Sun Blade™ 8000 Series
Installation Guide

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Contents

Preface

The *Sun Blade 8000 Series Installation Guide* provides detailed information about installing and setting up the Sun Blade™ 8000 Series Modular Systems for the first time. This guide is written for system installers who are familiar with rackmounting systems and installing computer hardware, as well as for system administrators who are experienced with installing and configuring various operating systems.

For information about related product documentation, technical support, or training, refer to these sections:

■ "Related Documentation" on page xv
■ "Documentation, Support, and Training" on page xvii
■ "Sun Welcomes Your Comments" on page xvii

Related Documentation

The documents listed in the following table are available online at:

■ For the Sun Blade 8000 Modular System;
  http://docs.sun.com/app/docs/blade8000
■ For the Sun Blade 8000 P Modular System;
  http://docs.sun.com/app/docs/coll/blade8000p

Note – The last two digits of the documentation part number identify the latest version of the product documentation that is available for download (or viewing online). For example: 819-xxxx-**XX**.

Title	Content	Part Number	Format	Content Availability
Sun Blade 8000 Series Product Notes	Late-breaking information about system.	819-5651	PDF HTML	Online
Sun Blade 8000 Series Site Planning Guide	Site planning information for new system deployments.	819-5648	PDF HTML	Online
Sun Blade 8000 Series Installation Guide	Initial installation information for new systems. It includes: • Rackmounting • Hardware setup • Cabling attachment • ILOM management network configuration • OS installations	819-5647	PDF Printed Option	Online Shipped when printed version is ordered.
Sun Installation Assistant for Windows and Linux	Provides information about: • Supported operating systems • Identification of system drivers installed by SIA • Using SIA to install operating systems on a Sun Blade 8000 Series Server Module	820-3357	PDF	Online
Sun Blade 8000 Series Online Information System (OIS)	Provides post installation information about the system that includes: • ILOM system management operations and configuration • Servicing the system • Troubleshooting the system **Note -** To run the online system, click `frames.html` after unzipping the file.	819-5846	Compressed `.zip` file	Download

Documentation, Support, and Training

Sun Function	URL
Documentation	http://www.sun.com/documentation/
Support	http://sunsolve.sun.com/
Training	http://www.sun.com/training/

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Sun is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by going to:

http://www.sun.com/hwdocs/feedback

Please include the title and part number of your document with your feedback:

Sun Blade 8000 Series Installation Guide, part number 819-5647-15.

Prepare to Install the Sun Blade 8000 Series Modular Systems

The Sun Blade™ 8000 Series includes the Sun Blade 8000 and 8000 P Modular Systems. This chapter reviews the Sun Blade 8000 Series standard features, as well as optional features that you can order separately. It also contains pertinent information about the Sun Blade 8000 Series Modular System packaging and shipping content. Lastly, it presents various deployment considerations you should review prior to setting up and installing the Sun Blade 8000 or 8000 P Modular System.

Information in this chapter is organized as follows:

- "About the System Shipped to You" on page 1
- "Contents of the Chassis Packaging" on page 8
- "Deployment Considerations" on page 10
- "Checklist of Installation Tasks" on page 23
- "What to Do Next" on page 23

About the System Shipped to You

The Sun Blade 8000 Series Modular System offers standard and optional system components. The standard components are assembled at the factory and are shipped to you preinstalled within the system chassis. Optional system components that you purchase independent of the system chassis are shipped separately for installation.

A summary of the standard components offered in the Sun Blade 8000 Series follows:

Sun Blade 8000 Series Modular Systems	
Blade Platform	Standard Components
• Sun Blade 8000 Modular System	The Sun Blade 8000 Modular System consists of a Sun Blade 8000 Chassis with the following standard components: • Ten slots for Sun Blade server modules • Twenty slots for PCIe ExpressModules • Four slots for Network Express Modules • Two slots for Chassis Monitoring Modules • One Chassis Monitoring Module (second CMM is optional for redundancy) • Six redundant power supplies with integrated fans • Nine redundant rear fan modules • Three redundant front fan modules • Front and rear system indicator lights • Filler panels for: nine blade slots, four Network Express Module slots, 20 ExpressModules, and one CMM • Rackmount rail kit • Temporary lift handles • Passive midplane for electrical and high-speed interconnect of modules and chassis components
• Sun Blade 8000 P Modular System	The Sun Blade 8000 P Modular System consists of a Sun Blade 8000 P Chassis with the following standard components: • Ten slots for Sun Blade server modules • Two slots for Network Express Modules • Two slots for Chassis Monitoring Modules • One Chassis Monitoring Module (second CMM is optional for redundancy) • Four redundant power supplies with integrated fans • Nine redundant rear fan modules • Front and rear system indicator lights • Filler panels for: nine blade slots, two Network Express Module slots, and one CMM slot • Rackmount rail kit • Temporary lift handles • Passive midplane for electrical and high-speed interconnect of modules and chassis components

A summary of the optional components offered in the Sun Blade 8000 Series follows.

Sun Blade 8000 Series Modular Systems	
Chassis Platform Option	Optional Component
• I/O Interface Modules	The PCIe ExpressModule (EM) is only offered with the Sun Blade 8000 Modular System Chassis. The Network Express Modules (NEMs) are interchangeable between blade platforms. • **PCIe ExpressModules (EMs)** The following hot-pluggable PCIe ExpressModules are supported in the Sun Blade 8000 Chassis: - Sun PCIe 4–Gbps Dual Port FC EM - Sun PCIe 1–Gbps Dual Port GbE UTP EM - Sun PCIe 1–Gbps Dual Port GbE MMF EM - Sun PCIe 10–Gbps Dual Port IB EM - Sun StorageTek FC Dual Port EM from Emulex - Sun x8 Dual 10-Gigabit Ethernet XFP EM • **Network Express Modules (NEMs)** The following hot-pluggable Network Express Modules are supported in the Sun Blade 8000 and 8000 P Chassis: - Sun 1–Gbps 20-Port GbE NEM - Sun StorageTek 20–Port 4–Gigabit FC NEM - Sun 10–Port 4x DDR IB PCIe NEM
• Chassis Monitoring Module	**Chassis Monitoring Module (CMM)** The Chassis Monitoring Module is a chassis platform interchangeable module. Optionally, a second Chassis Monitoring Module (CMM) can be added to a Sun Blade 8000 and 8000 P Chassis for redundancy. Note that the standard 8000 and 8000 P chassis comes equipped with one CMM.

• Server Module Configurations	The Sun Blade server module configurations offered include:
	• **Sun Blade X8400 Server Module Configurations**
	X8400 Small Configuration
	- CPU: 4x AMD Opteron 870 2.0-GHz, dual-core, 64-bit
	- Memory: 8-GB - 8x1GB DDR DIMMs
	- Hard Disk Drive: Support for up to two drives per blade
	X8400 Medium Configuration
	- CPU: 4x Opteron 875 2.2-GHz, dual-core, 64-bit
	- Memory: 16-GB - 8x2GB DDR DIMMs
	- Hard Disk Drive: Support for up to two drives per blade
	*X8400 Large Configuratio*n
	- CPU: 4x Opteron 885 2.6-GHz, dual-core, 64-bit
	- Memory: 32-GB - 8x4GB DDR DIMMs
	- Hard Disk Drive: Support for up to two drives per blade
	• **Sun Blade X8420 Server Module Configurations**
	X8420 Small Configuration
	-CPU: 4x AMD Opteron 8216 2.4-GHz, dual-core, 64-bit
	-Memory: 8-GB - 8x1GB DDR2 DIMMs
	-Hard Disk Drive: Support for up to two drives per blade
	X8420 Medium Configuration
	-CPU: 4x Opteron 8218 2.6-GHz, dual-core, 64-bit
	-Memory: 16-GB - 8x2GB DDR2 DIMMs
	- Hard Disk Drive: Support for up to two drives per blade
	X8420 Large Configuration
	- CPU: 4x AMD Opteron 8220 2.8-GHz, dual-core, 64-bit
	- Memory: 32-GB - 8x4GB DDR2 DIMMs
	- Hard Disk Drive: Support for up to two drives per blade
	• **Sun Blade X8440 Server Module Configurations**
	X8440 Medium Configurations
	Dual-Core Two-Socket CPU Configuration
	- CPU: 2x AMD Opteron 8222 3.0-GHz, dual-core, 64-bit
	- Memory 8-GB - 4x2 GB DDR2 DIMMs, 2 per socket
	- Hard Disk Drive: Support for up to two drives per blade
	Dual Core Four-Socket CPU Configuration
	- CPU: 4x AMD Opteron 8222 3.0-GHz, dual-core, 64-bit
	- Memory 16-GB - 8x2GB DDR2 DIMMs, 2 per socket
	- Hard Disk Drive: Support for up to two drives per blade

• Server Module Configurations (continued)	• **Sun Blade X8450 Server Module Configurations** *X8450 Small Configuration* Quad-Core Four-Socket CPU Configuration - CPU: 4x Intel Xeon L7345, 1.86-GHz, quad-core - Memory 16-GB - 8x2GB, Fully Buffered (FB) DIMMs - Hard Disk Drive: Support for up to two drives per blade *X8450 Medium Configuration* Quad-Core Four-Socket CPU Configuration - CPU: 4x Intel Xeon, E7320, 2.13-GHz, quad-core - Memory 16-GB - 8x2GB, FB-DIMMs - Hard Disk Drive: Support for up to two drives; 2 HDD filler panels *X8450 Large Configuration* Quad-Core Four-Socket CPU Configuration - CPU: 4x Intel Xeon, E7340, 2.40-GHz, quad-core - Memory 32-GB - 16x2GB FB-DIMMs - Hard Disk Drive: Support for up to two drives per blade

• Memory Kits	The following memory kits are offered as options:
	Memory Kits
	
	• X8400 Server Module
	  - 2GB DDR1-400 Memory Kit - 1GB DIMM x2
	  - 4GB DDR1-400 Memory Kit - 2GB DIMM x2
	  - 8GB DDR1-400 Memory Kit - 4GB DIMM x2
	• X8420 and X8440 Server Modules
	  - 2GB DDR2-667 Memory Kit - 1GB DIMM x2
	  - 4GB DDR2-667 Memory Kit - 2GB DIMM x2
	  - 8GB DDR2-667 Memory Kit - 4GB DIMM x2
	• *X8450 Server Module*
	  - 2GB FB-DIMMs Memory Kit - 1GB DIMM x2
	  - 4GB FB-DIMMS Memory Kit - 2GB DIMM x2
	  - 8GB FB-DIMMS Memory Kit - 4GB DIMM x2
	
	Note - X8400, X8420, and X8440 DIMMs are configured in pairs to maximize performance. For maximum performance, the X8450 FB-DIMMs are configured in groups of four. For more information about DIMM pair configuration rules, see "Memory Module Configuration and Population Order." on page 68.

• Hard Disk Drives (HDD)	The following hard disk drives are offered as options: • 73-GB (10k RPM) SFF SAS Drive, hot-pluggable, up to two per server. Available on the X8400, X8420, X8440, X8450 server modules. • 73-GB (15k RPM) SFF SAS Drive, hot-pluggable, up to two per server. Available on the X8400, X8420, X8440, X8450 server modules. • 146-GB (10k RPM) SFF SAS Drive, hot-pluggable, up to two per server. Available on the X8400, X8420, X8440, X8450 server modules. • 80-GB (5k RPM) SFF SATA Drive, hot-pluggable, up to two per server. Available on the X8400, X8420, X8440 server modules. • 200GB (5k RPM) SFF SATA Drive, hot-pluggable, up to two per server. Available on the X8450 server module.
• Operating Systems	The following operating systems are fully certified and supported on each Sun Blade server module: • X8400, X8420, X8440 Server Modules: • Solaris 10 08/07 or later (X8440 Server Module) • Solaris 10 06/06 or later (X8400 or X8420 Server Module) • Red Hat Enterprise Advanced Server v.4 Update 3 or later for x86 (32 bit and 64 bit) • Red Hat Enterprise Advanced Server v.5 or later for x86 (32 bit and 64 bit) • SUSE Linux Enterprise Server 9 with SP3 or later for x86 (64 bit) • SUSE Linux Enterprise Server 10 or later for x86 • Microsoft Windows Server 2003 Enterprise Edition (SP1 or R2) (32 bit and 64 bit) • Microsoft Windows Server 2003 Standard Edition (SP1 or R2) (32 bit and 64 bit) • Microsoft Windows Server 2008 Enterprise Edition (32 or 64 bit) • Microsoft Windows Server 2008 Standard Edition (32 or 64 bit) • VMware ESX Server 3.0.1 or later

• Operating Systems Continued	• X8450 Server Module
	• Solaris 10 08/07 (with patches) or later
	• Red Hat Enterprise Advanced Server Linux v.4 Update 5 or later for x86 (32 bit and 64 bit)
	• Red Hat Enterprise Advanced Server Linux v.5 or later for x86 (32 bit and 64 bit)
	• SUSE Linux Enterprise Server 9 with SP4 or later for x86 (64 bit)
	• SUSE Linux Enterprise Server 10 with SP1 or later for x86 (64 bit)
	• Microsoft Windows Server 2003 Enterprise Edition (SP1, SP2, or R2) (32 bit and 64 bit)
	• Microsoft Windows Server 2003 Standard Edition (SP1, SP2, or R2) (32 bit and 64 bit)
	• Microsoft Windows Server 2008 Standard Edition (32 bit and 64 bit)
	• Microsoft Windows Server 2008 Enterprise Edition (32 bit and 64 bit)
	• VMware ESX Server 3.0.2 or later

For the latest Sun Blade 8000 Series updates and new hardware availability, see the *Sun Blade 8000 Series Product Notes* at: http://docs.sun.com/

Contents of the Chassis Packaging

The Sun Blade 8000 Series Chassis is packaged in polyethylene foam cushions for dynamic protection and is contained within a corrugated container with an integrated wood pallet. The sealed corrugated container is attached to the wood pallet at the base with cap nails. The assembly is banded to the wood pallet for additional strength and protection. The following table further identifies the contents of the chassis packaging.

Chassis Packaged Items	Description
Sun Blade 8000 Series Chassis	The Sun Blade 8000 Series Chassis is shipped with the following standard components: • Chassis Monitoring Module (CMM) • CMM filler panel • Sun Blade server module filler panels • Network Express Module filler panels • *PCIe ExpressModule filler panels (*8000 Chassis only) • Power Supply Modules • Fan Modules • Temporary lift handles
Ship kit	The ship kit contains: • Rack Alignment Template • RJ-45 to DB-9 Adapter • X8400 Server Module Adapter for 8000 P Chassis • Sun Blade 8000 Series Product Notes • Sun Blade 8000 Series Installation Guide • Sun Blade 8000 Series Server Safety and Compliance Manual • Documentation CD • Getting Started Guide • Other safety and license documentation
Country kit	The country kit includes the Sun Blade 8000 and 8000 P Modular System power cords.
Rackmount kit	The rackmount kit contains: • Rackmount rail • Installation support tray. • One bag containing four M5x12 screws (P/N 240-2326-01 - used to secure the chassis to the rear of the rack mounting rails) • One bag containing 18 M6x20 screws (P/N 240-4374-01 - used to fasten rails, tray and chassis to rack)

No special tools are required for unpacking the chassis packaging, other than typical unpacking tools such as a knife or box cutter. The top and side panels of the container include instructions about how to unpack the system.

External Chassis Packaging

Depending on the configuration ordered, one or more boxes for the following optional features could accompany the Sun Blade 8000 Series Chassis packaging.

External Boxed Item(s)	Quantity	Description
Sun Blade server module	Up to 10 boxes	One Sun Blade Server Module per box
NEM	Up to 4 boxes	One Network Express Module (NEM) per box
CMM	1 box	One Chassis Monitoring Module (CMM) per box
EM* *Applies only to Sun Blade 8000 Modular System	Up to 20 boxes	One PCIe ExpressModule (EM) per box
Cables	1 box	Sun-supplied cables, if ordered
HDD	Up to 20 boxes	One hard disk drive per box
DIMM	Up to 40 boxes	One memory kit per box

Deployment Considerations

This section discusses deployment considerations associated with setting up and installing the Sun Blade 8000 or 8000 P Modular System in your environment. Topics covered in this section include:

Rackmount Options and Requirements

You can install the Sun Blade 8000 Series Chassis into the following Sun racks and cabinets:

- **Sun Rack 1000 Cabinet Family (72 inches/184 cm tall).** The Sun Rack 1000-38 is designed to hold one Sun Blade 8000 Chassis or two Sun Blade 8000 P Chassis. The Sun Rack 1000-42 is designed to hold:
  - Two customer-installed Sun Blade 8000 Chassis; or
  - Two customer-installed Sun Blade 8000 P Chassis; or
  - Three factory-installed Sun Blade 8000 P Chassis; or
  - Three genie lift installed Sun blade 8000 P Chassis.
- 19-inch EIA-compliant industry standard rack enclosure that meets the requirements listed in the table below.

Note – The (M5x20 and M6x20) screws supplied in the rackmounting kit may not fit EIA-compliant industry standard rack enclosures.

Rack Enclosure Feature	Requirements
Load Bearing capacity	The rack must firmly support the weight of a Sun Blade 8000 Modular System chassis (536 lbs) or a Sun Blade 8000 P Modular System chassis (420 lbs), plus the weight of the rackmounting hardware.
Vertical Space Requirements	The Sun Blade 8000 Chassis requires 19 rack units (19U) of vented rack space. The Sun Blade 8000 P Chassis requires 14 rack units (14U) of vented rack space. Additionally during rack installation, one rack unit (1U) of vertical rack space must be available for the temporary support tray.
Airflow	The system requires a maximum inlet and outlet airflow of 1500 cfm at 35 degrees C. The cabinet doors must be at least 63% perforated to allow for unrestricted airflow into the front and rear of the system chassis. For proper ventilation, each system in the rack enclosure requires 28 square inches (181 square cm) of unrestricted airflow into the front of the system, and 23 square inches (148 square cm) of unrestricted exhaust port at the back of the system. Maintain a minimum of 1.5 inches (3.8 cm) clearance between the system and front door, and a minimum of 4 inches (10 cm) clearance between the system and rear door.
Vertical Mounting Rail Requirements	The rack must have two pairs of vertical mounting rails (one pair in front, one in back) that conform to the EIA (RETMA) standard for mounting hole spacing. Left-side-to-right-side rail spacing (mounting hole center to mounting hole center) for front and back rails must be 18.3 inches (46.5 cm), per EIA standard. Front-to-back rail spacing must be at least 26.875 inches (68.26 cm) and not more than 34.875 inches (88.5 cm) from the outside face of the front rail to the outside face of the back rail.
Doors and Panels	If you are using a Sun Expansion Cabinet, you can remove the front door and the side panels to increase access to the system. Otherwise, see the instructions provided with the rack enclosure.
Anti-Tilt Protection	The rack must be bolted securely to the floor or equipped with a sturdy and extendable anti-tip leg. You must prevent the cabinet from tilting forward when one or more systems or devices are fully extended out the front of the rack.
Maximum Service Access	An area not less than 5 feet (1.7 meter) deep and 6 feet (2 meters) wide must be available in front of the rack for installation.
Fire Containment	The rack enclosure must meet Underwriters Laboratories, Inc. and TUV Rheinland of N.A. requirements for fire containment.

For each Sun Blade 8000 Series Chassis you want to rackmount, you will need a rackmounting kit. A rackmounting kit is enclosed in the Sun Blade 8000 Series Chassis packaging. This kit contains rackmounting rails, hardware, and an installation support tray.

Rack and Cabinet Safety

Racks or cabinets that contain the Sun Blade 8000 Series Chassis must be anchored to the floor or to adjacent frames, using the manufacturer's instructions.

Free-standing racks or cabinets with a footprint of less than 23.6 inches x 23.6 inches (600 mm x 600 mm) are likely to be unstable and should be treated with caution.

Caution – If the Sun Blade 8000 Series Modular System Modular System is installed in a closed or multi-rack assembly, the operating ambient temperature of the rack or cabinet environment might exceed the room ambient. Ensure that the rack environment ambient temperature at the front of the Sun Blade 8000 Modular System does not exceed 95 degrees F (35 degrees C).

Caution – Mounting the Sun Blade 8000 Series Chassis in a rack or cabinet should be such that a hazardous condition is not created due to uneven mechanical loading or weight distribution.

Chassis Dimensions and Weight

The following table identifies the dimension and weight of the Sun Blade 8000 Series Chassis and its major subcomponents.

Specifications	Sun Blade 8000 Chassis	Sun Blade 8000 P Chassis
Chassis Height	33.01 inches (838.49 mm); slightly less than 19 rack units	24.26 inches (616.21 mm); slightly less than 14 rack units
Chassis Depth	28.43 inches (722 mm)	28.43 inches (722 mm)

Chassis Depth in Rack	27.56 inches (700 mm); distance from the front vertical mounting rail to rear of the chassis	27.56 inches (700 mm); distance from the front vertical mounting rail to rear of the chassis
Chassis Width	17.5 inches (444.5 mm); not including rackmounting handles	17.5 inches (444.5 mm); not including rackmounting handles
Chassis Weight	- Fully configured Sun Blade 8000 Chassis: 536 lbs (243.13 kg) - Empty Sun Blade 8000 Chassis: 94 lbs (42.64 kg) - Chassis handles: 25 lbs (5.44 kg) - I/O chassis with midplane: 26 lbs (11.79 kg) - Power supply: 12 lbs (5.44 kg) - Server Module: 23 lbs (10.43 kg) - Front fan module: 3 lbs (1.36 kg) - Chassis Monitoring Modules: 5 lbs (2.27 kg) - Rear fan module: 3 lbs (1.36 kg) - Network Express Module: 7 lbs (3.18 kg) - PCIe ExpressModule: 2 lbs (0.91 kg) - Rack rail slides: 10 lbs (4.54 kg)	- Fully configured Sun Blade 8000 P Chassis: 420 lbs (190.51 kg) - Empty Sun Blade 8000 P Chassis: 75 lbs (34.02 kg) - Chassis handles: 12 lbs - I/O chassis with midplane: 15 lbs (6.80 kg) - Power supply: 9.25 lbs (4.19 kg) - Server Module: 23 lbs (10.43 kg) - Rear fan module: 3 lbs (1.36 kg) - Chassis Monitoring Module: 5 lbs (2.27 kg) - Network Express Module: 7 lbs (3.18 kg) - Rack rail slides: 10 lbs (4.54 kg)

System Cooling Requirements

This section provides the general environmental parameters and airflow requirements for the Sun Blade 8000 Series Chassis.

Note – The Sun Blade 8000 Series Chassis uses front-to-back forced air cooling.

General Environmental Conditions

You can operate and store the system safely in the conditions detailed in the following table.

Parameter	Operating Specifications	Nonoperating
Temperature	5 to 35 ºC (41 to 95 ºF) noncondensing	-40 to 65 ºC (-40 to 149 ºF) noncondensing
Optimum ambient temperature	22 ºC (71.6 ºF)	
Relative humidity	10 to 90% RH, noncondensing, 27 ºC max wet bulb	5 to 93% RH, noncondensing, 38 ºC max wet bulb
Optimum ambient relative humidity	45 to 50% RH, noncondensing	
Altitude	0 to 7500 feet (2286 m)	0 to 10,000 feet (3048 m)
Vibration	Z (vertical)-axis: 0.15G X/Y axis: 0.10G 5 to 500 Hz sine	Z (vertical)-axis: 0.50G X/Y axis: 0.25G 5 to 500 Hz sine
Shock	3Gs, 11msec, half sine (applied to rack)	

Airflow Guidelines

The Sun Blade 8000 Series Chassis uses front-to-back forced air cooling. To meet the declared environmental specification, follow these guidelines:

- The rack or cabinet in which the system chassis is mounted must provide a low resistance airway both in front of and behind the chassis.
- The use of perforated panels must allow adequate airflow to the system chassis when the cabinet doors are closed.

Operating Power Requirements

The following table identifies the Sun Blade 8000 Series Chassis operating power requirements.

Parameter	Operating Limit or Range
Maximum operating current*	16A x 3
Maximum in-rush current+	40A
Operating input voltage range	200 to 240 VAC
Voltage frequency range	47 to 63 Hz
Power factor	0.98
BTU/Hr rating	30,735 BTU/Hr++
Sun Blade 8000 Chassis Operating Power Notes	
(*) The Sun Blade 8000 Chassis has six AC power inlets to support both power supply and AC power grid redundancy. Each AC power inlet requires a 200VAC to 240VAC, 20A rated circuit (16A for EMEA, APAC except Japan and Taiwan). For full AC grid redundancy, it is recommended that 3 AC power inlets be connected to a separate AC power source from the remaining 3 AC power inlets. This connection can be accomplished with an AC power distribution unit as a part of a rack. If AC power grid redundancy is not required, a minimum of three 200 VAC to 240VAC, 20A rated circuits (16A for EMEA, APAC except Japan and Taiwan) are required with two system AC inlets connected to each circuit. (+) The in-rush current decays to the normal operating current in less than 200 milliseconds. Sequencing of power to multiple units is not required, as the peak current is less than seven times the operating current. (++) Maximum thermal power dissipation of the enclosure is 30,735 BTU/hrr {9000W system power x 3.415= 30,735}	
Sun Blade 8000 P Chassis Operating Power Notes	
(*) Sun Blade 8000 P Chassis has four power supplies and four AC power inlets to support power supply redundancy. Each power supply is connected to its own AC power inlet. Each AC power inlet requires a 200VAC to 240VAC, 20A rated circuit (16A for EMEA, APAC except Japan and Taiwan). Three operating power supplies are required to support a full configuration system. (+) The in-rush current decays to the normal operating current in less than 200 milliseconds. Sequencing of power to multiple units is not required, as the peak current is less than seven times the operating current. (++) Maximum thermal power dissipation of the enclosure is 30,735 BTU/hrr {9000W system power x 3.415= 30,735}	

I/O Connectivity

The Sun Blade 8000 Series Modular System Modular Systems provide flexible I/O connectivity through a combination of Network Express Modules (NEMs) and PCIe ExpressModules (EMs). A brief discussion about these modules and the benefits they provide follows.

The **NEMs** are intended to provide bulk I/O connectivity for all 10 Sun Blade server modules within the system chassis. Each server module has an independent PCI Express interface to each of the four NEM slots. Each NEM implements the equivalent functionality of 10 PCI Express adapters. For example, the Gigabit Ethernet (GbE) NEM provides the equivalent of 10 dual-port GbE NICs. Each GbE NEM provides twenty 10/100/1000 BASE-T Gigabit Ethernet RJ-45 interfaces, two dedicated to each blade. The NEMs are hot-pluggable devices, allowing system administrators to easily add or remove NEMs, as needed, without powering down the system. Furthermore, since the NEMs interface to the blades via PCI Express, there is no blade-based I/O component that needs to be added when a new NEM is installed. Today, the following NEMs are offered with the Sun Blade 8000 and 8000 P Modular Systems:

- Sun 20-Port GbE NEM
- Sun StorageTek 20-Port 4Gb FC NEM
- Sun 10-Port 4x DDR InfiniBand PCIe NEM

The **EMs** are designed to offer independent, dedicated I/O functions configurable on a per blade basis. The EM format is a standard developed by the PCI-SIG standards organization. The Sun Blade 8000 Chassis midplane implements PCI Express connectivity between the EMs and blades, and assigns two EMs to each blade. The EMs are fully hot-pluggable, allowing system administrators to easily replace EMs. Like the NEMs, EMs can be installed in a live system without any modification to the connected blade. Today, the following EMs are offered with the Sun Blade 8000 Modular System:

- Sun PCIe Dual-Port Fibre Channel (FC) ExpressModule (4-Gbps)
- Sun PCIe Dual-Port Gigabit Ethernet UTP ExpressModule (1-Gbps)
- Sun PCIe Dual-Port Gigabit Ethernet MMF ExpressModule (1-Gbps)
- Sun PCIe Dual-Port InfiniBand ExpressModule (10-Gbps)
- Sun StorageTek 4 Gb FC Dual-Port ExpressModule From Emulex
- Sun x8 Express Dual 10-Gigabit Ethernet Fiber XFP ExpressModule

Note – EMs are only offered and supported in the Sun Blade 8000 Chassis.

All I/O modules support connectivity to the following three types of networks:

- Local area networks
- Storage area networks (SANs)
- High-bandwidth low-latency networks used in clustering

Management Ethernet Network

The Sun Blade 8000 Series Modular System offers various methods for managing chassis components and blade server modules. All system management access is through a management port on the Chassis Monitoring Module (CMM). Internally, each CMM contains an Ethernet switch forming an internal Ethernet network. This internal network connects the CMM, blade service processors (SPs), and external Ethernet ports to enable full system management across a Ethernet local area network.

Installing a second CMM provides redundant system management access. Should network communication on one management port be lost, the management port on the redundant CMM will become active. Internally, the management network is also redundant. Each Chassis Monitoring Module and blade SP is connected to both the primary and backup networks. As depicted in the following schematic, if one network is unavailable, the other network is used, providing a protected environment.
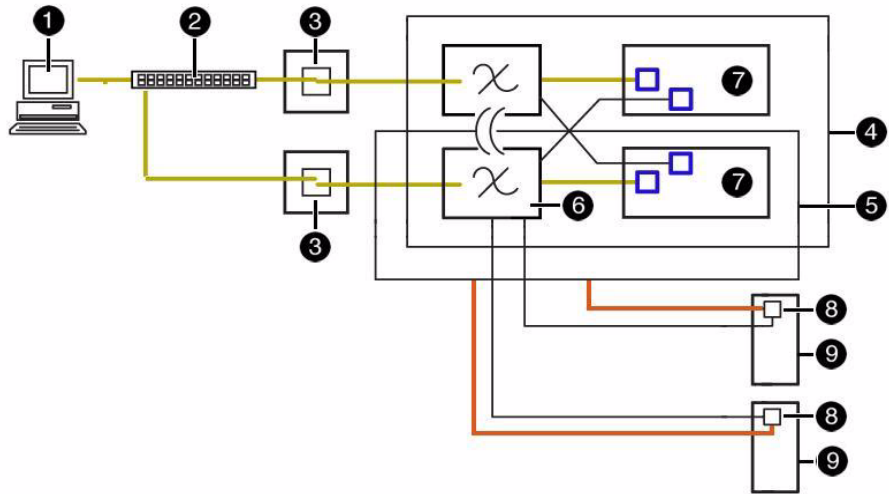
Illustration Key:

1. MGT Station	4. Chassis Monitoring Module - CMM 1	7. CMM Processor
2. External Switch	5. Chassis Monitoring Module - CMM 0	8. Service Processor
3. MGT Port	6. Embedded Switch	9. Blade Server Module - BL0 and BL01

VMware ESX Server 3 Installations

When installing VMware ESX Server on a Sun Blade server module, you should follow the VMware documentation for all aspects of the server installation.

All VMware ESX Server documentation is available for download at:

http://www.vmware.com/support/pubs/vi_pubs.html

VMware Service Console – Network Configuration

During the VMware ESX Server installation, you will be required to identify a network interface card for the VMware Service Console. To ensure that you select the proper network interface card for configuration, refer to Appendix I.

Factory-Installed Operating Systems

For your convenience, you can order hard disk drives for the Sun Blade server modules with factory-installed operating system software. This means that the software for the operating system is completely installed on the HDD, including the latest operating system device drivers. However, you must perform some setup actions prior to using the operating system. For more information about performing these initial setup actions, see:

- "Configure Factory-Installed Solaris 10 Operating System" on page 145

or

- "Initial Setup of the Factory-Installed Microsoft Windows Server 2003 R2 Operating System" on page 193.

For additional information about factory-installed software, refer to this site:

http://www.sun.com/software/preinstall

Supported OS Installation Sources

Operating systems can be installed from one of several sources:

- **Data Network**. Install an OS from the data network using an existing mechanism like JumpStart™ (Solaris), Kickstart (Red Hat), AutoYaST (SUSE), or RIS (Windows 2003).

- **CD/DVD attached USB drive.** Use a CD/DVD media drive attached with a cable to the USB connector on the server module.

- **CD/DVD on a remote management host.** Use KVMS software on a remote management host to boot the install program from CD/DVD media (KVMS host CD/DVD drive) or ISO files.

- **Factory-installed Solaris**. Complete the factory-installed Solaris OS installation by simply configuring the preloaded Solaris image on the hard disk drive. For more information, see Chapter 6.

- **Factory-installed Windows 2003 Server**. Complete the factory-installed Windows 2003 Server operating system by configuring the preloaded Windows image. For more information, see Chapter 8.

The most scalable way to install an operating system across multiple Sun Blade server modules (blades) is over the data network. However, if there is a need to install a different operating system on a single blade there is no need to use the network infrastructure. In this instance, you could use a USB CD/DVD drive attached to the blade or the remote KVMS method. For more information about installing operating systems, see Chapter 7, Chapter 9, and Chapter 10.

Caution – When a VMware ESX Server is deployed on a Sun Blade server module, you must follow the VMware documentation for guest operating system installation instructions. For more information, see:
http://www.vmware.com/support/pubs/vi_pubs.html

System Management Tools

The Sun Blade 8000 Series Modular System supports a rich variety of system management tools that you can use to administer the system. These system management tools include:

- **Integrated Lights Out Manager (ILOM)**. With ILOM, you can monitor and manage the Sun Blade 8000 Series Modular Systems proactively by viewing hardware configurations, monitoring system information, managing system alerts, and more. It offers a browser-based graphical user interface (GUI), a command-line interface (CLI), as well as an SNMP user interface and an IPMI (2.0) user interface. ILOM is preinstalled at the factory and automatically initializes as soon as power is applied to the chassis. It will independently run on the Chassis Monitoring Module and each Sun Blade Server Module service processor. It will also continue to run regardless of the state of the host operating system on the server module.

- **Sun N1 System Manager**. Sun N1™ System Manager is a comprehensive system management tool that you can purchase separately. This tool offers flexible capabilities that simplify infrastructure management of SPARC, x64 Sun Fire servers, and Sun Blade server modules. With Sun N1 System Manager, IT administrators can monitor, maintain, and provision multiple systems remotely from any Sun N1 Management Station. For more information about Sun N1 System Manager, see:
  `http://www.sun.com/software/products/system_manager`

- **Third-Party SNMP System Managers**. The Sun Blade 8000 Series Modular Systems support both SNMP (v1, v2C, v3) and IPMI (2.0) third-party management integration for tools like HP OpenView® and IBM Tivoli®.

System Management Levels and Capabilities

The Sun Blade 8000 Series Modular System enables you to easily control and monitor all system management operations at two levels:

- **Blade Server Module Level**. At the Sun Blade Server Module level, you can individually manage system operations by communicating directly with the service processor on each server module. Specific management operations at the Sun Blade server module level include:

  - Viewing applicable environmental sensors
  - Taking inventory of the blade itself, CPUs, DIMMs, and EMs
  - Enabling the download of SP firmware and BIOS images

- **Chassis Monitoring Module (CMM) Level**. At the chassis monitoring level, you can manage system operations for all shared chassis components by communicating directly with the CMM. Chassis-specific management operations include:

- Viewing environmental controls of all chassis components
- Managing the inventory of hot insertion and hot removal of chassis components
- Drilling-down to blade-level specific settings
- Configuring network settings for each blade
- Managing power consumption of chassis components.
- Promoting backup CMM to active state and demoting active CMM to standby state

In addition to administering specific management operations at the *blade* level and *chassis* level, you can direct the following common management operations at both levels:

- **External Management Network Setup/DHCP Client Configurations**. Assign an IP address or configure DHCP.
- **Hardware Monitoring and Management of System**. Retrieve information about hardware such as sensors and temperatures.
- **Event Filtering and Notification**. Control the severity of events and event notification settings.
- **Audit Changes**. View a log of changes made to the system configuration.
- **Role-based User Management**. Assign users to roles and manage role-based permission.
- **LDAP Client Configuration**. Configure IP address of LDAP server, authentication setup, and role mapping.
- **RADIUS Client Configuration**. Configure IP address of RADIUS server, authentication key setup, and role mapping.
- **SNMP Agent Configuration**. Configure SNMP user management, community string setup, and trap configuration.
- **Web Server Configuration**. Configure the web server port number and security certificate settings.
- **Clock or NTP Configuration**. Configure the time locally or configure the use of an NTP client.
- **Event Logs**. View multiple classes of logged events, including audit, environmental, and system.
- **Firmware Upgrade**. Upgrade the firmware for ILOM as needed.
- **Management of Hot-insert and Hot-remove**. Manage the inventory of hot-insert and hot-remove system chassis components.

Supported Storage Options

The Sun Blade 8000 Series Modular System supports the following Disk Arrays, Tape Libraries, Fibre Channel Switches, and Storage Software.

Note – Additional storage options may be supported in the future.

Sun Disk Arrays	
• StorTek 25xx - FC version	• StorEdge SE6920
• StorEdge 3510, SE3511	• StorEdge SE990/9985/9980/9970
• FLX210/210/280/380	

Third-Party Disk Arrays	
• NetApp FAS980, 6030/6070, 302/3050/3070, 270 (via FC)	• EMC CX 200/400/600, 300/500/700, 3-20/3-40/3-80
• EMC DMX 800/1000/2000/3000, DMX3	• EMC AX 100/150

Tape Libraries	
• L500/SL500 (FC) - LTO 2/3, SDLT 320/600	• L180 (FC - 9840 B/C, 9940B, LTO 2/3, SDLT 320/600
• L700/SL1400 (FC- T10000, 9840 B/C, 9940B, SDLT 320/600	• L6000
• StorEdge C4 tape library with FC1202 FC-SCSI bridge - LTO 2/3, SDLT 320/600	• L8500

Storage Software	
• Sun STK SAN 4.5 or later	• Solaris Volume Manager
• Sun STK Business Analytics 5.x	• Sun StorEdge Archive Manager (SAM FS) 4.x, QFS 4.x
• Sun STK Availability Suite 3.x/4.x	• Sun STK Operation Manager 4.x / 5.x
• Vertias VxSF 4.x/5.x	• EMC Powerpath

Checklist of Installation Tasks

1. **Unpack the Sun Blade 8000 Series Chassis.**

2. **Verify that you have received the required parts for rackmounting.**
   See "Contents of the Chassis Packaging" on page 8 for more information.

3. **Install the Sun Blade 8000 Series Chassis into the rack.**
   See Chapter 2.

4. **Install Sun Blade 8000 Series modules and options into the system chassis.**
   See Chapter 3.

5. **Connect power cords and power-on the Sun Blade 8000 Series Chassis.**
   See Chapter 4.

6. **Connect a management station and configure IP addresses to enable network management.**
   See Chapter 5.

7. **If applicable, configure the factory-installed Solaris 10 Operating System.**
   See Chapter 6

8. **If applicable, install Solaris 10 Operating System.**
   See Chapter 7.

9. **If applicable, configure the factory-installed Windows 2003 Operating System. See Chapter 8.**

10. **If applicable, install Windows Server 2003 or 2008 Operating System.**
    See Chapter 9.

11. **If applicable, install a Linux Operating System.**
    See Chapter 10.

What to Do Next

After unpacking the system chassis and verifying all the components in your order were received, proceed to Chapter 2 for detailed instructions about installing the Sun Blade 8000 Series Chassis into an open rack or cabinet.

Install System Chassis Into a Rack or Cabinet

This chapter provides instructions for installing the Sun Blade 8000 Series Chassis into an open rack or closed cabinet.

Note – The Sun Blade 8000 Series Chassis refers to both the Sun Blade 8000 Chassis Sun Blade 8000 P Chassis.

The information in this chapter is organized as follows:

Before You Begin

Before you install the Sun Blade 8000 Series Chassis into a rack enclosure, you should perform these tasks:

- Ensure that the rack enclosure meets the required rack unit space. For details, see "Verify Rack or Cabinet Supports Required Rack Unit Space" on page 26

- Remove the rack enclosure doors and extend the anti-tip bar. For more details, see "Prepare Rack Enclosure for Chassis Installation and Safety" on page 27

- Reduce chassis weight by removing components from the chassis. For more details, see "Remove Components to Reduce Chassis Weight" on page 29

Verify Rack or Cabinet Supports Required Rack Unit Space

You can install the Sun Blade 8000 Series Chassis into the following rack enclosures:

- Sun Rack 1000-42 or Sun Rack 1000-38

- 19-inch EIA-complaint industry-standard rack enclosure

Note – If you are using a non-Sun rack or cabinet, the screws supplied in the rackmounting kit will not fit a 19-inch EIA-compliant industry rack enclosure. For additional information about rackmounting options, see "Rackmount the Sun Blade 8000 Series Chassis" on page 33.

To successfully rackmount the Sun Blade 8000 Series Chassis into a rack enclosure it must support:

- 20 rack units for the Sun Blade 8000 Chassis (19 rack units are required for the 8000 Chassis and 1 rack unit is required for the temporary support tray). Two 8000 Chassis maximum per 42U rack or cabinet.

- 15 rack units for the Sun Blade 8000 P Chassis (14 rack units are required for the 8000 P Chassis and 1 rack unit is required for the temporary support tray). Two 8000 P Chassis maximum per 42U rack or cabinet when mounted manually using the temporary support tray. Three 8000 P Chassis maximum per 42 U rack or cabinet when factory installed or genie lift installed.

▼ Measure Rack Unit Space

Using the Rack Alignment Template supplied in the ship kit, follow these step to determine whether the rack or cabinet supports the required rack unit of space.

1. **Place the bottom of the Rack Alignment Template on the lowest available position in the rack enclosure.**
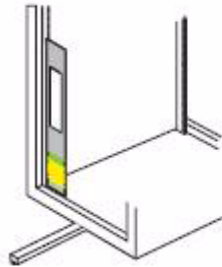
2. **Using the Rack Alignment Template, measure the space in the rack enclosure to ensure that the following space is available:**

   - 20 rack units of space are available for the Sun Blade 8000 Chassis and the temporary support tray.

   - 15 rack units of space are available for the Sun Blade 8000 P Chassis and the temporary support tray.

▼ Prepare Rack Enclosure for Chassis Installation and Safety

To prepare the rack enclosure for chassis installation and safety, do the following:

1. **Remove front and rear doors from the rack enclosure.**

2. Extend the anti-tip bar on the bottom of the rack enclosure for safety.
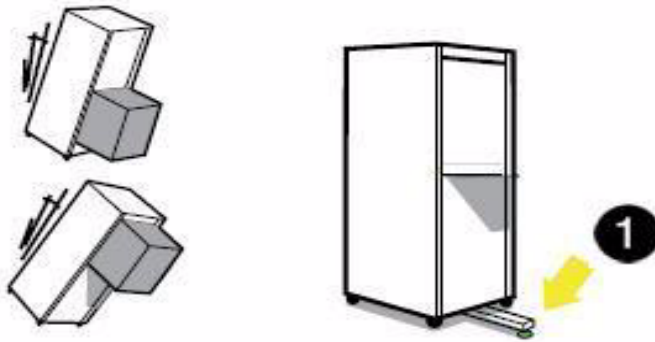
Illustration Key
1. Anti-Tip Bar

Remove Components to Reduce Chassis Weight

Before you begin rackmounting the chassis, you should remove the power supply modules and rear fan modules from the chassis. Removing these components will reduce the weight of the:

- Sun Blade 8000 Chassis from 263 lbs to 163 lbs
- Sun Blade 8000 P Chassis from 204 lbs to 140 lbs

Note – The procedures contained in this section assume that the Sun Blade 8000 Series Chassis is unpowered. See the *Sun Blade 8000 Series Online Information System* for instructions on removing a power supply module from a powered system chassis.

Caution – To ensure that the chassis remains within an acceptable range of operating temperatures, the Sun Blade 8000 Chassis requires six power supply modules, and the Sun Blade 8000 P Chassis requires four power supply modules.

Required Tools and Supplies

- A No. 2 Phillips screwdriver is required to remove and replace the power supplies and fans in the Sun Blade 8000 Chassis.

▼ Remove Power Supply Modules

1. **Perform one of the following steps to release a power supply module from the chassis:**

   - **Sun Blade 8000 Chassis**. Using a Phillips screwdriver, loosen the two captive screws on the power supply module until they turn freely, then flip up the power supply handle.
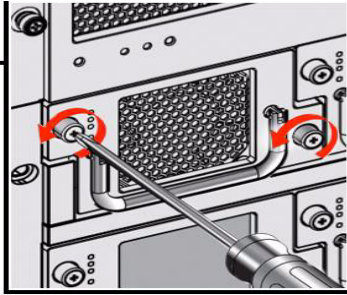
■ **Sun Blade 8000 P Chassis**. Slide up the power supply release button. The power supply handle will release.
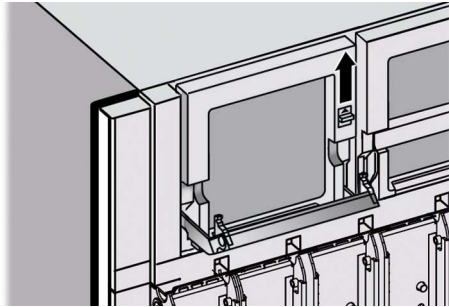
2. **Using the handle, pull the power supply module in a smooth motion until it is free from the chassis. Support the bottom of the power supply module before it is fully removed.**

Sun Blade 8000 Power Supply
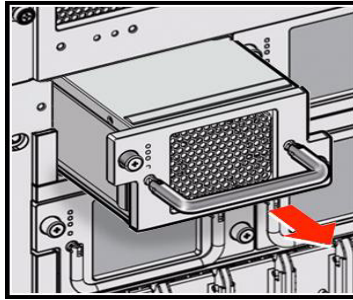
Sun Blade 8000 P Power Supply
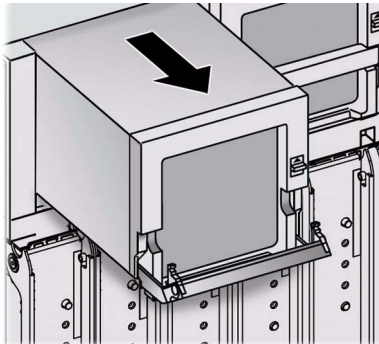
3. **Repeat Steps 1 and 2, until you have removed all power supply modules from the chassis.**

Note – Store the power supply modules in a safe place. After the chassis is rackmounted, you will need to reinstall the power supply modules into the chassis. This procedure is described in "Reinstall Power Supply Modules" on page 45.

▼ Remove Rear Fan Modules

1. **Using a Phillips screwdriver, loosen the two captive (green) screws on the rear fan module until they turn freely.**
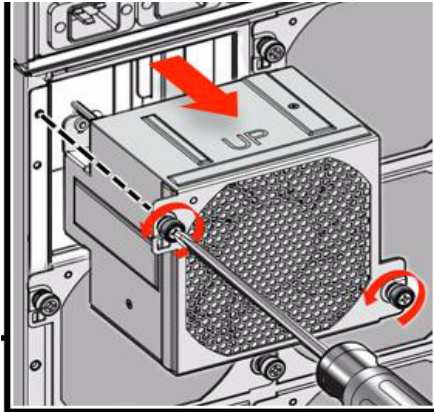
2. **Holding the two captive screws, pull out the rear fan module in a smooth motion until it is free from the chassis.**

3. **Repeat Steps 1 and 2 until you have removed all 9 rear fan modules from the chassis.**

Note – Store the rear fan modules in a safe place. After the chassis is rackmounted, you will need to reinstall the rear fan modules into the chassis. This procedure is described later in "Reinstall Rear Fan Modules" on page 47.

Rackmount the Sun Blade 8000 Series Chassis

This section presents the procedures for installing the Sun Blade 8000 Series Chassis into an open rack or cabinet. You must perform these procedures in the order they are presented in this section:

Note – The following rackmount procedures are applicable to both the Sun Blade 8000 and 8000 P Modular Systems. For illustration purposes, the Sun Blade 8000 Chassis is typically shown to help clarify a rackmounting step. Both blade platform chassis are similar in appearance with the exception of the number of I/O modules and power supply modules supported.

Before You Begin

Prior to performing the procedures in this section, you should have already performed these tasks:

- Ensured that the rack enclosure meets the required rack unit space. For details, see, "Verify Rack or Cabinet Supports Required Rack Unit Space" on page 26.
- Removed the rack enclosure doors and extend anti-tip bar. For more details, see "Prepare Rack Enclosure for Chassis Installation and Safety" on page 27.
- Reduced chassis weight by removing components from the chassis. For more details, see "Remove Components to Reduce Chassis Weight" on page 29.

Required Equipment, Tools, and Supplies

You will need the following equipment to install a Sun Blade 8000 Series Chassis into an open rack or cabinet.

- A suitable host rack or cabinet
- Rack Alignment Template
- The appropriate rackmount kit for the host rack or cabinet. This kit should include:
    - Rack glides (left and right)
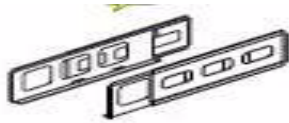
- Two packages of rail-mounting screws: Four (4) M5x12 screws and eighteen (18) M6x20 screws

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Note – You will use the M5x12 screws to fasten the system chassis to the rear rack mounting rails. You will use the M6 x 20 screws to fasten rails, support tray, and system chassis to rack enclosure. These screws are for Sun-supplied rack enclosures. The M6x20 screw may not fit non-Sun supplied rack enclosures.

- Temporary lift support tray and support arms
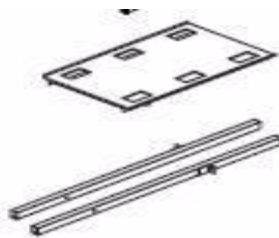
- Antistatic wrist strap
- No. 2 Phillips screwdriver

▼ Install Rack Glides

1. Determine the installation location for the rack glide mounting screws by following these steps:

a. Place the bottom of the Rack Alignment Template on the lowest available position in the rack enclosure.

Align the template with the holes on the rack rail. Note that one (1) rack unit of space is equal to three rack rail holes.
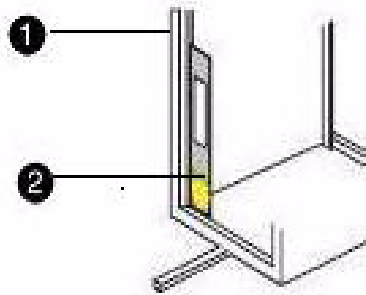
Illustration key:
1. Rack rail
2. Rack Alignment Template

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b. Using the Rack Alignment Template as a guide, identify the following installation locations for mounting the following components:

- **Temporary support tray**. You must leave 1 rack unit of space (three rack rail holes) at the bottom of the rack enclosure for the temporary support tray. You will need to identify front and rear rack rail holes on both the left and right rack rails.

  The Rack Alignment Template identifies the rack unit space required for the temporary support tray.

- **Rack glides (left and right)**. Using the Rack Alignment Template, identify the front and rear mounting locations for the initial rack glide mounting screws. See the following illustration.
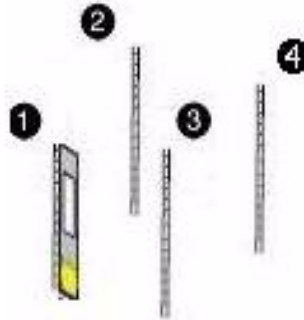
Illustration Key:
You need to identify the *front* (**1**, **3**) and *rear* (**2**, **4**) installation locations for the support tray.

Note – If you are installing the first system chassis into the rack enclosure, the mounting hole location for the rack glide is most often the next rack unit of space above the temporary support tray (11th or 12th rack rail hole).

2. **Insert an M6 rail screw into the four rack rail locations that you have identified in Step 1b for the rack glides.**

   Do not completely tighten the screws. Leave a 0.25-inch gap between the screw head and the rack rail. Ensure that you have inserted a screw into each left (both front and rear) and right (both front and rear) rail locations for the two rack glides.

3. **Prepare each rack glide (left and right) for installation by following these steps:**

   a. **If the screws on the side of the rack glide are not loosened, loosen them in order to extend the rack glide for installation.**
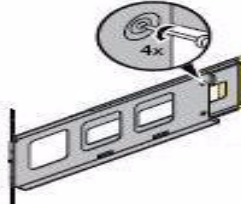
   b. **Pull the rack glide flange to extend or contract the length of the rack glide, as needed.**
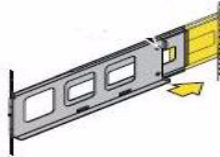
4. **To install the left and right glides onto the rack rails, perform the following steps:**

   a. **Place the extended glide so that the rear flange can be hooked over the screw that is installed at the rear of the rack rail.**
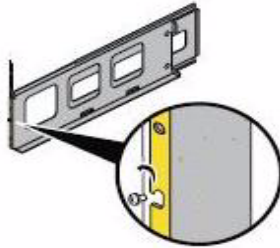
b. Install M6 screws on the lower glide flange, as illustrated below.

Do not fully tighten the screws. Leave a 0.25-inch gap between the screw head and rail.
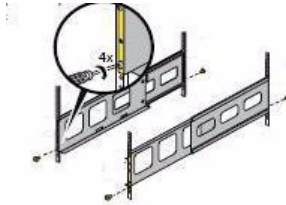
5. Fully tighten the four screws installed in Step 2.

6. Fully tighten other four screws installed in Step 4b.

▼ Attach Temporary Lift Support Tray

1. **Install a support arm on each side of the rack rails (in front of the rack glides) using two M6 screws.**

    The long end of the rack glide should be protruding from the rack and sitting below the rack glide.
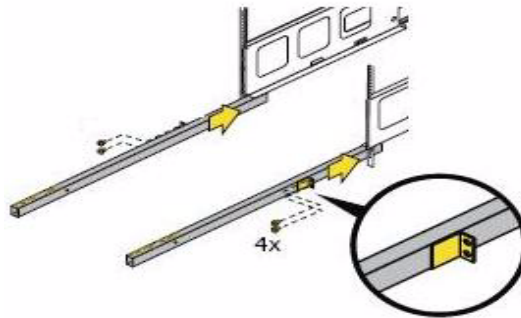
Installing the support arms might require two people.

2. **Locate the support tray and pull out the captive pins on the side of the tray.**
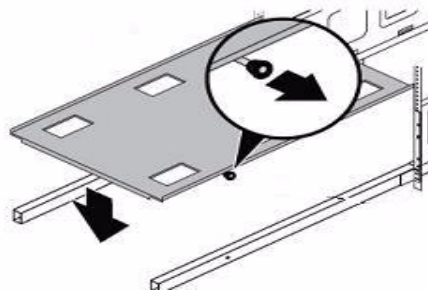
3. **Install the support tray on top of the arms, and release the captive pins into the corresponding holds on the support arms.**

    Ensure that the pins are fully inserted into the holes and are locked in place.

▼ Lift Chassis Onto the Support Tray

⚠ **Caution –** Do not attempt to lift a system chassis by yourself. All power supply modules and rear fan modules should be removed prior to lifting the chassis (see "Remove Components to Reduce Chassis Weight" on page 29). A depopulated Sun Blade 8000 Chassis weighs 163 lbs and must be lifted by at least four people. A depopulated Sun Blade 8000 P Chassis weighs 140 lbs and should be lifted by at least four people.

⚠ **Caution –** To reduce the possibility of tipping the rack or cabinet during installation ensure that the anti-tip bar is extended. The anti-tip bar is located on the bottom of the rack enclosure.

⚠ **Caution –** Keep the system chassis in the horizontal position when lifting it by the lifting handles.

⚠ **Caution –** When inserting the system chassis into the rack, it is essential that the chassis is kept parallel to the front of the rack. On final insertion into the rack, apply equal force to both sides of the system chassis to ensure correct installation.

1. **If you have not done so already, reduce the chassis weight by removing the six power supply modules and the nine rear fan modules. For detailed instructions, see** "Remove Components to Reduce Chassis Weight" on page 29**.**

2. **With four people using the lifting handles, lift the chassis from the pallet onto the temporary support tray. Slide the chassis as close as possible to the rack.**
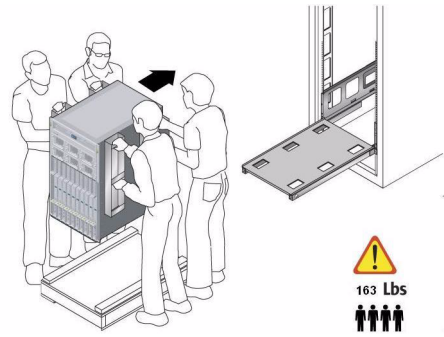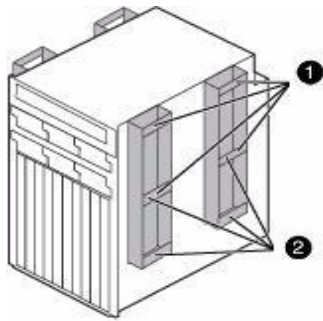
Illustration Key

1. Use these handles for lower installations
2. Use these handles for upper installations

3. **To remove the lifting handles from the chassis, perform these steps:**

   a. **Loosen the two captive screws on the handle.**
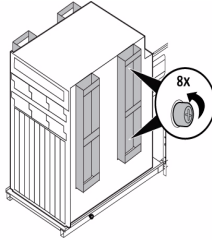
   b. **Slide the handle down and then pull the handle away.**
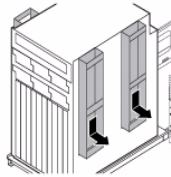
   c. **Repeat Steps 3a and 3b to remove remaining handles on chassis.**

▼ Slide and Secure Chassis Into the Rack

1. With one person on each side of the chassis, slide the chassis into the rack onto the rack glides.
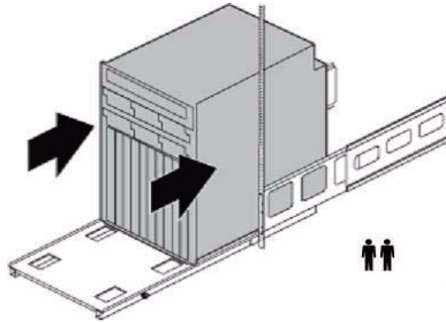
2. Remove the temporary support tray by performing these steps:

a. Extend the pins from the support tray.
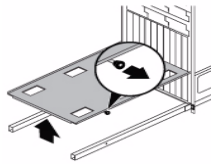
b. Lift off the support tray.

c. **Remove the support tray arms.**

d. **Save the support tray and arms for later use, or recycle.**

3. **Secure the chassis into the rack by performing these steps:**

a. **Install three (3) M6 screws on each side at the front of the system.**
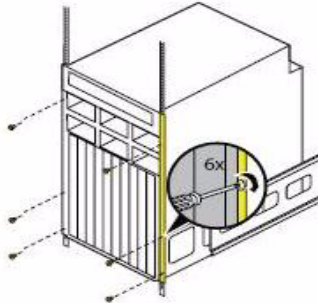
b. **At the rear of the system, install two M5 screws on each side of the system.**

   Install two screws per side.
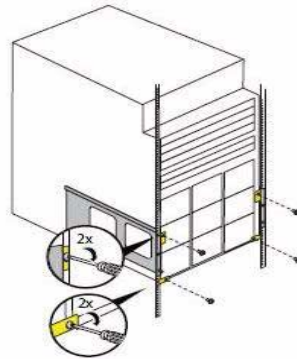
Reinstall Power Supplies and Fan Modules

After securing the Sun Blade 8000 Series Chassis into the rack, you will need to reinstall the power supplies and fan modules you previously removed.

In the Sun Blade 8000 Chassis you will need to reinstall six power supplies and nine fan modules. In the Sun Blade 8000 P Chassis you will need to install four power supplies and nine fan modules.

Use the following procedure to reinstall the power supplies and fan modules.

▼ Reinstall Power Supply Modules

1. **In the front of the system chassis, locate a vacant power supply slot.**

   Ensure that the power supply unit is facing up and the three LED holes appear on the left when installing the power supply module.

2. **Align the power supply unit with the power supply slot. Follow the guidelines below per chassis type.**

   Ensure that one hand is holding the power supply handle while the other hand is on the bottom of the unit supporting the weight of the unit.

3. **In a smooth motion, slide the power supply into the power supply slot until the unit engages with the internal connectors.**

4. **To secure the power supply in the chassis slot perform one the following actions based on your chassis type:**

   - **For Sun Blade 8000 Chassis**. Using a Phillips screwdriver, tighten the two screws to secure the power supply modules to the chassis.

Sun Blade 8000 Chassis Power Supply
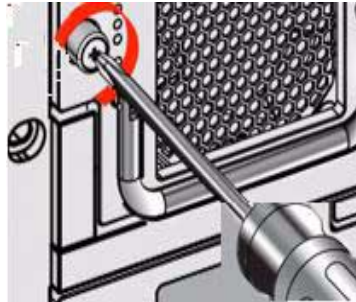
   - **For Sun Blade 8000 P Chassis**. Push the power supply handle up to lock in place.

Sun Blade 8000 P Chassis Power Supply

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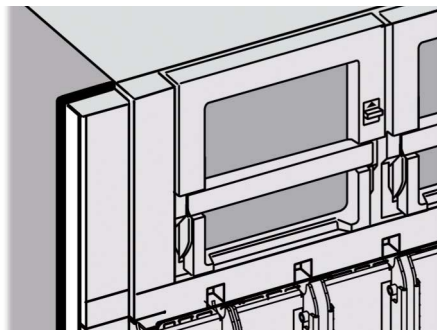
5. **Repeat Steps 1 through 4, until you have reinstalled all power supply modules in the chassis.**

▼ Reinstall Rear Fan Modules

1. **In the back of the system chassis, locate a vacant fan module slot.**

2. **Using both hands, align the fan module with the vacant slot. Note that the top of module is marked "TOP."**

3. **Slide the fan module into the vacant slot until the front panel meets the chassis.**

4. **To secure the fan module in the slot, tighten the captive screws by turning them clockwise.**

5. **Repeat Steps 1 through 4 until you have reinstalled all nine rear fan modules in the chassis.**

What to Do Next

After rackmounting the Sun Blade 8000 Series Chassis into a rack or open cabinet, you are ready to install the Sun Blade 8000 modules and options. For more information, see Chapter 3.

Install Modules and Options Into the Chassis

This chapter describes how to install modules and options into a Sun Blade 8000 and 8000 P Chassis. Topics discussed in this chapter include:

Note – The module installation procedures in this chapter are applicable to both server module platforms Sun Blade 8000 and 8000 P Modular Systems. For illustration purposes, the Sun Blade 8000 Chassis is typically shown to help clarify an installation step. Both platform chassis are similar in appearance with the exception of the number of I/O modules and power supply modules supported.

Plan Installation of Modules and Options

Before installing the Sun Blade 8000 modules and options into the system chassis, you should review these topics:

- "Prerequisites to Install Modules and Options" on page 50
- "About Chassis Filler Panels" on page 50
- "About Chassis Module Ejector Levers" on page 52

Prerequisites to Install Modules and Options

Before you begin the installation of the Sun Blade 8000 modules and options, you should have:

- Reviewed "Prepare to Install the Sun Blade 8000 Series Modular Systems" on page 1.
- Installed the Sun Blade 8000 Chassis into a rack or cabinet (unless a rack or cabinet was not purchased). For detailed instructions, see "Install System Chassis Into a Rack or Cabinet" on page 25.
- Locate the shipping packaging that contains the modules and options that you are about to install into the system chassis.
- An understanding of chassis filler panels and ejector levers. For details, see "About Chassis Filler Panels" on page 50 and "About Chassis Module Ejector Levers" on page 52.

About Chassis Filler Panels

The Sun Blade 8000 Series Chassis arrives with module-replacement filler panels. These filler panels are installed at the factory and must remain in the chassis until you are ready to replace them with a purchased module.

Sun Blade 8000 Chassis Views

Out-of-box rear view   Out-of-box front view

Sun Blade 8000 P Chassis Views

Out-of-box rear view   Out-of-box front view
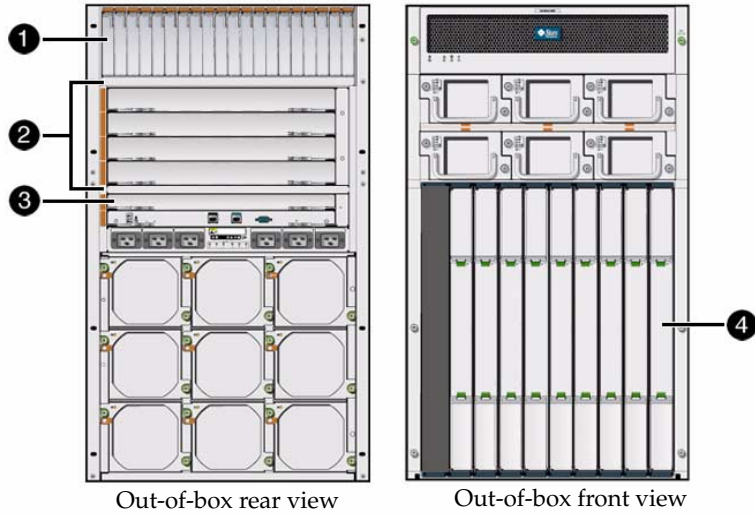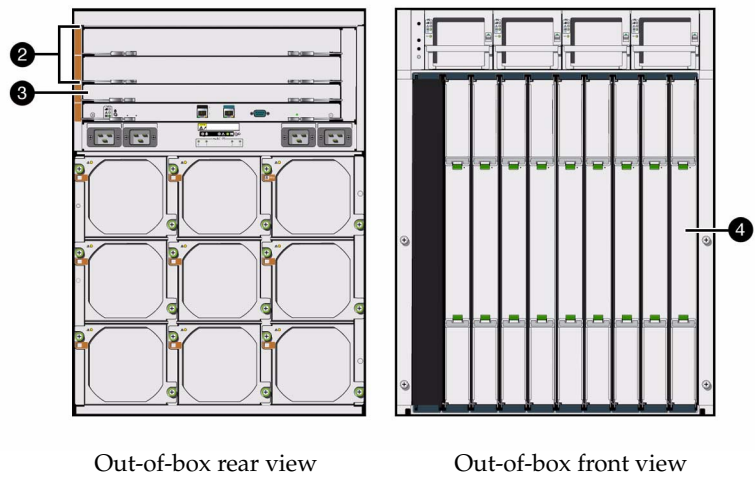
Illustration Key
1. EM filler panels
2. NEM filler panels
3. CMM filler panel
4. Server module filler panels

A filler panel is simply an empty metal enclosure that does not contain any functioning system hardware or cable connectors. These panels must remain in the unused chassis slots to comply with FCC limits for electromagnetic interference (EMI).

Instructions for removing the filler panel and installing the purchased module are provided later in this chapter.

Avoid Electrostatic Discharge

Internal modules and options are electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can destroy components.
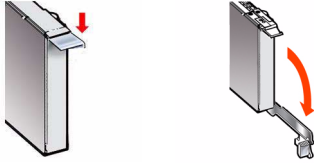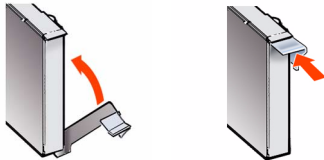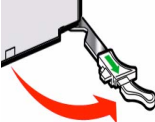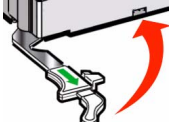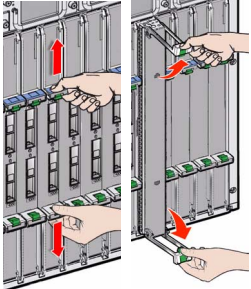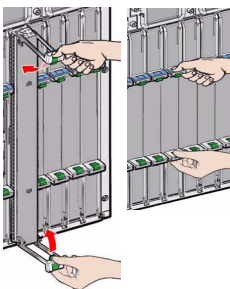
To prevent static damage whenever you are accessing any of the internal components, you must:

- Place static sensitive components such as hard drives, blades, server module options, NEMs, and EMs on an antistatic surface. The following items can be used as an antistatic surface:
  - The bag used to ship the component.
  - Sun Electronic Discharge (ESD) mat, Sun part number 250-1088 (available through your Sun Sales representative).
- Use the antistatic wrist strap that is supplied with each module. Attach this wrist strap to your wrist and ground the other end of strap to the system chassis (sheet metal). For additional information, see the instructions that are shipped with the strap.

About Chassis Module Ejector Levers

The Sun Blade 8000 Chassis contains ejector levers for each replacement module. These ejector levers are used to release or secure the placement of a module in a chassis slot. For each module slot in the chassis there is a specific type of ejector.

The following table provides a brief description of each ejector lever operation.

Ejector Levers	Chassis Slot/Module	Basic Operation
Open **Close**	**PCIe ExpressModule (EM)**	**To open** the lever, press down at the top to release latch, then pull ejector lever down. **To close** the lever and secure the EM, push the lever upward toward the unit until latch snaps into place.
Open　　　**Close**	**Network Express Module (NEM)** **and** **Chassis Monitoring Module**	**To open** the lever and to unlatch the module, squeeze the latch then swing the lever toward you. To close the lever and secure the module, push the left and right levers inward toward the unit until latch snaps into place.
Open　　　**Close**	**Sun Blade Server Modules (blades)**	**To open** the lever, press the ejector lever at the top and bottom to unlatch the server module; then swing out the top and bottom levers. **To close** the lever and secure the server module, raise the bottom lever and lower the top lever toward the unit until the latches snap into place.

Install Modules and Options

This section describes how to perform new installations of modules and options into a Sun Blade 8000 Chassis. Topics covered in this section include:

- "Add Chassis Monitoring Module" on page 55
- "Add Network Express Module" on page 58
- "Add PCIe ExpressModule" on page 62
- "Add Options to a Sun Blade Server Module" on page 65
    - "Increase Memory on a Sun Blade Server Module" on page 65
    - "Add Hard Disk Drives to a Sun Blade Server Module" on page 78
- "Add Sun Blade Server Module" on page 86

Caution – This section does not provide instructions for replacing existing chassis modules and options that are installed in a powered-on system. The instructions in this chapter assume that the new system has not yet been powered-on. For information about replacing existing modules and options, see the *Service and Upgrades* Help topics in the *Sun Blade 8000 Series Online Information System* (OIS). The OIS is provided on the Documentation CD and it is also available from the documentation portal: `http://www.sun.com/documentation`

Add Chassis Monitoring Module

The Sun Blade 8000 Series Chassis arrives with one Chassis Monitoring Module (CMM) installed in slot CMM0. The slot for a second Chassis Monitoring Module arrives with a filler panel.

Illustration Key
1. CMM filler panel in slot CMM1
2. CMM in slot CMM0

If you purchased a second Chassis Monitoring Module, use the following procedures to remove the CMM filler panel and to install a second Chassis Monitoring Module into slot CMM1.

Caution – If you did not purchase a second Chassis Monitoring Module, do not remove the CMM filler panel from slot CMM1. The CMM filler panel is required to meet FCC standards for EMI.

Note – For additional information regarding network management benefits that a second Chassis Monitoring Module provides, see "Management Network IP Address Configuration" on page 130. For other information concerning the CMM, see the topic *About the Chassis Monitoring Module* in the *Sun Blade 8000 Series Online Information System*.

▼ Remove CMM Filler Panel

1. In the rear of the chassis, locate the CMM filler panel to be removed.

Note that both CMM filler panel ejector levers are in the closed position.

2. Holding both ejector levers at the same time, open and unlatch the ejector levers by extending them outward.

If necessary, see "About Chassis Module Ejector Levers" on page 52 for additional information.

3. Holding the opened ejector levers, pull the CMM filler panel toward you until it has been fully removed from the chassis slot.

▼ Install Second CMM

1. Unpack the CMM (box labeled CMM), then locate the vacant CMM1 slot in the back of the chassis.

Note – For future reference, you may want to record the MAC address of the CMM module.

---

2. Align the CMM with the slot labeled CMM1. Ensure that the CMM's RJ-45 port connectors are facing toward you and that the CMM ejector levers are fully opened. Ensure that the sticker on the top of the unit is facing up.

3. Slide the CMM into the vacant chassis slot (labeled CMM1) until the ejector levers engage and start to close.

Failure to align the CMM correctly can result in damage with the CMM's internal connections to the chassis midplane.
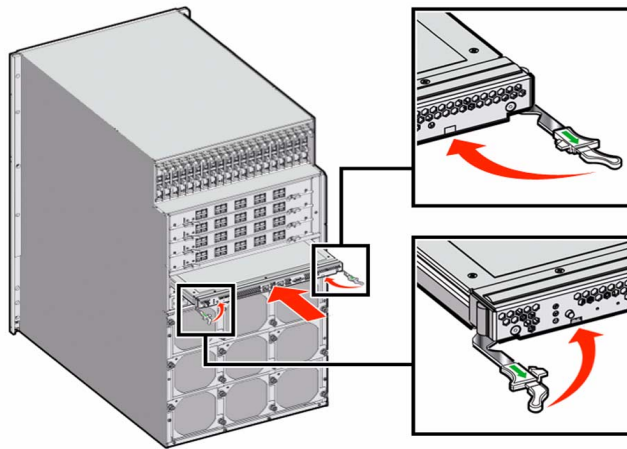
4. **Complete the installation by closing the ejector levers and ensuring that the latches are completely snapped closed. If necessary, see** "About Chassis Module Ejector Levers" on page 52 **for additional information.**

   The CMM is secured into the chassis.

Add Network Express Module

The Sun Blade 8000 Chassis supports up to four Network Express Modules (NEMs). The Sun Blade 8000 P Chassis supports up to two Network Express Modules. The chassis arrives with filler panels installed in each NEM slot (see figures below). Use the following procedures to remove a filler panel from a slot and to install a NEM into the corresponding vacant slot.

Sun Blade 8000 Chassis
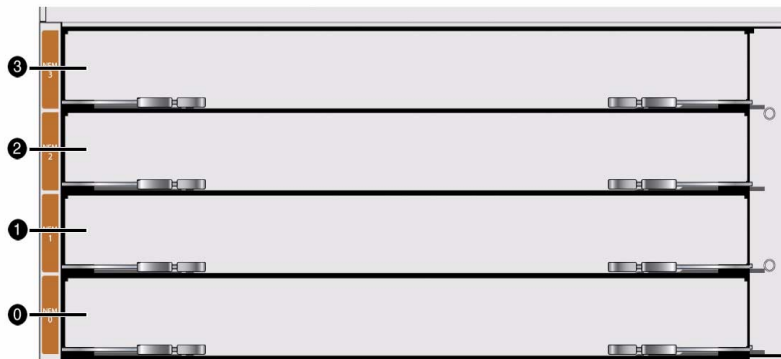
Sun Blade 8000 P Chassis
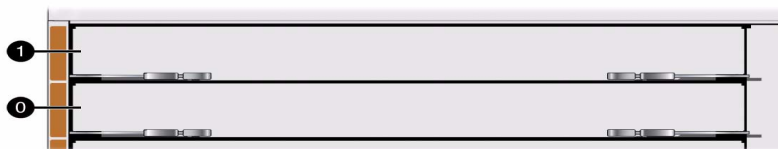
Illustration Key

0. NEM filler panel in slot NEM0
1. NEM filler panel in slot NEM1
2. NEM filler panel in slot NEM2
3. NEM filler panel in slot NEM3

Caution – If you are not installing a NEM into a slot, do not remove the NEM filler panel from the slot. The NEM filler panel is required to meet FCC standards for electromagnetic interface (EMI). The filler panels are also required to provide proper chassis airflow and cooling.

Note – For additional information about the I/O capability that a NEM provides, see "I/O Connectivity" on page 16. For further information about a NEM, including service procedures, see the *Network Express Module* topics in the *Sun Blade 8000 Series Online Information System.*

▼ Remove NEM Filler Panel

1. **In the rear of the chassis, locate the NEM filler panel that you want to remove.**

   Note that both NEM filler panel ejector levers are in the closed position.

2. **Holding both ejector levers at the same time, open and unlatch the ejector levers by extending them outward.**

   If necessary, see "About Chassis Module Ejector Levers" on page 52 for additional information.

3. **Holding the opened ejector levers, pull the NEM filler panel toward you until it has been fully removed from the chassis slot.**

▼ Install NEM

1. **Unpack the NEM (box labeled NEM).**

2. **(GbE NEM Only) If the NEM is a GbE NEM do the following:**

   - Locate the starting MAC address for all 20 GbE NEM ports printed on the rear of the NEM board.

   - Record the MAC address along with the chassis slot number where you are about to install the NEM and keep both for future reference.

Caution – Once a NEM is installed in the chassis, you will not be able to read the MAC address label.

Tip – Later in the installation when you specify operating system network information for multiple network interfaces, you will need to know the MAC address for each GbE NEM data port connected to your network. For more information about GbE NEM MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

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3. **Locate the vacant NEM slot in the back of the chassis. Ensure the label on top of the NEM is facing up.**

Tip – For information about NEM to server module connection, see "Server Module Connection to NEM" on page 96.

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4. **Align the NEM with the vacant NEM slot. Ensure that the NEM's RJ-45 port connectors are facing toward you and that the NEM ejector levers are fully opened.**
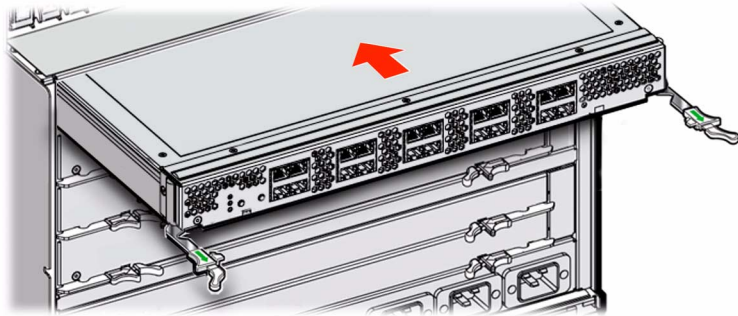
5. **Slide the NEM into the vacant NEM chassis slot until the ejector levers engage and start to close.**

   Failure to align the NEM correctly can result in damage with the NEM's internal connection to the chassis midplane.

6. **Complete the installation by closing both the ejector levers until the latches snap into place and the NEM is secured in the chassis.**

   If necessary, see "About Chassis Module Ejector Levers" on page 52 for additional information.
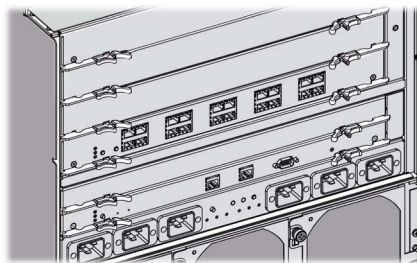
7. **For each remaining NEM to be installed, repeat the steps in the following two procedures:**

   - "Remove NEM Filler Panel" on page 59
   - "Install NEM" on page 60

Add PCIe ExpressModule

The Sun Blade 8000 Chassis supports up to 20 PCIe ExpressModules (EMs). It arrives with 20 filler panels installed in each EM slot labeled EM9.0-0.0. Use the following procedures to remove a filler panel from a slot and to install an EM into the corresponding vacant slot.

Note – Sun Blade 8000 P Chassis does not support PCIe ExpressModules.

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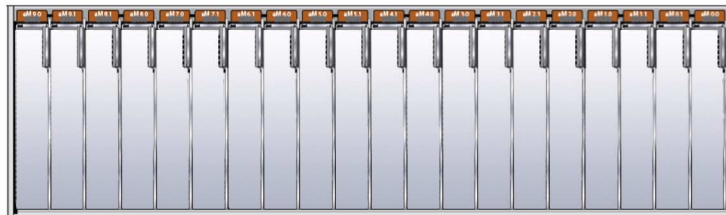
20 EM Filler Panels in Rear of Chassis

Caution – If you are not installing an EM into a slot, do not remove the EM filler panel from the slot. The EM filler panel is required to meet FCC standards for electromagnetic interference (EMI).

Note – For additional information about the I/O capability that an EM provides, see "I/O Connectivity" on page 16. For further information about replacing EMs, see the *Replacing an ExpressModule (Sun Blade 8000 Chassis)* topic in the *Sun Blade 8000 Series Online Information System*.

▼ Remove EM Filler Panel

1. **In the rear of the Sun Blade 8000 Chassis, locate the EM filler panel that you want to remove.**

   Note that the EM filler panel ejector lever is in the closed position.

2. **Holding the ejector lever, press down at the top to unlatch, then pull the lever down to release the lever on the filler panel.**

   If necessary, see "About Chassis Module Ejector Levers" on page 52 for additional information.

3. **Holding the opened ejector lever, pull the ejector lever toward you to slide the filler panel from the EM slot.**

▼ Install EM

1. **Unpack the EM (box labeled EM).**

2. **Record the MAC addresses of the two EM data ports for future reference. To view the EM port MAC addresses, do the following:**

   a. **Remove the cover from the EM by pressing the release button on the side and sliding the cover off.**

   b. **After recording the MAC address, replace the cover on the EM by sliding the cover into place.**

Tip – Later in the installation when you specify operating system network information for multiple network interfaces, you will need to know the MAC address for each EM data port connected to your network. For more information about EM MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

---

3. **Locate the vacant EM slot in the back of the Sun Blade 8000 Chassis.**

   Record the slot number for future reference with the MAC address.

Tip – For information about EM to server module connection, see "Server Module Connection to EM" on page 99.

---

4. **Align the EM with the vacant EM slot. Ensure that the EM's indicator lights on the front panel are facing toward you and that the EM ejector lever on the bottom is fully opened.**

5. **Slide the EM into the vacant EM chassis slot until the ejector lever engages and starts to close.**

   Failure to align the EM correctly can result in damage with the EM's internal connection to the chassis midplane.
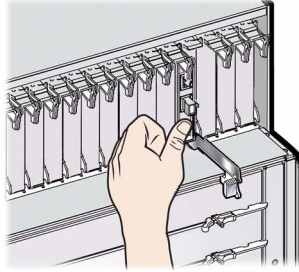
6. **Complete the installation by closing the ejector lever until the latch snaps into place.**

   If necessary, see "About Chassis Module Ejector Levers" on page 52 for additional information.

   ⚠️ **Caution –** Avoid breaking the lever and latch by taking caution when closing the lever and snapping the latch into place.

   The EM is secured into the chassis.

7. **For each remaining EM to be installed, repeat the steps in the following two procedures:**

    ▪ "Remove EM Filler Panel" on page 63

    ▪ "Install EM" on page 63.

Add Options to a Sun Blade Server Module

The Sun Blade Server Module is available in multiple configurations and is shipped as ordered. In addition to the standard server module configuration ordered, you can order separate customer-installable options for the server module such as additional memory or hard disk drives (HDDs).

Topics discussed in this section include:

▪ "Increase Memory on a Sun Blade Server Module" on page 65

▪ "Memory Module Installation" on page 75

▪ "Add Hard Disk Drives to a Sun Blade Server Module" on page 78

Caution – The following sections describe procedures for new installations of disk drives and memory modules. If you want to remove a disk drive using a hot-plug operation or replace a memory module on an existing installed server module, see the *Service and Upgrades* topics in the *Sun Blade 8000 Series Online Information System*.

Increase Memory on a Sun Blade Server Module

The Sun Blade Server Modules are shipped with standard memory configurations. If you ordered additional memory, a kit for the additional memory is shipped separately.

About Memory Modules

The X8400 Server Module uses 2.5V error-correcting (ECC) high-capacity dual inline memory modules (DIMMs). The DIMMs are built with double-data-rate synchronous dynamic access memory (DDR SDRAM) that operates at a 400-MHz clock frequency.

The X8420 and X8440 Server Modules use 1.8V error-correcting (ECC) high-capacity dual inline memory modules (DIMMs). The DIMMs are built with double-data-rate-two synchronous dynamic access memory (DDR2 SDRAM) that operates at a 667-MHz clock frequency.

The X8400 and X8420 Server Modules support up to 16 DIMMs, four per CPU. The X8440 Server Module supports up to 32 DIMMs, eight per CPU.

The X8450 Server Module uses 1.8V error correcting code (ECC) high-capacity Fully Buffered Dual Inline Memory Modules (FB-DIMMs). The FB-DIMMs are built with double-data-rate-two-synchronous dynamic random access memory (DD2 SDRAM) that operates at 667-MHz clock frequency.

Memory capacities available for all blades include:

- 1-Gbtye
- 2-Gbyte
- 4-Gbyte

The maximum memory capacity for the X8420 Server Modules is 64 Gbytes (4 CPUs x 4DIMMs per CPU x 4GB DIMMs = 64 GB total). The maximum memory capacity for the X8440 Server Module is 128 Gbytes (4 CPUs x 8 DIMMs per CPU x 4GB DIMMs = 128 GB total). The maximum memory capacity for the X8450 Server Modules is 128 Gbytes (32 DIMMs x 4GB DIMMs = 128-Gbytes total).

X8400 and X8420 CPU and DIMM Pair Locations

The figure below identifies the X8400 and X8420 Server Module CPU DIMM pairs (4 DIMMs maximum per CPU)
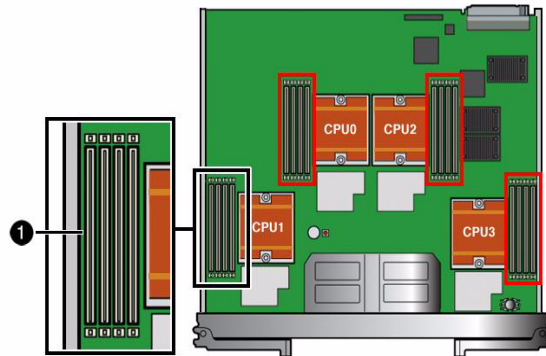
Illustration Key

1. DIMM Slot 0 location for CPU1

X8440 CPU and DIMM Pair Locations

The figure below identifies the X8440 Server Module CPU DIMM pairs (8 DIMMS maximum per CPU).
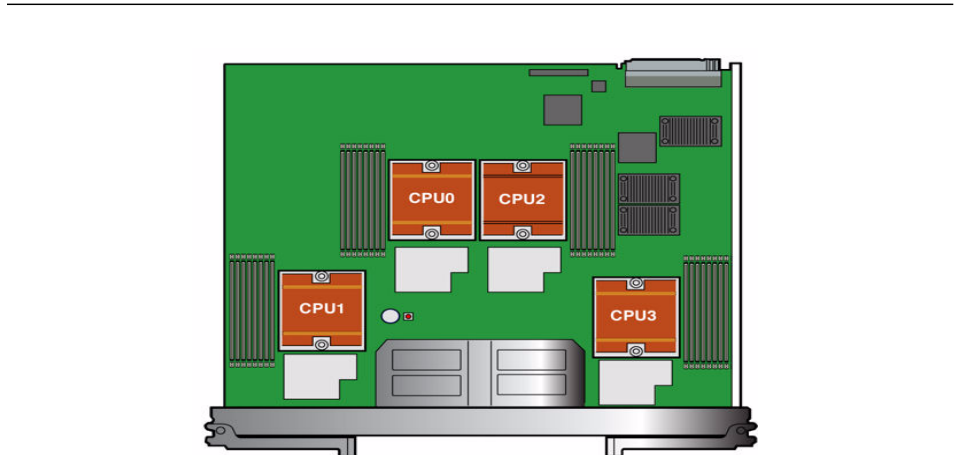
Note that in a two-socket X8440 Server Module configuration, the physical location for the processors include socket 2 and 3 (physical socket locations 0 and 1 are empty). At boot time, the first processor that activates is automatically viewed by the BIOS and OS as processor 0 and the second processor that activates is automatically viewed as processor 1. Therefore, when troubleshooting issues pertaining to a two-socket processor configuration on an X8440 Server Module it is important that you properly correspond the logical processor numbers (0 and 1) with the physical locations of the processors (2 and 3). A breakdown of this correspondence is as follows:

- Logical view of processor 0 (by BIOS and OS) corresponds with physical processor socket location 2.
- Logical view of processor 1 (by BIOS and OS) corresponds with physical processor socket location 3.

X8450 CPU and DIMM Group Locations

The figure below identifies the X8450 Server Module CPU locations and Fully-Buffered (FB) DIMM groups. All FB-DIMMs on the X8450 Server Module must be installed in groups of four for maximum performance.
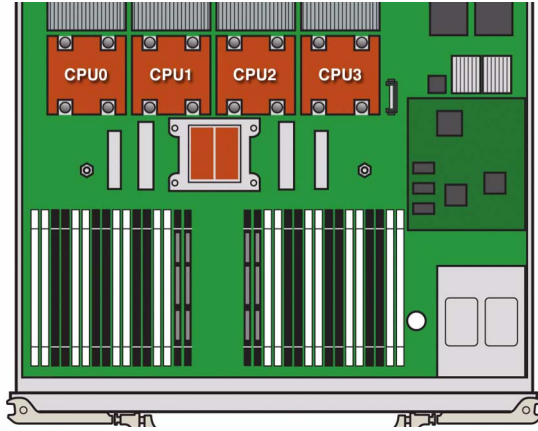
Memory Module Configuration and Population Order.

TABLE 3-1 identifies the recommended memory configuration rules. TABLE 3-2 identifies the memory population order rules for the server module.

TABLE 3-1   Memory Module Configuration Rules

Server Module	Memory Module Configuration Rules

X8450	• To achieve best performance, Fully Buffered DIMMs (FB-DIMMs) on the X8450 server module should be installed in groups of four. However, it is possible to populate FB-DIMMs on an X8450 server module in pairs. FB-DIMM pairs will not offer optimal performance unless the pairs are balanced symmetrically with a comparable pair of FB-DIMMs.
	• If you want to achieve maximum performance, then you should install FB-DIMMs in groups of four and follow these guidelines:
	  • FB-DIMMs within a group of four must be identical with respect to size and speed. In addition, FB-DIMM pairs within a group of four should be identical with respect to manufacturer.
	  • FB-DIMMs within a group of four must be installed in the appropriate color-coded slots. The color-coded slots alternate between black and white. There are four single slots for each color-coded group.
	  • Install FB-DIMMs in groups of four per the population order rules in TABLE 3-2.
	• If you want to install the minimum increment of FB-DIMMs, then you should install a pair of FB-DIMMs and follow these guidelines:
	  • FB-DIMM pairs should be identical with respect to manufacturer, size, and speed.
	  • FB-DIMM pairs must be installed in the next available color-coded slot per the X8450 population order rules described in TABLE 3-2. The color-coded group slots alternate between black and white. There are four single slots for each color-coded group. You would need to install the first DIMM pair in the first two slots in a color-coded group, then the next time you increment the FB-DIMMs with a pair, you would install the second FB-DIMM pair in the adjacent two slots in that color-coded group.
	• The maximum supported memory capacity is 128 Gbytes (32 FB-DIMMs = 128Gbyte total). Support for larger capacity FB-DIMMs may be offered as they become available.

TABLE 3-1 Memory Module Configuration Rules

Server Module	Memory Module Configuration Rules

X8440	• Each X8440 CPU supports up to 8 DIMMs
	• Available X8440 DIMM configurations:
	  • 2-DIMM = DIMM pair 3 (DIMM slots 6 and 7 installed)
	  • 4-DIMM = DIMM pairs 2 and 3 (DIMM slots 4, 5, 6, and 7 installed)
	  • 6-DIMM = DIMM pairs 1, 2, and 3 (DIMM slots 2, 3, 4, 5, 6, and 7 installed)
	  • 8-DIMM = DIMM pairs 0, 1, 2 and 3 (DIMM slots 0, 1, 2, 3, 4, 5, 6, and 7 installed
	• If the X8440 CPU has only a single DIMM pair, then you must install that single DIMM pair into the *farthest* slot locations from the respective CPU, which are slots 6 and 7.
	• All X8440 DIMM pairs must be identical with respect to manufacturer, size and speed.
	• When populating DIMMs on an X8440 Server Module, refer to the population order rules in TABLE 3-2 and the procedure for installing DIMMs "Memory Module Installation" on page 75.

X8420	• Each X8420 CPU supports up to 4 DIMMs. • DIMM pair 0 (DIMM Slots 0 and 1) is the pair *nearest* to the CPU. • DIMM pair 1 (DIMM Slots 2 and 3) is the pair *farthest* from the CPU. • If the X8420 CPU has only a single DIMM pair, then you must install that single DIMM pair into the *farthest* slot locations from the respective CPU, which are slots 2 and 3. • All X8420 DIMM pairs must be identical with respect to manufacturer, size and speed. • When populating DIMMs on an X8420 Server Module, refer to the population order rules in TABLE 3-2 and the procedure for installing DIMMs "Memory Module Installation" on page 75.
X8400	• Each X8400 CPU supports up to 4 DIMMs • DIMM pair 0 (DIMM Slots 0 and 1) is the pair *farthest* from the CPU. • DIMM pair 1 (DIMM Slots 2 and 3) is the pair *nearest* to the CPU. • If the X8400 CPU has only a single DIMM pair, then you must install that single DIMM pair into the *farthest* slot locations from the respective CPU, which are slots 0 and 1. • All X8400 DIMM pairs must be identical with respect to manufacturer, size and speed. • When populating DIMMs on an X8400 Server Module, refer to the population order rules in TABLE 3-2 and the procedure for installing DIMMs "Memory Module Installation" on page 75.

TABLE 3-2   Memory Module Population Order
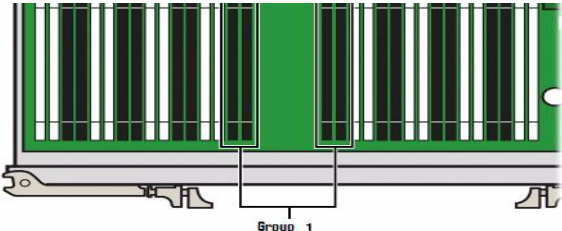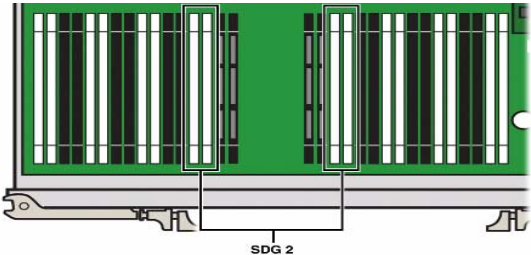
Server Module	Memory Module Population Order

X8450 (Group of 4)	**FB-DIMMs in Group of Four Population Order**
	
	Follow these population rules when you are installing FB-DIMMs in groups of four:
	
	• FB-DIMM within a group of four must be installed in the appropriate color-coded slots. The color-coded group slots alternate between black and white. There are four single slots for each color-coded group.
	
	• Populate the FB-DIMM groups on the X8450 Server Module in the following order:
	
	  • The first group of four DIMMs must be installed in the center black color-coded slots.
	
	  • The second group of four DIMMs must be installed in the white color-coded slots that appear on either side of the first group of DIMMs installed. The figure below identifies the second DIMM group (SDG-2) location.

TABLE 3-2   Memory Module Population Order
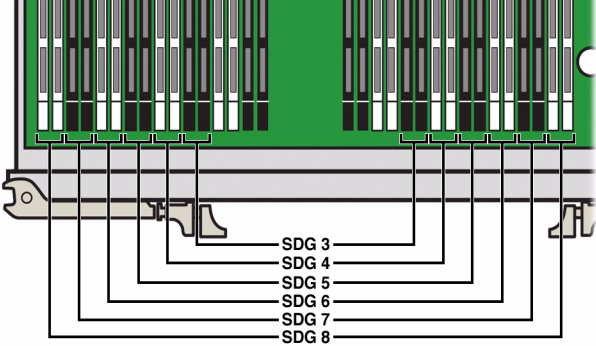
Server Module	Memory Module Population Order
X8450 (Group of 4 - (continued)	• Subsequent DIMM groups must be installed in the remaining six color-coded group slots. The figure below identifies the subsequent DIMM groups (SDG3-SDG8)
X8450 (Single Pair)	**FB-DIMM Single Pair Population Order** Follow these population rules when increasing the memory configuration with a single DIMM pair: • FB-DIMM pair must be installed in the appropriate color-coded slots. The color-coded group slots alternate between black and white. There are four single slots for each color-coded group.

TABLE 3-2   Memory Module Population Order
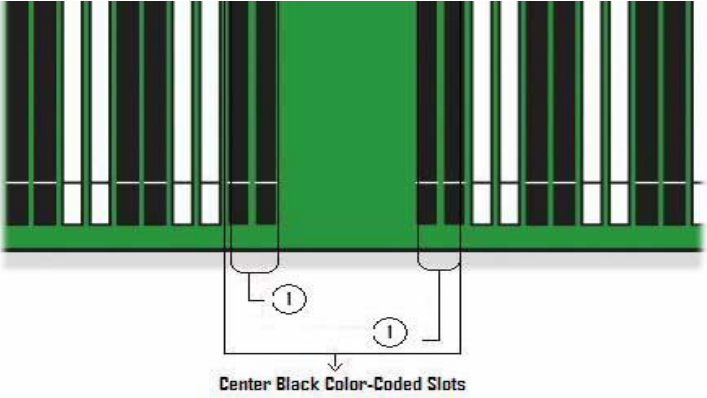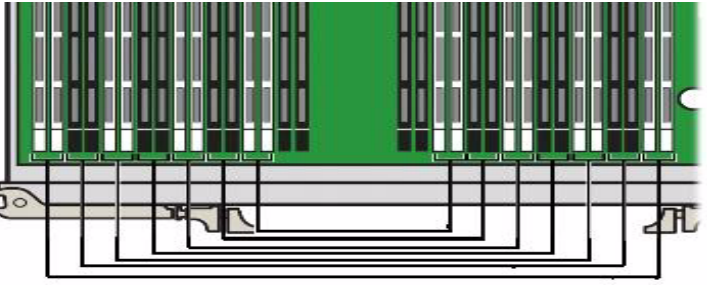
Server Module	Memory Module Population Order
X8450 (Single Pair - continued)	• Install the first DIMM pair in two adjacent black color-coded slots located in the center, see illustration below. The number **1** highlights the location of two adjacent slots where a single pair could be installed. Center Black Color-Coded Slots • The next time you increment the memory configuration with a single pair, you should install the second FB-DIMM in the two remaining black color-coded (adjacent) slots located in the center. • Subsequent groups of single DIMM pairs must be installed in the remaining seven color-coded group slots.

TABLE 3-2   Memory Module Population Order

Server Module	Memory Module Population Order

X8440	• All X8440 DIMMs must be populated in pairs, for example:
	  • DIMM pair 0 = DIMM slots 0 and 1. These DIMM slots are the nearest slots to the respective CPU.
	  • DIMM pair 1 = DIMM slots 2 and 3.
	  • DIMM pair 2 = DIMM slots 4 and 5.
	  • DIMM pair 3 = DIMM slots 6 and 7. These DIMM slots are the farthest slots to the respective CPU.)
	• If the X8440 CPU has only a single DIMM pair, then you must install that single DIMM pair into the *farthest* slot locations from the respective CPU, which are slots 6 and 7.
	• Each X8440 CPU supports up to eight DIMMs.

X8420	• All X8420 DIMMs must be populated in pairs, for example:
	  • DIMM pair 0 = DIMM slots 0 and 1. These DIMM slots are the nearest slots to the respective CPU.
	  • DIMM pair 1 = DIMM slots 2 and 3. These DIMM slots are the farthest slots to the respective CPU.
	• If the CPU has only a single DIMM pair, then you must install that single DIMM pair into the *farthest* slot locations from the respective CP, which are slots 2 and 3.
	• Each CPU supports up to four DIMMs.

X8400	• All X8400 DIMMs must be populated in pairs, for example:
	  • DIMM pair 0 = DIMM slots 0 and 1. These DIMM slots are the farthest slots from the respective CPU.
	  • DIMM pair 1 = DIMM slots 2 and 3. These DIMM slots are the nearest slots to the respective CPU.
	• If the CPU has only a single DIMM pair, then you must install that single DIMM pair into the *farthest* slot locations from the respective CPU, which are slots 0 and 1.
	• Each CPU supports up to four DIMMs.

▼ Memory Module Installation

Before installing additional memory on a server module, you will need to gather the following items:

- No. 2 Phillips screwdriver (to remove server module cover)
- Antistatic wrist strap and mat
- Sun Blade Server Module
- Memory kit

Follow these steps to add memory modules to a server module.

1. **Locate and unpack the server module from its antistatic packaging.**

Caution – Do not use the ejector latches to carry the server module. The ejector latches should only be used to seat the server module in the chassis. They are not designed to support the weight of the server module.

---

2. **Remove the server module cover by performing the following steps:**

   a. **Place the server module on a stable work surface.**

      For example, place the server module on top of an antistatic mat; or, place the server module on top of the server module's plastic packaging.

   b. **Remove the server module cover as follows:**

Note – Some X8440 Server Modules are shipped with tool-less covers. If the X8440 Server Module does not have screws holding the cover in place, refer to the instructions for removing a tool-less cover.

Server Module	Description
X8400, X8420, X8440	Using a Phillips screwdriver, remove the four middle cover screws and fully loosen the four captive screws.
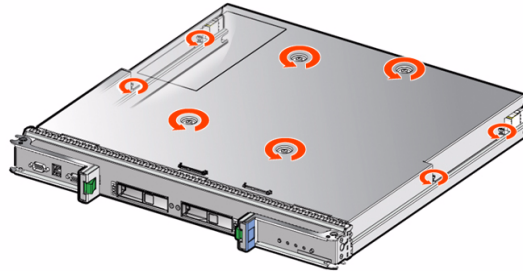
| X8440 or X8450 (Tool-less cover) | Locate the green release levers. Then, using your fingers push the levers inward to release the cover. |
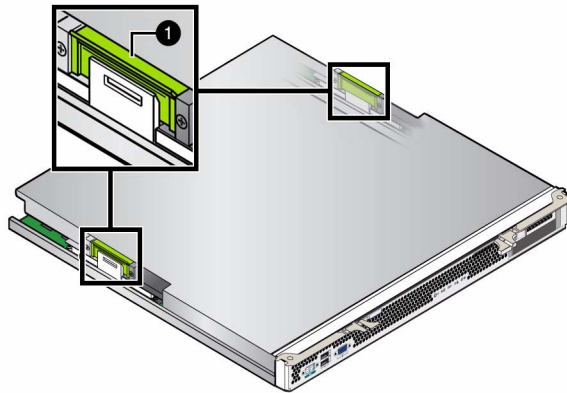
c. **Slide the cover up until the cover clears the tabs at the front of the server module, then remove the cover.**

3. **Locate and attach the antistatic wrist strap.**

   Follow instructions provided with wrist strap.

4. **Locate and unpack the new DIMM from its antistatic container.**

5. **Ensure that the DIMM ejector levers are open (angled outward) then align the DIMM notch to the DIMM connector key.**

6. **Using both thumbs, press the DIMM straight down into the DIMM connector slot until both ejector levers close, locking the DIMM in the DIMM connector slot.**

Note – The DIMMs must be inserted evenly, straight down into the DIMM connector slot, until the ejector levers lock into place.
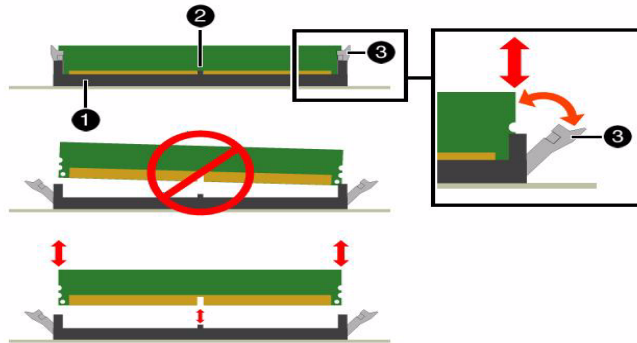
Illustration Key:

1. DIMM Connector Slot

2. DIMM Connector Key

3. DIMM Lever

7. **Verify that the DIMM ejector levers are upright, seated, and tight. Press on ejector levers to ensure that they are engaged properly.**

8. **To install the second DIMM, repeat Steps 4 through 7.**

9. **To reinstall the server module cover, slide the cover under the tabs at the front of the server module, then reinstall and tighten all screws.**

Add Hard Disk Drives to a Sun Blade Server Module

The Sun Blade Server Module is shipped without hard disk drives (HDDs). As an option, you can order and install up to 2 HDDs per server module. HDDs are easily installed in the HDD bays (labeled HDD0-1) located on the front panel of the server module (see figure below).
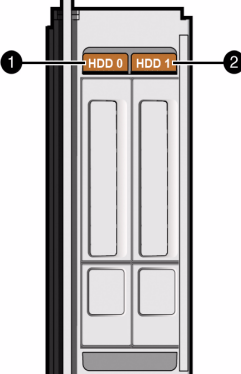
Server Module	HDD Figure
X8400, X8420, X8440	
X8450	

Illustration Key: 1) HDD0 Label; 2) HDD1 Label

Note – Installation of a hard disk drive is not necessary if you are configuring the server module to boot from a FC SAN device.

Tools and Supplies Needed

Before installing a hard disk into a server module, you will need to gather the following items:

- Installed Sun Blade Server Module
- Supported hard disk drive (HDD)
  - 73-Gbyte (10K RPM) SFF SAS Drive
    Available on the X8400, X8420, X8440, and X8450 server modules.
  - 73-GB (15K RPM) SFF SAS Drive
    Available on the X8400, X8420, X8440, X8450 server modules.
  - 146-Gbyte SFF SAS Drive
    Available on the X8400, X8420, X8440, X8450 server modules.
  - 80-Gbyte SFF SATA Drive
    Available on the X8400, X8420 and X8440 server modules.
  - 200GB SFF SATA Drive
    Available on the X8450 server module.

The Sun Blade server modules are shipped with two HDD filler panels in slots labeled HDD0 and HDD1.

Use the following procedures to remove the HDD filler panel from the server module and to install a HDD into the vacant HDD slot on the server module.

Caution – If you are not installing a hard drive, do not remove the HDD filler panel from the server module. The HDD filler panels are required to meet FCC standards for EMI.
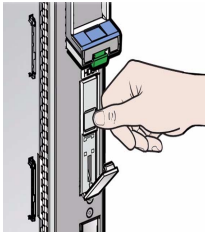
Caution – The following procedures describe a new installation of a server module in a powered-down chassis. The procedure is different if you are adding or replacing a server module using a hot-plug operation. For more information about server module hot plug operations, see the "Serving the system" topics in the Online Information System.

▼ Remove the HDD Filler Panel

1. Unpack the server module (box labeled Sun Blade).

2. In the front of the server module, locate the HDD filler panel that you want to remove. Note that the HDD filler panel ejector lever is in the closed position.

3. Open the HDD lever as follows:

Server Module	Instructions
X8400, X8420, X8440	Push the HDD ejector lever button to unlatch the lever, then tilt the lever down to release the filler panel.
X8450	Push the HDD ejector lever button to unlatch the lever, then tilt the lever up to release the filler panel.

4. Holding the opened ejector lever, pull the ejector lever toward you and slide the filler panel from the HDD slot.

Server Module	Removing HDD Filler Panel From Slot
X8400, X8420, X8440	
X8450	
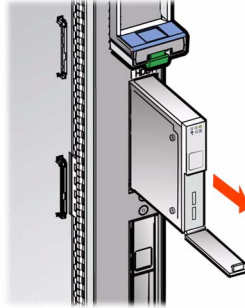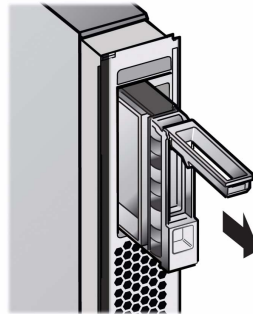
▼ Install HDD Into a Sun Blade Server Module

1. **Install the Sun Blade server module into a vacant chassis slot.**
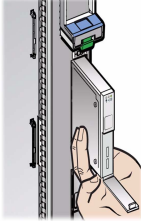
   For details, see "Install Sun Blade Server Module Into Chassis Slot" on page 87.

2. **Locate and unpack the new HDD from its antistatic container.**

3. **Locate the vacant HDD slot on the server module.**
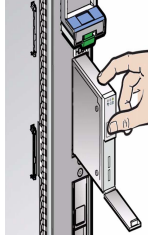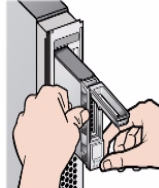
Server Module	HDD Figure
X8400, X8420, X8440	
X8450	

4. **On the new HDD, push the disk drive ejector lever button on the front to unlatch the lever, then for the:**

   - X8400, X8420, and X8440 tilt down the lever.
   - X8450 tilt up the lever.

5. **Align the HDD with the vacant HDD slot in the server module. Ensure that the ejector lever is completely open.**

Server Module	HDD Figure
X8400, X8420, X8440	HDD LEDs appear at the top.
X8450	HDD LEDs appear on the bottom.

6. **Slide the new HDD into the vacant HDD slot by pressing on the middle of the HDD faceplate with your thumb or finger.**

Server Module	HDD Figure
X8400, X8420, X8440	
X8450	

7. **Ensure that the HDD ejector lever is two-thirds open (approximately 60 percent with respect to the faceplate) when sliding in the HDD into the slot.**

   Do not slide the HDD in all the way. Leave the HDD out approximately 0.25 to 0.50 inch from the opening.

Server Module	HDD Figure
X8400, x8420, X8440	
X8450	
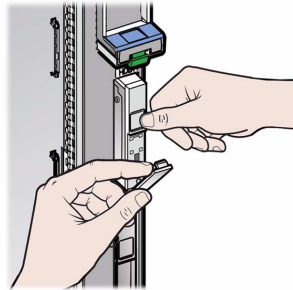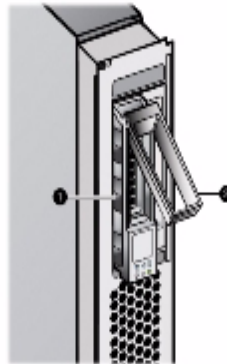
Illustration Key

1. Leave 0.25 to 0.50 inch from the slot opening.
2. Ejector lever should be two-thirds of the way open.

8. **Using your thumb or finger, press on the middle of the HDD front faceplate until the ejector lever engages with the server module.**

Server Module	HDD Figure
X8400, X8420, X8440	Pivot the ejector lever up until it clicks into place and the lever becomes flush with the HDD faceplate.
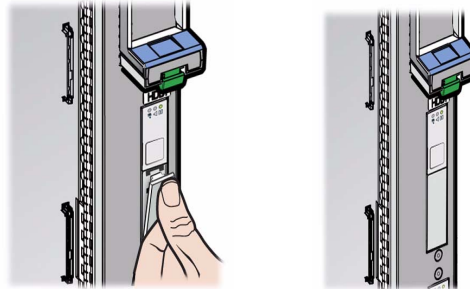
Server Module	HDD Figure
X8450	Pivot the ejector lever down until it clicks into place and the lever becomes flush with the HDD faceplate.
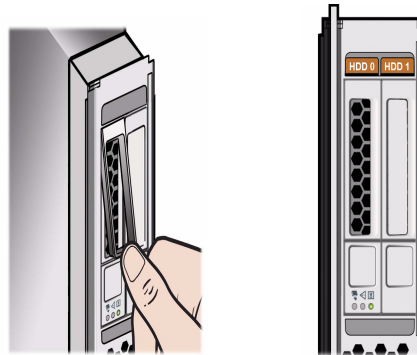
9. **To install a second hard disk drive, repeat Steps 1 through 8.**

Add Sun Blade Server Module

The Sun Blade 8000 Series Chassis supports up to 10 Sun Blade Server Modules (blades). The chassis arrives with nine filler panels installed in each server module slot labeled BL1-9.

Illustration Key
1. Vacant server module slot labeled BL0
2. Nine server module filler panels in slots labeled BL1 to BL9

Caution – If you are not installing a server module into a slot, do not remove the server module filler panel from the slot. The server module filler panel is required to meet FCC standards for EMI.

Use the following procedures to remove a filler panel from a slot and to install a server module into the corresponding vacant slot.

Caution – The following procedure is for new installations in a powered-off chassis. If you want to remove a server module using a hot-plug operation, see the *Service* or *Hot-plug Component* topics in the *Sun Blade 8000 Series Online Information System*.

▼ Remove Sun Blade Server Module Filler Panel

1. In the front of the chassis, locate the server module filler panel to be removed.

2. To unlatch the server module filler panel from the chassis, press the button on the ejector lever handles at the top and bottom; then pivot out and raise the top ejector lever and lower the bottom ejector lever.

If necessary, see "About Chassis Module Ejector Levers" on page 52 for more information.

3. Hold the ejector levers and pull the filler panel out of the chassis slot.

▼ Install Sun Blade Server Module Into Chassis Slot

1. Unpack the server module (box labeled Sun Blade), then locate the vacant server module slot in the front of the chassis.

⚠

Caution – Do not use the ejector levers to carry the server module. The ejector levers should only be used to seat the server module in the chassis. The levers are not designed to support the weight of the server module.

2. Align the server module with the vacant server module slot. Ensure that the:
- Blade indicator lights on the front panel are facing toward you.
- Video, keyboard, and mouse connectors are at the bottom.
- Blade ejector levers are fully opened.
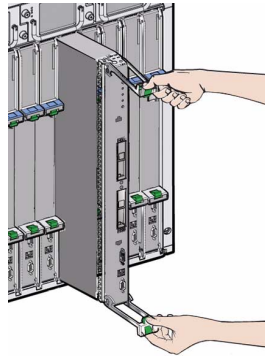
Server Module	Insert Server Module
X8400, X8420, X8440	
X8450	

3. **Slide the server module into the vacant server module chassis slot.**

    As the ejectors make contact with the chassis, the bottom lever will start to rise, and the top lever will start to lower.

4. **Simultaneously close the ejector levers at the top and bottom of the server module (lower the top ejector and raise the bottom ejector) until the levers lock in place against the front of the server module.**

What to Do Next

After installing modules and options into the Sun Blade 8000 Series Chassis, you are ready to connect the power cables and power on the system. See Chapter 4.

Attach Cables and Devices to Modules and Power On System Chassis

This chapter describes how to connect the AC power cables, management network cables, and data network cables to the appropriate chassis modules. Additionally, it describes how to connect a local serial console, VGA monitor, and USB devices to a Sun Blade server module. Finally this chapter instructs you how to power on the system chassis for the first time.

Topics covered in this chapter include:

Plan Cabling to I/O Modules

Prior to attaching I/O cables to the Sun Blade 8000 Series modules, you should review these topics:

- "About External I/O Ports and Power Inlets" on page 90
- "Chassis Slot Locations and Internal Connections" on page 95
    - "Server Module Connection to NEM" on page 96
    - "Server Module Connection to EM" on page 99 (Sun Blade 8000 Chassis only)
- "About Power Supply Connections" on page 103

About External I/O Ports and Power Inlets

The following Sun Blade 8000 Series modules provide external I/O ports:

- Network Express Module
- PCIe ExpressModule (for Sun Blade 8000 Chassis only)
- Chassis Monitoring Module
- AC Power Interface
- Sun Blade server module

The following sections identify the external cable connectors available on each Sun Blade 8000 Series module.

GbE, FC, or IB Network Express Module (NEM)

The Network Express Module is a hot-pluggable I/O interface module that connects to all 10 Sun Blade server modules simultaneously. Each Server Module connects to a NEM via a PCI Express bus.

Today, Sun offers three types of NEMs: 20-Port GbE NEM, 20-Port FC NEM, and a 10-Port DDR IB NEM.

Twenty external RJ-45 data ports per GbE NEM

The number of data network ports available for configuration in a fully populated system chassis is the number of data ports provided on the NEM multiplied by the number of NEMs installed. For example, for each GbE NEM installed, there are 20 external Gigabit Ethernet ports available. In a fully populated Sun Blade 8000 Chassis, 80 external GbE ports are available (four NEMs).

GbE, FC, or IB PCIe ExpressModule (EM)

The PCIe ExpressModule is a hot-pluggable modular I/O interface that provides dedicated I/O functions to each Sun Blade server module. The Sun Blade 8000 Chassis midplane provides PCI Express connectivity between the EMs and the blades, and assigns two EMs to each server module.

Illustration Key

1. Two data network ports

Today, Sun offers the following two-port EMs:

- GbE (Gigabit Ethernet) (UTP and MMF)
- IB (InfiniBand)
- FC (Fibre Channel)

The Sun Blade 8000 Chassis supports up to 20 EMs. The number of data network ports available for configuration in a fully populated system chassis is the number of data ports provided on the EM multiplied by the number of EMs installed. For instance, if you have a fully populated system chassis with 20 two-port EMs, a total of 40 data network ports would be available for configuration.

Chassis Monitoring Module (CMM)

The Chassis Monitoring Module (CMM) provides chassis-level monitoring. If a second CMM is added, the CMMs are automatically set up in a failover mode via the internal management switch. All chassis-level monitoring functions are accessible through HTTP(s), SNMP, and CLI. For additional information about the management network and chassis-level monitoring functions, see "Management Ethernet Network" on page 17 and "System Management Levels and Capabilities" on page 20.
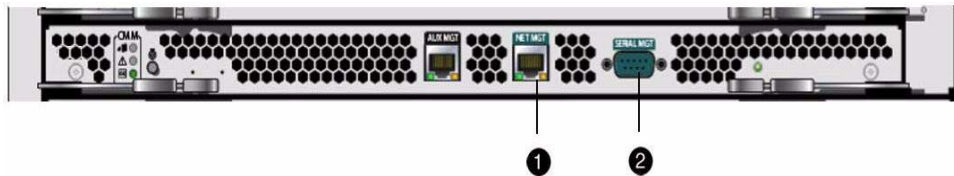
Illustration Key
1. One RJ-45 Network Management Ethernet (NET MGT) port
2. One DB-9 Serial Management (Serial MGT) port

In a fully populated chassis, there are two CMMs with one Ethernet NET MGT port and one serial port available on each CMM.

Note – The AUX port on the rear panel of the CMM is not supported.

AC Power Interface

The Sun Blade 8000 Series Modular Systems include a specific AC Power Interface for each chassis platform:

- **Sun Blade 8000 Chassis**. This chassis provides six AC Power inlets to support all six power supplies, as well as AC power grid redundancy. Each AC Power inlet requires a 200VAC to 240VAC, 20A rated circuit (16A for EMEA, APAC except Japan and Taiwan).

Illustration Key

1. Six AC power inlets available on the Sun Blade 8000 Chassis Power Interface

- **Sun Blade 8000 P Chassis**. This chassis provides four AC Power inlets to support all four power supplies, as well as N+1 power supply redundancy. Each AC Power inlet requires a 200VAC to 240VAC, 20A rated circuit (16A for EMEA, APAC except Japan and Taiwan).

Illustration Key

1. Four AC power inlets available on the Sun Blade 8000 P Chassis Power Interface

Sun Blade Server Module

The Sun Blade server modules (blades) are independent hot-pluggable servers that share the same chassis infrastructure. You can have up to 10 server modules per chassis.
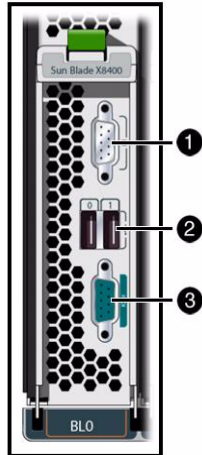
Illustration Key
1. Analog VGA Port
2. USB 2.0 High-speed Port
3. DB-9 Serial Management Port

Each server module provides one VGA port, two USB ports, and one serial port. These local Server Module ports enable direct communication with the server module. For instance, the VGA and USB ports enable you to communicate with the server module BIOS and OS. The Server Module serial port enables you to communicate with the server module service processor.

Direct management of an individual server is through the embedded server module service processor, Sun Integrated Lights Out Manager (ILOM). Access to the server module service processor is via the local serial port or the CMM management network. For more information about server module -level or chassis-level management, see "System Management Levels and Capabilities" on page 20. For information about the management network, see "Management Ethernet Network" on page 17.

Chassis Slot Locations and Internal Connections

The Sun Blade 8000 Series Chassis provide slot locations, external ports, and internal connections between Network Express Modules (NEMs), Sun Blade Server Modules (blades) and, if applicable, PCIe ExpressModules (EMs).

Note – The Sun Blade 8000 P Chassis offers the same slot locations, external ports, and internal connections as the Sun Blade 8000 Chassis, with the exception of internal connections to the PCIe ExpressModules. PCIe ExpressModules are not supported on the Sun Blade 8000 P Chassis.

The blades provide PCI Express I/O connectivity to the NEMs and EMs using HyperTransport links. A brief description about these connections follow.

Server Module Connection to NEM

The Sun Blade 8000 Chassis provides up to four NEM slots labeled NEM 0-3 with 0 being the bottom NEM slot and 3 being the top NEM Slot. The Sun Blade 8000 P Chassis provides up to two NEM slots labeled NEM 0-1 with 0 being the bottom NEM slot and 1 being the top NEM slot.

Sun Blade 8000 Chassis
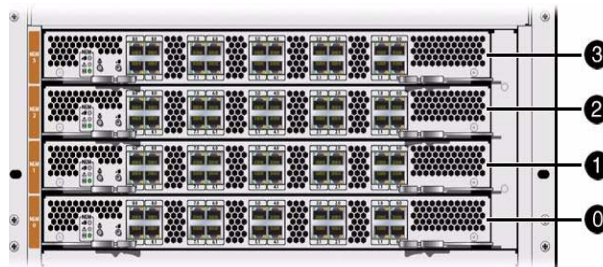
Sun Blade 8000 P Chassis
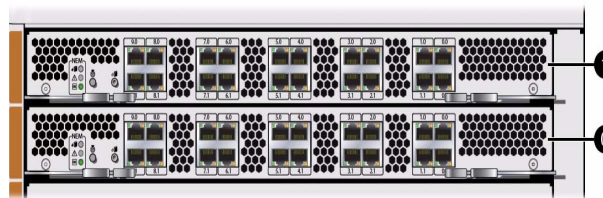
Illustration Key

NEM slot order:
0. NEM slot 0
1. NEM slot 1
2. NEM slot 2
3. NEM slot 3

Each Gigabit Ethernet NEM for example, provides 10 individual GbE NICs — one for each server module, labeled 0.0 to 9.1 right-to-left as viewed from the back of the chassis as follows.
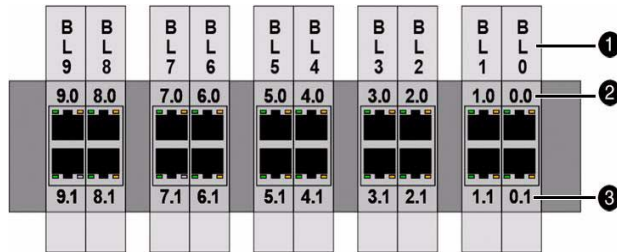
Illustration Key

1. 10 blades labeled BL0 to BL9

2. 10 NEM RJ-45 ports labeled 0.0 to 9.0

3. 10 NEM RJ-45 ports labeled 0.1 to 9.1

Each of the GbE NICs provide two external network ports for each server module, labeled port 0 at top and port 1 on the bottom as viewed from the back of the chassis.
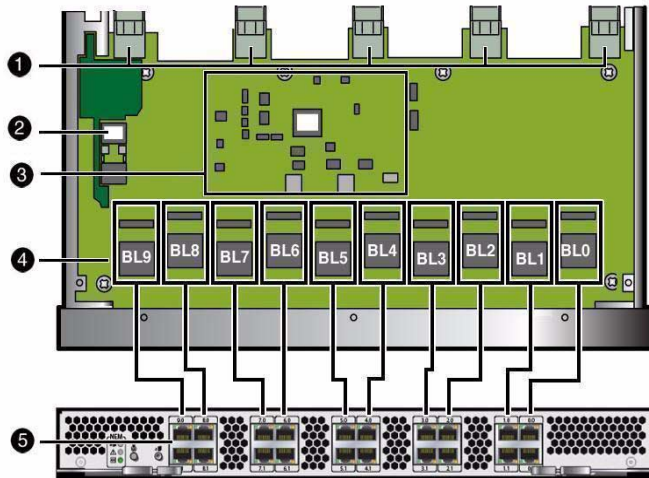
Illustration Key

1. Midplane connectors

2. DC-power conversion

3. Control logic system controller communication

4. Individual blades per I/O external network ports

5. External network ports

Server Module Connection to EM

The Sun Blade 8000 Chassis provides up to 20 EM slots, with two EM slots assigned to each server module. The EM slots are numbered EM 9.0 to 0.0 right-to-left as viewed from the rear of the chassis (see following figure).

Note – The Sun Blade 8000 P Chassis does not support EMs.
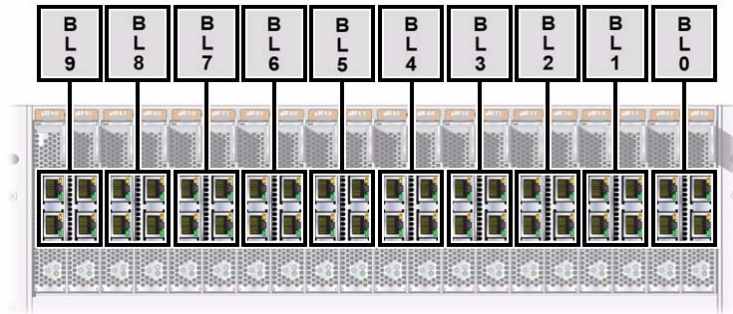
The individual EM ports are numbered as follows:

- **GbE EM Port Numbers**. Port 1 appears at the top and port 0 appears on the bottom of the EM.
- **FC EM Port Numbers.** Port 0 appears at the top and port 1 appears on the bottom of the EM.
- **IB EM Port Numbers.** Port 0 appears at the top and port 1 appears on the bottom of the EM.

About NEM and EM External Data Port MAC Addresses

All NEMs and EMs are shipped with unique MAC addresses for each port. The GbE NEM, for example, will have 20 unique port MAC addresses assigned — one for each RJ-45 data port. The starting MAC address for the 20 NEM ports is printed directly on the NEM board, for example:

- *If* `00:14:4F:`*nn*`:`*nn*`:##` were printed on the NEM board

  then the MAC address port range would be:

  `00:14:4F:`*nn:nn:*`##` - `00:14:4F:`*nn:nn:*`##`

  where the first instance of `00:14:4F:`*nn:nn:*`##` = the unique *starting* port MAC address.

  where the second instance of `00:14:4F:`*nn:nn:*`##` = the unique *ending* port MAC address.

The GbE EM, for example, will have two unique port MAC addresses assigned — one for each RJ-45 data port. The MAC address for each EM port is printed on the EM board, for example:

- `00:14:4F:`*nn:nn:nn*

  where nn = the unique MAC address digits for each EM data port.

NEM Data Port MAC Address Assignments per Server Module

On the rear panel of a NEM there are two rows of RJ-45 data ports — one RJ-45 per network device interface. The RJ-45 data ports on the rear of a NEM are numbered top to bottom and right to left. Each RJ-45 data port corresponds to a server module. Each server module corresponds to two RJ-45 data ports, as shown in the following figure.
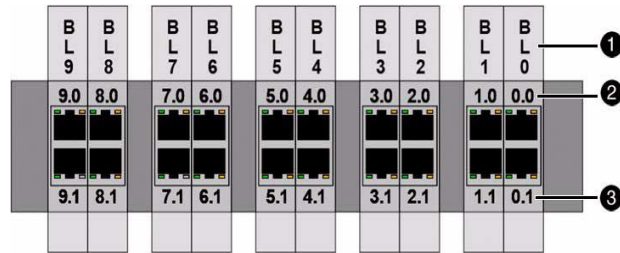
Illustration Key

1. 10 blades labeled BL0 to BL9
2. 10 NEM RJ-45 ports labeled 0.0 to 9.0
3. 10 NEM RJ-45 ports labeled 0.1 to 9.1

The NEM MAC addresses are hexadecimal numbers that are sequentially assigned to the NEM ports starting at the lowest port and ending at the highest port, for example:

- If the starting and ending MAC address printed on a GbE NEM board were:

  `00:14:4F:0C:B0:20-33:`

  - *where* the NEM RJ-45 port is labeled 0.0, the MAC address for port 0.0 would be 00:14:4F:0C:B0:20

  - *where* the NEM RJ-45 port is labeled 0.1, the MAC address for port 0.1 would be 00:14:4F:0C:B0:21

  - *where* the NEM RJ-45 port is labeled 1.0, the MAC address for port 1.0 would be 00:14:4F:0C:B0:22

  and so on until ...

  - *where* the NEM RJ-45 port is labeled 9.1, the MAC address for port 9.1 would be 00:14:4F:0C:B0:33

The physical NEM port MAC address will not change. However, the logical name assigned by an operating system (Solaris, Windows Server, or Linux) to an RJ-45 NEM port will be different from the physical MAC address. Information regarding how to configure multiple network interfaces (by their logical names) during an OS installation is discussed later in the operating system installation chapters.

EM Data Port MAC Address Assignments per Server Module

Each server module within a Sun Blade 8000 Chassis corresponds to two EM slots. On the rear panel of each EM there are two RJ-45 data ports — one RJ-45 per network device interface. Each RJ-45 data port corresponds to a server module. Each server module corresponds up to four RJ-45 EM data ports (two EMs per server module), as shown in the following figure.
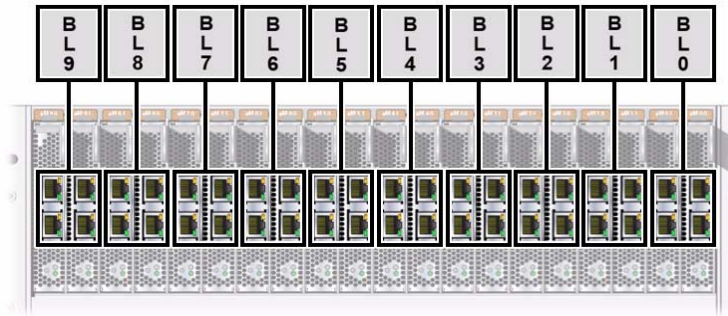
The EM MAC addresses are sequentially assigned to the EM ports starting at the lowest port and ending at the highest port, for example:.

■ If the port MAC addresses printed on a GbE EM were:

    00:14:4F:C4:FC:33 and 00:14:4F:C4:FC:34

   ■ *where* the bottom EM RJ-45 port is labeled 0.0, the MAC address for port 0.0 would be 00:14:4FC4:FC:33

   ■ *where* the top EM RJ-45 port is labeled 0.1, the MAC address for port 0.1 would be 00:14:4F:C4:FC:34

The physical EM port MAC address will not change. However, the logical name assigned by an operating system (Solaris, Windows Server, or Linux) to an RJ-45 EM port will be different from the physical MAC address. Information regarding how to configure multiple network interfaces (by their logical names) during an OS installation is discussed later in the operating system installation chapters.

Note – Prior to installing a NEM or EM into a chassis, you should have recorded the MAC address for each EM and NEM port for future reference. For details about obtaining the MAC addresses printed on a NEM or EM board, see "Add Network Express Module" on page 58 and "Add PCIe ExpressModule" on page 62.

About Power Supply Connections

The AC Power Interface supplies 48V main power to the modules in the system chassis. Main power is automatically applied after (1) the AC power cords between the AC Power Interface and the customer-supplied Modular Power System (MPS) are connected, and (2) the **OK** power LED on the system chassis flashes.

Note – By default, the Sun Blade server modules do not automatically power on when the system chassis powers up. For more information see "Power On System Chassis for First Time" on page 114

The AC inlets on the Power Interface provide power to each power supply unit. All power supply units have separate power cords.

Sun Blade 8000 Chassis   Sun Blade 8000 P Chassis
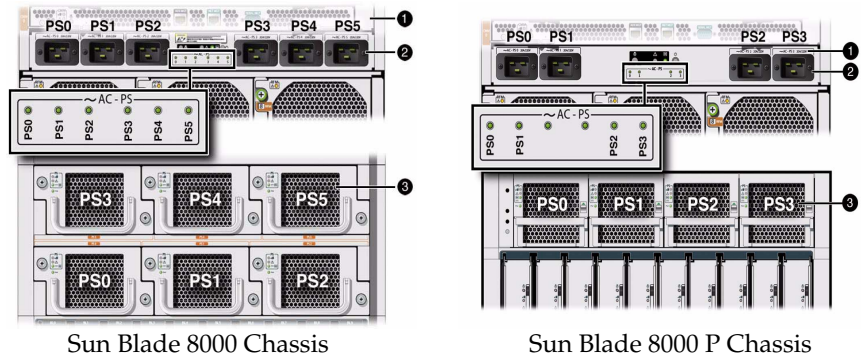
Illustration Key

1. Power supply labels (per power supply slot) on rear of Sun Blade Chassis.

2. AC inlets on power interface on rear of Sun Blade Chassis.

3. Power supply units on front of Sun Blade Chassis. The Sun Blade 8000 Chassis supports six power supply units. The Sun Blade 8000 P Chassis supports four power supply units.

The Sun Blade 8000 Chassis supports a grid redundant power supply when any three power cables are plugged into a MPS that is on a separate branch circuit from another MPS with three other power cables.

The Sun Blade 8000 P Chassis supports N+1 power supply redundancy. A minimum of three operating power supplies are required to support a fully configured system without N+1 power supply redundancy.

Attach I/O Cables to Modules

For more information about attaching I/O cables to modules, see these sections:

- "Attach Power Cables" on page 104
- "Attach CMM Network Management Cable" on page 107
- "Attach NEM Data Network Cables" on page 108
- "Attach EM Data Network Cables" on page 109

▼ Attach Power Cables

This section provides instructions for attaching power cables to the AC Power Interface. Your site location determines which power cord rating (20–AMP rating or 16–AMP rating) is supplied with the system chassis.

Power Cables Supplied

- **North America / Japan 20–AMP Power Cables**. NEMA L6-20P to IEC320-C19; 13 ft. (4m). Sun part number X5044A-Z for Sun Blade 8000 AC Power Interface. Sun part number X5074A-Z for the Sun Blade 8000 P AC Interface.

- **International 16–AMP Power Cables.** IEC309 to IEC320-C19; 13 ft. (4m). Sun part number X5045A-Z for Sun Blade 8000 AC Power Interface. Sun part number X5075A-Z for Sun Blade 8000 P AC Power Interface.

- **20–AMP (220VAC) Rack-Based Modular Power System (MPS)** (preinstalled in rack). IEC320-C20 to IEC320-C19; 4.9 ft. (1.5m). Sun part number X5046A-Z; 6.5 ft. (2m) for Sun Blade 8000 AC Power Interface. Sun part number X5076A-Z; 6.5 ft. (2m) for Sun Blade 8000 P AC Power Interface.

Caution – You should be familiar with the server module platform power requirements prior to attaching the power cables to a customer-supplied Modular Power System (MPS). For more information about system power requirements, see "Operating Power Requirements" on page 15.

1. **Locate the power cables shipped with the system.**

2. **Locate the AC Inlets on the Power Interface on the rear of the chassis.**

Sun Blade 8000 Chassis

Sun Blade 8000 P Chassis
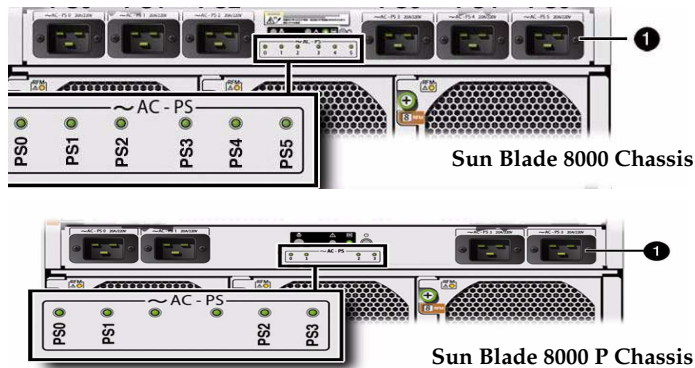
Illustration Key
1. AC Power
    Interface inlets

3. **Plug the power cables into AC power inlets.**

For example, in the rear of the Sun Blade 8000 Chassis, plug the six power cables into slot positions: PS0/PS1/PS2/PS3/PS4/PS5.
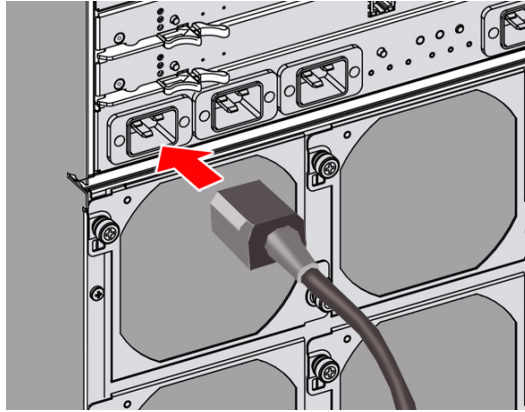
4. **Do one of the following to connect the other end of the power cables:**

   - **To connect cables to MPS in rack**. Plug the other end of the power cables directly into one or two customer-supplied MPSs.

Tip – To configure the Sun Blade 8000 Chassis as a redundant power system, use two MPSs and connect any three power cables to one MPS and the other three power cables to another MPS that is on a separate branch circuit.

   - **To connect cables directly to power wall receptacles**. Plug the other end of the power cables directly into wall receptacles.

   By default, main power is automatically distributed to the system chassis.

▼ Attach CMM Network Management Cable

This section provides instructions for attaching a local area network cable to the Ethernet NET MGT port on the rear panel of a Chassis Monitoring Module (CMM). Note that if you have a dual CMM configuration, you must attach separate local area network cables to each CMM.

1. **Locate an Ethernet network management cable.**

2. **Plug the Ethernet network management cable into the RJ-45 NET MGT port on the CMM (slot CMM-0).**
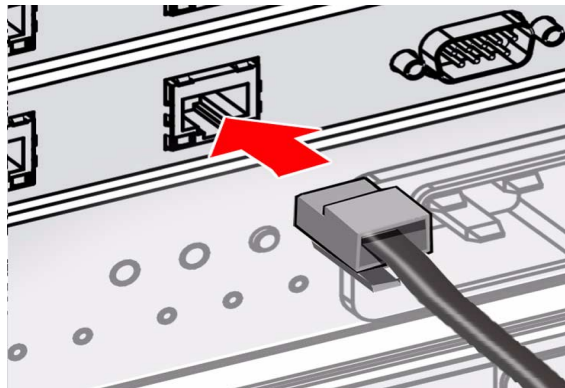
3. **Plug the other end of the Ethernet network management cable to your local area network.**

4. **If you have a dual CMM configuration, repeat Steps 1 through 3 to connect a local area network cable to the second CMM (slot CMM-1)**

▼ Attach NEM Data Network Cables

This section provides instructions for attaching data network cables to a Network Express Module (NEM).

Prerequisite

The following procedure assumes that:

- You have already recorded the MAC address for each NEM data port connected to a network. The starting MAC address is printed on the NEM board. This MAC address is not visible after installing the NEM into the chassis.

Note – Later in the installation, when you specify operating system network information for multiple network interfaces, you will need to know the MAC address for each NEM data port connected to your network. For more information about NEM MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

---

1. **Locate the data network cable.**

2. **Do one of the following:**

   - **For Ethernet NEMs**. Plug the Ethernet data network cable into the appropriate RJ-45 data slot.

     For information about a server module connection with a NEM, see "Server Module Connection to NEM" on page 96.
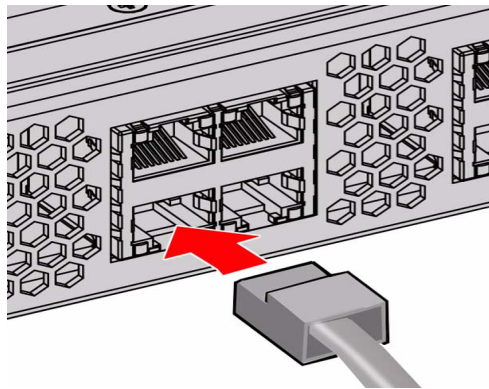
- **For FC NEMs**. Connect the fiber-optic cable to the FC port on the rear panel of the FC NEM.

- **For IB NEMs**. Connect the data network cable to the IB port on the rear panel of the IB NEM.

3. **Attach the other end of the data network cable to your local area network.**

▼ Attach EM Data Network Cables

This section provides instructions for attaching data network cables to the PCIe ExpressModules (EMs).

Note – EMs are only supported in the Sun Blade 8000 Chassis.

Prerequisite

The following procedure assumes:

- You have recorded the MAC address for each EM data port. The EM port MAC addresses are printed on the EM board. To view the EM port MAC addresses, you must remove the EM cover, for more information see "Add PCIe ExpressModule" on page 62.

Note – Later in the installation, when you configure the operating system network information for multiple network interfaces, you may need to know the MAC address for each EM port connected to a network. For more information about EM MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

---

1. **Locate the data network cable.**

2. **Plug the data network cable into the appropriate data slot on the rear panel of the EM.**

   For more information about a server module connection with an EM, see "Server Module Connection to EM" on page 99.

3. **Attach the other end of the data network cable to your local area network.**

Attach Local Devices to Server Module

This section covers these topics:

- "Attach Local Serial Console to Server Module" on page 110
- "Attach Local VGA Monitor to Server Module" on page 111
- "Attach USB Devices to Server Module" on page 112

▼ Attach Local Serial Console to Server Module

This section provides instructions for attaching a local serial console to an individual Sun Blade server module. Alternatively, if you want to communicate with the Chassis Monitoring Module to monitor and manage modules in the chassis, see "Attach Serial Console to Chassis Monitoring Module" on page 113.

1. **Locate the serial console cable.**

2. **Attach the serial console cable to the DB-9 SER MGT port on the front panel of the Sun Blade server module.**
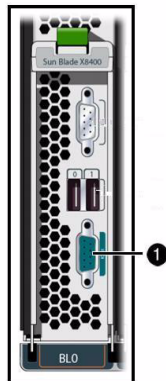
Illustration Key

1. Serial management port on front panel of server module

▼ Attach Local VGA Monitor to Server Module

This section provides instructions for attaching a local VGA monitor to a Sun Blade server module.

Prerequisite

- The VGA resolution is fixed to 1024x768x60Hz. Ensure that your VGA monitor supports this resolution prior to connecting.

1. **Locate the VGA monitor cable.**

2. **Attach the VGA monitor cable to the VGA port on the front panel of the Sun Blade server module.**
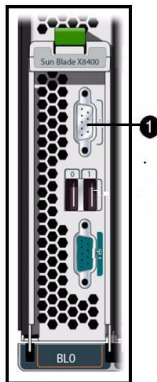
Illustration Key

1. VGA port on front panel of server module

▼ Attach USB Devices to Server Module

This section provides instructions for attaching local USB devices to a Sun Blade server module. Local USB devices can include:

- External media drives (CD/DVD and Floppy)
- Mouse (or other pointing device)
- Keyboard

1. **Locate the USB device.**

2. **Plug the USB device cable into one of the USB ports on the front panel of the Sun Blade server module.**
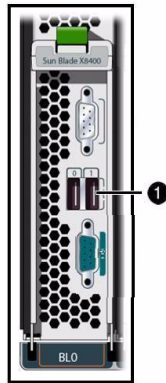
Illustration Key
1. USB ports on front panel of server module

Attach Serial Console to Chassis Monitoring Module

This section provides instructions for attaching a serial console to the Chassis Monitoring Module (CMM). Alternatively, if you want to communicate directly with a server module, you can connect a serial console to the front panel of a server module, see

▼ Attach Serial Console to CMM

1. **Locate the serial console cable.**

2. **Attach the serial console cable to the DB-9 SER MGT port on the rear panel of a CMM.**

Illustration Key

1. Serial management (SER MGT) port

Power On System Chassis for First Time

The Sun Blade 8000 Series Chassis, by default, receives main power as soon as the chassis power supplies receive power and the CMM boots up. At this time, the NEM and fan modules in the chassis automatically power-on. The Sun Blade server modules and their associated EMs in the chassis do not automatically power-on. These modules, by default, receive standby power. You can manually apply main power to these modules (server module and associated EM) via the server module Power button or the server module ILOM remote power controls.

Note – By default, the Auto-Power-On Chassis Policy is shipped enabled in ILOM. If you disable the Auto-Power-On Chassis Policy option, then only the CMMs receive power. You can apply main power to the chassis via the chassis Power button (or via the CMM ILOM chassis remote power controls if network connectivity has been established).

Note – As of ILOM 1.1.5, the BIOS no longer has a server module auto-power-on option. The Blade Power-On Policy in ILOM determines the power state of the server module at SP boot time. By default, the option "Set host power to last power state on boot" is shipped enabled in the Blade Power-On Policy. When the server module SP boots up for the first time (out-of-box), the host power state on the server module is OFF. The server module SP tracks the main power state and will restore the server module to its previous power state following a power interruption or a rebooting of the server module SP. For more information about the system power-on policies, see *About the CMM and Blade SP Power-On Policies* in the *Sun Blade 8000 Series Online Information System*.

Note – Prior to ILOM 2.0, the Sun Blade 8000 Series Chassis was required to have at least three power supplies receiving power (from a MPS or direct cabling) for the Auto-Power-On Chassis Policy to take effect. If fewer than three chassis power supplies are receiving power, you will not be able to power-on the system chassis.

The following section describe how to ensure that the system chassis is powered-on.

▼ Verify System Chassis Is Powered On

1. **Ensure that the AC power cables are attached from the Power Interface module to a MPS.**

   For details, see "Attach Power Cables" on page 104.

2. **Ensure that main power is applied to the system chassis.**

   When the chassis is powered on, the fans are operating and the OK power LED illuminates a STEADY ON green light. The OK power LED is located on both the front and rear panel of the chassis.

Note – By default, the Auto-Power-On Chassis Policy setting in ILOM is shipped enabled for the system chassis. When the Auto-Power-On Chassis Policy is enabled, the system chassis automatically applies main power to the NEMs and fan modules in the chassis. Standby power, by default (out-of-box), is applied to the server module SP and associated EM, if applicable.

Power LEDs on Front Chassis Panel
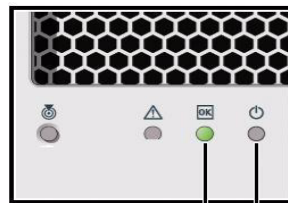
8000 Chassis

Illustration Key
1. System chassis OK power LED on front of chassis
2. System chassis Power button on front of chassis
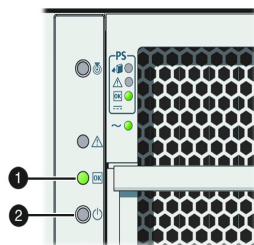
8000 P Chassis
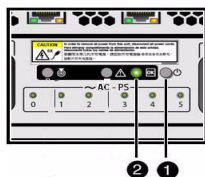
8000 Chassis

Illustration key
1. System chassis Power button on rear panel of the Power Interface module
2. System chassis Power LED on rear panel of the Power Interface module
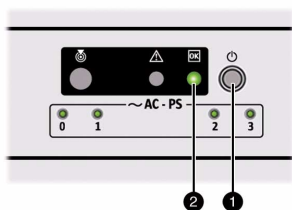
8000 P Chassis

If Chassis Is Not Receiving Main Power

If the system chassis is not powered-on, consider the following:

- If AC power was not applied to the chassis (chassis OK power LEDs do not illuminate a solid green light), do the following:

  - Verify the status of the chassis OK power LED on the front or rear panel of the chassis.

    Chassis OK power LEDs can exhibit one of four states: OFF, SLOW BLINK (on/off cycle at 1Hz, system may be booting), STANDBY BLINK (0.1 second on, 2.9 seconds off), or STEADY ON solid green light (system is operational)

  - If the chassis OK power LED is off, ensure that the power cables from the Power Interface module are attached to an active MPS (or if direct cabling is used, ensure power is being provided to the direct cabling). For details, see "Attach Power Cables" on page 104.

- If the chassis OK power LED exhibits a STANDBY blink (0.1 second on, 2.9 seconds off) press the Power button located on the front or rear panel of the chassis. The STANDBY power state indicates that the chassis is receiving AC power but the chassis is not powered on.

Note – You can change the policy for the Auto-Power-On Chassis setting in ILOM as soon as network connectivity is established. To access the Chassis Monitoring Modules Policy options, (1) connect to the CMM IP address and log in to ILOM, (2) in the ILOM window select CMM in the left navigation panel, then (3) select `Configuration -> Policy` in the right panel. For more information about ILOM and how to establish network connectivity, see Chapter 5.

To verify the power state on a Sun Blade server module, see "Verify Server Module Power State" on page 117.

▼ Verify Server Module Power State

1. **Verify that the system chassis is powered on.**

   A STEADY ON green light should be visible from the chassis OK power LED.

   If the chassis has not been powered-on, see "Verify System Chassis Is Powered On" on page 115.

2. **Determine the server module power state:**

   - **Server Module SP - Standby Power**. The OK power LED on the server module front panel illuminates a STANDBY BLINK (0.1 second on, 2.9 seconds off). The STANDBY BLINK indicates that the server module SP is active but the server module host is powered OFF.
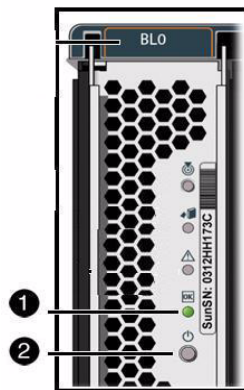
Illustration Key
1. Server Module OK power LED
2. Server Module Power button

You can apply main power to the server module host via the server module Power button or ILOM remote power controls.

■ **Server Module Host - Main Power**. The OK power LED on the server module front panel illuminates a STEADY ON green light. The STEADY ON LED state indicates the server module SP and host are both powered ON.

If Server Module Is Not Receiving Power

If the server module is not receiving power, consider the following:

■ The Server Module SP Power Policy, in ILOM, determines whether power is applied to the host at server module SP boot time. For more information about the server module SP power policy options, see the *Blade SP Power Policy* in the *Sun Blade 8000 Series Online Information System*.

Note – The server module power-on state prior to ILOM 1.1.5 was controlled in the BIOS. The earlier server module BIOS firmware power-on state was shipped enabled — causing the server module to automatically power-on with main power upon receiving power from the chassis.

■ If the server module is not powering on, see the following topics in the *Sun Blade Online Information System* for more information:
  ■ *Power Management Overview*
  ■ *About Power Partitioning*
  ■ *Detect Power Budget Ticket Denial*
  ■ *Resolve Power Deficiency*
  ■ *Manually Adjust Power Partitioning*

Note – Server Module and EM connections are powered on and off as a pair. When power is disabled on a server module, it is also disabled on its associated EM (if an EM is configured). EMs are only supported in the Sun Blade 8000 Chassis.

Tip – You can power blades on or off from ILOM as soon as network connectivity to the system is established. To power a server module on or off from ILOM, connect to the server module IP address and log in to ILOM, then select **Remote Power -> Remote Power Contro**l for the server module. For more information about ILOM and how to establish network connectivity, see Chapter 5.

What to Do Next

After attaching cables to I/O modules, attaching local devices to a Sun Blade server module, and powering on the system chassis and server module (s), you are ready to configure the CMM and server module management network. See Chapter 5.

Configure IP Addresses to Establish Initial Connection With ILOM

You can establish communication with ILOM through a console connection to the serial management port on the server module or CMM, or through an Ethernet connection to the network management port on the server module or CMM.

The type of connection you establish to ILOM determines which type of system management tasks you can perform. For example, to remotely access the full range of system management functionality in ILOM, you will require an Ethernet connection to the CMM and IP assignments to the CMM and server SP.

Note – If you choose not to use ILOM and the network management port to manage your server, many of the advanced features, such as environmental monitoring, IPMI management, and the web interface, will be unavailable. You can use the data port of the host operating system to access third-party network management applications, SNMP tools, or operating system utilities, however these solutions only have a limited management view of the Sun Blade 8000 or 8000 P Modular System.

Topics discussed in this chapter include:

What Is ILOM?

Integrated Lights Out Manager (ILOM) is system management firmware that is preinstalled on the Sun Blade 8000 Series Server Modules and CMMs. ILOM enables you to actively manage and monitor components installed in the system. With ILOM, you can monitor and manage your system proactively by viewing hardware configurations, monitoring system information, managing system alerts, and more.

ILOM is accessible through a variety of interfaces, such as web browsers, command-line interfaces (CLI), SNMP interfaces, and IPMI interfaces. ILOM automatically initializes as soon as power is applied to your system. ILOM will continue to run regardless of the state of the host operating system, making it a "lights-out" management system.

Any user with a valid user account can access ILOM. The first time you access ILOM, you will need to use the preconfigured ILOM administrator account.

For more information about ILOM, see the *Sun Integrated Lights Out Manage 2.0 User's Guide* (820-1188-11).

For general information about the tasks you can perform in ILOM, see "System Management Levels and Capabilities" on page 20. For additional information about the preconfigured ILOM administrator account, see "About the Preconfigured ILOM Administrator Account" on page 122.

About the Preconfigured ILOM Administrator Account

The Sun Blade 8000 Series Modular Systems ship with one preconfigured ILOM administrator account:

> **User name**: root
>
> **Password**: *changeme*

The preconfigured administrator account, known as root, cannot be deleted or changed, other than resetting its password (*changeme*). This account offers built-in administrative privileges (read and write access) to all ILOM functions, features, and commands.

The first time you access ILOM, at the CMM level or server module level, you will need to log in as root with the default password *changeme*. After you have logged in to ILOM and established network connectivity to the system, you should consider resetting the password (*changeme*) associated with the ILOM root account. To

prevent your system from unauthorized access, reset this password on each CMM and blade installed in the system chassis. For more information about resetting the ILOM `root` account password, see "Reset ILOM Root Account Password (changeme)" on page 143.

About ILOM's Initial Setup

Prior to establishing communication with ILOM, you should consult the following topics:

- "ILOM Connection Setup Worksheet" on page 123
- "DHCP IP Assignment Considerations" on page 125
- "Static IP Assignment Considerations" on page 128
- "Management Network IP Address Configuration" on page 130
- "ILOM Network Port Assignment" on page 130

ILOM Connection Setup Worksheet

Use the following worksheet in TABLE 5-1 to gather the information that you will need to initially establish communication with ILOM.

TABLE 5-1   Initial Setup Worksheet to Establish Communication With ILOM

Information for Setup	Requirement	Description
Local Serial Console Connection	Optional - *if using DHCP to assign initial IP address* Mandatory - *if DHCP server is not utilized to assign initial IP address*	If you are not utilizing a DHCP server to assign IP addresses to the server SP or CMM, you must establish a local serial console connection to ILOM via the serial management port on the server or Chassis Monitoring Module (CMM). For more information about how to attach a serial console to a server or CMM, see "Attach Serial Console to Chassis Monitoring Module" on page 113 or "Attach Local Devices to Server Module" on page 110.
Remote Ethernet Management Connection	Optional	To access ILOM's full range of management functionality, you must connect your local area network to the network management port of on the CMM. For more information, see "Attach CMM Network Management Cable" on page 107.
SP IP Assignment	Mandatory	Decide whether to assign DHCP or static IP address(es) to the server SP(s) or CMM(s). All remote system management communication with ILOM is through the server SP or CMM management network. For more information, see the following topics: • "DHCP IP Assignment Considerations" on page 125 • "Static IP Assignment Considerations" on page 128 • "Assign a Static IP Address to Server SP Using a Serial Connection" on page 135 • "Assign Static IP Address to CMM Using a Serial Connection" on page 137 • "Assign DHCP IP Addresses Using an Ethernet Management Connection" on page 133
ILOM Interface	Mandatory	When establishing (or modifying) an IP address on a server SP or CMM, you will use one of the following ILOM Interfaces: • **Command-line interface (CLI) - use to establish the initial IP address**. If an IP address has not been assigned to the server SP or CMM, you can connect to ILOM to assign the IP address via a local serial console. • **Web interface - use to edit an existing IP address**. If an IP address has been assigned to the server SP or CMM and a LAN connection is established to the MGT port, you can connect to ILOM to edit the existing IP address(es) assigned via the Web interface. For more information about ILOM interfaces, consult the *Sun Blade 8000 Series Online Information System*.
ILOM Firewall Access	Optional	Consult ILOM's network port usage for Ethernet networks requiring firewall access. For more information, see "ILOM Network Port Assignment" on page 130.
Dual CMMs Present in Chassis	Mandatory	Unique IP addresses must be assigned to both CMMs. For more information, see

DHCP IP Assignment Considerations

If you are planning to use a DHCP server to assign an IP address to a server SP or CMM, consult the following topics:

Sun Server Platform DHCPDISCOVER Packet Broadcast

The Sun server SP or CMM automatically broadcasts a DHCPDISCOVER packet when power is applied to the Sun server platform. If you have an established DHCP server on the network, the DHCP server automatically returns a DHCPOFFER packet containing IP address(es) and other network configuration information to the requesting server SP(s) or CMM(s).

Note – You can choose to have a DHCP server assign Ethernet IP address(es) for you, or you can configure the DHCP server to assign specific Ethernet IP address(es) by providing the MAC address of the SP(s). For more information, consult the DHCP server user documentation. For more information about how to obtain the MAC address of server SP or CMM, see "SP Network Interface MAC Address" on page 126.

Requirements for DHCP Assignment

The following conditions must be present to assign IP address(es) to the Sun server SP interfaces using a DHCP server:

- An Ethernet cable must be plugged into the server management port or CMM management port.
- A DHCP server must be connected to the same subnet as the Sun server platform.
- The DHCP server must be configured to accept new media access control (MAC) addresses.
- The DHCP configuration setting in ILOM must be enabled. This setting is enabled by default.

SP Network Interface MAC Address

If you are planning to use a DHCP server to assign IP address(es) to the SP network interface(s), you might need the MAC address of the server SP or CMM.

You can obtain the service processor MAC address via one of the following methods described in TABLE 5-2.

TABLE 5-2   Methods to Obtain SP MAC Address

ILOM Category	Method	Description
Rackmount server SP Blade server SP	View internal label	Typically, the MAC address label for the server SP on the management network appears on a sticker attached to the server. If the MAC address does not appear on a sticker attached to the server, consult the user documentation provided with the Sun server platform.
CMM	View internal label	Typically, the MAC address label for the CMM on the management network appears on a sticker attached to the CMM. If the MAC address does not appear on a sticker attached to the CMM, consult the user documentation provided with the Sun server platform.
All	Customer Information Sheet	Refer to the Customer Information Sheet provided with the Sun server platform.

Post DHCP Requirements

After the DHCP server has assigned IP address(es) to the SP network interface(s), you can identify the IP address(es) that were assigned by the DHCP server using one of the following methods specified in TABLE 5-3.

TABLE 5-3   Method to Identify IP Address(es) Assigned by DHCP Server

Method	Description
DHCP log file (Note that this log file is not part of ILOM, it is the log file on the DHCP server.)	Open the DHCP log file and do the following: 1. Locate the MAC address of the service processor in the MAC address field. 2. Identify the IP value assigned in the IP address field that corresponds to the MAC address in the MAC address field. 3. Use the IP address you identified in Step 2 to remotely communicate with ILOM using the web interface. **Tip**. Typically, DHCP log file entries are individual lines with the following comma-separated fields: ID, Date, Time, Description, IP Address, Host Name, MAC Address.
Serial console connection	Establish a serial console connection to the serial port on the server or CMM. Log in to ILOM as root using the CLI and type one of the following commands: • For a chassis server module in slot <*n*>: `show /CH/BLn/SP network` • For a chassis CMM in slot 0: `show /CMM/network/CMM0` • For chassis CMM in slot 1: `show /CMM/network/CMM1`

Static IP Assignment Considerations

If you are planning to assign static IP address(es) to a server SP or CMM, consult the following topics:

- "Requirements for Static IP Assignment" on page 128
- "Serial Device - Terminal Emulation Software Settings" on page 129
- "Post Static IP Assignment" on page 129

Requirements for Static IP Assignment

To initially assign a static IP address to a server SP or CMM, you must satisfy the requirements described in TABLE 5-4.

TABLE 5-4   Requirements for Static IP Assignment

Requirements	Step	Description
Establish serial console connection	1	Establish a serial console connection to the server SP or CMM by connecting a terminal or PC running terminal emulation software to the serial port of a server or CMM. For more information about how to attach a serial terminal or PC to a serial port on a server or CMM, consult the user documentation provided with the Sun server platform. Note that for Sun server platforms that have CMMs, you can configure the static IP address for the blade SPs installed in the chassis using the CMM ILOM command-line interface.
Configure serial port settings	2	Configure the required serial settings for the terminal device or terminal emulation software. For more information, see "Serial Device - Terminal Emulation Software Settings" on page 129.
Assign static IP address using the ILOM CLI	3	Assign the static IP address using the ILOM CLI. For more information, see the following topics that apply to your system configuration: • "Assign a Static IP Address to Server SP Using a Serial Connection" on page 135. or • "Assign Static IP Address to CMM Using a Serial Connection" on page 137.

Serial Device - Terminal Emulation Software Settings

When connecting to ILOM using a serial console, you will need to configure the terminal device or terminal emulation software to use the following serial settings:

- 8N1: eight data bits, no parity, one stop bit
- 9600 baud
- Disable hardware flow control (CTS/RTS)
- Disable software flow control (XON/XOFF)

The following CLI `show` commands enable you to view properties and values associated with a server or CMM external serial port:

```
show <target>
```

Examples:

- For CMM: `show /CMM/serial/external`
- For rackmount server: `show /SP/serial/external`
- For blade server module: `show /CH/BL`*n*`/SP/serial/external`

Post Static IP Assignment

You can remotely manage IP addresses using the ILOM web interface or CLI after satisfying these requirements:

- IP address assignment to a server SP or CMM
- Established Ethernet connection to the server or CMM network management port

For more information about managing the assignment of IP addresses using an Ethernet network management connection, see "Edit IP Address Assignments Using an Ethernet Management Connection" on page 139.

Management Network IP Address Configuration

ILOM's IP connections are typically configured to the SP network interface, which enables you to separate management traffic and data traffic. The DHCP or Static IP address(es) you assign to a server SP or CMM are known as the *management network IP address(es)*, not to be confused with the data network IP address(es).

Note that the data network IP addresses are configured after installing a host operating system on a server. It is important to distinguish the data network IP addresses from the management network IP addresses since they both serve different purposes.

All future references, in this guide, to the management network IP addresses will be referred to as the "IP address of the server SP" or "IP address of the CMM." Typically, these references are presented when providing instructions for connecting to the ILOM web interface or ILOM CLI.

For more information about ILOM's management network, see "Management Ethernet Network" on page 17.

For information about assigning data network IP addresses to a server, consult the user documentation provided with the host operating system.

ILOM Network Port Assignment

The following tables (TABLE 5-5 and TABLE 5-6) identify the default network ports used by ILOM. Most of these network ports are configurable. When configuring firewall security access to ILOM, you should configure these ports with the appropriate ports that are currently being used by the firewall service.

TABLE 5-5   Direct Server SP ILOM Port Assignment

Ports	Protocols	Applications
80	HTTP over TCP	SP - ILOM user configurable port
443	HTTPS over TCP	SP - ILOM user configurable port
5120	TCP	SP - ILOM Remote Console: CD
5123	TCP	SP - ILOM Remote Console: Diskette
5121	TCP	SP - ILOM Remote Console: Keyboard and Mouse
7578	TCP	SP - ILOM Remote Console: Video
22	SSH over TCP	SSH - Secure Shell
69	TFTP over UDP	TFTP - Trivial File Transfer Protocol
123	NTP over UDP	NTP - Network Time Protocol

TABLE 5-5 Direct Server SP ILOM Port Assignment *(Continued)*

161	SNMP over UDP	SNMP - Simple Network Management Protocol
162	IPMI over UDP	IPMI - Platform Event Trap (PET) (outgoing port)
389	LDAP over UDP/TCP	LDAP - Lightweight Directory Access Protocol (user configurable port)
514	Syslog over UDP	Syslog - (outgoing port)
546	DHCP over UDP	DHCP - Dynamic Host Configuration Protocol (client)
623	IPMI over UDP	IPMI - Intelligent Platform Management Interface
1812	RADIUS over UDP	RADIUS - Remote Authentication Dial In User Service

TABLE 5-6 Direct CMM ILOM Network Port Assignment

Ports	Protocols	Applications
80	HTTP over TCP	CMM - ILOM (user configurable port)
443	HTTPS over TCP	CMM - ILOM (user configurable port)
8000 - 8009	HTTP over TCP	CMM - ILOM drill-down (BL0-BL9)
8400 - 8409	HTTPS over TCP	CMM - ILOM drill-down (BL0-BL9)
22	SSH over TCP	SSH - Secure Shell
69	TFTP over UDP	TFTP - Trivial File Transfer Protocol
123	NTP over UDP	NTP - Network Time Protocol
161	SNMP over UDP	SNMP - Simple Network Management Protocol
389	LDAP over UDP/TCP	LDAP - Lightweight Directory Access Protocol (user configurable port)
514	Syslog over UDP	Syslog - (outgoing port)
546	DHCP over UDP	DHCP - Dynamic Host Configuration Protocol (client)
1812	RADIUS over UDP	RADIUS - Remote Authentication Dial In User Service

Unique IP Address Assignment for Dual CMM Configurations

If you have a dual CMM configuration, the CMM installed at the factory in slot CMM0 of the system chassis is initially known as the *active CMM (or master CMM)*. If you purchased a second CMM, the second CMM (installed in slot CMM1) is initially known as the *standby CMM* (or *slave CMM*).

Unique (static or DHCP) IP addresses must be assigned to both CMMs. Additionally, these CMMs must be assigned one unique high availability IP address that floats between them. This high availability address enables the standby CMM to become the active CMM, in the event that the original active CMM becomes faulted.

Assign IP Addresses to the Sun Server Modules SP and CMMs

Use the following procedures to assign IP addresses to the server module SP network interface(s) on the server modules and CMMs.

- "Assign DHCP IP Addresses Using an Ethernet Management Connection" on page 133
- "Assign a Static IP Address to Server SP Using a Serial Connection" on page 135
- "Assign Static IP Address to CMM Using a Serial Connection" on page 137

Prerequisites

Prior to assigning IP addresses, you should have completed the following installation tasks:

- Unpacked and completed the hardware and cabling setup of the Sun Blade 8000 Series system. For details, see Chapter 2, Chapter 3, and Chapter 4.

- Serial Connection Requirements. If you are assigning an IP address via the serial connection of the blade, you should have:
  - Established console access to the blade through a serial connection. For details, see "Attach Local Devices to Server Module" on page 110.
  - Configured serial settings:
    - 8N1: eight data bits, no parity, one stop bit
    - 9600 baud
    - Disable hardware flow control (CTS/RTS)
    - Disable software flow control (XON/XOFF)
- Ethernet Connection Requirements. If you are assigning an IP via the management port on the CMM, you should have:
  - Attached an ethernet cable to the NET MGT port on rear panel of the CMM(s). For details, see "Attach CMM Network Management Cable" on page 107.
- If you intend to have DHCP IP addresses assigned, you need to have an established DHCP server on the same local network as the Sun Blade 8000 Series system. Setting up a DHCP server is out of the scope of this guide; see the documentation supplied with the DHCP server software.

▼ Assign DHCP IP Addresses Using an Ethernet Management Connection

Follow these instructions when using DHCP to assign IP addresses.

1. **Verify that your DHCP server is configured to accept new media access control (MAC) addresses.**

   Consult the documentation supplied with your DHCP server software.

2. **Verify that an Ethernet cable is plugged into the Ethernet port (NET MGT) port on the CMM.**

Note – Provided that ILOM was not configured previously with a static IP address, ILOM automatically broadcasts a DHCPDISCOVER packet with the ID of its SP network interface(s) MAC address(es). If ILOM was previously configured with a static IP address, you must disable the static IP address setting on the Network Settings tab. For more information about editing IP address settings, see "Edit Existing IP Addresses in ILOM Using the Web Interface" on page 139 or "Edit Existing IP Address(es) in ILOM Using the CLI" on page 141.

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3. **The DHCP server on your network returns the DHCPOFFER packet containing the IP address and other information. The service processor then manages its "lease" of IP addresses assigned by the DHCP server.**

4. **Use one of the following methods to obtain the DHCP IP address(es) assigned to the SP network interface(s):**

   - **ILOM-CMM using serial connection**

     Using a serial console attached to the rear panel of the CMM, log in to ILOM as the Administrator. For example, at the Login prompt, you could type the preconfigured Administrator user name `root` and its default password *changeme*, then press Enter.

     - To set the working directory for the active CMM, type:
       `cd /CMM/network/CMM0`

     - To view the active CMM IP address, type: `show`

     - To drill-down and view the IP addresses of each blade, type:
       `show /CH/BL0/SP/network`

Note – CMM0 represents the CMM installed in slot CMM0. BL0 represents the blade installed in slot BL0. To specify the target CMM or blade, you must specify the slot number of where the module is installed. Blade slots range from 0 to 9. CMM slots range from 0 to 1.

   - **ILOM- Server SP using serial connection**

     Using a serial console attached to the front panel of a blade, log in to ILOM as the Administrator. For example, at the Login prompt, you could type the preconfigured Administrator user name `root` and its default password *changeme*, then press Enter.

     - To view the blade SP IP address, type: **`show /SP/network`**

   - **DHCP server logs**

   For more information, see "Post DHCP Requirements" on page 127 or consult the DHCP server documentation for details.

▼ Assign a Static IP Address to Server SP Using a Serial Connection

Follow these instructions when assigning a static IP address, using a serial connection, to a server SP.

1. **Establish a local serial console connection to the server SP.**

   Attach a serial console to the serial port on the server or CMM. For more information, consult the user documentation provided with the Sun server platform.

2. **Configure the following settings in the terminal window appearing on the connected serial console:**

   - 8N1: eight data bits, no parity, one stop bit
   - 9600 baud
   - Disable hardware flow control (CTS/RTS)
   - Disable software flow control (XON/XOFF)

3. **Press Enter to establish a connection between the serial console and the SP interface.**

   Eventually the ILOM Login prompt appears.

   For example: *<host name>* `Login:`

4. **Log in to ILOM as an Administrator by entering an Administrator user name and password then press Enter.**

Note – You can log in to ILOM using the preconfigured Administrator account shipped with ILOM: `root`/*changeme*. For more details, see "About the Preconfigured ILOM Administrator Account" on page 122.

The default prompt appears (->) and the system is ready for you to run the CLI commands to establish network settings.

5. **Type the following command to set the working directory:**

   `cd /SP/network`

6. **Use the following CLI commands to specify the IP, NetMask, and Gateway addresses. Note that the last command (`set commitpending=true`) in the table below must be performed last.**

Command	Description and Example
`set pendingipaddress=`	Type this command followed by the static IP address that you want to assign to the server SP. For example, typing: `set pendingipaddress=129.144.82.26` would, tell ILOM to assign `129.144.82.26` as the IP address to the server SP.
`set pendingipnetmask=`	Type this command followed by the static NetMask address that you want to assign to the server SP. For example, typing: `set pendingipnetmask=255.255.255.0` would tell ILOM to assign `255.255.255.0` as the NetMask address to the server SP.
`set pendingipgateway=`	Type this command followed by the static Gateway address that you want to assign to the server SP. For example, by typing: `set pendingipgateway=129.144.82.254` would tell ILOM to assign `129.144.82.254` as the Gateway address to the server SP.
`set pendingipdiscovery=`	Type the following command to tell ILOM that you want to set a static IP address on the server SP. `set pendingipdiscovery=static`

`set commitpending=true`	Type this command (`true`) to assign the network settings specified.
	
	For example:
	`set pendingipaddress=129.144.82.26`
	`set pendingipnetmask=255.255.255.0`
	`set pendingipgateway=129.144.82.254`
	`set pendingipdiscovery=static`
	`set commitpending=true`

Typically, after assigning (or changing) an IP address the connection made to ILOM using the former IP address will time-out. Use the newly assigned IP address to connect to ILOM.

▼ Assign Static IP Address to CMM Using a Serial Connection

Follow these instructions when assigning a static IP address, using a serial connection, to a CMM.

1. **Verify that the serial connection to an active CMM is operational.**

   For information about attaching a serial console to a CMM, consult the user documentation provided with the Sun server platform.

2. **Log in to ILOM as an Administrator by entering an Administrator user name and password then press Enter.**

Note – You can log in to ILOM using the preconfigured Administrator account shipped with ILOM: `root`/*changeme*. For more details, see "About the Preconfigured ILOM Administrator Account" on page 122.

   The default prompt appears (->) and the system is ready for you to run the CLI commands to establish network settings.

3. **To set a static IP address on the CMM through the ILOM CLI, type the following command to set the working directory:**

   `cd /CMM/network/CMM0`

Note – CMM0 refers to the CMM installed in slot CMM0. The target CMM is specified by referencing the slot number of the CMM.

---

4. **Use the following commands to specify the IP, NetMask, and Gateway addresses. Note that the last command (`set commitpending=true`) in the table below must be performed last.**

Command	Description and Example
`set pendingipaddress=`	Type this command followed by the static IP address that you want to assign to the CMM. For example, typing: `set pendingipaddress=129.144.82.26` would, in this example, tell ILOM to assign `129.144.82.26` as the CMM IP address.
`set pendingipnetmask=`	Type this command followed by the static NetMask address that you want to assign to the CMM. For example, typing: `set pendingipnetmask=255.255.255.0` would tell ILOM to assign `255.255.255.0` as the CMM NetMask address.
`set pendingipgateway=`	Type this command followed by the static gateway address that you want to assign to the CMM. For example, typing: `set pendingipgateway=129.144.82.254` would tell ILOM to assign `129.144.82.254` as the CMM gateway address.
`set pendingipdiscovery=`	Type the following command to tell ILOM whether you want to set a Static IP address. `set pendingipdiscovery=static`

`set commitpending=true`	Type this command (`true`) to assign the network settings specified.
	
	For example:
	`set pendingipaddress=129.144.82.26`
	`set pendingipnetmask=255.255.255.0`
	`set pendingipgateway=129.144.82.254`
	`set pendingipdiscovery=static`
	`set comitpending=true`

If you connected to ILOM through a remote SSH connection, the connection made to ILOM using the former IP address will time-out. Use the newly assigned IP address to connect to ILOM.

Edit IP Address Assignments Using an Ethernet Management Connection

Use the following procedures to manage service processor(s) IP assignment(s) over an Ethernet management connection:

▼ Edit Existing IP Addresses in ILOM Using the Web Interface

Follow these instructions when editing existing IP address(es), using the ILOM web interface, that have been assigned to a server SP or CMM.

1. **Using a browser-based client, type the IP address of the server SP or CMM in the browser address box then press Enter.**

   The ILOM Login screen appears.

2. **In the ILOM Login screen, log in as an Administrator by entering an administrator user name and password.**

Tip – You can log in to ILOM using the preconfigured Administrator account shipped with ILOM: `root/changeme`. For more details, see "About the Preconfigured ILOM Administrator Account" on page 122.

   The ILOM interface appears.

3. **In the right pane of the ILOM interface, click Configuration --> Network.**

   The Network Settings page for the server or CMM appears.

ILOM Server SP - Network Settings Page

ILOM CMM - Network Settings Page

4. **To edit IP addresses assigned to the SP interfaces, do the following:**

   a. **Select the radio button for** `Use the Following IP Address`.

   b. **Enter values for IP Address, Subnet Mask, and Gateway in the text boxes.**

   Typically, after assigning (or changing) an IP address the connection made to ILOM using the former IP address will time-out. Use the newly assigned IP address to connect to ILOM.

▼ Edit Existing IP Address(es) in ILOM Using the CLI

Follow these instructions when editing existing IP address(es), using the ILOM CLI, that have been assigned to a server SP or CMM.

1. **Establish a local serial console connection or SSH connection to the server SP or CMM:**

- **Local Serial Console Connection**

  Attach a serial console to the serial port on the server or CMM.

  For more information, consult the user documentation provided with the Sun server platform.

or

- **Remote - Secure Shell (SSH) Connection**

  Establish a Secure Shell connection to the server SP or CMM.

  From the remote client, establish a secure connection as root to the server SP or CMM. For example, you can establish a secure connection from a remote SSH client to the server SP by typing the following:

      ssh -l root <server_ip_address>

    Password: *changeme*

  The default prompt appears (->) and the system is ready for you to run the CLI commands to establish network settings.

2. **Type one of the following commands to set the SP working directory:**

- For a chassis server module: `cd /SP/network`
- For a chassis CMM in slot 0: `cd /CMM/network/CMM0`
- For a chassis CMM in slot 1: `cd /CMM/network/CMM1`

3. **Type the** `show` **command to view the IP address(es) assigned, for example:**

- For a chassis server module: `show /CH/BLn/SP network`
- For a chassis CMM in slot 0: `show /CMM/network/CMM0`
- For chassis CMM in slot 1: `show /CMM/network/CMM1`

4. Type the following commands to change the existing IP address assigned.

Command	Description and Example
`set pendingipaddress=`	Type this command followed by the static IP address that you want to assign to the server SP or CMM. For example, by typing: `set pendingipaddress=129.144.82.26` would, tell ILOM to assign `129.144.82.26` as the IP address to the server SP.
`set pendingipnetmask=`	Type this command followed by the static NetMask address that you want to assign to the server SP or CMM. For example, typing: `set pendingipnetmask=255.255.255.0` would tell ILOM to assign `255.255.255.0` as the NetMask address to the server SP (or CMM).
`set pendingipgateway=`	Type this command followed by the static gateway address that you want to assign to the server SP or CMM. For example, typing: `set pendingipgateway=129.144.82.254` would tell ILOM to assign `129.144.82.254` as the Gateway address to the server SP (or CMM).
`set pendingipdiscovery=`	Type the following command to tell ILOM that you want to set a static IP address on the server SP or CMM. `set pendingipdiscovery=static`

`set commitpending=true`	Type this command (`true`) to assign the network settings specified.
	For example:
	`set pendingipaddress=129.144.82.26`
	`set pendingipnetmask=255.255.255.0`
	`set pendingipgateway=129.144.82.254`
	`set pendingipdiscovery=static`
	`set commitpending=true`

If you connected to ILOM through a remote SSH connection, the connection made to ILOM using the former IP address will time-out. Use the newly assigned IP address to connect to ILOM.

Reset ILOM Root Account Password (changeme)

After establishing network connectivity to the CMM and blades, you should reset the ILOM `root` account password (*changeme*) to prevent unauthorized access to the system.

▼ Reset ILOM Root Account Password

To reset the *changeme* password, follow these steps.

1. **Access ILOM at the chassis level by typing the IP address for the CMM in a web browser.**

   The ILOM Login screen appears.

2. **In the ILOM Login screen, do the following:**

   a. **Type the user name (`root`) and password (*changeme*).**

   b. **Click Log in.**

      The ILOM web interface appears.

3. **In the ILOM web interface, do the following:**

   - To change the preconfigured administrator password at the chassis level, click the CMM in the left navigation pane, then proceed to Step 4.
   - To change the preconfigured administrator password at the blade level, click the appropriate blade in the left navigation pane, then proceed to Step 4.

      The tabbed pages for the CMM or blade appear at the top of the right pane in the ILOM user interface.

4. **In the ILOM user interface, click the tabs: User Management -> User Account.**

   The User Account page appears.

5. **In the User Account page, select the radio button for `root` then click Edit.**

   A security message appears. Click OK to continue and the User Account dialog box appears.

6. **In the User Account dialog box, do the following:**

    a. **Select the box for Change.**

    b. **In the Password text box, type the new password.**

    c. **In the Confirm Password text box, type the new password again.**

    d. **Click Save.**

    The new password identified in Step 6b and Step 6c is activated for the `root` administrator account.

7. **If necessary, repeat Step 2 through Step 6d to reset the password (***changeme***) on each CMM and blade installed in the system chassis.**

    For information about creating new user accounts and assigning a role (privileges) to a user account, see the *System Management* topics in the Sun Blade 8000 Series Online Information System.

What to Do Next

After configuring network information for the Sun Blade 8000 or 8000 P Modular System, you are ready to set up the Sun Blade server modules with an operating system. For details, see

- "Configure Factory-Installed Solaris 10 Operating System" on page 145
- "Install Solaris 10" on page 163
- "Install Windows Server Operating System" on page 201
- "Install Linux Operating System" on page 247

Configure Factory-Installed Solaris 10 Operating System

This chapter identifies the steps for configuring the Solaris™ 10 Operating System (OS) that was preinstalled at the factory on server modules shipped with hard disk drive(s) (HDDs). The factory-installed version of Solaris 10 is Solaris 10 6/06 or later.

Note – The Solaris 10 6/06 OS image is preinstalled on X8400 Server Modules. The Solaris 10 8/07 OS image is preinstalled on X8420, X8440, and X8450 server modules.

Topics covered in this chapter include:

- "Before You Begin" on page 146
  - "Special Considerations for Factory-Installed Solaris HDDs" on page 146
  - "Hardware and Software Prerequisites" on page 146
  - "Configuration Worksheet" on page 147
  - "Solaris 10 User Documentation" on page 150
- "Establish Connection to Configure Factory-Installed Solaris 10 OS" on page 151
  - "Configure Factory-Installed Solaris 10 OS via SSH" on page 152
  - "Configure Factory-Installed Solaris 10 OS via a Serial Port Connection" on page 157
- "Post Solaris Configuration" on page 161
  - "Reset GRUB Menu Time-out Value (Mandatory)" on page 161
  - "Redirect Solaris I/O (Optional)" on page 162

Before You Begin

Before configuring the factory-installed Solaris 10 Operating System, you should review the following topics:

- "Special Considerations for Factory-Installed Solaris HDDs" on page 146
- "Hardware and Software Prerequisites" on page 146
- "Configuration Worksheet" on page 147
- "Solaris 10 User Documentation" on page 150

Special Considerations for Factory-Installed Solaris HDDs

- **Installed HDD Configurations.** If you ordered a server module with a single HDD installed, you must always boot that drive from Slot 0. If you ordered a server module with two HDDs installed, you must always boot the drives from their respective installed slots (HDD shipped preinstalled in HDD Slot 0 must always boot from Slot 0; HDD shipped preinstalled in HDD Slot 1 must always boot from Slot 1).

- **Hardware RAID**. Factory-installed Solaris HDDs are not configured with hardware RAIDs. If you want to configure s hardware RAID on a factory-installed Solaris HDD, see "Hardware RAID Configuration" on page 324, and "Configure Hardware RAID (Optional)" on page 325. If you perform a hardware RAID on a factory-installed Solaris HDD, you must reinstall Solaris after performing the hardware RAID. See "Perform the Solaris Operating System Installation" on page 173.

- **Output From Serial Port**. The text output of the factory-installed Solaris 10 Operating System is available via a local or remote serial console.

Hardware and Software Prerequisites

Ensure that the following hardware and software prerequisites are met prior to configuring the factory-installed Solaris 10 6/06 or later image:

- **Properly Installed and Configured Sun Blade 8000 or 8000 P Modular System**. At this point of the installation, you should have already unpacked the system, installed the system into a rack, installed the options and modules, and configured DHCP or static IP to supply network connectivity to the Chassis Monitoring Module (CMM) and to the Sun Blade Server Module(s). For

information about installing modules and connecting cables, see Chapter 3 and Chapter 4. For information about configuring the management network, see Chapter 5.

■ **Preinstalled HDD Configurations Shipped.** If you ordered a server module with a single HDD installed, you must boot the drive from Slot 0. If you ordered a server module with two HDDs installed, you must boot the drives from their respective installed slots (HDD shipped preinstalled in HDD Slot 0 must always boot from Slot 0; HDD shipped preinstalled in HDD Slot 1 must always boot from Slot 1).

■ **Hardware RAID**. By default, the Sun-supplied disk drives are shipped *without* a hardware RAID configuration. For more information about hardware raid configurations, see "Hardware RAID Configuration" on page 324, and "Configure Hardware RAID" on page 327.

■ **Reviewed the *Sun Blade 8000 Series Product Notes***. You should review the Product Notes for any late-breaking information concerning Solaris installations.

Configuration Worksheet

Use the following worksheet to gather the information that you need to configure the factory-installed Solaris 10 OS. You only need to collect the information that applies to your application of the system.

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Language	Choose from the list of available languages for the Solaris 10 software.	English*
Locale	Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal	Choose the type of terminal that you are using from the list of available terminal types.	
Network connection	Is the system connected to a network?	• Networked • Non-networked*

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
MAC addresses assigned to ports on Network Express Modules (NEMs) and PCIe ExpressModules (EMs)

For additional information about NEM and EM port MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100. | | If the system is networked, you will need to know the MAC address for each NEM port and EM port connected to a network.

• **NEM Ports**. Locate the starting MAC address for all 20 NEM ports on the NEM board. The starting MAC address is printed on a yellow label near the connector. If the NEM is installed in the chassis, you will need to remove the NEM from the chassis to view the MAC address. For more information about obtaining the NEM MAC address, see "Add Network Express Module" on page 58.

• **EM Ports**. Locate the two EM port MAC addresses printed on the EM board. You will need to remove the EM from the chassis and remove the cover on the EM to view these addresses. For more about removing the EM cover, see "Add PCIe ExpressModule" on page 62.

For information about removing EMs and NEMs when the system is powered on, see the hot-plug procedures in the Online Information System.

Note - During the Solaris system configuration, you will be asked to configure network interfaces from a list of *Solaris-named* network interfaces. If you are unsure of how a *Solaris-named* network interface corresponds to a *physical* port, you can match the *Solaris-named* interface to the physical port by using the MAC address. Further instructions are provided later in the chapter. | • Identify the primary networked port and any other networked ports |
| DHCP | | Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces? | • Yes
• No* |
| If you are not using DHCP, note the network address: | IP address | If you are not using DHCP, supply the IP address for the system.
Example: `129.200.9.1` | |
| | Subnet | If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet?
Example: `255.255.255.0` | |
| | IPv6 | Do you want to enable IPv6 on this machine? | • Yes
• No* |
| Host name | | A host name that you choose for the system. | |

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather the following information: • Default Realm • Administration Server • First KDC • (Optional) Additional KDCs	• Yes • No*
Name service	Name service	Which name service should this system use? **Note**. If the system uses a name service, you will need to provide information about the service.	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server or let the installation program find one?	• Specify One • Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made.	• Search Domain:
	LDAP	Provide the following information about your LDAP profile: • Profile name: • Profile server: If you specify a proxy credential level in your LDAP profile, gather this information: • Proxy-Bind Distinguished Name: • Proxy-Bind Password:	

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Default route	Do you want to specify a default route IP address or let the Solaris installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. You have the following choices: • You can specify the IP address. An /etc/defaultrouter file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. • You can let the Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the ICMP router discovery protocol. If you are using the command-line interface, the software detects an IP address when the system is booted. • You can choose None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	• Specify One • Detect One • None*
Time zone	How do you want to specify your default time zone?	• Geographic region* • Offset from GM • Time zone file
Root password	Choose a root password for the system.	

Solaris 10 User Documentation

You can access the various collections of the Solaris 10 OS user documentation at:

http://docs.sun.com/app/docs/prod/solaris.10

Specifically, you can access documentation about the factory-installed Solaris 10 6/06 or later at:

http://www.sun.com/software/preinstall

Establish Connection to Configure Factory-Installed Solaris 10 OS

You must establish one of the following connections to the Sun Blade server module to configure the factory-installed Solaris OS:

- **Secure Shell (SSH) Remote Connection**. For details, see "Establish SSH Connection to Configure Factory-Installed Solaris 10 OS" on page 151

- **Serial Port Connection**. For details, see "Configure Factory-Installed Solaris 10 OS via a Serial Port Connection" on page 157

Establish SSH Connection to Configure Factory-Installed Solaris 10 OS

The following procedure describes how to configure the factory-installed Solaris 10 OS through a secure shell (ssh) connection.

Prerequisites

To use this procedure the following requirements must be met:

- Management network connectivity established to the Sun Blade 8000 or 8000 P Modular System. For details, see "Attach CMM Network Management Cable" on page 107 and "Configure IP Addresses to Establish Initial Connection With ILOM" on page 121.

- The MAC address of any EM and NEM ports connected to a network. For more information about data port MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

- A remote client capable of establishing a Secure Shell connection to capture the text output and input of the Solaris 10 OS configuration.

- IP address for the Sun Blade server module SP or the CMM.

- The ILOM administrator account to log in to the system. For details about using the preconfigured administrator account (`root`) supplied with ILOM, see "About the Preconfigured ILOM Administrator Account" on page 122.

▼ Configure Factory-Installed Solaris 10 OS via SSH

Note – After completing the following procedure, you will need to configure a new time-out value for the GRUB boot loader menu. For details, see "Reset GRUB Menu Time-out Value (Mandatory)" on page 161.

1. **Establish a Secure Shell connection by doing one of the following:**

   - **Establish a secure shell connection to the CMM**

     From the remote client, establish a secure connection as root to the CMM. For example , you can establish a secure connection from a remote Solaris client to the CMM by typing the following:

     ```
     ssh -l root <cmm_ip_address>

     Password: changeme
     ```

   or

   - **Establish a Secure Shell connection to the server module SP**

     From a remote client, establish a secure connection as root to the server module SP. For example, you can establish a secure connection from a remote Solaris client to the server module SP by typing the following:

     ```
     ssh -l root <sp_ip_address>

     Password: changeme
     ```

2. **Reset the Solaris 10 OS image on the server module by doing one of following:**

   - **Reset the Solaris 10 OS through CMM**

     In the ILOM SSH session, type the command to reset the Solaris OS on the server module, for example:

     ```
     reset /CH/BL#/SYS
     ```

     where **#** = the slot number of the server module in the chassis. For example, if you wanted to reset the server module that is installed in slot 2 of the chassis, you would type:

     ```
     reset /CH/BL2/SYS
     ```

   or

   - **Reset the Solaris 10 OS image through the server module SP**

     In the ILOM SSH session, type the command to reset the Solaris OS on the server module, for example:

     ```
     reset /SYS
     ```

The system prompts you to confirm that you want to reset `/SYS (y/n)`?

3. **Continue the reset operation by typing y (for yes) and pressing Enter.**

   The message `Performing hard reset on /SYS` appears followed by the system prompt `->` .

4. **At the system prompt (->), specify the command to start the ILOM CLI console by doing one of the following:**

   - **Start the ILOM CLI console on the CMM**

     Type the command to start the ILOM CLI console from the CMM, for example:

     ```
     start /CH/BL#/SP/console
     ```

     where **#** = the slot number of the server module in the chassis. For example, if you wanted to connect to the server module that is installed in slot 2 of the chassis, you would type:

     ```
     start /CH/BL2/SP/console
     ```

   or

   - **Start the ILOM CLI console on the server module SP**

     Type the command to start the ILOM CLI console from the server module SP, for example:

     ```
     start /SP/console
     ```

     A message appears prompting you to confirm that you want to start the ILOM CLI console.

5. **Continue the operation for starting the ILOM CLI console by typing y (for yes) and pressing Enter.**

   The GRUB boot loader menu appears.
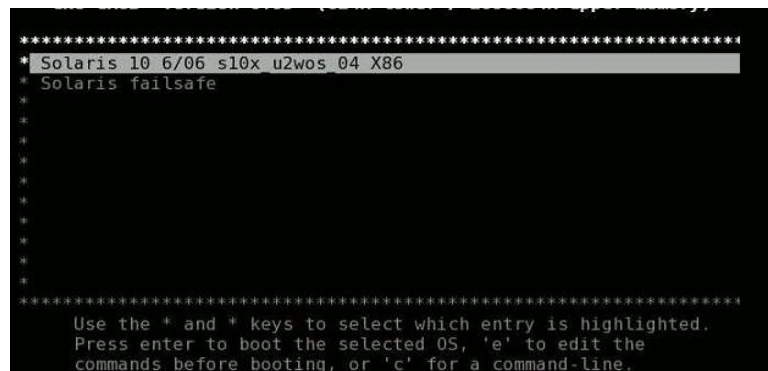
6. **In the GRUB boot loader menu, press Enter to boot the factory-installed Solaris OS image.**

   The Terminal Type menu appears enabling you to choose a terminal type.

   ```
   What type of terminal are you using?
    1) ANSI Standard CRT
    2) DEC VT52
    3) DEC VT100
    4) Heathkit 19
    5) Lear Siegler ADM31
    6) PC Console
    7) Sun Command Tool
    8) Sun Workstation
    9) Televideo 910
   10) Televideo 925
   11) Wyse Model 50
   12) X Terminal Emulator (xterms)
   13) CDE Terminal Emulator (dtterm)
   14) Other
   Type the number of your choice and press Return:
   ```

7. **In the Terminal Type menu, select the appropriate terminal choice and press Enter.**

   The Configure `kdmconfig` menu appears enabling you to configure a keyboard, display, and mouse.

8. **In the Configure `kdmconfig` menu, press F2.**

   The `kdmconfig` utility detects the drivers that are necessary to configure the keyboard, display, and mouse on your system. A second Configure `kdmconfig` menu appears.

   ```
   ┌─ kdmconfig - Introduction and X Server Selection ─────────
   │
   │  kdmconfig allows you to select the X Window System server (Xorg or Xsun).
   │  The currently selected X server is marked with an [X] below.  To change the
   │  selected server, use the up and down arrow keys and press <ENTER> to mark
   │  your selection [X].  If you change the X server selection, the new X server
   │  will be used the next time an X Window session is started.
   │
   │  For Xsun, kdmconfig has attempted to identify the devices necessary for the
   │  window system.  If the configuration is incorrect or incomplete you may not
   │  be able to use the window system.  Press F2 to view and edit the current or
   │  proposed Xsun configuration.
   │
   │  For Xorg, kdmconfig is unable to display or update the current Xorg
   │  configuration.  Press F2 for instructions on Xorg configuration.
   │
   │  Press F3 to exit kdmconfig without making any changes.
   │
   │       X Server Selection
   │       ─────────────────────
   │  v    [X]  Xorg server
   │
   │    F2 Continue    F3 Exit    F6 Help
   ```

9. **In the Configure** `kdmconfig` **menu, examine the information about the** `kdmconfig`**, then press F2 to continue.**

   After a few moments, a series of network-related questions appear. If the system is to be attached to a network, you will be expected to choose at least one network interface from a list of *Solaris-named* interfaces (for example, `e1000g0`; `e1000g1`; and so on).

10. **To continue configuring the Solaris system and network information, do one of the following:**

    - **For a non-network system configuration.** You should choose `No` in the Network Configuration screen and continue the normal Solaris configuration by following the Solaris 10 OS preinstallation on-screen prompts.

       After you have entered the system-configuration information, the server completes the boot process and displays the Solaris login prompt. Next, you will need to reconfigure the GRUB time-out value, for more information see "Reset GRUB Menu Time-out Value (Mandatory)" on page 161.

    - **For a networked system configuration**. If you are certain how to match the Solaris logical network interface names with the physical network ports, then:

       a. **Continue the normal Solaris configuration process by following the Solaris 10 OS preinstallation on-screen prompts.**

       b. **Refer to the Solaris documentation for additional details and the information you gathered in the** "Configuration Worksheet" on page 147 **to help you specify the required Solaris system and network information.**

          The screens that appear may vary depending on the method that you chose for assigning network information to the server (DHCP or static IP address). After you have entered the system-configuration information, the server completes the boot process and displays the Solaris login prompt.

       c. **After Solaris reboots, reset the GRUB menu time-out value,** see "Reset GRUB Menu Time-out Value (Mandatory)" on page 161.

    - **For a networked system configuration; uncertain of logical interface names and physical port names**.

       If you are uncertain how to match a *Solaris-named* interface to a physical EM or NEM networked port, you should choose `NO` in the `Network Connection` screen then continue the normal Solaris configuration process.

       After the system boots, you will need to log in to the system as `root` and run the `ifconfig -a` command in a shell to display a complete list of interfaces. For more details, see Appendix E.

Tip – If you selected Yes in the Network Connection screen and you are uncertain which *Solaris-named* interfaces to select in the Configure Multiple Network Interfaces screen, you should choose any selection, and then press F2 to proceed. The next time the Network Connection screen appears, answer No and continue the normal configuration process, then proceed to Appendix E to learn how to identify and match the logical and physical network interface names.

Establish Serial Port Connection to Configure Factory-Installed Solaris 10 OS

The following procedure describes how to configure the factory-installed Solaris 10 OS through a serial port connection.

Prerequisites

The following requirements must be met prior to configuring the factory-installed Solaris 10 OS through a serial port connection:

- Physically attached console to the serial port on one of the following modules:
    - Front panel of the Sun Blade server module. For details, see "Attach Local Serial Console to Server Module" on page 110.

    or

    - Rear panel on the CMM. For details, see "Attach Serial Console to CMM" on page 113.
- The serial properties on the attached console should match the following default serial port settings:
    - 9600 baud
    - 8N1 (eight data bits, no parity, one stop bit)
    - Disable flow control
- A local client interface (for example, terminal window) capable of capturing the input and output of the Solaris 10 OS configuration.
- The ILOM administrator account to log in to the system. For details about using the preconfigured administrator account (root) supplied with ILOM, see "About the Preconfigured ILOM Administrator Account" on page 122.
- The MAC address of any EM and NEM ports connected to a network. For more information about data port MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

▼ Configure Factory-Installed Solaris 10 OS via a Serial Port Connection

1. **From the serial console, start a terminal session by doing one of the following:**

   - **On a serial console running Solaris:**

     Type the appropriate command to start a terminal session. For example, you can start a terminal session on a Solaris console by typing:

     ```
     $tip -9600 /dev/ttya
     ```

   - **On a client running Windows:**

     Open the appropriate program to start a terminal session. For example, you can start a terminal session on a Windows console by selecting:

     ```
     Start -> Programs -> Accessories -> Communications ->
     Hyperterminal
     ```

   - **On a client running Linux:**

     Type the appropriate command to start a terminal session. For example, to start a terminal session on a Linux console, you could launch Minicom.

     Minicom is a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

2. **Log in to the Sun Blade Server Module as an Administrator, for example:**

   ```
   login: root
   password: changeme
   ```

3. **Reset the Solaris 10 OS image on the server module by doing one of following:**

   - **Reset Solaris 10 OS through CMM**

     In the ILOM SSH session, type the command to reset the Solaris OS on the server module, for example:

     ```
     reset /CH/BL#/SYS
     ```

     where # = the slot number of the server module in the chassis. For example, if you wanted to reset the server module that is installed in slot 2 of the chassis, you would type:

     ```
     reset /CH/BL2/SYS
     ```

   or

   - **Reset Solaris 10 OS image through server module SP**

     In the ILOM SSH session, type the command to reset the Solaris OS on the server module, for example:

     ```
     reset /SYS
     ```

The system prompts you to confirm that you want to reset `/SYS (y/n)`?

4. **Continue the reset operation by typing y (for yes) and pressing Enter.**

   The message `Performing hard reset on /SYS` appears followed by the system prompt -> .

5. **At the system prompt** (->)**, specify the command to start the ILOM CLI console by doing one of the following:**

   ■ **Start the ILOM CLI console from the CMM**

   Type the command to start the ILOM CLI console from the CMM, for example:

   `start /CH/BL#/SP/console`

   where **#** = the slot number of the server module in the chassis. For example, if you wanted to connect to the server module that is installed in slot 2 of the chassis, you would type:

   `start /CH/BL2/SP/console`

   or

   ■ **Start the ILOM CLI console from the server module SP**

   Type the command to start the ILOM CLI console from the server module SP, for example:

   `start /SP/console`

   A message appears prompting you to confirm that you want to start the ILOM CLI console.

6. **Continue the operation for starting the ILOM CLI console by typing y (for yes) and pressing Enter.**

   The GRUB boot loader menu appears.

```
     GNU GRUB   version 0.95   (624K lower / 2096064K upper memory)

 ********************************************************************
 * Solaris 10 6/06 s10x_u2wos_04 X86
 * Solaris failsafe
 *
 *
 *
 *
 *
 *
 *
 *
 *
 ********************************************************************
      Use the * and * keys to select which entry is highlighted.
      Press enter to boot the selected OS, 'e' to edit the
      commands before booting, or 'c' for a command-line.
```

7. **In the GRUB boot loader menu, press Enter to boot the factory-installed Solaris OS image.**

    The Terminal Type menu appears.

8. **In the Terminal Type menu, select the appropriate terminal choice and press Enter.**

    The Configure `kdmconfig` menu appears enabling you to configure a keyboard, display, and mouse.

```
What type of terminal are you using?
 1) ANSI Standard CRT
 2) DEC VT52
 3) DEC VT100
 4) Heathkit 19
 5) Lear Siegler ADM31
 6) PC Console
 7) Sun Command Tool
 8) Sun Workstation
 9) Televideo 910
 10) Televideo 925
 11) Wyse Model 50
 12) X Terminal Emulator (xterms)
 13) CDE Terminal Emulator (dtterm)
 14) Other
Type the number of your choice and press Return: █
```

9. **In Configure** `kdmconfig` **menu, press F2.**

    The `kdmconfig` utility detects the drivers that are necessary to configure the keyboard, display, and mouse on your system. A second Configure `kdmconfig` menu appears.

```
┌─ kdmconfig - Introduction and X Server Selection ──────────┐

  kdmconfig allows you to select the X Window System server (Xorg or Xsun).
  The currently selected X server is marked with an [X] below.  To change the
  selected server, use the up and down arrow keys and press <ENTER> to mark
  your selection [X].  If you change the X server selection, the new X server
  will be used the next time an X Window session is started.

  For Xsun, kdmconfig has attempted to identify the devices necessary for the
  window system.  If the configuration is incorrect or incomplete you may not
  be able to use the window system.  Press F2 to view and edit the current or
  proposed Xsun configuration.

  For Xorg, kdmconfig is unable to display or update the current Xorg
  configuration.  Press F2 for instructions on Xorg configuration.

  Press F3 to exit kdmconfig without making any changes.

      X Server Selection
      ──────────────────

  v    [X]  Xorg server


    F2 Continue     F3 Exit     F6 Help
```

10. **In the Configure** `kdmconfig` **menu, examine the information about the**
    `kdmconfig`**, then press F2 to continue.**

    After a few moments, a series of network-related questions appear. If the system
    is to be attached to a network, you will be expected to choose at least one
    network interface from a list of *Solaris-named* interfaces (for example, `e1000g0`;
    `e1000g1`; and so on).

11. **To continue configuring the Solaris system and network information, do one
    of the following:**

    ■ **For a non-network system configuration.** Choose `No` in the Network
      Configuration screen and continue the normal Solaris configuration by
      following the Solaris 10 OS preinstallation on-screen prompts.

      After you have entered the system-configuration information, the server
      completes the boot process and displays the Solaris login prompt. Next, you
      will need to reconfigure the GRUB time-out value. For more information see
      "Reset GRUB Menu Time-out Value (Mandatory)" on page 161.

    ■ **For a network system configuration; certain of logical interface names and
      physical port names.**

      If you are certain how to match the Solaris logical network interface names
      with the physical network ports, continue the following steps:

    a. **Continue the normal Solaris configuration process by following the
       Solaris 10 OS preinstallation on-screen prompts.**

    b. **Refer to the Solaris documentation for additional details and the
       information you gathered in the** "Configuration Worksheet" on page 147 **to
       help you specify the required Solaris system and network information**

The screens that appear may vary depending on the method that you chose for assigning network information to the server (DHCP or static IP address). After you have entered the system-configuration information, the server completes the boot process and displays the Solaris login prompt.

c. **After Solaris reboots, reset the GRUB menu time-out value,** see "Reset GRUB Menu Time-out Value (Mandatory)" on page 161

- **For a network system configuration; uncertain of logical interface names and physical port names**.

  If you are uncertain how to match a *Solaris-named* interface to a physical EM or NEM networked port, you should choose NO in the Network Connection screen then continue the normal Solaris configuration process.

  After the system boots, you will need to log into the system as root and run the ifconfig -a command in a shell to display a complete list of interfaces. For more details, see Appendix E.

Tip – If you selected Yes in the Network Connection screen and you are uncertain which *Solaris-named* interfaces to select in the Configure Multiple Network Interfaces screen, you should choose any selection, and then press F2 to proceed. The next time the Network Connection screen appears, answer No and continue the normal configuration process, then proceed to Appendix E to learn how to identify and match the logical and physical network interface names.

Post Solaris Configuration

After completing the Solaris preinstallation configuration and rebooting the Solaris Operating System, you will need to reset the GRUB menu time-out value. You may also want to redirect the I/O for the Solaris console to a non-serial console. For more information, see:

- "Reset GRUB Menu Time-out Value (Mandatory)" on page 161
- "Redirect Solaris I/O (Optional)" on page 162

▼ Reset GRUB Menu Time-out Value (Mandatory)

After you complete the Solaris installation, you should reset the *default* time-out value (-1, *infinite time-out*) for the GRUB menu. If you do not reset the default (*-1*) time-out value, each time you reboot the system, the GRUB menu will pause the boot process and wait for user input.

When you set a positive time-out value for the GRUB menu, the GRUB menu will automatically time-out enabling the boot process to complete and display the Solaris Login screen.

To change the time-out value for the GRUB menu, follow these steps:

1. **Log into Solaris as** `root` **and open a terminal window.**

2. **In the terminal window, type the following:**

   `bootadm set-menu timeout=`*<number of timeout seconds>*

Note – Typically the GRUB menu time-out value for the Solaris OS is set to 10 seconds. However, the *default* GRUB menu time-out value configured on the Solaris factory-installed image is set to -1 (infinite time-out).

For example, to change the *default* GRUB menu time-out value from -1 (infinite time-out) to a 10 second time-out, you would type:

`bootadm set-menu timeout=10`

▼ Redirect Solaris I/O (Optional)

The console for the preinstalled Solaris image is a serial console. If you want to redirect the console to a non-serial console keyboard and monitor, you will need to execute the `eeprom console= text` command. After executing this command, the Solaris console is automatically directed to the keyboard (input) and monitor (output).

To redirect the Solaris console to a keyboard and monitor, follow these steps:

1. **Log in Solaris as** `root` **and open a terminal window.**

2. **To specify serial output redirection as text, type the following command:**

   `eeprom console=text`

Install Solaris 10

This chapter provides information about how to install Solaris 10 on a Sun Blade Server Module.

⚠ **Caution –** Critical patches are required for Solaris 10 6/06, 11/06, and 8/07. For more information, see "Required Critical Solaris Patches for Sun Blade 8000 Server Modules" on page 166.

This chapter, where necessary, refers you to the Solaris 10 documentation set for more details about completing the installation.

Topics in this chapter are organized as follows:

- "Plan Solaris Installation" on page 164
- "Hardware and Software Prerequisites" on page 164
- "Required Critical Solaris Patches for Sun Blade 8000 Server Modules" on page 166
- "Perform the Solaris Operating System Installation" on page 173
    - "Checklist of Tasks to Perform" on page 173
    - "Verify BIOS Settings for New Installs" on page 174
    - "Install Solaris 10 OS via PXE Network Environment" on page 179
    - "Install Solaris 10 via Local or Virtual Media" on page 186

Plan Solaris Installation

Before installing and configuring the Solaris Operating System on a Sun Blade Server Module, you need to plan how your site will support the installation. There are many options at various steps in the installation and configuration process, and understanding the deployment of the installation clarifies the appropriate decisions you will make for your site.

For more information about deployment installation considerations, see these topics:

- "Installation Methods" on page 319
- "Installation Targets" on page 324
- "Hardware RAID Configuration" on page 324

Hardware and Software Prerequisites

Before starting the Solaris 10 installation, consider the following hardware and software prerequisites:

- **Minimum Supported Solaris Operating System**. The Sun Blade server module supports the following minimum Solaris Operating System:

Server Module	Minimum Supported Solaris OS
X8400, X8420	• Solaris 10 06/06 or later
X8440	• Solaris 8/07 or later
X8450	• Solaris 8/07 with patches (or later)

  For updates to the Solaris 10 operating system, go to http://sunsolve.sun.com.

- **Proper Format of Solaris 10 Distribution Files**. Depending on the installation method chosen to install Solaris, you will need to have one of the following: the Solaris Distribution CD/DVD, ISO image, or JumpStart image readily available for installation.

- **Properly Installed and Configured Sun Blade 8000 Series Modular System**. At this point of the installation, you should have already unpacked the system, installed the chassis into a rack, installed the modules, and configured DHCP or static IP to supply network connectivity to the Chassis Monitoring Module

(CMM) and the Sun Blade server module. For information about installing modules and connecting cables, see Chapter 3 and Chapter 4. For information about configuring the management network, see Chapter 5.

Note – If you are performing the installation from a console that is attached to the serial port of a CMM or server module, you do not need to have network connectivity established to the system to perform the Solaris 10 OS installation.

- **Properly Configured Installation Environment Supporting the Installation Method**. You need to have a properly configured installation environment that supports your site's chosen installation method. For instance, if your site's installation method is a PXE-based network installation, you would need to ensure that the PXE server is properly configured prior to performing the Solaris installation. For more information about supported installation methods, see "Installation Methods" on page 319.
- **Properly Configured Boot Device in BIOS.** If your permanent boot device in the BIOS is different from the installation boot device, you can use F8 to manually select a one-time boot device during the Solaris 10 OS installation.

Note – Later in this chapter, you are instructed to choose a permanent boot device in the BIOS Setup utility prior to performing the Solaris installation. The permanent boot device is the device you will always boot from after installing Solaris.

- **Hardware RAID**. By default, the Sun-supplied disk drives are shipped *without* a hardware RAID configuration. If you need to configure hardware raid on the disk drive, you must perform this configuration prior to installing the operating system. For more information about hardware raid configurations, see "Hardware RAID Configuration" on page 324, and "Configure Hardware RAID" on page 327.
- **Applicable Network Information**. For a non-networked system, you need to know the host name of the system you are installing and the language and the locales that you intend to use on the system.

    For a networked system, see the requirements listed in the "Solaris OS Installation and Network Configuration Worksheet" on page 167.
- **Properly Configured FC SAN Device.** If your Solaris installation target is to a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the FC Host Bus Adapter (HBA) prior to the OS installation. For more information, see Appendix D.
- **Reviewed the Sun Blade 8000 Series Product Notes**. You should review the Product Notes for any late-breaking information concerning Solaris installations.

Required Critical Solaris Patches for Sun Blade 8000 Server Modules

The Solaris operating systems 10 06/06 and 11/06 require critical patches to properly operate on a Sun Blade server module. These patches should be installed after completing the Solaris operating system installation. All updates and patches required for Solaris are freely available at: http//sunsolve.com

Install the following critical patches after installing the Solaris operating system on a Sun Blade server module.

Critical Solaris Patch	For Solaris OS Release	Patch Description
119131-22 (or later)	Solaris 10 06/06	Includes the following fibre channel fixes that are pertinent to the Sun Blade 8000 and 8000 P Modular Systems: • 6300113 - doing update_drv st does not cause conf to be re-read when mpxio enabled
118855-36 (or later)	Solaris 10 06/06 Solaris 10 11/06	Fixes the following critical e1000g network driver bugs, as well as Fibre Channel hot-plug support: • 6423041 - mdi interfaces to support pHCI driver locking • 6436387 e1000g panic while using cfgadm to unconfigure the pcie slot • 6462893 HCTS network test failed on thumper machine due to e1000g issue
123776-03 (or later)	Solaris 10 06/06 Solaris 10 11/06	Fixes the following critical MSI interrupt migration bug: • 6474602 MSI interrupt migration broken for e1000g

Critical Solaris Patch	For Solaris OS Release	Patch Description
125101-09 (or later)	Solaris 10 06/06 Solaris 10 11/06	Fixes critical bugs 6488621,6446729,6480953 where kernel hangs when booting with –v.
120223-15 to 120223-25	Solaris 10 06/06, Solaris 11/06 Solaris 08/07	Provides latest driver recommended for Emulex patch.
127112-10	Solaris 10 08/07	Fixes critical bug 6636513 where SIGFPE is incorrectly delivered to processes with masked floating point exception. This patch is required to successfully operate Solaris 10 08/07 on the Sun Blade X8450 Server Module.

Gather Information Related to the Solaris Installation

Before starting the Solaris installation, consult the following sections:

- "Solaris OS Installation and Network Configuration Worksheet" on page 167
- "Distribution Media and Related Documentation" on page 172

Solaris OS Installation and Network Configuration Worksheet

Use the following worksheet to gather the information that you need to configure the Solaris 10 OS. You only need to collect the information that applies to your application of the system.

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Language	Choose from the list of available languages for the Solaris 10 software.	English*
Locale	Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal	Choose the type of terminal that you are using from the list of available terminal types.	

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Network connection	Is the system connected to a network?	• Networked • Non-networked*
MAC addresses assigned to ports on Network Express Modules (NEMs) and PCIe ExpressModules (EMs) For additional information about how MAC addresses are assigned to NEM and EM data ports, see "About NEM and EM External Data Port MAC Addresses" on page 100.	If the system is networked, you will need to know the MAC address for each NEM port and EM port connected to a network. Y • **NEM Ports**. Locate the starting MAC address for all 20 NEM ports on the NEM board. The starting MAC address is printed on yellow label near the connector. If the NEM is installed in the chassis, you will need to remove the NEM from the chassis to view the MAC address. For information about obtaining a NEM MAC address, see "Add Network Express Module" on page 58. • **EM Ports**. Locate the two EM port MAC addresses printed on the EM board. You will need to remove the EM from the chassis and remove the cover on the EM to view these addresses. For more about removing the EM cover, see "Add PCIe ExpressModule" on page 62. For information about removing EMs and NEMs when the system is powered on, see the Hot-plug procedures in the Online Information System. **Note -** During the Solaris system configuration, you will be asked to configure network interfaces from a list of *Solaris-named* network interfaces. If you are unsure of how a *Solaris-named* network interface corresponds to a *physical* port, you can match the *Solaris-named* interface to the physical port by using the MAC address. Further instructions are provided later in the chapter.	• Identify the primary networked port and any other networked ports
DHCP	Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	• Yes • No*

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: `129.200.9.1`	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: `255.255.255.0`	
	IPv6	Do you want to enable IPv6 on this machine?	• Yes • No*
Host name		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: • Default Realm • Administration Server • First KDC • (Optional) Additional KDCs	• Yes • No*

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Name service	Name service	Which name service should this system use?	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server or let the installation program find one?	• Specify One • Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made. • Search Domain: • Search Domain: • Search Domain:	
	LDAP	Provide the following information about your LDAP profile: • Profile name: • Profile server: If you specify a proxy credential level in your LDAP profile, gather this information: • Proxy-Bind Distinguished Name: • Proxy-Bind Password:	

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Default route	Do you want to specify a default route IP address or let the Solaris installation program find one?	• Specify One
	The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network.	• Detect One
		• None*
	You have the following choices:	
	• You can specify the IP address. An `/etc/defaultrouter` file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route.	
	• You can let the Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the ICMP router discovery protocol. If you are using the command-line interface, the software detects an IP address when the system is booted.	
	• You can choose None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	
Time zone	How do you want to specify your default time zone?	• Geographic region*
		• Offset from GM
		• Time zone file
Root password	Choose a root password for the system.	

Distribution Media and Related Documentation

You should locate the required Solaris distribution media and Product Notes, as well as consult the following Solaris documentation.

- For the Solaris 10 6/06 installation guides, see
  http://docs.sun.com/app/docs/coll/1236.3
- For the Solaris 10 administration guides, see
  http://docs.sun.com/app/docs/coll/47.16
- For information about upgrading your system, see
  http://docs.sun.com/app/docs/doc/817-5505
- For troubleshooting information, see Appendix A at:
  http://docs.sun.com/app/docs/doc/817-5504

Perform the Solaris Operating System Installation

This section describes the applicable procedures you must perform to install the Solaris 10 6/06 or later Operating System on a Sun Blade server module.

Checklist of Tasks to Perform

The following tasks must be performed in the order in which they are listed.

Step	Requirement	Task
Step 1	**Mandatory**	Prior to starting the installation, you should have decided upon the installation method, installation target, and disk configuration. For more information about these supported installation implementations, see the following sections: • "Installation Methods" on page 319 • "Installation Targets" on page 324 • "Hardware RAID Configuration" on page 324
Step 2	**Mandatory**	The Sun Blade 8000 Series system hardware must be properly set up and configured with network information. To perform these tasks, see the following sections: • "Install System Chassis Into a Rack or Cabinet" on page 25 • "Install Modules and Options Into the Chassis" on page 49 • "Attach Cables and Devices to Modules and Power On System Chassis" on page 89 • "Configure IP Addresses to Establish Initial Connection With ILOM" on page 121
Step 3	**Optional**	Implement a RAID configuration on the drive before installing Solaris 10. To complete this task, see: • "Configure Hardware RAID (Optional)" on page 325

Step	Requirement	Task
Step 4	Mandatory	You must verify that the required BIOS settings are properly configured for new installations. To complete this task, perform the following procedure: • "Verify BIOS Settings for New Installs" on page 174
Step 5	Mandatory	Perform the Solaris installation by following one of these procedures: • "Install Solaris 10 OS via PXE Network Environment" on page 179 • "Install Solaris 10 via Local or Virtual Media" on page 186
Step 6	Mandatory	Install critical Solaris patches. For more information, see "Required Critical Solaris Patches for Sun Blade 8000 Server Modules" on page 166.

Verify BIOS Settings for New Installs

For all new installations, you should verify that the following BIOS settings are properly configured before you begin installing the Solaris 10 OS:

■ System time

■ System date

■ Boot order

You can view and change these settings permanently in the BIOS Setup utility by pressing F2 during the BIOS start-up. In this utility, you can set optimal defaults, as well as view and edit BIOS settings as needed. Note that all changes you make in the BIOS Setup utility (through F2) are permanent until the next time you change them.

Tip – If necessary, you can specify a temporary boot device by pressing F8 during the BIOS start-up. Note that a temporary boot device setting is only in effect for the current system boot. After the system boots from a temporary boot device, the permanent boot device setting specified through F2 (in the BIOS) will be in effect.

To learn how to view and change the BIOS settings related to new installations, see the following procedure. The following procedure explains the process for changing the system time, system date, and selecting a permanent boot device (local hard disk drive or FC SAN device).

Prerequisites

Before you can configure the BIOS settings for a new installation, you must have one of the following console options ready to use:

- Sun ILOM Remote Console (via the ILOM web interface)
- Remote console (via a SSH connection)
- Attached console to server module or CMM (via the serial or VGA port)

For more information about these console options, see "Console Options" on page 320.

▼ View or Edit BIOS Settings for New Installations
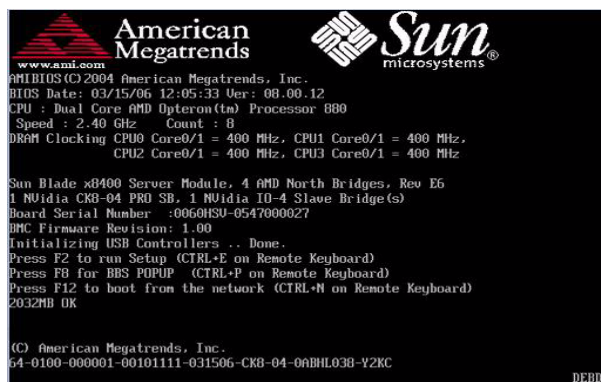
1. **Establish console access.**

   For details, see "Console Options" on page 320.

2. **Reset the Sun Blade server module, for example:**
   - **From the ILOM web interface**, select Reset on the Remote Power Control tab.
   - **From a local server**, press the Power button (momentary, 1 second) on the front panel of the server module to turn the server module off, then press the Power button (momentary, 1 second) to turn the server module on.
   - **From the ILOM CLI on server module SP**, type: `reset /SYS`
   - **From the ILOM CLI on CMM**, type: `reset /CH/BL#/SYS`

     where # = slot number of the server module in the chassis

     The BIOS screen appears.

3. **When prompted in the BIOS screen, press F2 to access the BIOS Setup utility.**

   After a few moments, the BIOS Setup utility appears.

4. **To ensure that the factory defaults are set, do the following:**

   a. **Press F9 to automatically load the optimal factory default settings.**

      A message appears prompting you to continue this operation by selecting OK or to cancel this operation by selecting CANCEL.

   b. **In the message, highlight OK then press Enter.**

      The BIOS Setup utility screen appears with the cursor highlighting the first value in the system time field.

5. **In the BIOS Setup utility, you can edit the system time or date by using these keys:**

   - PLUS (+) to increment the current value shown
   - MINUS (-) to decrement the current value shown
   - ENTER to move the cursor to the next value field
   - UP or DOWN arrows to change between the system time and date selection

6. **To access the boot settings, select the Boot menu.**

The Boot Settings menu appears.

7. **In the Boot Settings menu, use the down arrow key to select** `Boot Device Priority`, **then press Enter.**

The Boot Device Priority menu appears listing the order of the known bootable devices.
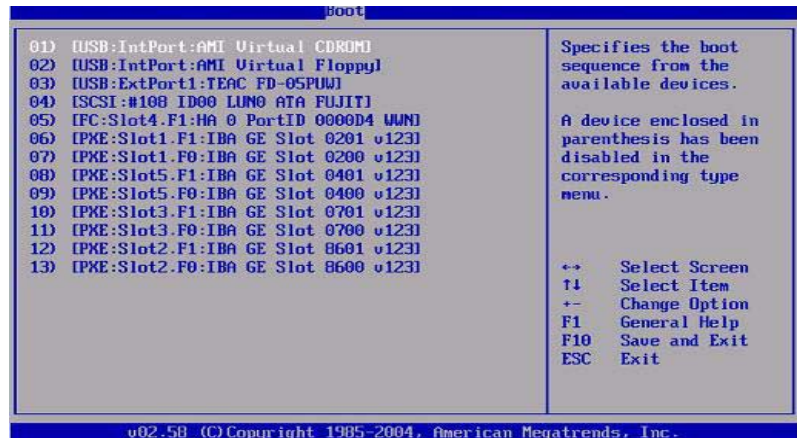
Note that the **first device** in the list has the **highest boot priority**.

8. **In the Boot Device Priority menu, do the following to edit the first boot device entry in the list:**

   a. **Use the up and down arrow keys to select the first entry in the list, then press Enter.**

   b. **In the Options screen, use the up and down arrow keys to select the default permanent boot device, then press Enter.**
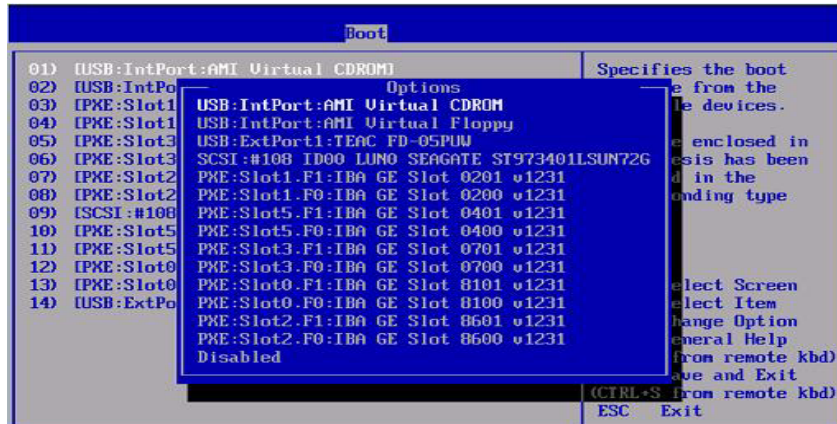
Tip – The device strings listed on the Boot menu and Options menu are in the format of: *Device Type, Slot Indicator,* and *Product ID String*

Note – You can change the boot order for other devices in the list by repeating Steps 8a and 8b for each device entry you want to change.

9. **To save the changes made and exit the utility, press F10. If you are performing this step from the ILOM Remote Console, select** `F10` **from the ILOM Remote Console Keyboard menu.**

Note – When using the ILOM Remote Console, F10 is trapped by the local OS. You must use the F10 option listed in the Keyboard drop-down menu that is available at the top of the console.

A message appears prompting you to save changes and exit setup.

10. **Select** `OK`**, then press Enter.**

Install Solaris 10 OS via PXE Network Environment

This section describes how to install the Solaris 10 OS from an established PXE-based network environment using remote media.

When you install the Solaris OS via a PXE-based network, you can choose to use any of the following media: Solaris 10 6/06 or later Distribution CD/DVD, customer-provided ISO image, or customer-provided JumpStart image.

Note – JumpStart can help you eliminate some or most of the manual tasks of setting up the Solaris Operating System for the first time on multiple servers. For more information about using JumpStart, see *Solaris 10 Installation Guide: Custom JumpStart and Advanced Installations* (Sun part number: 817-5506-12) (http://docs.sun.com).

The following procedure documents the initial steps you must perform to install Solaris over the network. Specifically, this procedure explains the steps of selecting the PXE network interface card that has been configured to communicate over the same network as the network installation server.

Prerequisites

The following requirements must be met prior to performing the Solaris 10 PXE installation:

- Install the appropriate supported edition of Solaris per server module:

Server Module	Minimum Supported Solaris OS
X8400, X8420	• Solaris 10 06/06 or later
X8440	• Solaris 8/07 or later
X8450	• Solaris 8/07 with patches or later

- The PXE network install server must be configured on the same subnet as the Sun Blade server module.
- The Sun Blade server module is configured as a client on the PXE server by specifying the MAC address of the network port.
- Obtained a list of data port MAC addresses for the NEMs or EMs is installed in the Sun Blade 8000 or 8000 P Chassis. These MAC addresses should have been recorded for future reference prior to installing the EM or NEM into the system chassis. For more information about how to obtain the MAC address of a NEM or

EM, see "Add Network Express Module" on page 58 or "Add PCIe ExpressModule" on page 62. Note that EMs are only supported on the Sun Blade 8000 Chassis.

- If you are installing Solaris 10 to a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the FC Host Bus Adapter prior to the OS installation. For more information, see Appendix D.

- If you are using an ISO DVD-image to perform the installation, the ISO DVD-image must be available on disk or on a shared network location.

- If you are using a JumpStart installation image, the image must be properly prepared and ready for installation. Information concerning how to properly set up and deploy a JumpStart installation is outside the scope of this guide. For details, see the *Solaris 10 Installation Guide: Custom JumpStart and Advanced Installations* (Sun part number: 817-5506-12).
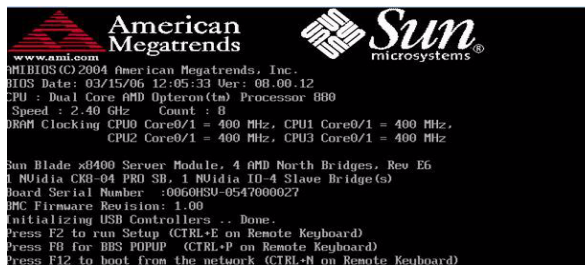
▼ Install Solaris 10 via PXE

1. **Power on or reset the Sun Blade server module, for example:**

   - **From the ILOM web interface**, select Reset on the Remote Power Control tab.

   - **From the local server**, press the Power button (momentary, 1 second) on the front panel of the server module to turn the server module off, then press the Power button (momentary, 1 second) to turn the server module on.

   - **From the ILOM CLI on server module SP**, type: **reset /SYS**

   - **From the ILOM CLI on CMM**, type: **reset /CH/BL#/SYS**

     where # = slot number of the server module in the chassis

     The BIOS Screen appears.

Note – The next events, occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You may want to enlarge the size of your screen to eliminate scroll bars.

2. **In the BIOS power-on self-test (POST) screen, press F8 to specify a temporary boot device.**

   The Please Select Boot Device menu appears.

3. **In the menu, select the appropriate PXE boot port. The PXE boot port is the physical network port configured to communicate with your network install server.**

Tip – You can determine the PXE interface boot device by (1) matching the *PXE: Slot*# (listed on the Please Select Boot Device menu) with the physical labeled NEM or EM slot number on the chassis, and (2) matching the *F#* (listed on the Please Select Boot Device menu) with the physical labeled NIC port number on the NEM (0.0 to 9.1) or EM (0 or 1). For more information about chassis slot locations and connections, see "About External I/O Ports and Power Inlets" on page 90.

The screen shown below depicts a sample configuration with NEMs installed in chassis slots labeled NEM2 and NEM3 (PXE:Slot2 and PXE:Slot3). This configuration is shown only as an example and it may not match the configuration listed on your screen.
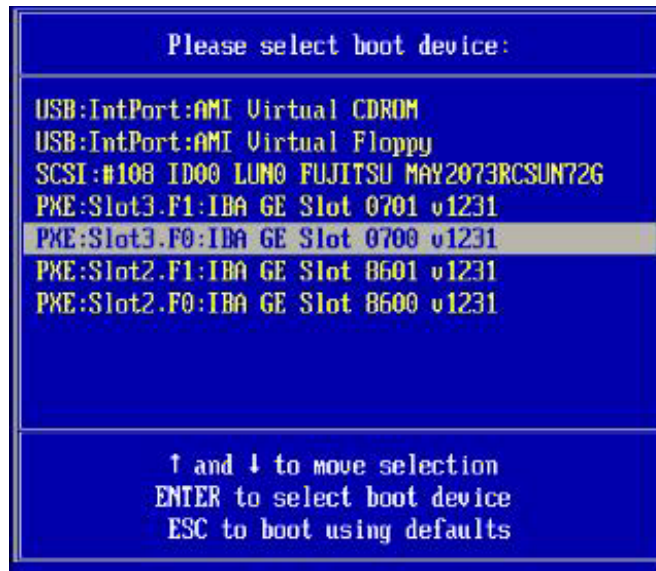
The GRUB menu appears.

4. **In the GRUB menu select** `Solaris 10 OS` **and press Enter.**


```
GNU GRUB  version 0.95  (624K lower / 2096064K upper memory)

Solaris_10 os




    Use the ↑ and ↓ keys to select which entry is highlighted.
    Press enter to boot the selected OS, 'e' to edit the
    commands before booting, or 'c' for a command-line.

The highlighted entry will be booted automatically in 8 seconds.
```

The mini root message appears.


```
   [Multiboot-elf, <0x1000000:0x1468b:0x3941d>, shtab=0x104e258, entry=0x100000
0]
module /boot/x86.miniroot
```

The install boot message appears.


```
Use is subject to license terms.
Configuring devices.
```

The Install Type menu appears.

5. **In the Install Type menu, do one of the following:**

   - S**elect Option (1)** `Solaris Interactive (default)` **and press Enter**.

     This option continues the normal user interactive installation process. It assumes that if the system is to be attached to a network, you are aware of which Solaris-named network interfaces to select for configuration. Note that the Solaris-named network interfaces are logical names and are different from the physical names assigned to NEM and EM ports. If you are uncertain how to match the Solaris-named interfaces to physical networked ports, then you should choose Option 6, and see the details below for more information.

or

   - S**elect Option (6)** `Single User Shell` **and press Enter**.

     This option launches a single user shell. In this shell, you will use the `ifconfig -a` command to identify the network interfaces by their logical and physical names.

     For detailed information about launching the single user shell and using the `ifconfig -a` command to list network interfaces by their logical and physical names, see Appendix F.

.

The Solaris Interactive program initializes and the Proposed System Configuration screen appears.

6. **In the Proposed System Configuration screen, press Enter to accept the proposed configuration.**


```
Timed out, continuing.

Solaris Interactive

Beginning system identification...
Searching for configuration file(s)...
Search complete.

Proposed Window System Configuration For Installation:

    Video Device:      ATI Technologies Inc Rage XL
    Video Driver:      XF86-ATI
    Resolution/Colors: 1024x768 - 256 colors @ 70Hz
    Screen Size:       17-inch (43cm)
    Monitor Type:      MultiFrequency 56kHz (up to 1280x1024 interlaced)
    Keyboard Type:     Generic US-English(104-Key)
    Pointing Device:   Generic USB Mouse (3 Button)

Press    <ENTER>      to accept proposed configuration
or       <ESC>        to change proposed configuration
or       <SPACE>      to pause

         <<< timeout in 30 seconds >>>
```

The Select a Language menu appears.

7. **In the language selection menu, type the selected language ID number (0–9), then press Enter.**


```
Select a Language

   0. English
   1. French
   2. German
   3. Italian
   4. Japanese
   5. Korean
   6. Simplified Chinese
   7. Spanish
   8. Swedish
   9. Traditional Chinese

Please make a choice (0 - 9), or press h or ? for help:
```

The Solaris Welcome screen appears.
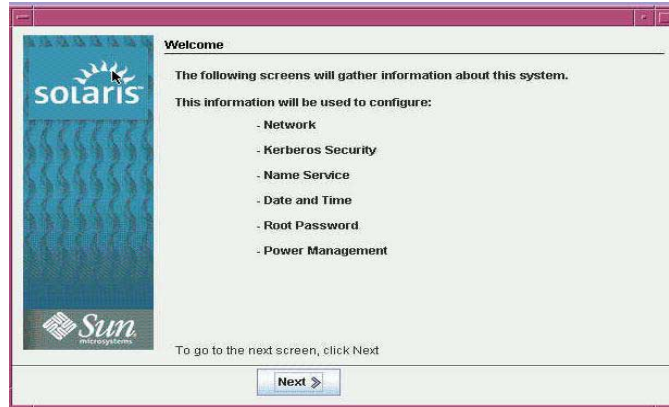
8. During the Solaris OS configuration, you will be presented with a list of network interfaces to configure.

To help you enter the correct system and network information, use the information previously gathered from:

- The "Solaris OS Installation and Network Configuration Worksheet" on page 167

- Step 5 - ("In the Install Type menu, do one of the following:" on page 183) and Appendix F.

Note – The Solaris system and network screens that appear will vary depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

After you have entered the Solaris OS system configuration information, the server completes the boot process and displays the Solaris login prompt.

Install Solaris 10 via Local or Virtual Media

This section describes how to install the Solaris 10 6/06 or later Operating System from either local or virtual media.

When you install the Solaris OS via local or virtual media, you can choose to use the Solaris 10 6/06 or later Distribution CD/DVD or ISO DVD image.

The following procedure explains the initial steps of installing Solaris. For detailed information about the Solaris 10 installation, see the *Solaris 10 Installation Guide: Basic Installations* (Sun part number: 817-0544-11).

Prerequisites

The following requirements should be met prior to performing the Solaris 10 local or virtual installation:

■ Gathered the installation media for the appropriate supported edition of Solaris 10 per server module:

Server Module	Minimum Supported Solaris OS
X8400, X8420	• Solaris 10 06/06 or later
X8440	• Solaris 8/07 or later
X8450	• Solaris 8/07 with patches (or later)

■ Established console access. For more information, see "Console Options" on page 320.

■ Network installation server must be configured on the same network as the server module.

■ If you are installing the Solaris 10 OS to a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the FC Host Bus Adapter. For more information, see Appendix D.

■ Obtained a list of MAC addresses for each NEM and EM port connected to a network. These MAC addresses should have been recorded for future reference prior to installing the EM or NEM into the system chassis. For more information about how to obtain the MAC address of a NEM or EM, see "Add Network Express Module" on page 58 or "Add PCIe ExpressModule" on page 62. For information about MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100.

▼ Install Solaris 10 via Local or Virtual Media

1. **Do one of the following:**

   - **For distribution CD/DVD**. Insert the Solaris 10 Distribution media (CD labeled #1 or the single DVD) into the local or remote USB CD/DVD-ROM drive.

   - F**or ISO image**. Ensure that the ISO images are available and that the ILOM Remote Console application is aware of the first ISO image location.

2. **Reset the Sun Blade server module, for example:**

   - **From the ILOM web interface**, select Reset on the Remote Power Control tab.

   - **From the local server**, press the Power button (momentary, 1 second) on the front panel of the server module to turn the server module off, then press the Power button (momentary, 1 second) to turn the server module on.

   - **From the ILOM CLI on server module SP**, type: `reset /SYS`

   - **From the ILOM CLI on CMM**, type: `reset /CH/BL#/SYS`

     where # = slot number of server module in chassis

     The BIOS screen appears.
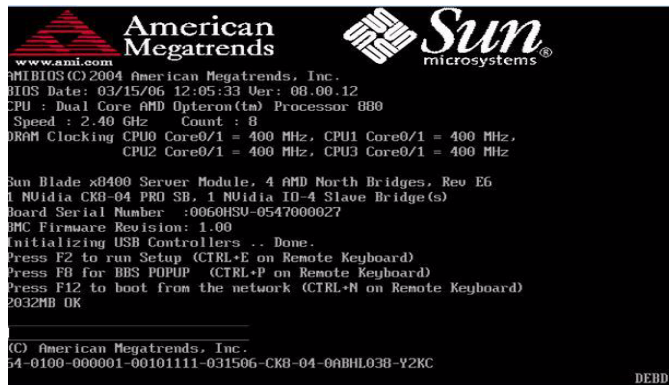
Note – The next events, occur very quickly; therefore, focused attention is needed for the following steps. Please watch carefully for these messages as they appear on the screen for a brief time. You may want to enlarge the size of your screen to eliminate scroll bars.

---

3. **In the BIOS power-on self-test screen, press F8 to specify a temporary boot device for the Solaris installation.**

   The Please Select Boot Device menu appears.

4. **In the menu, select either the external or virtual CD/ DVD device as the first boot device then press Enter.**

In the sample figure below, the virtual CD/DVD device is specified as the first boot device.
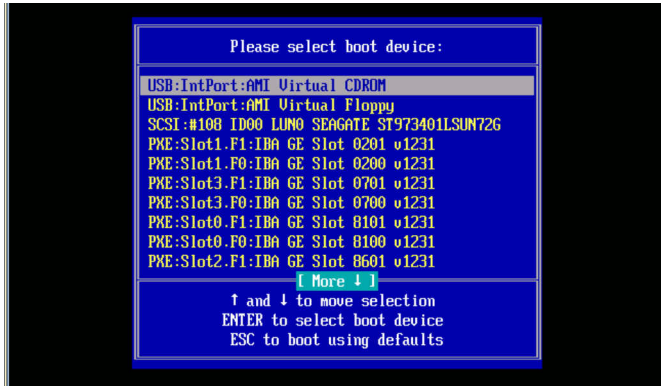
Tip – The device strings listed on Boot menu are in the format of: *device type*, *slot indicator*, and *product ID string*.

Tip – If you are performing the Solaris installation from the ILOM Remote Console application, you need to select the `AMI Virtual CDROM`.

The GRUB menu appears.

5. **In the GRUB menu select** `Solaris` **and press Enter.**

The mini boot message appears.

The install boot message appears.

The Install Type menu appears.

6. **In the Install Type menu, do one of the following:**

   ■ **Select Option (1) `Solaris Interactive (default)` and press Enter.**

   This option continues the normal user interactive install process. It assumes that if the system is to be attached to a network, you are aware of which Solaris-named network interfaces to select for configuration. Note that the Solaris-named network interfaces are logical names and are different from the physical names assigned to NEM and EM ports. If you are uncertain how to match the Solaris-named interfaces to physical networked ports, then you should choose Option 6, and see the details below for more information.

or

   ■ **Select Option (6) `Single User Shell` and press Enter.**

This option launches a single user shell. In this shell, you will use the `ifconfig -a` command to identify the network interfaces by their logical and physical names.

For detailed information about launching the single user shell and using the `ifconfig -a` command to list network interfaces by their logical and physical names, see Appendix F.

The Solaris Interactive program initializes, the system network options are configured, and the Proposed System Configuration screen appears.

7. **In the Proposed System Configuration screen, press Enter to accept the proposed configuration.**

The Select a Language menu appears.

8. **In the language selection menu, type the selected language ID number (**0–9**),
   then press Enter.**

The Solaris Welcome screen appears.

9. During the Solaris OS configuration, you will be presented with a list of network interfaces to configure.

```
Configure Multiple Network Interfaces

Multiple network interfaces have been detected on this system.  Specify all
of the network interfaces you want to configure.

Note: You must choose at least one interface to configure.

     Network interfaces
     _____
     [ ] e1000g1
     [ ] e1000g2
     [ ] e1000g3
     [ ] e1000g4
     [ ] e1000g5
     [ ] e1000g6
     [ ] e1000g7
```

To help you enter the correct system and network information, use the information previously gathered from:

■ The "Solaris OS Installation and Network Configuration Worksheet" on page 167

■ Step 6 - ("In the Install Type menu, do one of the following:" on page 189) and Appendix F

10. **Continue the normal Solaris installation. Refer to the Solaris documentation for additional details.**

Note – The Solaris system and network screens that appear will vary depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

After you have entered the system-configuration information, the server completes the boot process and displays the Solaris login prompt.

11. **Install required critical Solaris patches. For more information, see** "Required Critical Solaris Patches for Sun Blade 8000 Server Modules" on page 166**.**

Initial Setup of the Factory-Installed Microsoft Windows Server 2003 R2 Operating System

This chapter describes how to complete the initial setup of the factory-installed Microsoft Windows Server 2003 R2 operating system. This chapter assumes that the hard disk drive installed in your server includes the factory-installed image for Windows Server 2003 R2.

Note – The factory-installed Windows Server 2003 R2 is initially available for Sun Blade X8440 Server Modules. Future Sun Blade 8000 Server Modules will be available with factory-installed Microsoft Windows Server 2003 R2 images.

The following factory-installed versions of the Windows Server 2003 R2 operating system are available for X8440 Server Modules:

- Microsoft Windows Server 2003 R2 with SP2, Standard Edition
- Microsoft Windows Server 2003 R2 with SP2, Standard Edition 64-bit
- Microsoft Windows Server 2003 R2 with SP2, Enterprise Edition
- Microsoft Windows Server 2003 R2 with SP2, Enterprise Edition 64-bit

Topics covered in this chapter include:

Before You Begin

Before you set up the factory-installed Windows Server 2003 R2 operating system, you should review the following topics:

- "Hardware and Software Prerequisites" on page 194
- "Establish Console Connection to the Sun Blade server module" on page 195
- "Configure BIOS Settings for New Installations" on page 214

Hardware and Software Prerequisites

Ensure that the following hardware and software prerequisites are met prior to powering on the server:

- **Properly Installed Sun Blade 8000 or 8000 P Modular System**. At this point of the installation, you should have already unpacked the server, installed the server options, installed the server into the chassis, and configured DHCP or static IP to supply network connectivity to the server. For information about installing modules and connecting cables, see Chapter 3 and Chapter 4. For information about configuring the management network, see Chapter 5.

- **Boot Drive From Respective Slot.** You can boot the Microsoft Windows Server 2003 R2 operating system from either of the server module's HDD bays (00 or 01). However, the drive targeted for installation must be the first drive listed in the BIOS boot order. For information about verifying or changing the BIOS boot order, see "Configure BIOS Settings for New Installations" on page 214.

- **RAID Considerations**. By default, the Sun-supplied disk drives are shipped *without* a hardware RAID configuration. If you want to make the factory-installed OS part of a RAID while preserving the data on the drive, you can optionally partition the drive with a mirrored RAID set (also known as LSI hardware RAID Level 1). You can perform the mirrored RAID set before or after the configuration of the Windows preinstalled image. For more information about hardware raid configurations, see "Hardware RAID Configuration" on page 324, and "Configure Hardware RAID (Optional)" on page 325.

- **Reviewed the *Sun Blade 8000 Series Product Notes***. You should review the Product Notes for any late-breaking information concerning Windows installations.

- **Microsofts Windows Server 2003 Documentation**. For additional information about how to perform the initial setup of the Windows Server 2003 operating system, see Microsofts Windows Server 2003 R2 documentation.

- **Windows Media Recovery User's Guide**. Refer to the *Sun x64 Servers Windows Server 2003 R2 Recovery Installation Guide* (820-3674-10) if you need instructions for recovering the factory-installed Windows image on your server. This guide is available online at: `http://docs.sun.com`

Establish Console Connection to the Sun Blade server module

You must establish one of the following console connections to the Sun Blade server module to complete the initial setup of the factory-installed Windows operating system:

- **Sun ILOM Remote Console** (via ILOM web interface). For more information about the Sun ILOM Remote Console, see Appendix C.
- **Local VGA Console**. Video output for the Windows factory-installed image is, by default, directed to the VGA port. For more information about attaching a VGA monitor to the server module, see "Attach Local VGA Monitor to Server Module" on page 111.

For additional information about which console option to select (local or remote), see "Console Options" on page 320.

Perform Initial Setup of Factory-Installed Windows Server 2003 R2 OS

Follow these steps to boot the Windows factory-installed image, as well as to configure the initial Windows operating system settings for language, licensing, date and time, and network.

1. **Reset the blade, for example:**

   - **From the ILOM web interface**, select `Reset` on the Remote Power Control tab.

   - **From local server**, press the Power button (momentary, 1 second) on the front panel of the blade to turn off the blade, then press the Power button (momentary, 1 second) to turn on the blade.

   - **From ILOM CLI on blade SP**, type: `reset /SYS`

   - **From ILOM CLI on CMM**, type `reset /CH/BL#/SYS`

   where # = slot number of the blade in the chassis

   The BIOS screen appears then an EMS Detection Message appears.

   Tip – If your mouse or keyboard is not responding, wait until the device(s) are properly detected.

   ---

2. **In the EMS Connection Detected Message dialog box, click OK to continue using this local connection.**

   The Welcome to Windows Setup dialog appears.

3. **In the Welcome to Windows Setup dialog, click Next and continue the set up process by following the on-screen instructions.**

   The following table summarizes the Windows Setup screens in the order in which they appear, as well as the actions required to complete them. For additional information, refer to Microsoft's documentation.

Windows Setup Screen Name	Action Required
Welcome to Windows Setup Wizard	Click Next.
License Agreement	Accept license agreement and click Next.
Regional Language Options	Specify your regional and language settings and click Next.
Personalize Your Software	Type your name and organization and click Next.
Licensing Mode	Select the licensing option purchased and click Next. *Tip* - Client license must match the quantity purchased.
Computer Name and Administrator Password	Specify a computer name and an administrator password then click Next.
Date and Time Settings	Specify the date, time, and time zone then click Next.
Workgroup or Computer Domain	Specify a valid domain or workgroup then click Next.

After completing the Windows setup dialogs, a series of messages and events occur while the initial setup completes, for example:

- A message appears indicating that the system is performing the final configuration. When complete, the system automatically reboots.
- After the system reboots, the BIOS dialog appears and the message "Starting Windows" appears. When complete, the Windows Login dialog appears.
- In the Windows Login screen press CTRL-ALT-Delete to log in.
- A Post Security dialog appears. In the Post Security dialog box, you can optionally specify security settings.
- The Manage Your Server dialog appears. In the Manage Your Server dialog you can optionally set up additional user roles.

Important Information

After completing the Windows setup, refer to these sections about finding additional information about the x64 Server Updates or x64 Windows Server 2003 R2 Recovery Media Kit:

- "Sun Link" on page 198
- "Recovery Media Kit" on page 199

Sun Link

From the Windows operating system Start menu, you can conveniently obtain x64 server updates, view online docs, or install supplemental software by selecting Sun Link Online Information (see FIGURE 8-1 and FIGURE 8-2).

FIGURE 8-1 Sun Link Online Information

FIGURE 8-2 Sun Supplemental Software

Recovery Media Kit

The Sun Blade 8000 Series Server Modules that are shipped with a factory-installed Windows operating system might also include an optional recovery media kit. If you need to perform a recovery of the Windows operating system using this kit, follow the instructions in the enclosed *Sun x64 Servers Windows Server 2003 R2 Recovery Installation Guide*. If you do not have the recovery media kit, contact your support representative.

Note – The optional recovery media kit must be ordered separately. By default, it is not shipped with the factory-installed Windows HDDs. The *Sun x64 Servers Windows Server 2003 R2 Recovery Installation Guide* that is enclosed with the optional recovery media kit is also provided online at: `http://docs.sun.com`

Install Windows Server Operating System

This chapter provides instructions for installing Windows Server operating systems on the Sun Blade server modules.

Note – Alternatively, you can choose to use the Sun Installation Assistant (SIA) to install Windows Server 2003 on a Sun Blade Server module. The SIA provides and installs the device driver, if required, for you. For more information about using SIA to install the Windows Server 2003 operating system, follow the instructions provided in the *Sun Installation Assistant for Windows and Linux (Sun Blade 8000 Modular Systems) Sun Part Number* 820-3357.

Topics in this chapter are organized as follows:

Plan the Windows Server Installation

Before installing and configuring the Windows Server operating system on a Sun Blade Server Module, you need to plan how your site will support the installation. There are numerous options at various steps in the installation and configuration process, and understanding the deployment of the installation clarifies the appropriate decisions you will make for your site.

For information about installation deployment, see these topics:

- "Installation Methods" on page 319
- "Installation Targets" on page 324
- "Hardware RAID Configuration" on page 324

Hardware and Software Prerequisites

Before starting the Windows Server installation, consider the following hardware and software prerequisites:

- **Proper Format of Windows Server Distribution Files**. Depending on the installation method chosen to install Windows, you will need to have either the Windows Server distribution media, ISO CD-ROM image, a RIS image, or WDS image available for installation.

- **Minimum Supported Windows Server Operating Systems**. The Sun Blade 8000 Series Modular Systems support the following English-only Windows Server operating system editions.

Server Module	Operating System
All server modules	• Microsoft Windows Server 2003 R2 Enterprise Edition (32 or 64 bit) • Microsoft Windows Server 2003 R2 Standard Edition (32 or 64 bit) • Microsoft Windows Server 2003 (SP1) Enterprise Edition (32 or 64 bit) • Microsoft Windows Server 2003 (SP1) Standard Edition (32 or 64 bit) • Microsoft Windows Server 2008 Standard Edition (32 bit and 64 bit) • Microsoft Windows Server 2008 Enterprise Edition (32 bit and 64 bit)

- **Installed and Configured Sun Blade 8000 Series Modular System**. At this point of the installation, you should have already unpacked the system, installed the system into a rack, installed the options and modules, and configured DHCP or static IP to supply network connectivity to the Chassis Monitoring Module (CMM) and the Sun Blade server module.

- **Installation Method**. At this point of the installation, you should have already chosen a supported installation method for installing Windows Server on a Sun Blade server module. For more information about supported installation methods, see "Installation Methods" on page 319.

- **Hardware RAID**. By default, the Sun-supplied disk drives are shipped *without* a hardware RAID configuration. If you need to configure hardware RAID on the disk drive, you must perform this configuration prior to installing the operating system. For more information about hardware RAID configurations, see "Hardware RAID Configuration" on page 324, and "Configure Hardware RAID" on page 327.

- **Boot Device Order in BIOS.** If your permanent boot device in the BIOS is different from the installation boot device, you can use the F8 key to manually select a one-time boot device during the Windows Server OS installation.

- **Network Information**. For a non-network system, you need to know the host name of the system you are installing and the language and the locales that you intend to use on the system.

  For a network system, you need to gather the information identified in the "Windows Server 2003 Network Configuration Worksheet" on page 204.

- **FC SAN Device Installations**. If your installation target for the Windows Server installation is a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the QLogic or Emulex adapter. For more information, see Appendix D.

- **Service Packs and Device Drivers**: When installing Windows Server on a Sun Blade server module, the following requirements apply:

  - **Windows Server 2003 Service Pack 1**. If you are not planning to install Windows Server 2003 R2, you will need to install Windows Server 2003 Service Pack 1 after completing the Windows installation. Procedures later in this chapter inform you when to install this service pack. Note that the Windows Server 2003 R2 version already contains the Service Pack 1 updates.

  - **Windows Server Device Drivers on Resource CD**. The Sun Blade 8000 Series Resource CD contains the mandatory Windows Server device drivers you will need to install in order to support the Windows Server operating system. For more information about these drivers, see "Device Drivers for Windows Server Installations" on page 207 or, see the README.TXT file on the resource CD.

- **Windows Server Floppy Diskette**. If you decide to store the Windows Server device drivers on a mass-storage device floppy, you will need to have a floppy diskette available for the installation. The instructions for creating a mass-storage device floppy are provided later in this chapter, "Create Mass-Storage Device Floppy For Windows 2003 Drivers" on page 210.

- **Sun Blade 8000 Series Product Notes**. You should review the *Sun Blade 8000 Series Notes* for any late-breaking information concerning Windows Server 2003 installations.

- **Microsoft's Windows Server Installation Documentation**. In addition to using the instructions in this chapter to perform the Windows Server installation, you should review and refer to the Microsoft Windows Server documentation to complete the installation.

Windows Server 2003 Network Configuration Worksheet

If the Sun Blade 8000 or 8000 P Modular System will be attached to a network, the Windows Server 2003 installation wizard will prompt you to configure one or more network interfaces. Prior to installing Windows 2003 Server, use the following network configuration worksheet to gather information about your network and the system network ports you want to configure. You only need to collect the information that applies to your application of the system.

Information for Installation	Description or Example	Your Answers or Action to Take
Language	Choose from the list of available languages for the Windows software.	English
Locale	Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)
Terminal	Choose the type of terminal that you are using from the list of available terminal types.	
Network connection	Is the system connected to a network?	• Network • Non-network

Information for Installation		Description or Example	Your Answers or Action to Take
MAC addresses assigned to ports on Network Express Modules (NEMs) and PCIe ExpressModules (EMs) For additional information about how MAC addresses are assigned to NEM and EM data ports, see "About NEM and EM External Data Port MAC Addresses" on page 100.		If the system is network, you will need to know the MAC address for each NEM and EM port connected to the network. You can determine the MAC address for the: • **NEM Ports**. Locate the starting MAC address for all 20 NEM ports on the NEM board. The starting MAC address is printed on a yellow label near the connector. For information about obtaining a NEM MAC address, see "Add Network Express Module" on page 58. • **EM Ports**. Locate the two EM port MAC addresses printed on the EM board. You will need to remove the EM from the chassis and remove the cover on the EM to view these addresses. For more about removing the EM cover, see "Add PCIe ExpressModule" on page 62. For information about removing EMs and NEMs when the system is powered on, see the hot-plug procedures in the *Sun Blade 8000 Series Online Information System*. **Note -** During the Windows system configuration, you will be asked to configure network interfaces from a list of *Windows friendly-named* network interfaces. If you are unsure how a *Windows friendly-named* network interface corresponds to a *physical* port, you can match the *Windows friendly-named* interface to the physical port by using the MAC address. For further instructions, see Appendix A.	• Identify the primary network port and any other network ports
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	• Yes • No
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: 129.200.9.1	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: 255.255.255.0	
	IPv6	Do you want to enable IPv6 on this machine?	• Yes • No
Host name		A host name that you choose for the system.	

Information for Installation		Description or Example	Your Answers or Action to Take
Name service	Name service	Which name service should this system use? **Note**. If the system uses a name service, provide the following information.	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server or let the installation program find one?	• Specify One • Find One
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses.	
	LDAP	Provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather this information: Proxy-Bind Distinguished Name: Proxy-Bind Password:	
Time zone		How do you want to specify your default time zone?	• Geographic region • Offset from GM • Time zone file
Administrator password		Choose an Administrator password for the system.	

Device Drivers for Windows Server Installations

If you are performing a Windows Server 2003 installation, you will be required to install device drivers at boot time and later after the installation completes. These device drivers provide both operating system support and in-band communication with the Sun Blade Server Module. For a list of device drivers to be installed at boot time, see TABLE 9-1 "Windows Server 2003 Device Drivers Installed At Boot Time" on page 208.

If you are performing a Windows Server 2008 installation, you are not required to install device drivers at boot time or after the installation completes. All device drivers are provided in the Windows Server 2008 installation program. However, you might want to consider installing the optional AMI virtual floppy device driver after the installation completes if you intend to use either the floppy device or floppy image redirection feature in the Sun ILOM Remote Console.

For information about where to obtain the Windows Server device drivers, see"Where to Obtain Device Drivers" on page 208.

For information about how to prepare device drivers for installations, see:

- "Prepare Required Windows Server 2003 Device Drivers For Installation" on page 209
- "Prepare Optional Windows Server 2008 Device Driver For Installation" on page 211

For information about how to update or install system device drivers after performing the Windows Server installation, see"Install and Update System Device Drivers – Post Installation" on page 241

TABLE 9-1 Windows Server 2003 Device Drivers Installed At Boot Time

Device Drivers or Utility	Description
LSI1064 SAS/SATA Driver	This LSI SAS/SATA device driver must be available at installation boot time if installing to a local SAS or SATA hard disk drive (HDD).
AMI Virtual Floppy Driver	This AMI Virtual Floppy device driver is included on all three floppy images. This driver is only required if installing via remote KVMS session. Do NOT install this driver at this time if using a local floppy disk drive.
QL2300 SAN Driver	This QLogic Fibre Channel EM device driver must be installed at installation boot time if your installation target is an QLogic FC SAN device.
Emulex SAN Driver	This Emulex Fibre Channel EM or NEM device driver must be installed at installation boot time if your installation target is an Emulex FC SAN device.
Floppy Create Utility **Rawrite_32.exe** **Floppy_Images**	This utility is used to write the required floppy image drivers to a mass-storage device floppy.

Note - At boot time, you need to install only one floppy driver set (F1, F2, or F3).The floppy driver set that you choose to install will depend on your installation target. Instructions for when to install system device drivers at boot time are included in the following procedures:

Where to Obtain Device Drivers

You can obtain the Windows Server device drivers for installation from the Sun Blade 8000 Resource CD. Alternatively, you can download the required device drivers from the Sun Blade 8000 Series Modular System - Download page at: www.sun.com/servers/blades/8000/downloads.jsp

On the Resource CD, you should refer to the README.TXT file for the exact location of the device driver directories. Typically, the required drivers are available on the Resource CD in the following directories (support/drivers/...).

■ **Floppy_images**. This directory provides installation floppy images. You only need to install one floppy image at **boot time**. The floppy set you choose to install will depend on your installation target. In addition to the floppy image, this folder contains the utility to write the drivers to a mass-storage device floppy. However, if you are performing the installation via remote KVMS, you do not need to use this utility, you can simply mount the floppy image for installation.

- **X86 (32 bit)**. This directory contains the device drivers you can choose to install after installing the OS. This directory contains 32-bit driver executables for the Virtual Floppy; CPU, SAS/SATA HDDs, EMs and NEMs. You should not install any drivers that were previously installed at boot time.

- **X64 (64 bit)**. This directory contains the device drivers you can choose to install after installing the OS. This directory contains 64-bit driver executables for the Virtual Floppy; CPU, SAS/SATA HDDs, EMs and NEMs. You should not install any drivers that were previously installed at boot time.

- **ISO_IMAGES**. This directory contains the 32-bit and 64-bit ISO images for all drivers.

Prepare Required Windows Server 2003 Device Drivers For Installation

For Microsoft Windows Server 2003 installation, you will need to prepare required device drivers for installation at either boot time or after the installation.To prepare the Microsoft Windows Server 2003 device drivers for installation, you can either:

- Store the Windows device driver ISO floppy.img file on a shared network location for installation. The ISO `floppy.img` file is required for all remote KVMS Windows Server 2003 operating system installations.

- Store the Windows device driver ISO `floppy.img` file on a shared network location for installation. The ISO `floppy.img` file is required for all remote KVMS Windows Server 2003 operating system installations.create a mass storage device floppy to store the required Windows Server 2003 device drivers for installation. The mass storage device floppy is required for all local server hard disk drive operating system installations. For more information about creating a mass-storage device floppy, see following procedure Create Mass-Storage Device Floppy For Windows 2003 Drivers.

⚠ **Caution –** The device drivers required during the Windows Server 2003 installation must be installed in a specific order or the installation will fail. The installation procedures provided later in this chapter identify the appropriate time each driver must be installed during the Windows 2003 installation. For information about how to install post installation device drivers, see "Install and Update System Device Drivers After Installation" on page 242.

▼ Create Mass-Storage Device Floppy For Windows 2003 Drivers

The following procedure to create a mass-storage device floppy requires:

- PC or laptop running Microsoft Windows
- Attached external (or internal) floppy disk drive
- Attached external (or internal) CD/DVD media drive
- Sun Blade 8000 Resource CD

Note – If you intend to use the floppy image file to install the drivers, you do not need to create a mass-storage device floppy.

---

1. **On a system running Microsoft Windows, insert the Resource CD into the CD/DVD media drive.**

2. **Insert a blank floppy disk into the floppy drive.**

3. **In Windows Explorer, open the** `floppy_images` **directory and double-click** `rawrite32.exe` **to run the Create Driver Utility.**

Note – This utility will run on 32-bit and 64-bit X86 systems running Microsoft Windows.

---

4. **Select the location of the floppy driver set (drivers on Resource CD to install) and specify the target drive location (where the floppy drive is currently inserted) then click** `Write to Disk`**.**

   A confirmation message appears.

5. **In the confirmation message, click** `OK` **to continue.**

   A message appears stating that the image was written successfully to disk.

During the normal 32-bit or 64-bit Microsoft Windows setup, you will be instructed to load the mass-storage device floppy in conjunction with the F6 option.

Prepare Optional Windows Server 2008 Device Driver For Installation

For Microsoft Windows Server 2008 installations, all device drivers are included in the Windows Server 2008 distribution media with the exception of one optional AMI Virtual Floppy driver that you might want to consider installing *after* the Windows 2008 installation.

The AMI Virtual Floppy device driver is required if you intend to use the floppy device or floppy image redirection features offered in the Sun ILOM Remote Console. For more information about the Sun ILOM Remote Console, see Appendix C "Sun ILOM Remote Console" on page 335

To prepare the Windows Server 2008 AMI virtual floppy device driver for installation, you can store this driver on a thumb drive or CD. For more information about how to install the AMI virtual Floppy device driver after the OS installation, see "Install and Update System Device Drivers – Post Installation" on page 241.

Perform the Windows Server Installation

This section describes the applicable procedures you must perform to install Windows Server software.

Checklist of Tasks to Perform

The following tasks must be performed in the order in which they are listed.

Pre-Installation Tasks		
Steps	***Win2K3 and *Win2K8**	**Tasks**
Step 1	**Mandatory**	The Sun Blade 8000 Series system hardware must be properly set up and configured with network information. To perform these task, see these sections: • Chapter 3 "Install Modules and Options Into the Chassis" on page 49 • Chapter 5 "Configure IP Addresses to Establish Initial Connection With ILOM" on page 121
Step 2	**Mandatory**	Prior to starting the installation, you should have decided upon an installation method, installation target, and disk configuration. • "Installation Methods" on page 319 • "Installation Targets" on page 324 • "Hardware RAID Configuration" on page 324
Step 3	**Mandatory**	You must verify that the required BIOS settings are properly configured for new installations. To complete this task, perform the following procedure: • "Configure BIOS Settings for New Installations" on page 214
Step 4	**Mandatory for blades shipped with a pre-installed Solaris OS**	If you received a hard disk drive with a Solaris image preinstalled on it, you must remove the Solaris image from the hard drive before performing the Windows operating system installation.
Step 5	**Optional**	Implement a RAID configuration on the drive before installing Windows Server. To complete this task, see: • "Configure Hardware RAID (Optional)" on page 325 • "Hardware RAID Configuration" on page 324
* Win2K3 = Windows Server 2003; Win2K8 = Windows Server 2008		

Step 6	**Mandatory for Win2K3 only**	Locate the Resource CD or download the mandatory device drivers for Windows 2003 from the product page. To perform this task, refer to these sections: • "Device Drivers for Windows Server Installations" on page 207 • "Where to Obtain Device Drivers" on page 208 • "Prepare Required Windows Server 2003 Device Drivers For Installation" on page 209
Windows Server Installation Task		
Step 7	**Mandatory**	Perform the Windows Server installation by following one of these procedures: • "Install Windows Server 2003 via Local or Virtual Media" on page 219 • "Install Windows Server 2003 via PXE Network Environment" on page 225 • "Install Windows Server 2008 via Local or Virtual Media" on page 232 • "Install Windows Server 2008 via PXE" on page 238
Post Installation Tasks		
Step 8	**Mandatory for Win2K3 only**	Install the Windows Server 2003 Service Pack 1. For more information, refer to Microsoft documentation supplied with Service Pack 1. **Note -** If you installed Windows Server 2003R2, you do not need to install Windows Server 2003 Service Pack 1.
Step 9	**Minatory - Win2K3 only** **Optional Win2K8 only**	Update or install system drivers (if required) after installation. For more information, see "Install and Update System Device Drivers – Post Installation" on page 241
Step 10	**Mandatory**	Perform the normal Windows post-installation tasks (network information, admin password, register and activate license, and so forth). Consult Microsoft documentation for details.
* Win2K3 = Windows Server 2003; Win2K8 = Windows Server 2008		

Configure BIOS Settings for New Installations

For all new installations, you should verify that the following BIOS settings are properly configured before you begin installing the Windows Server software:

- System time
- System date
- Boot device order

You can view and permanently change these settings in the BIOS Setup utility by pressing F2 during the BIOS start-up. In this utility, you can set optimal defaults, as well as view and edit BIOS settings as needed. Note that all changes you make in the BIOS Setup utility (through F2) are permanent until the next time you change them.

Tip – If you need to set a temporary boot device during the operating system installation, you can specify a one-time boot device by pressing F8 during the BIOS start-up. Note that this temporary boot device setting is only in effect for the current system boot After the system boots from a temporary boot device, the permanent boot device setting specified through F2 (in BIOS) will be in effect.

Note – The example screens in the following procedure are provided to assist you through the procedure. Note that the software version numbers shown in the example screens might not match the software version numbers shown in your BIOS screens.

To learn how to view and permanently set up the BIOS settings related to new installations, see the procedure "View or Edit BIOS Settings for New Installations" on page 215.

Prerequisites

Before you can configure the BIOS settings for a new installation, you must have one of the following console options ready to use:

- Sun ILOM Remote Console (via ILOM web interface)
- Console via a SSH connection
- Console via a VGA port connection
- Console via a serial port connection

For more information about these console options, see Appendix B.

▼ View or Edit BIOS Settings for New Installations

1. **Reset the Sun Blade server module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (momentary, 1 second) on the front panel of the blade to turn off the blade, then press the Power button (momentary, 1 second) to turn on the blade.

     The BIOS screen appears.
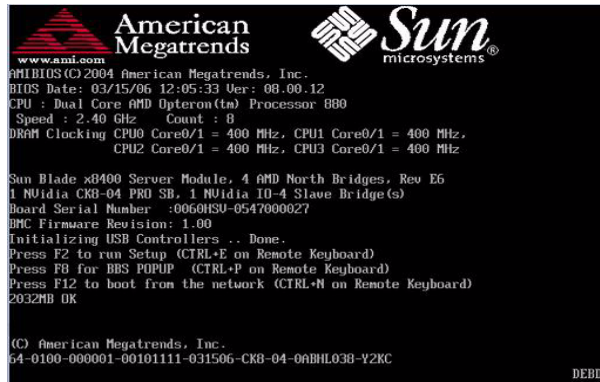
2. **When prompted in the BIOS screen, press F2 to access the BIOS Setup utility.**

   After a few moments, the BIOS Setup utility screen appears.
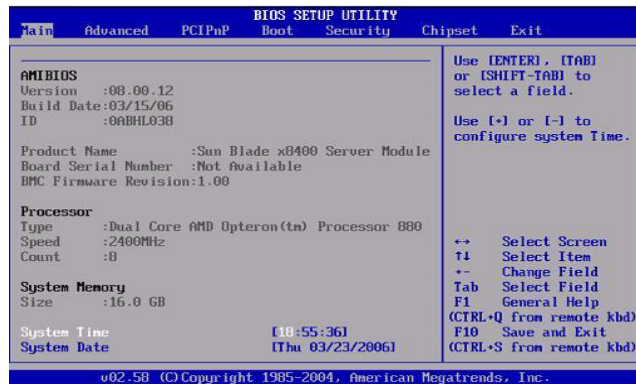
3. **Ensure that the optimal factory defaults are set by doing the following:**

   a. **Press F9 to automatically load the optimal factory defaults.**

      A message appears prompting you to continue this operation by selecting OK or to cancel this operation by selecting CANCEL.

   b. **In the load optimal defaults message, select OK to continue loading the defaults then press Enter.**

      The BIOS Setup utility screen appears with the cursor selecting the first value in the system time field.

4. **In the BIOS Setup utility, you can edit the system time or date by using these keys:**

   - PLUS (+) to increment the current value shown
   - MINUS (-) to decrement the current value shown
   - ENTER to move the cursor to the next value field
   - UP or DOWN arrows to change between the system time and date selection

5. **To access the boot settings, use the (left or right) arrow key to select the Boot menu.**

   The Boot Settings menu appears.

6. **In the Boot Settings menu, use the down arrow key to select** Boot Device Priority**, then press Enter.**

The Boot Device Priority menu appears, listing the order of the known bootable devices.

```
                              ┌─────Boot─────┐
 01)  [USB:IntPort:AMI Virtual CDROM]              Specifies the boot
 02)  [USB:IntPort:AMI Virtual Floppy]             sequence from the
 03)  [USB:ExtPort1:TEAC FD-05PUW]                 available devices.
 04)  [SCSI:#108 ID00 LUN0 ATA FUJIT]
 05)  [FC:Slot4.F1:HA 0 PortID 0000D4 WWN]         A device enclosed in
 06)  [PXE:Slot1.F1:IBA GE Slot 0201 v123]         parenthesis has been
 07)  [PXE:Slot1.F0:IBA GE Slot 0200 v123]         disabled in the
 08)  [PXE:Slot5.F1:IBA GE Slot 0401 v123]         corresponding type
 09)  [PXE:Slot5.F0:IBA GE Slot 0400 v123]         menu.
 10)  [PXE:Slot3.F1:IBA GE Slot 0701 v123]
 11)  [PXE:Slot3.F0:IBA GE Slot 0700 v123]
 12)  [PXE:Slot2.F1:IBA GE Slot 8601 v123]         ←→     Select Screen
 13)  [PXE:Slot2.F0:IBA GE Slot 8600 v123]         ↑↓     Select Item
                                                   +-     Change Option
                                                   F1     General Help
                                                   F10    Save and Exit
                                                   ESC    Exit

              v02.58 (C)Copyright 1985-2004, American Megatrends, Inc.
```

7. **In the Boot Device Priority menu, do the following to edit the boot order:**

   a. **Use the up and down arrow keys to select the slot-order to change then press Enter.**

      The Boot Device Options menu appears.

   b. **In the Boot Device Options menu, select the device you want to move into the slot-order selected in Step 7a, then press Enter.**

```
                              ┌─────Boot─────┐
 01)  [USB:IntPort:AMI Virtual CDROM]              Specifies the boot
 02)  [USB:IntPo┌──────────Options──────────┐      e from the
 03)  [PXE:Slot1│ USB:IntPort:AMI Virtual CDROM│    le devices.
 04)  [PXE:Slot1│ USB:IntPort:AMI Virtual Floppy│
 05)  [PXE:Slot3│ USB:ExtPort1:TEAC FD-05PUW │     e enclosed in
 06)  [PXE:Slot3│ SCSI:#108 ID00 LUN0 SEAGATE ST973401LSUN72G│ sis has been
 07)  [PXE:Slot2│ PXE:Slot1.F1:IBA GE Slot 0201 v1231│  d in the
 08)  [PXE:Slot2│ PXE:Slot1.F0:IBA GE Slot 0200 v1231│  nding type
 09)  [SCSI:#108│ PXE:Slot5.F1:IBA GE Slot 0401 v1231│
 10)  [PXE:Slot5│ PXE:Slot5.F0:IBA GE Slot 0400 v1231│
 11)  [PXE:Slot5│ PXE:Slot3.F1:IBA GE Slot 0701 v1231│
 12)  [PXE:Slot0│ PXE:Slot3.F0:IBA GE Slot 0700 v1231│  lect Screen
 13)  [PXE:Slot0│ PXE:Slot0.F1:IBA GE Slot 8101 v1231│  lect Item
 14)  [USB:ExtPo│ PXE:Slot0.F0:IBA GE Slot 8100 v1231│  ange Option
               │ PXE:Slot2.F1:IBA GE Slot 8601 v1231│  neral Help
               │ PXE:Slot2.F0:IBA GE Slot 8600 v1231│  from remote kbd)
               │ Disabled                   │  ve and Exit
               └────────────────────────────┘ (CTRL+S from remote kbd)
                                                   ESC    Exit
```

   The selected device appears in the ordered specified on the Boot Device Priority menu.

Note – You can change the boot order for other devices in the list by repeating Steps 7a and 7b.

---

8. **To save the changes made and exit the utility, press F10. However, if you are performing this step from the ILOM Remote Console, i select** F10 **from the ILOM Remote Console -> Keyboard menu.**

Note – When using the ILOM Remote Console, F10 is trapped by the OS. You must use the F10 option listed in the Keyboard drop-down menu.

The Exit Options menu appears.

9. **In the Exit Options menu, select the option to** Save Changes and Exit, **then press Enter.**
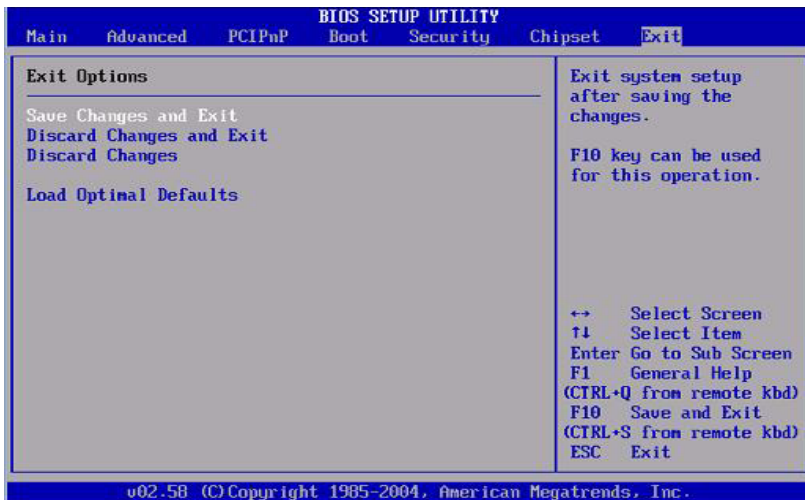
Install Windows Server 2003 via Local or Virtual Media

This section describes how to install Windows Server 2003 from either the distribution media or an ISO CD image.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2003 installation:

- Established console access. For more information, see "Console Options" on page 320.
- Established installation target. For more information, see "Installation Targets" on page 324.
- Mandatory LSI and AMI device drivers are readily available for installation. For more information about preparing these drivers for installation, see "Device Drivers for Windows Server Installations" on page 207.
- Device drivers loaded from a mass floppy device requires you to attach a floppy drive to the local server or the system hosting the ILOM Remote Console client.
- Device drivers loaded from an ISO image requires the ISO image to be stored on network shared location or on the system hosting the ILOM Remote Console Client.
- If you are installing Windows Server 2003 to a SAN device, you must properly configure the FC SAN adapter prior to performing the installation. For more information, see Appendix D.

▼ Install Windows Server 2003 via Local or Virtual Medium

1. **Do one of the following:**

   - **For Distribution CD/DVD**. Insert the Windows Server 2003 distribution media into the attached USB CD/DVD-ROM drive. Also, insert the mass-storage device floppy into the attached USB floppy drive.

   - **For ISO Images**. Ensure that the ISO floppy image and ISO CD image containing the Windows distribution files are readily available on a network-shared location or on the system hosting the ILOM Remote Console.

2. **Reset the Sun Blade server module, for example:**

- From the ILOM web interface, select `Reset` on the Remote Power Control tab.

or

- Press the Power button (approximately, 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

  The BIOS screen appears.

Note – The next events, occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

As the server begins the power-up sequence, it will go through a series of test(s) and allows you the opportunity to configure the BIOS, storage, and network controllers.

Tip – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the external or virtual CD/DVD device as the first boot device.

---

3. **When prompted,** `Press any key to boot CD`**; press any key on the keyboard to boot from CD.**
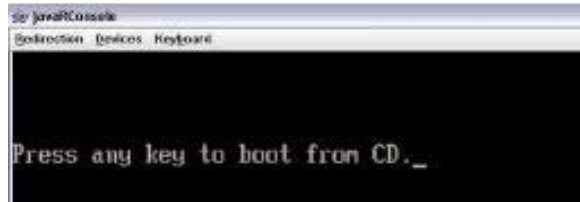
The Windows text-mode setup program begins and the blue Windows Setup screen appears.

A message appears informing you to press F6 to install third-party drivers.

4. **Press F6 (twice with 1 second interval to ensure that this step is not missed) to specify the installation of device drivers.**
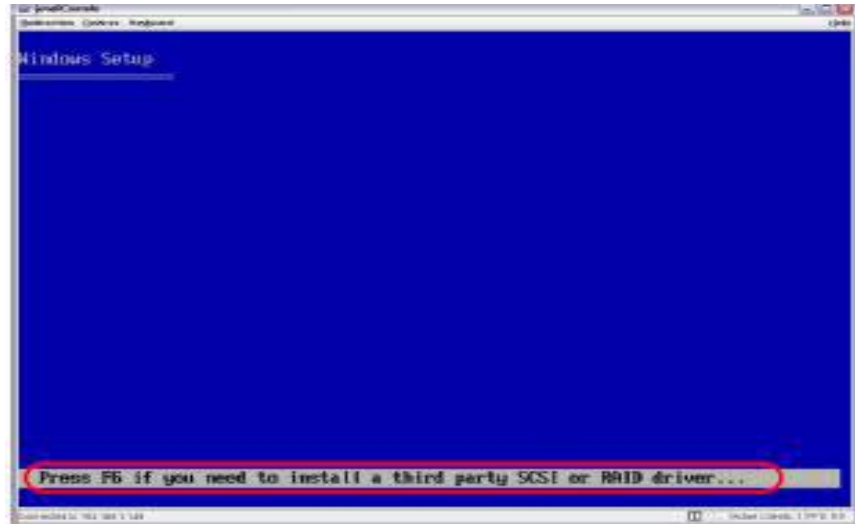
Note – The Windows text-mode set up program does not acknowledge when the F6 key is pressed. It will take a few minutes before you see the next screen.

The Windows Setup screen for specifying additional drivers appears.

5. **In the Windows Setup screen shown below, press S to manually specify the device drivers to install.**
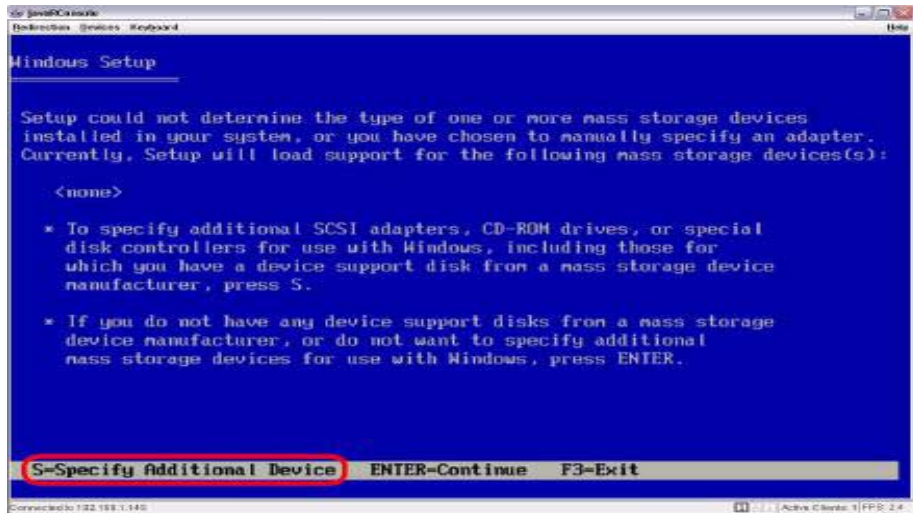
The Windows Setup screen listing the available drivers appears.

6. **In the Windows Setup screen listing the available drivers, you must individually load the following mandatory drivers into memory:**

   - **AMI Virtual Floppy Driver** (*first mandatory driver to be installed when performing OS installation from remote KVMS - floppy device or image*). Select the Virtual Floppy driver then press Enter. A message appears listing the AMI driver installed.

Note – If you need to load more than one mandatory driver into memory at this time, you will need to repeat Steps 5 and 6 for each subsequent driver required. When all applicable drivers have been loaded into memory, proceed to Step 7.

   - **LSI Logic Fusion MPT SAS Driver** (*mandatory driver to be installed only when installing the OS to the server module HDD*). Select either the 32-bit or 64-bit driver version driver then press Enter. A message appears listing the Windows (32-bit or 64-bit) driver installed.
   - **FC SAN Bus Adapter Driver** (*mandatory driver to be installed only when installing the OS to a Fibre Channel SAN installation target*). Select the appropriate FC SAN driver then press Enter. A message appears listing the driver installed.

7. **Press Enter to continue.**

   The Windows Welcome to Setup screen appears.

8. **In the Windows Welcome to Setup screen, press Enter to set up Windows now.**

```
Windows Server 2003, Enterprise Edition Setup

    Welcome to Setup.

    This portion of the Setup program prepares Microsoft(R)
    Windows(R) to run on your computer.

        •  To set up Windows now, press ENTER.

        •  To repair a Windows installation using
           Recovery Console, press R.

        •  To quit Setup without installing Windows, press F3.




    ENTER=Continue   R=Repair   F3=Quit
```

The Windows Server Express or Custom screen appears.

9. **In the Windows Express or Custom screen, press Enter to specify** `Express Setup`**.**

```
Windows Server 2003, Enterprise Edition Setup

    Windows Setup can automatically configure most aspects of your
    installation, requiring little or no input from you.  If you are
    configuring a computer with no local monitor or keyboard, you
    must use this feature or setup will not complete.


    If you would like to use this feature, please press ENTER now.


    If you would like to proceed with a manual installation, please
    press the C key now.




    ENTER=Express Setup   C=Custom Setup   F3=Quit
```

The setup screen for formatting the partition appears.

```
Windows Server 2003, Enterprise Edition Setup

  The partition you selected is not formatted. Setup will now
  format the partition.

  Use the UP and DOWN ARROW keys to select the file system
  you want, and then press ENTER.

  If you want to select a different partition for Windows,
  press ESC.

     Format the partition using the NTFS file system (Quick)
     Format the partition using the NTFS file system
```

10. **In the Formatting Partition Setup screen, select one of the following then press Enter to continue.**

   - **Format partition using NTFS file system (Quick)**. This operation takes one minute or less to complete.

   - **Format partition using NTFS file system (Full)**. This operation takes 30 minutes to complete.

11. **Continue the normal Windows installation.**

   For more details, see Microsoft's Windows Server 2003 documentation.

Note – If the Remote Access Configuration option is enabled in the BIOS, the message "An EMS Connection has been detected on your system" appears after the Windows Server files have been copied to the server hard disk. The Remote Access Configuration option (when enabled) enables the system to support Microsoft's Emergency Management Services (EMS) and the Special Administration Console (SAC) for out-of-band console I/O support via a serial connection. For more information about EMS, see the Microsoft TechNet web site. (This message does not appear when the Remote Access Configuration option is disabled in the BIOS.)

---

12. **After the Windows installation is complete, install the Windows Server 2003 SP1. Note that if you installed the Windows Server 2003R2, you do not need to install the Windows Server 2003 SP1.**

   To obtain the Windows Server 2003 SP1 software, you can download it from the Microsoft web site. For more information about installing SP1, refer to Microsoft's documentation.

Tip – If you need to know, when configuring the OS networking and communication settings, which NEM ports and EM ports are active, or how to match a Windows device friendly name to a physical EM or NEM port, see Appendix A.

Install Windows Server 2003 via PXE Network Environment

This section explains the initial information you will need to install the Windows Server 2003 operating system software over an established PXE-based network via a customer-provided Windows 2003 Remote Installation Services (RIS) image.

Note – Alternatively, you can install the Windows 2003 operating system over an established PXE-based network via a customer-provided Windows Deployment Services (WDS) image. If you decide to install Windows 2003 with a WDS image, you will need to update the ILOM firmware on the server module to 2.0.1.1 or later. If you are installing the Windows 2003 operating system to the X8400 or X8420 Server Module, you will also need to enable `IRQ0 Legacy Routing for HPET` in the BIOS Advanced ACPI Configuration menu.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2003 installation from a RIS image:

- The PXE network install server is configured on the same network as the Sun Blade server module.
- A customer-provided Windows Server 2003 RIS image, as well as the RIS Administrator password.

Note – Information concerning how to properly set up and deploy a RIS network environment is outside the scope of this installation guide. For these details, see Microsoft's documentation for deploying and using Remote Installation Services.

- If you are installing Windows to a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the FC Host Bus Adapter prior to performing the installation. For more information, see Appendix D.

▼ Install Windows Server 2003 via PXE

1. **Reset the Sun Blade server module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately, 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

   The BIOS screen appears.

   Note – The next events occur very quickly, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

2. **Press F8 to specify a temporary boot device.**

   The Please Select Boot Device menu appears.

3. **In the Please Select Boot Device menu, select the appropriate PXE install boot device and press Enter.**

   The PXE install boot device is the physical network port configured to communicate with your network install server.

Tip – You can determine the PXE interface boot device by (1) matching the *PXE:Slot#* (listed on the Please Select Boot Device menu) with the physical labeled NEM or EM slot number on the chassis, and (2) matching the *F#* (listed on the Please Select Boot Device menu) with the physical labeled NIC port number on the NEM (0.0 to 9.1) or EM (0 or 1). For more information about chassis slot locations and connections, see "About External I/O Ports and Power Inlets" on page 90

```
              Please select boot device:

USB:IntPort:AMI Virtual CDROM
USB:IntPort:AMI Virtual Floppy
USB:ExtPort1:TEAC FD-05PUW
SCSI:#108 ID00 LUN0 SEAGATE ST973401LSUN72G
SCSI:#108 ID01 LUN0 SEAGATE ST973401LSUN72G
PXE:Slot1.F1:IBA GE Slot 0201 v1231
PXE:Slot1.F0:IBA GE Slot 0200 v1231
PXE:Slot5.F1:IBA GE Slot 0401 v1231
PXE:Slot5.F0:IBA GE Slot 0400 v1231
PXE:Slot3.F1:IBA GE Slot 0701 v1231
              [ More ↓ ]
      ↑ and ↓ to move selection
      ENTER to select boot device
        ESC to boot using defaults
```

The Boot Agent screen appears.

4. **In the Boot Agent screen, press F12 for a network service boot.**

```
Intel(R) Boot Agent GE v1.2.31
Copyright (C) 1997-2005, Intel Corporation

CLIENT MAC ADDR: 08 00 20 B6 CE 88  GUID: 00020003 0004 0005 0006 0007000800
CLIENT IP: 192.168.1.102  MASK: 255.255.255.0  DHCP IP: 192.168.1.1

Press F12 for network service boot
```

The Welcome to Client Installation wizard appears.

5. In the Welcome to Client Installation wizard, press Enter to continue.

The next screen prompts you for a user name, password, and domain name.

6. In the user name and password screen, specify your user name and password, then press Enter.

Use the Tab key to move between fields.

The Windows Server 2003 version screen appears.

7. **In the Windows Server 2003 version screen, select the version (32-bit or 64-bit) you are installing, then press Enter.**


```
Client Installation Wizard                                        Platform

  Use the arrow keys to select one of the following options:

       Install Microsoft Windows 32-Bit Edition
       Install Microsoft Windows 64-Bit Edition




  Description:   With this option a 64-bit Windows will be installed to
  this computer.




[ENTER] continue            [ESC] go back            [F3] restart computer
```

The Windows Server 2003 operating system choice screen appears.

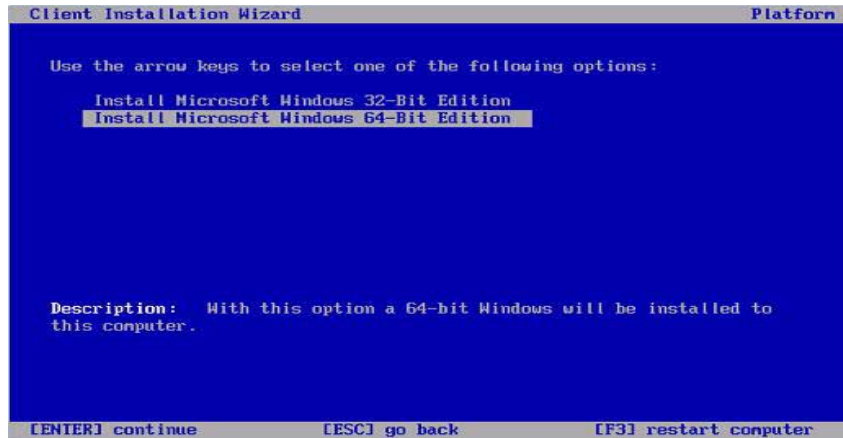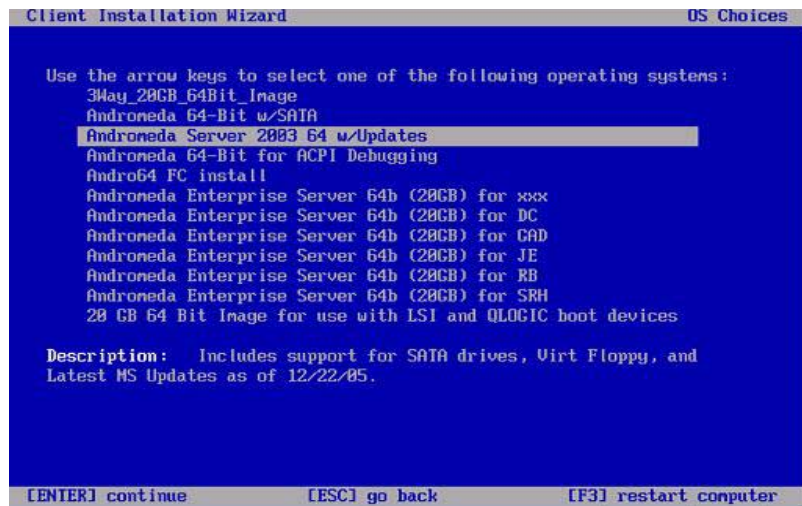8. **In the OS choice screen, select the OS option you are installing, then press Enter.**

Note – The OS choice screen identifies the names of the OS images that are available for you to install from your RIS server. The OS choice screen from your RIS server will list different options from the ones shown in the example screen below.

```
Client Installation Wizard                                        OS Choices

  Use the arrow keys to select one of the following operating systems:
       3Way_20GB_64Bit_Image
       Androneda 64-Bit w/SATA
       Androneda Server 2003 64 w/Updates
       Androneda 64-Bit for ACPI Debugging
       Andro64 FC install
       Androneda Enterprise Server 64b (20GB) for xxx
       Androneda Enterprise Server 64b (20GB) for DC
       Androneda Enterprise Server 64b (20GB) for GAD
       Androneda Enterprise Server 64b (20GB) for JE
       Androneda Enterprise Server 64b (20GB) for RB
       Androneda Enterprise Server 64b (20GB) for SRH
       20 GB 64 Bit Image for use with LSI and QLOGIC boot devices

  Description:   Includes support for SATA drives, Virt Floppy, and
  Latest MS Updates as of 12/22/05.




[ENTER] continue            [ESC] go back            [F3] restart computer
```
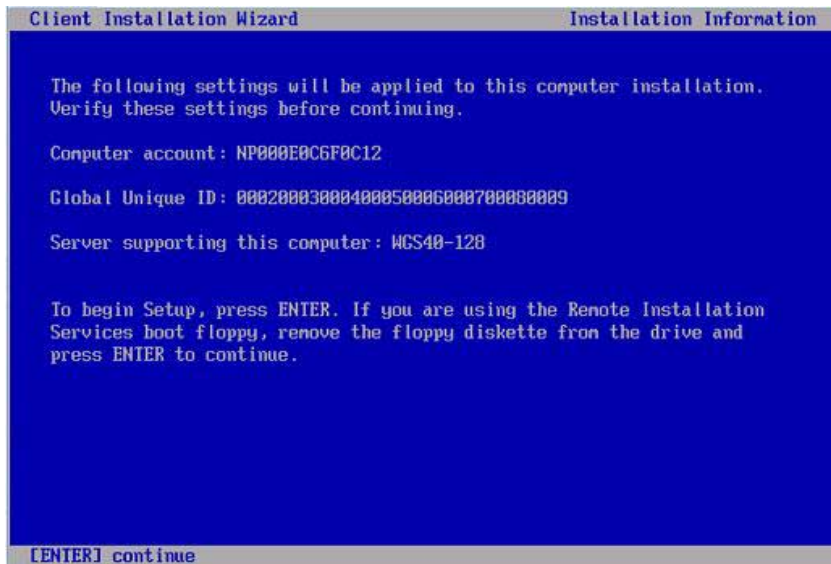
A Caution screen appears.

9. **In the Caution screen, press Enter to continue.**

The Installation Information screen appears.

10. **In the Installation Information screen, press Enter to continue.**

The Administrator Password screen appears.

11. **In the Administrator Password screen, specify an OS Administrator password and press Enter.**
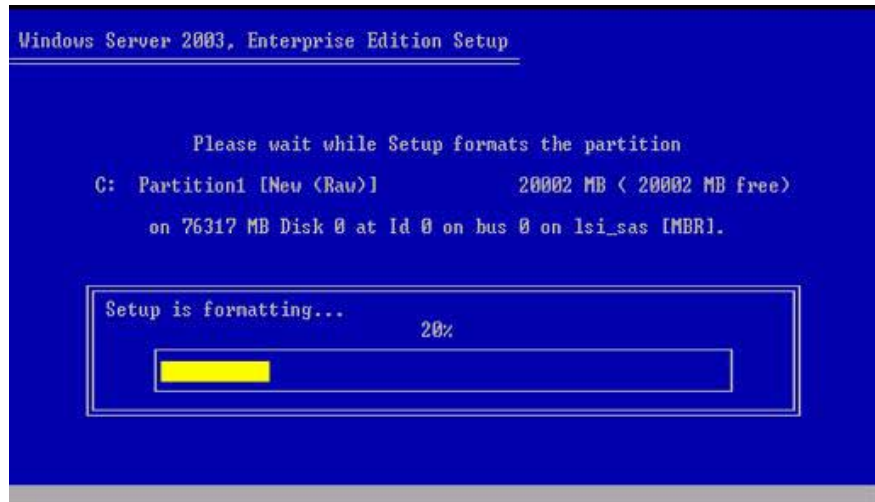
Note that this password is assigned to the OS installation target.

You will be asked to confirm the password.

12. **In the Administrator Password Confirmation screen, retype the password and press Enter.**

The Windows Setup starts and a message appears that the setup is formatting the partition.

13. **Continue the normal Windows Server 2003 installation. For more details, see Microsoft's Windows Server 2003 installation documentation.**

Note – Do not activate the Windows Server 2003 license until after all drivers have been installed and updated. For details about the drivers that must be installed after installation, see "Install and Update System Device Drivers – Post Installation" on page 241.

Tip – If you need to know, when configuring the OS networking and communication settings, which NEM ports and EM ports are active, or how to match a Windows device-friendly name to a physical EM or NEM port, see Appendix A.

Install Windows Server 2008 via Local or Virtual Media

The Microsoft Windows 2008 installation does not require you to install device drivers during the installation. All device drivers required at installation boot time are included in the Microsoft Windows 2008 setup program.

This section describes how to perform a virtual or local install of the Windows Server 2008 operating system on a Sun Blade 8000 Series Server Module. You can either use the Windows 2008 CD/DVD distribution media or a Windows Server 2008 ISO-CD-ROM image to perform this procedure.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2008 local or virtual installation:

■ Established console access. For more information, see "Console Options" on page 320.

■ Established installation target. For more information, see "Installation Targets" on page 324.

■ If you are installing Windows Server 2008 to a SAN device, you must properly configure the FC SAN adapter prior to performing the installation. For more information, see Appendix D.

Post Installation

After performing the Windows Server 2008 installation, you might consider installing the AMI Virtual Floppy device driver. This driver is required if you intend to use the Sun ILOM Remote Console floppy drive or floppy image feature. For more information about installing this driver after installation, see "Install and Update System Device Drivers – Post Installation" on page 241.

▼ Install Windows Server 2008 via Local or Virtual Medium

1. **Do one of the following:**

   - **For Distribution CD/DVD**. Insert the Windows Server 2003 distribution media into the attached USB CD/DVD-ROM drive. Also, insert the mass-storage device floppy into the attached USB floppy drive.

   - **For ISO Images**. Ensure that the ISO floppy image and ISO CD image containing the Windows distribution files are readily available on a network-shared location or on the system hosting the ILOM Remote Console.

2. **Reset the Sun Blade server module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

   The BIOS screen appears.

As the server begins the power-up sequence, it will go through a series of test(s) and allow you the opportunity to configure the BIOS, storage, and network controllers.

3. **When prompted,** Press any key to boot CD or DVD**; press any key on the keyboard to boot from CD or DVD.**

The Windows Server 2008 language and other preferences dialog appears.

4. **In the Windows Server 2008 Language and other preferences dialog, do the following:**

   a. **Click the drop-down list boxes to specify settings for: language, time or currency format, and input method.**

   b. **Click Next to continue.**

The Windows Server 2008 Install Now dialog appears.

5. **In the Windows Server 2008 Install Now dialog, click the Install Now Arrow to continue.**

   The Windows Server 2008 Product Activation Key dialog appears.

6. **In the Windows Server 2008 Product Activation Key dialog, do the following:**

   a. **In the Product Activation text box, type your product activation key.**

   b. **(Optional) Select the Automatically activate Windows when I'm online check box.**

   c. **Click Next to continue.**

   The Windows Server 2008 Edition Purchased dialog appears.

7. **In the Windows 2008 Edition Purchased dialog appears, do the following:**

   a. **In the list box, select the edition purchased.**

   b. **Click the check box (at the bottom) to verify the edition selected is the edition purchased.**

   c. **Click Next to continue.**

   The Windows Server 2008 License Term Agreement dialog appears.

8. **In the Windows Server 2008 License Term Agreement dialog, do the following:**

   a. **Review the license terms.**

   b. **Click the check box (at the bottom) to indicate that you accept the license agreement.**

   c. **Click Next to continue.**

   The Windows Server 2008 Installation Type dialog appears.

9. **In the Windows Server 2008 Installation Type dialog, click Custom (Advanced)).**

   The Windows Server 2008 Installation Target and Disk Partitioning dialog appears.

10. **In the Windows Server 2008 Installation Target and Disk partitioning dialog, do the following:**

    a. **In the list box, select the targeted disk.**

    b. **Click New (at the bottom) to create a primary partition for the installation.**

    c. **In the list box, specify the size of the primary partition then click Apply.**

    The primary partition appears in the list box.

    d. **Click Next to continue.**

    The Installing Windows dialog appears.
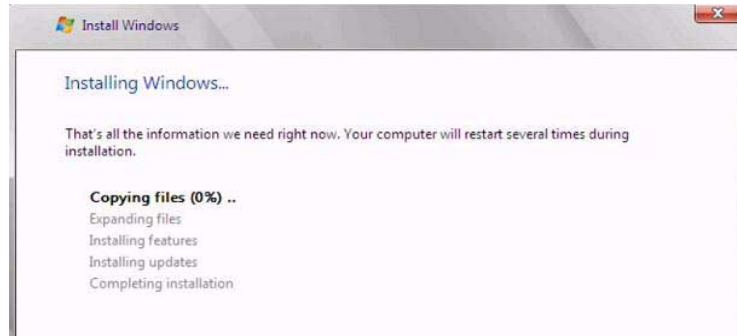
11. **Continue the normal Windows installation.**

For more details, see Microsoft's Windows Server 2008 documentation.

Tip – If you intend to use a remote redirected floppy device (via Sun ILOM Remote Console) with the server module, you will need to install the AMI Virtual floppy device driver after completing the Windows Server 2008 installation. For more information about how to install this driver, see "Install and Update System Device Drivers – Post Installation" on page 241.

Install Windows Server 2008 via PXE Network

This section explains the initial information you will need to install the Windows Server 2008 operating system over an established PXE-based network via a customer-provided Windows Deployment Services (WDS) image

Topics included in this section:

- "Prerequisites" on page 238.
- "Install Windows Server 2008 via PXE" on page 238

Note that the procedure presented in this section documents the initial steps to install Windows 2008 over the network using a WDS image. Specifically, it explains the steps for selecting the Sun Blade server module PXE network interface card that will be communicate with your WDS install server. For further information about using a WDS image to install the Windows Server 2008 operating system, see Microsoft's Windows Deployment Services documentation.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2008 installation from a WDS image:

- The PXE network install server to be configured on the same network as the Sun Blade server module.
- A customer-provided WDS image of the Windows Server 2008 operating system software, as well as the appropriate administrator WDS password.

Note – Information concerning how to properly set up and deploy a WDS network environment is outside the scope of this installation guide. For these details, see Microsoft's documentation for deploying and using Windows Deployment Services.
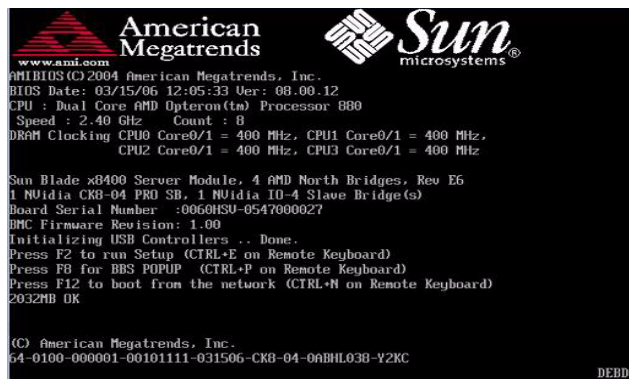

- If you are installing Windows to a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the FC Host Bus Adapter prior to performing the installation. For more information, see Appendix D.
- Established console access. For more information, see Appendix B.

▼ Install Windows Server 2008 via PXE

1. Reset the Sun Blade server module, for example:

- From the ILOM web interface, select `Reset` on the Remote Power Control tab.

or

- Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

2. **Press F8 to specify a temporary boot device.**

   The Please Select Boot Device menu appears.

3. **In the Please Select Boot Device menu, select the appropriate PXE install boot device and press Enter.**

   The PXE install boot device is the physical network port configured to communicate with your network install server.

Tip – You can determine the PXE interface boot device by (1) matching the *PXE:Slot#* (listed on the Please Select Boot Device menu) with the physical labeled NEM or EM slot number on the chassis, and (2) matching the *F#* (listed on the Please Select Boot Device menu) with the physical labeled NIC port number on the NEM (0.0 to 9.1) or EM (0 or 1). For more information about chassis slot locations and connections, see "About External I/O Ports and Power Inlets" on page 90

The Boot Agent screen appears.

4. **In the Boot Agent screen, press F12 for a network service boot.**

```
Intel(R) Boot Agent GE v1.2.31
Copyright (C) 1997-2005, Intel Corporation

CLIENT MAC ADDR: 08 00 20 B6 CE 88   GUID: 00020003 0004 0005 0006 0007000800
CLIENT IP: 192.168.1.102   MASK: 255.255.255.0   DHCP IP: 192.168.1.1

Press F12 for network service boot
```

5. **Continue the normal Windows Server 2008 WDS network installation. For additional information, consult Microsoft's Windows Deployment Services product documentation.**

Install and Update System Device Drivers – Post Installation

After installing Windows Server software, you must install the following mandatory system device drivers:

Operating System	Mandatory Device Drivers Required After Installation
Windows Server 2003	• AMD CPU Driver (not required for Windows 2008 • Intel Ethernet EM and NEM Drivers
Windows Server 2008	• None

Other system device drivers that you might need to install after completing the OS installation include:

Operating System	Optional Device Drivers After Installation
Windows Server 2003	• **AMI Virtual Floppy Device Driver**. If this driver was not previously installed at boot time, you should install this driver after completing the OS installation. • **FC SAN Bus Adapter Driver**. If your Sun Blade 8000 Series Chassis includes a Fibre Channel EM, you must properly configure the FC Host Bus Adapter prior to installing the FC SAN driver. For more information, see Appendix D. • **Mellanox IB Driver**. If your Sun Blade 8000 Series Chassis includes an InfiniBand EM, you will need to install the Mellanox IB driver after completing the OS installation.
Windows Server 2008	• **AMI Virtual Floppy Device Driver**. If you intend to use the Sun ILOM Remote Console floppy drive or floppy image feature in the future, you might consider installing Windows Server 2008 AMI Virtual Floppy device drive after performing the Windows Server 2008 installation. This driver (unlike Windows Server 2003 device drivers) can be stored on a thumb drive or CD for post installation.

The Sun Blade 8000 Series Resource CD includes all the device driver software. Refer to the README.TXT file on the Resource CD for the location of the device driver directories.

Prerequisites

The following requirements must be met prior to installing and updating the system device drivers:

- Obtained the Resource CD containing the system device drivers. Refer to the README.TXT file on the Resource CD for the exact location of device driver directories.

- Prepared the device driver(s) for installation, for example:

  - attached an external floppy drive to install the Windows Server 2003 device drivers from a mass storage device floppy.

  or

  - mounted the Windows Server 2003 floppy ISO image on a shared network location.

  or

  - attached a thumb drive or inserted a CD containing the Windows 2008 AMI Virtual driver.

  For more information, see "Prepare Required Windows Server 2003 Device Drivers For Installation" on page 209 or "Prepare Optional Windows Server 2008 Device Driver For Installation" on page 211

▼ Install and Update System Device Drivers After Installation

Use the following procedure to update the Microsoft Windows Server installation with the necessary system device driver software.

Note – The following procedure provides instructions for how to install and update all drivers that are on the Resource CD, with the exception of the ATI Rage XL Graphics Controller Driver. Installation information along with the latest ATI drivers for x64 and x86 systems can be downloaded from the Sun Blade 8000 Series product page at: http://www.sun.com/servers/blades/8000/downloads.jsp

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1. **Using Windows Explorer, open the x86 or x64 directory on the Resource CD.**

2. **To launch the Sun Blade 8000 Device Driver program, double-click the driver executable to launch the device driver program.**

   The File Download - Security Warning dialog appears.

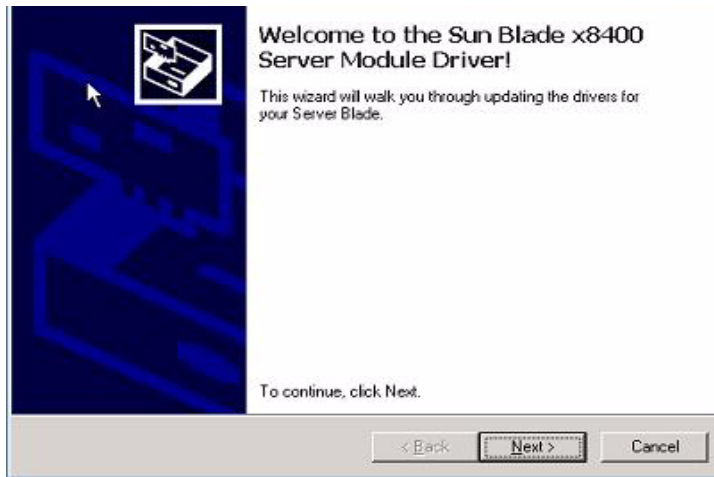3. **In the File Download - Security Warning dialog, click Run to continue.**

The Internet Explorer - Security Warning dialog appears.

4. **In the Internet Explorer - Security Warning dialog, click Run.**

The Welcome to the Sun Blade 8000 Driver Install dialog appears.

5. In the Welcome to the Sun Blade 8000 Driver Install dialog, click Next.

The End User License Agreement dialog appears.

6. In the End User License Agreement dialog, select `I accept this EULA`**, then click Next to continue.**

The File/Copy Transfer dialog appears as files are copied to the appropriate folders.

The Congratulations You are Finished dialog appears.

7. **In the Congratulations You Are Finished dialog, the names of all the drivers installed and updated on your system are listed. Click Finish then OK to exit.**

8. **Repeat Steps 2 through 6 to install the remaining applicable device drivers on the Resource CD.**

   Refer to the README.TXT file on the Resource CD for more information about the system device drivers.

Install Linux Operating System

This chapter provides instructions for installing:

- Red Hat Enterprise Linux v.4 Update 3 (or later) for x86 (32-bit and 64-bit); (RHEL4-U3)
- Red Hat Enterprise Linux v.5 (or later) for x86 (64-bit) (RHEL5)
- SUSE Linux Enterprise Server 9 Service Pack 3 (or later) for x86 (64-bit) (SLES9-SP3)
- SUSE Linux Enterprise Server 10 (or later) for x86 (64 bit) (SLES10)

Note – The Sun Blade 8000 Series Modular System does not require additional device drivers to support these Linux operating systems: RHEL4, RHEL5, or SLES10.

Note – Alternatively, you can choose to use the Sun Installation Assistant (SIA) to install the Linux operating system on a Sun Blade server module. SIA provides and installs the device driver(s), if required, for you. For more information about using SIA to install an operating system, follow the instructions provided in the *Sun Installation Assistant for Windows and Linux User's Guide (Sun Blade 8000 Modular Systems)* Sun part number 820-3357.

Topics in this chapter are organized as follows:

Plan the Linux Installation

Before installing and configuring Linux on a Sun Blade Server Module, you need to plan how your site will support the installation. There are many options at various steps in the installation and configuration process, and understanding the deployment of the installation clarifies the appropriate decisions you will make for your site.

For information about installation deployment considerations, see these topics:

Hardware and Software Prerequisites

Before starting the Linux installation, consider the following hardware and software prerequisites:

- **Minimum Supported Linux Operating System**. The Sun Blade server module supports the following minimum Linux operating systems:

Server Module	Minimum Supported Linux OS
X8400, X8420, X8440	• Red Hat Enterprise Advanced Server v.4 Update 3 or later for x86 (32 bit and 64 bit) (RHEL4-U3) • Red Hat Enterprise Advanced Server v.5 or later for x86 (32 bit and 64 bit) (RHEL5) • SUSE Linux Enterprise Server 9 with SP3 for x86 (64 bit) (SLES9-SP3) • SUSE Linux Enterprise Server 10 for X86 (64 bit) (SLES9-SP3)
X8450	• Red Hat Enterprise Advanced Server v.4 Update 5 or later for X86 (32 bit and 64 bit) (RHEL4-U5) • Red Hat Enterprise Advanced Server v.5 or later for x86 (32 bit and 64 bit) (RHEL5) • SUSE Linux Enterprise Server 9 with SP4 for x86 (64 bit) (SLES9-SP3) • SUSE Linux Enterprise Server 10 with SP1 for x86 (64 bit) (SLES9-SP3)

- **Linux Distribution Media Readily Available**. Depending on the installation method chosen to install Linux, you will need to have either the Linux Distribution CD/DVD, ISO CD/DVD image, KickStart image, or AutoYaST image readily available for installation.

  If you are performing a local installation, you will need to attach an external USB CD/DVD-ROM drive to the front of the Sun Blade Server Module. If you are performing a remote installation from a virtual drive using the ILOM Remote Console application, the system hosting the ILOM Remote Console must have either:

  - An external or internal CD/DVD-ROM drive available
  - The ISO images available on disk or a network-shared location

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Note – For Linux, a CD set is typically four to seven discs; for DVD typically only one disc is needed. When you install from the CD set, you will insert the first (or boot) disc into the local attached USB CD/DVD drive or remote CD/DVD drive.

- **Sun Remote Console Linux Installations Must Use 1024 x 768 Display Resolutions for X8440 and X8450 Server Modules.** The Sun Remote Console requires a resolution of 1024x768. At the Linux graphical installer prompt, you need to specify 1024 x 768. For more information about how to set the resolution to 1024 x 768, refer to the instructions provided in the following procedures: "Install RHEL4 or RHEL5 via Local or Virtual Media" on page 266 and "Install SLES9 or SLES10 via Local or Virtual Media" on page 286.

- **Linux ACPI Driver Must be Enabled to Support Hot Plug**. After installing the Linux operating system, you must configure the ACPI driver to support hot-plug operations. For more information about how to load the acpiphp kernel driver, see "Configure ACPI Driver for Hot Plug Support" on page 310.

- **Properly Installed and Configured Sun Blade 8000 Series Modular System**. At this point of the installation, you should have already unpacked the system, installed the system into a rack, installed the options and modules, and configured DHCP or static IP to supply network connectivity to the Chassis Monitoring Module (CMM) and Sun Blade server modules. For more information about performing these installation tasks, see Chapter 2, Chapter 3, Chapter 4, and Chapter 5.

- **Properly Configured Installation Environment**. You need to have a properly configured installation environment that supports your site's chosen installation method. For instance, if your site's installation method is a PXE-based network installation via KickStart or AutoYaST, you would need to ensure that the KickStart or AutoYaST server and file were properly created and configured prior to performing the Linux installation. For more information about supported installation methods, see "Installation Methods" on page 319.

- **Properly Configured Boot Device in BIOS.** If your permanent boot device in the BIOS is different from the installation boot device, you can use F8 to manually select a one-time boot device during the Linux installation.

> **Note –** Later in this chapter, you are instructed to choose a permanent boot device in the BIOS Setup utility prior to performing the Linux installation. The permanent boot device is the device you will always boot from after installing Linux.

- **Hardware RAID**. By default, the Sun-supplied disk drives are shipped *without* a hardware RAID configuration. If you need to configure hardware RAID on the disk drive, you must perform this configuration prior to installing the operating system. For more information about hardware RAID configurations, see "Hardware RAID Configuration" on page 324, and "Configure Hardware RAID" on page 327

- **SLES9-SP3 Required FC Emulex Driver**. For SLES9-SP3 the version of the Fibre Channel Emulex driver packed in the SLES9-SP3 distribution (8.0.16.17) does not recognize the Sun branded Emulex Fibre Channel EM and NEM.

  For the updated driver package (emulex-lpfc-8.0.16.27.2.6.7.282-1x86_64.rpm, go to: `http://forgeftp.novell.com/driver-process/staging/pub/update/SUN/sle9/common/x86_64/`

> **Note –** Alternatively you can install SLES9-SP3 using the Sun Installation Assistant. (SIA). SIA provides and installs the device driver, if required, for you. For more information about using SIA to install an operating system, follow the instructions provided in the *Sun Installation Assistant for Windows and Linux User's Guide (Sun Blade 8000 Modular Systems)* Sun part number 820-3357.

- **Applicable Network Information**. For a non-network system, you need to know the host name of the system you are installing and the language and the locales that you intend to use on the system.

  For a network system, see the "Linux OS Installation and Network Configuration Worksheet" on page 251.

- **Properly Configured FC SAN Adapter to Install to a FC SAN Device**. If your installation target for the Linux installation is a Fibre Channel (FC) Storage Area Network (SAN) device, you must properly configure the FC SAN adapter. For more information, see Appendix D.

> **Note –** For SLES9-SP3 the version of the Fibre Channel Emulex driver packed in the SLES9-SP3 distribution (8.0.16.17) does not recognize the Sun branded Emulex Fibre Channel EM and NEM. For the updated driver package (emulex-lpfc-8.0.16.27.2.6.7.282-1x86_64.rpm), go to: `http://forgeftp.novell.com/driver-process/staging/pub/update/SUN/sle9/common/x86_64/`

- **Reviewed the Sun Blade 8000 Series Product Notes**. You should review the Product Notes for any late-breaking information concerning Linux installations.

Gather Information Related to the Linux Installation

Before starting the Linux installation, consult the following sections:

-
-

Linux OS Installation and Network Configuration Worksheet

Use the following worksheet to gather the information that you need to configure the Linux operating system. You only need to collect the information that applies to your application of the system.

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Language	Choose from the list of available languages for the Linux software.	English*
Locale	Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal	Choose the type of terminal that you are using from the list of available terminal types.	
Network connection	Is the system connected to a network?	• Networked • Non-networked*

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
MAC addresses assigned to ports on Network Express Modules (NEM)s and PCIe ExpressModules (EMs) Tip: *For additional information about how NEM and EM Data Port MAC Addresses are assigned, see* "About NEM and EM External Data Port MAC Addresses" on page 100.	If the system is networked, you will need to know the MAC address for each NEM port and EM port connected to a network. You can determine the MAC address for the: • **NEM Ports**. Locate the starting MAC address for all 20 NEM ports on the NEM board. The starting MAC address is printed on a yellow label near the connector. If the NEM is installed in the chassis, you will need to remove the NEM from the chassis to view the MAC address. For details about gathering NEM MAC address, see "Add Network Express Module" on page 58. • **EM Ports**. Locate the two EM port MAC addresses printed on the EM board. You will need to remove the EM from the chassis and remove the cover on the EM to view these addresses. For more about removing the EM cover, see "Add PCIe ExpressModule" on page 62. For information about removing EMs and NEMs when the system is powered on, see the hot-plug procedures in the *Sun Blade 8000 Series Online Information System*. **Note**. During the Linux system configuration, you will be asked to configure network interfaces from a list of *Linux-named* network interfaces. If you are unsure of how a *Linux-named* network interface corresponds to a *physical* port, you can match the *Linux-named* interface to the physical port by using the MAC address. Further instructions are provided later in this chapter.	• Identify the primary networked port and any other networked ports
DHCP	Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	• Yes • No*

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: `129.200.9.1`	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: `255.255.255.0`	
	IPv6	Do you want to enable IPv6 on this machine?	• Yes • No*
Host name		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: • Default Realm • Administration Server • First KDC • (Optional) Additional KDCs	• Yes • No*

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Name service	Name service	Which name service should this system use? **Note**. If the system uses a name service, provide the following information.	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server or let the installation program find one?	• Specify One • Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made. Search Domain: Search Domain: Search Domain:	
	LDAP	Provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather this information: Proxy-Bind Distinguished Name: Proxy-Bind Password:	

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Default route	Do you want to specify a default route IP address or let the Linux installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. You have the following choices: • You can specify the IP address. An `/etc/defaultrouter` file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. • You can let the Linux installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the ICMP router discovery protocol. If you are using the command-line interface, the software detects an IP address when the system is booted. • You can choose None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	• Specify One • Detect One • None*
Time zone	How do you want to specify your default time zone?	• Geographic region* • Offset from GM • Time zone file
Root password	Choose a root password for the system.	

Linux OS Distribution Media and Related Documentation

You should locate the required Linux distribution media and Product Notes, as well as consult the following documentation:

Linux Documentation	Description
SUSE Linux Enterprise Server Documentation **http://www.novell.com**	• **README File**. Provides late-breaking information and is available on the SUSE documentation CD. • **SUSE Linux Enterprise Server Installation Manual**. Provides information about installation requirements, disk partitioning, the YaST installation, and other configuration options. • **SUSE Linux Enterprise Server Administration Manual**. Provides additional information about configuring your system and integrating it with your existing network services. • **SUSE Linux Enterprise Server Support Sites**. Novell provides considerable technical information about the Enterprise Server operating system at its product and support web sites. See the SUSE Linux Enterprise Server Home Page at http://www.novell.com/products/linuxenterpriseserver for additional support information.
Red Hat Documentation **http://www.redhat.com/docs**	• **README File.** Provides late-breaking information and is available on the Red Hat distribution media. • **Red Hat Enterprise Linux Quick Installation Guide**. Provides essential information to assist you during the installation of Red Hat Enterprise Linux. • **Red Hat Enterprise Linux Installation Guide.** Provides detailed information about the Red Hat Enterprise Linux installation process. • **Red Hat Enterprise Linux Introduction to System Administration.** Provides information about customizing the Red Hat Enterprise Linux software. • **System Administration for Diskless Booting.** Provides information about configuring your server and Red Hat Linux for diskless booting.

Perform the Linux Installation

This section describes the applicable procedures you must perform to install one of the following supported Linux operating systems:

- RHEL4-U3 or later for x86,
- RHEL5 or later for x86
- SLES9-SP3 or later for x86
- SLES10 or later for x86

Checklist of Tasks to Perform

The following tasks must be performed in the order in which they are listed.

Step		Task
Step 1	Mandatory	Prior to starting the installation, you should have decided upon an installation method, installation target, and disk configuration. For more information about these supported installation implementations, see these sections: • "Installation Methods" on page 319 • "Installation Targets" on page 324 • "Hardware RAID Configuration" on page 324
Step 2	Mandatory	The Sun Blade 8000 Series system hardware must be properly set up and configured with network information. To perform these task, see these sections: • "Install System Chassis Into a Rack or Cabinet" on page 25 • "Install Modules and Options Into the Chassis" on page 49 • "Configure IP Addresses to Establish Initial Connection With ILOM" on page 121
Step 3	Mandatory	You must verify that the required BIOS settings are properly configured for new installations. To complete this task, perform the following procedure: • "Configure BIOS Settings for New Installations" on page 258
Step 4	Optional	Implement a hardware RAID configuration on the drive before installing Red Hat 4.0 Update 3. To complete this task, see: • "Configure Hardware RAID (Optional)" on page 325

Step		Task
Step 5	**Mandatory**	Perform the Linux installation by following one of these procedures: • "Install RHEL4 or RHEL5 via Local or Virtual Media" on page 266 • "Install RHEL4 or RHEL5 via PXE Network Environment" on page 280 • "Install SLES9 or SLES10 via Local or Virtual Media" on page 286 • "Install SLES9 or SLES10 via PXE Network Environment" on page 305
Step 6	**Mandatory**	Upon completing the linux installation, perform the following procedure to configure the ACPI driver to support hot plug operations. • "Configure ACPI Driver for Hot Plug Support" on page 310
Step 7	**As needed**	Register your OS installation and update the Linux operating system as needed to the latest Linux software available: • **SUSE Linux**. Refer to Novell documentation for updating SUSE Linux software. (http://www.novell.com) • **Red Hat** . Refer to Red Hat documentation for updating Red Hat 4.0. (http://www.redhat.com/docs)

Configure BIOS Settings for New Installations

For all new installations, you should verify that the following BIOS settings are properly configured before you begin installing Linux:

- System time
- System date
- Boot device order
- Advanced ACPI Configuration -> ACPI MCFG Table
- Advanced AMD PowerNow= Enabled
  Advanced AMD Power Now is only required on the X8400 and X8420 Server Modules

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Caution – The Sun Blade BIOS factory defaults are not suitable for some versions of Linux. If you do not set them as instructed in the following procedure, you may not be able to install or even boot Linux with the BIOS factory defaults.

You can view and permanently change the factory default settings in the BIOS Setup utility by pressing F2 during the BIOS start-up. Note that all changes you make in the BIOS Setup utility (through F2) are permanent until the next time you change them.

Tip – During the OS installation, if you need to set a temporary boot device, you can specify a one-time boot device by pressing F8 during the BIOS start-up. Note that this temporary boot device setting is only in effect for the current system boot. After the system boots from a temporary boot device, the permanent boot device setting specified through F2 will be in effect.

Note – The example screens in the following procedure are provided to assist you through the procedure. Note that the software version numbers shown in the example screens might not match the software version numbers shown in your BIOS screens.

To learn how to view and change the BIOS settings related to new installations see the procedure, "View or Edit BIOS Settings for New Installs" on page 260.

Prerequisites

Before you can configure the BIOS settings for a new installation, you must have one of the following console options ready to use:

- Sun ILOM Remote Console (via ILOM web interface)
- Console using SSH connection
- Console using VGA port connection
- Console using serial port connection

For more information about these console options, see "Console Options" on page 320.

▼ View or Edit BIOS Settings for New Installs

1. **Reset the Sun Blade server module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

   The BIOS screen appears.

2. **When prompted in the BIOS screen, press F2 to access the BIOS Setup utility.**

   The BIOS Setup Utility screen appears.

3. **Ensure that the factory optimal defaults are loaded by doing the following:**

   a. **Press F9 to automatically load the default optimal settings.**

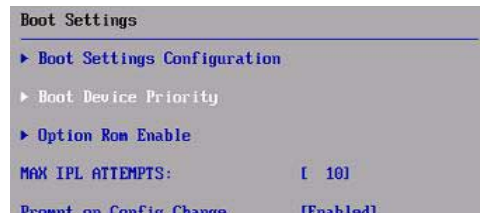   A message appears prompting you to continue this operation by selecting OK or to cancel this operation by selecting CANCEL.

   b. **In the load optimal defaults message, select** OK **to continue loading the defaults, then press Enter.**

      The BIOS Setup Utility screen appears with the cursor selecting the first value in the system time field.

4. **In the BIOS Setup Utility screen, you can edit the system time or date by using these keys:**

   - PLUS (+) to increment the current value shown
   - MINUS (-) to decrement the current value shown
   - ENTER to move the cursor to the next value field
   - UP or DOWN arrow keys to change between the system time and date selection

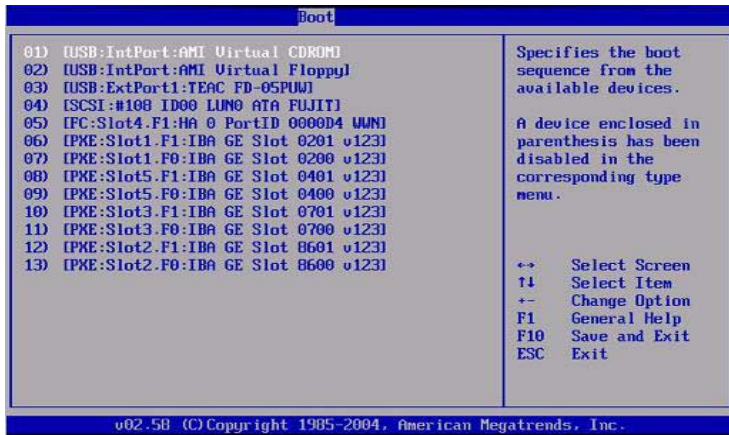5. **To access the boot settings, use the (left or right) arrow key to select the Boot menu.**

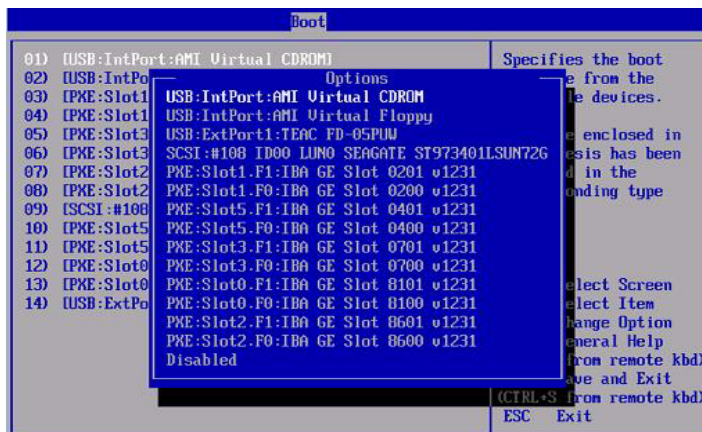
   The Boot Settings menu appears.

6. **In the Boot Settings menu, use the down arrow key to select** Boot Device Priority, **then press Enter.**

   The Boot Device Priority menu appears listing the order of the known bootable devices.

```
                        ┌──────Boot──────┐
   01) [USB:IntPort:AMI Virtual CDROM]            Specifies the boot
   02) [USB:IntPort:AMI Virtual Floppy]           sequence from the
   03) [USB:ExtPort1:TEAC FD-05PUW]               available devices.
   04) [SCSI:#10B ID00 LUN0 ATA FUJIT]
   05) [FC:Slot4.F1:HA 0 PortID 0000D4 WWN]       A device enclosed in
   06) [PXE:Slot1.F1:IBA GE Slot 0201 v123]       parenthesis has been
   07) [PXE:Slot1.F0:IBA GE Slot 0200 v123]       disabled in the
   08) [PXE:Slot5.F1:IBA GE Slot 0401 v123]       corresponding type
   09) [PXE:Slot5.F0:IBA GE Slot 0400 v123]       menu.
   10) [PXE:Slot3.F1:IBA GE Slot 0701 v123]
   11) [PXE:Slot3.F0:IBA GE Slot 0700 v123]
   12) [PXE:Slot2.F1:IBA GE Slot 8601 v123]
   13) [PXE:Slot2.F0:IBA GE Slot 8600 v123]       ←→     Select Screen
                                                  ↑↓     Select Item
                                                  +-     Change Option
                                                  F1     General Help
                                                  F10    Save and Exit
                                                  ESC    Exit

           v02.58 (C)Copyright 1985-2004, American Megatrends, Inc.
```

7. **In the Boot Device Priority menu, do the following to edit the boot order:**

   a. **Use the up and down arrow keys to select the slot order to change, then press Enter. The Boot Device Options menu appears.**

   b. **In the Options menu, select the device you want to move into the slot order selected in Step 7a, then press Enter.**


```
                        ┌──────Boot──────┐
   01) [USB:IntPort:AMI Virtual CDROM]            Specifies the boot
   02) [USB:IntPo┌──────────Options──────────┐   e from the
   03) [PXE:Slot1│ USB:IntPort:AMI Virtual CDROM │ e devices.
   04) [PXE:Slot1│ USB:IntPort:AMI Virtual Floppy│
   05) [PXE:Slot3│ USB:ExtPort1:TEAC FD-05PUW    │ e enclosed in
   06) [PXE:Slot3│ SCSI:#10B ID00 LUN0 SEAGATE ST973401LSUN72G │ esis has been
   07) [PXE:Slot2│ PXE:Slot1.F1:IBA GE Slot 0201 v1231│ d in the
   08) [PXE:Slot2│ PXE:Slot1.F0:IBA GE Slot 0200 v1231│ onding type
   09) [SCSI:#10B│ PXE:Slot5.F1:IBA GE Slot 0401 v1231│
   10) [PXE:Slot5│ PXE:Slot5.F0:IBA GE Slot 0400 v1231│
   11) [PXE:Slot5│ PXE:Slot3.F1:IBA GE Slot 0701 v1231│
   12) [PXE:Slot0│ PXE:Slot3.F0:IBA GE Slot 0700 v1231│
   13) [PXE:Slot0│ PXE:Slot0.F1:IBA GE Slot 8101 v1231│ elect Screen
   14) [USB:ExtPo│ PXE:Slot0.F0:IBA GE Slot 8100 v1231│ elect Item
                 │ PXE:Slot2.F1:IBA GE Slot 8601 v1231│ hange Option
                 │ PXE:Slot2.F0:IBA GE Slot 8600 v1231│ eneral Help
                 │ Disabled                            │ rom remote kbd)
                 └─────────────────────────────────────┘ ave and Exit
                                                  (CTRL+S from remote kbd)
                                                  ESC    Exit
```

Note – You can change the boot order for other devices in the list by repeating Steps 7a and 7b for each device entry you want to change.


The specified device appears in the specified slot order on the Boot Device Priority menu.

8. **Press Escape to exit the Boot Device Priority menu.**

9. **Use the left and right arrow keys to select the Advanced menu.**

    The Advanced menu appears.

10. **In the Advanced ACPI Settings menu, select** `Advanced ACPI Configuration` **and press Enter.**
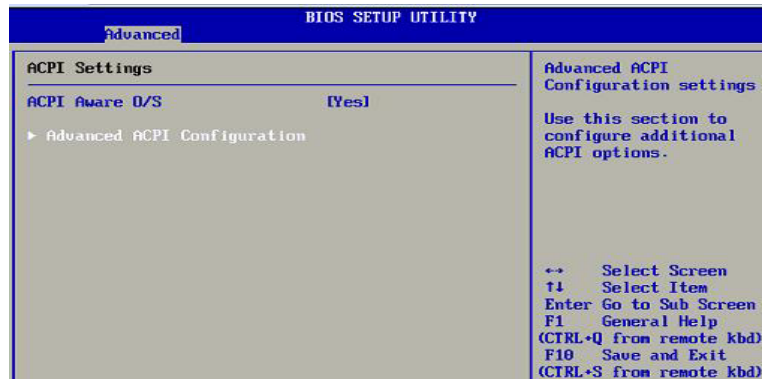
    The Advanced ACPI Configuration menu appears.

11. **In the Advanced ACPI Configuration menu, use the arrow keys to select the** `ACPI MCFG Table` **and press Enter.**
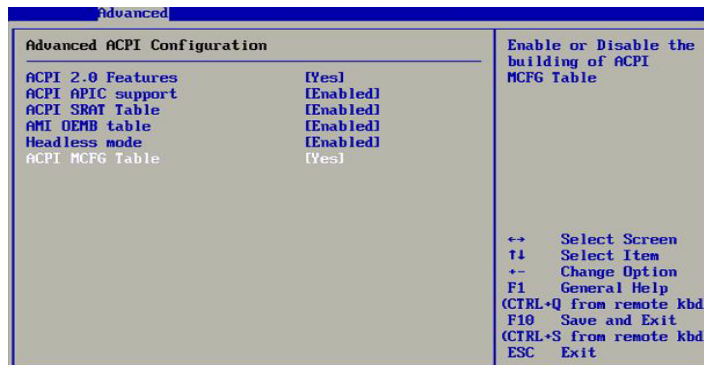
    The ACPI Options menu appears.

12. **In the ACPI Options menu, do one of the following:**

   - **For RHEL4 U3 and U4**, set ACPI MCFG Table to No
   - **For all other Linux OS,** set ACPI MCFG Table to Yes.

⚠️ **Caution –** Certain versions of Linux will not install or boot with MCFG set to YES. You may need to change this setting to NO.

13. **Press Escape to exit the Advanced ACPI Configuration menu.**

   The Advanced Settings menu appears.

14. **In the Advanced Settings menu, use the up and down arrow keys to select the** AMD PowerNow Configuration **then press Enter.**

Note – The AMD PowerNow Configuration only needs to be enabled on X8400 and X8420 Server Modules. This option does not need to be enabled on the other server modules.

The AMD PowerNow Configuration menu appears.

15. **In the AMD PowerNow Configuration menu, use the + (plus) or - (minus) keys to change the setting to** Enabled**.**

Note – The AMD PowerNow settings in X8440 Server Module is preconfigured to Enabled. The AMD PowerNow setting for the X8400 and X8420 Server Modules must be manually set to Enabled.

The Options pop-up menu appears.

16. **In the Options pop-up menu, select** `Enabled` **then press Enter.**

17. **To save the changes made and exit the utility, press F10. However, if you are performing this step from the ILOM Remote Console application, select** `F10` **from the ILOM Remote Console -> Keyboard menu.**

    The Exit menu appears.

18. **In the Exit menu, select the option to** `Save Changes and Exit` **then press Enter.**
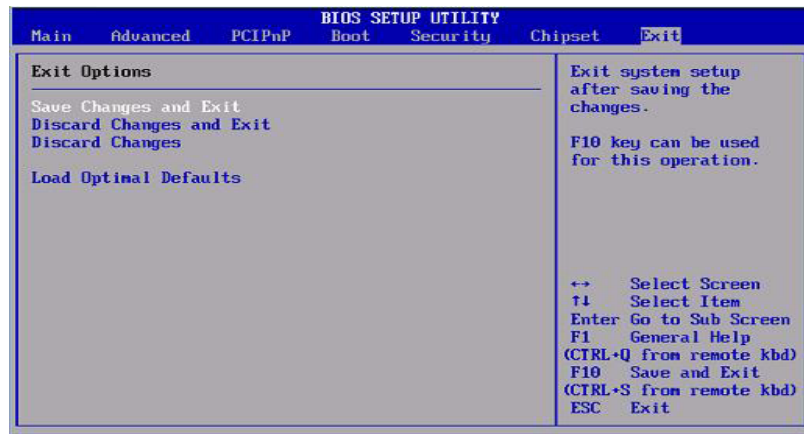
Install RHEL4 or RHEL5 via Local or Virtual Media

This section describes how to install the Red Hat Enterprise Linux v.4 Update 3 or later software from Linux Distribution CD/DVD or ISO CD-images.

Note – If you are using Sun-provided RHEL4 CDs, you must upgrade the RHEL4 operating system to Update 3 immediately after completing the installation.

For instructions on how to install RHEL4 U3 or RHEL5 from distribution media (CD/DVD or ISO CD-images), see these sections:

- "Prerequisites for RHEL Local or Virtual Media Install" on page 266
- "Install RHEL4 via Local or Virtual Medium" on page 267
- "Install RHEL5 via Local or Virtual Medium" on page 273.

Prerequisites for RHEL Local or Virtual Media Install

The following requirements must be met prior to performing the RHEL installation:

- Gathered the installation media for the appropriate supported edition of RHEL per server module.

Server Module	Supported RHEL Edition
X8400, X8420, X8440	• Red Hat Enterprise Linux Advanced Server v.4 Update 3 (or later) for X86 (32 bit and 64 bit) (RHEL4-U3) • Red Hat Enterprise Advanced Server v.5 (or later) for X86 (32 bit and 64 bit) (RHEL5)
X8450	• Red Hat Enterprise Linux Advanced Server v.4 Update 5 (or later) for X86 (32 bit and 64 bit) (RHEL4-U3) • Red Hat Enterprise Linux Advanced Server v.5 (or later) for X86 (32 bit and 64 bit) (RHEL5)

Note – If you are using ISO CD images, they must be available on disk or on a network-shared location.

Note – If you are installing Linux to a SAN device, you must configure the FC SAN adapter prior to performing the Linux OS installation. For more information, see Appendix D.

- Properly configured BIOS boot sequence. For more information, see "Configure BIOS Settings for New Installations" on page 258.
- Configured your network installation server on the same network as the Sun Blade server module.
- Established console access. For more information, see "Console Options" on page 320.
- Established Installation Target. For more information, see "Installation Targets" on page 324.
- Obtained a list of data port MAC addresses for the NEMs or EMs installed in the Sun Blade 8000 Series chassis. These MAC addresses should have been recorded for future reference prior to installing the EM or NEM into the system chassis. For more information about data port MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100. For more information about obtaining the MAC addresses of the EM and NEM data ports, see "Add Network Express Module" on page 58 or "Add PCIe ExpressModule" on page 62.

▼ Install RHEL4 via Local or Virtual Medium

1. **Do one of the following:**

   - **For Distribution CD/DVD**. Insert the Red Hat 4.0 Distribution media boot disc (CD labeled number 1 or the single DVD) into the attached USB CD/DVD-ROM drive.
   - **For ISO images**. Ensure that the ISO image(s) are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application.

2. **Reset the Sun Blade server module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

   The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

As the server begins the power-up sequence it will go through a series of test(s) and allow you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Tip – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first boot device.

After a few seconds, the splash screen for the Red Hat installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

3. **In the Red Hat Enterprise Linux splash screen, perform one of the following:**

    ■ **Set the display resolution to 1024 x 768** and **continue normal user interactive install**.

    The 1024 x 768 setting is **required** for all **X8440 and X8450 Server Modules** remote console OS installations. To set the display resolution to 1024 x 768 and continue the normal interactive install, follow these steps:

    a. **At the boot prompt, type the following:**

    ```
    linux resolution=1024x768
    ```

    b. **Press Enter to continue the normal user interactive install.**

    This option assumes that if the system is to be attached to a network, you are aware of which Linux-named network interface to select for configuration. The Linux-named network interfaces are logical names and are different from the physical names assigned to NEM and EM ports. If you are uncertain how to match the Linux-named interfaces to the physical networked ports, then you should choose to perform the option described below for launching a user shell to identify the network interfaces.

    c. **Proceed to Step 4.**

or

    ■ **Type `linux rescue` to launch a user shell**; then proceed to Appendix G.

Note – This step launches a user shell. In this shell, you will use the `ifconfig -a` command to identify the network interfaces by their logical and physical names.

    For detailed information about launching the user shell and using the `ifconfig -a` command to identify the network interfaces by their logical and physical names, see Appendix H.

4. **In the Testing CD Media screen, press the Tab key to select** `Skip` **and press Enter.**

Note – If you are experiencing problems with the initial set-up for the installation, it may be necessary to test the installation CD media by selecting OK.

A message appears about running Anaconda, the Red Hat Enterprise Linux system installer. After a few seconds the Red Hat splash screen appears displaying the Welcome Installer screen.

5. **In the Red Hat Welcome screen, press Next to continue the installation.**

The Language screen appears.

6. **In the Language screen, select the appropriate language and click Next.**
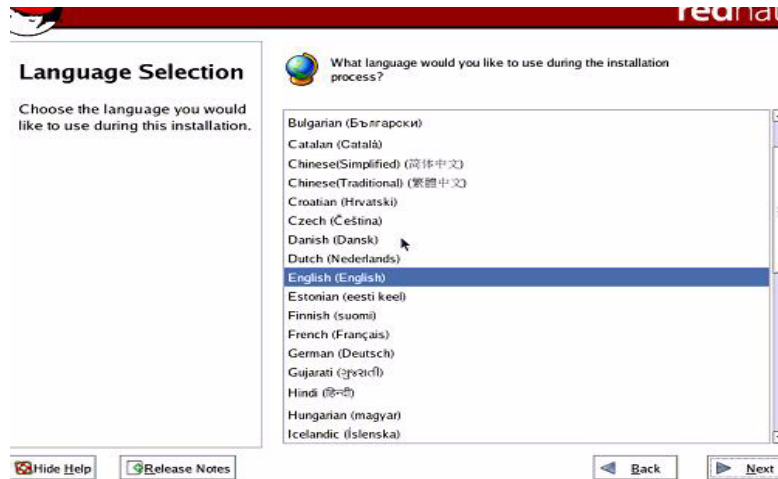
The Keyboard Configuration screen appears.

7. **In the Keyboard Configuration screen, select the appropriate keyboard configuration and click Next.**
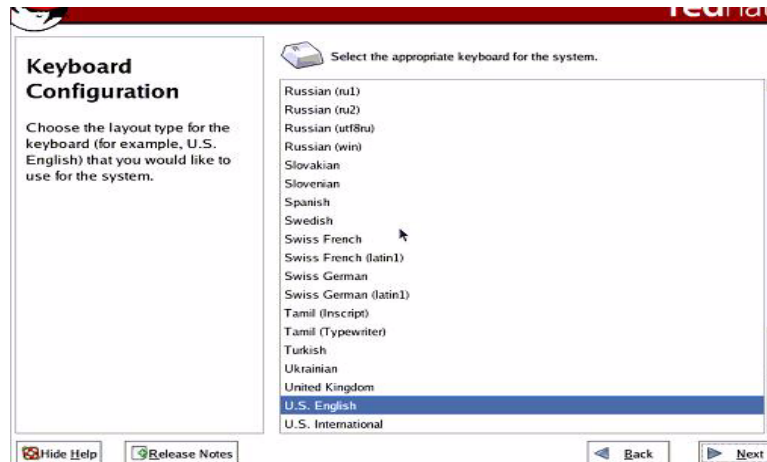
8. **When the Disk Partitioning Setup screen appears, do the following:**
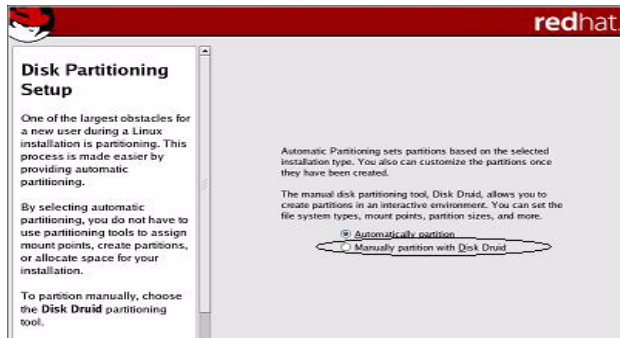
   a. **Select the** `Manual Disk Partitioning` **option.**

b. **Partition the disk as appropriate by referring to the instructions presented on the Red Hat disk partitioning screen.**

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

9. **Continue the basic Red Hat installation setup.**

10. **Reboot immediately after the install and perform the following steps to force the graphic mode to display the required 1024 x768 resolution:**

    a. **After the GRUB menu appears, intercept the boot by typing a space.**

    b. **In the boot command line, add the following kernel argument then press Enter.**

       ```
       resolution=1024x768
       ```

11. **Upon completing the basic Red Hat installation setup, perform the following post-installation tasks:**

    a. **Ensure that the correct display resolution is set by doing the following:**

       - At the prompt, type `system-config-display` then press Enter.
       - Select "ATI ES1000" as the driver and set the resolution to 1024x768.

    b. **Configure ACPI Driver to support hot-plug operations.**

       For more information, see "Configure ACPI Driver for Hot Plug Support" on page 310.

    c. **Configure network settings for Internet access.**

       Refer to Red Hat documentation for more information.

d. **Register for the Red Hat Network Service and activate the service.**

Refer to Red Hat documentation for more information.

e. **Configure your system for automatic updates.**

Refer to Red Hat documentation for more information.

f. **.Download and install the latest errata and bug fixes for RHEL4-U3 or later.**

Refer to Red Hat documentation for more information.

▼ Install RHEL5 via Local or Virtual Medium

1. **Do one of the following:**

   - **For Distribution CD/DVD**. Insert the Red Hat 5.0 Distribution media boot disc (CD labeled number 1 or the single DVD) into the attached USB CD/DVD-ROM drive.

   - **For ISO images**. Ensure that the ISO image(s) are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application.

2. **Reset the Sun Blade server module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

   The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

As the server begins the power-up sequence it will go through a series of test(s) and allow you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Tip – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first boot device.

After a few seconds, the splash screen for the Red Hat 5.0 installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

3. **In the Red Hat Enterprise Linux splash screen, do one of the following:**

   - Set the display resolution to 1024 x 768 and continue the normal interactive install by doing the following:

     a. **At the boot prompt, type the following boot command:**

        ```
        linux vesa
        ```

     b. **Press Enter.**

        This option continues the normal user interactive installation process. It assumes that if the system is to be attached to a network, you are aware of which Linux-named network interface to select for configuration. Note that the Linux-named network interfaces are logical names and are different from the physical names assigned to NEM and EM ports. If you are uncertain how to match the Linux-named interfaces to the physical networked ports, then you should choose to perform the option described below for launching a user shell to identify the network interfaces.

     c. **Proceed to Step 4.**

or

   - Type `linux rescue` to launch a user shell; then proceed to Appendix H.

     This option launches a user shell. In this shell, you will use the `ifconfig -a` command to identify the network interfaces by their logical and physical names.

     For detailed information about launching the user shell and using the `ifconfig -a` command to identify the network interfaces by their logical and physical names, see Appendix H.

4. **In the Language screen, select the appropriate language and click OK.**

The Keyboard Type screen appears.

5. **In the Keyboard Type screen, select the appropriate keyboard configuration and click OK.**
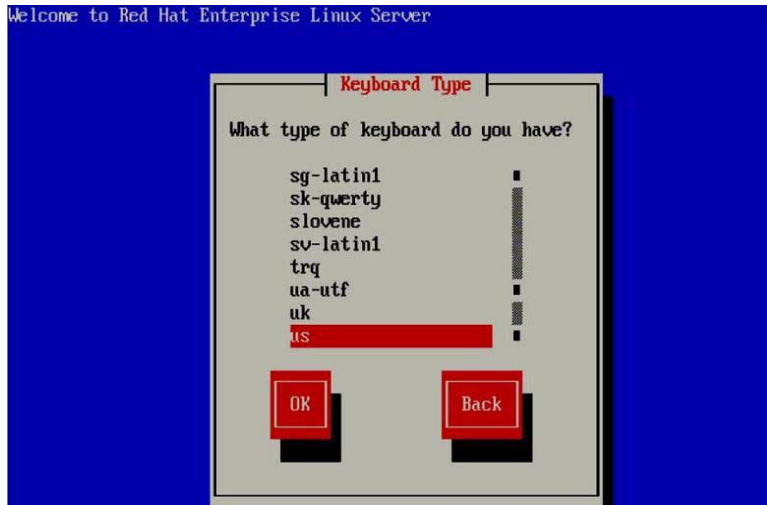
The Installation Method screen appears.

6. **In the Installation Method screen, select the appropriate installation method (Local CDROM or NFS Image) and click OK.**
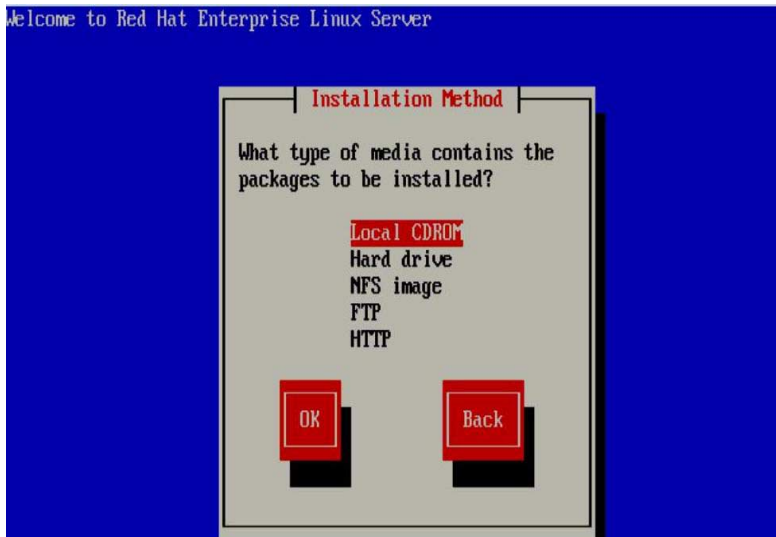
The CD Found screen appears.
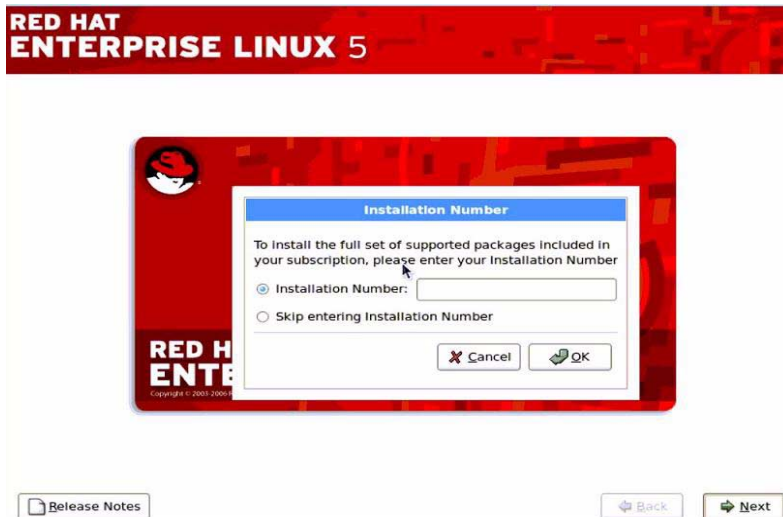
7. In the CD Found screen, click Skip.

The Red Hat Enterprise Linux 5 screen appears.

8. In the Red Hat Enterprise 5 screen, click Next.

The Installation Number dialog appears.

9. **In the Installation Number dialog, enter the "Installation number" or click "Skip entering installation number" then click OK.**

The Default Disk Partition screen appears.

10. **In the Default Disk Partition screen, do the following:**

   a. **In the drop-down list box, select the** `create custom` **option.**

   b. **Partition the disk as appropriate by referring to the instructions presented on the Red Hat disk partitioning screen.**

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

11. **Continue the basic Red Hat installation setup.**

12. **Reboot immediately after the install and perform the following steps to force the graphic mode to display the required 1024x768 resolution:**

   a. **After the GRUB menu appears, intercept the boot by typing a space.**

   b. **In the boot command line, add the following kernel argument then press Enter.**

   ```
   vesa
   ```

13. **Upon completing the basic Red Hat installation setup, perform the following post-installation tasks:**

   a. **Ensure that the correct display resolution is set by doing the following:**

      ■ At the prompt, type `system-config-display` then press Enter.

      ■ Select "Radeon" as the driver and set the resolution to 1024x768.

   b. **Configure ACPI to support hot-plug operations on the server module. For more information, see** "Configure ACPI Driver for Hot Plug Support" on page 310**.**

   c. **Configure network settings for Internet access.**

      Refer to Red Hat documentation for more information.

   d. **Register for the Red Hat Network Service and activate the service.**

      Refer to Red Hat documentation for more information.

   e. **Configure your system for automatic updates.**

      Refer to Red Hat documentation for more information.

   f. **Download and install the latest errata and bug fixes for RHEL4-U3 or later.**

      Refer to Red Hat documentation for more information.

Install RHEL4 or RHEL5 via PXE Network Environment

This section describes how to install the Red Hat Enterprise Linux v.4 Update 3 or *later* software from an established PXE-based network environment using a customer-provided KickStart image.

KickStart is Red Hat's automated installation method. It enables a system administrator to create a single image containing the settings for some to all installation and configuration parameters that are normally provided during a typical Red Hat Linux installation. Typically, a KickStart image is placed on a single network server and read by multiple systems for installation.

The following procedure documents the initial steps you must perform to install RHEL over the network. Specifically, this procedure explains the steps for selecting the Sun Blade server module PXE network interface card that has been configured to communicate over the same network as the KickStart installation server.

Note – If you are installing RHEL4 and using Sun-provided RHEL4 CDs, you must upgrade the RHEL4 operating system to Update 3 or later immediately after completing the installation.

Prerequisites

The following requirements must be met prior to performing the RHEL4 or RHEL5 PXE installation:

- Install the appropriate supported edition of RHEL per server module:

Server Module	Supported RHEL Edition
X8400, X8420, X8440	• Red Hat Enterprise Linux Advanced Server v.4 Update 3 (or later) for x86 (32 bit and 64 bit) (RHEL4-U3) • Red Hat Enterprise Linux Advanced Server v.5 (or later) for x86 (32 bit and 64 bit) (RHEL5)
X8450	• Red Hat Enterprise Linux Advanced Server v.4 Update 5 (or later) for x86 (32 bit and 64 bit) (RHEL4-U3) • Red Hat Enterprise Linux Advanced Server v.5 (or later) for x86 (32 bit and 64 bit) (RHEL5)

- The KickStart file must be configured with the RHEL4-U3 or later; or RHEL5 operating system.

- The KickStart file should be configured with the ACPI driver enabled to support hot-plug operations. For more information, see "POST Linux Installation Requirement For Hot Plug" on page 310.
- The KickStart file should be configured to support the required 1024x768 display resolution.
  - **For RHEL4**: Use the following kernel argument: `resolution=1024x768` to set the proper resolution.
  - **For RHEL5**: Use the following kernel argument: `vesa` to set the required resolution to 1024x768.

Tip – Information concerning how to properly set up and deploy a KickStart installation environment is outside the scope of this installation guide. Note that setting up a KickStart environment typically involves: creating a KickStart image, creating a boot diskette containing the KickStart image or placing the KickStart image on a shared-network location, and making the installation tree available. For complete details, see Red Hat's KickStart documentation.

Note – The following procedure assumes that you are using a customer-provided KickStart image that contains all the Red Hat Enterprise Linux v.4 Update 3 (or later) OS files.

▼ Install RHEL4 or RHEL5 via PXE

1. **Reset the Sun Blade Server Module, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (momentary, 1 second) on the front panel of the blade to turn off the blade, then press the Power button (approximately 1 second) to turn on the blade.

   The BIOS screen appears

Note – The next events, occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

---

2. **Press F8 to specify a temporary boot device.**

   The Please Select Boot Device menu appears listing the available boot device.

3. **In the Please Select Boot Device menu, select the appropriate PXE install boot device and press Enter.**

   The PXE install boot device is the physical network port configured to communicate with your network install server.

Tip – You can determine the PXE interface boot device by (1) matching the *PXE:Slot*# (listed on the Please Select Boot Device menu) with the physical labeled NEM or EM slot number on the chassis, and (2) matching the *F*# (listed on the Please Select Boot Device menu) with the physical labeled NIC port number on the NEM (0.0 to 9.1) or EM (0 or 1). For more information about chassis slot locations and connections, see "About External I/O Ports and Power Inlets" on page 90.

```
              Please select boot device:

USB:IntPort:AMI Virtual CDROM
USB:IntPort:AMI Virtual Floppy
USB:ExtPort1:TEAC FD-05PUW
SCSI:#108 ID00 LUN0 SEAGATE ST973401LSUN72G
SCSI:#108 ID01 LUN0 SEAGATE ST973401LSUN72G
PXE:Slot1.F1:IBA GE Slot 0201 v1231
PXE:Slot1.F0:IBA GE Slot 0200 v1231
PXE:Slot5.F1:IBA GE Slot 0401 v1231
PXE:Slot5.F0:IBA GE Slot 0400 v1231
PXE:Slot3.F1:IBA GE Slot 0701 v1231
                   [ More ↓ ]
          ↑ and ↓ to move selection
          ENTER to select boot device
            ESC to boot using defaults
```

The network bootloader loads and a boot prompt appears. After a few seconds the installation kernel will begin to load.

After a few seconds, the splash screen for the Red Hat installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

```
          redhat.
                    Red Hat Enterprise Linux

  –  To install or upgrade in graphical mode, press the <ENTER> key.
  –  To install or upgrade in text mode, type: linux text <ENTER>.
  –  Use the function keys listed below for more information.
[F1-Main] [F2-Options] [F3-General] [F4-Kernel] [F5-Rescue]
boot: _
```

4. At the boot prompt, press **Enter to initiate the installation process.**

As the Red Hat installation program initializes, a series of messages appear. After about 20 to 40 seconds, a message appears about running Anaconda, the Red Hat Enterprise Linux system installer. After a few more seconds the Red Hat splash screen appears displaying the Red Hat Welcome installer screen.

5. **In the Red Hat Welcome screen, press Next to continue the installation.**
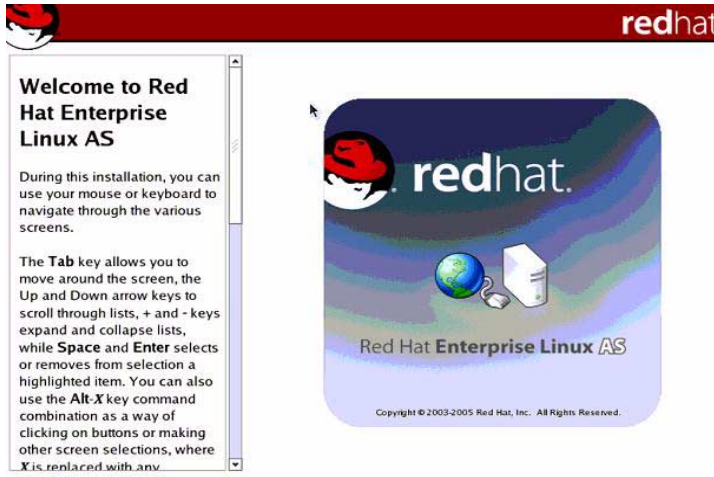
6. **When the Disk Partitioning screen appears, do the following**

   a. **Select the** `Manual Disk Partitioning` **option.**
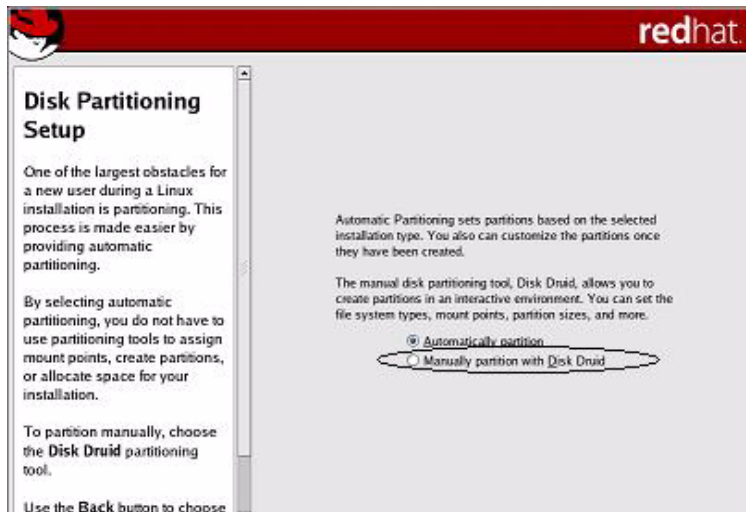
   b. **Partition the disk as appropriate.**

   Refer to the instructions presented on the Red Hat disk partitioning screen for details.

> **Note –** If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

7. **Continue the basic Red Hat installation setup.**

8. **Upon completing the basic Red Hat installation setup, refer to the Red Hat installation documentation and perform the following post-installation tasks:**

   a. **Configure network settings for Internet access.**

   b. **Register for the Red Hat Network Service and activate the service.**

   c. **Configure your system for automatic updates.**

   d. **Automatically download and install the latest errata and bug fixes for RHEL4-U3 or later.**

   e. **Configure ACPI to support hot-plug operations on the server module.**

      For more information, see "Configure ACPI Driver for Hot Plug Support" on page 310

Install SLES9 or SLES10 via Local or Virtual Media

This section describes how to install the SUSE Linux Enterprise Server 9 (SLES9) with Service Pack 3 *or later* software from d Linux Distribution CD/DVD or ISO CD-images.

SUSE Linux Enterprise Server installation program provides an easy-to-use graphical interface for installing and configuring the operating system. Whether you are using distribution CDs/DVDs to install SLES from a locally attached CD/DVD drive or from a remote CD/DVD drive attached via KVMS, the installation procedure is fundamentally the same.

The following procedure documents the initial steps to install SUSE Linux via local or remote media. Prior to beginning the installation, review the installation prerequisites listed below and consult Novell's installation documentation for SLES9 or SLES10 installations. For more information about how to install the SLES9 or SLES10 via local or virtual media, see these procedures:

- "Install SLES9 via Local or Virtual Medium" on page 287
- "Install SLES10 via Local or Virtual Medium" on page 294

Note – If you are using Sun-provided SLES9 CDs, you must upgrade the SLES9 operating system with Service Pack 3 (or later) immediately after completing the installation.

Prerequisites

The following requirements must be met prior to performing the SLES9 or SLES10 installation:

- Gathered the installation media for the appropriate supported edition of SLES:

Server Module	Supported SLES Edition
X8400, X8420, X8440	• SUSE Linux Enterprise Server 9 with SP3 (or later) for x86 (64 bit) (SLES9-SP3) • SUSE Linux Enterprise Server 10 (or later) for x86 (64 bit) (SLES10)
X8450	• SUSE Linux Enterprise Server 9 with SP4 (or later) for x86 (64 bit) (SLES9-SP4) • SUSE Linux Enterprise Server 10 with SP1 (or later) for x86 (64 bit) (SLES10-SP1)

Note – If you are using ISO CD-images, they must be available on disk or on a network-shared location.

- Established console access. For more information, see "Console Options" on page 320.
- Established installation target. For more information, see "Installation Targets" on page 324.

Note – If you are installing Linux to a SAN device, you must properly configure the FC SAN adapter prior to performing the installation. For more information, see Appendix D.

- Properly configured the BIOS boot sequence. For more information, see "Configure BIOS Settings for New Installations" on page 258.
- Obtained a list of MAC addresses for the NEMs or EMs installed in the Sun Blade 8000 Series chassis. These MAC addresses should have been recorded for future reference prior to installing the EM or NEM into the system chassis. For more information about data port MAC addresses, see "About NEM and EM External Data Port MAC Addresses" on page 100. For more information about obtaining the MAC addresses of the EM and NEM data ports, see "Add Network Express Module" on page 58 or "Add PCIe ExpressModule" on page 62.

▼ Install SLES9 via Local or Virtual Medium

1. **Do one of the following:**

- **For Distribution CD/DVD**. Insert the SLES9-SP 3 boot disc (CD labeled number 1 or DVD) into the local or virtual CD/DVD-ROM drive.
- **For ISO CD images**. Ensure that the ISO images are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application.

2. **Reset the Sun Blade server module, for example:**

- From the ILOM web interface, select `Reset` on the Remote Power Control tab.

  or

- Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

  The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for these steps. Watch carefully for the messages as they appear on the screen for a brief time. You may want to enlarge the size of your screen to eliminate scroll bars.

As the server begins the power-up sequence it will go through a series of test(s) and allow you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Note – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first the boot device.

After a few seconds the SUSE initial boot screen appears.

3. **In the SUSE initial boot screen press F2 and select the** `1024x768 screen resolution` **option.**
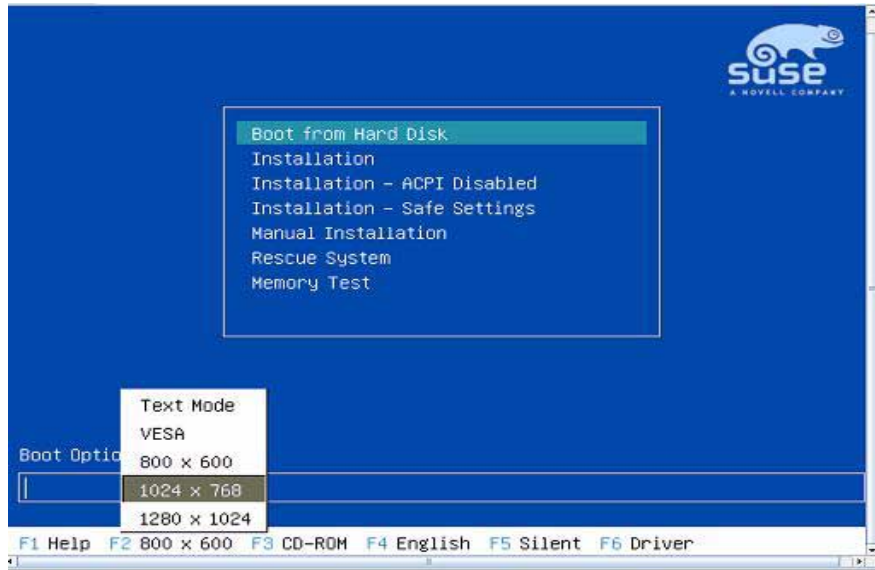
Caution – For installations on X8400 or X8420 server modules, you should change the default screen resolution from 1280x1024 to 1024x768. The Sun Blade X8400 and X8420 Server Modules do not support screen resolutions greater than 1024x768.

4. **In the initial SUSE installation screen, do one of the following:**

- Use the tab key to select the second option `Installation` and press Enter; then proceed to Step 5.

  This option continues the normal user interactive install process. It assumes that if the system is to be attached to a network, you are aware of which Linux-named network interfaces to select for configuration. Note that the Linux-named network interfaces are logical names and are different from the physical names assigned to the NEM and EM ports. If you are uncertain how to match the Linux named interfaces to physical networked ports, then you should choose "`Rescue System`".

or

- Use the tab key to select `Rescue System` and press Enter; then proceed to Appendix G.

  This option launches a user shell. In this shell, you will use the `ifconfig -a` command to identify the network interfaces by their logical and physical names.

  For detailed information about launching a shell and using the `ifconfig -a` command to list the network interfaces by their logical and physical names, see Appendix G.

5. **In the License screen, click I Agree.**

SUSE LINUX Enterprise Server (SLES) 9
Novell Software License Agreement

PLEASE READ THIS AGREEMENT CAREFULLY. BY INSTALLING OR
OTHERWISE USING THE SOFTWARE (INCLUDING ITS COMPONENTS), YOU
AGREE TO THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE
WITH THESE TERMS, DO NOT DOWNLOAD, INSTALL OR USE THE
SOFTWARE AND, IF APPLICABLE, RETURN THE ENTIRE UNUSED
PACKAGE TO THE RESELLER WITH YOUR RECEIPT FOR A REFUND. THE
SOFTWARE MAY NOT BE SOLD, TRANSFERRED, OR FURTHER
DISTRIBUTED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM NOVELL.

RIGHTS AND LICENSES

This Novell Software License Agreement ("Agreement") is a
legal agreement between You (an entity or a person) and
Novell, Inc. ("Novell") with respect to the software

| I Agree | I Do Not Agree |

The YaST Language Selection screen appears.

6. **In the YaST Language Selection screen, specify the language to use for SUSE Linux and YaST installation.**
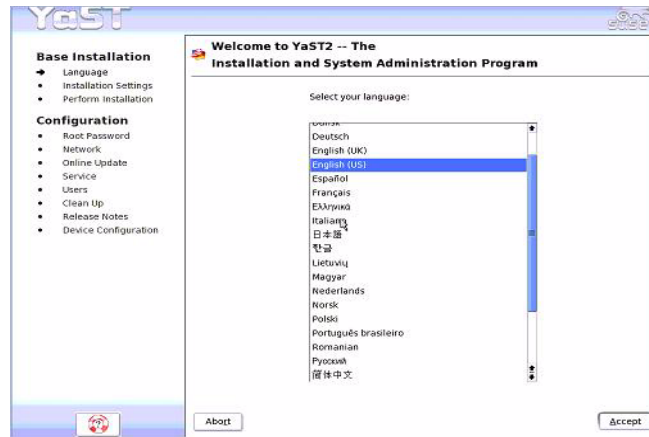
The YaST Installation Settings screen appears.

7. **In the YaST Installation Settings screen, do the following:**
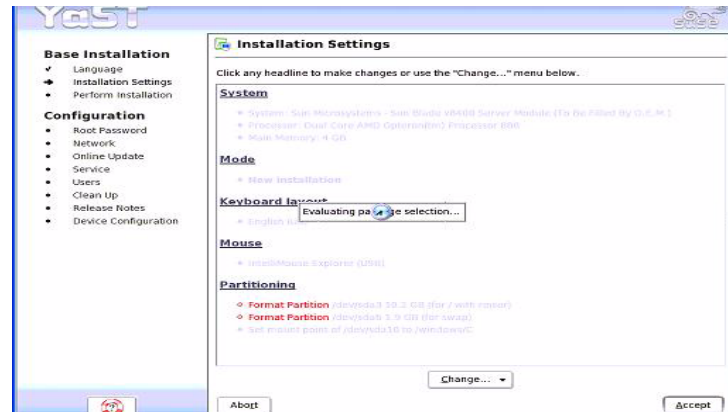
a. **Click the** `Partitioning` **option.**

b. **Select** `Create Custom Partition` **and click OK.**
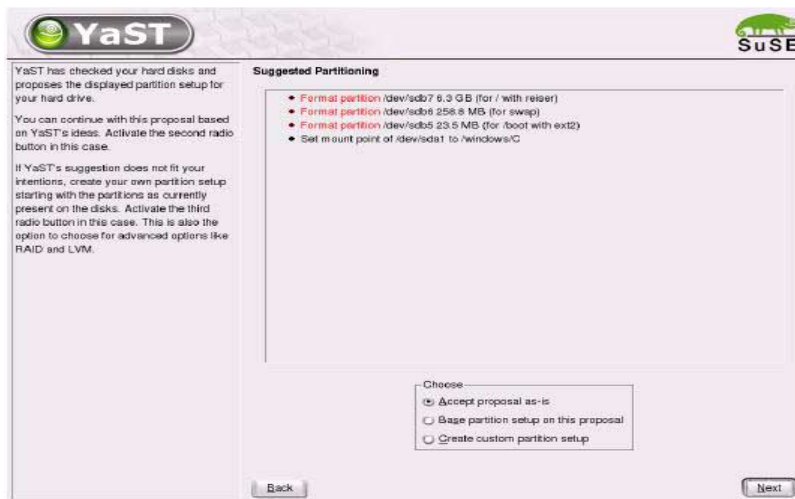
c. **Select** `Custom Partition` **then click Next.**

The screen Preparing Hard Disk Step 1 appears.

d. **Partition the drive as appropriate.**

Refer to the YaST partitioning instructions for more information.

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

8. **Continue the basic installation setup until all the SLES9 OS files are installed and the system reboots.**

9. **After the completing the basic installation setup, refer to the YaST documentation and perform the following post-installation tasks:**

a. **Provide a password for your account.**

b. **Configure and test the Internet access and network settings.**

c. **If you installed SLES9, you will need to download the Service Pack 3 or later files and update the OS.**

d. **Configure ACPI to support hot-plug operations on the server module.**

For more information see, "Configure ACPI Driver for Hot Plug Support" on page 310.

▼ Install SLES10 via Local or Virtual Medium

1. **Do one of the following:**

    -   **For Distribution CD/DVD**. Insert the SLES10 boot disc (CD labeled number 1 or DVD) into the local or virtual CD/DVD-ROM drive.

    -   **For ISO CD images**. Ensure that the ISO images are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application.

2. **Reset the Sun Blade server module, for example:**

    -   From the ILOM web interface, select Reset on the Remote Power Control tab.

    or

    -   Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

    The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for these steps. Watch carefully for the messages as they appear on the screen for a brief time. You may want to enlarge the size of your screen to eliminate scroll bars.

As the server begins the power-up sequence it will go through a series of test(s) and allow you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Note – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first the boot device.

After a few seconds the SUSE initial boot screen appears.

3. **In the SUSE initial boot screen press F3 and select the** `1024x768 screen resolution` **option.**
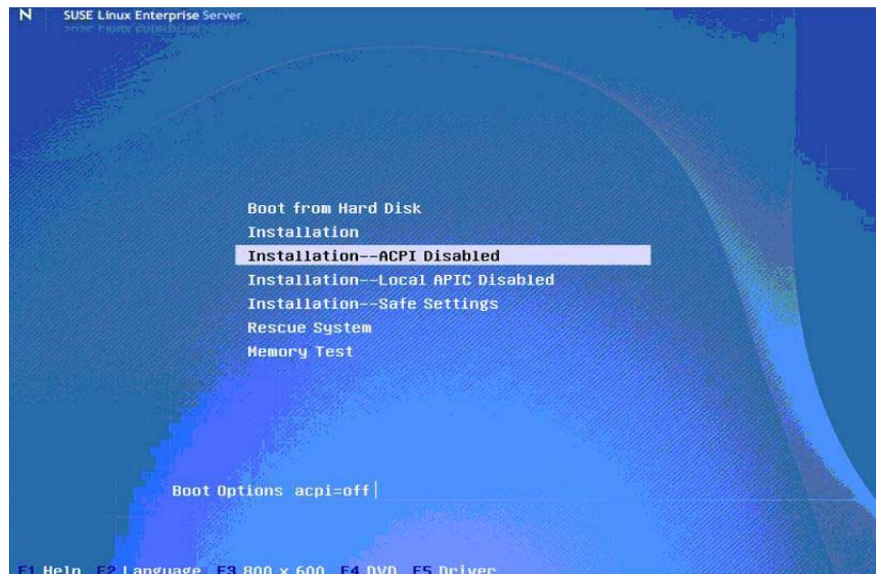
4. **In the initial SUSE boot installation screen, do one of the following:**

   ▪ Use the tab key to select the second option `Installation` and press Enter; then proceed to Step 5.

   This option continues the normal user interactive install process. It assumes that if the system is to be attached to a network, you are aware of which Linux-named network interfaces to select for configuration. Note that the Linux-named network interfaces are logical names and are different from the physical names assigned to the NEM and EM ports. If you are uncertain how to match the Linux named interfaces to physical networked ports, then you should choose "`Rescue System`".

or

   ▪ Use the tab key to select `Rescue System` and press Enter; then proceed to Appendix G.

   This option launches a user shell. In this shell, you will use the `ifconfig -a` command to identify the network interfaces by their logical and physical names.

   For detailed information about launching a shell and using the `ifconfig -a` command to list the network interfaces by their logical and physical names, see Appendix G.

5. **In the Language screen, select the appropriate language option then click Next.**

Note – It may take several minutes for the Language screen to appear.
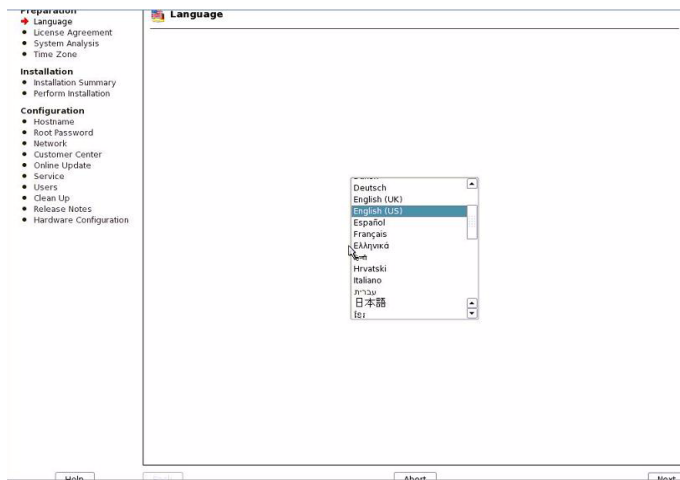
The License Agreement screen appears.

6. **In the License Agreement screen, select** `Yes I agree` **then click Next.**

   The Installation Mode screen appears.

7. **In the Installation Mode screen, select New Installation then click Next.**
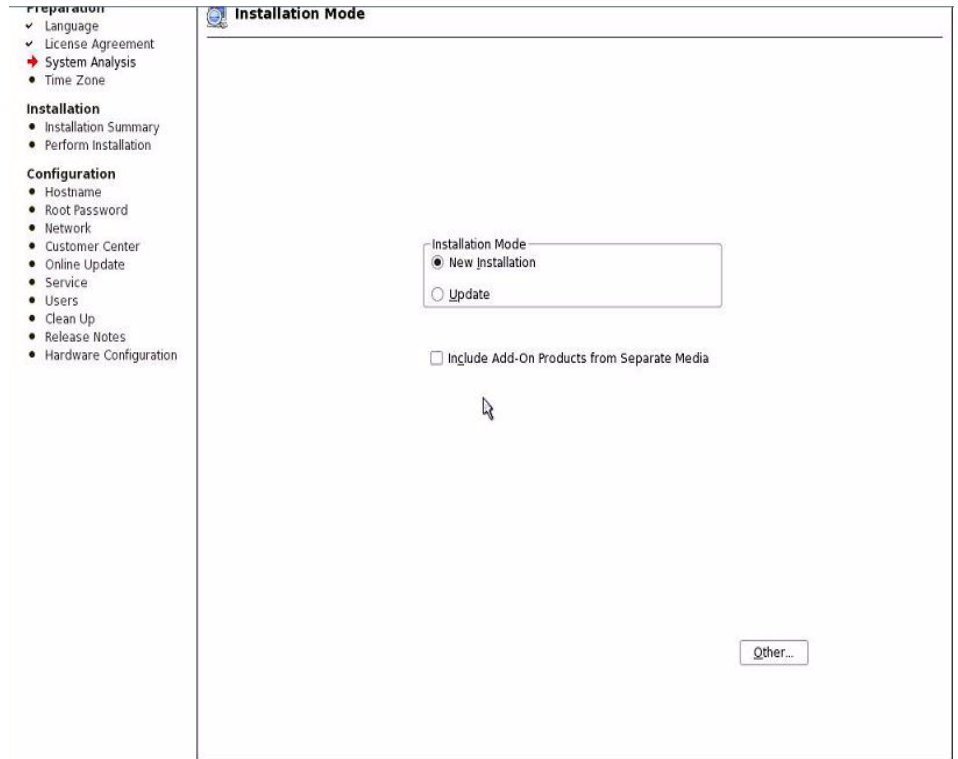
The Clock and Time Zone screen appears.

8. **In the Clock and Time Zone screen, select the appropriate clock and time zone settings then click Next.**
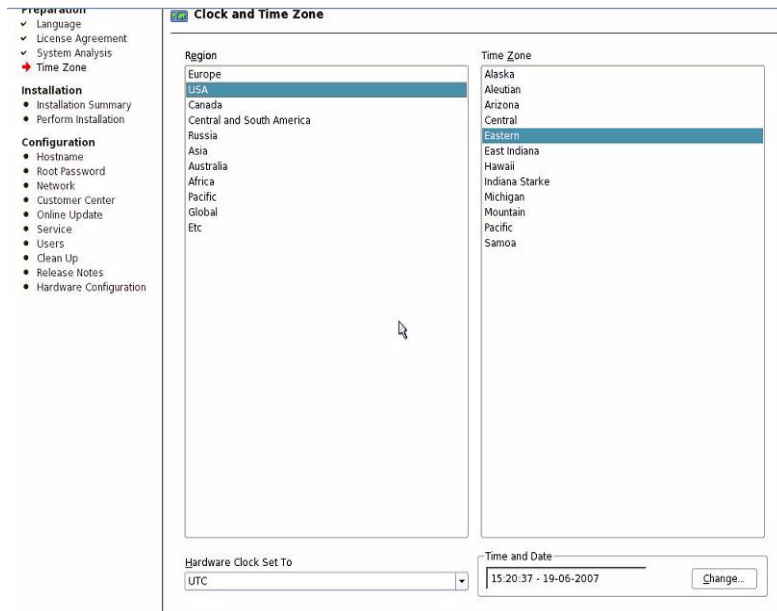
The Installation Settings screen appears.

9. **In the Installation Settings screen, click the Expert tab.**
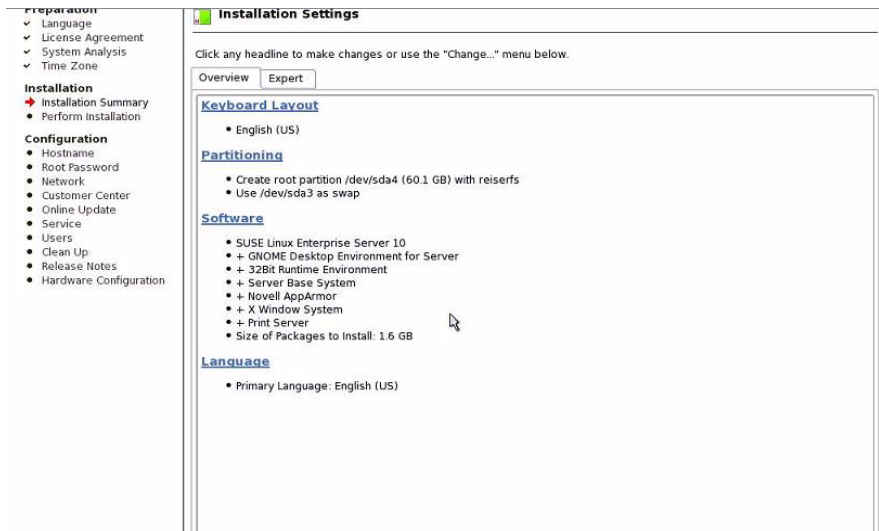
10. **In the Expert tab of the Installation Settings screen, do the following**

    a. **Click the** `Partitioning` **option.**

    b. **Click the** `Booting` **option.**

       The Boot Loader Settings screen appears.

11. **In the Boot Loader Settings screen, click the Boot Loader Installation tab.**
    The Boot Loader Installation tab appears.

12. **In the Boot Loader Installation tab, type** `Boot Loader` **then click** `Finish`**.**

    Caution – Do NOT install any boot loader.

    The Expert tab of the Installation Setting screen appears.

13. **In the Expert tab of the Installation Settings, click the** `Partitioning` **option.**
    The Suggested Partitioning screen appears.

14. **In the Suggested Partitioning screen, click the** `Create Custom Partition Setup` **option then click Next.**
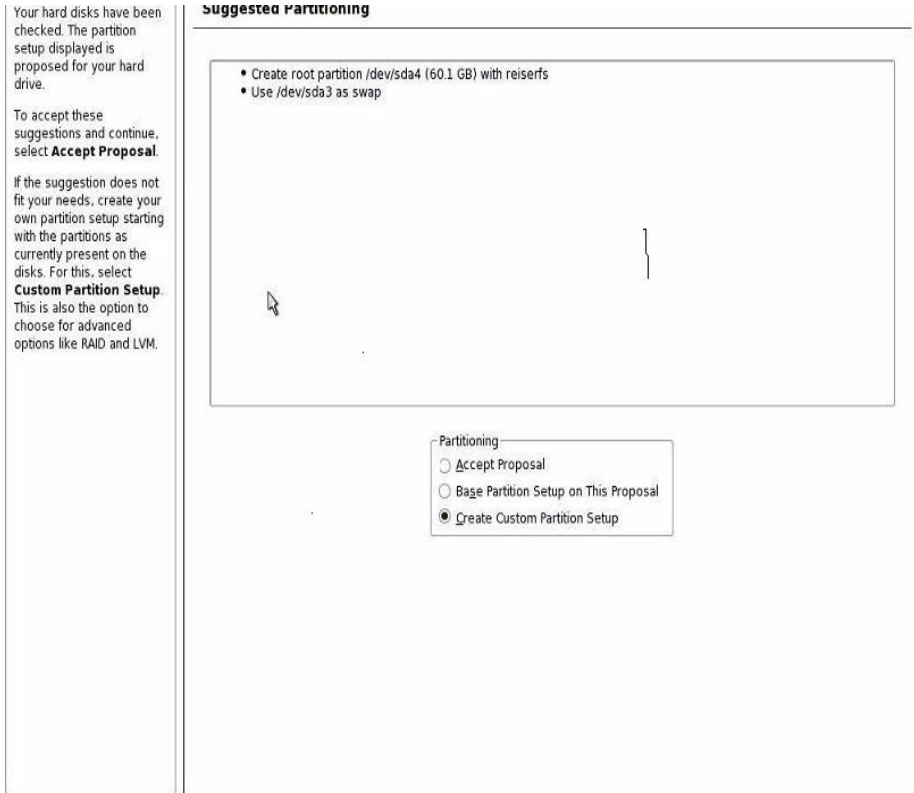
The Preparing Hard Disk screen appears.

15. In the Preparing Hard Disk screen, click the Custom Partitioning option then click Next.

All hard disks automatically detected on your system are shown here. Select the hard disk on which to install SUSE Linux Enterprise Server 10.

You may select later which part of the disk is used for SUSE Linux Enterprise Server 10.

The **Custom Partitioning** option for experts allows full control over partitioning the hard disks and assigning partitions to mount points when installing SUSE Linux Enterprise Server 10.

Preparing Hard Disk: Step 1

Hard Disk

◯ 1:   1. IDE,   74.5 GB, /dev/sda, FUJITSU-MHV5480S

◯ Custom Partitioning (for experts)

The Expert Partitioner screen appears.

16. **In the Expert Partitioner screen, partition the drive as appropriate then click Finish.**

    Refer to the YaST partitioning documentation for more information.
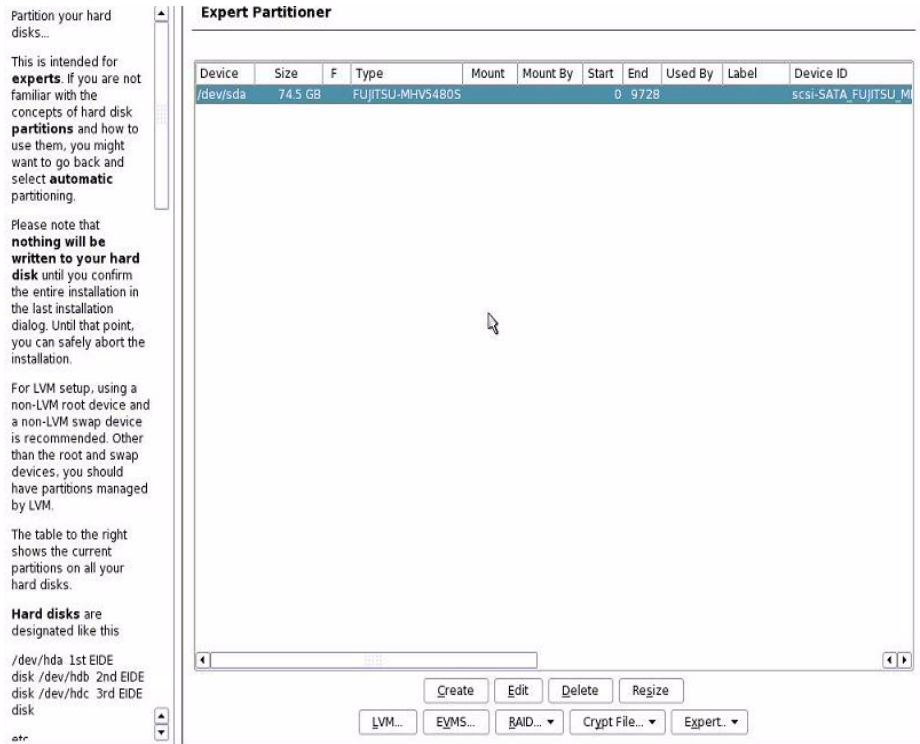
    The Expert tab of the Installation Settings screen appears.

17. **In the Expert tab of the Installation Settings screen, click the** `Booting` **option.**

    The Boot Loader Setting screen appears.

18. **In the Boot Loader Settings screen, do the following:**

    a. **In the Boot Loader Type drop-down list box, select** GRUB**.**

    b. **In the Boot Loader Location, select or specify the appropriate location.**
       For example, a Master Boot Record may be specified as /dev/sda.

    c. **Click** Finish**.**
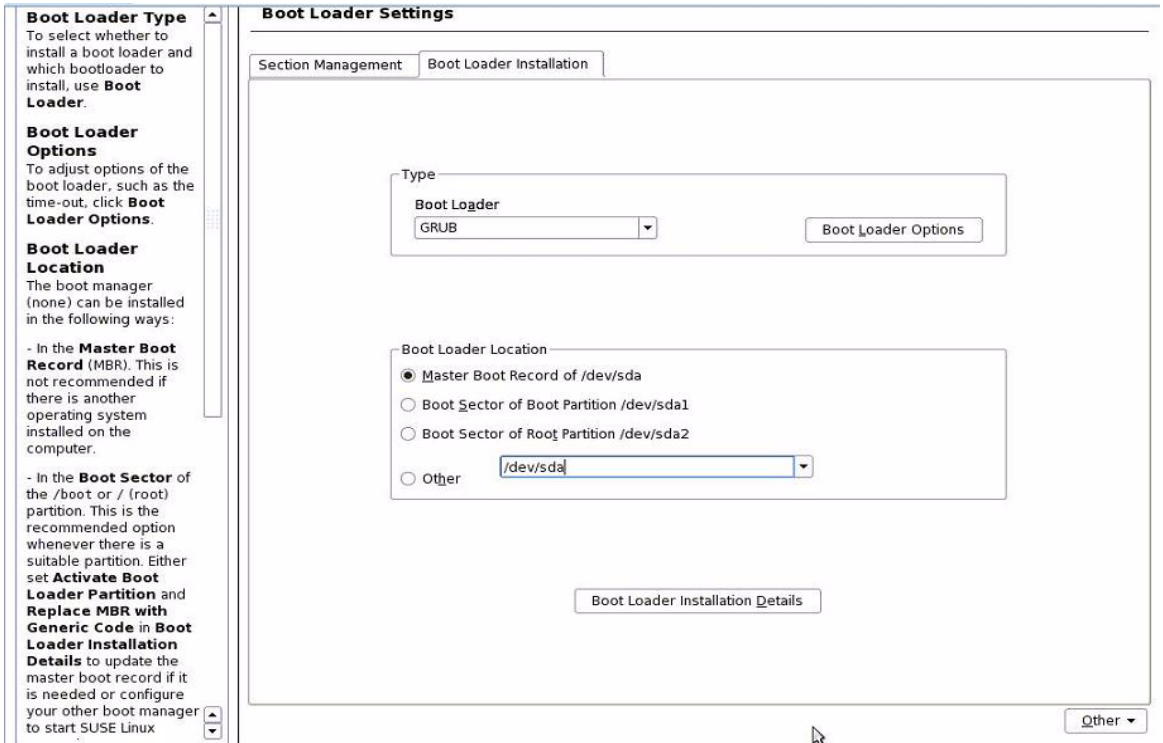
The Expert tab of the Installation Settings screen appears.

19. **In the Expert tab of the Installation Settings screen, do the following:**

    a. **Specify the appropriate software options for your installation.**

    b. **Verify that the appropriate** `Installation Settings` **are configured.**

    c. **Click Accept to begin the installation**

       A confirmation dialog appears.

    d. **In the confirmation dialog, click Install.**

20. **Continue the basic installation setup until all the SLES10 OS files are installed and the system reboots.**

21. **After the completing the basic installation setup, refer to the YaST documentation and perform the following post-installation tasks:**

    a. **Provide a password for your account.**

    b. **Configure and test the Internet access and network settings.**

    c. **Configure ACPI to support hot plug operations.**

       For more information see, "Configure ACPI Driver for Hot Plug Support" on page 310.

Install SLES9 or SLES10 via PXE Network Environment

This section describes how to install the SLES9 with Service Pack 3 or later software over an established PXE-based network environment using an AutoYaST control file.

Novell AutoYaST is a method for installing one or more SUSE Linux systems automatically and with minimal user intervention. You must perform AutoYaST installations using a control file containing both installation and configuration data. For more information about creating the AutoYaST control file and applying it to a YaST installation, consult Novell's documentation (http://www.novell.com).

The following procedure documents the initial steps you must perform to install SUSE Linux over the network using an AutoYaST control file. Specifically, this procedure explains the steps for selecting the PXE network interface card that has been configured to communicate over the same network as your AutoYaST install server.

Note – If you are using Sun-provided SLES9 CDs, you must upgrade the SLES9 operating system with Service Pack 3 (or later) immediately after completing the installation.

Prerequisites

The following requirements must be met prior to performing SLES9 or SLES10 PXE installation:

- Install the appropriate edition of SLES per server module:

Server Module	Supported SLES Edition
X8400, X8420, X8440	• SUSE Linux Enterprise Server 9 with SP3 (or later) for x86 (64 bit) (SLES9-SP3) • SUSE Linux Enterprise Server 10 (or later) for x86 (64 bit) (SLES10)
X8450	•)SUSE Linux Enterprise Server 9 with SP4 (or later) for x86 (64 bit) (SLES9-SP4) • SUSE Linux Enterprise Server 10 with SP1 (or later) for x86 (64 bit) (SLES10-SP1)

- Established AutoYaST network Installation environment. Information concerning how to properly set up and deploy an AutoYaST network installation environment is outside the scope of this installation guide. You should refer to the instructions in the Novell AutoYast installation documentation for setting up and configuring an AutoYaST network installation.

- AutoYaST file must specify screen resolution settings for 1024x768. You can use kernel argument `vga=791` to set the required resolution.

- AutoYaST file must be preconfigured with the ACPI driver enabled to support hot plug-operations. For more information, see .

▼ Install SLES9 or SLES10 via AutoYaST

1. **Reset the Sun Blade Server Module, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately 1 second) on the front panel of the blade to turn off the blade, then press the Power button again to turn on the blade.

   The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for these steps. Watch carefully for the messages as they appear on the screen for a brief time. You may want to enlarge the size of your screen to eliminate scroll bars.

2. **Press F8 to specify the temporary boot device.**

   The Please Select Boot Device menu appears listing the available boot device.

3. **In the Please Select Boot Device menu, select the appropriate PXE install boot device.**

   The PXE install boot device is the physical network port configured to communicate with your network install server.

Tip – You can determine the PXE interface boot device by (1) matching the *PXE:Slot*# (listed on the Please Select Boot Device menu) with the physical labeled NEM or EM slot number on the chassis, and (2) matching the *F*# (listed on the Please Select Boot Device menu) with the physical labeled NIC port number on the NEM (0.0 to 9.1) or EM (0 or 1). For more information about chassis slot locations and connections, see

---

Note – The following Please Select Boot device menu is an example. This menu may not match the configuration listed on your menu.

```
              Please select boot device:

 USB:IntPort:AMI Virtual CDROM
 USB:IntPort:AMI Virtual Floppy
 USB:ExtPort1:TEAC FD-05PUW
 SCSI:#108 ID00 LUN0 SEAGATE ST973401LSUN72G
 SCSI:#108 ID01 LUN0 SEAGATE ST973401LSUN72G
 PXE:Slot1.F1:IBA GE Slot 0201 v1231
 PXE:Slot1.F0:IBA GE Slot 0200 v1231
 PXE:Slot5.F1:IBA GE Slot 0401 v1231
 PXE:Slot5.F0:IBA GE Slot 0400 v1231
 PXE:Slot3.F1:IBA GE Slot 0701 v1231
                  [ More ↓ ]
          ↑ and ↓ to move selection
          ENTER to select boot device
          ESC to boot using defaults
```

The network bootloader loads and a boot prompt appears. Wait for the five second time-out and the installation kernel will begin to load.

After a few seconds the SLES installation program will load.

The SUSE Linux Novell License Agreement screen appears.

4. **In the SUSE Linux Novell License Agreement screen, click** `Accept`**.**

   The SUSE YaST installation program initializes. The YaST graphical installation screen appears.

   Depending on the AutoYaST file configuration, the YaST Language Selection screen might appear.

5. **If the YaST Language Selection screen appears, specify which language to use.**

   Depending on the AutoYaST file configuration, the YaST Installation Mode screen might appear.

6. **If the YaST Installation Mode screen appears, select** `New Installation`**, then click** `OK` **to continue.**

   The system's hardware is detected. The YaST Installation Settings screen appears.

7. **In the YaST Installation Settings screen, do the following:**

   a. **Click the** `Partitioning` **option.**

   b. **Select** `Create Custom Partition` **and click OK.**
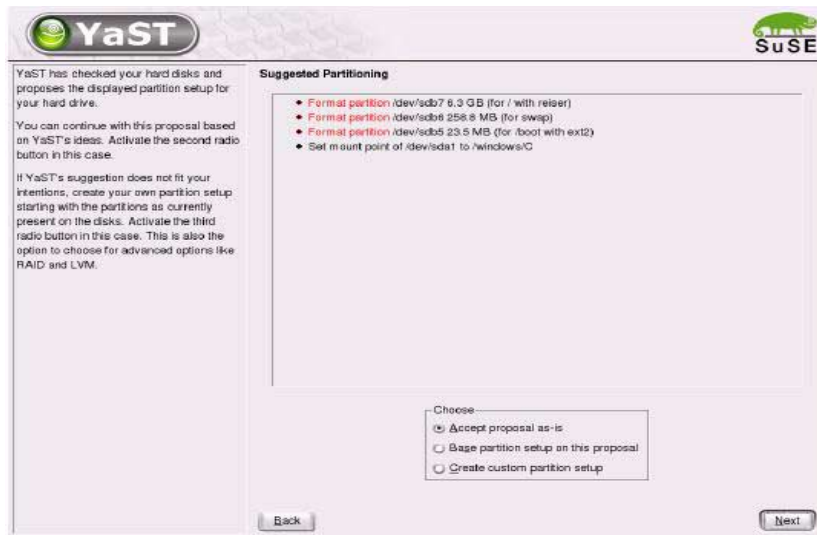
   c. **Partition the disk as appropriate.**

   Refer to the YaST Partitioning instructions for more information.

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

8. **Continue the basic installation setup until all the SLES OS files are installed and the system reboots.**

9. **After the completing the basic installation setup, refer to the YaST documentation and perform the following post-installation tasks:**

   a. **Provide a password for your account.**

   b. **Configure and test the Internet access and network settings.**
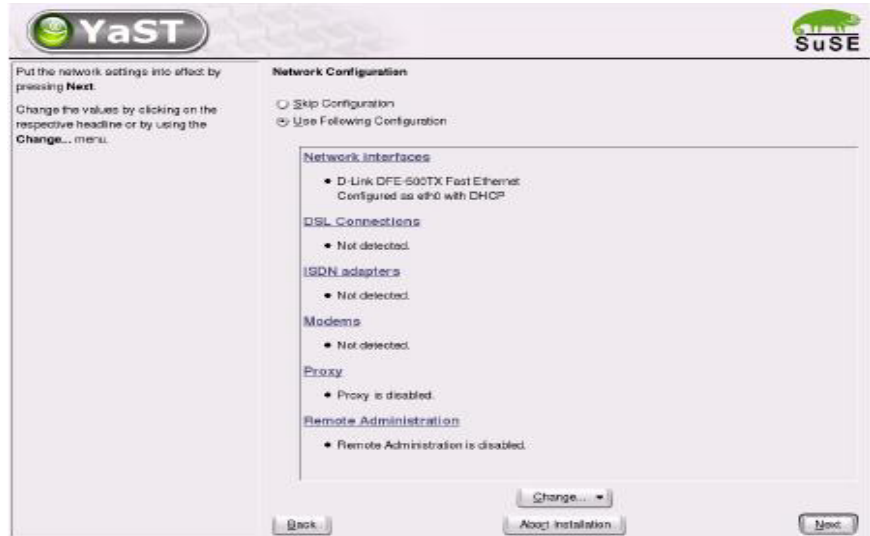
   c. **Register the OS, then if you installed SLES9 you will need to download the Service Pack 3 or later files.**

Note – Configure ACPI driver to support hot plug operations. For more information, see "Configure ACPI Driver for Hot Plug Support" on page 310.

POST Linux Installation Requirement For Hot Plug

The Linux operating systems require you to configure the ACPI driver to support system hot plug operations. For instructions about configuring the ACPI driver, see the following procedure.

▼ Configure ACPI Driver for Hot Plug Support

1. **At a shell prompt, create the following file in** `/etc/init.d/acpiphp`**:**

```
#!/bin/bash
#chkconfig: 123435 20 99
#description: Load the acpiphp hotplug driver, replacing
shpchp

case $1 in

start)

  /sbin/modprobe -q -r shpchp
  /sbin/modprobe acpiphp
  ;;

stop)

  /sbin/modprobe -r acpiphp
  ;;

status)

  /sbin/lsmod | grep acpiphp
  ;;

*)

  printf "\nUsage: $(basename $0) [start | stop | status] \n"
  exit 1
  ;;

esac
exit 0
```

2. **Type the following command to make the file executable.**

```
chmod +x /etc/init.d/acpiphp
```

3. **Type the following command to add the script to the automated system startup sequence.**

   `chkconfig --add acpiphp`

4. **Type the following command to verify that the acpiphp "service" has been registered properly.**

   `chkconfig --list acpiphp`

   The system returns output similar to the following:

   ```
   chkconfig --list acpiphp
   acpiphp 0:off 1:0n 2:on 3:on 4:on 5:on 6:off
   ```

5. **This one-time only (alternatively reboot the system now), you can manually start the new acpiphp "service" by typing:**

   `/etc/init.d/acpiphp start`

   The system restarts and the `acpiphp` kernel module automatically loads.

6. **Type the following to verify that the proper hot-plug driver is installed:**

   `/etc/init.d/acpiphp status`

   The system returns output similar to the following (the numbers might vary):

   ```
   /etc/init.d/acpiphp status
   acpiphp               29149 0
   ```

Configure Windows Network Communication Settings With Multiple Network Interfaces

This appendix provides information you should consider when configuring the Windows network communication settings with multiple Sun Blade 8000 Series network interfaces.

Topics in this appendix include:

- "Determine Which Network Data Ports Are Actively Connected to a Network" on page 314.
- "Confirm Physical Port MAC Addresses and Match Them to Window Device Names" on page 315.
- "Launch the Manage Your Server Program After Windows Setup Completes" on page 317.

▼ Determine Which Network Data Ports Are Actively Connected to a Network

By using Microsoft's Network Connections folder, you can visually determine which Sun Blade 8000 Series EM and NEM ports are actively connected to a network. To access the Network Connections folder, follow this step:

● **Click Start -> Settings -> Control Panel-> Network Connections.**

The Network Connections folder appears identifying the actively connected data ports.
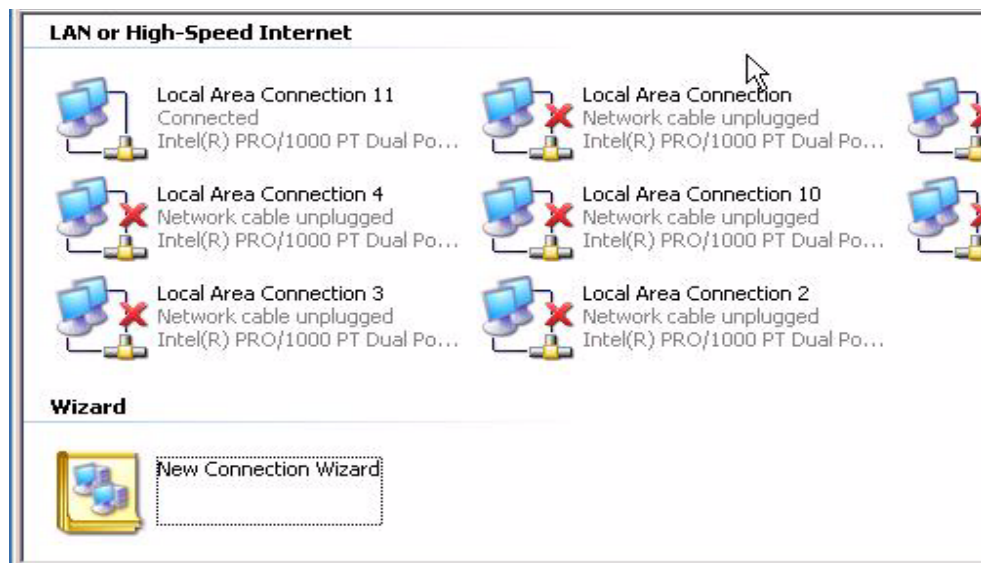
Illustration Key

• A red X marks the port connections that are currently inactive.

▼ Confirm Physical Port MAC Addresses and Match Them to Window Device Names

To confirm the MAC addresses of installed NEM and EM ports and to match them to the Windows Device Friendly Names, you will need to open a command prompt and run `ipconfig /all`.

To open a Windows command prompt and run `ipconfig /all` follow these steps:

1. **Click -> Start -> Run.**

   The Run dialog box appears.

2. **In the Run dialog box, type `cmd` then click OK.**

   The cmd.exe DOS window appears.

3. **In the cmd.exe DOS window, type `ipconfig /all`.**

   The output from the `ipconfig /all` command identifies the installed NEM and EM ports by the connection name in the order of enumeration.

Note – The output does not necessarily follow an alpha or numeric order. You can customize the connection name in the Network Connections folder for details, see Microsoft's documentation. The output below illustrates how the Windows operating system, by default, assigns logical names to network interfaces.

Illustration Key

1. Second Ethernet adapter port.
2. First Ethernet adapter port

In the sample output:

- `Ethernet Adapter Local Area Connection` is the Windows default logical name (friendly name) assigned to a network interface.

  Note that the first *Ethernet Adaptor Local Area Connection* appears with a null value. This entry identifies the connection-specific DNS suffix (for example, `east.sun.com`) and the physical MAC address for that port.

- `Ethernet Adapter Local Area Connection 2` identifies a disconnected media state, a description, and the physical MAC address for that port.

Note – The numeric value following the Windows logical friendly name refers to the network connection number.

▼ Launch the Manage Your Server Program After Windows Setup Completes

To configure network settings after the Windows Server 2003 Setup program completes, you can use the Manage Your Server program. You can access this program at any time as long as you are logged in as Administrator.

To launch Manager Your Server, do the following:

● **Click Start -> All Programs -> Administrator Tools -> Manager Your Server.**

For specific details about how to specify network settings using the Manage Your Server program, see Microsoft's documentation.

Plan the Operating System Installation

When planning the installation of an operating system on an Sun Blade server module, consider reviewing the following topics before you begin the installation:

- "Installation Methods" on page 319
  - "Console Options" on page 320
  - "Local and Remote Installation Media Options" on page 322
- "Installation Targets" on page 324
- "Hardware RAID Configuration" on page 324

Installation Methods

Prior to starting the operating system installation, you need to determine the installation method you will use to install the operating system software. To define your installation method, you need to decide which type of console and installation media you will use to perform the installation.

The following sections identify the console options and media options you can use when performing an operating system installation:

- "Console Options" on page 320
- "Local and Remote Installation Media Options" on page 322

Note – You can mix and match any console option with any installation media option discussed in this chapter.

Console Options

This section describes some of the common console options you could use when installing an operating system on a Sun Blade server module. Which console option you decide to use will depend on the type of installation you want to perform:

- **Serial Console via Serial Port Connection**. This option uses a console via a serial port connection to capture the output and input of the operating system installation.

  If you choose to use a serial port connection to perform the OS installation, you must complete the following tasks:

  - Physically attach a *serial console* to the serial port on either the server module or the Chassis Monitoring Module (CMM). For details, see "Attach Local Serial Console to Server Module" on page 110 or "Attach Serial Console to CMM" on page 113.

Note – A dumb terminal (such as VT100) or a laptop attached to a serial port are considered examples of a *serial console*.

  - Log in to ILOM as an administrator. You can use the preconfigured ILOM administrator account provided (root/password). For more information about the preconfigured ILOM administrator account, see "About the Preconfigured ILOM Administrator Account" on page 122.

  - Use the local client interface, such as a terminal window, capable of capturing the text output and input of the operating system installation.

  - Start the ILOM CLI console on the CMM or Sun Blade server module (blade) Service Processor (SP), for example:

    i. For the CMM, you would type:

       ```
       start /CH/BL#/SP/console
       ```

       where # = the slot number of the server module in the chassis

    ii. For the server module SP, you would type:

       ```
       start /SP/console
       ```

Note – If you are using the Sun Installation Assistant to install an operating system, the serial console option is not supported.

- **Console via VGA Port Connection**. This option uses a console via a VGA port connection to capture the output and input of the operating system installation.

  If you choose to use a VGA port connection to perform the OS installation, you must complete the following tasks:

  - Physically attach the VGA console to the VGA analog port that is located on the front panel of the server module. For details, see "Attach Local VGA Monitor to Server Module" on page 111.

  - Physically attach a keyboard and mouse to the USB connectors on the front panel of the server module.

  - Use the start console command to direct the input and output of the OS installation to the VGA connection.

- **Sun ILOM Remote Console (Remote KVMS)**. The Sun ILOM Remote Console is a Java application that is launched from the ILOM web interface. For this console option, the text output device is the remote console that is running the Sun ILOM Remote Console application. The input devices are the remote keyboard and mouse.

  If you choose to use the Sun ILOM Remote Console to perform the OS installation, you must complete the following tasks:

  - Have network connectivity established to the Sun Blade 8000 or 8000 P Modular System. For details, see "Attach CMM Network Management Cable" on page 107 and "Configure IP Addresses to Establish Initial Connection With ILOM" on page 121.

  - Have the IP address for either the CMM or the Sun Blade server module SP. For details, see Chapter 5.

  - Log in to ILOM as an administrator. You can use the preconfigured ILOM administrator account provided (root/password). For more information about the preconfigured ILOM administrator account, see "About the Preconfigured ILOM Administrator Account" on page 122.

  - Launch the Sun ILOM Remote Console (Java application running the remote console) to capture the input and output of the operating system installation.

  For details about configuring ILOM for remote KVMS and launching the Sun ILOM Remote Console, see Appendix C.

- **Console via SSH**. This option establishes console access through a SSH connection to either the CMM or server module SP. This option is similar to the "console via serial port connection" except that it uses a SSH connection to the serial port.

  If you choose to use a secure connection to perform the OS installation, you must complete the following tasks:

- Have network connectivity established to the Sun Blade 8000 or 8000 P Modular System. For details, see "Attach CMM Network Management Cable" on page 107 and "Configure IP Addresses to Establish Initial Connection With ILOM" on page 121.

- Have the IP address for either the CMM or the Sun Blade server module SP. For details, see Chapter 5.

- Log in to ILOM as an administrator. You can use the preconfigured ILOM administrator account provided (root/password). For more information about the preconfigured ILOM administrator account, see "About the Preconfigured ILOM Administrator Account" on page 122.

- Have a remote client capable of establishing a Secure Shell connection to capture the output and input of the operating system installation.

- Start the ILOM CLI console on the CMM or server module SP, for example:

  For CMM, you would type:

  `start /CH/BL#/sp/console`

  where # = the slot number of the server module in the chassis

  For server module SP, you would type:

  `start /sp/console`

Local and Remote Installation Media Options

You can choose to use local or remote installation media when installing an operating system on a Sun Blade server module. Which media option you choose to use will depend on the type of installation you want to perform:

- **Local Media**. When you choose to perform the installation using local media you must use the operating system distribution CD/DVD to perform the installation.

  This method requires you to physically attach a CD/DVD-ROM drive to the USB connector on the front panel of the Sun Blade Server Module. For more information about attaching a CD/DVD ROM to a Sun Blade server module, see "Attach USB Devices to Server Module" on page 112.

- **Remote Media**. When you choose to perform the installation using remote media, you can use one of the following installation media:

  - OS Distribution CD or DVD
  - Customer-provided ISO CD/DVD image
  - Customer-provided automation install image such as a Windows RIS image, Windows WDS image, Solaris JumpStart image, RHEL KickStart image, or a SLES AutoYaST image.

Automating the installation process (with RIS, WDS, JumpStart, KickStart, or AutoYaST) can eliminate some or most of the manual tasks of setting up the operating system installation for the first time on multiple systems. Instead, you simply apply the properly configured image on the targeted installation servers for installation.

The remote media method does not require you to be physically near the server. You can choose to boot the installation media over the network via a virtual drive or PXE client:

- **Boot Installation Media via Virtual Drive**. A virtual drive refers to the drive being emulated. This can include a remote CD/DVD drive or an ISO image located on a network share. If you choose to boot the installation media via a virtual drive, you must list the virtual drive as the first temporary boot device in the BIOS.

- **Boot Installation Media via PXE Client**. A PXE client refers to the computer booting the installation media via PXE (Intel Preboot Execution Environment). The installation media uses the PXE specification implemented on the Sun Blade 8000 or 8000 P Modular System. Specifically, the PXE technology provides the server with the capability to boot operating system over the network using the Dynamic Host Configuration Protocol (DHCP).

   Note that when you install the operating system from remote media via a PXE-based network, you will need to configure the PXE network interface card as the temporary boot device. Instructions for configuring the PXE network interface card as the temporary boot device are provided in the following procedures:

   "Install Windows Server 2003 via PXE" on page 226

   "Install Windows Server 2008 via PXE Network" on page 237

   "Install RHEL4 or RHEL5 via PXE Network Environment" on page 280

   "Install SLES9 or SLES10 via PXE Network Environment" on page 305

Some of the hardware and software requirements to install the operating system using remote media include:

- Network connection to both the Chassis Monitoring Module (CMM) and the Sun Blade server module within the Sun Blade 8000 Series chassis. For information about how to configure network parameters for the Sun Blade 8000 Series system, see Chapter 5.

- Properly configured network installation server that specifies one or more Sun Blade server modules or Storage Area Network (SAN) devices as the installation targets. For more information about installation targets, see "Installation Targets" on page 324.

- If you choose to automate the network installation process via an automated installation image (such as RIS, WDS, JumpStart, KickStart, or AutoYaST) you will also need to have an established automated server environment. Information concerning how to properly set up and deploy an automated

installation image is outside the scope of this installation guide. For these details, you should consult the vendor's operating system documentation for setting up and deploying an automated installation image.

Installation Targets

You can choose to install the operating system to the following installation targets:

- **Local Hard Drive on Sun Blade server module**. Use this installation target when installing the operating system to disk drive(s) installed on the Sun Blade Server Module.

- **External Storage Device**. Use this installation target when installing to an external storage device, such as a Fibre Channel storage device. This installation target is commonly used for enterprise-level system implementations, such as a diskless server module configuration. For more information about installing an operating system to a FC SAN device, see Appendix D.

Hardware RAID Configuration

The Sun Blade server module supports two types of array architectures: *RAID-0* and *RAID-1*. By default, the Sun-supplied disk drives are shipped *without* a hardware *RAID* configuration. Before installing the operating system, you must decide whether to configure hardware RAID, and if so, which type of hardware RAID configuration you want to implement. A brief description about hardware RAID and the two hardware RAID levels supported on Sun-supplied disk drives follows.

A hardware RAID configuration enables you to combine multiple small disk drives into an array of disk drives that yields performance, capacity, and/or reliability in excess of that provided by a single disk drive. Additionally, the RAID volume appears to the server as a single logical storage unit or drive.

One of the factors you should consider if you decide to configure a hardware RAID is the reliability Mean Time Between Failure (MTBF). The MTBF of a RAID-0 array is equal to the MTBF of a single drive, divided by the number of drives in your array. For many applications, this MTBF could be too low. In this situation, you might want to consider configuring your disk array to support fault-tolerance. A fault-tolerant disk array (RAID-1) enables you to redundantly *mirror* the information on two duplicate disks simultaneously. Thereby, if one disk fails, the server can instantly switch to the other disk without any loss of data or service.

A second factor you should consider when configuring a hardware RAID is disk access and performance. Data striping distributes the data across multiple disks to increase throughput and the effective disk size. The performance increase depends on the application. When using this level of RAID, you are trading performance for reliability since there is no redundancy or fault tolerance. If either disk in the RAID-0 pair should fail, the whole RAID fails.

Based on the first and second factors discussed previously, you will need to decide which of the two supported hardware RAID levels to implement:

- **RAID Level-0 = Striped Disk Array Without Fault Tolerance (IS Volume)**. Note that in the LSI Logic Configuration Utility, RAID **Level-0** is known in the BIOS as **IS Volume**.
- **RAID Level-1 = Mirroring (IM Volume)**. Note that in the LSI Logic Configuration Utility, RAID **Level-1** is known in the BIOS as **IM Volume**.

Note – **IS Volume** = Integrated Striped Volume. **IM Volume** = Integrated Mirroring Volume.

Configure Hardware RAID (Optional)

The following procedure describes how to configure hardware RAID on an unpartitioned drive *before* installing an operating system on a Sun Blade server module.

To simplify these instructions, the following procedure describes how to create a Level-1 hardware RAID configuration. Configuring a Level-0 hardware RAID configuration is similar.

To perform this procedure, you will use the LSI Logic MPT Setup Utility. In the LSI Logic Configuration Utility, RAID **Level-1** is known as **IM Volume**; RAID **Level-0** is known as **IS Volume**.

Prerequisites

Before you can configure hardware RAID, you must have completed the following pre-installations task:

- **Removed Solaris**. If Solaris was installed on the hard disk drive, you should remove it prior to configuring the hardware RAID. For more information about removing Solaris, consult the Solaris product documentation.

- **Remove Windows Server**. If Windows Server was installed on the hard disk drive, you should remove it prior to configuring the hardware RAID. For more information about removing Windows Server 2003, consult Microsoft's Windows Server 2003 product documentation.
- **Established Access to a Console**. For more information about console options, see "Console Options" on page 320.

▼ Configure Hardware RAID

1. **Reset the Sun Blade server module, for example:**

    ■ From the ILOM web interface, select `Reset` on the Remote Power Control tab.

    or

    ■ Press the Power button (momentary, 1 second) on the front panel of the server module to turn off the server module, then press the Power button (momentary, 1 second) to turn on the server module.

    The BIOS screen appears. Watch for the LSI Logic Corp. screen

    Watch for the prompt to press Ctrl-C.

2. **In the BIOS screen showing the LSI Logic Corp. message, press Ctrl-C to start the LSI Logic Configuration Utility.**

    A message appears that the LSI Logic Configuration Utility is being invoked, then the LSI Logic MPT Setup Utility screen appears displaying the adapters.

3. **In the adapter list, select the** `SAS1064` **adapter and press Enter.**


```
LSI Logic MPT Setup Utility        v6.04.07.00 (2005.11.03)
Adapter List  Global Properties
Adapter     PCI  PCI  PCI  PCI  FW Revision        Status    Boot
            Bus  Dev  Fnc  Slot                              Order
SAS1064     01   01   00   00   1.08.04.00-IR      Enabled



















Esc = Exit Menu        F1/Shift+1 = Help
Alt+N = Global Properties  -/+ = Alter Boot Order  Ins/Del = Alter Boot List
```
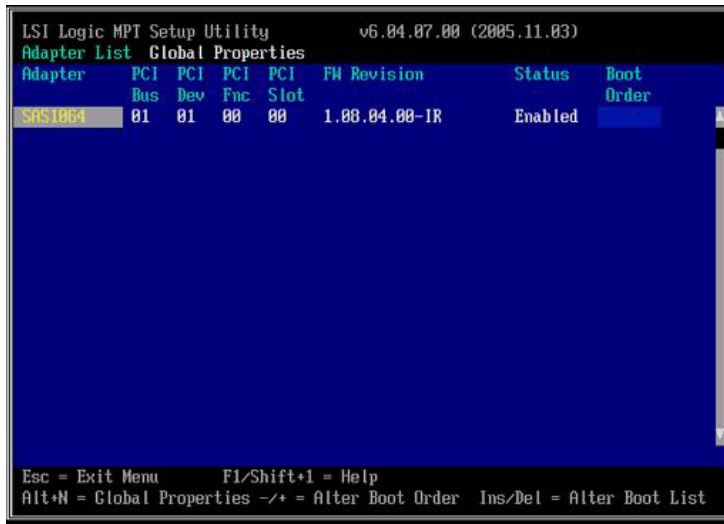
The Adapter Properties menu appears.

4. **In the Adapter Properties menu, select** `RAID Properties` **and press Enter.**


```
LSI Logic MPT Setup Utility        v6.04.07.00 (2005.11.03)
Adapter Properties -- SAS1064

          Adapter                    SAS1064
          PCI Slot                   00
          PCI Address(Bus/Dev/Func)  01:01:00
          MPT Firmware Revision      1.08.04.00-IR
          SAS Address                5000000E:00000000
          Status                     Enabled
          Boot Order
          Boot Support               [Enabled BIOS & OS]

          RAID Properties

          SAS Topology

          Advanced Adapter Properties



Esc = Exit Menu        F1/Shift+1 = Help
Enter = Select Item    -/+ = Change Item
```

The Select New Array Type menu appears.

5. **In the Select New Array Type menu, select** `Create IM Volume` **and press Enter.**
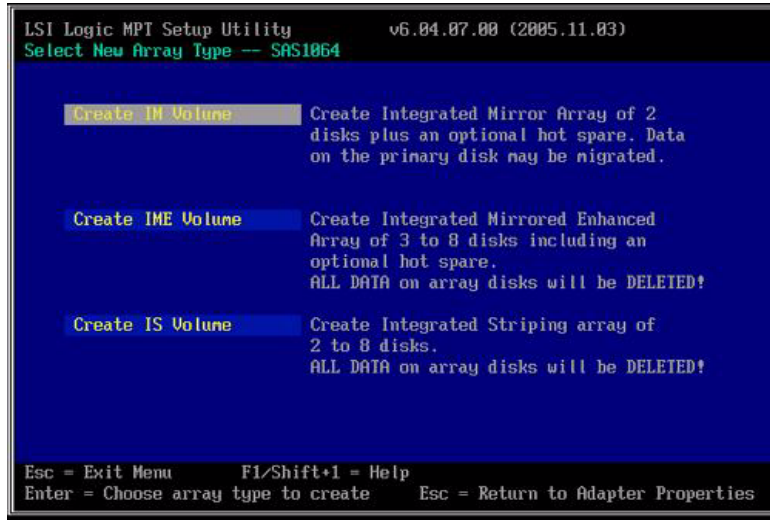
The LSI Logic MPT Setup Utility - Create New Array menu appears.

6. **In the Create New Array menu, select** `Slot NUM 0 - RAID DISK NO` **by moving the right arrow key over the** `RAID Disk` **column, then press the spacebar to select the** `RAID Disk 0` **for the array.**
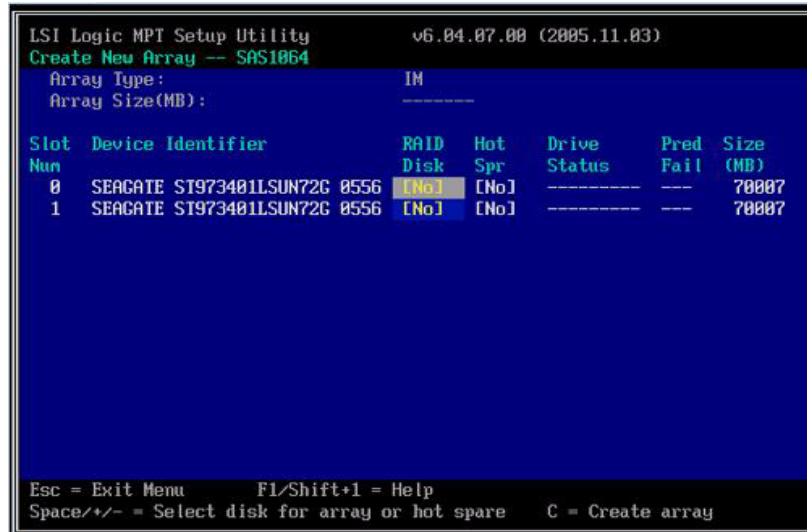
The Create New Array options menu appears.

7. **In the Create New Array options menu, press D to overwrite any existing data.**

A warning message may appear stating that data found will be lost.

8. **If the Warning screen appears, press the spacebar to continue.**

The LSI Logic MPT Setup Utility - Create New Array menu appears, showing RAID Disk 0 as the primary.

9. **In the Create New Array menu, select the column for** `Slot NUM 1- RAID DISK` **(as shown in the following screen) and press the spacebar to select** `RAID Disk 1` **for the array.**

```
LSI Logic MPT Setup Utility        v6.04.07.00 (2005.11.03)
Create New Array -- SAS1064
   Array Type:                    IM
   Array Size(MB):                --------

Slot   Device Identifier          RAID   Hot   Drive      Pred  Size
Num                               Disk   Spr   Status     Fail  (MB)
   0    ATA     FUJITSU MHT2040BB04C  [Yes]  [No]  Primary    ---   38154
   1    ATA     FUJITSU MHT2040BB04C  [No]   [No]  ---------  ---   38154




Esc = Exit Menu        F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare     C = Create array
```

The Create New Array warning screen *might* appear.

10. **If the Create New Array Warning screen appears, press the spacebar to continue.**

```
LSI Logic MPT Setup Utility        v6.04.07.00 (2005.11.03)
   Create New Array -- SAS1064

WARNING! Data was found on the selected disk, this data will be lost
when the array is created!

Choose Discard configuration or Cancel Exit on the next screen to abort.




Esc = Exit Menu        F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare     C = Create array
```

11. **In the Create New Array, press C to create the array.**

Note – The LSI Logic MPT Setup Utility - Create New Array menu appears showing **RAID Disk 0** as the **Primary** and **RAID Disk 1** as the **Secondary**.

The Save Changes menu appears.

12. **In the Save Changes menu, select** `Save Changes and Exit this menu` **then press Enter.**

The following message appears `Processing may take a minute`

The Adapter Properties menu appears.

13. **In the Adapter Properties menu, press Escape (Esc).**

The Adapter List menu appears.

14. **In the Adapter List menu, press Escape (Esc).**

    The LSI Logic MPT Exit menu appears.

15. **In the LSI Logic MPT Exit menu, select** `Exit the Configuration Utility and Reboot` **then press Enter.**

    ```
    LSI Logic MPT Setup Utility          v6.04.07.00 (2005.11.03)




                    Are you sure you want to exit?
                    Cancel Exit
                    Save changes and reboot.
                    Discard changes and reboot.
                    Exit the Configuration Utility and Reboot


    Esc = Exit Menu        F1/Shift+1 = Help
    ```
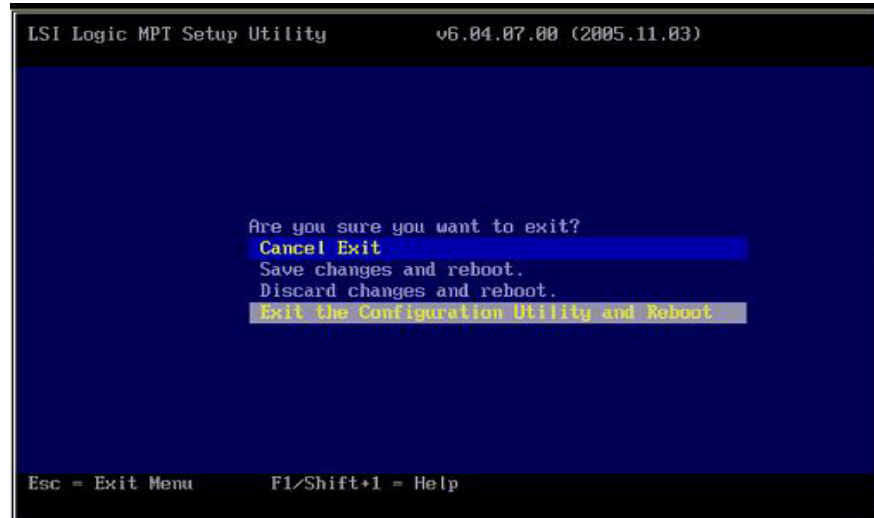
    After the system reboots, the System BIOS will detect a change in the Boot Device Priority List and display a message notifying you that the list of boot devices has changed.

16. **After completing the procedure, verify that the BIOS Boot Device Priority List is correct.**

    For Solaris installations, see "View or Edit BIOS Settings for New Installations" on page 175. For Windows installations, see "Configure BIOS Settings for New Installations" on page 214. For Linux installations, see "View or Edit BIOS Settings for New Installs" on page 260.

Sun ILOM Remote Console

This appendix introduces the Sun ILOM Remote Console features and explains how to launch and configure the Sun ILOM Remote Console application.

For more information, refer to the following sections:

- "Sun ILOM Remote Console Overview" on page 335
- "Launch and Configure ILOM for Remote Management" on page 336
- "Launch and Configure Sun ILOM Remote Console for Remote x64 Server Management" on page 339

Sun ILOM Remote Console Overview

The Sun ILOM Remote Console is a Java application that you can launch from the ILOM web interface. When you use the Sun ILOM Remote Console, you can remotely redirect and control the following devices on a remote x64 host server:

- Keyboard
- Mouse
- Video console display
- Storage devices or images (CD/DVD, floppy device)

The Sun ILOM Remote Console enables the devices on your local client to behave as if they were directly attached to the remote host server. For instance, the redirection functionality, using a network connection to the remote host server, enables you to do the following:

- Install software from your local media drive to a remote host server.
- Run command-line utilities on a remote host server from a local client.
- Access and run GUI-based programs on a remote host server from a local client.

- Remotely configure x64 processor-based server features from a local client.
- Remotely manage x64 processor-based server policies from a local client.
- Remotely monitor x64 processor-based server elements from a local client.
- Perform almost any x64 processor-based software task from a local client that you normally could perform while sitting at a remote host server.

Installation Requirements

The Sun ILOM Remote Console does not require you to install any additional hardware or software. It is built into the ILOM software. However, to run the Sun ILOM Remote Console, you must have the following software installed on your local client:

- **Web browser** – Supported browsers include: Internet Explorer 6.0 or later; Mozilla 1.7.5 or later; Mozilla Fire Fox 1.0 or later.
- **JRE 1.5 or higher (Java 5.0 or higher)** – To download the Java 1.5 runtime environment, see http://java.com.

Launch and Configure ILOM for Remote Management

Prior to launching the Sun ILOM Remote Console, you must launch the ILOM web interface and configure ILOM for remote management.

- **Connect to the ILOM web interface** – You must connect to the ILOM web interface of the server (SP or CMM) that you want to remotely manage. For instructions, see "Connect to the ILOM Web Interface" on page 337.
- **Configure ILOM remote control settings** – Prior to remotely managing a Sun x64 server using the Sun ILOM Remote Console, you must initially configure ILOM settings for remote management: *console redirectio*n, *supported mouse mode*, *remote host power states*, as well as *start-up PC-Check diagnostic tests*. For more information, see "Configure ILOM Remote Control Settings Using the Web Interface" on page 337.

Note – Typically you will set up the remote management control settings once in ILOM with the exception of the remote host power states.

▼ Connect to the ILOM Web Interface

Follow these steps to connect to the ILOM web interface:

1. **Open a web browser and specify the IP address of an x64 server SP or x64 CMM that you want to remotely manage, then press Enter.**

   The ILOM Login page appears.

2. **In the ILOM Login page, enter the user name and password of a valid Administrator role account, then press Enter.**

Tip – The preconfigured Administrator role account shipped with ILOM is `root/`
changeme. For additional information about this preconfigured account, see "About the Preconfigured ILOM Administrator Account" on page 122.

▼ Configure ILOM Remote Control Settings Using the Web Interface

Prerequisite:

- Established connection to the remote host server ILOM web interface (SP or CMM). For instructions, see "Connect to the ILOM Web Interface" on page 337.

Follow these steps to configure ILOM settings for remote management:

1. **In the CMM or SP ILOM web interface, click the Remote Control tab.**

   - **For the SP ILOM web interface**. The Remote Control page appears displaying four sub-tabs: *Redirection*, *Remote Power Control*, *Mouse Mode Settings*, and *Diagnostics*.

   - **For the CMM ILOM web interface**. The Remote Control page appears displaying two sub-tabs: *Redirection* and *Remote Power Control*.

Note – Alternatively, you can configure the remote control settings for each server SP associated with the CMM. To access the remote control settings for other server SPs listed in the CMM ILOM web interface, click the server SP in the left frame of the page, then click the Remote Control tab in the right frame of the page.

---

2. In the Remote Control page, set the following remote control settings.

Console Redirection Settings	Click the Redirection tab and select one of the following console color redirection options: • **8-bit.** Select 8-bit redirection for slower network connections. • **16-bit.** Select 16-bit redirection for faster network connections.
Mouse Mode Settings *(SP setting only)*	Click the Mouse Mode Settings tab and select one of the following mouse mode settings: • **Absolute.** Select Absolute Mouse Mode for best performance when you are using Solaris or Windows operating systems. Absolute is the default. • **Relative.** Select Relative Mouse Mode when you are using a Linux operating system. Note that not all Linux operating systems support Absolute mode.
Power State Settings	Click the Remote Power Control tab to select one of the following host server power states: • **Immediate Power Off.** Select Immediate Power Off to immediately turn off the power to the remote host server. • **Graceful Shutdown and Power Off.** Select Graceful Shutdown and Power Off to attempt to shut down the OS gracefully prior to powering off the remote host server. • **Power On.** Select Power On to turn on full power to the remote host server. Power On is the default. • **Power Cycle.** Select Power Cycle to immediately turn off the power on the remote host server, then apply full power to the remote host server. • **Reset.** Select Reset to immediately reboot the remote host server.
PC-Check Diagnostic Settings *(SP setting only)* **Note:** The PC-Check setting is only supported on Sun Blade 8000 Series systems.	Click the Diagnostics tab to enable or disable the following PC-Check diagnostic settings: • **Disabled.** Select Disabled if you do not want to run PC-Check diagnostic tests when starting a remote host server. • **Enabled.** Select Enabled if you want to run basic PC-Check diagnostic tests upon start-up of the remote host server. These basic diagnostic tests typically take 3 minutes to complete. • **Extended.** Select Extended if you want to run extended PC-Check diagnostic tests upon start-up of the remote host server. These extended diagnostic tests typically take 30 minutes to complete.

Launch and Configure Sun ILOM Remote Console for Remote x64 Server Management

To manage an x64 server remotely, you must launch the Sun ILOM Remote Console and configure the console features, as needed, for remote management. For more information, see these procedures:

- "Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 339
- "Add a New Server Session" on page 340
- "Start, Stop, or Restart Device Redirection" on page 341
- "Redirect Keyboard and Mouse Devices" on page 341
- "Control Keyboard Modes and Key Send Options" on page 342
- "Redirect Storage Devices" on page 343
- "Start, Stop, or Restart Device Redirection" on page 341
- "Exit the Sun ILOM Remote Console" on page 344

▼ Launch the Sun ILOM Remote Console Using the ILOM Web Interface

Prerequisites:

- Established connection to the ILOM web interface (SP or CMM). For instructions, see "Connect to the ILOM Web Interface" on page 337.
- Configured ILOM Remote Control Settings. For instructions, see "Configure ILOM Remote Control Settings Using the Web Interface" on page 337.

To launch the Sun ILOM Remote Console using the ILOM web interface, follow these steps:

1. **In the ILOM web interface for either a server SP or CMM SP, click the Remote Control tab.**

   The Remote Console page appears.

2. **In the Remote Console page, click the Redirection tab.**

   The Redirection page appears.

3. In the Redirection page, click Launch Redirection.

A certificate warning message might appear stating that the name of the site does not match the name on the certificate. If this message appears, click Run to continue.

The Sun ILOM Remote Console window appears. If you connected to an x64 server SP then one server session tab appears. If you connected to an x64 CMM then multiple server session tabs could appear (one tab for each server in the chassis).

Note – If applicable, you can alternatively launch the Sun ILOM Remote Console for each server SP listed in the CMM ILOM web interface. To launch the Sun ILOM Remote Console for a server associated with a CMM, click the server SP in left frame of the page, then click Remote Console --> Redirection --> Launch Redirection.

▼ Add a New Server Session

Prerequisite:

■ Established connection to the Sun ILOM Remote Console. For instructions, see "Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 339.

Follow these steps to add a new server session to the ILOM Remote Console:

1. In the Sun ILOM Remote Console window, select Redirection --> New Session.

The New Session Creation dialog appears.

2. In the New Session Creation dialog, type the IP address of a remote host x64 server SP, then click OK.

The Login dialog appears.

3. In the Login dialog, type an Administrator account user name and password.

A session tab for the newly added remote host server appears in the tab set of the Sun ILOM Remote Console.

▼ Start, Stop, or Restart Device Redirection

Prerequisite:

■ Established connection to the Sun ILOM Remote Console. For instructions, see "Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 339.

Follow these steps to start, stop, or restart the redirection of devices:

1. **In the Sun ILOM Remote Console window, click the Redirection menu.**

2. **In the Redirection menu, specify, if necessary, any of the following redirection options:**

Start Redirection	Select Start Redirection to enable redirection of devices. Start Redirection is enabled by default.
Restart Redirection	Select Restart Redirection to stop and start redirection of devices. Typically, this option is used when a valid redirection is still established.
Stop Redirection	Select Stop Redirection to disable the redirection of devices

A confirmation message appears confirming that you want to change the redirection setting.

3. **In the Confirmation message, click Yes to proceed or No to cancel the operation.**

▼ Redirect Keyboard and Mouse Devices

Prerequisite:

■ Established connection to the Sun ILOM Remote Console. For instructions, see "Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 339.

Follow these steps to redirect a remote host server keyboard and mouse to your local client:

1. **In the Sun ILOM Remote Console window, do the following:**

   a. **Select Devices --> Mouse to enable or disable mouse redirection.**

      Enable (checkmark) is the default.

   b. **Select Devices --> Keyboard to enable or disable keyboard redirection.**

      Enable (checkmark) is the default.

▼ Control Keyboard Modes and Key Send Options

Prerequisite:

- Established connection to the Sun ILOM Remote Console. For instructions, see "Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 339.

Follow these steps to control keyboard modes and individual key send options:

1. **In the Sun ILOM Remote Console window, click the Keyboard menu.**

2. **In the Keyboard menu, specify, if necessary, any of the following keyboard settings.**

Auto-keybreak Mode	Select Auto-keybreak Mode to automatically send a keybreak after every key press. Use this option to help resolve keyboard problems over slow network connections. The Auto-keybreak Mode is enabled by default.
Stateful Key Locking	Select Stateful Key Locking if your client uses stateful key locking (Solaris with XSun, OSX). Stateful Key Locking applies to these three lock keys: Caps Lock, Num Lock, and Scroll Lock.
Left Alt Key	Select the Left Alt Key to toggle the left Alt Key on or off.
Right Alt Key	Select Right Alt Key to toggle the right Alt Key on or off for non-US keyboards. When enabled, this option allows you to type the third key character on a key. This keyboard option provides the same capabilities of an Alt Graph key.
F10	Select F10 to apply the F10 function key (typically used in BIOS).
Control Alt Delete	Select Control Alt Delete to send the Control-Alt-Delete sequence.
Control Space	Select Control Space to send a Control-Space sequence to enable input on remote host.
Caps Lock	Select Caps Lock to send the Caps Lock key to enable input with Russian and Greek keyboards.

▼ Redirect Storage Devices

Prerequisites:

- Established connection to the Sun ILOM Remote Console. For instructions, see "Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 339.
- For Solaris client systems, you must perform the following steps prior to redirecting storage devices:
    - If Volume Manager is enabled, you will need to disable this feature.
    - Assign root privilege to the processor that is running the Sun ILOM Remote Console by entering these commands:

      `su to root`

      `ppriv -s +file_dac_read pid_javarconsole`

- Refer to "CD and Diskette Redirection Operation Scenarios" on page 345 for more information.

Follow these steps to redirect a storage device or ISO image:

1. **In the Sun ILOM Remote Console window, select the Devices menu.**

2. **In the Devices menu, do the following:**

    a. **Enable the appropriate storage device or image setting.**

CD-ROM	Select CD-ROM to enable the local CD device. This option causes your local CD-ROM drive to behave as though it were a CD device directly attached to the remote host server.
Floppy	Select Floppy to enable the local floppy device. This option causes your local floppy drive to behave as though it were a floppy device directly attached to the remote host server.
CD-ROM Image	Select CD-ROM Image to specify the location of a CD-ROM image on your local client or network share.
Floppy Image	Select Floppy Image to specify the location of a floppy image on your local client or network share.

Tip – There are only two choices for CD/DVD redirection. You can choose to either redirect a CD-ROM drive or redirect a CD-ROM image.

Tip – If you are installing software from distribution CD/DVD, insert the CD/DVD into the redirected drive and select CD-ROM drive.

> **Tip –** If you are installing software from an ISO image, place the ISO image on your local client or network shared file system then select CD-ROM image.

A dialog appears prompting you to specify a storage drive location or image file location.

    b. To specify the storage drive location or image file location, do one of the following:

- In the Drive Selection dialog, select or type a drive location, then click OK.

  or

- In the File Open dialog, browser to the location of the image, then click OK.

3. To reuse these storage settings on the host at a later time, click Devices --> Save as Host Default.

▼ Exit the Sun ILOM Remote Console

Follow these steps to exit the Sun ILOM Remote Console and close any remote server sessions that might have remained opened:

1. In the Sun ILOM Remote Console window, select the Redirection menu.

2. In the Redirection menu, select Quit.

CD and Diskette Redirection Operation Scenarios

Use the following information to help identify different case scenarios in which the CD drive or diskette drive redirection functionality might behave during a Remote Console session.

Case	Status	DVD As Seen by Remote Host	Diskette As Seen by Remote Host
1	Remote Console application not started, or Remote Console started but DVD/diskette redirection not started	DVD device present. No medium indication is sent to the host from ILOM when the hosts asks.	Diskette device present. No medium indication is sent to the host from ILOM when the host asks.
2	Remote Console application started with no medium present in the drive	DVD device present. When the host asks, which may be automatic or when you access the device on the host, the remote client sends a status message. In this case, since there is no medium, the status is no medium.	Diskette device present. When the host asks (for example, you double-click on a drive), the remote client sends a status message. In this case since there is no medium, the status is no medium.
3	Remote Console application started with no medium, then medium is inserted	DVD device present. When the hosts asks (automatic or manual), the remote client sends a status message as medium present and also indicates the medium change.	Diskette device present. When the host asks (manual), the remote client sends a status message as medium present and also indicates the medium change.
4	Remote Console application started with medium inserted	Same as case 3.	Same as case 3.
5	Remote Console application started with medium present, then medium is removed	Next command from the host will get a status message indicating medium not present.	Next command from the host will get a status message indicating medium not present.
6	Remote Console application started with image redirection	Same as case 3.	Same as case 3.

Case	Status	DVD As Seen by Remote Host	Diskette As Seen by Remote Host
7	Remote Console application started with image, but redirection is stopped (which is the only way to stop ISO redirection)	Driver knows DVD redirection stopped, so it sends a medium absent status on the next host query.	Driver knows DVD redirection stopped so it sends a medium absent status on the next diskette query.
8	Network failure	The software has a keep alive mechanism. The software will detect keep-alive failure since there is no communication and will close the socket, assuming the client is unresponsive. Driver will send a no medium status to the host.	The software has a keep alive mechanism. The software will detect unresponsive client and close the socket, as well as indicate to the driver that the remote connection went away. Driver will send a no medium status to the host.
9	Client crashes	Same as case 8.	Same as case 8.

Guidelines for Installing an Operating System to an FC SAN Device

This appendix presents guidelines you should consider prior to installing an operating system to a Fibre Channel (FC) Storage Area Network (SAN) device. Specifically, it identifies the steps you must take to configure an FC SAN device as an installation target.

Topics discussed in this appendix include:

- "Before You Begin" on page 347
- "QLogic FC EM Configuration Considerations and Procedure" on page 349
- "Emulex FC EM Configuration Considerations and Procedure" on page 360
- "Special Considerations for Windows Server 2003 Installation to FC SAN Device" on page 367

Before You Begin

The guidelines presented in this appendix assume you have already:

- Enabled the Boot Option ROM PCIe I/O slot in the BIOS Utility.
- Properly installed FC EM or NEM in the Sun Blade 8000 or 8000 P Chassis. For details, see "Add PCIe ExpressModule" on page 62 or "Add Network Express Module" on page 58.

Note – FC EMs are supported only in the Sun Blade 8000 Chassis.

- Verified that the FC EM or NEM is securely installed in the chassis and power has been applied.
- Observed the FC EM or NEM operating state. Each port has a corresponding set of LEDs that provide a visual indication of the operating state. The following tables summarize the LED operating state definitions for the QLogic and Emulex EMs.

Sun PCIe Dual-Port FC EM from QLogic - LED State Definitions

Hardware State	Yellow LED (4 Gbps	Green LED (2 Gbps)	Amber LED (1 Gbps)	Comments
Power off	Off	Off	Off	Card does not have power.
Power on (before firmware initialization)	On	On	On	On continuously
Power on (after firmware initialization)	Flash	Flash	Flash	All at the same time
Firmware Fault	Flash in sequence	Flash in sequence	Flash in sequence	Flashing in sequence of Yellow-->Green-->Amber
1 Gbps Link Up/Active	Off	Off	On/Flash	On for link up Flash if I/O activity
2 Gbps Link Up/Active	Off	On/Flash	Off	On for link up Flash if I/O activity
4 Gbps Link Up/Active	On/Flash	Off	Off	On for link up Flash if I/O activity

Sun StorageTek Dual-Port FC EM (or NEM) from Emulex - LED State Definitions

Green LED	Yellow LED	Hardware State
Off	Off	Wake-Up Failure (Failed board)
Off	On	POST failure (Failed board)
Off	Slow Blink	Wake-Up Failure Monitor
Off	Fast Blink	Failure in POST
Off	Flashing	POST Processing in Progress
On	Off	Failure While Functioning
On	On	Failure While Functioning

Green LED	Yellow LED	Hardware State
On	1 Fast Blink	1Gb Link Rate - Normal, link up
On'	2 Fast Blink	2Gb Link Rate - Normal, link up
On	3 Fast Blink	4Gb Link Rate - Normal, link up
Slow Blink	Off	Normal - Link Down
Slow Blink	On	Not Defined
Slow Blink	Slow blink	Off-line for Download
Slow Blink	Fast Blink	Restricted Off-line Mode (waiting for Restart)
Slow Blink	Flashing	Restricted Off-line Mode, test active

QLogic FC EM Configuration Considerations and Procedure

Consider the following information when configuring a QLogic FC EM as an installation target.

- The SAN must be installed and configured to make the storage visible to the host. After the SAN is configured and attached to the Host Bus Adapter (HBA) port on the FC EM, the QLogic ROM BIOS utility, Fast!UTIL, includes a feature to scan for targets to verify the link. Verify that the World Wide Name (WWN) is visible to the switch (if used) and is part of a valid zone. Some RAID arrays require permission settings to allow access. Usually, the WWN is required to set proper permissions. Check the storage device user documentation for the switch and RAID array for the configuration details.

- The storage system must have at least one available LUN for booting the server(s). The storage device will typically have a logical LUN associated with a specific drive or group of drives configured as a RAID. Most operating systems require that this LUN *must* be LUN 0. Some arrays also require that the "host type" is defined for the OS (Solaris, Linux, or Windows.) This LUN configuration must be confirmed in the user documentation for the SAN storage array.

  Also, the storage array must be configured to allow the server exclusive access to the LUN; access is typically assigned via the FC HBA WWN on the storage array. No other server may view or have access this LUN.

- Switch zoning is often used to keep hosts and LUNs separated from each other. You can use a web-based GUI or CLI application to verify that:

- The WWN for the adapter port is attached to the switch.
- The WWN for the RAID storage array is attached to the switch.
- The WWN for the adapter and RAID storage array are visible (or logged in) at the connected switch port and are part of a valid zone as required.

■ Only one HBA port can be connected to the SAN during the OS installation. Multiple ports attached to the SAN can cause data corruption and will often cause failures. The OS may view these additional paths to the storage as separate storage devices.

With the appropriate software, additional storage paths (controller ports/HBA connections) can be added after the multipath software has been installed. This task is done after the initial OS installation to the SAN. Refer to the multipath software documentation for further details.

The QLogic adapter includes a setting to enable **Spinup Delay**. By default, this setting should be **disabled**. It is best to ensure that the RAID storage array has completed its initialization and is ready for access before booting the server. If the server scans the FC bus before the array has completed initialization, it may fail to detect the boot device. Depending on the number and types of LUNs available, the delay across the fabric could be several minutes. If so, the Spinup Delay may need to be **enabled** to allow the boot device time to initialize.

■ Configuring the LUN for SAN boot generally requires configuration on the RAID or storage array as well as the HBA. In order to configure the RAID array permissions and configure a FC switch, it may be required to know the WWN. This can be found by booting the Sun Blade server module and entering the QLogic Fast!UTIL software using CTRL-Q when prompted.

▼ Configure the QLogic FC EM Host Bus Adapter

To select and configure the Adapter port connected to the Storage Area Network, perform the following steps:

Note – The EM has two ports. Each port will be listed as a single `Adapter` in the system. Device "1" is the lower EM port and Device "0" is the upper EM port.

---

1. **Reset the Sun Blade server module.**

   Watch for the QLogic HBA banner message to appear in the BIOS screen.

2. **Press Ctrl-Q when the QLogic HBA banner message appears.**

   The QLogic Fast!UTIL - Select Host Adapter menu appears.

3. **In the Select Host Adapter menu, use the up or down arrow key to select the adapter you want to view and configure, then press Enter.**
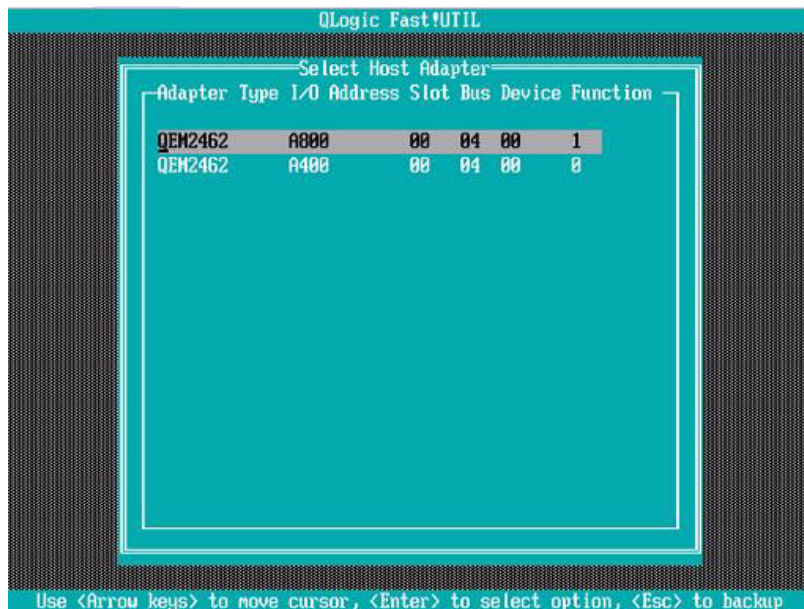
The Fast!Util Options menu appears.

4. **In the Fast!Util Options menu, use the up or down arrow key to select Configuration Settings then press Enter.**
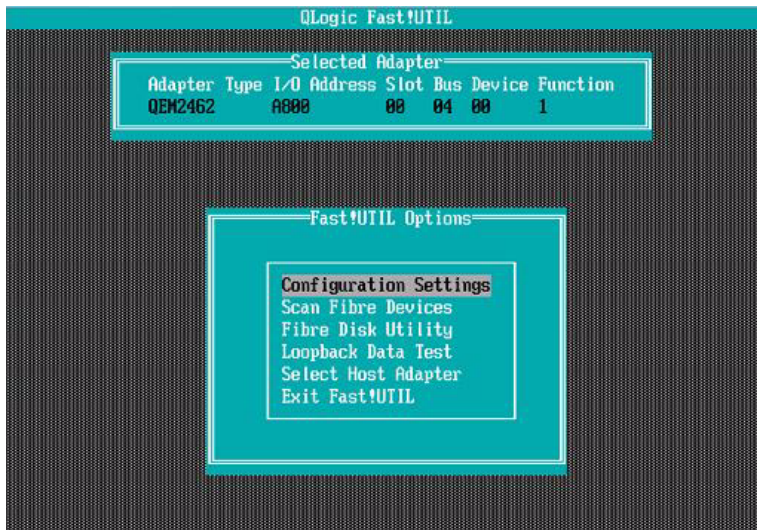
The Configuration Settings menu appears.

5. **In the Configuration Settings menu, use the up or down arrow key to select Adapter Settings, then press Enter.**
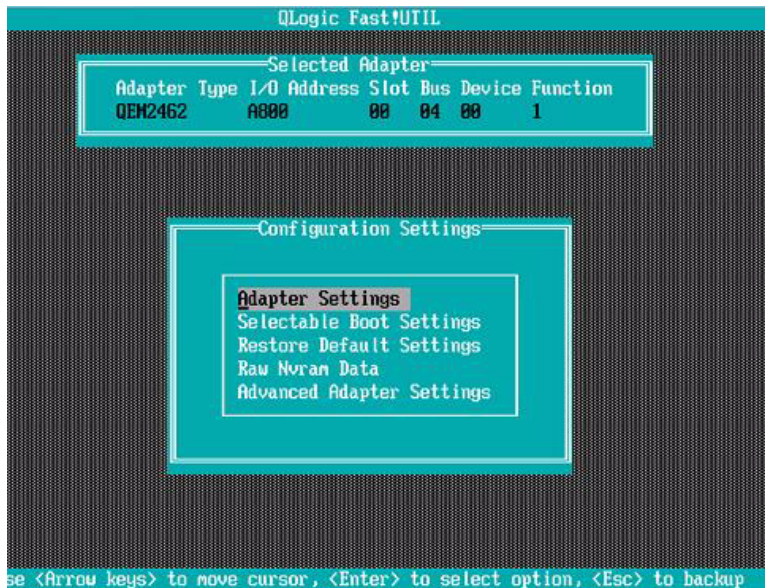
The Adapter Settings menu appears.

6. **In the Adapter Settings menu, use the up or down arrow key to change the Host Adapter BIOS setting to** `Enabled`**, then press Enter.**
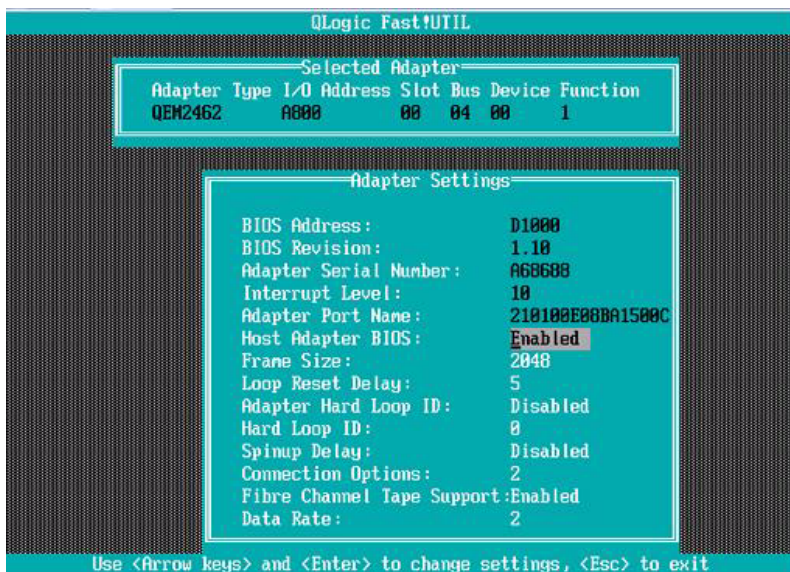
The Configuration Settings menu appears.

7. **Press ESC twice to exit the Configuration Settings menu and return to the Configuration Settings Modified menu.**

The Configuration Settings Modified menu appears.

8. **In the Configuration Settings Modified menu, select** `Save Changes` **and press Enter.**

The Fast!UTIL Options menu appears.

9. **In the Fast!UTIL Options menu, use the up or down arrow key to select** Scan
   Fibre Device**, then press Enter.**
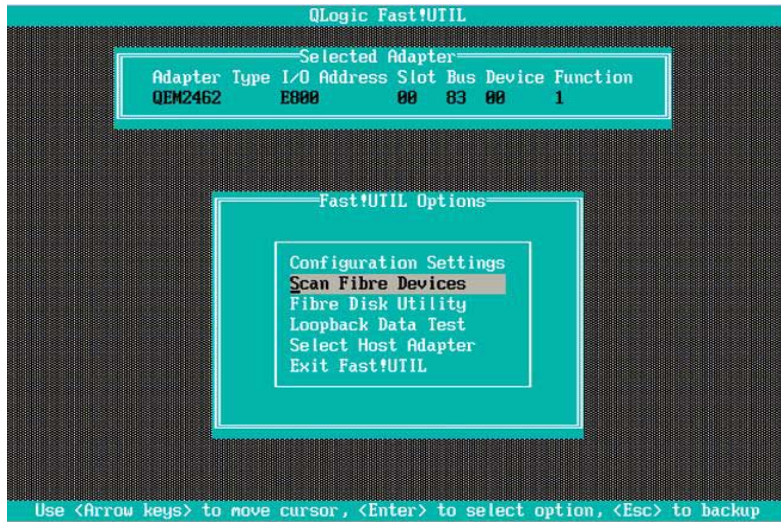
The system verifies which FC ports are active. The Scan Fibre Channel Loop screen
appears listing the Fibre Channel devices connected to the EMs.

10. **In the Scan Fibre Channel Loop screen, record vendor specific information and
    port WWN for future reference. The Port Name Column identifies the WWN for
    each discovered port.**
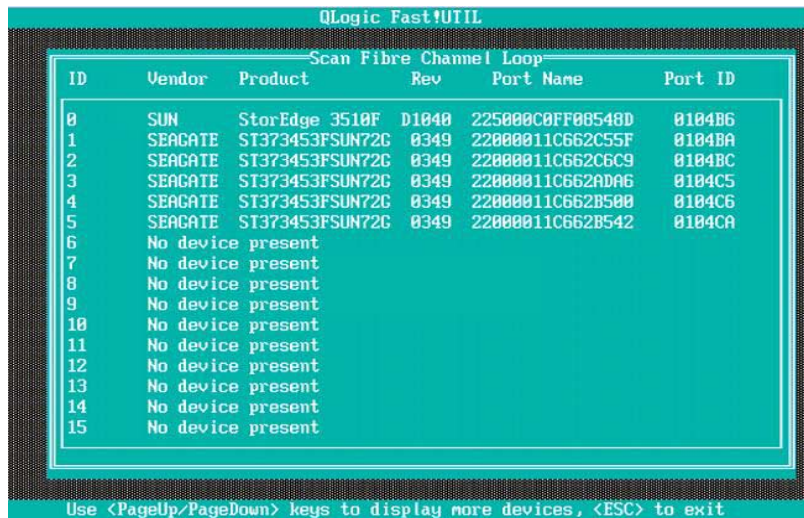
11. **Press Esc to exit the Scan Fibre Channel Loop screen.**

    The Fast!UTIL Options menu appears.

12. **In the Fast!UTiL Options menu, select** `Configuration Settings`**, then press Enter.**

    The Configuration Settings menu appears.

13. **In the Configuration Settings menu, select** `Selectable Boot Settings`**, then press Enter.**
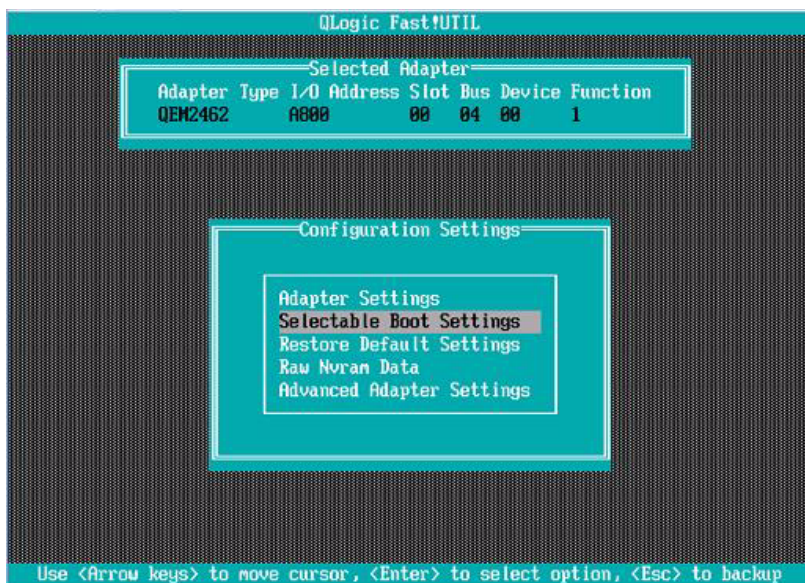
The Selectable Boot Settings screen appears.

14. **In the Selectable Boot Settings screen, do the following:**

    a. **Change the Selectable Boot option to** `Enabled`.

    b. **Use the down or up arrow key to select the (Primary)** `Boot Port Name, Lun entry` **and press Enter.**
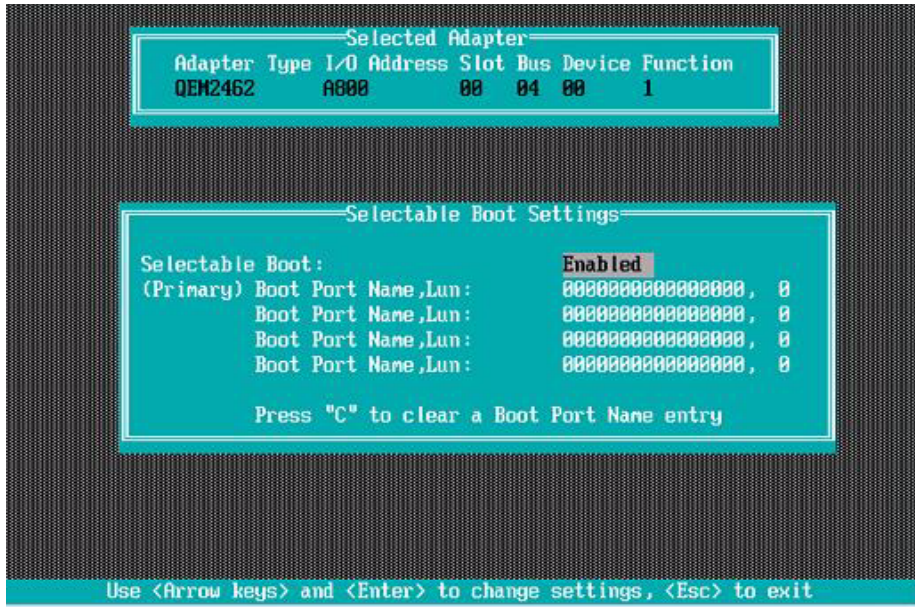
The Select Fibre Channel Device screen appears.

15. **In the Select Fibre Channel Device screen, use the up or down arrow key to select the appropriate boot device, then press Enter.**

Tip – If necessary, refer to the list of port IDs and names previously recorded in Step 10.

Tip – The WWN for the boot device is listed in the Port Name column.

```
                         QLogic Fast!UTIL

                   ═Select Fibre Channel Device═
   ID    Vendor   Product         Rev    Port Name         Port ID

   0     SEAGATE  ST336704FSUN36G  0726   21000020372AF252   0000D4
   1     SEAGATE  ST336704FSUN36G  042D   21000020372AF5A2   0000D6
   2     SEAGATE  ST336704FSUN36G  0726   2100002037E3E2CC   0000D3
   3     SEAGATE  ST336704FSUN36G  042D   210000203784110D6  0000D2
   4     SEAGATE  ST336704FSUN36G  042D   2100002037A9E894   0000D9
   5     SEAGATE  ST336704FSUN36G  042D   210000203790F24B   0000D5
   6     No device present
   7     No device present
   8     No device present
   9     No device present
   10    No device present
   11    No device present
   12    No device present
   13    No device present
   14    No device present
   15    No device present

        Use <PageUp/PageDown> keys to display more devices

Use <Arrow keys> to move cursor, <Enter> to select option, <Esc> to backup
```

The Selectable Boot Settings screen appears listing the selected boot device WWN as the primary boot device.
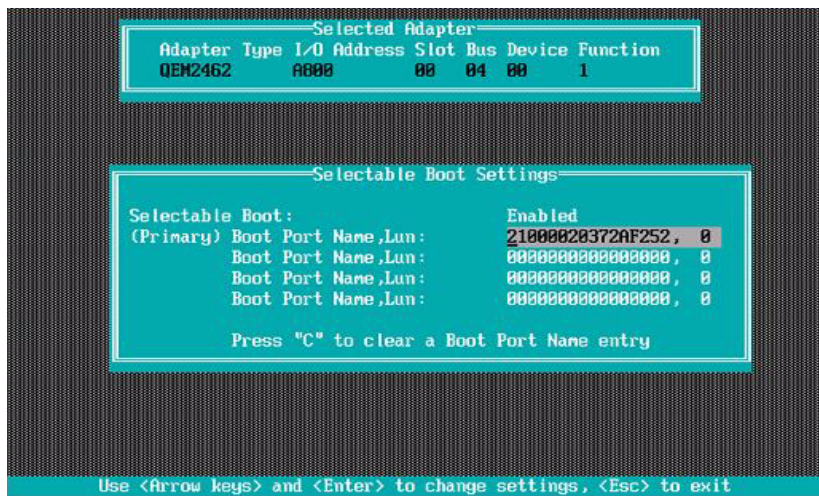
16. **Press ESC to exit the Selectable Boot Settings screen.**

    The Configuration Settings menu appears.

17. **Press ESC to exit the Configuration Settings menu.**

    The Configuration Settings Modified menu appears.

18. **In the Configuration Settings Modified menu, select** Save changes **and press Enter.**
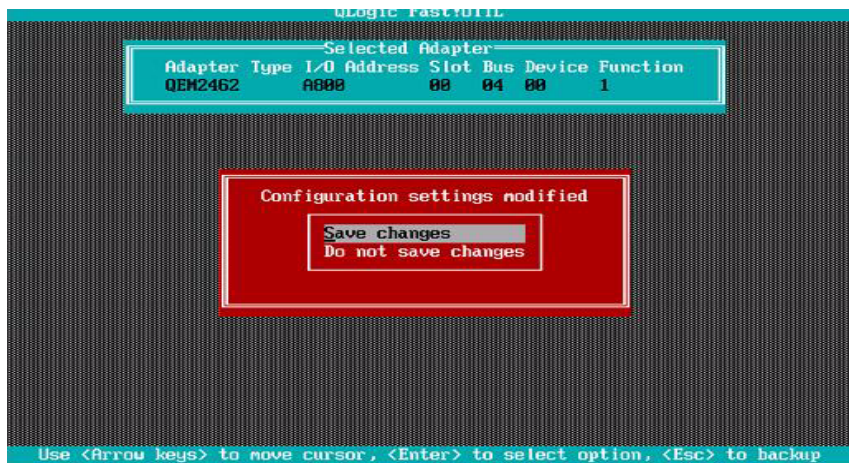
The Fast!UTIL Options menu appears.

19. In the Fast!UTIL Options menu, select `Exit Fast!UTIL` **and press Enter.**
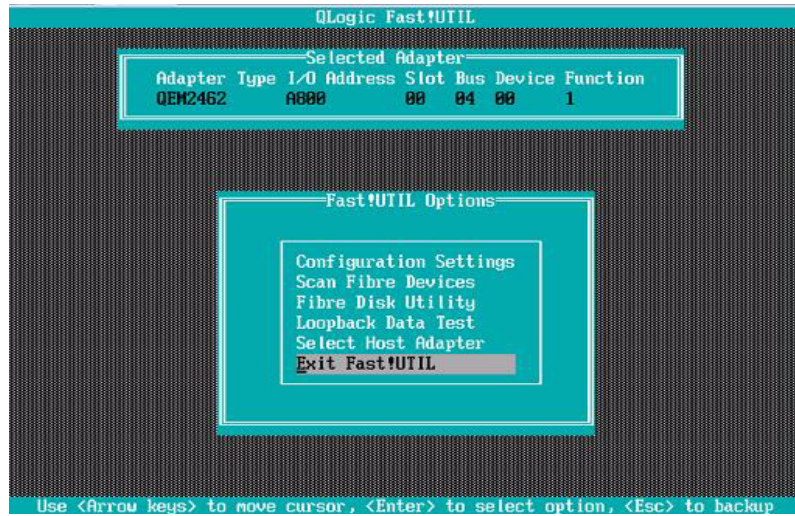
The Exit Fast!UTIL menu appears.

20. In the Exit Fast!UTIL menu, select `Reboot System` **and press Enter.**

21. After rebooting the blade, press F2 to enter the BIOS Setup Utility.

22. In the BIOS Setup utility, select the Boot menu.

The WWN for the device you recently configured appears in the Boot Device Priority list.

Emulex FC EM Configuration Considerations and Procedure

Consider the following information when configuring an Emulex FC EM as an installation target.

■ The SAN must be installed and configured to make the storage visible to the host. After the SAN is configured and attached to the Host Bus Adapter (HBA) port on the FC EM, you must use the Emulex Light Pulse BIOS Utility to enable the ROM BIOS and configure the boot device(s) as required. You will also need to verify that the World Wide Name (WWN) is visible to the switch (if used) and is part of a valid zone. Some RAID arrays require permission settings to allow access. Often, the WWN is required to set proper permissions. Check the storage device user documentation for the switch and the RAID array for the configuration details.

■ The storage system must have at least one available LUN for booting the server(s). The storage device will typically have a logical LUN associated with a specific drive or group of drives configured as a RAID. Most operating systems require that this LUN must be LUN 0. Some arrays also require that the "host type" is defined for the OS (Solaris, Linux, or Windows.) This LUN configuration must be confirmed in the user documentation for the SAN storage array.

Also, the storage array must be configured to allow the server exclusive access to the LUN; access is typically assigned via the FC HBA WWN on the storage array. No other server may view or have access to this LUN.

■ Switch zoning is often used to keep hosts and LUNs separated from each other. You can use the web-based GUI or CLI application to verify that:

   ■ The WWN for the adapter port is attached to the switch.

   ■ The WWN for the RAID storage array is attached to the switch.

   ■ The WWN for the adapter port and the RAID storage array are visible (or logged-in) at the connected switch port and are part of a valid zone as required.

■ Only one HBA port can be connected to the SAN during the OS installation. Multiple ports attached to the SAN can cause data corruption and will often cause failures. The OS may view these additional paths to the storage system as separate storage devices.

With the appropriate software, additional storage paths (controller ports/HBA connections) can be added after the multipath software has been installed. This task is done after the initial OS installation to the SAN. Refer to the OS or Emulex multipath software documentation for further details

The Emulex adapter includes a setting to enable Spinup Delay. By default, this setting should be disabled. In general, it is best to ensure that the RAID storage array has completed its initialization and is ready for access before booting the server. If the server scans the FC bus before the array has completed initialization, it may fail to detect the boot device. Depending on the number of LUNs and types available, the delay across the fabric could be several minutes. If so, the Spinup Delay may need to be enabled to allow the boot device time to initialize.

▼ Configure the Emulex FC Host Bus Adapter

To select and configure the Adapter port connected to the Storage Area Network, perform the following steps:

1. **Reset the Sun Blade server module.**

   Watch for the Emulex LightPulse x86 BIOS !!! banner to appear.

2. **Press Ctrl-E when the Emulex LightPulse x86 BIOS !!! banner appears.**

The Emulex Adapters in the System menu appears.

3. **In the Emulex Adapters in the System menu, do the following:**

● **In the Enter a Selection text field (located at bottom of screen), type the selection number that represents the SAN Device Port you want to configure, then press Enter.**

```
Emulex Light Pulse BIOS Utility, ZL1.71a0
Copyright (c) 1997-2006 Emulex. All rights reserved.


Emulex Adapters in the System:

1.  LPe11020-S:         PCI  Bus:02 Device:00 Function:01
2.  LPe11020-S:         PCI  Bus:02 Device:00 Function:00
```

The Adapter PCI BUS Device menu appears.

4. **In the Adapter PCI Bus Device menu, do the following:**

● **In the Enter a Selection text field (located at bottom of screen), type the number 2 to select the option** `Configure This Adapter's Parameters`**, then press Enter.**

```
Adapter 02:             PCI  Bus:02 Device:00 Function:00

LPe11020-S:      I/O Base: E400  Firmware Version: ZS2.50A6
Port Name: 10000000 C95B025A   Node Name: 20000000 C95B025A
Topology: Auto Topology: Loop First (Default)


1.  Configure Boot Devices
2.  Configure This Adapter's Parameters
```

The Adapter PCI Bus Device Options menu appears.

5. **In the Adapter PCI BUS Device Options menu, do the following:**

   a. **In the Enter a Selection text field, type the number 1 to select the option** `Enable or Disable BIOS`, **then press Enter.**

   ```
   Adapter 02:                PCI  Bus:02 Device:00 Function:00

   LPe11020-S:      I/O Base: E400  Firmware Version: 2S2.50A6
   Port Name: 10000000 C95B025A   Node Name: 20000000 C95B025A
   Topology: Auto Topology: Loop First (Default)


   1.  Enable or Disable BIOS
   2.  Change Default ALPA Of This Adapter
   3.  Change PLOGI Retry Timer (+Advanced Option+)
   4.  Topology Selection (+Advanced Option+)
   5.  Enable or Disable Spinup Delay (+Advanced Option+)
   6.  Auto Scan Setting (+Advanced Option+)
   7.  Enable or Disable EDD 3.0 (+Advanced Option+)
   8.  Enable or Disable Start Unit Command (+Advanced Option+)
   9.  Enable or Disable Environment Variable (+Advanced Option+)
   A.  Enable or Disable Auto Boot Sector (+Advanced Option+)
   B.  Link Speed Selection (+Advanced Option+)

    Enter a Selection: _
   ```

   A message appears prompting you to confirm your selection.

   b. **In the confirmation message, type the number 1 to confirm you want to enable BIOS.**

   A message appears stating `The BIOS is Enabled!`

   ```
   Adapter 02:                PCI  Bus:02 Device:00 Function:00




   The BIOS is Enabled!!



   Enable Press 1, Disable Press 2:_
   ```

   c. **Press ESC twice to return to the Adapter PCI Bus Device menu.**

6. **In the Adapter PCI Bus Device menu, do the following.**

   ● **In the Enter a Selection text field (located on bottom of screen), type the number 1 to select the option** `Configure Boot Devices`**, then press Enter.**

```
    Adapter 02:              PCI  Bus:02 Device:00 Function:00

    LPe11020-S:      I/O Base: E400   Firmware Version: ZS2.50A6
    Port Name: 10000000 C95B025A   Node Name: 20000000 C95B025A
    Topology: Auto Topology: Loop First (Default)


 1.  Configure Boot Devices
 2.  Configure This Adapter's Parameters
```

The List of Saved Boot Devices menu appears.

```
    Adapter 02:  S_ID: 000001     PCI  Bus:02 Device:00 Function:00


    List of Saved Boot Devices:

 1. Unused    DID:000000 WWPN:00000000 00000000 LUN:00   Primary Boot
 2. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
 3. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
 4. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
 5. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
 6. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
 7. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
 8. Unused    DID:000000 WWPN:00000000 00000000 LUN:00
```

7. **In the List of Saved Boot Devices menu, do the following:**

   a. **In the Enter a Selection text field (located at bottom of screen), type the number 1 to configure a Primary Boot device, then press Enter.**

The Adapter PCI Bus Device menu appears displaying the LUN# Device String option.

```
Adapter 02: S_ID: 000001    PCI  Bus:02 Device:00 Function:00

00. Clear selected boot entry!!
01. ALPA:E8(00) WWPN:50020F23 00005A8C LUN:00   SUN    T300         0118
```

b. **In the Adapter PCI Bus Device menu, type 01 in the Enter a Selection text field (located at bottom of screen), then press Enter.**

A pop-up menu appears prompting you to enter the two-digit LUN number.

```
ALPA:E8(00) WWPN:50020F23 00005A8C

Enter two digits of starting LUN (Hex):_

<Esc> to Previous Menu
```

c. **In the pop-up menu, type the appropriate LUN number, then press Enter.**

For example, for Windows installations the two-digit LUN number is 00.

The Adapter PCI BUS Device menu appears displaying the ID Adapter options.

8. **In the ID Adapter menu, do the following:**

a. **In the Enter Selection text field (located at bottom of screen), type the selection number of the LUN previously selected in the last step, then press Enter.**

```
Adapter 02:  S_ID: 000001    PCI  Bus:02 Device:00 Function:00

ALPA:E8 SelectID:00      WWPN:50020F23 00005A8C

01.     LUN:00              SUN     T300         0118
02.     LUN:01              SUN     T300         0118
```

A pop-up menu appears.

b. In the pop-up menu, type 1 in the Enter Selection text field, then press Enter.

```
DID:0000E8 WWPN:50020F23 00005A8C LUN:00

      1. Boot this device via WWPN
      2. Boot this device via DID

         <Esc> to Previous Menu
          Enter a Selection:
```

The Adapter - List of Saved Boot Devices menu appears with the WWN of the Boot Device selected.

```
   Adapter 02: S_ID: 000001    PCI  Bus:02 Device:00 Function:00


   List of Saved Boot Devices:

1. Used     DID:000000 WWPN:50020F23 00005A8C LUN:00  Primary Boot
2. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
3. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
4. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
5. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
6. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
7. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
8. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
```

9. **If no further devices need to be configured, press ESC to return to the previous menu and press X to exit.**

   A message appears prompting you to reboot the system for the changes to take effect.

10. **In the message text field, type Y for YES, then press Enter to reboot the system.**

```
Reboot the System to Make All the Changes to Take Effect!


 REBOOT THE SYSTEM (Y/N):_
```
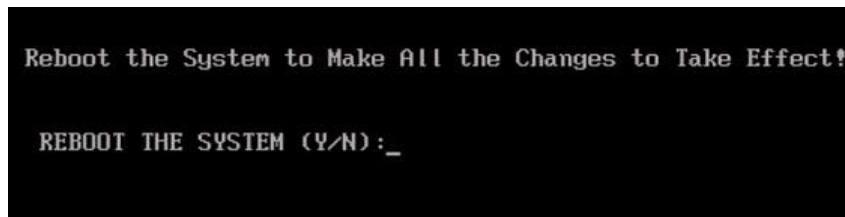
The BIOS screen appears.

11. **In the BIOS screen, press F2 to enter the BIOS Setup utility.**

12. **In the BIOS Setup utility, select the Boot menu.**

    The WWN for the device you recently configured appears in the Boot Device Priority list.

Special Considerations for Windows Server 2003 Installation to FC SAN Device

For Windows Server 2003 Operating Systems, the hosts must be segregated from each other in order to perform the installation to the FC SAN device. This is accomplished by attaching a host to the appropriate configured Fibre Channel switch or directly attaching each host to one of the storage subsystem's Fibre Channel ports.

FC-AL (Fibre Channel - Arbitrated Loop) is not recommended because it does not provide adequate segregation of the attached hosts. If the host is the only one on the loop, it will generally work.

Microsoft Windows Server 2003 software requires the RAID/storage array unit to appear as LUN 0 to the server for the boot device and it must have exclusive access to the bootable device. No other host on the SAN should be able to detect or have access to the same logical disk. LUN masking at the RAID/storage array, zoning at the switch, or some combination of the two is typical.

Installation of the QLogic System Driver

The driver for the QLogic adapter is not bundled with the current version of Windows Server 2003. The driver is available as a floppy image (SUNBLF2.IMG (32-bit) or SUNBLF3.IMG (64-bit)) on the Sun Blade 8000 Series Resource CD. When installing Windows Server 2003, you must load the QLogic driver as one of the boot devices using F6. Windows will not be able to create, modify, read, or write to any available partitions on the boot device without this driver. Once the driver has been loaded, the procedure for installing Windows Server 2003 to the SAN is identical to installing the Windows software to a local disk. Ensure that the intended target is the only attached device. This will make it much easier to identify the correct installation partition.

Installation of the Emulex System Driver

The driver for the Emulex adapter is not bundled with the current version of Windows Server 2003. The driver is available as a floppy image (SUNBLWF4.IMG (32-bit and 64-bit)) on the Sun Blade 8000 Series Resource CD. When installing Windows Server 2003, you must load the Emulex driver as one of the boot devices using F6. Windows will not be able to create, modify, read, or write to any available partitions on the boot device without this driver. Once the driver has been loaded, the procedure for installing Windows Server 2003 to the SAN is identical to installing the Windows software to a local disk. Ensure that the intended target is the only attached device. This will make it much easier to identify the correct installation partition.

Identify Network Interface Names by Logical and Physical Names for Factory-Installed Solaris

This appendix explains how to run the `ifconfig -a` command and identify the network interfaces by their logical and physical names (MAC addresses). It assumes you are referring to this appendix from either:

- Step 10 in the Procedure: "Configure Factory-Installed Solaris 10 OS via SSH" on page 152.

or

- Step 11 in the Procedure: "Configure Factory-Installed Solaris 10 OS via a Serial Port Connection" on page 157

Prerequisite

- The MAC addresses for each EM and NEM port connected to the network. These address should have been recorded previously per the "Configuration Worksheet" on page 147.

▼ Identify Network Interface Names by Logical and Physical Names

1. **Log in to the system as root and run** `ifconfig -a plumb` **in a command shell.**

   The command discovers all installed network interfaces. The shell prompt (#) appears when the discovery completes.

2. **To output a list of all Solaris named interfaces along with their physical MAC addresses, type this command at the prompt (#):**

   ```
   # ifconfig -a
   ```

   A sample `ifconfig-a` output is as follows:

   ```
   # ifconfig -a
   lo0: flags=
   2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu
   8232 index 1
               inet 127.0.0.1 netmask ff000000
   e1000g0: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500
   index 2
               inet 0.0.0.0 netmask 0
               ether 0:14:4f:c:a1:ee
   e1000g1: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500
   index 3
               inet 0.0.0.0 netmask 0
               ether 0:14:4f:c:a1:ef
   e1000g2: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500
   index 4
               inet 0.0.0.0 netmask 0
               ether 0:14:4f:c:a5:d6
   e1000g3: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500
   index 5
               inet 0.0.0.0 netmask 0
               ether 0:14:4f:c:a5:d7
   e1000g4: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500
   index 6
               inet 0.0.0.0 netmask 0
               ether 0:14:4f:c:a1:4e
   ```

In the sample above, the Solaris named network interfaces appear as e1000g0, e1000g1, and so on. The MAC address for each network interface appears after the word ether. For example, the MAC address associated to the Solaris named network interface e1000g0 is 0:14:4f:c:a1:ee.

3. **Do the following:**

   a. **Refer to the list of MAC addresses previously gathered as part of the** "Configuration Worksheet" on page 147.

   b. **Match each MAC address in the Configuration Worksheet list with the associated entry in the** ifconfig -a **output.**

   c. **Record the Solaris network interface name for each MAC address previously recorded in the Configuration Worksheet list.**

   d. **When you are done, type** sys-unconfig(1M) **at the command line.**

      This command restores the system configuration to the "as-manufactured" state.

Caution – The sys-unconfig(1M) command will halt the system

For example,

```
# sys-unconfig

                         WARNING


This program will unconfigure your system.   It will cause
it

to revert to a "blank" system - it will not have a name or
know about other systems or networks.

This program will also halt the system.

Do you want to continue (y/n) ?
```

4. **Reboot the system.**

   You will be prompted with a series of configuration questions.

5. **In the Network Connection screen, select** Yes.

   The Configure Multiple Network Interfaces screen appears.

6. **In the Configure Multiple Network Interfaces screen, consult the list of network interface names recorded in Step 3c then select the appropriate network interfaces.**

7. **Continue the normal Solaris configuration.**

   Refer to the Solaris documentation and the information you previously gathered in the "Configuration Worksheet" on page 147 to help you identify the system and network information.

   After completing the Solaris configuration and after the system reboots, you should configure the GRUB menu time-out value. For more information, see "Reset GRUB Menu Time-out Value (Mandatory)" on page 161.

Launch User Shell From Solaris 10 to Identify Network Interfaces by Logical and Physical Names

This appendix explains how to launch a user shell during the Solaris installation to identify network interfaces by logical and physical names. It assumes you are referring to this appendix from either:

- Step 5 in the Procedure "Install Solaris 10 via PXE" on page 180

or

- Step 6 in the Procedure "Install Solaris 10 via Local or Virtual Media" on page 187.

Prerequisite

- The MAC addresses for each EM and NEM port connected to a network. These addresses should have been recorded earlier per the "Solaris OS Installation and Network Configuration Worksheet" on page 167.

▼ Launch User Shell and Identify Network Interfaces

1. **In the Install Type menu, select Option (6) Single User Shell and press Enter.**

   If a message appears about mounting an OS instance, select **q**. You should not mount any OS instance.

   The message "Starting Shell" appears, see the following figure.

```
    1.      Solaris Interactive (default)
    2.      Custom JumpStart
    3.      Solaris Interactive Text (Desktop session)
    4.      Solaris Interactive Text (Console session)
    5.      Apply driver updates
    6.      Single user shell

Enter the number of your choice.
Selected: 6

Single user shell

Searching for installed OS instances...

Multiple OS instances were found. To check and mount one of them
read-write under /a, select it from the following list. To not mount
any, select 'q'.

  1 /dev/dsk/c2t0d0s0      Solaris 10 6/06 s10x_u2wos_08 X86
  2 /dev/dsk/c2t1d0s0      Solaris 10 6/06 s10u2_08-ON-WOS X86

Please select a device to be mounted (q for none) [?,??,q]: q

Starting shell.
#
```

2. **At the command prompt (#), type the following command to plumb all network interfaces.**

   # **ifconfig -a plumb**

Note – The plumb process may take some time.

---

3. **At the command prompt, type the following command to output a list of all network interfaces by their Solaris logical name and physical MAC address name.**

   # **ifconfig -a**

The output of Solaris named interfaces and MAC addresses appear. For an example, see the following sample output.

```
# ifconfig -a |more
e1000g0: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 2
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:ee
e1000g1: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 3
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:ef
e1000g2: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 4
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a5:d6
e1000g3: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 5
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a5:d7
e1000g4: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 6
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:4e
e1000g5: flags=1000842<BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 1
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:4f
e1000g6: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 7
        inet 0.0.0.0 netmask 0
        ether 8:0:20:b6:ce:94
e1000g7: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 8
        inet 0.0.0.0 netmask 0
#
```

In the sample output above, the:

- `e1000g#` entry in the first column refers to the Solaris logical named interface. This first column in the output identifies the logical names assigned by Solaris to the network interfaces.

- `ether #:#:#:#:#:#` entry in second column (third row) refers to the physical MAC address name of the network port.

  For example:

  The physical MAC address for the Solaris named network interface `e1000g0` is `0:14:4f:c:a1:ee`.

4. **Do the following:**

   a. **Refer to the list of MAC addresses previously gathered as part of the** "Solaris OS Installation and Network Configuration Worksheet" on page 167**.**

   b. **Match each MAC address in the Configuration Worksheet with each associated entry in the** `ifconfig -a` **output.**

   c. **Record the Solaris network interface name next to the physical port MAC address previously recorded (per the Configuration Worksheet).**

5. **When you are done, type `exit` at the command prompt.**

   The Solaris Installation program will resume where you last left off.

   Refer to the next step in the installation process:

   - Step 5 - Select Option (1) User Interactive - ("In the Install Type menu, do one of the following:" on page 183) (PXE installation).

   - or

   - Step 6 - Select Option (1) User Interactive - ("In the Install Type menu, do one of the following:" on page 189) (Local or Virtual Media installation).

Launch User Shell From SUSE to Identify Network Interfaces by Logical and Physical Names

This appendix explains how to launch a user shell during the Linux SUSE OS installation in order to identify network interfaces by logical and physical names. It assumes you are referring to this appendix from:

- Step 4 in the Procedure: "Install SLES9 via Local or Virtual Medium" on page 287
- Step 4 in the Procedure: "Install SLES10 via Local or Virtual Medium" on page 294.

Prerequisite

- The MAC addresses for each EM and NEM port connected to a network. These addresses should have been recorded earlier per the "Linux OS Installation and Network Configuration Worksheet" on page 251.

▼ Launch User Shell and Identify Network Interfaces

1. **If you have not already done so, select** `Rescue System` **and press Enter.**
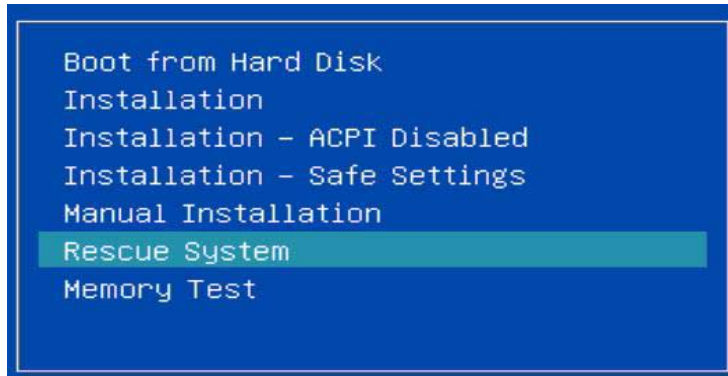
The message `Loading Linux Kernel` appears followed by the SUSE splash screen, then the Choose a Keyboard Map screen appears.

2. **In the Choose a Keyboard Map screen, select the appropriate keyboard configuration and click OK.**
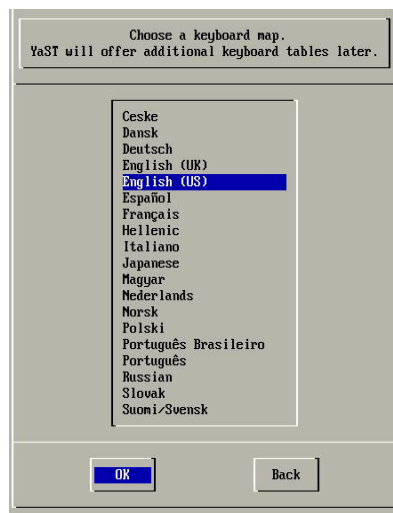
The user shell launches and the Rescue Login prompt appears.

3. **At the Rescue Login prompt, type** `root` **to log in, then press Enter.**

The Rescue prompt appears.

4. **At the Rescue prompt (#), type the following command then press Enter to display all network interfaces.**

   # ifconfig -a

The output of the Linux SUSE named and physical named network interfaces appear. See the following sample output as an example.

```
eth4      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:52
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xc800 Memory:b5d80000-b5da0000

eth5      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:53
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xcc00 Memory:b5de0000-b5e00000

eth6      Link encap:Ethernet  HWaddr 00:14:4F:0C:A4:72
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xf800 Memory:bbd80000-bbda0000

eth7      Link encap:Ethernet  HWaddr 00:14:4F:0C:A4:73
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xfc00 Memory:bbde0000-bbe00000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:528 (528.0 b)  TX bytes:528 (528.0 b)

Rescue:~ #
```

If you have multiple network interfaces and the output of interfaces scrolls off the top of the screen, you can display the output per interface.

5. **To view the output per network interface, type the following command at the prompt, then press Enter:**

   `# ifconfig eth#`

   where # = the interface number. For example, if you type:

   `# ifconfig eth0`

   The output for **eth0** appears:

```
eth0        Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:53
            BROADCAST MULTICAST  MTU:1500  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
            Base address:0xcc00 Memory:b5de0000-b5e00000
```

   In the sample output above:

   - `eth0` entry in the first column refers to the Linux SUSE logical named interface. This first column in the output identifies the logical names SUSE assigned to the network interface.
   - `HWaddr 00.14.4F.0C:A1:53` entry in second column (first row) refers to the physical MAC address of the network port.

6. **Do the following:**

   a. **Refer to the list of MAC addresses you previously gathered as part of the** "Linux OS Installation and Network Configuration Worksheet" on page 251.

   b. **For each network interface, match each physical MAC address with each logical name entry in the** `ifconfig -a` **output.**

   c. **Record the SUSE logical network interface name with the physical port MAC address for future reference.**

   You will need to refer to this record when configuring the network interfaces during the Linux SUSE OS installation.

7. **When you are done, do one of the following to exit the Rescue shell.**

   a. **From the ILOM web interface, select Remote Control ->Remote Power Control->Reset.**

   b. **From other consoles, type** `reboot` **at the Rescue prompt (#), then press Enter.**

8. **Restart the Linux SUSE installation program by using the following documentation as a reference:**

   ■ Procedure "Install SLES9 via Local or Virtual Medium" on page 287 or "Install SLES10 via Local or Virtual Medium" on page 294. Restart the procedure from Step 1.

   ■ Newly recorded list of the network interfaces that identifies the network interfaces by their logical and physical names. You will need this list to help you identify which network interfaces you want to configure in the Linux SUSE installation.

Launch User Shell From Red Hat to Identify Network Interfaces by Logical and Physical Names

This appendix explains how to launch a user shell during the Linux Red Hat installation in order to identify network interfaces by their logical and physical names. It assumes you are referring to this appendix from:

Step 3 in the Procedure "Install RHEL4 via Local or Virtual Medium" on page 267.

Step 3 in the Procedure "Install RHEL5 via Local or Virtual Medium" on page 273

Prerequisite

■ The MAC addresses for each EM and NEM port connected to a network. These address should have been recorded earlier per the "Linux OS Installation and Network Configuration Worksheet" on page 251.

▼ Launch User Shell and Identify Network Interfaces

1. If you have not already done so, type: `linux rescue` at the boot prompt, then press Enter.
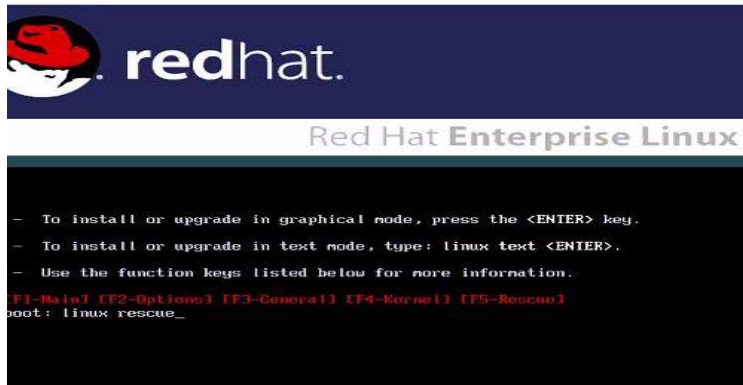
The Choose a Language screen appears.

2. In the Choose a Language screen, select the appropriate language and click OK.

The Keyboard Type screen appears.

3. In the Keyboard Type screen, select the appropriate configuration then click OK.

The Setup Network screen appears.

4. **In the Setup Network screen, click No.**
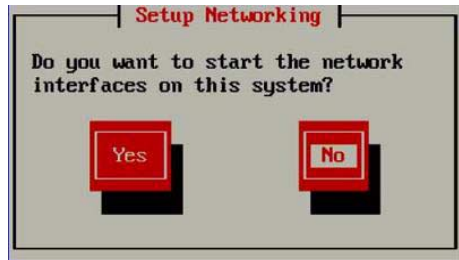
The Rescue screen appears.

5. **In the Rescue screen, click Skip.**
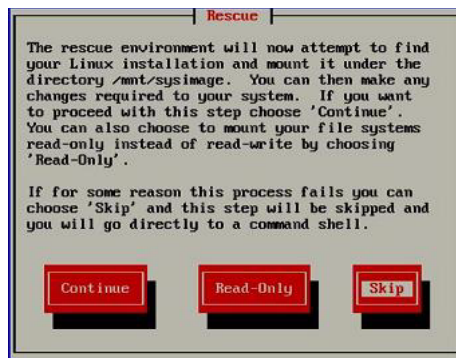
The user shell appears.

6. **At the command prompt (#) in the user shell, type the following command to display all network interfaces, then press Enter.**

   # **ifconfig -a**

   When finished please exit from the shell and your system will reboot.

   ~/bin/sh-3.00# ifconfig -a

   The output of the Linux Red Hat named network interfaces appear. See the following sample output as an example.


   ```
                     collisions:0 txqueuelen:1000
                     RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
                     Base address:0xcc00 Memory:b5de0000-b5e00000

   eth6          Link encap:Ethernet  HWaddr 00:14:4F:0C:A4:72
                 BROADCAST MULTICAST  MTU:1500  Metric:1
                 RX packets:0 errors:0 dropped:0 overruns:0 frame:0
                 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
                 collisions:0 txqueuelen:1000
                 RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
                 Base address:0xf800 Memory:bbd80000-bbda0000

   eth7          Link encap:Ethernet  HWaddr 00:14:4F:0C:A4:73
                 BROADCAST MULTICAST  MTU:1500  Metric:1
                 RX packets:0 errors:0 dropped:0 overruns:0 frame:0
                 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
                 collisions:0 txqueuelen:1000
                 RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
                 Base address:0xfc00 Memory:bbde0000-bbe00000

   lo            Link encap:Local Loopback
                 LOOPBACK  MTU:16436  Metric:1
                 RX packets:0 errors:0 dropped:0 overruns:0 frame:0
                 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
                 collisions:0 txqueuelen:0
                 RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

   ~/bin/sh-3.00# _
   ```

   If you have multiple network interfaces and the output of interfaces scrolls off the top of the screen, you can display the output per interface.

7. **To view the output per network interface, type the following at the command prompt, then press Enter:**

   `# ifconfig eth#`

   where # = the interface number. For example, if you type:

   `# ifconfig eth0`

   The output for **eth0** appears,:

   ```
   -/bin/sh-3.00# ifconfig eth0
   eth0      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:F2
             BROADCAST MULTICAST  MTU:1500  Metric:1
             RX packets:0 errors:0 dropped:0 overruns:0 frame:0
             TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
             collisions:0 txqueuelen:1000
             RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
             Base address:0x8800 Memory:89b80000-89ba0000

   -/bin/sh-3.00#
   ```

   In the sample output above:

   - eth0 entry in the first column refers to the Linux Red Hat logical named interface. This first column in the output identifies the logical names Red Hat assigned to the network interface.

   - HWaddr 00.14.4F.0C:A1:F2 entry in second column (first row) refers to the physical MAC address of the network port.

8. **Do the following:**

   a. **Refer to the list of MAC addresses you previously gathered as part of the** "Linux OS Installation and Network Configuration Worksheet" on page 251**.**

   b. **For each network interface, match each physical MAC address with each logical name entry in the** ifconfig -a **output.**

   c. **Record the Red Hat logical network interface name with the physical port MAC address for future reference. You will need to refer to this record when configuring the network interfaces during the Red Hat OS installation.**

9. **When you are done, do one of the following to exit the user shell.**

   - From the ILOM, select Remote Control ->Remote Power Control->Reset.

   - From the ILOM Remote Console, select Ctrl Alt Delete in the Keyboard menu.

   - From other consoles, press Ctrl->Alt->Delete.

10. **Restart the Linux Red Hat installation program by using the following documentation as a reference:**

   ■ Procedure "Install RHEL4 via Local or Virtual Medium" on page 267 or "Install RHEL5 via Local or Virtual Medium" on page 273. Restart the procedure, starting from Step 1.

   ■ Newly recorded list of the network interfaces that identifies them by their logical and physical names. You will need this list to help you identify which network interfaces you want to configure in the Linux Red Hat installation.

Configure Interface Card for VMware Service Console

This appendix provides information about configuring a Sun Blade 8000 Series network interface card for the VMware Service Console during the VMware ESX Server 3 installation.

Configure the Network Setting for VMware Service Console

During the VMware ESX Server 3 installation, a Network Configuration screen appears prompting you to select and configure a network interface card for the VMware Service Console. In the Network Configuration screen, you must click the Device drop-down box to view the network interface cards currently populated in the Sun Blade 8000 or 8000 P Chassis (see the following sample screen).

Note – The following sample screen shows interfaces for a Sun Blade 8000 Chassis populated with four Network Express Modules (NEMs) and zero PCIe Express Modules (EMs). PCIe ExpressModules (EMs) are unsupported on a Sun Blade 8000 P Chassis.

How to Translate the List of Network Interface Cards to Physical Hardware, Chassis Label, and Port Locations

The PCI bus numbering (7:0:1) for each network interface card translate to a bus number, device number, and function number. For example:

PCI Bus Number 7:0:1 translates to: *Bus 7*, *Device 0*, and *Function 1*

Refer to the following tables to translate the PCI bus numbering for network interface cards populated in a Sun Blade 8000 or 8000 P Chassis.

TABLE I-1 X8400 and X8420 Sun Blade PCI Bus Numbering Translations for EMs

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
8:0:0/8:0:1	EM1	BL0	EM 0.1	0/1
		BL1	EM 1.1	0/1
		BL2	EM 2.1	0/1
		BL3	EM 3.1	0/1
		BL4	EM 4.1	0/1
		BL5	EM 5.1	0/1
		BL6	EM 6.1	0/1
		BL7	EM 7.1	0/1
		BL8	EM 8.1	0/1
		BL9	EM 9.1	0/1

TABLE I-1   X8400 and X8420 Sun Blade PCI Bus Numbering Translations for EMs

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
87:0:0/87:0:1	EM0	BL0	EM 0.0	0/1
		BL1	EM 1.0	0/1
		BL2	EM 2.0	0/1
		BL3	EM 3.0	0/1
		BL4	EM 4.0	0/1
		BL5	EM 5.0	0/1
		BL6	EM 6.0	0/1
		BL7	EM 7.0	0/1
		BL8	EM 8.0	0/1
		BL9	EM 9.0	0/1

* The Sun Blade 8000 Chassis provides up to 20 EM slots with two EM slots assigned to each blade. The EM slots are numbered EM 0.0 to 9.1 from right to left.

TABLE I-2   X8400 and X8420 Sun Blade PCI Bus Numbering Translations for X7284A-Z EM

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
0A:00:0/0A:00:1/ 0B:00:0/0B:00:1	EM1	BL0	EM 0.1	0/1/2/3
		BL1	EM 1.1	0/1/2/3
		BL2	EM 2.1	0/1/2/3
		BL3	EM 3.1	0/1/2/3
		BL4	EM 4.1	0/1/2/3
		BL5	EM 5.1	0/1/2/3
		BL6	EM 6.1	0/1/2/3
		BL7	EM 7.1	0/1/2/3
		BL8	EM 8.1	0/1/2/3
		BL9	EM 9.1	0/1/2/3

TABLE I-2 X8400 and X8420 Sun Blade PCI Bus Numbering Translations for X7284A-Z EM

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
89:00:0/89:00:1/ 8A:00:0 / 8A:00:1	EM0	BL0	EM 0.0	0/1/2/3
		BL1	EM 1.0	0/1/2/3
		BL2	EM 2.0	0/1/2/3
		BL3	EM 3.0	0/1/2/3
		BL4	EM 4.0	0/1/2/3
		BL5	EM 5.0	0/1/2/3
		BL6	EM 6.0	0/1/2/3
		BL7	EM 7.0	0/1/2/3
		BL8	EM 8.0	0/1/2/3
		BL9	EM 9.0	0/1/2/3

* The Sun Blade 8000 Chassis provides up to 20 EM slots with two EM slots assigned to each blade. The EM slots are numbered EM 0.0 to 9.1 from right to left.

TABLE I-3 X8440 Sun Blade PCI Bus Numbering Translations for EMs

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
9:0:0/9:0:1	EM 1	BL0	EM 0.1	0/1
		BL1	EM 1.1	0/1
		BL2	EM 2.1	0/1
		BL3	EM 3.1	0/1
		BL4	EM 4.1	0/1
		BL5	EM 5.1	0/1
		BL6	EM 6.1	0/1
		BL7	EM 7.1	0/1
		BL8	EM 8.1	0/1
		BL9	EM 9.1	0/1

TABLE I-3   X8440 Sun Blade PCI Bus Numbering Translations for EMs

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
87:0:0/87:0:1	EM 0	BL0	EM 0.0	0/1
		BL1	EM 1.0	0/1
		BL2	EM 2.0	0/1
		BL3	EM 3.0	0/1
		BL4	EM 4.0	0/1
		BL5	EM 5.0	0/1
		BL6	EM 6.0	0/1
		BL7	EM 7.0	0/1
		BL8	EM 8.0	0/1
		BL9	EM 9.0	0/1

* The Sun Blade 8000 Chassis provides up to 20 EM slots with two EM slots assigned to each blade. The
  EM slots are numbered EM 0.0 to 9.1 from right to left.

TABLE I-4   X8440 Sun Blade PCI Bus Numbering Translations for X7284A-Z EM

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
0B:00:0/0B:00:1/ 0C:00:0/0C:00:1	EM 1	BL0	EM 0.1	0/1/2/3
		BL1	EM 1.1	0/1/2/3
		BL2	EM 2.1	0/1/2/3
		BL3	EM 3.1	0/1/2/3
		BL4	EM 4.1	0/1/2/3
		BL5	EM 5.1	0/1/2/3
		BL6	EM 6.1	0/1/2/3
		BL7	EM 7.1	0/1/2/3
		BL8	EM 8.1	0/1/2/3
		BL9	EM 9.1	0/1/2/3

TABLE I-4   X8440 Sun Blade PCI Bus Numbering Translations for X7284A-Z EM

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
89:00:0/89:00:1/ 8A:00:0/8A:00:1	EM 0	BL0	EM 0.0	0/1/2/3
		BL1	EM 1.0	0/1/2/3
		BL2	EM 2.0	0/1/2/3
		BL3	EM 3.0	0/1/2/3
		BL4	EM 4.0	0/1/2/3
		BL5	EM 5.0	0/1/2/3
		BL6	EM 6.0	0/1/2/3
		BL7	EM 7.0	0/1/2/3
		BL8	EM 8.0	0/1/2/3
		BL9	EM 9.0	0/1/2/3
* The Sun Blade 8000 Chassis provides up to 20 EM slots with two EM slots assigned to each blade. The EM slots are numbered EM 0.0 to 9.1 from right to left.				

TABLE I-5   x8450 Sun Blade PCI Bus Numbering Translations for EMs

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
5:00:0/5:00:1	EM 1	BL0	EM 0.1	0/1
		BL1	EM 1.1	0/1
		BL2	EM 2.1	0/1
		BL3	EM 3.1	0/1
		BL4	EM 4.1	0/1
		BL5	EM 5.1	0/1
		BL6	EM 6.1	0/1
		BL7	EM 7.1	0/1
		BL8	EM 8.1	0/1
		BL9	EM 9.1	0/1
14:00:0/14:00:1	EM 0	BL0	EM 0.0	0/1
		BL1	EM 1.0	0/1
		BL2	EM 2.0	0/1
		BL3	EM 3.0	0/1
		BL4	EM 4.0	0/1
		BL5	EM 5.0	0/1
		BL6	EM 6.0	0/1
		BL7	EM 7.0	0/1
		BL8	EM 8.0	0/1
		BL9	EM 9.0	0/1

* The Sun Blade 8000 Chassis provides up to 20 EM slots with two EM slots assigned to each blade. The EM slots are numbered EM 0.0 to 9.1 from right to left.

TABLE I-6 X8450 Sun Blade PCI Bus Numbering Translations for X7284A-Z EMs

PCI Bus:Device:Function	Network Device	Blade Chassis Label	EM Chassis Label	RJ-45 Network Port
06:00:0/06:00:1/ 07:00:00:0/07:00:1	EM 1	BL0	EM 0.1	0/1/2/3
		BL1	EM 1.1	0/1/2/3
		BL2	EM 2.1	0/1/2/3
		BL3	EM 3.1	0/1/2/3
		BL4	EM 4.1	0/1/2/3
		BL5	EM 5.1	0/1/2/3
		BL6	EM 6.1	0/1/2/3
		BL7	EM 7.1	0/1/2/3
		BL8	EM 8.1	0/1/2/3
		BL9	EM 9.1	0/1/2/3
16:00:0/16:00:1/ 17:00:00:0/17:00:1	EM 0	BL0	EM 0.0	0/1/2/3
		BL1	EM 1.0	0/1/2/3
		BL2	EM 2.0	0/1/2/3
		BL3	EM 3.0	0/1/2/3
		BL4	EM 4.0	0/1/2/3
		BL5	EM 5.0	0/1/2/3
		BL6	EM 6.0	0/1/2/3
		BL7	EM 7.0	0/1/2/3
		BL8	EM 8.0	0/1/2/3
		BL9	EM 9.0	0/1/2/3

* The Sun Blade 8000 Chassis provides up to 20 EM slots with two EM slots assigned to each blade. The EM slots are numbered EM 0.0 to 9.1 from right to left.

TABLE I-7 X8400 and X8420 Sun Blade PCI Bus Numbering Translations for NEMs

PCI Bus:Device:Function	Network Device	8000 Chassis * Label	8000 P Chassis * Label	RJ-45 Network Port
F:0:0	NEM	NEM 3	NEM 0	0
F:0:1	NEM	NEM 3	NEM 0	1
8E:0:0	NEM	NEM 2	NEM 1	0
8E:0:1	NEM	NEM 2	NEM 1	1
2:0:0	NEM	NEM 1	N/A	0
2:0:1	NEM	NEM 1	N/A	1
81:0:0	NEM	NEM 0	N/A	0
81:0:1	NEM	NEM 0	N/A	1

* The Sun Blade 8000 Chassis supports up to four NEM slots labeled NEM 0-3 with 0 being the bottom NEM slot and 3 being the top NEM slot. The Sun Blade 8000 P Chassis supports up to two NEM slots labeled NEM 0-1 with 0 being the bottom NEM slot.

TABLE I-8 X8440 Sun Blade PCI Bus Numbering Translations for NEMs

PCI Bus:Device:Function	Network Device	8000 Chassis * Label	8000 P Chassis * Label	RJ-45 Network Port
02:00:0	NEM	NEM 3	NEM 0	0
02:00:1	NEM	NEM 3	NEM 0	1
81:00:0	NEM	NEM 2	NEM 1	0
81:00:1	NEM	NEM 2	NEM 1	1
10:00:0	NEM	NEM 1	N/A	0
10:00:1	NEM	NEM 1	N/A	1
8E:00:0	NEM	NEM 0	N/A	0
8E:00:1	NEM	NEM 0	N/A	1

* The Sun Blade 8000 Chassis supports up to four NEM slots labeled NEM 0-3 with 0 being the bottom NEM slot and 3 being the top NEM slot. The Sun Blade 8000 P Chassis supports up to two NEM slots labeled NEM 0-1 with 0 being the bottom NEM slot.

TABLE I-9   X8450 Sun Blade PCI Bus Numbering Translations for NEMs

PCI Bus:Device:Function	Network Device	8000 Chassis * Label	8000 P Chassis * Label	RJ-45 Network Port
0B:00:0	NEM	NEM 3	NEM 0	0
0B:00:1	NEM	NEM 3	NEM 0	1
1A:00:0	NEM	NEM 2	NEM 1	0
1A:00:1	NEM	NEM 2	NEM 1	1
24:00:0	NEM	NEM 1	N/A	0
24:00:1	NEM	NEM 1	N/A	1
29:00:0	NEM	NEM 0	N/A	0
29:00:1	NEM	NEM 0	N/A	1

* The Sun Blade 8000 Chassis supports up to four NEM slots labeled NEM 0-3 with 0 being the bottom NEM slot and 3 being the top NEM slot. The Sun Blade 8000 P Chassis supports up to two NEM slots labeled NEM 0-1 with 0 being the bottom NEM slot.

For additional information about chassis slot locations and internal connections between NEMs, EMs, and Sun Blade server modules, see "Chassis Slot Locations and Internal Connections" on page 95.

Index