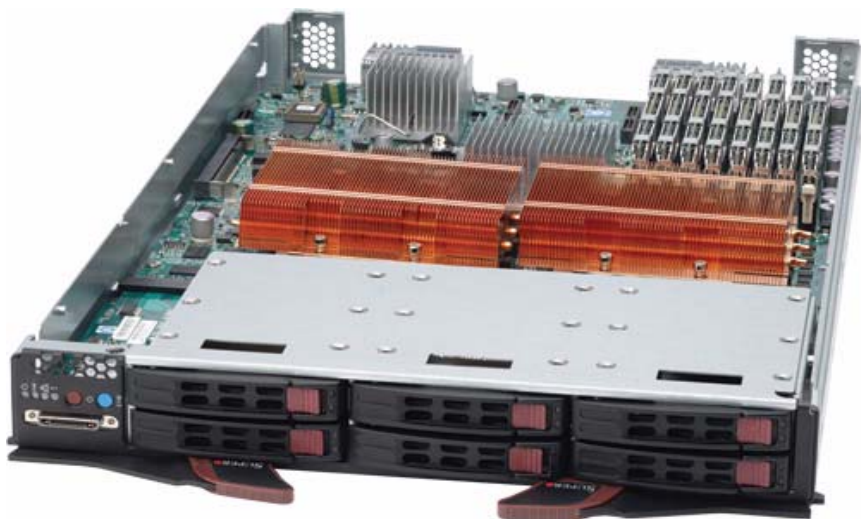


SUPERMICRO[®]

SBI-7125W-S6 Blade Module



User's Manual

Revision 1.0b

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Manual Revision 1.0b

Release Date: May 18, 2011

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Preface

About this Manual

This manual is written for professional system integrators, Information Technology professionals, service personnel and technicians. It provides information for the installation and use of Supermicro's SBI-7125W-S6 Blade Module. Installation and maintenance should be performed by experienced professionals only.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the SBI-7125W-S6 Blade Module and describes its main features.

Chapter 2: System Safety

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SBI-7125W-S6 Blade Module.

Chapter 3: Setup and Installation

Refer to this chapter for details on installing the SBI-7125W-S6 Blade Module into the SuperBladeSuperBlade chassis. Other sections cover the installation and placement of memory modules and the installation of hard disk drives into the blade module.

Chapter 4: Blade Module Features

This chapter covers features and component information about the SBI-7125W-S6 Blade Module. Included here are descriptions and information for mainboard components, connectors, LEDs and other features of the blade module.

Chapter 5: RAID Setup Procedure

RAID setup and operations for the SBI-7125W-S6 Blade Module are covered in this chapter.

Chapter 6: BIOS

BIOS setup is covered in this chapter for the SBI-7125W-S6 Blade Module.

Appendix A: BIOS POST Codes

BIOS POST Codes for the SBI-7125W-S6 Blade Module are explained in this appendix.

Appendix B: iSCSI Setup Procedure

The iSCSI setup procedure for the blade module is described in this appendix.

Notes

Table of Contents

Chapter 1 Introduction	1-1
1-1 Overview.....	1-1
1-2 Product Checklist of Typical Components.....	1-1
1-3 Blade Module Features.....	1-2
Processors.....	1-2
Memory.....	1-2
Storage.....	1-3
Density.....	1-3
1-4 Contacting Supermicro.....	1-4
Chapter 2 System Safety	2-1
2-1 Electrical Safety Precautions.....	2-1
2-2 General Safety Precautions.....	2-2
2-3 Electrostatic Discharge Precautions.....	2-2
2-4 Operating Precautions.....	2-2
Chapter 3 Setup and Installation	3-1
3-1 Overview.....	3-1
3-2 Installing Blade Modules.....	3-1
Powering Up a Blade Unit.....	3-1
Powering Down a Blade Unit.....	3-1
Removing a Blade Unit from the Enclosure.....	3-1
Removing/Replacing the Blade Cover.....	3-2
Installing a Blade Unit into the Enclosure.....	3-2
3-3 Processor Installation.....	3-4
3-4 Onboard Battery Installation.....	3-5
3-5 Memory Installation.....	3-6
Populating Memory Slots.....	3-6
DIMM Installation.....	3-7
3-6 Hard Disk Drive Installation.....	3-8
3-7 Installing the Operating System.....	3-10
Installing with an External USB CD-ROM Drive.....	3-10
Installing via PXE Boot.....	3-10
Installing via Virtual Media (Drive Redirection).....	3-11
3-8 Management Software.....	3-11

3-9 Configuring and Setting up RAID	3-11
Chapter 4 Blade Module Features	4-1
4-1 Control Panel	4-2
Power Button	4-3
KVM Button	4-3
LED Indicators	4-3
KVM Connector	4-3
4-2 Mainboard	4-4
Jumpers	4-6
CMOS Clear	4-6
4-3 Blade Unit Components	4-6
Memory Support	4-7
Hard Disk Drives	4-7
Chapter 5 RAID Setup Procedure	5-1
5-1 WebBIOS Configuration	5-1
Accessing the WebBIOS	5-1
WebBIOS Configuration Wizard	5-2
WebBIOS Configuration Wizard – Auto Configuration	5-3
WebBIOS Configuration Wizard – Custom Configuration	5-3
Device Properties	5-4
Adapter Properties	5-4
Virtual Disk Properties	5-4
Physical Drive Properties	5-4
Battery Backup Unit	5-5
System Event Information	5-5
5-2 MegaRAID Storage Manager Software Overview	5-5
Creating Storage Configurations	5-5
Monitoring Storage Devices	5-6
Maintaining Storage Configurations	5-6
Hardware and Software Requirements	5-6
5-3 MegaRAID Storage Manager Software Installation	5-6
Installing MegaRAID Storage Manager for Microsoft Windows	5-7
Installing MegaRAID Storage Manager for Linux	5-9
Linux Error Messages	5-10
5-4 MegaRAID Storage Manager Window and Menus	5-11
Starting MegaRAID Storage Manager Software	5-11
MegaRAID Storage Manager Window	5-14

Physical/Logical View Panel	5-14
Properties/Operations/Graphical View Panel.....	5-15
Event Log Panel.....	5-15
Menu Bar.....	5-15
5-5 Configuration.....	5-17
Creating a New Storage Configuration	5-17
Understanding Virtual Disk Parameters	5-18
Using Auto Configuration	5-19
Using Guided Configuration	5-20
Using Manual Configuration: RAID 0	5-22
Using Manual Configuration: RAID 1	5-24
Using Manual Configuration: RAID 5	5-25
Using Manual Configuration: RAID 10	5-26
Using Manual Configuration: RAID 50	5-27
Adding Hotspare Disks.....	5-28
Changing Adjustable Task Rates	5-28
Changing Virtual Disk Properties	5-29
Deleting a Virtual Disk.....	5-29
Saving a Storage Configuration to Disk	5-30
Clearing a Storage Configuration from a Controller	5-30
Adding a Saved Storage Configuration.....	5-30
Chapter 6 BIOS.....	6-1
6-1 Introduction.....	6-1
System BIOS	6-1
How To Change the Configuration Data	6-1
Starting the Setup Utility.....	6-1
6-2 BIOS Updates.....	6-2
Flashing BIOS.....	6-2
6-3 Running Setup	6-3
6-4 Main BIOS Setup.....	6-4
6-5 Advanced Setup	6-5
6-6 Security	6-12
6-7 Boot	6-13
Boot Priority Order/Excluded from Boot Order.....	6-13
6-8 Exit.....	6-13

Appendix A BIOS POST CodesA-1

 A-1 BIOS POST MessagesA-1

 A-2 BIOS POST Codes.....A-3

 Recoverable POST ErrorsA-4

 Terminal POST Errors.....A-4

Appendix B iSCSI Setup Procedure.....B-1

List of Figures

Figure 1-1. Full Rack of Blade Enclosures and Blade Servers	1-3
Figure 3-1. Inserting a Blade into the Enclosure	3-3
Figure 3-2. Locking the Blade into Position.....	3-3
Figure 3-3. Installing a Processor in a Socket.....	3-5
Figure 3-4. Installing the Onboard Battery	3-6
Figure 3-5. 8-slot DIMM Numbering.....	3-7
Figure 3-6. Installing a DIMM into a Memory Slot.....	3-8
Figure 3-7. Installing a Hard Drive in a Carrier.....	3-9
Figure 4-1. SBI-7125W-S6 Blade Unit Front View	4-1
Figure 4-2. Blade Control Panel.....	4-2
Figure 4-3. B7DW3 Mainboard	4-4
Figure 4-4. Intel 5400 MCH/ESB2 Chipset: Block Diagram.....	4-5
Figure 4-5. Exploded View of SBI-7125W-S6 Blade Module	4-6
Figure 5-1. Adapter Selection Screen.....	5-1
Figure 5-2. Initial Screen.....	5-2
Figure 5-3. Customer Information Screen.....	5-7
Figure 5-4. Setup Type Screen.....	5-8
Figure 5-5. Select Server Window	5-12
Figure 5-6. Server Login Window.....	5-13
Figure 5-7. Storage Manager Window	5-14
Figure 5-8. Configuration Wizard Mode Selection Screen.....	5-17
Figure 5-9. Auto Configuration Screen.....	5-19
Figure 5-10. Guided Configuration Screen	5-20
Figure 5-11. Virtual Disk Parameters Screen.....	5-21
Figure 5-12. Array Selection Screen.....	5-22
Figure 5-13. Virtual Disk Creation Screen.....	5-23
Figure 5-14. Array Selection Screen – Adding a Hotspare	5-24
Figure B-1. Microsoft MPIO Multipathing Support for iSCSI Check Box.....	B-2
Figure B-2. Configure iSCSI Network Boot Support Check Box.....	B-3

Notes

List of Tables

Table 1-1. SBI-7125W-S6 Blade Specification Features	1-2
Table 3-1. Populating Eight Memory Slots for Interleaved Operation	3-6
Table 4-1. SBI-7125W-S6 Blade Unit Features	4-1
Table 4-2. Blade Control Panel.....	4-2
Table 4-3. Blade Module LED Indicators	4-3
Table 4-4. B7DW3 Mainboard Layout.....	4-5
Table 4-5. Main Components of SBI-7125W-S6 Blade Module.....	4-7
Table 6-1. Main BIOS Setup Menu Options.....	6-4
Table 6-2. SATA Port 0/SATA Port 1 Submenu Menu Options	6-4
Table 6-3. Advanced Setup Menu Options	6-6
Table 6-4. Boot Features Submenu Menu Options.....	6-6
Table 6-5. Memory Cache Submenu Menu Options.....	6-7
Table 6-6. PCI Configuration Submenu Menu Options.....	6-8
Table 6-7. Advanced Chipset Control Submenu Menu Options	6-8
Table 6-8. Advanced Processor Options Submenu Menu Options.....	6-9
Table 6-9. I/O Device Configuration Submenu Menu Options	6-10
Table 6-10. Console Redirection Submenu Menu Options.....	6-11
Table 6-11. Hardware Monitor Submenu Menu Options.....	6-12
Table 6-12. Security Menu Options.....	6-12
Table 6-13. Exit Menu Options.....	6-13
Table A-1. BIOS POST Messages.....	A-1
Table A-2. Terminal POST Errors	A-4
Table A-3. Boot Block Flash ROM Terminal POST Errors.....	A-8

Notes

Chapter 1

Introduction

1-1 Overview

The SBI-7125W-S6 blade module is a compact self-contained server that connects into a pre-cabled enclosure that provides power, cooling, management and networking functions. One enclosure for the SBI-7125W-S6 blade module can hold ten blade units.

In this manual, “blade system” refers to the entire system (including the enclosure and blades units), “blade” or “blade unit” refers to a single blade module and “blade enclosure” is the chassis that the blades, power supplies and modules are housed in.

Please refer to our web site for information on operating systems that have been certified for use with the SuperBlade (www.supermicro.com/products/superblade/).

1-2 Product Checklist of Typical Components

Your blade module ships with its mainboard already installed in its chassis. Memory, hard disk drives and the CPU must all be installed by the user after shipment. See [Chapter 3: "Setup and Installation" on page 3-1](#) for details on installation of these components.

Aside from the blade module unit itself, the following optional add-on cards may be ordered for your blade module:

- Blade IPMI Add-on Card: AOC-SIMBL
- Mezzanine Cards (with Infiniband Switch): AOC-IBH-001, AOC-IBH-002, AOC-IBH-003, AOC-IBH-XDD, AOC-IBH-XDS or AOC-IBH-XQS

See the [Supermicro website](#) and the *SuperBlade Network Modules User's Manual* on your SuperBlade system's CD-ROM for more details on these add-on cards.

1-3 Blade Module Features

Table 1-1 lists the main features of the SBI-7125W-S6 blade module. See the proceeding section for components typically included in a blade system and other optional components. Specific details on the SBI-7125W-S6 blade module is found in **Chapter 4: "Blade Module Features"** on page 4-1.

Table 1-1. SBI-7125W-S6 Blade Specification Features

Mainboard	B7DW3 (proprietary form factor) Chassis Dimensions (HxWxD): 11.32" x 1.67" x 18.9"
Processors	Single or dual Intel™ Xeon® 5400/5300/5200/5100/5000 sequence processors. Please refer to our web site for a complete listing of supported processors.
FSB Speed	1600/1333/1066 MHz front side (system) bus speed
Chipset	Intel 5400 MCH/ESB2
Graphics Controller	ATI ES1000 with 32 MB graphics
BIOS	16 Mb Phoenix® Flash ROM
Memory Capacity	Eight 240-pin DIMM sockets supporting up to 64 GB of ECC FBD DDR2-800/667/533 SDRAM.
SATA Controller	LSI SAS 1078 controller for six SAS or SATA drives
Hard Drive Bays	Six (6) hot-swap drive bays for 2.5" SAS/SATA disk drives

Processors

The SBI-7125W-S6 blade module supports up to dual 771-pin Intel Xeon 5400/5300/5200/5100/5000 series processors.

Refer to the Supermicro web site for a complete listing of supported processors (<http://www.supermicro.com/products/superblade>). Please note that you will need to check the detailed specifications of a particular blade module for a list of the CPUs it supports.

Details on installation of the processor into the SBI-7125W-S6 blade module are found in **Chapter 3: "Setup and Installation"** on page 3-1.

Memory

The SBI-7125W-S6 blade module has eight 240-pin DIMM sockets that can support up to 64 GB of ECC FBD (Fully Buffered DIMM) DDR2-800/667/533 SDRAM. Memory is interleaved, which requires modules of the same size and speed to be installed in groups (of two or three).

Please refer to the Supermicro web site for a list of supported memory (www.supermicro.com/products/superblade). The detailed specifications for a blade module will contain a link to a list of recommended memory sizes and manufacturers.

Details on installation of memory modules into the SBI-7125W-S6 blade module are found in **Chapter 3: "Setup and Installation"** on page 3-1.

Storage

The SBI-7125W-S6 blade module can have six 2.5-inch SATA (Serial ATA) or SAS hard disk drives in front-mounted easy removable carriers. See [Chapter 3: "Setup and Installation" on page 3-1](#) for storage installation details.

Density

A maximum of ten blade modules may be installed into a single blade enclosure. Each blade enclosure is a 7U form factor, so a standard 42U rack may accommodate up to six enclosures with 60 blade modules, or the equivalent of 60 1U servers. With the inclusion of six CMM modules, twelve Gigabit Ethernet switches and six InfiniBand switches, this would occupy up to 84U space in a conventional 1U server configuration.

[Figure 1-1](#) displays a view of a full rack with six blade enclosures in it, each with ten blades to an enclosure.

Figure 1-1. Full Rack of Blade Enclosures and Blade Servers



1-4 Contacting Supermicro

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Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

Tel: +886-2-8228-1366, ext. 132 or 139

Chapter 2

System Safety

2-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperBlade from damage:

- Be aware of how to power on/off the enclosure power supplies and the individual blades as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the blade module when removing or installing such system components as the mainboard, memory modules and processors.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets. Power input requires 110-240 VAC, depending upon your power supply module.
- Mainboard Battery: This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032 Lithium 3V battery). Dispose of used batteries according to the manufacturer's instructions.



WARNING: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

2-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperBlade clean and free of clutter.
- Place the blade module cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, replace the blade module's cover before installing it back into the blade enclosure.

2-3 Electrostatic Discharge Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards.

The following measures are generally sufficient to neutralize this difference **before** contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the mainboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure the blade enclosure provides excellent conductivity between the power supplies, the blade modules and the mainboard.

2-4 Operating Precautions

Care must be taken to assure that the cover of the blade unit is in place when the blade is operating to assure proper cooling. Out of warranty damage to the blade can occur if this practice is not strictly followed.

Any drive carrier without a hard drive installed must remain fully installed in the drive bay when the blade module is operating to ensure proper airflow.

Chapter 3

Setup and Installation

3-1 Overview

This chapter covers the setup and installation of the blade module and its components.

3-2 Installing Blade Modules

Up to ten SBI-7125W-S6 blade modules may be installed into a single blade enclosure (depending upon your enclosure and blade). Blade modules with Windows and Linux operating systems may be mixed together in the same blade enclosure.

Powering Up a Blade Unit

Each blade unit may be powered on and off independently from the rest of the blades installed in the same enclosure. A blade unit may be powered up in two ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to apply power using either a CMM module, or by the use of an installed SIMBL add-on card in the blade module.

Powering Down a Blade Unit

A blade unit may be powered down in either of five ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to power down (if you have Operator or Admin privileges on the CMM).
- Use IPMItool when connected to the CMM to power down (if you have Operator or Admin privileges on the CMM).
- Use IPMIview or a browser connected to the SIMBL card attached to the blade to power down.
- Use IPMItool to use a Command Line Interface (CLI) to the SIMBL (if you have Operator or Admin privileges).

Removing a Blade Unit from the Enclosure

Although the blade system may continue to run, individual blades should always be powered down before removing them from the enclosure.

Removing a Blade Unit from the Enclosure

1. Power down the blade unit (see ["Powering Down a Blade Unit"](#) above).
2. Squeeze both handles to depress the red sections then pull out both handles completely and use them to pull the blade unit from the enclosure.



NOTE: Blade Modules can be Hot-Plugged from the enclosure.

Removing/Replacing the Blade Cover

The blade cover must be removed to access the mainboard when you need to install or remove processors, memory units, the onboard battery and so on.

Removing/Replacing the Blade Cover

1. Remove the blade unit from the enclosure (see ["Removing a Blade Unit from the Enclosure"](#) above).
2. Depress the two buttons on the cover while pushing the cover toward the rear of the blade unit. When it stops, lift the cover off the blade unit.
3. To replace the cover, fit the six grooves in the cover into the studs in the sides of the blade, then slide the cover toward the front of the blade to lock it into place.

Installing a Blade Unit into the Enclosure

Make sure the cover of the blade unit has been replaced first before installing a blade unit in the enclosure.

Installing a Blade Unit into the Enclosure

1. Slowly push the blade unit into its bay with the handles fully pulled out (see [Figure 3-1](#)).
2. When the blade stops, push the handles back in to their locked position, making sure the notches in both handles catch the lip of the enclosure (see [Figure 3-2](#)).



NOTE: Blade Modules can be Hot-Plugged into the enclosure.



WARNING: Use extreme caution when inserting a blade module into the enclosure. If the blade's power connector becomes damaged, it can damage pins on other blade bays that it is inserted into.

Figure 3-1. Inserting a Blade into the Enclosure

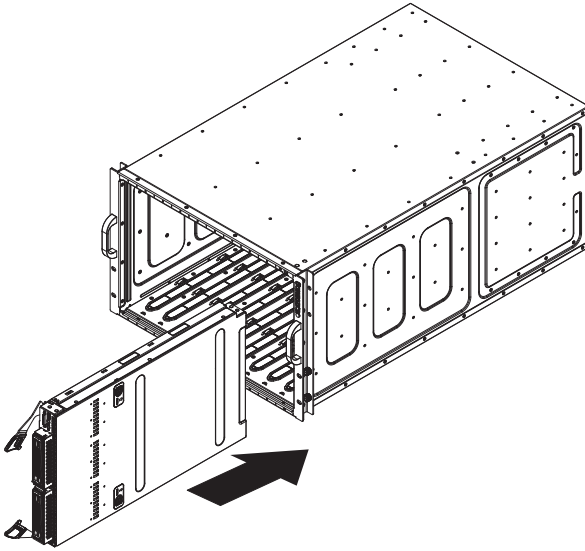
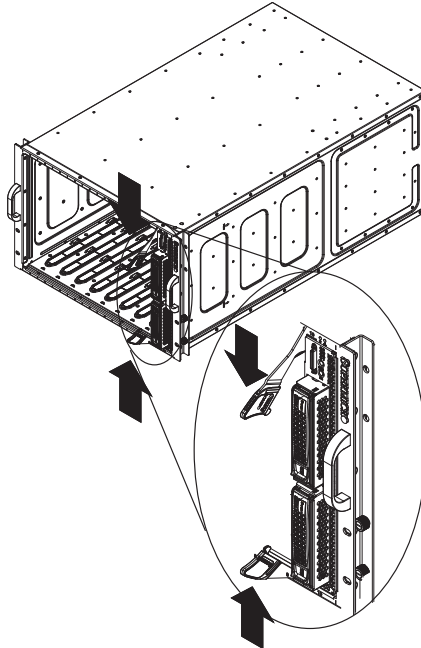


Figure 3-2. Locking the Blade into Position



3-3 Processor Installation

One or two processors may be installed to the mainboard of each blade unit. See [Chapter 1](#) for general information on the features of the blade unit and the [Supermicro web site](#) for further details including processor, memory and operating system support.



WARNING: This action should only be performed by a trained service technician. Allow the processor heatsink to cool before removing it.

Removing a Processor

1. Power down and remove the blade unit from the enclosure (see [Section 3-2: Installing Blade Modules on page 3-1](#) for details).
2. Remove the cover of the blade unit (see "[Removing/Replacing the Blade Cover](#)" on [page 3-2](#)).
3. Loosen the four screws that secure the heatsink to the mainboard.
4. Remove the heatsink by *gently* rotating it back-and-forth sideways with your fingers to release it from the processor. Set the heatsink aside and upside-down so that nothing comes into contact with the thermal grease on its underside.
5. Raise the lever of the processor socket up until the processor is released from the socket, then lift the silver cover plate and remove the processor.



WARNING: This action should only be performed by a trained service technician.

Installing a Processor

1. If present, remove the protective black PnP cap from the processor socket.
2. Raise the lever of the processor socket until it reaches its upper limit.
3. Lift the silver cover plate completely up and out of the way.



NOTE: Be careful not to damage the pins protruding from the CPU socket.

4. Align pin 1 of the processor with pin 1 of the socket (both are marked with a small gold triangle) and gently seat the processor into the socket ([Figure 3-3](#)).
5. Check to make sure the processor is flush to the socket and fully seated.
6. Lower the socket lever until it locks.
7. To install the heatsink, apply thermal grease to the top of the processor. (If reinstalling a heatsink, first clean off the old thermal grease with a clean, lint-free cloth.)

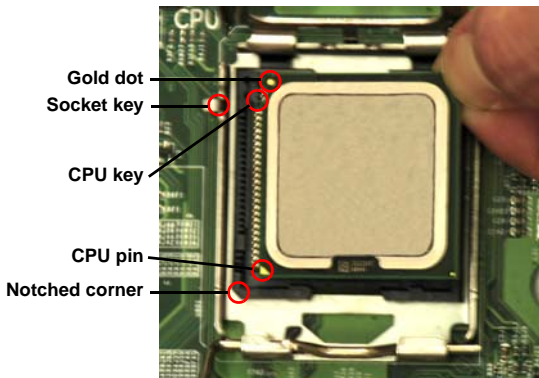
- Place the heatsink on the processor then tighten two diagonal screws until snug, then the other two screws.
- When all four screws are snug, tighten them all to secure the heatsink to the mainboard.



NOTE: Do not overtighten the screws as this may damage the processor or the heatsink.

- Replace the cover on the blade unit and finish by installing the unit back into the blade enclosure.

Figure 3-3. Installing a Processor in a Socket



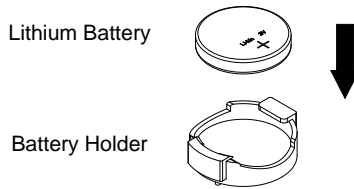
3-4 Onboard Battery Installation

A battery is included on the mainboard to supply certain volatile memory components with power when power has been removed from the blade module. If this battery dies, it must be replaced with an equivalent CR2032 Lithium 3V battery. Dispose of used batteries according to the manufacturer's instructions. See [Figure 3-4](#) for a diagram of installing a new onboard battery.



WARNING: There is a danger of explosion if the onboard battery is installed upside down, which reverses its polarities.

Figure 3-4. Installing the Onboard Battery



3-5 Memory Installation

The mainboard of each blade unit must be populated with DIMMs (Dual In-line Memory Modules) to provide system memory. **The DIMMs should all be of the same size and speed and from the same manufacturer due to compatibility issues.** See details below on supported memory and our web site (www.supermicro.com/products/superblade) for recommended memory.

Populating Memory Slots

The mainboard of a SBI-7125W-S6 blade module has eight memory slots, depending upon the blade model. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Populating two slots at a time (DIMM1A + DIMM2A, DIMM3A + DIMM4A, etc.) with memory modules of the same size and of the same type will result in dual-channel, interleaved memory, which is faster than single-channel, non-interleaved memory. See [Table 3-1: "Populating Eight Memory Slots for Interleaved Operation" on page 3-6](#) for details.

For an interleaved configuration, memory modules of the same size and speed must be installed in pairs. You should not mix DIMMs of different sizes and speeds.

Table 3-1. Populating Eight Memory Slots for Interleaved Operation

Number of DIMMs	Channel 0		Channel 1		Channel 2		Channel 3	
	1A	---	2A	---	---	---	---	---
2 DIMMs	1A	---	2A	---	---	---	---	---
4 DIMMs	1A	---	2A	---	3A	---	4A	---
6 DIMMs	1A	1B	2A	2B	3A	3B	---	---
8 DIMMs	1A	1B	2A	2B	3A	3B	4A	4B

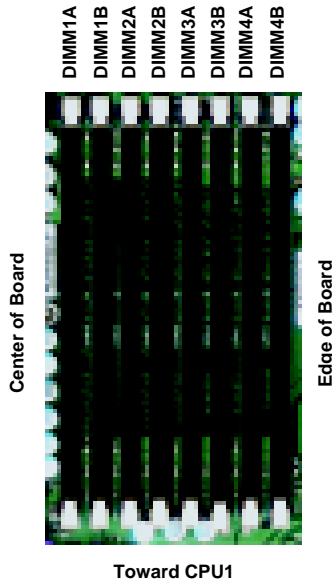


NOTE: The DIMM slot number specified in [Table 3-1](#) equals the DIMM slot to be populated. A "----" indicates that the DIMM slot should be left unpopulated.



NOTE: Though multiple DIMM memory module types and speeds may be supported, you need to use DIMM memory modules of the same speed and type.

Figure 3-5. 8-slot DIMM Numbering



DIMM Installation



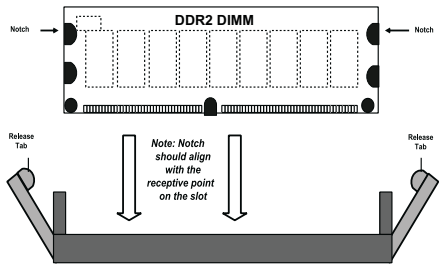
WARNING: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Installing DIMM Memory Modules

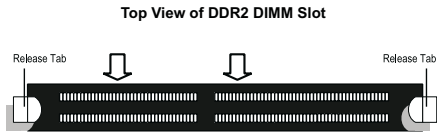
1. Power down the blade module (see ["Powering Down a Blade Unit"](#) on page 3-1).
2. Remove the blade from the enclosure and the cover from the blade (see ["Removing/Replacing the Blade Cover"](#) on page 3-2).
3. Remove the air shroud that covers the DIMM slots.
4. Insert each DIMM vertically into its slot, starting with slots 1A and 2A. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM incorrectly (see [Figure 3-6](#)).

Figure 3-6. Installing a DIMM into a Memory Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.



To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.



5. Gently press down on the DIMM until it snaps into place in the slot. Repeat for all modules (see [Table 3-1](#) for installing DIMMs into the slots in the correct order).
6. Replace the air shroud and the blade cover and install the blade module back into the enclosure.
7. Power up the blade unit (see "[Powering Up a Blade Unit](#)" on page 3-1).

3-6 Hard Disk Drive Installation

Hard disk drives are installed in “carriers” which are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. A blade module needs a hard disk drive with an operating system installed to operate.



WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

To remove a hard drive carrier, do the following:

Removing a Hard Drive Carrier

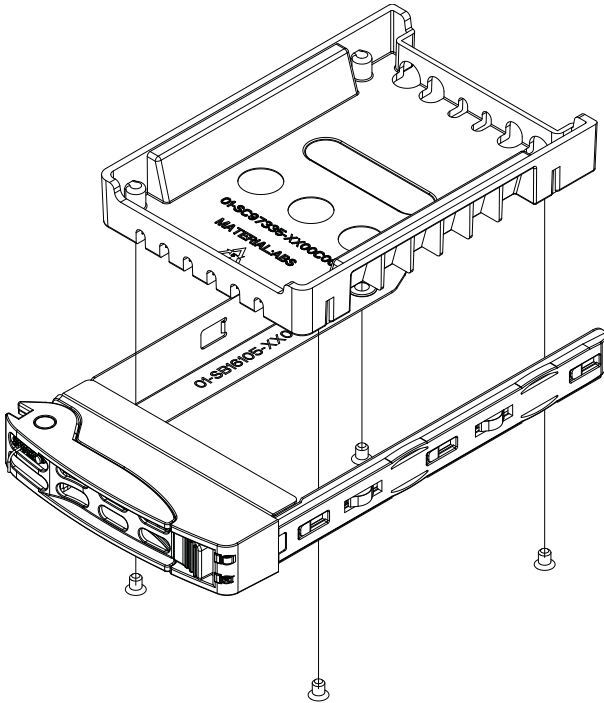
1. Locate the colored “Open” button at the bottom of the drive carrier and press it with your thumb. This action releases the drive carrier from the drive bay.
2. Pull the release handle out about 45-degrees, then use it to pull the drive carrier out.

To Install a hard drive, use the following procedure:

Installing a Hard Drive

1. Remove a blank drive carrier from the blade (see removal procedure above).
2. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.
3. Align the drive in the carrier so that the screw holes of both line up.
4. Secure the drive to the carrier with six screws as shown in [Figure 3-7](#).
5. Insert the drive carrier into its slot keeping the Open button at the bottom. When the carrier reaches the rear of the bay the release handle will retract.
6. Push the handle in until you hear the carrier click into its locked position.

Figure 3-7. Installing a Hard Drive in a Carrier



3-7 Installing the Operating System

An operating system (OS) must be installed on each blade module. Blades with Microsoft Windows OS and blades with Linux OS can both occupy and operate within the same blade enclosure. Refer to the SuperMicro web site for a complete list of supported operating systems.

There are several methods of installing an OS to the blade modules.

Installing with an External USB CD-ROM Drive

The most common method of installing the OS is with an external USB CD-ROM drive. Take the following steps to install the OS to a blade module:



WARNING: Installing the OS from an external CD-ROM drive may take several hours to complete.

1. Connect an SUV cable (Serial port/USB port/Video port cable) to the KVM connector on the front of the blade module. You will then need to attach a USB hub to the USB port on this cable to provide multiple USB ports.
2. Connect the external CD-ROM drive, a USB keyboard and a mouse to the USB hub. You will also need to connect a monitor to the video connector on the SUV cable. Turn on the blade module.
3. Insert the CD containing the OS into the CD-ROM drive.
4. Follow the prompts to begin the installation.

Installing via PXE Boot

PXE (Preboot Execution Environment) is used to boot a computer over a network. To install the OS via PXE, the following conditions must be met:

1. The PXE BOOT option in BIOS must be enabled.
2. A PXE server has been configured (this can be another blade in the system).
3. The PXE server must be connected over a network to the blade to be booted.
4. The blade has only non-partitioned/unformatted hard drives installed and no bootable devices attached to it.

Once these conditions are met, make sure the PXE server is running. Then turn on the blade on which you wish to boot and/or install the OS. The BIOS in the blade will look at all bootable devices and finding none will connect to the PXE server to begin the boot/install.

Installing via Virtual Media (Drive Redirection)

You can install the OS via Virtual Media through either the *IPMIview* (Java based client utility), *IPMITool* or the *Web-based Management Utility*. With this method, the OS is installed from an ISO image that resides on another system/blade.

Refer to the manuals on your SuperBlade CD-ROM for further details on the Virtual Media (CD-ROM or Drive Redirection) sections of these two utility programs.

3-8 Management Software

System management may be performed with either of three software packages: *IPMIview*, *IPMITool* or a *Web-based Management Utility*. These are designed to provide an administrator with a comprehensive set of functions and monitored data to keep tabs on the system and perform management activities.

Refer to the manuals on your SuperBlade CD-ROM for further details on the various functions provided by these management programs.

3-9 Configuring and Setting up RAID

Each blade module that supports two or more hard drives may be used to create a RAID array. The procedures for doing this vary depending upon the blade model chosen for your SuperBlade system.

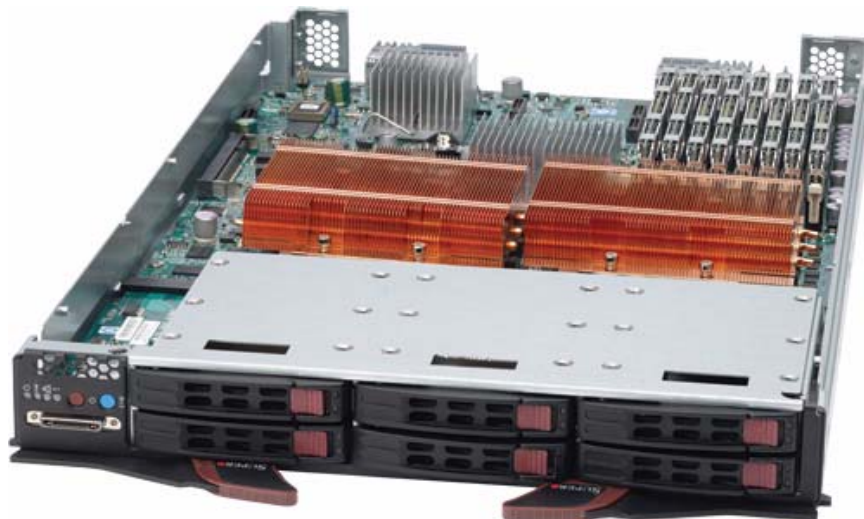
See [Chapter 5](#) for details on how to configure and set up RAID on your blade module.

Notes

Chapter 4

Blade Module Features

Figure 4-1. SBI-7125W-S6 Blade Unit Front View



This chapter describes the SBI-7125W-S6 blade unit. Installation and maintenance should be performed by experienced technicians only.

See [Figure 4-1](#) for a front view of the blade unit and [Table 4-1](#) for its features.

Table 4-1. SBI-7125W-S6 Blade Unit Features

Feature	Description
Processors	Supports single or dual 771-pin Intel Xeon 5400/5300/5200/5100/5000 series processors
Memory	Supports up to 64 GB of ECC FBD DDR2-800/667/533 SDRAM in eight DIMM slots
Storage	Six 2.5" hot-plug SAS or SATA hard disk drives
Ports	KVM port (1)
Features	Onboard ATI ES1000 graphics chip with 16MB of SDRAM, IPMI 2.0, ATA/100, Plug and Play, APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, Real Time Clock, Watch Dog,
Power Consumption	Base Power Draw (~35W) / Power per CPU (50W/80W/120W) / Power per DIMM (typically 14.5W)

4-1 Control Panel

Each blade has a similar control panel (Figure 4-2) with power on/off button, a KVM connector, a KVM button and four LEDs on the top front of the unit. The numbers mentioned in Figure 4-2 are described in Table 4-2.

Figure 4-2. Blade Control Panel

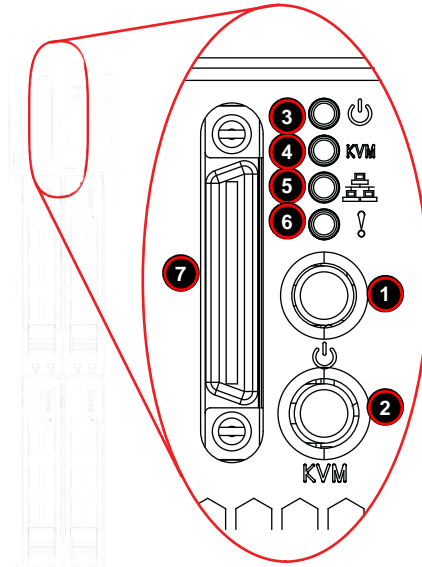


Table 4-2. Blade Control Panel

Item	Function	State	Description
1	Power Button	N/A	Turns blade module on and off
2	KVM Button	N/A	Initiates KVM function
3	Power LED	Green	Indicates power status "On"
		Orange	Indicates power status "Off" (with power cables plugged in)
4	KVM/UID LED	Blue	Indicates KVM being utilized on blade unit
		Flashing Blue	Indicates UID activated on blade module
5	Network/IB LED	Flashing Green	Indicates network activity over LAN
		Flashing Orange	Indicates network activity over InfiniBand module
6	System Fault LED	Red	Indicates a memory error, overheat, VGA error or any error that prevents booting
7	KVM Connector	N/A	Connector for SUV/KVM cable

Power Button

Each blade has its own power button so that individual blade units within the enclosure may be turned on or off independently of the others. Press the power button (#1) to turn on the blade server. The power LED (#3) will turn green. To turn off, press and hold the power button for >4 seconds and the power LED will turn orange.

KVM Button

KVM stands for Keyboard/Video/Mouse. With KVM, a user can control multiple blades with a single keyboard/video/mouse setup. Connect your keyboard, mouse and monitor to the USB and VGA connectors on the CMM module, then push the KVM button on the control panel of the blade module you wish to access.

LED Indicators

Blade module LEDs are described below in [Table 4-3](#).

Table 4-3. Blade Module LED Indicators

LED	State	Description
Power LED	Green	Power On
	Amber	Standby
	Red	Power Failure ^a
KVM/UID LED (Blue)	Steady On	Indicates that KVM has been initialized on this blade module
	Flashing	Serves as a UID indicator (the UID function is activated with a management program)
Network LED (Green)	Flashing	Flashes on and off to indicate traffic (Tx and Rx data) on the LAN connection to this blade module.
System Fault LED (Red)	Steady On	This LED illuminates red when a fatal error occurs. This may be the result of a memory error, a VGA error or any other fatal error that prevents the operating system from booting up.

- a. In the event of a power failure, the N+1 Redundant Power Supply (if included in your system's configuration) automatically picks up the system load to provide uninterrupted operation. The failed power supply should be replaced with a new one as soon as possible.

KVM Connector

Alternatively, you may connect a KVM cable (CBL-0218L, with a keyboard/video/mouse attached) to the KVM connector (#7) of the blade you wish to access. To switch to another blade, disconnect the cable then reconnect it to the new blade.

See the *Web-based Management Utility User's Manual* on your SuperBlade system CD-ROM for further details on using the KVM function remotely.

4-2 Mainboard

The mainboard of the SBI-7125W-S6 blade unit is a proprietary design, which is based on the Intel 5400 MCH/ESB2 chipset. See [Figure 4-4](#) for a block diagram of this chipset, [Figure 4-3](#) for a view of the B7DW3 Mainboard and [Figure 4-5](#) for an exploded view diagram of the blade unit.

Figure 4-3. B7DW3 Mainboard

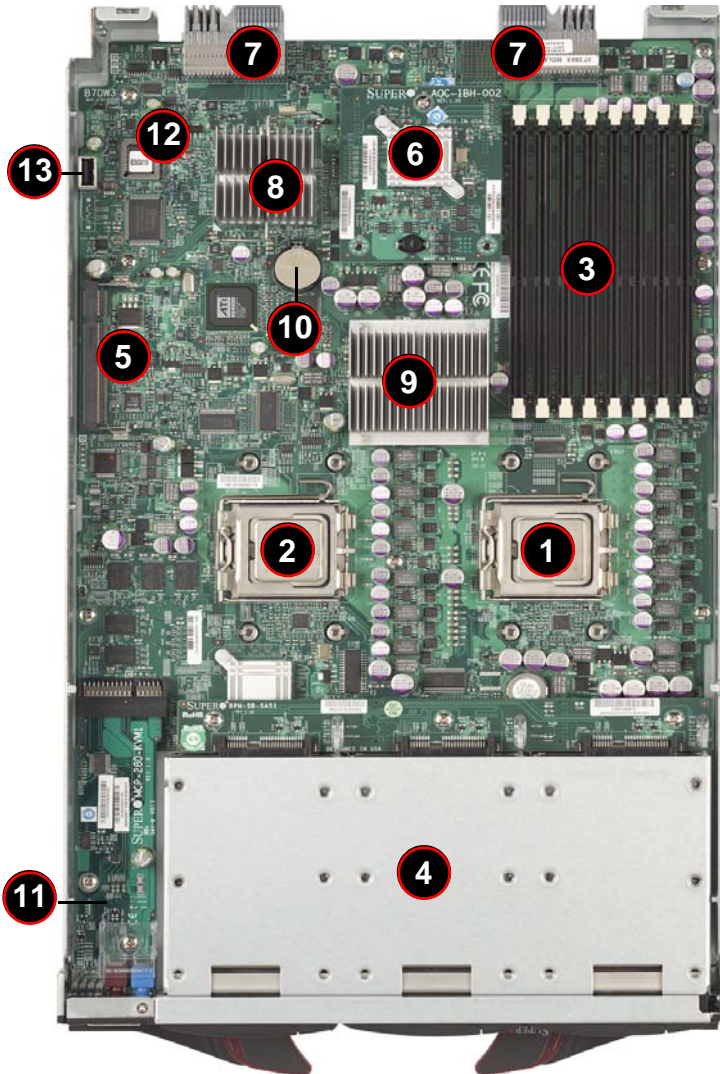
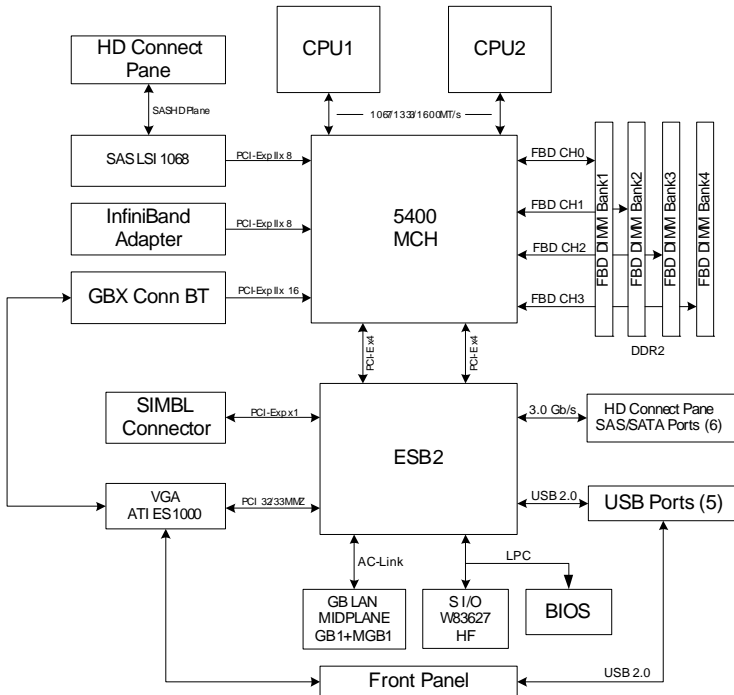


Table 4-4. B7DW3 Mainboard Layout

Item	Description
1	LGA 771 CPU1 Socket
2	LGA 771 CPU2 Socket
3	DIMM Slots (see Figure 3-5: "8-slot DIMM Numbering" on page 3-7 for details)
4	6 2.5" SAS/SATA Hard Drive Bays
5	SIMBL Slot
6	InfiniBand Card
7	Gbx Connectors (for power and logic to backplane)
8	Intel (ESB2) 82563EB (South Bridge chip)
9	Intel 5400 (North Bridge chip)
10	Onboard Battery
11	KVM Module
12	BIOS Chip
13	USB Port

Figure 4-4. Intel 5400 MCH/ESB2 Chipset: Block Diagram



Jumpers

The jumpers present on the mainboard are used by the manufacturer only; there are no jumpers used to configure the operation of the mainboard.

CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. JBT1 consists of two contact pads located near the BIOS chip (#11 in [Figure 4-3](#)).

Clearing CMOS

1. First power down the blade and remove it from the enclosure.
2. Remove the blade cover to access the mainboard (see [Section : Removing/ Replacing the Blade Cover on page 3-2](#) for further details). Short the CMOS pads with a metal object such as a small screwdriver.
3. Replace the cover, install the blade back into the enclosure and power it on.

4-3 Blade Unit Components

Figure 4-5. Exploded View of SBI-7125W-S6 Blade Module

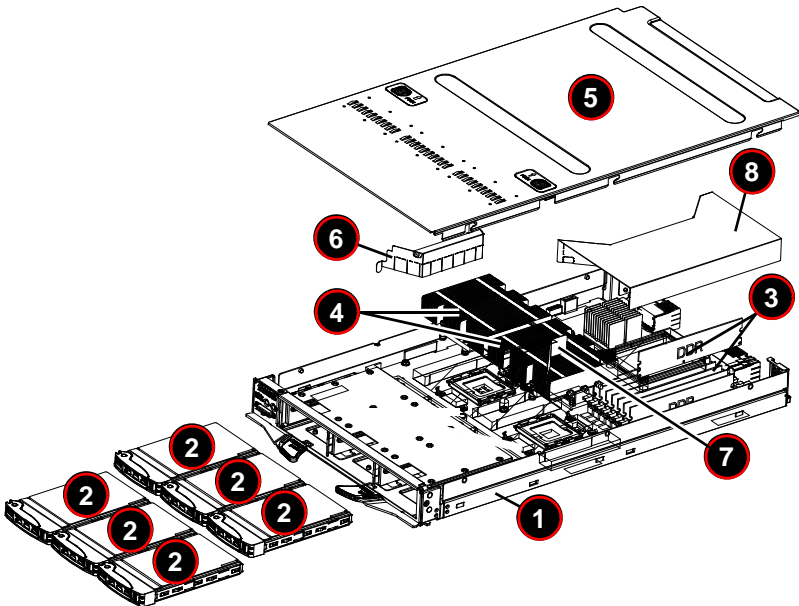


Table 4-5. Main Components of SBI-7125W-S6 Blade Module

Item	Description
1	Blade Unit/Module
2	2.5" Hard Drive
3	DIMMs (system memory)
4	CPU Heatsinks (2)
5	Top Cover
6	Air Shroud 1
7	Air Shroud 2
8	Air Shroud 3

Memory Support

The SBI-7125W-S6 blade module supports up to 64 GB of ECC FBD DDR2-800/667/533 SDRAM in eight DIMM sockets. See [Section 3-5](#) for further details on mainboard memory installation.

Hard Disk Drives

The SBI-7125W-S6 blade unit accommodates up to six 2.5" SAS or SATA hard disk drives, which are mounted in drive "carriers". The drives are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. The six drives can be used to set up a RAID array (RAID 0, 1, 5, 10 or 50) or JBOD. These drives use a yellow color for the Blade HDD active LED.



WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

Notes

Chapter 5

RAID Setup Procedure

RAID setup for the SBI-7125W-S6 blade module is done using the MegaRAID Storage Manager BIOS Configuration utility through BIOS or by using the MegaRAID Storage Manager Software utility in Windows.



NOTE: Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

5-1 WebBIOS Configuration

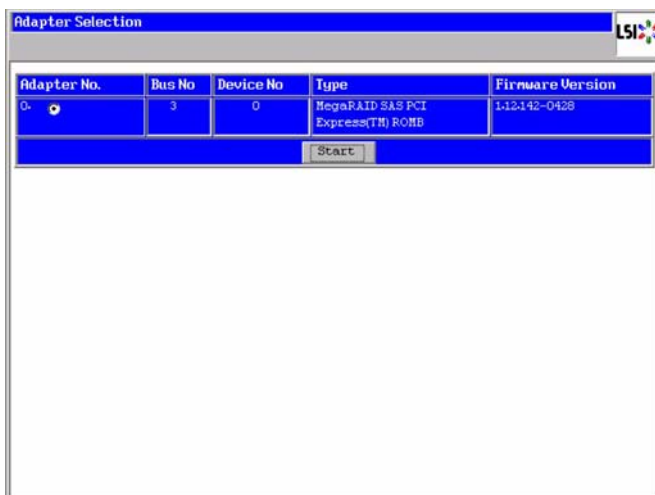
The WebBios Configuration manages RAID configurations on SAS controllers. The utility works independently of the operating system.

Accessing the WebBIOS

Starting the WebBIOS Configuration:

1. When prompted during bootup, press CTRL + H.
2. In the ADAPTER SELECTION screen (Figure 5-1), select an adapter.

Figure 5-1. Adapter Selection Screen



3. Click START.

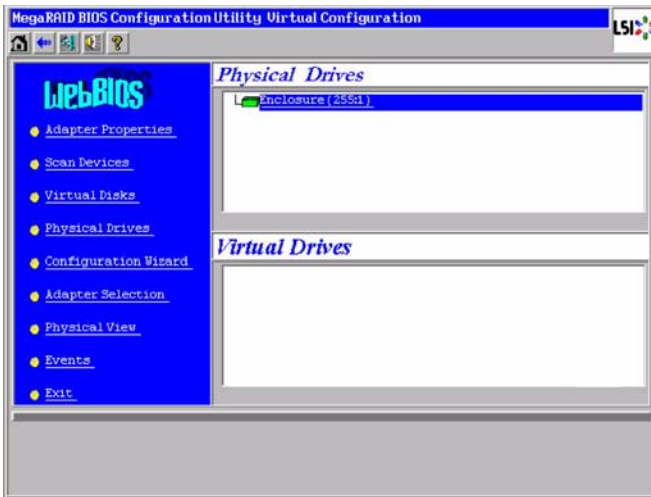
WebBIOS Configuration Wizard

The Configuration Wizard is used to setup RAID arrays and virtual disks. This section includes an overview of use. For more in depth information and descriptions, see the WebBIOS Help and other LSI documentation.

Using the WebBIOS Configuration Wizard:

1. Click the CONFIGURATION WIZARD link located on the left hand side on the INITIAL screen ().

Figure 5-2. Initial Screen



2. Select either the CLEAR CONFIGURATION, NEW CONFIGURATION or ADD CONFIGURATION options.



NOTE: The CLEAR CONFIGURATION and NEW CONFIGURATION settings delete all existing data. Create a backup before choosing these options.

3. Click NEXT.
4. Select either the CUSTOM CONFIGURATION, AUTO CONFIGURATION WITH REDUNDANCY or AUTO CONFIGURATION WITHOUT REDUNDANCY options and click NEXT.

See the sections below for details on using each of these configurations.

WebBIOS Configuration Wizard – Auto Configuration

Using the Auto Configuration Setting:

1. When prompted to review the new configuration, review the settings.
2. Click ACCEPT or BACK to change any settings.



NOTE: AUTO CONFIGURATION WITH REDUNDANCY creates a RAID 5 configuration if at least three disks are available. If only two disks are available, the setup creates RAID 1.

3. Click YES to save the configuration, and YES again to initialize the new virtual disk. WebBIOS CU will begin the initialization of the virtual drives.

WebBIOS Configuration Wizard – Custom Configuration

This section gives an overview of the WebBIOS CUSTOM CONFIGURATION. When using the CUSTOM CONFIGURATION setting, consult the WebBIOS disk Help file and other LSI documentation for more complete instructions.

Using the Custom Configuration Setting:

1. The CUSTOM CONFIGURATION window includes two sections: PHYSICAL DRIVES and DISK GROUPS. Press CTRL and select each of the ready desired physical drives from the group. Select two drives for RAID 1 and three drives for RAID 5 when making selections for these RAID configurations.
2. Click ACCEPT DG.
3. For other RAID levels, repeat [step 1](#) and [step 2](#) and do the following:
 - For RAID 10 configuration, create a second RAID 1 disk group.
 - For RAID 50 confirmation, select physical drives for a second RAID 5 disk group.
4. Click NEXT when you have completed selecting drives for disk groups. The SPAN DEFINITION screen appears.

Select one of the available disk groups and click ADD TO SPAN and then click NEXT.
5. In the VIRTUAL DISK DEFINITION screen, set the following settings:
 - **RAID Level:** To create a RAID 10 (spanned), add both disk groups you created earlier to SPAN. Then click NEXT and select the RAID level on the virtual disk definition. Do the same for RAID 50 and RAID 60.
 - **Stripe Size:** For stripe size, configure the settings below:

Access Policy	Select READ/WRITE, READ ONLY, or BLOCKED.
Read Policy	Use AHEAD, NORMAL, or ADAPTIVE.
Write Policy	Use WBACK, WTHRU, or BAD BBU

IO Policy	Use this setting to read to a specific virtual disk. Cached mode reads to buffered in cached memory and in DIRECT mode reads are not buffered.
Disk Cache Policy	ENABLE, DISABLE, and UNCHANGED.
Disable BGI	Selecting YES disables background initiation.
Select Size	Select the size for the virtual disk.

6. Click ACCEPT or RESET.
7. Click NEXT.
8. Preview the configuration and click ACCEPT to continue or BACK to go to the previous screen, and then click YES to continue.

Device Properties

This section gives an overview for the properties of the adapters, virtual disks, and drives.

Adapter Properties

Click the ADAPTER PROPERTIES to see the definitions for each adapter. There are two screens. The first screen is read-only. Click NEXT to see the second screen, whose settings can be adjusted. For more information on these settings, see the application Help or LSI documentation.

Virtual Disk Properties

This section gives an overview of the virtual disk properties accessed in the WEBBIOS MAIN screen.

The PROPERTIES panel shows the virtual disk RAID level and other defining information. Before changing settings you should make a backup of the information. You can change the settings by doing any of the following:

- **Locate:** This setting sets the designated LEDs on the physical drives of the virtual disk (requires SAFTE support).
- **Fast or Slow:** Select either of these settings to initialize the virtual drives.
- **CC:** This setting runs a consistency check (not available for RAID 0).

Physical Drive Properties

This section gives an overview of the physical drive properties accessed in the WEBBIOS MAIN screen. Though the physical drive properties cannot be changed on this screen, the following information can be changed:

- **MakeDriveOffline:** Use this setting to push the drive offline.
- **Locate:** Use this setting to enable the drive LEDs. The drive must be in the enclosure.

The PREPARE FOR REMOVAL option may be available.

Battery Backup Unit

If the card has a battery backup, do the following to view the battery information.

Viewing Battery Backup Information:

1. Click ADAPTER PROPERTIES in the WEBBIOS MAIN screen.
2. Click NEXT.
3. Click the word PRESENT in the BATTERY BACKUP field.

System Event Information

This section gives an overview of the System Event properties.

Viewing event information:

1. Click EVENTS in the WEBBIOS MAIN screen.
2. Choose an EVENT LOCALE from the menu.
3. Select an EVENT CLASS OF INFORMATION: WARNING, CRITICAL, FATAL, or DEAD and then choose the number of events to view. When finished click GO.

5-2 MegaRAID Storage Manager Software Overview

MegaRAID Storage Manager software is a configuration and monitoring utility used with the Embedded MegaRAID Software. This section provides a brief overview of the MegaRAID Storage Manager software and explains how to install it on the supported operating systems.

MegaRAID Storage Manager software enables you to configure, monitor, and maintain storage configurations created under Embedded MegaRAID Software. The MegaRAID Storage Manager graphical user interface (GUI) makes it easy for you to create and manage storage configurations.



NOTE: MegaRAID Storage Manager software can be used to manage a wide range of MegaRAID controllers. Some MegaRAID Storage Manager software features are not applicable for Embedded MegaRAID Software.

Creating Storage Configurations

MegaRAID Storage Manager software enables you to easily configure the controllers, disk drives, and virtual disks on your workstation or server. The Configuration Wizard greatly simplifies the process of creating arrays and virtual disks.

You can use the Configuration Wizard Auto Configuration mode to automatically create the best possible configuration with the available hardware. You can use the Guided Configuration mode, which asks you a few brief questions about the configuration, and then creates it for you. Or you can use the Manual Configuration mode, which gives you complete control over all aspects of the storage configuration.

Monitoring Storage Devices

MegaRAID Storage Manager software displays the status of virtual disks, physical disks, and other storage devices on the workstation or server that you are monitoring. System errors and events are recorded in an event log file and are displayed on the screen. Special device icons appear on the screen to notify you of disk failures and other events that require immediate attention.

Maintaining Storage Configurations

You can use MegaRAID Storage Manager software to perform system maintenance tasks such as running consistency checks on arrays that support redundancy.

Hardware and Software Requirements

The hardware requirements for MegaRAID Storage Manager software are as follows:

- PC-compatible computer with an IA-32 (32-bit) Intel Architecture processor or an EM64T (64-bit) processor and at least 128 Mbytes of system memory (256 Mbytes recommended)
- Hard disk drive with at least 50 Mbytes available free space

The supported operating systems for the MegaRAID Storage Manager software are as follows:

- Microsoft Windows 2000, Microsoft Windows Server 2003, and Microsoft Windows XP.
- Red Hat Linux (3.0 or 4.0)
- SUSE SLES 9 with latest updates and service packs

Refer to your server documentation and to the operating system documentation for more information on hardware and operating system requirements.

5-3 MegaRAID Storage Manager Software Installation

This section explains how to install (or reinstall) MegaRAID Storage Manager software on your workstation or server.

This installation supports the following operating systems:

- Microsoft Windows
- Red Hat Linux
- SUSE Linux. 5.3.1

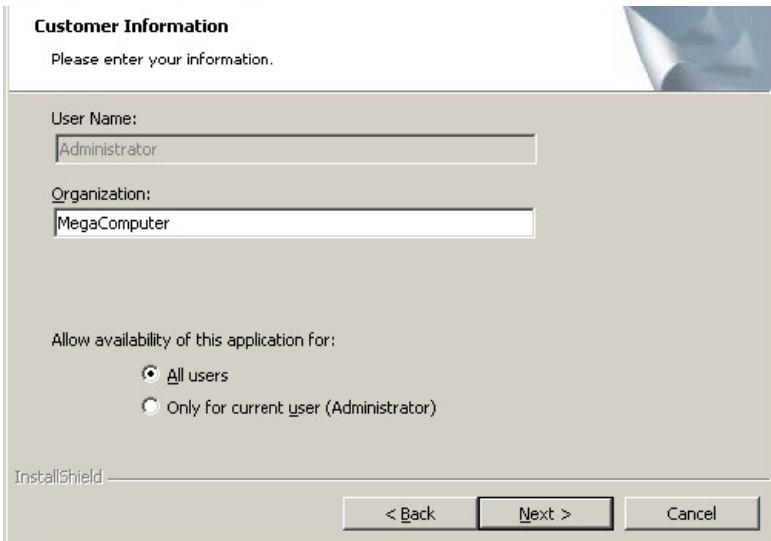
Installing MegaRAID Storage Manager for Microsoft Windows

Follow the below steps to install MegaRAID Storage Manager software on a system running Microsoft Windows 2000, Microsoft Windows Server 2003, or Microsoft Windows XP:

1. Insert the MegaRAID Storage Manager software installation CD in the CD-ROM drive. If necessary, find and double-click the *setup.exe* file to start the installation program.
2. When the WELCOME screen appears, click NEXT. If MegaRAID Storage Manager software is already installed on this system, the PROGRAM MAINTENANCE screen appears. Read the screen text and select MODIFY, REPAIR or REMOVE.
3. When the next screen appears, read and accept the user license, and click NEXT.

The CUSTOMER INFORMATION screen appears (Figure 5-3).

Figure 5-3. Customer Information Screen



Customer Information

Please enter your information.

User Name:
Administrator

Organization:
MegaComputer

Allow availability of this application for:

All users

Only for current user (Administrator)

InstallShield

< Back Next > Cancel

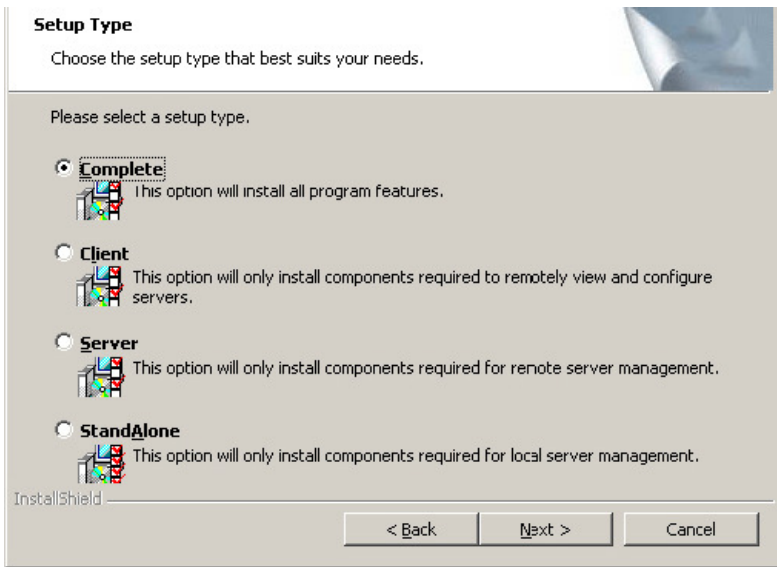
4. In the CUSTOMER INFORMATION screen enter your user name and organization name. In the bottom part of the screen select an installation option:
 - If you select ALL USERS, any user with administrative privileges can use this version of MegaRAID Storage Manager software to view or change storage configurations.
 - If you select ONLY FOR CURRENT USER (ADMINISTRATOR), the MegaRAID Storage Manager shortcuts and associated icons will be available only to the user with this user name.

Click NEXT to continue.

5. On the next screen, accept the default Destination Folder, or click CHANGE to select a different destination folder. Click NEXT to continue.

The SETUP TYPE screen appears (Figure 5-4).

Figure 5-4. Setup Type Screen



6. In the SETUP TYPE screen select one of the Setup options. The options are fully explained in the screen text.
 - Select COMPLETE if you are installing MegaRAID Storage Manager software on a server.
 - Select CLIENT if you are installing MegaRAID Storage Manager software on a PC that will be used to view and configure servers over a network.
 - Select SERVER to install only those components required for remote server management.
 - Select STANDALONE if you will use MegaRAID Storage Manager software to create and manage storage configurations on a standalone workstation.

Click NEXT to proceed.

7. Click INSTALL in the next screen to install the program.
8. Click FINISH when the final CONFIGURATION WIZARD screen appears.

If you select CLIENT installation for a PC used to monitor servers, and if there are no available servers with a registered framework on the local subnet (that is, servers with a complete installation of MegaRAID Storage Manager software), then you cannot connect to a remote server unless you first edit the *startupui.bat* file. Specifically, you must add the IP address of the remote server to the end of the *startupui.bat* file.

For example, to connect to a remote framework on server 192.168.0.10, add the IP address to the end of *startupui.bat* as shown in this example:

```
start JRE\bin\javaw -classpath .;GUI.jar
GUI.VivaldiStartupDialog ajsgyqkj=71244 192.168.0.10
```

Be sure to include a space in front of the IP address, as shown in the above example.

Installing MegaRAID Storage Manager for Linux

Follow the steps below if you need to install MegaRAID Storage Manager software on a system running Red Hat Linux or SUSE Linux:

1. Copy the *SSM_linux_installer...tar.gz* file to a temporary folder.
2. Untar the *SSM_linux_installer...tar.gz* file using the following command:

```
tar -zxvf SSM_linux_installer...tar.gz
```

A new disk directory is created.

3. Go to the new disk directory.
4. In the disk directory, find and read the *readme.txt* file.
5. To start the installation, enter the following command:

```
./install.sh
```

If you select Client installation for a PC used to monitor servers, and if there are no available servers with a registered framework on the local subnet (that is, servers with a complete installation of MegaRAID Storage Manager software), you cannot connect to a remote server unless you first edit the *startupui.sh* file. Specifically, you must add the IP address of the remote server to the end of the *startupui.sh* file.

For example, to connect to a remote framework on server 192.168.0.10, add the IP address to *startupui.sh* as shown in this example:

```
start JRE\bin\javaw -classpath .;GUI.jar GUI.VivaldiStartup-  
Dialog ajsgyqkj=71244 192.168.0.10
```

Be sure to include a space in front of the IP address, as shown in the above example.

Linux Error Messages

One or more of the following messages may appear while you are installing MegaRAID Storage Manager software on a Linux system:

- More than one copy of MegaRAID Storage Manager software has been installed.
This message indicates that the user has installed more than one copy of MegaRAID Storage Manager software. (This can be done by using the *rpm-force* command to install the *rpm* file directly, which is not recommended, instead of using the *install.sh* file.) In such cases, the user must uninstall all the *rpm* files manually before installing MegaRAID Storage Manager software with the procedure listed previously.
- The version is already installed.
This message indicates that the version of MegaRAID Storage Manager software you are trying to install is already installed on the system.
- The installed version is newer.
This message indicates that a version of MegaRAID Storage Manager software is already installed on the system, and it is a newer version than the version you are trying to install.
- Exiting installation.
This is the message that appears when the installation is complete.
- RPM installation failed.
This message indicates that the installation failed for some reason.

Additional message text explains the cause of the failure.

5-4 MegaRAID Storage Manager Window and Menus

This section explains how to start MegaRAID Storage Manager software and describes the MegaRAID Storage Manager window and menus.

Starting MegaRAID Storage Manager Software

Follow these steps to start MegaRAID Storage Manager software and view the main window:

1. Start the program using the method required for your operating system environment:
 - To start MegaRAID Storage Manager software on a Microsoft Windows system, select **START → PROGRAMS → MEGARAID STORAGE MANAGER → STARTUPUI**, or double-click the MEGARAID STORAGE MANAGER shortcut on the desktop.



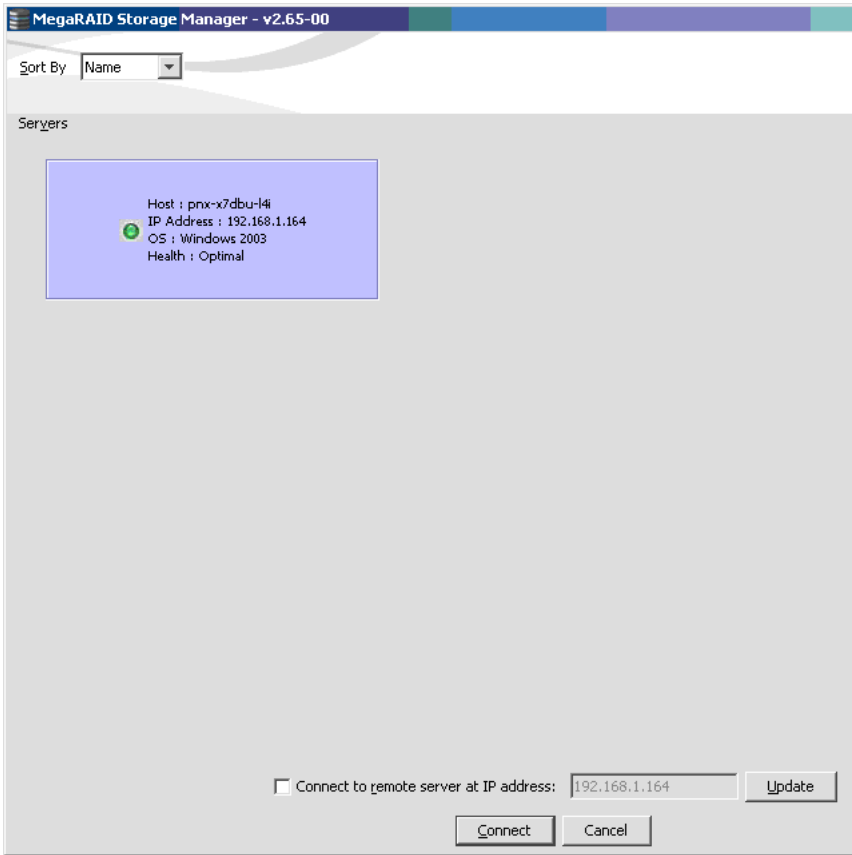
NOTE: If a warning appears stating that Windows Firewall has blocked some features of the program, click **UNBLOCK** to allow MegaRAID Storage Manager software to start.

This is because Windows Firewall sometimes blocks the operation of programs that use Java.

- To start MegaRAID Storage Manager software on a Red Hat Linux system, select **APPLICATIONS → SYSTEM TOOLS → MEGARAID STORAGE MANAGER → STARTUPUI**.
- To start MegaRAID Storage Manager software on a SUSE SLES 9 system, select **START → SYSTEM → MORE PROGRAMS → MEGARAID STORAGE MANAGER**.

When the program starts, the **SELECT SERVER** window appears ([Figure 5-5](#)).

Figure 5-5. Select Server Window



If the circle in the server icon is yellow instead of green, it means that the server is running in a degraded state—for example, because a disk drive used in a virtual disk has failed. If the circle is red, the storage configuration in the server has failed.



NOTE: To access servers on a different subnet, type in the box at the bottom of the screen the IP address of a server in the desired subnet where MegaRAID Storage Manager software is running, and click UPDATE. If you check the Connect to remote Framework box, you can also access a standalone installation of MegaRAID Storage Manager software, if it has a network connection.

2. Double-click the icon of the server that you want to access.

The SERVER LOGIN window appears (Figure 5-6).

Figure 5-6. Server Login Window



The screenshot shows a window titled "Enter User Name & Password" with a blue background and the LSI LOGIC logo. The window contains the following elements:

- Login Mode :** A drop-down menu currently set to "Full Access".
- User Name :** A text input field.
- Password :** A text input field.
- Login** and **Cancel** buttons at the bottom.

3. Select an access mode from the drop-down menu.
 - Select FULL ACCESS if you need to both view the current configuration and change the configuration.
 - Select VIEW ONLY if you need to only view and monitor the configuration.
4. Enter your user name and password, and click LOGIN.



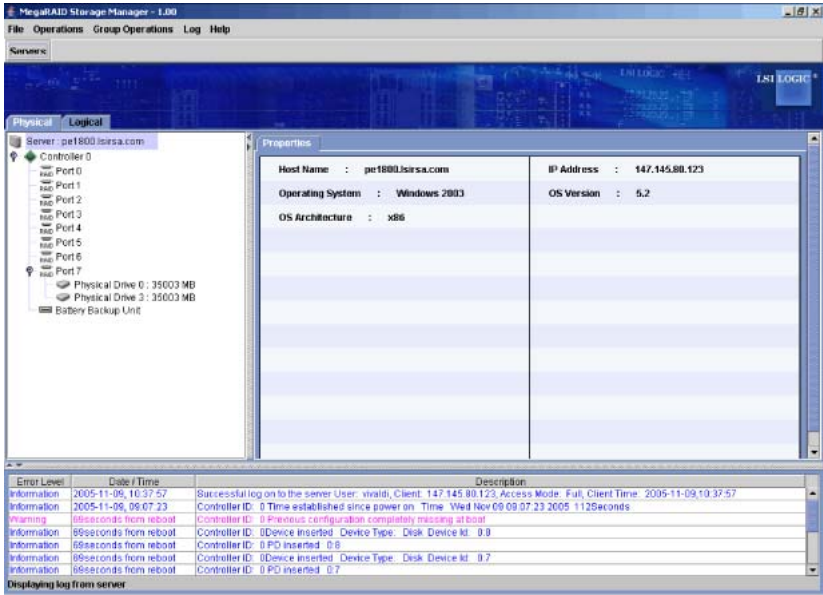
NOTE: If the computer is networked, this is the login to the computer itself, not the network login.

You must enter the root/administrator user name and password to use Full Access mode. If your user name and password are correct for the Login mode you have chosen, the main MEGARAID STORAGE MANAGER window appears.

MegaRAID Storage Manager Window

This section describes the MEGARAID STORAGE MANAGER window (Figure 5-7).

Figure 5-7. Storage Manager Window



The following sections describe the panels and menu options that appear in this window.

Physical/Logical View Panel

The left panel of the MEGARAID STORAGE MANAGER window displays either the Physical view or the Logical view of the system and the devices in it, depending on which tab is selected.

- The Physical view shows the hierarchy of physical devices in the system. At the top of the hierarchy is the system itself. One or more controllers are installed in the system. Each controller has one or more ports. Disk drives and other devices are attached to the ports.
- The Logical view shows the hierarchy of controllers, virtual disks, and disk groups that are defined on the system. (Physical drives also appear in the Logical view, so you can see which physical drives are used by each virtual disk.)

The following icons in the left panel represent the controllers, disk drives, and other devices:

- System
- Controller

- Port
- Array
- Virtual disk
- Physical drive

A **red** circle to the right of an icon indicates that the device has failed.

A **yellow** circle to the right of an icon indicates that a device is running in a degraded state.

Properties/Operations/Graphical View Panel

The right panel of the MEGARAID STORAGE MANAGER window has either two or three tabs, depending on what kind of device is selected in the left panel.

- The PROPERTIES tab displays information about the selected device. For example, if a controller icon is selected in the left panel, the PROPERTIES tab lists information such as the controller name and the device port count.
- The OPERATIONS tab lists the operations that can be performed on the device that is selected in the left panel. Some types of devices, such as arrays and ports, do not have operations associated with them.
- The GRAPHICAL VIEW tab can be selected in the right panel if a physical drive or virtual disk is selected in the left panel. In graphical view, the device's storage capacity is color coded according to the legend shown on the screen. For example, on a physical drive configured space is blue, available space is white, and reserved space is red.

Event Log Panel

The lower part of the MEGARAID STORAGE MANAGER window displays the system event log entries. New event log entries appear during the session. Each entry has a timestamp and date, an error level indicating the severity of the event, and a brief description of the event.

Menu Bar

This section contains brief descriptions of the main selections from the MEGARAID STORAGE MANAGER menu bar.

File Menu

The FILE menu has an EXIT option for exiting from the MEGARAID STORAGE MANAGER software. It also has a RESCAN option for updating the display in the MEGARAID STORAGE MANAGER window. (RESCAN is seldom required; the display normally updates automatically.)

Operations Menu

The OPERATIONS menu is available when a controller, physical drive, or logical drive is selected in the MEGARAID STORAGE MANAGER window. The OPERATIONS menu options vary depending on what type of device is selected in the left panel of the MEGARAID STORAGE MANAGER window. The options also vary depending on the current state of the selected device. For example, if you select an offline physical drive, the MAKE DRIVE ONLINE option appears in the OPERATIONS menu.

You can also view the OPERATIONS selections on the main window on the OPERATIONS tab in the right panel. If an operation requires user inputs before it can be executed, it appears in the OPERATIONS tab but not in the OPERATIONS menu. A device-specific OPERATIONS menu pops up if you right-click a device icon in the left panel.

An ADVANCED OPERATIONS submenu is also available. This is where you access the CONFIGURATION WIZARD and other configuration-related commands. To access this menu, select OPERATIONS → ADVANCED OPERATIONS.

Group Operations Menu

The GROUP OPERATIONS menu options include CHECK CONSISTENCY, INITIALIZE, and SHOW PROGRESS.

Log Menu

The LOG menu includes options for saving and clearing the message log.

Help Menu

On the HELP menu you can select HELP → HELP to view the MegaRAID Storage Manager software online help file. You can select HELP → ABOUT to view version information for the MegaRAID Storage Manager software.



NOTE: When you use the MegaRAID Storage Manager software online help, you may see a warning message that Internet Explorer has restricted the file from showing active content. If this warning appears, click on the active content warning bar and enable the active content.

5-5 Configuration

You use MegaRAID Storage Manager software to create and modify storage configurations. RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, and RAID 60 storage configurations are supported.



WARNING: LSI recommends that you do not use both SAS and SATA drives in the same array. Using different drive interfaces in this way could cause unpredictable behavior, decreased performance, an increased error count, and decreased MTBF.



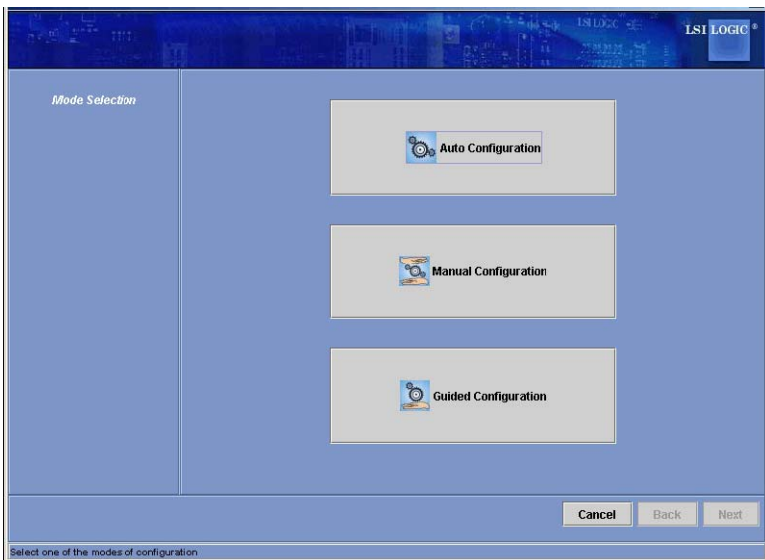
NOTE: You cannot create or modify a storage configuration unless you are logged on with administrator privileges.

Creating a New Storage Configuration

You can use the MegaRAID Storage Manager Configuration Wizard to create new storage configurations. To open the MegaRAID Storage Manager Configuration Wizard, select a controller in the left panel of the MEGARAID STORAGE MANAGER window and then select OPERATIONS→ADVANCED OPERATIONS→CONFIGURATION→CONFIGURATION WIZARD.

The CONFIGURATION WIZARD MODE SELECTION screen appears ([Figure 5-8](#)).

Figure 5-8. Configuration Wizard Mode Selection Screen



This screen lists three configuration modes that you can select from:

- **AUTO CONFIGURATION** automatically creates an optimal configuration from the available disk drives.
- **MANUAL CONFIGURATION** gives you the greatest level of control in creating a new virtual disk.
- **GUIDED CONFIGURATION** asks you a few simple questions about what kind of configuration you want and then automatically creates it from the available disk drives.



NOTE: You can use **AUTO**, **GUIDED**, or **MANUAL CONFIGURATION** mode to create a **RAID 0** or **RAID 1** configuration. However to create a **RAID 10** configuration, you must use the **MANUAL CONFIGURATION** mode.

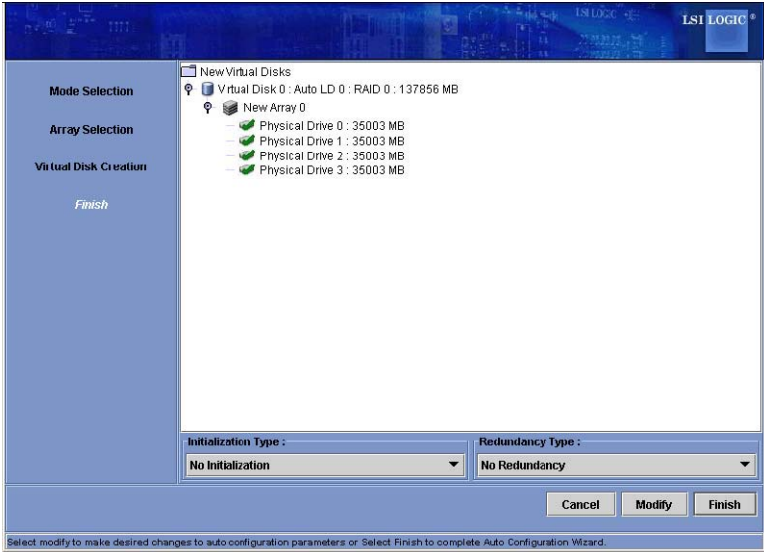
Understanding Virtual Disk Parameters

This section describes the Virtual Disk Parameters that you can set when you use the Guided Configuration or Manual Configuration modes of the Configuration Wizard. You should change these parameters only if you have a specific reason for doing so. It is usually best to leave them at their default settings.

- **Stripe Size:** A stripe size of 64 Kbytes is supported.
- **Disk Cache Policy:** Select a cache setting for this disk: Unchanged, Enabled or Disabled.
- **Init State**
 - **No Initialization:** The new configuration is not initialized and the existing data on the disks is not overwritten.
 - **Fast Initialization:** MegaRAID Storage Manager software quickly writes zeroes to the first and last 8 Mbyte regions of the new virtual disk.
 - **Full Initialization:** A complete initialization is done on the new configuration. This may take a long time if the disks are large.

Using Auto Configuration

Figure 5-9. Auto Configuration Screen



Selecting AUTO CONFIGURATION mode brings up the AUTO CONFIGURATION screen (Figure 5-9).

AUTO CONFIGURATION is the quickest and simplest way to create a new storage configuration. When you select AUTO CONFIGURATION mode on the CONFIGURATION WIZARD MODE SELECTION screen, the Configuration Wizard creates the best configuration possible using the available physical disks.

Follow these steps to create a new storage configuration in AUTO CONFIGURATION mode:

1. Select a redundancy option from the drop-down menu at the bottom of the AUTO CONFIGURATION screen:
 - **No Redundancy:** The new configuration will have no data redundancy (RAID 0). If a physical disk in the configuration fails, all data will be lost.
 - **With Redundancy:** The new configuration will have data redundancy via mirrored data (RAID 1) or via parity data (RAID 5). If a physical disk fails, data is still protected.
2. Select an initialization option from the drop-down menu at the bottom of the screen:
 - **No Initialization:** The new configuration is not initialized, and the existing data on the disks is not overwritten.
 - **Fast Initialization:** MegaRAID Storage Manager software quickly writes zeroes to the first and last 8 Mbyte regions of the new virtual disk.

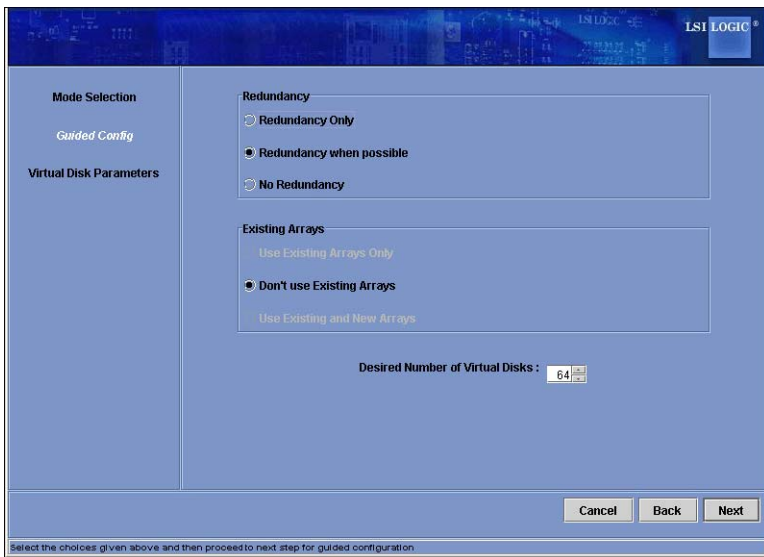
- **Full Initialization:** A complete initialization is done on the new configuration. This may take a long time if the disks are large.
3. (Optional) Click MODIFY if you want to switch to MANUAL CONFIGURATION mode so you can modify the suggested Auto Configuration.

When you click MODIFY, the VIRTUAL DISK CREATION screen () appears. Select the new virtual disk, and click RECLAIM. Then select the new array from the ARRAYS WITH FREE SPACE list, and change the virtual disk parameters as needed.

4. Click FINISH. The new storage configuration will be created and initialized (unless you selected NO INITIALIZATION).

Using Guided Configuration

Figure 5-10. Guided Configuration Screen



Selecting GUIDED CONFIGURATION mode brings up the GUIDED CONFIGURATION screen (Figure 5-10).

GUIDED CONFIGURATION provides an easy way to create a new storage configuration. Based on the information that is provided, the Configuration Wizard uses the available disk drives to create an optimal storage configuration.

Follow these steps to create a new storage configuration in GUIDED CONFIGURATION mode:

1. Select a redundancy option at the top of the GUIDED CONFIGURATION screen:
 - **Redundancy Only:** Create a configuration only if redundancy (RAID 1 or RAID 5) is possible.

- **Redundancy when possible:** Create a redundant configuration if possible. Otherwise, create a non-redundant configuration.
 - **No Redundancy:** Create a non-redundant configuration.
2. Choose whether you want to use existing arrays in the new virtual disk. The options are:
 - **Use Existing Arrays Only**
 - **Don't Use Existing Arrays**
 - **Use Existing and New Arrays**

The first and third options are disabled if there are no available existing arrays.
 3. Select a maximum number of virtual disks to be created. The Configuration Wizard may not be able to create as many virtual disks as you want, depending on the current configuration and the number of virtual disks that have already been created.
 4. Click NEXT to continue to the next VIRTUAL DISK PARAMETERS screen (Figure 5-11).

Figure 5-11. Virtual Disk Parameters Screen

The screenshot shows the 'Virtual Disk Parameters' screen for a RAID 0 configuration. The interface includes a sidebar on the left with navigation options: 'Mode Selection', 'Guided Config', 'Virtual Disk Parameters' (selected), and 'Finish'. The main area is titled 'RAID 0' and displays the following configuration:

- Virtual Disk Count:** 64
- Total Capacity:** 100% (137,856 MB)

A note states: 'The capacity mentioned will be used as an approximation while creating the virtual disks.'

The 'Virtual Disk Parameters' section includes the following settings:

- Stripe Size:** 64 K
- Read Policy:** No Read Ahead
- Default Write Policy:** Write Through
- IO Policy:** Direct IO
- Access Policy:** Read Write
- Disk Cache Policy:** Unchanged
- Init State:** No Initialization

At the bottom right, there are three buttons: 'Cancel', 'Back', and 'Next'.

5. Change the default volume parameters in the VIRTUAL DISK PARAMETERS screen, if needed. In the top section of the screen you can specify the number of virtual disks to create. You can also choose to use less than the full capacity of this array for the virtual disk(s).



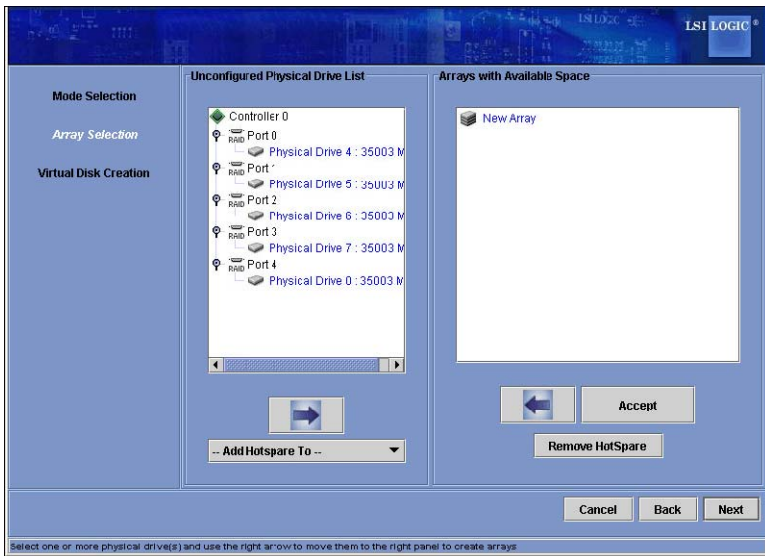
NOTE: You could do this to leave capacity available for other virtual disks that you create later.

6. Click NEXT to continue to the next screen.
7. Check the configuration that you have just defined. If it is acceptable, click FINISH. If you want to change something, click BACK to return to the previous screens.

Using Manual Configuration: RAID 0

Follow these steps to create a RAID 0 storage configuration using the MANUAL CONFIGURATION mode of the Configuration Wizard. Figure 5-12 shows the first, ARRAY SELECTION screen, that appears when you select MANUAL CONFIGURATION.

Figure 5-12. Array Selection Screen



1. In the ARRAY SELECTION screen, select two or more available drives in the left panel. Click the RIGHT ARROW button to move the selected drives to the right panel.



NOTE: MegaRAID Storage Manager software will not allow you to select the disk drive on which the operating system is installed or any other drives that are already part of a configuration.

2. Click ACCEPT to accept these drives for the new RAID 0 array.

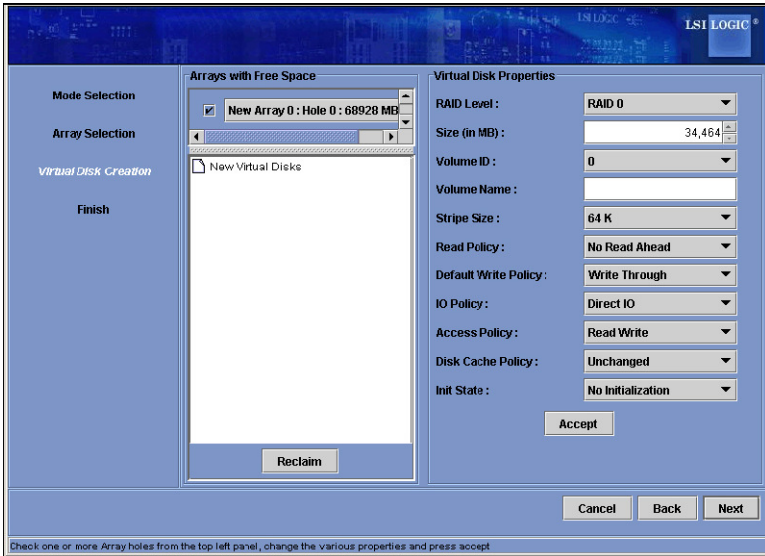


NOTE: To remove a single drive from a proposed new array, select the drive icon in the right panel and click the LEFT ARROW button.

3. Click NEXT.

The VIRTUAL DISK CREATION screen appears, as shown in [Figure 5-13](#).

Figure 5-13. Virtual Disk Creation Screen



4. The ARRAYS WITH FREE SPACE menu lists the new array that you just defined, plus any existing arrays with holes (free space) that could be used for a new configuration.

From this menu, select the array to use for the new virtual disk.

5. In the right panel, select RAID 0 as the RAID level.
6. (Optional) Set SIZE (in MB) to a lower number if you do not want to use the entire available capacity for the new virtual disk.
7. (Optional) Change the other VIRTUAL DISK PROPERTIES, if necessary.
8. Click ACCEPT to accept the configuration of the new virtual disk.



NOTE: Click the RECLAIM button if you want to undo a virtual disk that you just defined.

9. Click NEXT to continue with the next configuration step. The VIRTUAL DISK SUMMARY screen appears.
10. Review the configuration shown in the VIRTUAL DISK SUMMARY screen. If you want to change something, click BACK and change the configuration parameters.
11. Click FINISH to accept the configuration and start the initialization process (unless you selected NO INITIALIZATION earlier).

Using Manual Configuration: RAID 1

Follow these steps to create a RAID 1 storage configuration using the MANUAL CONFIGURATION mode of the Configuration Wizard:

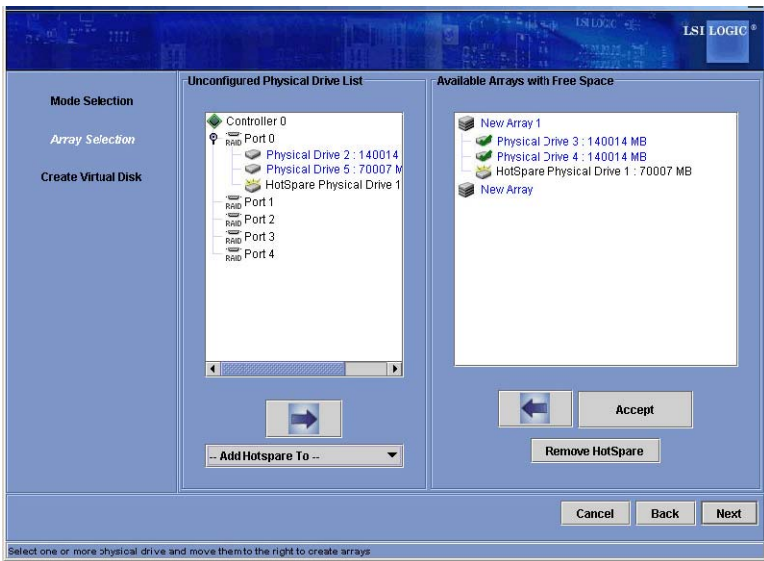
1. In the ARRAY SELECTION screen (Figure 5-12) select two available drives in the left panel. Click the RIGHT ARROW button to move the selected drives to the right panel.



NOTE: MegaRAID Storage Manager software will not allow you to select the disk drive on which the operating system is installed or any other drives that are already part of a configuration.

2. Click ACCEPT to accept these drives for the new RAID 1 array.
3. To add a hotspare to an array, select an available drive in the left panel. Select the array from the drop-down menu, and click ADD HOTSPARE TO, as shown in Figure 5-14.

Figure 5-14. Array Selection Screen – Adding a Hotspare



4. To remove a hotspare from an array, select it in the right panel and click REMOVE HOTSPARE.
5. Click NEXT.

The VIRTUAL DISK CREATION screen appears, as shown in [Figure 5-13](#).

6. The ARRAYS WITH FREE SPACE menu lists the new array(s) that you just defined, plus any existing arrays with holes (free space) that could be used for a new configuration.

Select the array to use for the new virtual disk.

7. In the right panel, select RAID 1 as the RAID level.
8. (Optional) Set SIZE (in MB) to a lower number if you do not want to use the entire available capacity for the new virtual disk.
9. (Optional) Change the other VIRTUAL DISK PROPERTIES, if necessary.
10. Click ACCEPT to accept the configuration of the new virtual disk.



NOTE: Click the RECLAIM button if you want to undo a virtual disk that you just defined.

11. Click NEXT to continue with the next configuration step.

The VIRTUAL DISK SUMMARY window appears.

12. Review the configuration shown in the window. If you want to change something, click BACK and change the configuration parameters.
13. Click FINISH to accept the configuration and start the initialization process (unless you selected NO INITIALIZATION earlier).

Using Manual Configuration: RAID 5

Follow these steps to create a RAID 5 storage configuration using the MANUAL CONFIGURATION mode of the Configuration Wizard.

1. In the ARRAY SELECTION screen ([Figure 5-12](#)), select three available drives in the left panel. Click the RIGHT ARROW button to move the selected drives to the right panel.



NOTE: MegaRAID Storage Manager software will not allow you to select the disk drive on which the operating system is installed or any other drives that are already part of a configuration.

2. Click ACCEPT to accept these drives for the new RAID 5 array.



NOTE: To remove a single drive from a proposed new array, select the drive icon in the right panel and click the Left Arrow button.

3. Click NEXT.

The VIRTUAL DISK CREATION screen appears (Figure 5-13).

4. The ARRAYS WITH FREE SPACE menu lists the new array that you just defined, plus any existing arrays with holes (free space) that could be used for a new configuration.

From the ARRAYS WITH FREE SPACE menu, select the array to use for the new virtual disk.

5. In the right panel, select RAID 5 as the RAID level.
6. (Optional) Set SIZE (in MB) to a lower number if you do not want to use the entire available capacity for the new virtual disk.
7. (Optional) Change the other VIRTUAL DISK PROPERTIES, if necessary.
8. Click ACCEPT to accept the configuration of the new virtual disk.



NOTE: Click the RECLAIM button if you want to undo a virtual disk that you just defined.

9. Click NEXT to continue with the next configuration step.

The VIRTUAL DISK SUMMARY window appears.

10. Review the configuration shown in the VIRTUAL DISK SUMMARY window. If you want to change something, click BACK and change the configuration parameters.
11. Click FINISH to accept the configuration and start the initialization process (unless you selected NO INITIALIZATION earlier).

Using Manual Configuration: RAID 10

Follow these steps to create a RAID 10 storage configuration using the MANUAL CONFIGURATION mode of the Configuration Wizard:

1. In the ARRAY SELECTION screen (Figure 5-12) select two available drives in the left panel. Click the RIGHT ARROW button to move the selected drives to the right panel.
2. Click ACCEPT to accept these drives for a new RAID 1 array.
3. Select two more drives for a second RAID 1 array, and click ACCEPT.
4. To add a hotspare, select an available drive in the left panel, select the array from the drop-down menu and click ADD HOTSPARE TO, as shown in Figure 5-14.
5. To remove a hotspare from an array, select it in the right panel and click REMOVE HOTSPARE.
6. Click NEXT.

The VIRTUAL DISK CREATION screen appears (Figure 5-13).

7. The ARRAYS WITH FREE SPACE menu lists the new array that you just defined, plus any existing arrays with holes (free space) that could be used for a new configuration.

In the left panel, select the two RAID 1 arrays from the menu.

8. In the right panel, select RAID 10 as the RAID level.
9. Click ACCEPT to accept the configuration of the new virtual disk.



NOTE: Click the RECLAIM button if you want to undo a virtual disk that you just defined.

10. Click NEXT to continue with the next configuration step. The VIRTUAL DISK SUMMARY window appears.
11. Review the configuration shown in the window. If you want to change something, click BACK and change the configuration parameters.
12. Click FINISH to accept the configuration and start the initialization process (unless you selected NO INITIALIZATION earlier).

Using Manual Configuration: RAID 50

Follow these steps to create a RAID 50 storage configuration using the MANUAL CONFIGURATION mode of the Configuration Wizard:

1. In the ARRAY SELECTION screen ([Figure 5-12](#)) select two available drives in the left panel. Click the RIGHT ARROW button to move the selected drives to the right panel.
2. Click ACCEPT to accept these drives for a new RAID 5 array.
3. Select two more drives for a second RAID 5 array, and click ACCEPT.
4. To add a hotspare, select an available drive in the left panel. Select the array from the drop-down menu, and click Add Hotspare To, as shown in [Figure 6-7](#).
5. To add a hotspare, select an available drive in the left panel, select the array from the drop-down menu and click ADD HOTSPARE TO, as shown in [Figure 5-14](#).
6. To remove a hotspare from an array, select it in the right panel and click REMOVE HOTSPARE.
7. Click NEXT.

The VIRTUAL DISK CREATION screen appears ([Figure 5-13](#)).

8. The ARRAYS WITH FREE SPACE menu lists the new array that you just defined, plus any existing arrays with holes (free space) that could be used for a new configuration.

In the left panel, select the two RAID 5 arrays from the menu.

9. In the right panel, select RAID 50 as the RAID level.

For a RAID 10 array, the entire capacity of the array is automatically used for the new virtual disk. You cannot define another virtual disk on this array.

10. (Optional) Change the other VIRTUAL DISK PROPERTIES, if necessary. For more information, see "[Understanding Virtual Disk Parameters](#)".

Adding Hotspare Disks

Hotspares are disk drives that are available to automatically replace failed drives in a RAID 1, RAID 5, RAID 6 RAID 10, RAID 50, and RAID 60 virtual disk. Each virtual disk can have one dedicated hotspare.

For more information, see the LSI documentation and software Help file for more information.

To add a global hotspare disk, follow these steps:

1. In the left panel of the MegaRAID Storage Manager window, right click the icon of any unused disk drive.
2. Select MAKE GLOBAL HOTSPARE.

Changing Adjustable Task Rates

Follow these steps if you need to change the adjustable rates for rebuilds and other system tasks that run in the background:



NOTE: LSI recommends that you leave the adjustable task rates at their default settings to achieve the best system performance. If you raise the task rates above the defaults, foreground tasks will run more slowly and it may seem that the system is not responding. If you lower the task rates below the defaults, rebuilds and other background tasks may run very slowly and may not complete within a reasonable time. If you decide to change the values, record the original default value here so you can restore them later, if necessary:

- Rebuild Rate: _____
- Background Initialization (BGI) Rate: _____
- Check Consistency Rate: _____

1. Select the PHYSICAL VIEW tab in the left panel of the MEGARAID STORAGE MANAGER window, and select a controller icon.
2. In the right panel of the MEGARAID STORAGE MANAGER window, select the OPERATIONS tab, and select SET ADJUSTABLE TASK RATES.

The task rates appear in the right panel.

3. Enter changes, as needed, to the task rates for REBUILD RATE, BACKGROUND INITIALIZATION (BGI) RATE (for fast initialization), and CHECK CONSISTENCY RATE (for consistency checks).

Each task rate can be set from 0 to 100. The higher the number, the faster the activity will run in the background, possibly impacting other system tasks.

4. Click GO to accept the new task rates.
5. When the warning message appears, click OK to confirm that you want to change the task rates.

Changing Virtual Disk Properties

You can change a virtual disk's READ POLICY, WRITE POLICY, and other properties at any time after the virtual disk is created. To do this, follow these steps:

1. Select a virtual disk icon in the left panel of the MEGARAID STORAGE MANAGER window.
2. In the right panel, select the PROPERTIES tab, and then select SET VIRTUAL DISK PROPERTIES.

A list of VIRTUAL DISK PROPERTIES appears in the right panel.

3. Change the VIRTUAL DISK PROPERTIES as needed in the right panel. For information on these properties, see "[Understanding Virtual Disk Parameters](#)".



NOTE: Only the DISK WRITE CACHE and READ AHEAD functions are supported in Embedded MegaRAID Software.

4. Click GO to accept the changes.

Deleting a Virtual Disk



WARNING: Be sure to back up the data on the virtual disk before you delete it. Be sure that the operating system is not installed on this virtual disk.

You can delete virtual disks to rearrange the storage space. To delete a virtual disk, follow these steps:

1. Back up all user data that is on the virtual disk you intend to delete.
2. In the left panel of the MEGARAID STORAGE MANAGER window, select the LOGICAL tab, and click the icon of the virtual disk you want to delete.
3. In the right panel, select the OPERATIONS tab, and select DELETE VIRTUAL DISK.
4. Click Go.
5. When the warning message appears, click YES to confirm that you want to delete the virtual disk.

Saving a Storage Configuration to Disk

You can save an existing controller configuration to a file so you can apply it to another controller. To save a configuration file, follow these steps:

1. Select a controller icon in the left panel of the MEGARAID STORAGE MANAGER window.
2. On the menu bar, select OPERATIONS→ADVANCED OPERATIONS→CONFIGURATION→SAVE CONFIGURATION

The SAVE dialog box appears.

3. In the SAVE dialog box, type a name for the configuration file, or accept the default name (*hostname.cfg*).
4. Click SAVE to save the configuration file.

Clearing a Storage Configuration from a Controller

You can use the ADD NEW CONFIGURATION option to add a new storage configuration while keeping the existing configuration. Alternatively, you can clear the existing storage configuration from a controller and then create a totally new configuration or load a previously saved configuration file.



WARNING: Before you clear a configuration, be sure to save any data that you want to keep. Clearing a configuration deletes all data from the disks of the existing configuration. Be sure that the operating system is not installed on this configuration.

To clear a configuration from a controller, follow these steps:

1. Select a controller icon in the left panel of the MEGARAID STORAGE MANAGER window.
2. On the menu bar, select OPERATIONS→ADVANCED OPERATIONS→CONFIGURATION→CLEAR CONFIGURATION

A WARNING message appears.

3. Click YES to clear the configuration or NO to cancel the operation.

Adding a Saved Storage Configuration

When you replace a controller, or when you want to duplicate an existing storage configuration on a new controller, you can add a saved configuration to the controller.



WARNING: When you add a saved configuration to a replacement controller, be sure that the number and size of the physical disks connected to the controller are exactly the same as when the configuration was saved.

To add a saved configuration, follow these steps:

1. Select a controller icon in the left panel of the MEGARAID STORAGE MANAGER window.
2. On the menu bar, select OPERATIONS→ADVANCED OPERATIONS→CONFIGURATION→ADD SAVED CONFIGURATION
A WARNING message appears.
3. Click YES.
4. When the OPEN dialog box appears, select the configuration file, and click OPEN.
5. View the configuration detail, then select APPLY.
6. Confirm the new configuration when prompted.

Notes

Chapter 6

BIOS

6-1 Introduction

This chapter describes the BIOS for Intel SuperBlade modules. The Intel Blade modules use a Phoenix™ ROM BIOS that is stored in a flash chip. This BIOS can be easily upgraded using a floppy disk-based program.



NOTE: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the <http://www.supermicro.com/products/SuperBlade/module/> web site for further details on BIOS setup and the BIOS menus for your SuperBlade blade module.

System BIOS

BIOS stands for Basic Input Output System. The Phoenix BIOS flash chip stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the blade unit is turned off, a backup battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the blade is powered on it is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <DELETE> key at the appropriate time during system boot. (See "[Starting the Setup Utility](#)" below.)

Starting the Setup Utility

Normally, the only visible POST (Power-On Self-Test) routine is the memory test. As the memory is being tested, press the <DELETE> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus.



WARNING: To prevent possible boot failure, do not shut down or reset the system while updating the BIOS.

6-2 BIOS Updates

It may be necessary to update the BIOS used in the blade modules on occasion. However, it is recommended that you not update BIOS if you are not experiencing problems with a blade module.

Updated BIOS files are located on our web site(www.supermicro.com/products/superblade/). Please check the current BIOS revision and make sure it is newer than your current BIOS before downloading.

There are several methods you may use to upgrade (flash) your BIOS. After downloading the appropriate BIOS file (in a zip file format), follow one of the methods described below to flash the new BIOS.

Flashing BIOS

Use the procedures below to “Flash” your BIOS with a new update using the KVM dongle, USB ports on the CMM module or by use of a Floppy disk.

Flashing a BIOS using the KVM Dongle:

For this method, you must use a KVM “dongle” cable (CBL-0218L, included with the system).

1. Copy the contents of the zip file to a bootable USB pen drive.
2. Connect the KVM dongle (CBL-0218L) to the KVM connector at the front of the blade you will be flashing the BIOS to.
3. Connect your bootable USB pen drive to one of the two USB slots on the KVM dongle.
4. Boot to the USB pen drive and go to the directory where you saved the contents of the zip file.
5. Type **flash filename.rom** (replace *filename.rom* by the actual ROM file name).

Flashing a BIOS using the USB Ports on the CMM:

1. Copy the contents of the zip file to a bootable USB pen drive.
2. Connect your bootable USB pen drive to one of the two USB slots on the CMM (located on the back side of the enclosure).
3. Boot to the USB pen drive and go to the directory where you saved the contents of the zip file.
4. Type **flash filename.rom** (replace *filename.rom* by the actual ROM file name).

Flashing a BIOS using a Floppy Image File

This method must be performed remotely.

1. Copy the image file from the zip file to your desktop.
2. Use the web browser or IPMIView to access your CMM remotely using its IP Address.

3. Go to the VIRTUAL MEDIA menu and select FLOPPY IMAGE UPLOAD.
4. BROWSE or OPEN to locate the *.img file on your desktop and select it.
5. Press the UPLOAD button and wait a few seconds for the image to upload to the CMM.
6. Once the upload finishes, turn on the blade module and press to enter the BIOS setup utility.
7. In the BOOT MENU, bring **USB LS120: PEPPCMM VIRTUAL DISC 1** to the top of the boot priority list.
8. Exit while saving the changes. The blade module will boot to the virtual media (floppy image) **A:\>**.
9. Type **flash filename.rom**.



NOTE: Replace *filename.rom* by the actual ROM file name (such as **B7DBE142.rom** for example) in the command.

6-3 Running Setup



NOTE: Default settings are in **bold** text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the MAIN BIOS SETUP screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options.

When you first power on the computer, the BIOS is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <DELETE> immediately after turning the system on, or
2. When the message **Press the <Delete> key to enter Setup** appears briefly at the bottom of the screen during the POST, press the <DELETE> key to activate the main SETUP menu:

6-4 Main BIOS Setup

All main Setup options are described in this section.

Use the UP/DOWN arrow keys to move among the different settings in each menu. Use the LEFT/RIGHT arrow keys to change the options for each setting.

Press the <ESC> key to exit the CMOS SETUP menu. The next section describes in detail how to navigate through the menus.

Items that use sub-menus are indicated with the ► icon. With the item highlighted, press the <ENTER> key to access the submenu.

Menu options found in the MAIN BIOS SETUP menu are shown in the [Table 6-1](#).

Table 6-1. Main BIOS Setup Menu Options

Menu Option	Description
System Time	To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.
System Date	Using the arrow keys, highlight the month, day and year fields, and enter the correct data for the system date. Press the <Enter> key to save the data.
BIOS Date	The BIOS Date field displays the date when this version of the BIOS was built.
► SATA Port 0/ SATA Port 1	These settings allow the user to set the parameters of the SATA Port 0 and 1 drives. Hit <Enter> to activate the following sub-menu screen for detailed options of these items, and to set the correct configurations accordingly. The items included in this submenu are shown in Table 6-2 below.

Table 6-2. SATA Port 0/SATA Port 1 Submenu Menu Options

Menu Option	Description
Type	Selects the type of SATA hard drive. Selecting User will allow the user to manually enter the parameters of the HDD. Selecting Auto will allow the BIOS to automatically configure the parameters of the HDD. Select CD-ROM if a CD-ROM drive is installed. Select ATAPI if a removable disk drive is installed.
Total Sectors	This item allows the user to specify the total number of sectors of the drive. This setting cannot be changed if the Type setting (above) has Auto selected.
Maximum Capacity	This item allows the user to specify the maximum capacity of the drive. This setting cannot be changed if the Type setting (above) has Auto selected.
Multi-Sector Transfer	This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are Disabled , 4 Sectors , 8 Sectors and 16 Sectors .
LBA Mode Control	This item determines whether the BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and Disabled .
32 Bit I/O	This option allows the user to enable or disable the 32-bit data transfer function. The options are Enabled and Disabled .
Transfer Mode	This option allows the user to set the transfer mode. The options are Standard , Fast PIO1 , Fast PIO2 , Fast PIO3 , Fast PIO4 , FPIO3/DMA1 and FPIO4/DMA2 .

Table 6-2. SATA Port 0/SATA Port 1 Submenu Menu Options (Continued)

Menu Option	Description
Ultra DMA Mode	This option allows the user to select Ultra DMA Mode. The options are Disabled , Mode 0, Mode 1, Mode 2, Mode 3, Mode 4 and Mode 5.
Parallel ATA	This setting allows the user to enable or disable Parallel ATA. The options are Enabled and Disabled .
Serial ATA	This setting allows the user to enable or disable Serial ATA. The options are Enabled and Disabled.
Native Mode Operation	Used to select the native mode for ATA. The options are Auto and Serial ATA.
▶ SATA Controller Mode	Select Compatible to allow the SATA and PATA drives to be automatically detected and placed in Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically detected and placed in Native IDE Mode. When the SATA Controller Mode is set to "Enhanced", it displays a submenu with the following menu options: NOTE: Enhanced mode is supported only by Windows 2000 OS and later versions.
Serial ATA (SATA) RAID Enable	Select Enable to enable Serial ATA RAID functions. The options are Enabled and Disabled . NOTE: For a Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select either the Intel or the Adaptec Host RAID Controller. If this item is set to Disabled, the item SATA AHCI Enable will be available.
SATA AHCI	Select Enable to enable the Serial ATA Advanced Host Interface. The options are Enabled and Disabled . WARNING: Use caution when setting this function. This feature is for advanced programmers only.
System Memory	This display informs you how much system memory is recognized as being present in the system.
Extended Memory	This display informs you how much extended memory is recognized as being present in the system.

6-5 Advanced Setup

Choose **Advanced** from the BIOS Setup Utility main menu with the arrow keys. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <ENTER>. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <ENTER>. Table 6-3 contains a list of all menu options in the ADVANCED SETUP menu.

Table 6-3. Advanced Setup Menu Options

Submenu	Description
▶ Boot Features	Access this submenu to make changes to boot features. See Table 6-4 for a list of menu options in this submenu.
▶ Memory Cache	Access this submenu to make changes to settings for the memory cache. See Table 6-5 for a list of menu options in this submenu.
▶ PCI Configuration	Access this submenu to make changes to settings for PCI devices. See Table 6-6 for a list of menu options in this submenu.
▶ Advanced Chipset Control	Access this submenu to make changes to advanced chipset settings. See Table 6-7 for a list of menu options in this submenu. WARNING: Use caution when changing the Advanced settings. Incorrect values entered may cause a system malfunction. Also, a very high DRAM frequency or incorrect DRAM timing may cause system instability. When this occurs, revert to the default settings.
▶ Advanced Processor Options	Access this submenu to make changes to advanced processor option settings. See Table 6-8 for a list of menu options in this submenu.
▶ I/O Device Configuration	Access this submenu to make changes to I/O device configuration settings. See Table 6-9 for a list of menu options in this submenu.
▶ Console Redirection	Access this submenu to make changes to console redirection settings. See Table 6-10 for a list of menu options in this submenu.
▶ Hardware Monitor	Access this submenu to make changes to the hardware monitor settings. See Table 6-11 for a list of menu options in this submenu.

Table 6-4. Boot Features Submenu Menu Options

Menu Option	Description
Quick Boot Mode	If enabled, this feature will speed up the POST (Power-On Self-Test) routine by skipping certain tests after the computer is turned on. The settings are Enabled and Disabled. If Disabled, the POST routine will run at normal speed.
Quiet Boot Mode	This setting allows you to Enable or Disable the diagnostic screen during boot-up.
POST Errors	Enabling this setting pauses and displays the Setup entry or resume boot prompt if an error occurs on boot. If disabled, the system will always attempt to boot. The settings are Enabled and Disabled.
ACPI Mode	Use this setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are Yes and No.
Power Button Behavior	If set to Instant-Off, the system will power off immediately as soon as the user hits the power button. If set to 4-sec. override, the system will power off when the user presses the power button for 4 seconds or longer. The options are Instant-Off and 4-sec override .
Power Loss Control	This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off , Power On and Last State.
Summary Screen	This setting allows you to Enable or Disable the summary screen, which displays the system configuration during bootup.

Table 6-5. Memory Cache Submenu Menu Options

Menu Option	Description
Cache System BIOS Area	This setting allows you to designate a reserve area in the system memory to be used as a system BIOS buffer into which the BIOS will write (cache) its data. Select Write Protect to enable this function, and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.
Cache Video BIOS Area	This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer into which the BIOS will write (cache) its data. Select Write Protect to enable the function and this area will be reserved for Video BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.
Cache Base 0-512k	If enabled, this feature will allow the data stored in the base memory area (block 0-512k) to be cached (written) into a buffer, a storage area in the static DROM (SDROM) or to be written into the L1/L2/L3 cache in the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512k. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the system memory for faster CPU operation.
Cache Base 512k-640k	If enabled, this feature will allow the data stored in memory area 512K-640k to be cached (written) into a buffer, a storage area in the static DROM (SDROM) or written into the L1/L2/L3 cache in the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512k. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the system memory for faster CPU operation.
Cache Extended Memory Area	If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the static DROM (SDROM) or written into the L1/L2/L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512k. Select Write Back to allow CPU to write data back directly from the buffer without writing data to the system memory for faster CPU operation.
Discrete MTRR Allocation	If enabled, MTRRs (Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and Disabled .

Table 6-6. PCI Configuration Submenu Menu Options

Menu Option	Description
Onboard GLAN1/ Onboard GLAN2 (Gigabit-LAN) OPROM Configure	Enabling this option provides the capability to boot from an Ethernet port. The options are Enabled and Disabled.
Default Primary Video Adapter	Choose the default video adapter. The options are Onboard and Other.
Emulated IRQ Solution	Choose the emulated IRQ solution. The options are Enabled and Disabled .
PCI-E I/O Performance	Choose between Payload 256B (with coalesce disabled) and Coalesce (with a payload size of 128 bytes).
PCI Parity Error Forwarding	Enabling logs PCI SERR/PERR error events in BIOS and IPMI. The options are Enabled and Disabled .
ROM Scan Ordering	Determines what kind of option ROM activates first. The options are Onboard First and Addon First.
PCI Fast Delayed Transaction	Enabling improves heavy DMA transfer for 32-bit PCI multimedia cards. The options are Enabled and Disabled .
Reset Configuration Data	If set to Yes, this setting clears the Extended System Configuration Data (ESCD) area. The options are Yes and No.
Large Disk Access Mode	This setting determines how large hard drives are to be accessed. The options are DOS or Other (for Unix, Novelle NetWare and other operating systems).

Table 6-7. Advanced Chipset Control Submenu Menu Options

Menu Option	Description
SERR Signal Condition	This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, Single Bit , Multiple Bit and Both.
4GB PCI Hole Granularity	This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are 256 MB , 512 MB, 1GB and 2GB.
Memory Branch Mode	This option allows the BIOS to enumerate Host Mode for Device 16, Function 1, Reg. 40h bit 16 and Reg. 58h [14]. The options are Interleave , Sequential, Mirror and Single Channel 0.
Branch 0 Rank Interleave	Selects the Branch 0 rank interleave. The options are 1:1, 2:1 and 4:1 .
Branch 0 Rank Sparing	Enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and Disabled .
Branch 1 Rank Interleave	Selects the Branch 1 rank interleave. The options are 1:1, 2:1 and 4:1 .
Branch 1 Rank Sparing	Enable to enable the sparing feature for Branch 1 Rank. The options are Enabled and Disabled .
Enhanced x8 Detection	Select enabled to enable Enhanced x8 DRAM UC Error Detection. The options are Enabled and Disabled.

Table 6-7. Advanced Chipset Control Submenu Menu Options (Continued)

Menu Option	Description
High Bandwidth FSB	Select Enabled to enable a high bandwidth FSB or Disable to disable it.
High Temp DRAM OP	Select Enabled to enable a high temp DRAM OP or Disable to disable it.
ABM Thermal Sensor	Select Enabled to enable the ABM thermal sensor or Disable to disable it.
Thermal Throttle	Select Enabled to enable the Thermal Throttle function or Disable to disable it.
Global Activation Throttle	Select Enabled to enable the Global Activation Throttle function or Disable to disable it.
Crystal Beach Feature	Enabling this creates memory-mapped accesses to the Crystal Beach configuration space located in Device 8, Fn 0 and Fn 1. The options are Enabled and Disabled .
Route Port 80h Cycles to	This feature allows the user to decide which bus to send debug information to. The options are PCI and LPC .
Clock Spectrum Feature	If Enabled , the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and Disabled .
High Precision Event Timer	Use this setting to Enable or Disable HPET support. The options are Yes and No .
USB Function	Select Enabled to enable all USB devices specified. The options are Enabled and Disabled .
Legacy USB Support	This setting allows you to enable support for Legacy USB devices. The options are Enabled and Disabled .

Table 6-8. Advanced Processor Options Submenu Menu Options

Menu Option	Description
CPU Speed	This is a display that indicates the speed of the installed processor.
Frequency Ratio	Selects the internal frequency multiplier of the CPU(s). Options are Default , x6 and x7.
Core Multi-Processing (Available when supported by the CPU)	Determines whether the 2nd CPU core is enabled. The options are Enabled and Disabled .
Machine Checking (Available when supported by the CPU)	Set to Enabled to activate Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Enabled and Disabled .
Thermal Management 2 (Available when supported by the CPU)	Set to Enabled to use Thermal Management 2 (TM2), which will lower the CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), which allows CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

Table 6-8. Advanced Processor Options Submenu Menu Options (Continued)

Menu Option	Description
C1 Enhanced Mode (Available when supported by the CPU)	Set to Enabled to enable Enhanced Halt State to lower the CPU voltage/frequency to prevent overheating. The options are Enabled and Disabled . Refer to the Intel web site for detailed information.
Execute Disable Bit	Set to Enable to allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack. Note: this feature is available when your OS and your CPU support the Execute Disable Bit function. For more information, please refer to the Intel and Microsoft web sites.
Adjacent Cache Line Prefetch (Available when supported by the CPU)	The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. Options are Enabled and Disabled .
Hardware Prefetcher	Select to Enable or Disable hardware prefetching.
Direct Cache Access	This is a system level protocol used in a multi-processor systems to improve I/O network performance. Options are Enabled and Disabled .
Intel (R) Virtualization Technology	Select Enabled to use the feature of Virtualization Technology. The options are Enabled and Disabled .
Intel EIST Support	EIST is used to allow the CPU state to dynamically change based on the system load. The options are Enabled and Disabled . (Native mode support only.)

Table 6-9. I/O Device Configuration Submenu Menu Options

Menu Option	Description
KBC Clock Input	This setting allows you to select clock frequency for KBC. The options are 6MHz, 8MHz, 12MHz , and 16MHz.
► Serial Port A	This setting allows you to assign control of serial port A. The options are Enabled (user defined), Disabled, and Auto (BIOS or OS controlled).
Base I/O Address	This setting allows you to select the base I/O address for serial port A. The options are 3F8 , 2F8 , 3E8, and 2E8.
Interrupt	This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and IRQ4 .
► Serial Port B	This setting allows you to assign control of serial port B. The options are Enabled (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.
Mode	This setting allows you to set the type of device that will be connected to serial port B. The options are Normal and IR (for an infrared device).
Base I/O Address	This setting allows you to select the base I/O address for serial port B. The options are 3F8, 2F8 , 3E8 and 2E8.
Interrupt	This setting allows you to select the IRQ (interrupt request) for serial port B. The options are IRQ3 and IRQ4.
I ² C Bus Switch	This setting allows you to switch on or off the I ² C bus. The options are Auto and Disabled.

Table 6-9. I/O Device Configuration Submenu Menu Options (Continued)

Menu Option	Description
►DMI Event Logging	Access the submenu to make changes to the following settings.
Event Log Validity	This is a display to inform you of the event log validity. It is not a setting.
Event Log Capacity	This is a display to inform you of the event log capacity. It is not a setting.
View DMI Event Log	Highlight this item and press <Enter> to view the contents of the event log.
Event Logging	This setting allows you to Enable or Disable event logging.
ECC Event Logging	This setting allows you to Enable or Disable ECC event logging.
Mark DMI Events as Read	Highlight this item and press <Enter> to mark the DMI events as read.
Clear All DMI Event Logs	Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and No .

Table 6-10. Console Redirection Submenu Menu Options

Menu Option	Description
COM Port Address	This item allows you to specify to redirect the console to Onboard COM A or Onboard COM B. This setting can also be Disabled .
BAUD Rate	This item allows you to select the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, 19.2K , 38.4K, 57.6K, and 115.2K.
Console Type	This item allows you to choose from the available options to select the console type for console redirection. The options are VT100, VT100 (8bit), PC-ANSI (7bit), PC ANSI , VT100+, and VT-UTF8.
Flow Control	This item allows you to choose from the available options to select the flow control for console redirection. The options are: None, XON/XOFF, and CTS/RTS .
Console Connection	This item allows you to choose select the console connection: either Direct or Via Modem.
Continue CR after POST	Choose whether to continue with console redirection after the POST routine. The options are On and Off .

Table 6-11. Hardware Monitor Submenu Menu Options

Menu Option	Description
CPU Temperature Threshold	<p>This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70°C, 75°C, 80°C and 85°C.</p> <p>The hardware monitor provides the following temperature data:</p> <ul style="list-style-type: none"> • PECE Agent 1 Temperature • PECE Agent 2 Temperature • System Temperature
Voltage Monitoring	<p>The following voltages are displayed:</p> <ul style="list-style-type: none"> • VcoreA • VcoreB • +1.8V • P1V5 • +3.3V • +12V • 5Vsb • 5VDD • P_VTT • Vbat

6-6 Security

Choose **Security** from the Phoenix BIOS Setup Utility main menu with the arrow keys. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <ENTER>. All Security BIOS settings are described in [Table 6-12](#) below.

Table 6-12. Security Menu Options

Menu Option	Description
Supervisor Password Is:	This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.
User Password Is:	This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.
Set Supervisor Password	When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.
Set User Password	When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.
Password on Boot	This setting allows you to require a password to be entered when the system boots up. The options are Enabled (password required) and Disabled (password not required).

6-7 Boot

Choose **Boot** from the Phoenix BIOS Setup Utility main menu with the arrow keys. Highlighting a setting with a **+** or **-** will expand or collapse that entry. See details on how to change the order and specs of boot devices in the ITEM SPECIFIC HELP window.

Boot Priority Order/Excluded from Boot Order

Use the UP and DOWN arrow keys to select a device. Use a **<+>** key or a **<->** key to move the device up or down. Use the **<f>** key or the **<r>** key to specify the devices. You can also use the keys indicated above to specify the priority of boot order of a device or to move items from the category of EXCLUDED FROM BOOT ORDER to the category of BOOT PRIORITY ORDER and vice versa. See details on how to change the priority of boot order of devices in the ITEM SPECIFIC HELP window.

6-8 Exit

Choose EXIT from the Phoenix BIOS Setup Utility main menu with the arrow keys. All Exit BIOS settings are described in [Table 6-13](#) below.

Table 6-13. Exit Menu Options

Menu Option	Description
Exit Saving Changes	Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.
Exit Discarding Changes	Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.
Load Setup Defaults	Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.
Discard Changes	Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.
Save Changes	Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Notes

Appendix A

BIOS POST Codes

A-1 BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Table A-1. BIOS POST Messages

BIOS Message	Description
Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
Stuck key	Stuck key on keyboard.
Keyboard error	Keyboard not working.
Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
Keyboard locked - Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
Shadow Ram Failed at offset: nnnn	Shadow RAM failed at offset nnnn of the 64k block at which the error was detected.
System RAM Failed at offset: nnnn	System RAM failed at offset nnnn of in the 64k block at which the error was detected.
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly at offset nnnn .
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
System timer error	The timer test failed. Requires repair of system board.
Real time clock error	Real-Time Clock fails BIOS hardware test. May require board repair.
Check date and time settings	BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of wait states , improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.
Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
Diskette drive A error Diskette drive B error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.
System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
CPU ID:	CPU socket number for Multi-Processor error.
EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
DMA Test Failed	ServerBIOS2 test error: Cannot write to extended DMA (Direct Memory Access) registers.
Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).
Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified device .
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device .
CD ROM Drive	CD ROM Drive identified.
Entering SETUP...	Starting Setup program
Failing Bits: nnnn	The hex number nnnn is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk n (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
nnnn kB Extended RAM Passed	Where nnnn is the amount of RAM in kilobytes successfully tested.
nnnn Cache SRAM Passed	Where nnnn is the amount of system cache in kilobytes successfully tested.
nnnn kB Shadow RAM Passed	Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
nnnn kB System RAM Passed	Where nnnn is the amount of system RAM in kilobytes successfully tested.
One or more I2O Block Storage Devices were excluded from the Setup Boot Menu	There was not enough room in the IPL table to display all installed I2O block-storage devices.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ??????. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nnnn	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ?????.
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an Option ROM , i.e., an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST. Can be turned off in Setup.
PS/2 Mouse:	PS/2 mouse identified.
Run the I2O Configuration Utility	One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: nnnn	Displays the address nnnn of the upper limit of Upper Memory Blocks , indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

A-2 BIOS POST Codes

This section lists the POST (Power-On Self-Test) codes for the Phoenix BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

- **One long and two short beeps** – video configuration error
- **One repetitive long beep** – no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to *port 80h*, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to *port 80h*.

Table A-2. Terminal POST Errors

Post Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
22h	1-3-1-3 Test 8742 Keyboard Controller
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line xxxx*
2Eh	1-3-4-3 RAM failure on data bits xxxx* of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
98h	1-2 Search for option ROMs. One long, two short beeps on check-sum failure
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
A Eh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for the boot block in Flash ROM:

Table A-3. Boot Block Flash ROM Terminal POST Errors

Post Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock

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Table A-3. Boot Block Flash ROM Terminal POST Errors (Continued)

Post Code	Description
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (**xxxx**) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the low order byte of the error. It repeats this sequence continuously.

Notes

Appendix B

iSCSI Setup Procedure

This appendix covers the iSCSI setup procedure for Supermicro blade systems. If you do not wish to employ this optional interface for your blades, then skip this procedure in your blade setup.



NOTE: iSCSI installation requires two (2) network switch/pass-thru modules to implement.

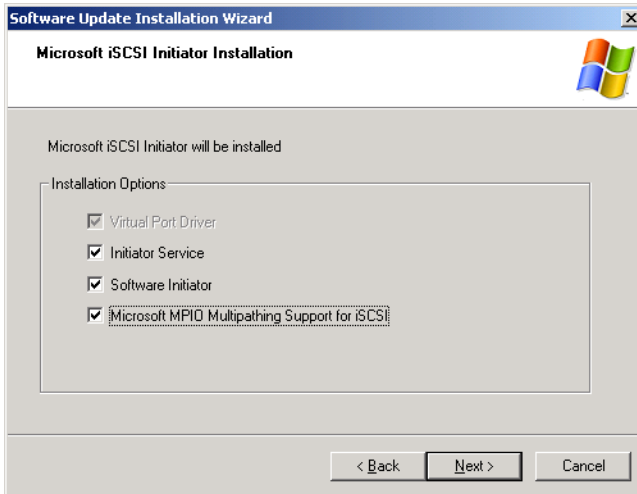
To implement iSCSI use in Supermicro blade systems, use the procedure below:

1. On boot-up press CTRL-D to go to the iSCSI PORT SELECTION screen.
2. Set one port to **Primary** and press <ENTER>.
3. Select the iSCSI BOOT CONFIGURATION option.
4. For DYNAMIC IP CONFIGURATION (DHCP) enter information for the following settings:
 - Initiator Name
 - Initiation IP
 - Subnet Mask
 - Gateway
 - VLAN ID
5. For USE DHCP FOR iSCSI TARGET INFORMATION enter information for the following settings, and then select OK to continue:
 - Target Name
 - Target IP
 - Target Port
 - Boot LUN
6. Select SAVE CHANGES AND EXIT on the setup screen.
7. Put the *Windows Installation CD* into the CD-ROM drive. In Windows press F6 to load the *Intel® iSCSI Setup* driver from the disc.
 - a. If you installed *Windows 2003 32-bit SP1 or SP1 R2* then install the *Microsoft Hotfix for Windows Server, KB902113 NDIS QFE*. Windows 2003 SP2 contains the QFE.
 - b. To Install Windows 2003 x64 you must first create an operating system installation media including a *Hot Fix* referenced from *KB article #934848* at:

<http://support.microsoft.com/kb/934848/en-us>

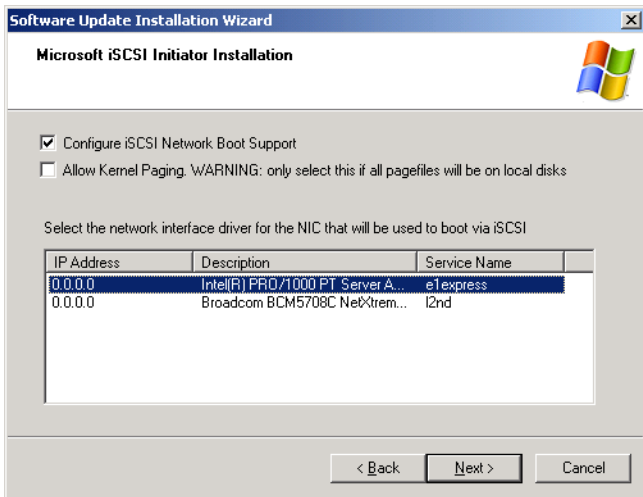
8. Copy the following Windows drivers to your desktop (or a convenient directory for later reference and use):
 - Intel Network Driver
 - Microsoft iSCSI Software Initiator with integrated software boot support
 - ISBOOT.exe
9. Bring up the WINDOWS DEVICE MANAGER screen, and under devices, highlight the second ETHERNET CONTROLLER (under OTHER DEVICES).
10. Select UPDATE DRIVER from the right-click menu. When prompted for the driver file, point to where you saved the driver files and windows will pick it up for installation.
11. Launch the MS ISCSI INITIATOR file that you saved previously, and do the following actions on the MICROSOFT ISCSI INITIATOR INSTALLATION screens that appear:
 - a. Go through the first two screens and on the third screen check the MICROSOFT MPIO MULTIPATHING SUPPORT FOR ISCSI check box (Figure B-1).

Figure B-1. Microsoft MPIO Multipathing Support for iSCSI Check Box



- b. On the next screen check the CONFIGURE ISCSI NETWORK BOOT SUPPORT check box and select the INTEL GIGABIT ADAPTER identified as **e1express** (Figure B-2).

Figure B-2. Configure iSCSI Network Boot Support Check Box



- c. In the next screen select AGREE.
 - d. In the final screen, click FINISH.
12. Reboot the system.
 13. Launch the *ISBOOT.exe* file. It will create an *Intel/12.3* folder on your system. In this new folder look for either the *WIN32* folder for 32-bit Windows installation, or the *WINX64* folder for 64-bit installation.
 14. In the *WIN32* folder launch the *iSCSIAPP.exe* file for 32-bit installation, or in the *WINX64* folder launch the *iSCSIAPP.exe* file. In the window that appears select first YES and then OK at the prompts.
 15. Reboot the system and press CTRL-D to go back to the iSCSI PORT SELECTION screen. In this screen disable the first primary port and then enable the second port to **Primary**.
 16. Repeat [step 3](#) through [step 6](#) above to configure the new port.
 17. Update the network driver in the WINDOWS DEVICE MANAGER for the **first** Ethernet controller by highlighting the first listed ETHERNET CONTROLLER (under OTHER DEVICES) and selecting UPDATE DRIVER from the right-click menu.

When prompted for the driver file, point to where you saved the driver files and windows will pick it up for installation.
 18. Uninstall the *Intel @iSCSI Setup* driver in the WINDOWS DEVICE MANAGER window (right-click UNINSTALL).

19. Open the WINDOWS COMMAND PROMPT terminal window and type

iscsibcg /verify /fix

in the window and press <ENTER>.

20. Reboot the system.

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