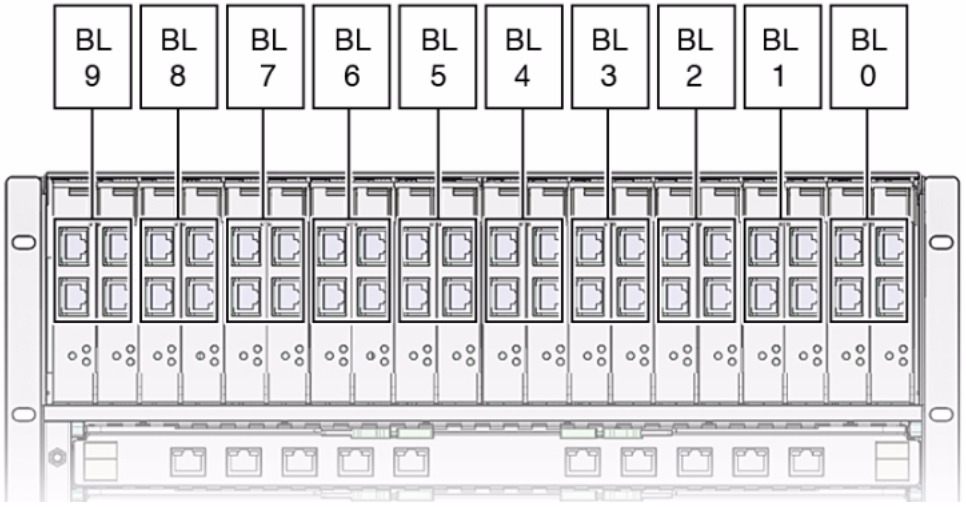
NEM	Part Number	Internal SAS Support	Documentation Web Site
Sun Blade 6000 NEM	X4250A	N/A	This NEM is documented within the Sun Blade 6000 modular system documentation.
Sun Blade 6000 Multi-Fabric NEM	X4212A	SAS-1	http://download.oracle.com/docs/cd/E19051-01/index.html
Sun Blade 6000 10GbE Multi-Fabric NEM	X4236A	SAS-1	http://download.oracle.com/docs/cd/E19661-01/index.html
Sun Blade 6000 Virtualized Multi-Fabric 10GbE NEM	X4238	SAS-1	http://download.oracle.com/docs/cd/E19661-01/index.html
Sun Blade 6000 Virtualized Multi-Fabric 10GbE M2 NEM	X4338A	SAS-2	http://download.oracle.com/docs/cd/E19530-01/index.html
Sun Blade 6000 Ethernet Switched Network Express Module 24p 10GbE	X2073A	SAS-2	http://download.oracle.com/docs/cd/E19285-01/index.html
Sun Blade 6000 Virtualized 40 GbE Network Express Module	7100090	SAS-2	http://download.oracle.com/docs/cd/E21077_01/index.html

Note – Refer to http://oracle.com/goto/blades for the latest list of supported NEMs.

PCIe EMs

The PCIe EMs are designed to offer independent, dedicated I/O functions configurable on a per server module basis.

Each blade slot has two dedicated PCIe EM slots, numbered as follows that correspond to the server modules as shown in the following diagram.



The following table describes how the blade slots correspond to the PCIe EM slots.

Blade Slot	PCIe EM Slots
0	0.0, 0.1
1	1.0, 1.1
2	2.0, 2.1
3	3.0, 3.1
4	4.0, 4.1
5	5.0, 5.1
6	6.0, 6.1
7	7.0, 7.1
8	8.0, 8.1
9	9.0, 9.1

The PCIe EM format is a standard developed by the PCI-SIG standards organization. The chassis midplane implements PCI Express connectivity between the PCIe EMs and server modules and assigns two PCIe EMs to each server module. All PCIe EMs are hot-pluggable, allowing system administrators to easily replace them.

PCIe EMs can be installed in a system without any modification to the connected server module hardware. The Sun Blade 6000 modular system supports industry-standard, hot-swappable PCIe EMs.

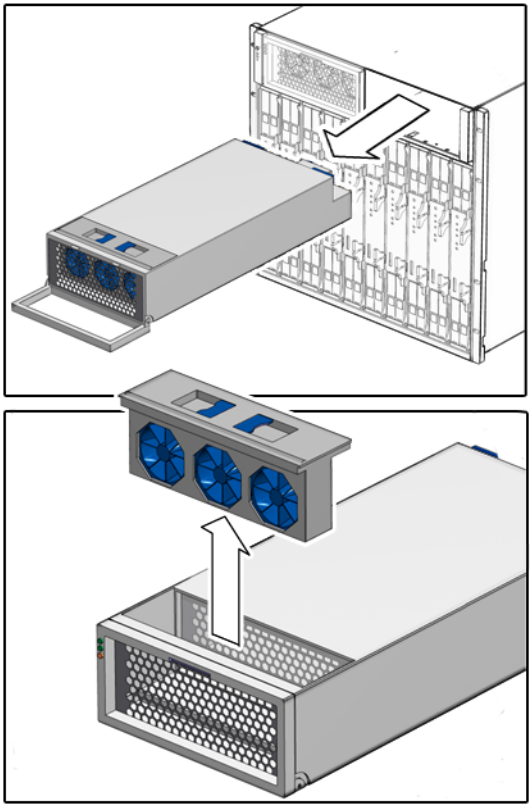
The following table shows the supported PCIe EMs and links to available PCIe EM documentation. The PCIe EMs listed here were available at the time this document was last updated.

PCIe EM	Product Number	Document URL
Ethernet PCIe EMs		
Sun PCI Express Dual Gigabit Ethernet MMF/UTP ExpressModule	X7283A	http://download.oracle.com/docs/cd/E19380-01/index.html
Sun x4 PCIe Quad Gigabit Ethernet ExpressModule	X7284A	http://download.oracle.com/docs/cd/E19640-01/index.html
Sun Quad GbE UTP x8 PCIe ExpressModule	X7287A	http://docs.oracle.com/cd/E19113-01/
Sun Dual 10GbE SFP+ PCIe ExpressModule	X1108A	http://download.oracle.com/docs/cd/E19571-01/index.html
Sun Dual 10GbE SFP+ PCIe 2.0 ExpressModule	X1110A	http://download.oracle.com/docs/cd/E19254-01/index.html
Sun Dual 10GbE XFP PCIe ExpressModule	X1028A	http://download.oracle.com/docs/cd/E19862-01/index.html
Host Bus Adapter PCIe EMs		
Sun StorageTek 4 Gb Fibre Channel ExpressModule HBA (Qlogic)	SG-XPCIE2 FC-QB4-Z	http://download.oracle.com/docs/cd/E19419-01/index.html
Sun StorageTek 4 Gb Fibre Channel ExpressModule HBA (Emulex)	SG-XPCIE2 FC-EB4-Z	http://download.oracle.com/docs/cd/E19919-01/index.html

PCIe EM	Product Number	Document URL
Sun StorageTek Dual 8Gb Fibre Channel Dual GbE ExpressModule HBA (Qlogic)	SG-XPCIEFCGBE-Q8-Z	http://download.oracle.com/docs/cd/E19925-01/index.html
Sun StorageTek Dual 8Gb Fibre Channel Dual GbE ExpressModule HBA (Emulex)	SG-XPCIEFCGBE-E8-Z	http://download.oracle.com/docs/cd/E19353-01/index.html
Sun StorageTek Dual 4 Gb FC Dual GbE HBA ExpressModule (Qlogic)	SG-XPCIE2FCGBE-Q-Z	http://download.oracle.com/docs/cd/E19883-01/index.html
Sun StorageTek Dual 4 Gb FC Dual GbE HBA ExpressModule (Emulex)	SG-XPCIE2FCGBE-E-Z	http://download.oracle.com/docs/cd/E19732-01/index.html

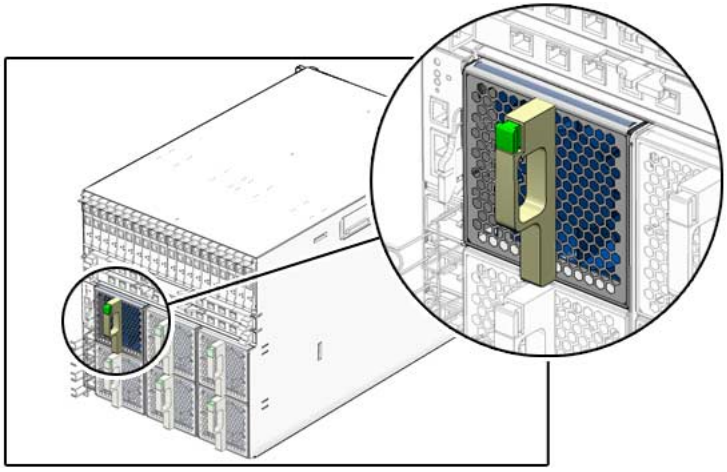
Power Supplies and Front Fan Modules

The system contains two redundant power supplies, each capable of powering the chassis. Each power supply has an integrated fan module, as shown in the following illustration.



Rear Fan Modules

The system has six redundant fan modules, in the rear of the system enclosure. The following illustration shows the location of the modules and provides a close-up of one of them.



Chassis Monitoring Module and Service Processor

The chassis has a service processor module, called a chassis monitoring module (CMM). This service processor (SP) supports the service processor program, called the Oracle Integrated Lights Out Manager (ILOM).

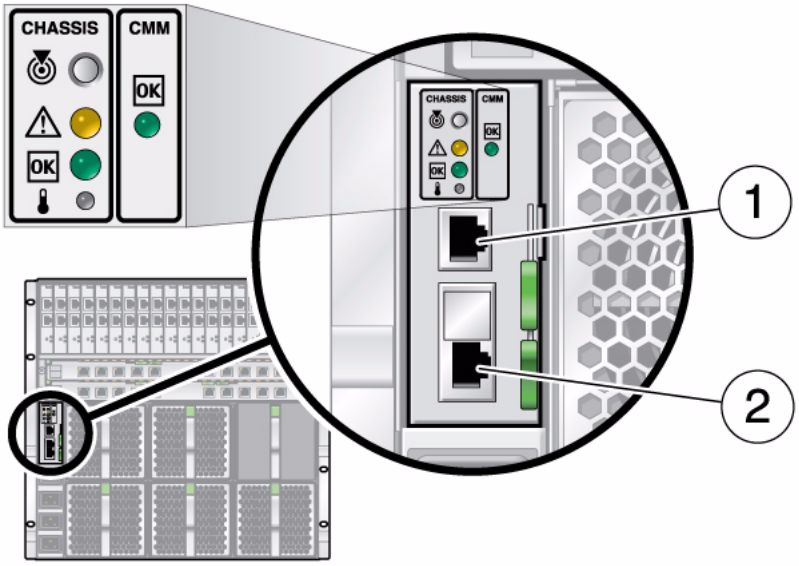
These topics are covered in this section:

- "Identifying CMM Models" on page 17
- "Oracle ILOM CMM" on page 18
- "Sun Blade Zone Manager" on page 19

Identifying CMM Models

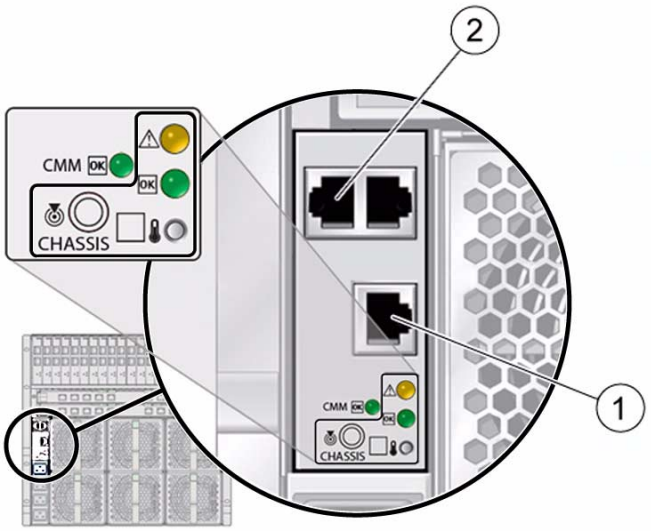
There are three models of CMM modules available, depending on the chassis that you have. The following illustrations show the layout of the CMM types.

The following illustration shows the CMM module that is supported with the A90-A/B chassis.



The following illustration shows the CMM that is supported with the A90-D and 7105379 chassis. The CMMs for these chassis have different part numbers, but they have the same layout.

Note – For a more detailed description of how to identify which CMM module goes with which chassis, see the *Sun Blade 6000 Modular System Service Manual*.



Legend Table	
1	SER MGT port
2	NET MGT 0 port

Note – The A90-B chassis might have the NET MGT 0 port covered. This can be removed if you want to use the NET MGT port 1. Refer to the *Oracle ILOM CMM Administration Guide for the Sun Blade 6000 Modular System* for instructions on enabling the NET MGT port 1.

Oracle ILOM CMM

The service processor allows you to manage chassis components and to access the service processors of the individual server modules even when the chassis and/or the server modules are powered off.

Oracle ILOM enables you to:

- Display and configure ILOM network parameters
- Display and configure server module service processor (SP) network parameters
- Connect to the server module SP
- Display the following information about chassis components:
  - Presence of the component
  - FRU ID SEEPROM data
  - Status

In addition to the CMM that manages the chassis, each server module has its own SP that operates independently of the CMM. You can access the server module SP by entering a command on the CMM. They can also be accessed directly, through their SP IP address or through a multi-port adapter on the front of the server module. Some NEMs also have a service processor.

Disk modules do not have a service processor. The CMM provides a limited set of commands for managing them.

Oracle ILOM 3.1

The Oracle ILOM web interface and CLI have been updated in Oracle LOM 3.1. Refer to the Oracle ILOM 3.1 documentation for more information on the changes in the Oracle ILOM 3.1 interface:

http://www.oracle.com/goto/ILOM/docs

Sun Blade Zone Manager

Sun Blade Zone Manager is a component of the Sun Blade 6000 Oracle ILOM CMM. The Sun Blade Zone Manager can be accessed through the Storage tab of the Oracle ILOM CMM.

The Sun Blade Zone Manager allows you to assign storage devices from SAS-2-capable storage modules to SAS-2-capable server modules. Storage devices within any installed SAS-2 storage module can be assigned to any server module in the chassis. You must install at least one SAS-2 NEM in the chassis in order to enable storage device assignment.

Refer to the Oracle ILOM documentation for more information about Sun Blade Zone Manager.

Managing Firmware

This section discusses managing firmware in the chassis and the server modules. It includes information about updating firmware and about keeping the firmware in the chassis elements compatible with other chassis elements.

The following topics are covered in this section:

- "Firmware Overview" on page 21
- "How to Download Sun Blade 6000 CMM Firmware" on page 23
- "Updating Server Module and NEM Firmware" on page 23
- "Updating Firmware to Support SAS-2 Components" on page 25
- "Oracle ILOM CMM Documentation" on page 26

Firmware Overview

The following topics are covered in this section:

- "How Sun Blade 6000 Firmware Is Released" on page 21
- "Software Update Documentation" on page 22
- "Chassis and Component Firmware Compatibility" on page 22

How Sun Blade 6000 Firmware Is Released

The firmware is incorporated into new chassis, blade, and network express module (NEM) products at the factory. However, it is updated periodically in packages called either "software updates" or "firmware updates."

All of these updates are released for either a single server module, NEM, or the Sun Blade 6000 chassis.

For server modules, software updates can include software and firmware. The chassis has no software, so the chassis software updates contain only firmware. The NEM software updates might include software drivers and firmware.

For a major release, the first number of the release changes, for example, from 2.0 to 3.0. For a minor release, the second number changes, for example from 2.0. to 2.1.

Software Update Documentation

The chassis, server modules, and NEMs each have a corresponding product notes document that lists known issues with the hardware, software, firmware, service processor, and documentation. These documents describe the issues and provide workarounds where possible.

The product notes document is updated with each major software release and often for minor releases as well. Customers should review this document as part of managing firmware.

The chassis product notes also include a list of bugs fixed in each release. A list of bugs fixed is also available on the download page as a Read Me.

Chassis and Component Firmware Compatibility

Oracle tests the following components against other chassis components that are running the latest available firmware and the prior revision.

- New server modules
- New NEMs
- Firmware updates for server modules, CMM, and NEMs

If any component is using firmware older than the prior version, the intercomponent dependencies will not be exhaustively tested. While there is no reason to believe there will be any compatibility issue, Oracle cannot guarantee this.

The Sun Blade 6000 Chassis software download Read Me and the *Sun Blade 6000 Modular System Firmware Update Guide* contain additional information about chassis and component firmware compatibility.

Note – Because of the bug fixes and new features available in software updates, you should install the latest firmware as soon as possible.

▼ How to Download Sun Blade 6000 CMM Firmware

1. **Read the** *Sun Blade 6000 Modular System Firmware Update Guide* **for detailed instructions on updating chassis and component firmware.**
2. **Navigate to the Sun Blade 6000 modular firmware download page at:**

   `http://www.oracle.com/technetwork/systems/patches/firmware/release-history-jsp-138416.html`
3. **Click Sun Blade 6000 Modular System.**
4. **Click the software update version that you want to download.**

   The Oracle support login page appears.
5. **Enter a user name and password.**

   The Patch Details page appears.
6. **Click the Read Me button on the right side of Patch details page.**

   The Read Me shows the firmware versions for chassis components that are compatible with the chassis firmware version. Fixed bugs for the current software release are also listed.
7. **Click the Download button on the right side of the Patch Details page.**
8. **To download the firmware file, click on the zip file that is displayed.**

Updating Server Module and NEM Firmware

See the topics for information about firmware update procedures. Refer to the corresponding component product notes for information about known issues and service dependencies.

The following topics are covered in this section:

- "Guidelines for Updating Firmware" on page 24
- "Adding a Server Module to the Chassis" on page 24

- "Chassis and Server Modules Running Oracle ILOM" on page 24
- "ELOM-to-ILOM Transition" on page 25

Guidelines for Updating Firmware

Specific instructions for updating chassis and component firmware are available in the *Sun Blade 6000 Modular System Firmware Update Guide*.

The following are general guidelines for updating chassis firmware:

- You can upgrade Sun Blade 6000 chassis, server module, and NEM firmware independently.
- You should always update server module firmware before updating the CMM firmware.
- If a NEM firmware update is required, you should install it after updating CMM firmware.

Caution – Some firmware upgrade procedures remove a component from service. For example, server module ILOM upgrade procedures might shut down the server to perform BIOS upgrades. NEM and storage module firmware upgrades (or hot-swapping) might interrupt I/O connectivity to multiple blades.

Adding a Server Module to the Chassis

Normally, you can install a server module with newer firmware than existing server modules in the chassis without adversely impacting the other components in the chassis.

However, to ensure that this is the case, all components should use the latest version of the firmware or the prior release of the firmware.

Chassis and Server Modules Running Oracle ILOM

Oracle ILOM is Oracle's common service processor firmware. It is the standard for rackmount servers, blade chassis and server modules, regardless of the CPU architecture. The Sun Blade 6000 chassis and all newer Oracle server modules, including SPARC, Intel, and AMD, run Oracle ILOM.

Apart from the file name, the general procedures for updating Oracle ILOM firmware are identical from server module to server module and are located in the Oracle ILOM documentation. Refer to the Oracle ILOM documentation collection for the corresponding product for details. See "Oracle ILOM CMM Documentation" on page 26.

ELOM-to-ILOM Transition

Some server modules, such as the Sun Blade X6250 and Sun Blade X6450 server modules, were originally shipped with the ELOM (Embedded Lights Out Manager) service processor firmware. These server modules can all be updated to Oracle ILOM.

All server modules running ELOM should be updated to run Oracle ILOM.

This procedure is documented in the *ELOM-to-ILOM Migration User's Guide*, which is included in the corresponding server module documentation library.

Note – The T6300 server module is an exception; it uses ALOM. Refer to the T6300 documentation for details.

Updating Firmware to Support SAS-2 Components

When you install a server module with a SAS-2-capable REM into the Sun Blade 6000 server, firmware updates might be required.

If the Sun Blade 6000 chassis has SAS-1 server modules or NEMs installed, the SAS expanders on these components need to be updated to SAS expander firmware version 5.04.03 or later.

In addition, the Sun Blade 6000 Virtualized Multi-Fabric 10GbE NEM must have minimum Oracle ILOM version 2.0.3.12 build 63406.

To update the SAS expander firmware for this release, use the `fwupdate` tool from the Oracle Hardware Management Pack available at:

`http://www.oracle.com/goto/system-management`

The *SAS-1/SAS-2 Compatibility Upgrade Guide for the Sun Blade 6000 Modular System* contains specific information about upgrading the SAS-1 expanders using the `fwupdate` tool.

Oracle ILOM CMM Documentation

The Oracle ILOM documentation libraries contain Oracle ILOM information for the Sun Blade 6000 chassis and server modules.

Oracle ILOM documentation is located here:

`http://www.oracle.com/goto/ILOM/docs`

The Oracle Integrated Lights Out Manager (ILOM) 3.0 CMM Administration for Sun Blade 6000 and Sun Blade 6048 Modular Systems contains information specific to the CMM and is available in the Oracle ILOM 3.0 documentation library.

In the Oracle ILOM 3.1 and later libraries, the CMM information is integrated into the documentation set, and there is no CMM-specific administration guide.

Information about chassis sensors is available in the *Oracle Integrated Lights Out Manager (ILOM) 3.x Supplement for Sun Blade 6000 and 6048 Modular Systems* in the Sun Blade 6000 modular system documentation library.

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