Intel® Compute Module MFS5000SI User Guide

A Guide for Technically Qualified Assemblers of Intel® Identified Subassemblies/ Products

Intel Order Number D90834-006

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Intel® server boards contain a number of high-density VLSI and power delivery components that need adequate airflow for cooling. Intel's own chassis are designed and tested to meet the intended thermal requirements of these components when the fully integrated system is used together. It is the responsibility of the system integrator that chooses not to use Intel developed server building blocks to consult vendor datasheets and operating parameters to determine the amount of airflow required for their specific application and environmental conditions. Intel Corporation can not be held responsible if components fail or the server board does not operate correctly when used outside any of their published operating or non-operating limits.

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Preface

About this Manual

Thank you for purchasing and using the Intel® Compute Module MFS5000SI

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing compute modules. This document provides reference information, feature information, and step-by-step instructions for adding and replacing components in the compute module. For the latest version of this manual,see http://www.intel.com/support/motherboards/server/mfs5000si/.

Manual Organization

Chapter 1 provides a brief overview of the compute module. This includes a list of the compute module features, illustrations of the product, and product diagrams to help you identify components and their locations.

Chapter 2 provides instructions for adding and replacing components. It provides step-by-step instructions and diagrams for installing or replacing components such as the processors, memory DIMMs, and other components.

Chapter 3 provides information regarding the BIOS Setup Utility and how to update the compute module BIOS. This section includes information on how to access and use the BIOS Setup Utility as well as update the compute module firmware using the Intel® Modular Server Control UI and the latest Intel®Modular Server System MFSYS25/MFSYS35 Unified Firmware Update (UFU).

Chapter 4 provides information to assist you in troubleshooting the Intel®Compute Module MFS5000SI. This section also includes information on hardware diagnostics.

The back of this manual provides technical specifications, regulatory information,"getting help" information, and the warranty.

Safety Information

Important Safety Instructions

Read all caution and safety statements in this document before performing any of the instructions. See also *Intel® Server Boards and Server Chassis Safety Information* at http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die *Intel® Server Boards and Server Chassis Safety Information* unter http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez *Intel® Server Boards and Server Chassis Safety Information* sur le site http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

Instrucciones de seguridad importantes

Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea *Intel® Server Boards and Server Chassis Safety Information* en http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

重要安全指导

在执行任何指令之前，请阅读本文件中的所有注意事项及安全声明。并参阅 http://support.intel.com/support/motherboards/server/sb/CS-010770.htm 上的 *Intel Server Boards and Server Chassis Safety Information*（《Intel 服务器主板与服务器机箱安全信息》）。

Warnings

These warnings and cautions apply whenever you remove the compute module enclosure cover to access components inside the chassis. Only a technically qualified person should maintain or configure the chassis.

Heed safety instructions: Before working with your server product, whether you are using this guide or any other resource as a reference, pay close attention to the safety instructions. You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in noncompliance with product regulations in the region(s) in which the product is sold.

Compute module power on/off: The power button turns off only DC power to the compute module; standby power is still present in the compute module. To remove all power from the compute module, uninstall or remove the compute module from the chassis.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the chassis and disconnect the power cord, telecommunications systems, networks, and modems attached to the chassis before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this document only at an ESD workstation. If one is not available, provide some ESD protection by wearing an anti-static wrist strap attached to chassis ground (any unpainted metal surface) on your chassis when handling parts.

ESD and handling electronic devices: Always handle electronic devices carefully. They can be extremely sensitive to ESD. Do not touch the connector contacts.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle nosed pliers. If your jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the pins on the board.

Reinstalling enclosure cover: To protect internal components and for proper cooling and airflow, the compute module should not be inserted into the chassis with the cover removed; operating it without the enclosure cover in place can damage compute module parts.

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1   Compute Module Features

This chapter briefly describes the main features of the Intel® Compute Module MFS5000SI, as well as provides illustrations showing the location of important components and connections on the compute module.

The Intel® Compute Module MFS5000SI is shown in the following pictures.

Figure 1. Intel® Compute Module MFS5000SI
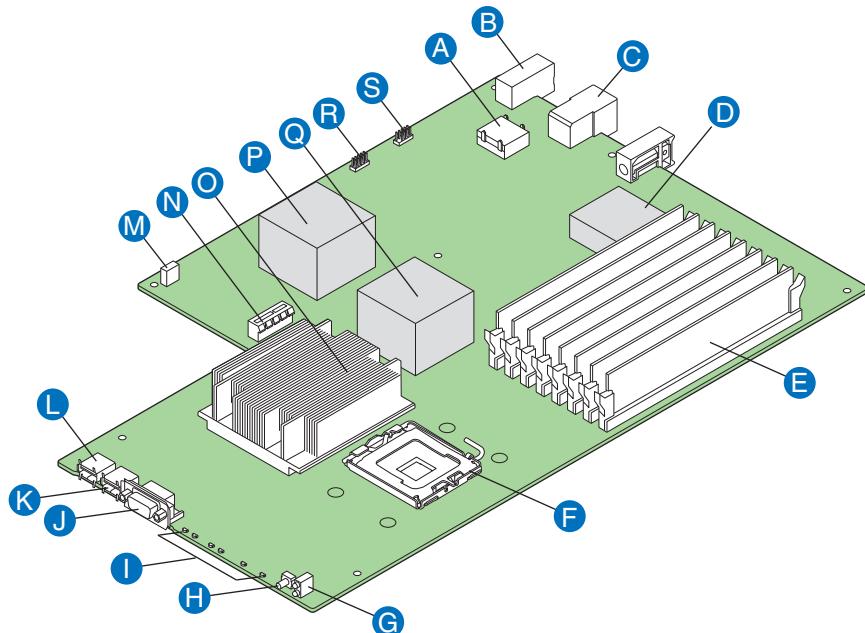
Figure 2. Server Board

The following table summarizes the major features of the server board.

Table 1. Compute Module Features

Feature	Description
Processors	Support for up to two Dual-Core Intel® Xeon® processors 5000 sequence
Memory	Support for up to 32 GB of fully-buffered DDR2 667-MHz DIMMs (FB-DIMM) Eight DIMM slots Support for DIMM sparing and memory mirroring
Chipset	Intel® 5000P chipset, consisting of: • Intel® 5000P Memory Controller Hub (MCH) • Intel® 6321ESB I/O Controller Hub
Peripheral Interfaces	External connections: • Two USB 2.0 ports • Video connector Internal connections: • One connector to the chassis I/O mezzanine card
Video	ATI* ES1000 controller with 16 MB on-board memory
Hard Drive	LSI* 1064e SAS controller
LAN	Intel® 8256EB dual port controller
Trusted Computing	Trusted Platform Module, version 1.2

Connector and Component Locations
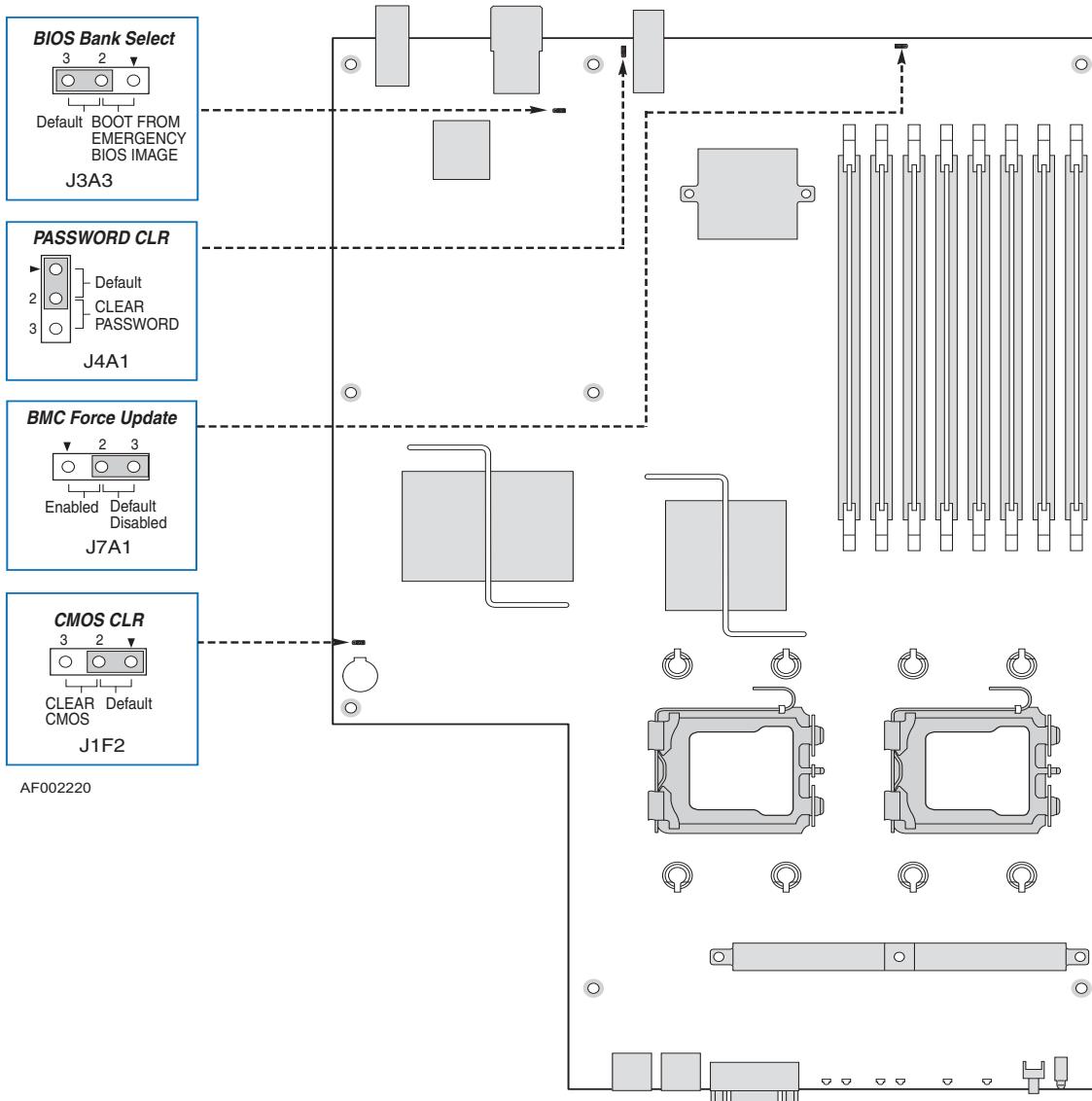
AF002219

A	Mezzanine Card Connector	K	USB2 Port
B	Midplane Power Connector	L	USB1 Port
C	Midplane Signal Connector	M	CMOS Battery
D	SAS Connector	N	Test Connector (manufacturing only)
E	FBDIMM Slots	O	CPU #2 Heatsink
F	CPU1 Socket	P	Intel® 6321ESB I/O Controller Hub
G	Power/Fault LEDs	Q	Intel® 5000P Memory Controller Hub (MCH)
H	Power Switch	R	Test Connector (manufacturing only)
I	Activity and ID LEDs	S	Serial Debug Connector (manufacturing only)
J	Video Connector		

Figure 3. Component and Connector Locations

Configuration Jumpers

AF002220
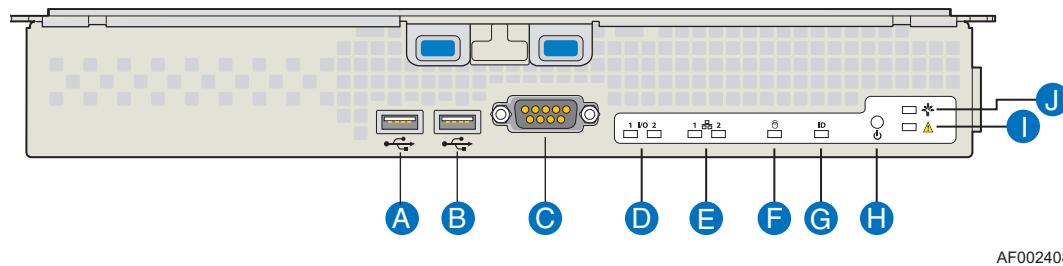
Jumper Name	Pins	What happens at system reset...
J7A1: BMC Force Update	1-2	BMC Firmware Force Update Mode - Enabled
	2-3	BMC Firmware Force Update Mode - Disabled (Default)
J4A1: Password Clear	1-2	These pins should have a jumper in place for normal system operation (Default)
	2-3	If these pins are jumpered, administrator and user passwords will be cleared immediately. These pins should not be jumpered for normal operation.

Jumper Name	Pins	What happens at system reset...
J1F2: CMOS Clear	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered, the CMOS settings will be cleared immediately. These pins should not be jumpered for normal operation.
J3A3: BIOS Bank Select	1-2	If these pins are jumpered, the BIOS will be forced to boot from the lower bank. These pins should not be jumpered for normal operation.
	2-3	These pins should have a jumper in place for normal system operation. (Default)

Figure 4. Configuration Jumper Locations

Front Panel Connectors and Indicators

A	USB1 Port	B	USB2 Port
C	Video Connector	D	I/O 1 and I/O 2 Activity LEDs
E	NIC1 and NIC2 Activity LEDs	F	Drive Activity LED
G	ID LED	H	Power Button
I	Fault LED	J	Power LED

Figure 5. Front Panel Connectors and Indicators

Front Panel Indicators

The Intel® Compute Module MFS5000SI includes a number of diagnostic LEDs on the front of the compute module that can aid in troubleshooting your system. The following table lists these LEDs along with a usage description of each LED.

Table 2. Diagnostic LED Information

LED Name	Function	Color	Indicator
Power LED	Identifies power state of system	Green	Off = Power is off On = Power on Slow Blink = Power is in standby or sleeping mode
Fault LED	Identifies fault warning	Amber	Off = No Fault On = Critical error or non-recoverable Slow blink = Non-critical Fast blink = Locate (when device does not have an ID LED) Double blink = Degraded state
ID LED	Provides an aid in identifying a compute module from the front panel	Blue	Use the Intel® Modular Server Control software to activate or inactivate the LED.
Drive activity LED	Indicates drive activity	Green	Off = No drive activity Blink = Drive activity
NIC1—2 LEDs	Indicates network activity and link	Green	Blink = Outbound activity
I/O 1 - I/O 2 Activity LEDs	Indicates network activity and link of NICs on I/O mezzanine card	Green	Off = No link On = Link established Blink = Activity

Hardware Requirements

To avoid integration difficulties and possible board damage, your system must meet the requirements outlined below.

Processor

The Intel® Compute Module MFS5000SI supports up to two Multi-Core Intel® Xeon® Processors 5xxx Series.

Memory

A minimum of two fully-buffered DDR2 667 MHz DIMM(s) (FB-DIMM) should be installed. Additional DIMMs must be installed in pairs, up to eight total.

Power Supply

A minimum of one 1000-Watt power supply is required to turn on a compute module.

One power supply supports one compute module plus all other modules in the system.

Two power supplies support two to three compute modules (in any slot) plus all other modules in the system.

Three power supplies support four to six compute modules (in any slot) plus all other modules in the system.

Any additional power supplies above minimum required (based on configuration) provides redundancy.

Additional Information and Software

If you need more information about this product or information about the modular server systems that can be used with the compute module, use the following resources.

For this information or software	Use this Document or Software
If you just received this product and you need to install components in your compute module	Intel® Compute Module MFS5000SI Quick Start User's Guide Available in the product box or for download at: http://www.intel.com/support/motherboards/server/MFS5000SI/
For in-depth technical information about the compute module, including chipset information and mechanical drawings	Intel® Compute Module MFS5000SI Technical Product Specification Available at: http://www.intel.com/support/motherboards/server/MFS5000SI/
If you just received this product and you need to assemble your modular server system and install components	Intel® Modular Server System MFSYS25/MFSYS35 Quick Start User's Guide Available in the product box or for download at: http://www.intel.com/support/motherboards/server/mfsys25/ Intel® Modular Server System MFSYS25/MFSYS35 User's Guide Available at: http://www.intel.com/support/motherboards/server/mfsys25/

For this information or software	Use this Document or Software
For in-depth technical information about the modular server system, including subsystem overviews and mechanical drawings	Intel® Modular Server System MFSYS25/MFSYS35 Technical Product Specification Available at: http://www.intel.com/support/motherboards/server/mfsys25/
Accessories or other Intel server products	Spares, Parts List, and Configuration Guide Available at: http://www.intel.com/support/motherboards/server/mfs5000si/ or by using the Server Configurator Tool Available at: http://serverconfigurator.intel.com/default.aspx
Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product Processors that have been tested with this product DIMMs that have been tested with this product Hard Drives that have been tested with this product	Server Configurator Tool Available at: http://serverconfigurator.intel.com/default.aspx Tested product lists available for download at: http://www.intel.com/support/motherboards/server/mfs5000si/
Latest drivers, Unified Firmware Update packages and utilities	Available for download at: http://www.intel.com/support/motherboards/server/mfs5000si/ Click the "Software and Drivers" link on the left side of the webpage.
For software to manage your Intel® Modular Server System	Intel® Modular Server Control UI The Intel® Management Module integrated management interface for the modular server system. For instructions and information refer to the Intel® Modular Server System MFSYS25/MFSYS35 User Guide Available at: http://www.intel.com/support/motherboards/server/mfsys25/ Intel® System Management Software Available at: http://www.intel.com/go/servermanagement/

2   Hardware Installations and Upgrades

Before You Begin

Before working with your server product, review the safety and ESD information at the beginning of this manual and in the appendices.

Tools and Supplies Needed

- Phillips* (cross head) screwdriver (#1 bit and #2 bit)
- 1/4-inch nut driver
- Needle-nosed pliers
- Anti-static wrist strap and conductive foam pad (recommended)

Installation Guidelines

Before installing options:

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.
2. Remove the compute module from the chassis; before doing so, you must first shut down the operating system and turn off the compute module. You do not have to shut down the chassis.
3. Blue on a component indicates a touch point, where you can grip the component to install or remove it from the server.
4. Green on a component indicates that the component may be hot-swapped. See the instructions included with the hot-swap component for a complete list of installation or removal steps.

Removing and Installing an Intel® Compute Module MFS5000SI

Removing a Compute Module from the Server System

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.
2. If the compute module is operating, shut down the operating system and power it down.
3. Release the two retention levers by pressing on the release button located between the two lever handles.

4. Rotate the two lever handles outward and pull the compute module from the chassis slot.

5. Place either a filler or another compute module into the bay within one minute; this step is required to maintain proper airflow patterns throughout the server system and to ensure proper system cooling.

Installing a Compute Module into the Server System

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If you have not done so already, install any necessary options, such as processors, memory, hard drives and expansion cards in the compute module.

   Note: *The top cover is a required component of the compute module; do not attempt to insert a compute module into a server system without a top cover installed.*

3. Make sure the retention levers on the compute module are in the open position.

4. Insert the compute module into an open slot in the system and slide it in until it stops.

5. Close the retention lever handles on the front of the compute module.
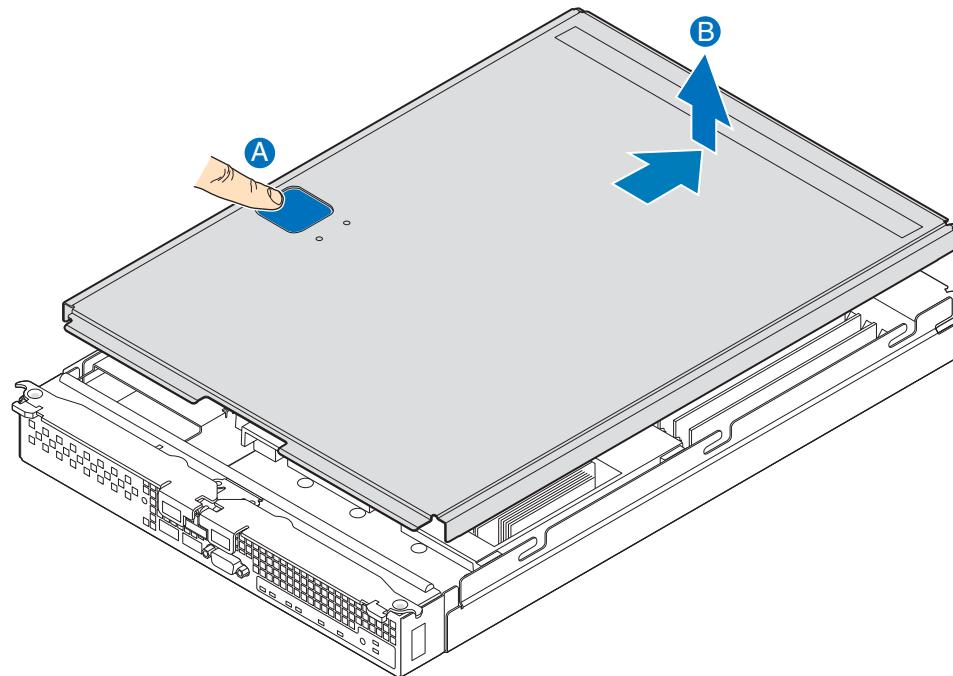
Opening and Closing the Top Cover

Opening and Removing the Top Cover

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Carefully lay the compute module down on a flat, non-conductive surface, with the cover side up.

4. Press the top cover release button (see letter "A" in Figure 6) and slide the top cover back, away from the compute module bezel (see letter "B" in Figure 6). Lift the top cover up and off the compute module.

Caution: *Always install the top cover before installing the compute module into a server system.*

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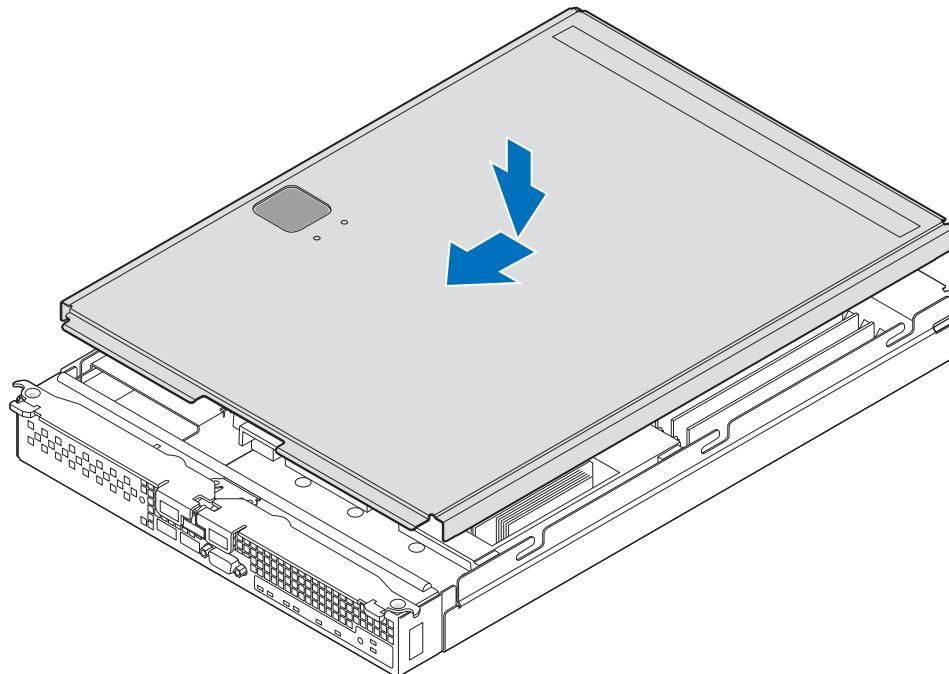
Figure 6. Removing Top Cover

Replacing and Closing the Top Cover

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. Place the top cover on the compute module so that it engages the cover guide notches.

   Note: *Before closing the top cover, check that all components are installed and seated correctly and that no loose tools or parts are inside the compute module.*

3. Slide the top cover forward to the closed position until the retention latch fully engages.

AF002403
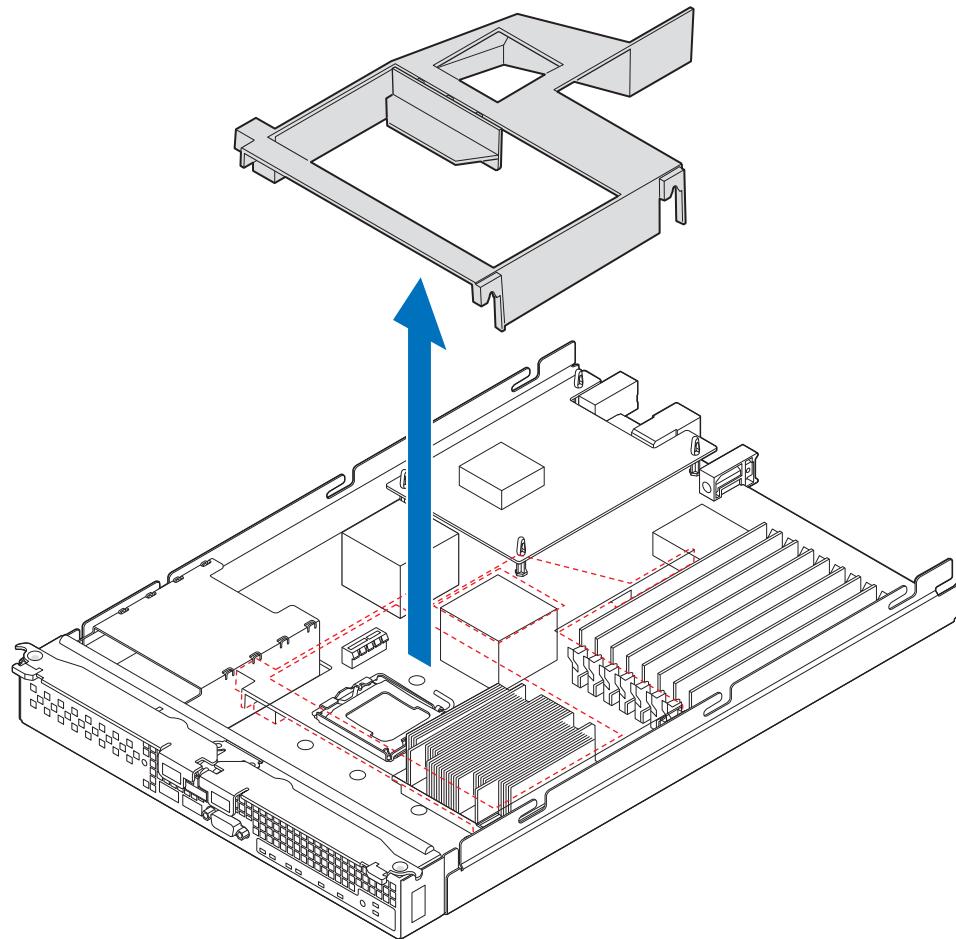
Figure 7. Installing Top Cover

Installing or Replacing a Processor

Caution: *Only processors validated for use in the Intel® Compute Module MFS5000SI should be installed. You may damage the compute module if an inappropriate processor is installed.*

Installing a Processor
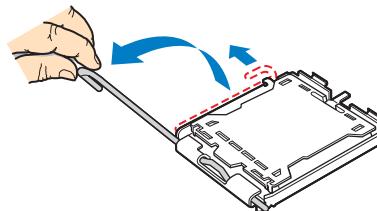
1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.

4. Remove the processor air duct.

AF002404

Figure 8. Removing Processor Air Duct

5. Locate the processor socket. Push the lever handle down and away from the socket to release it. Fully raise the socket handle.
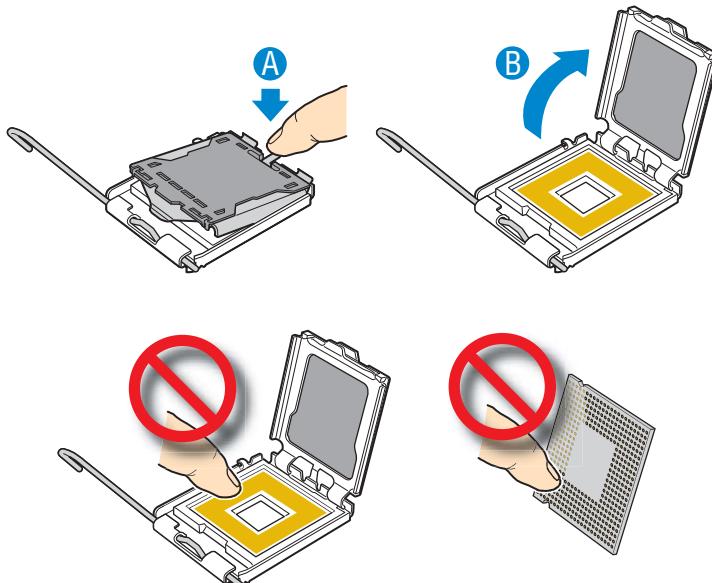
TP02074

Figure 9. Lifting Processor Socket Handle

6. Push the rear tab of the load plate with your finger tip (see letter "A" in Figure 10) to bring the front end of the load plate up slightly. Open the load plate (see letter "B" in Figure 10).

   Note: *Do not touch the socket pins; they are very sensitive and easily damaged.*

TP02075

Figure 10. Opening Load Plate

7. If present, remove the protective shipping cover from the processor.
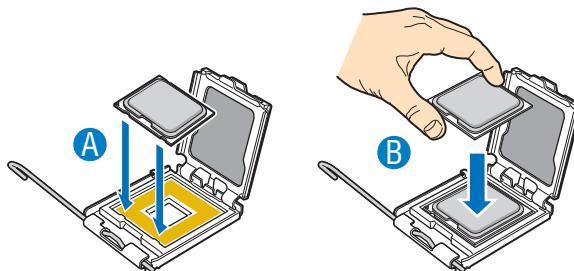
AF002222

Figure 11. Removing Protective Shipping Cover

8. Orient the processor with the processor socket so that the processor cutouts match the socket notches (see letter "A" in Figure 12). Install the processor (see letter "B" in Figure 12).

Caution: *The underside of the processor has components that may damage the socket pins if installed improperly. Processor must align correctly with socket opening before installation. DO NOT DROP processor into socket.*
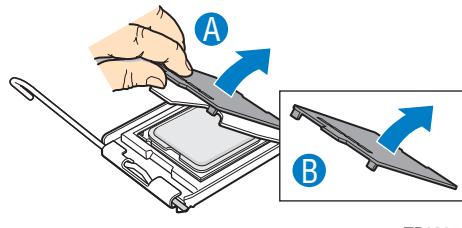
AF002223

Figure 12. Orienting and Installing Processor

9. Remove the socket protective cover. Grasp the socket protective cover tab and pull away from the load plate (see letter "A" in Figure 13). Remove the socket protective cover (see letter "B" in Figure 13) and store for future use.
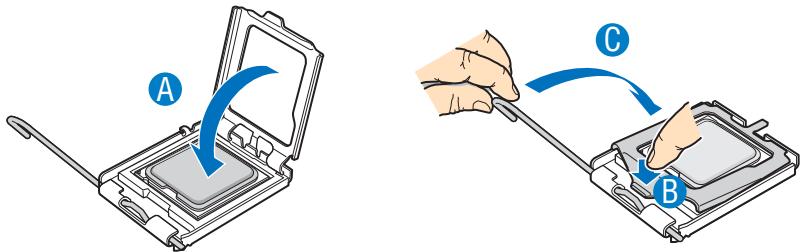
   Note: *Retain the socket protective cover for later use when removing a processor that will not be replaced.*

TP02076

Figure 13. Removing Socket Protective Cover

10. Lower the processor load plate (see letter "A" in Figure 14). With your finger, push down on the load plate (see letter "B" in Figure 14). Lower the socket lever until it is fully latched (see letter "C" in Figure 14).
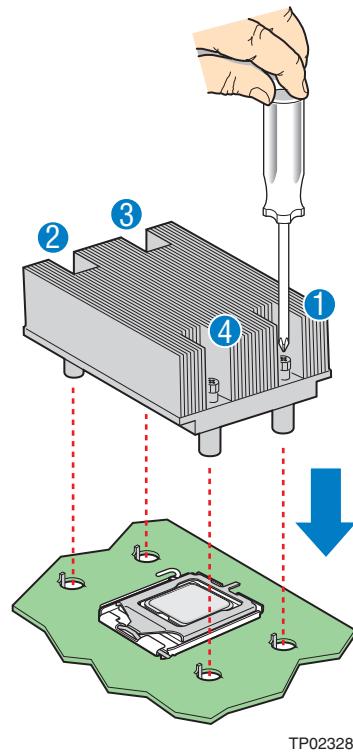
AF002224

Figure 14. Lowering Load Plate and Socket Lever

11. Ensure that the thermal material is intact on the bottom of the heatsink.

12. Align the heatsink over the processor, thermal material side down, with the captive screws in line with the holes on the heatsink retention module. Press down firmly on the heatsink.

13. Press firmly on the captive screws and tighten them, alternating between screws in a diagonal manner (see tightening order in Figure 15). Do not over-tighten the screws by using excessive force.

TP02328
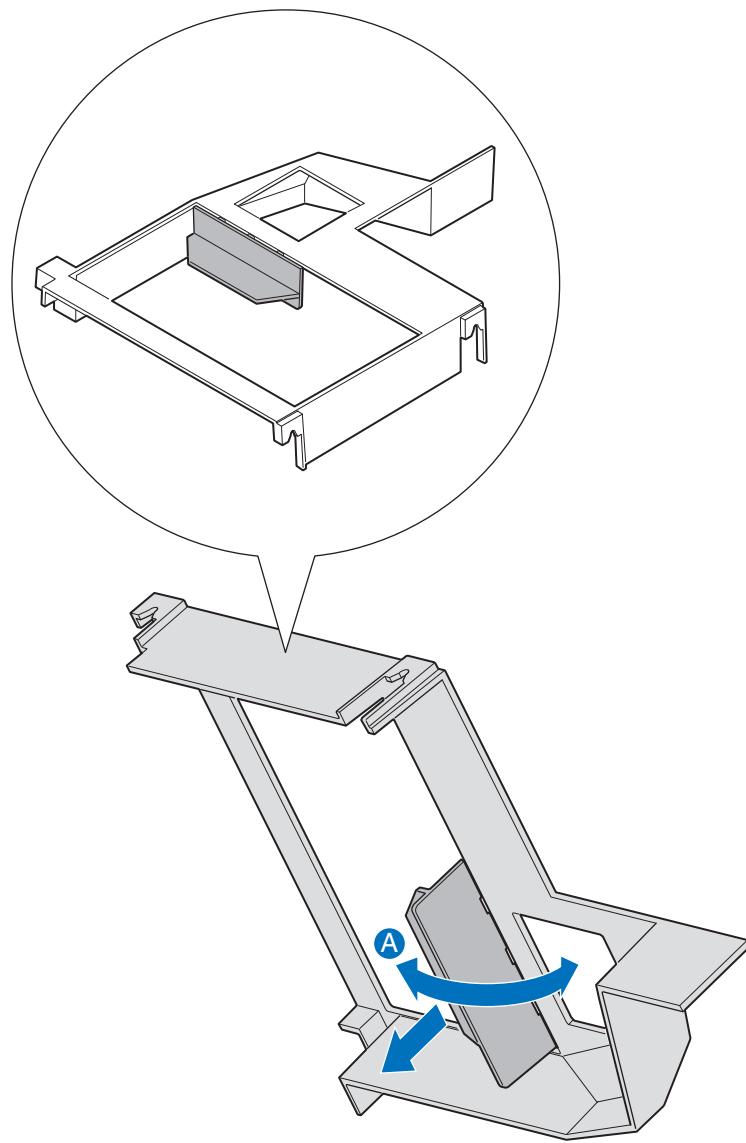
Figure 15. Installing Heatsink

14. If you are installing a second processor, then the second processor air baffle must be removed to ensure proper cooling for two processors.

Caution: *This step only applies if your system has TWO processors. For a one-processor configuration, the second processor air baffle must remain in place to ensure proper cooling.*
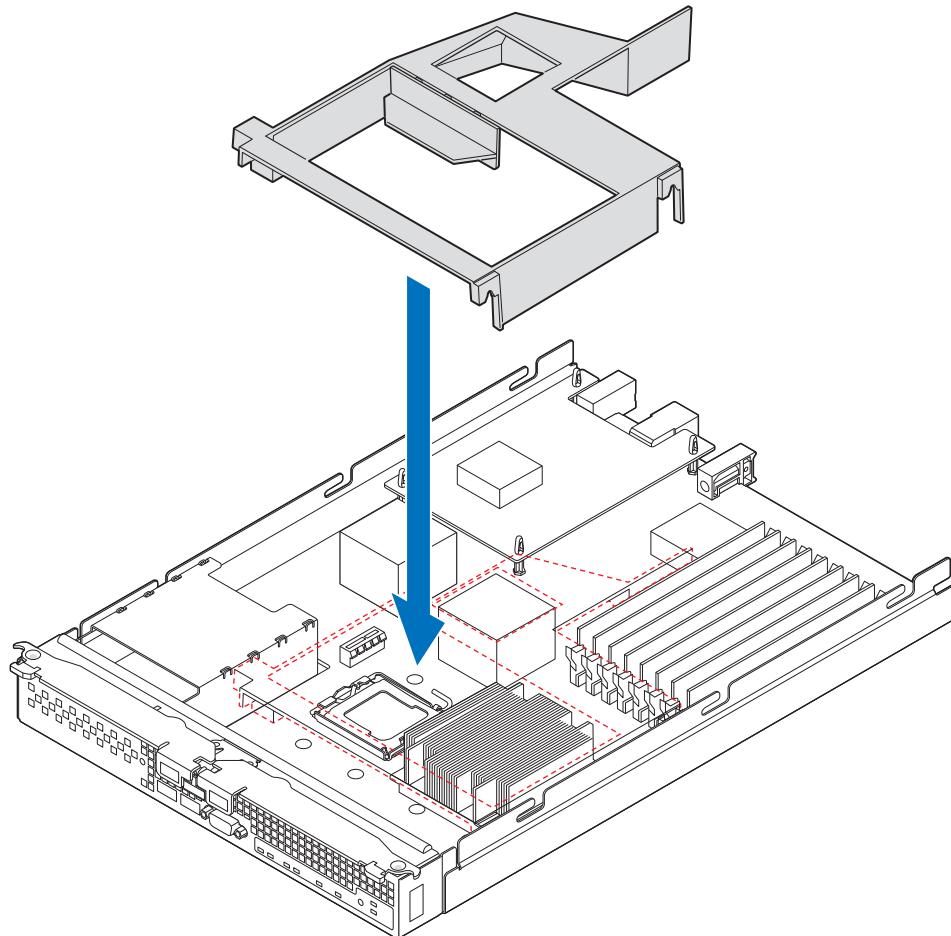
Remove the second processor air baffle by rocking the air baffle back and forth until it breaks off (see letter "A" in Figure 16).

AF002410

Figure 16. Removing Second Processor Air Baffle

15. Reinstall the processor air duct.
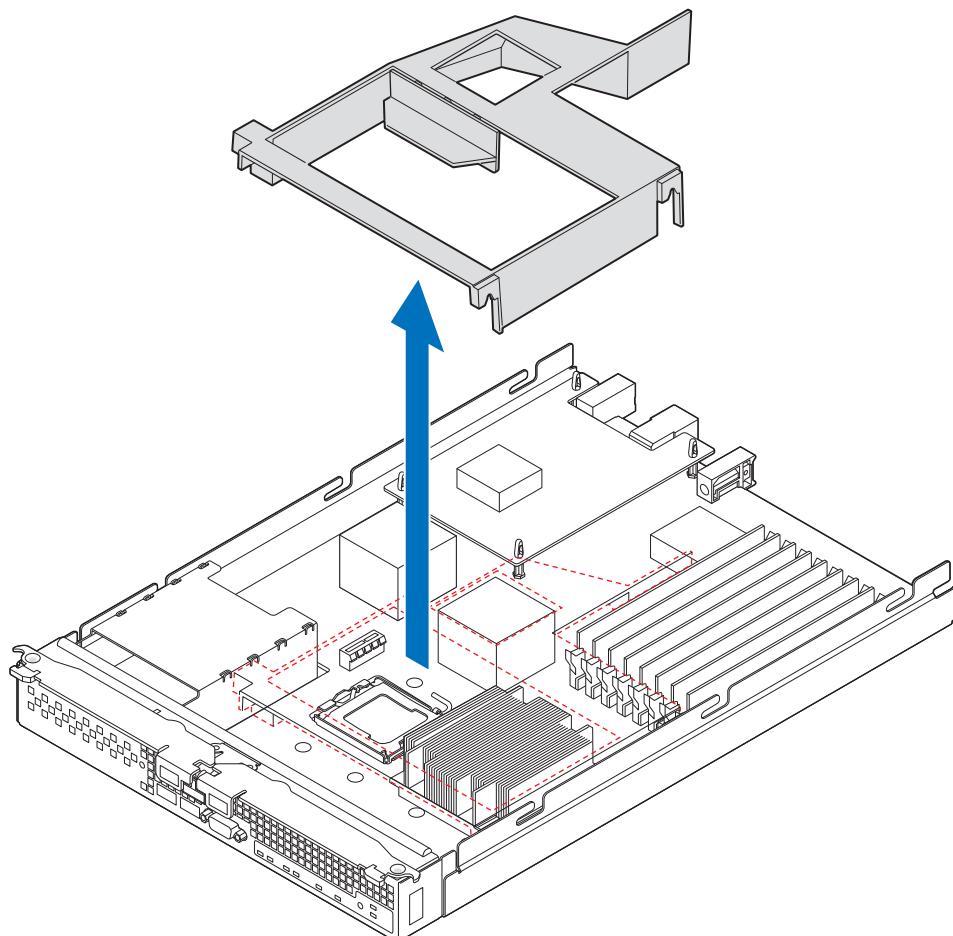
AF002405

Figure 17. Reinstalling Processor Air Duct

16. Reinstall the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

17. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10.

Replacing a Processor
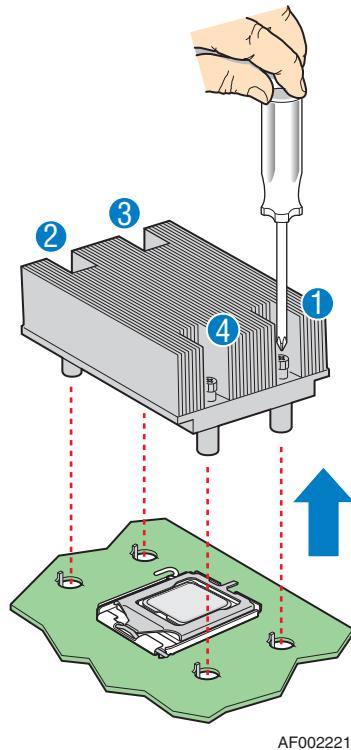
1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.

4. Remove the processor air duct.

AF002404
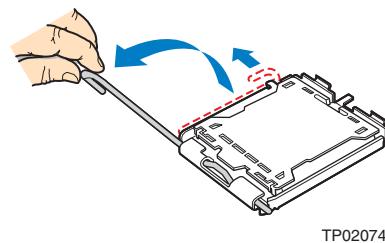
Figure 18. Removing Processor Air Duct

5. Carefully remove the processor heatsink by fully loosening the captive screws on the heatsink, and then gently lifting the heatsink off the processor.

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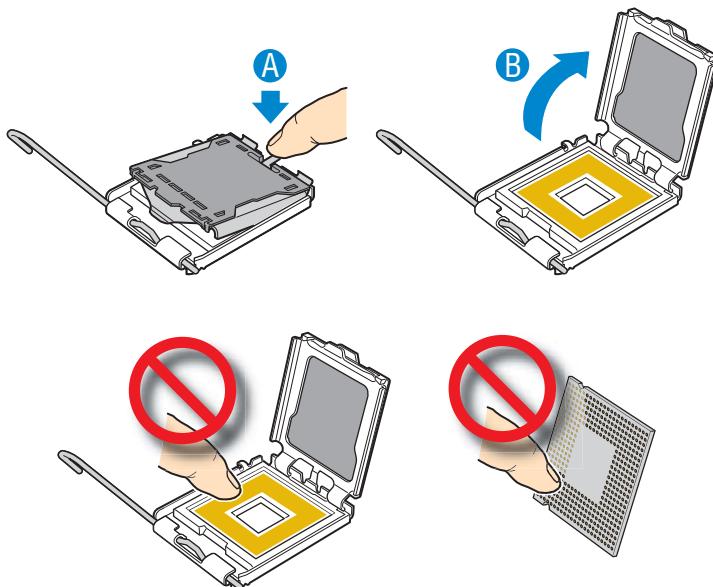
Figure 19. Removing the Heatsink

6. Push the lever handle down and away from the socket to release it. Fully raise the socket handle.

TP02074

Figure 20. Lifting Processor Socket Handle

7. Push the rear tab of the load plate with your finger tip (see letter "A" in Figure 21) to bring the front end of the load plate up slightly. Open the load plate (see letter "B" in Figure 21).
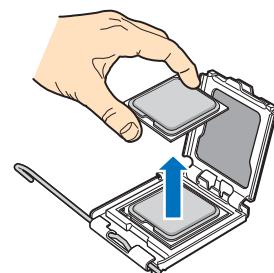
TP02075

Figure 21. Opening Load Plate

8. Remove processor.

   Note: *Do not touch the socket pins; they are very sensitive and easily damaged.*

AF002225

Figure 22. Removing Processor

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9. If present, remove the protective shipping cover from the replacement processor.
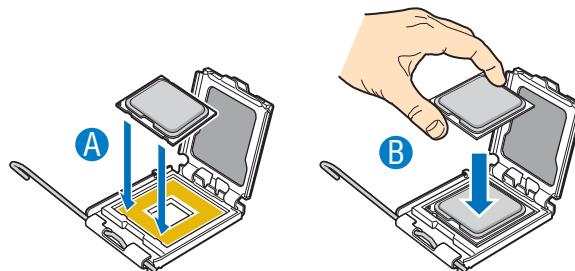
AF002222

Figure 23. Removing Protective Shipping Cover

10. Orient the replacement processor with the processor socket so that the processor cutouts match the socket notches (see letter "A" in Figure 24). Install the replacement processor (see letter "B" in Figure 24).
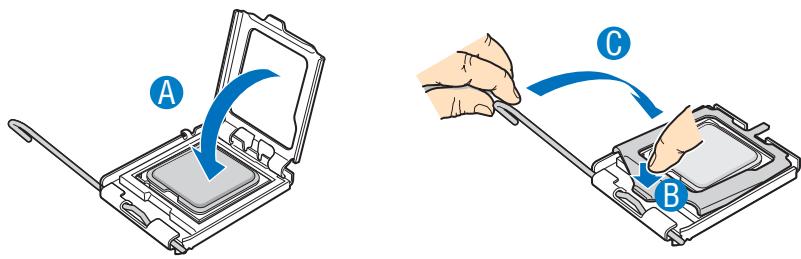
Caution: *The underside of the processor has components that may damage the socket pins if installed improperly. Processor must align correctly with socket opening before installation. DO NOT DROP processor into socket.*

AF002223

Figure 24. Orienting and Installing Processor
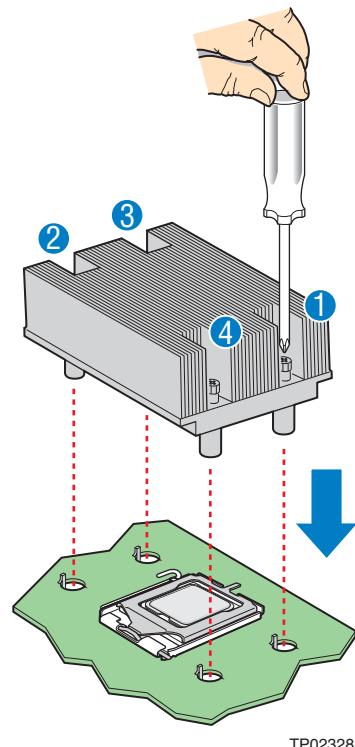
11. Lower the processor load plate (see letter "A" in Figure 25). With your finger, push down on the load plate (see letter "B" in Figure 25). Lower the socket lever until it is fully latched (see letter "C" in Figure 25).

AF002224

Figure 25. Lowering Load Plate and Socket Lever
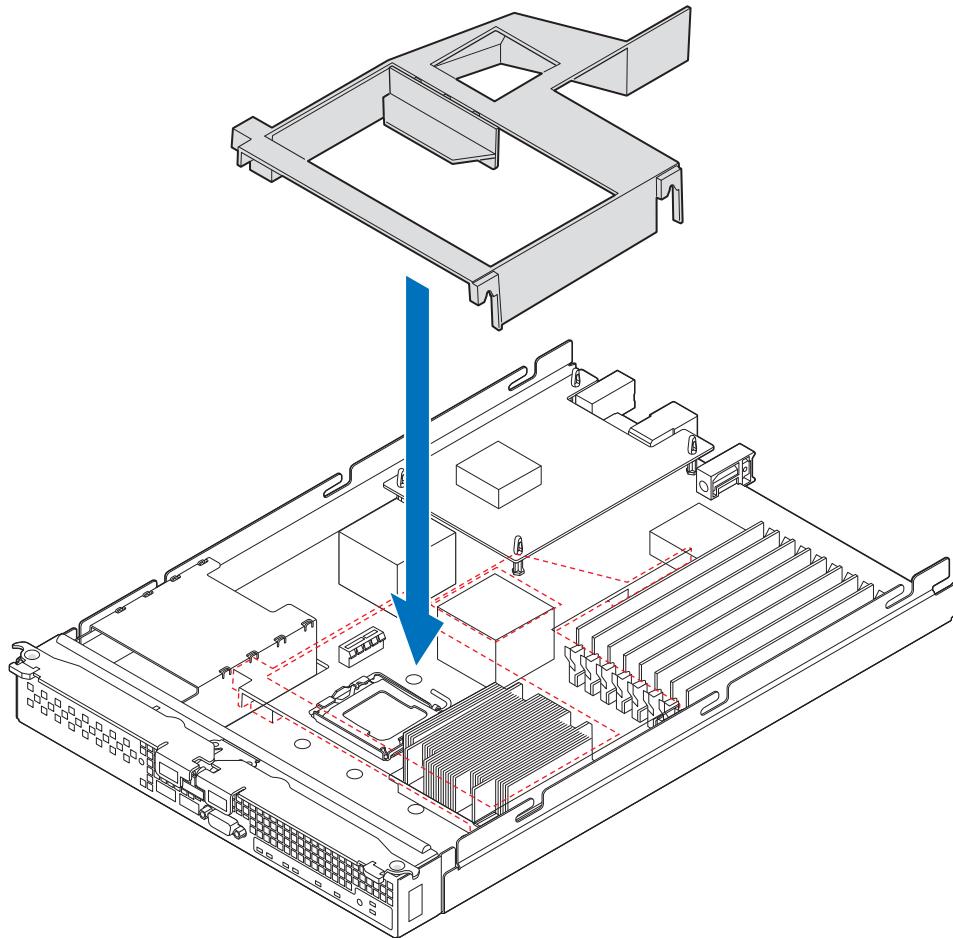
12. Ensure that the thermal material is still intact on the bottom of the heatsink.

13. Align the heatsink over the processor, thermal material side down, with the captive screws in line with the holes on the heatsink retention module. Press down firmly on the heatsink.

14. Press firmly on the captive screws and tighten them, alternating between screws in a diagonal manner (see tightening order in Figure 26). Do not over-tighten the screws by using excessive force.

TP02328

Figure 26. Reinstalling Heatsink

15. Reinstall the processor air duct.

AF002405

Figure 27. Reinstalling Processor Air Duct

16. Reinstall the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

17. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10.

Installing and Removing Memory Modules

Supported Memory

The server board provides support for eight DDR2-667 fully-buffered DIMM sockets across two branches. Each branch has two channels. Channel A consists of slots A1 and A2; channel B consists of slots B1 and B2; channel C consists of slots C1 and C2; and channel D consists of slots D1 and D2.

DIMMs must be populated in pairs across consecutive channels starting with the lowest numbered slot in each channel. Slots A1 and B1 are paired, followed by slots C1 and D1.

For performance reasons, when configuring four DIMMs, DIMM pair A2 and B2 should never be populated before DIMM pair C1 and D1. A four-DIMM configuration should be populated as A1 and B1; C1 and D1.

In non-mirrored mode, all DIMMs with the same slot number within a given branch must match (size, technology, manufacturer). It is not required to match DIMMs between different slot numbers.

DIMMs must meet the following requirements:

- Use only fully-buffered DIMMs (FB-DIMMs) with DDR2 DRAM technology.
- Use only DDR2-667 stacked FB-DIMM modules.

In determining your memory requirements, the need for memory sparing or memory mirroring must be considered.

Memory Sparing and Mirroring

The chipset includes hardware that supports memory mirroring and memory on-line sparing. Both memory mirroring and memory on-line sparing provide a way to prevent data loss in case a DIMM fails.
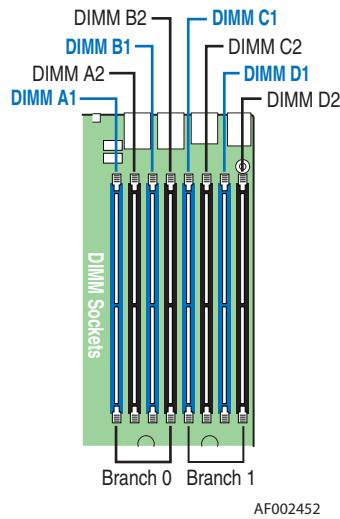
With memory mirroring the system maintains two copies of all data in the memory subsystem. If a DIMM fails, the data is not lost because the second copy of the data is available from the mirrored DIMM in the opposite channel. The system will not fail due to memory error unless both the primary and the mirrored copy of the data become corrupt at the same time.

In a mirrored system, the maximum usable memory is one-half of the installed memory, with a minimum of four DIMMs installed. Since the data is duplicated across DIMMs, it means that up to one-half of the installed DIMMs are actively in use at any one time. The remaining DIMMs are used for mirroring.

Memory mirroring and memory sparing are mutually exclusive. Only one can be active at a time. See the Intel® Compute Module MFS5000SI *Technical Product Specification* for additional information regarding the memory sub-system.

Installing DIMMs

DIMM slots are numbered as follows:

DIMM B2 — DIMM C1
DIMM B1 — DIMM C2
DIMM A2 — DIMM D1
DIMM A1 — DIMM D2

DIMM Sockets

Branch 0   Branch 1

AF002452

Figure 28. DIMM Slot Order
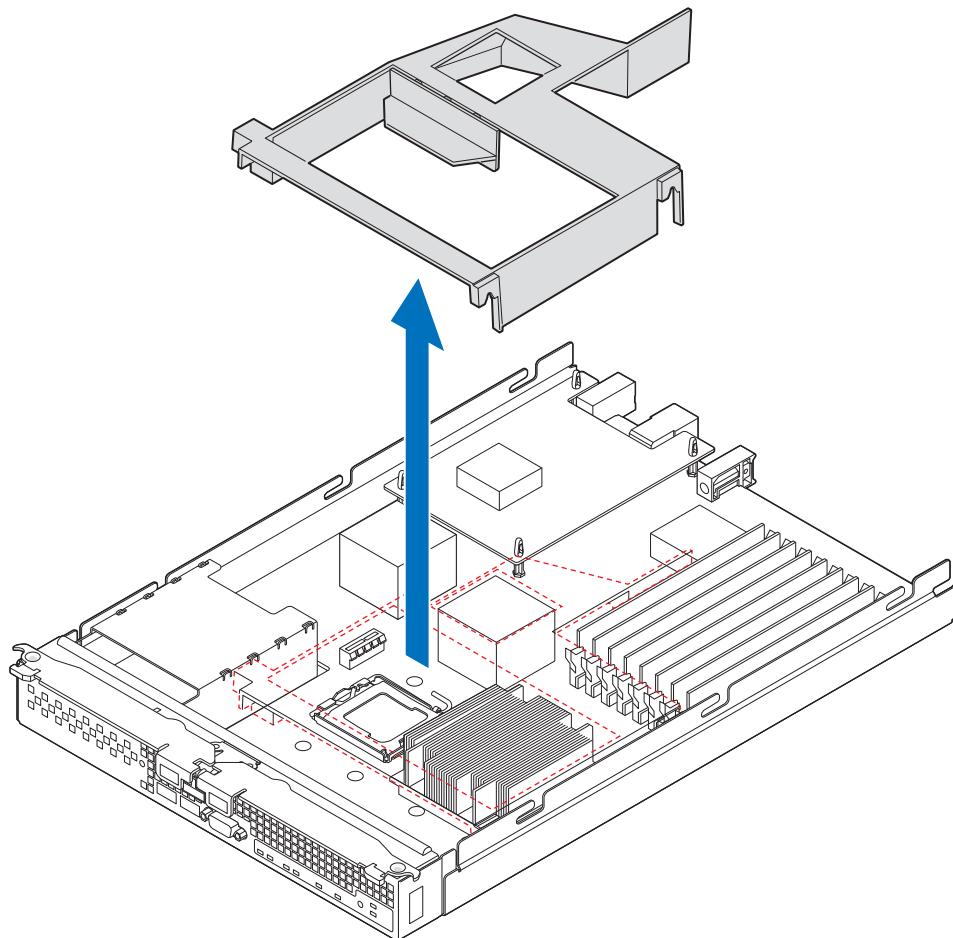
Populate DDR2 FBDIMMs in the following order:

1. A1, B1, C1, D1, then

2. A2, B2, C2, D2

To install DIMMs:

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.

4. Remove the processor air duct.
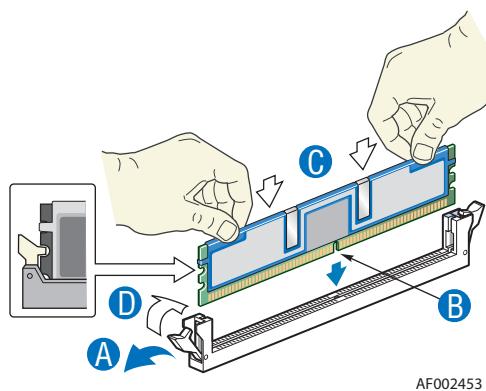
AF002404

Figure 29. Removing Processor Air Duct

5. Locate the DIMM sockets.

6. Holding the DIMM by the edges, remove it from it's packaging.

Intel® Compute Module MFS5000SI User Guide

7. Open both DIMM socket levers (see letter "A" in Figure 30). Position the DIMM above the socket, taking care to align the two small notches in the bottom of the DIMM with the keys in the DIMM socket (see letter "B" in Figure 30). Insert the bottom edge of the DIMM into the socket and press down on the top edge of the DIMM (see letter "C" in Figure 30) until the DIMM is fully seated and the retaining clips (see letter "D" in Figure 30) are locked firmly into place.
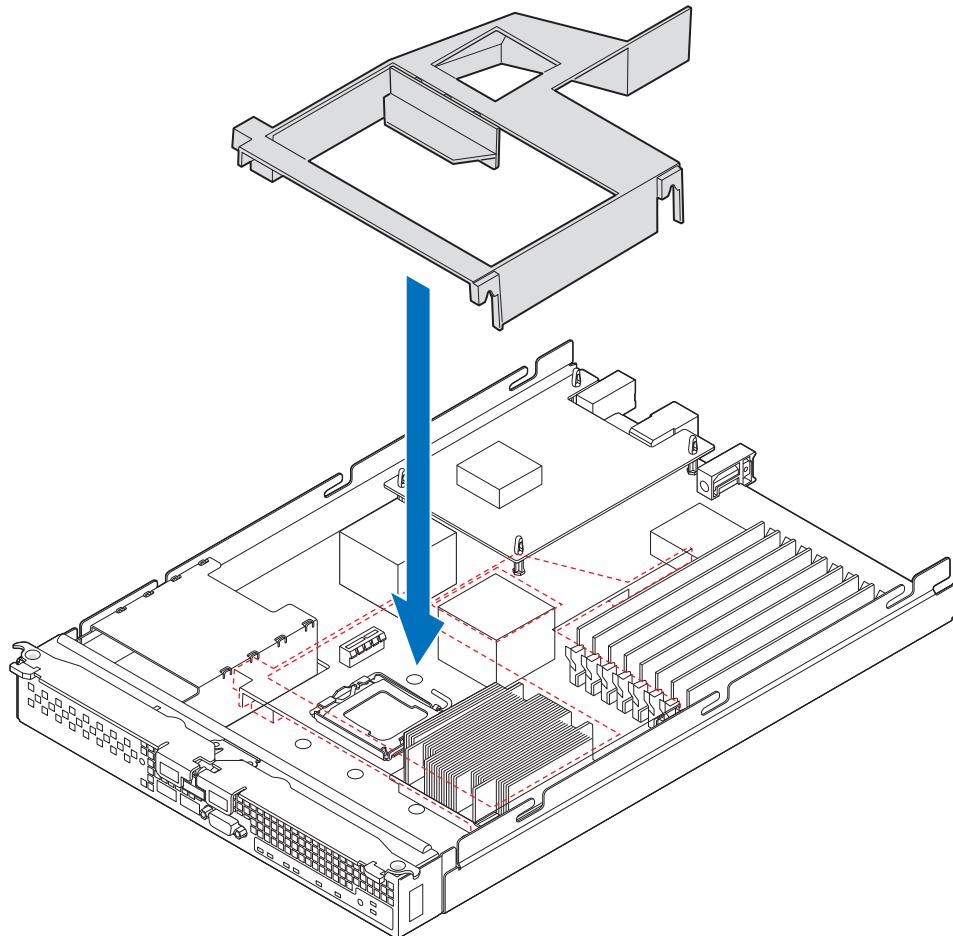
Important: *Visually check that each latch is fully closed and correctly engaged with each DIMM edge slot.*

AF002453

Figure 30. Installing DIMMs

8. Reinstall the processor air duct.

AF002405
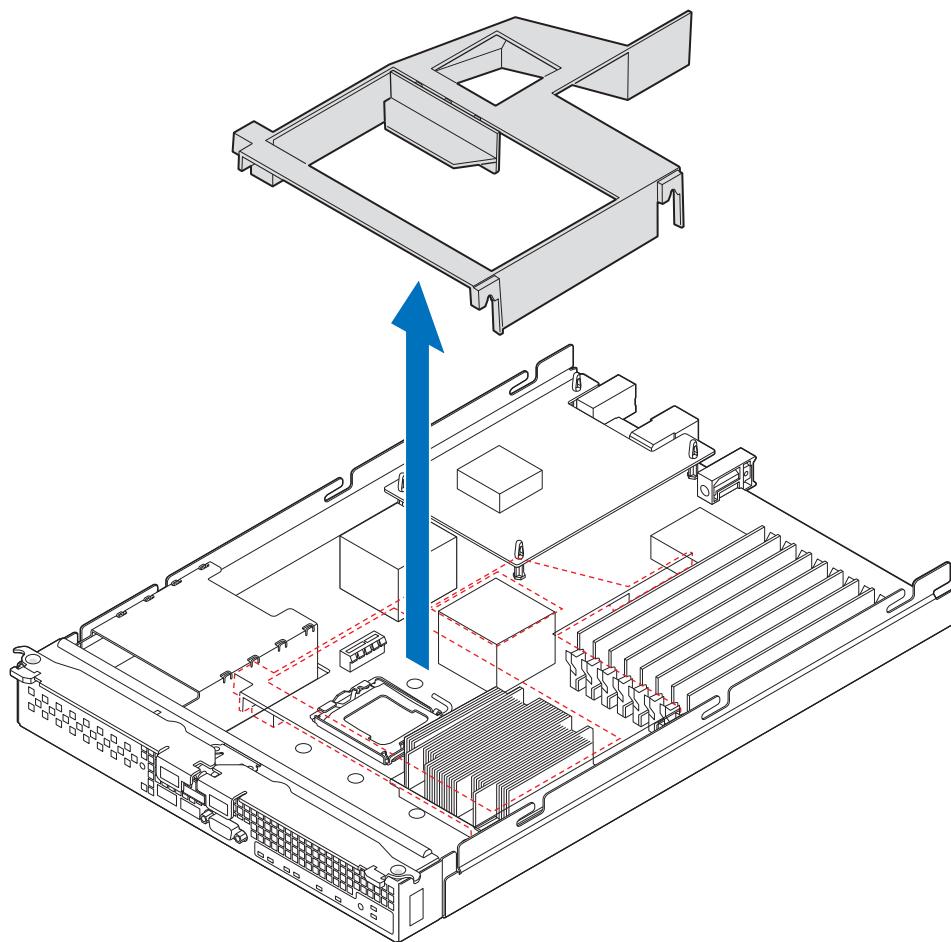
Figure 31. Reinstalling Processor Air Duct

9. Reinstall the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

10. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10.

Removing DIMMs

To remove DIMMs:

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.

4. Remove the processor air duct.
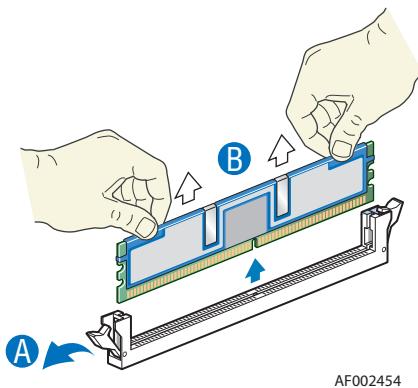
AF002404

Figure 32. Removing Processor Air Duct

5. Locate the DIMM socket and gently open the retaining clips at each end of the socket (see letter "A" in Figure 33). This will slightly lift the DIMM from its socket.

6. Holding the DIMM by the edges, remove it from the socket (see letter "B" in Figure 33).
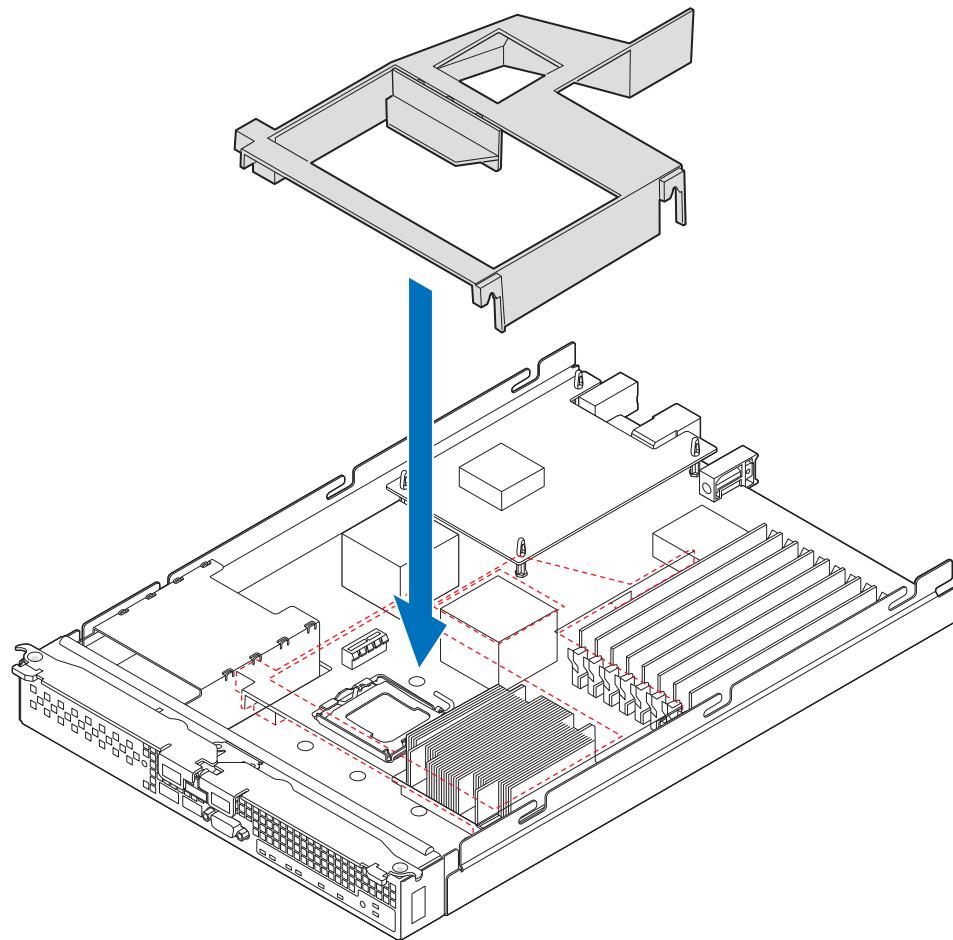
   Important: *Store the removed DIMM in an anti-static package.*

AF002454

Figure 33. Removing DIMMs

7. Reinstall the processor air duct.

AF002405
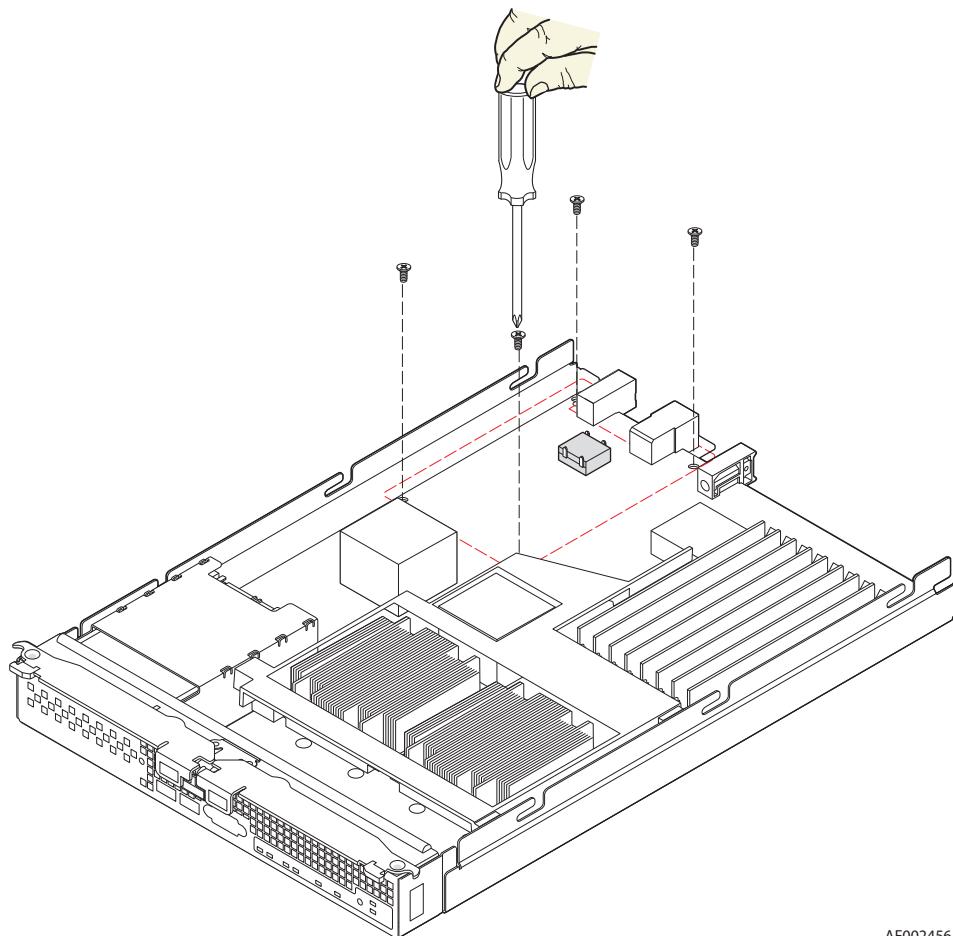
Figure 34. Reinstalling Processor Air Duct

8. Reinstall the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

9. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10.

Installing and Removing the Intel® Dual Gibagit Ethernet I/O Expansion Mezzanine Card

Installing the Intel® Dual Gigabit Ethernet I/O Expansion Mezzanine Card
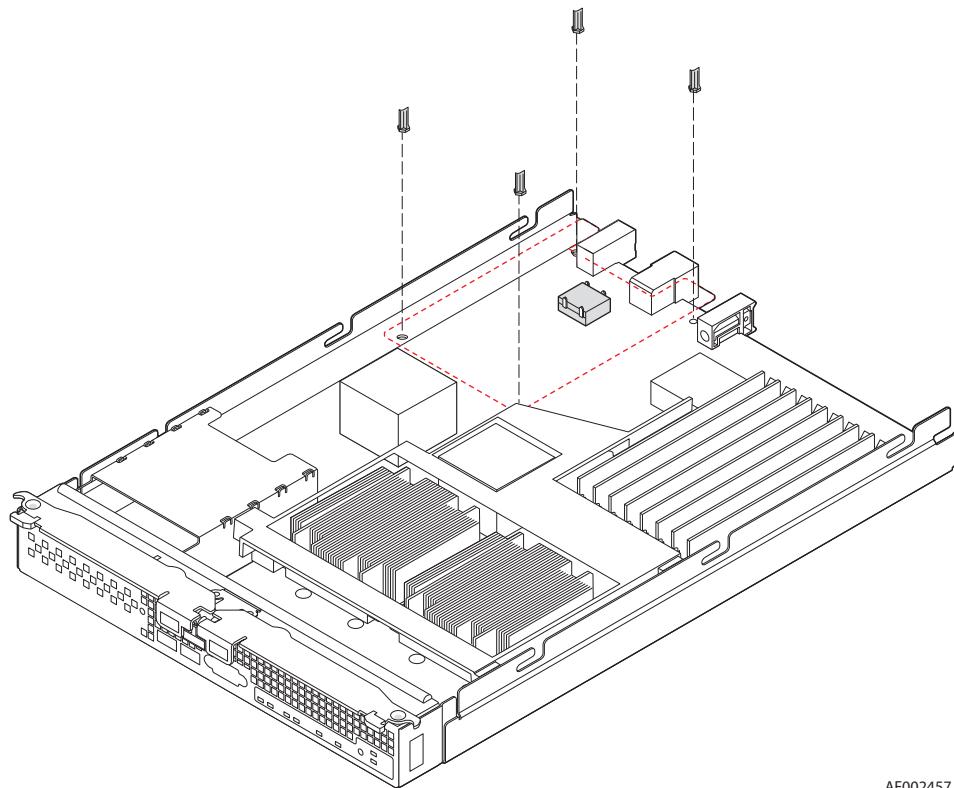
1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.

4. Holding the mezzanine card by its edges, remove it from the packaging. Remove the protective connector cover from the mezzanine card.

5. Locate the mezzanine card connector on the server board.

6. With a Phillips* screwdriver, remove four screws from the server board.

AF002456
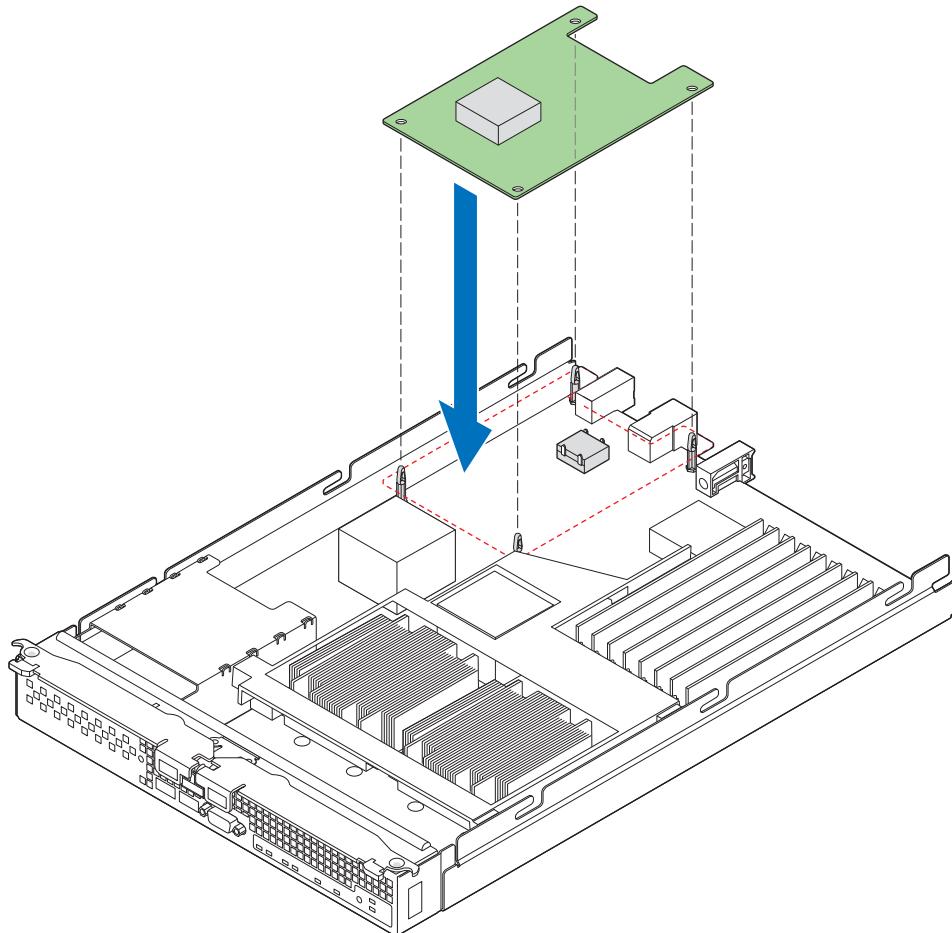
Figure 35. Removing Screws from Server Board

7. With a 1/4-inch nut driver, install the four standoffs that shipped with the mezzanine card.

AF002457

Figure 36. Installing Standoffs for Mezzanine Card
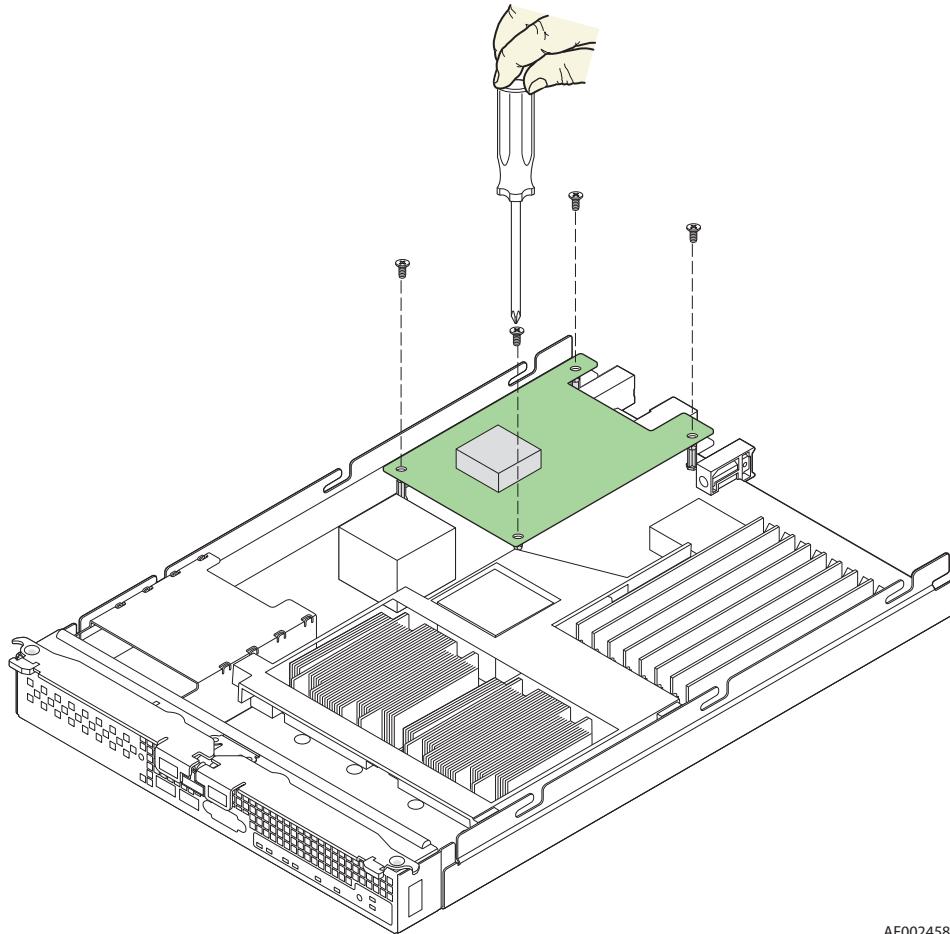
8. Position the mezzanine card above the mezzanine card connector on the server board and align the four screw holes with the standoffs taking care to position the connector housing on the mezzanine card with the connector on the server board.

9. Carefully press the mezzanine card into place until it is fully seated in the connector and resting on the standoff supports.

AF002407

Figure 37. Installing Mezzanine Card

10. Secure the mezzanine card to the standoffs with the four screws previously removed.

AF002458
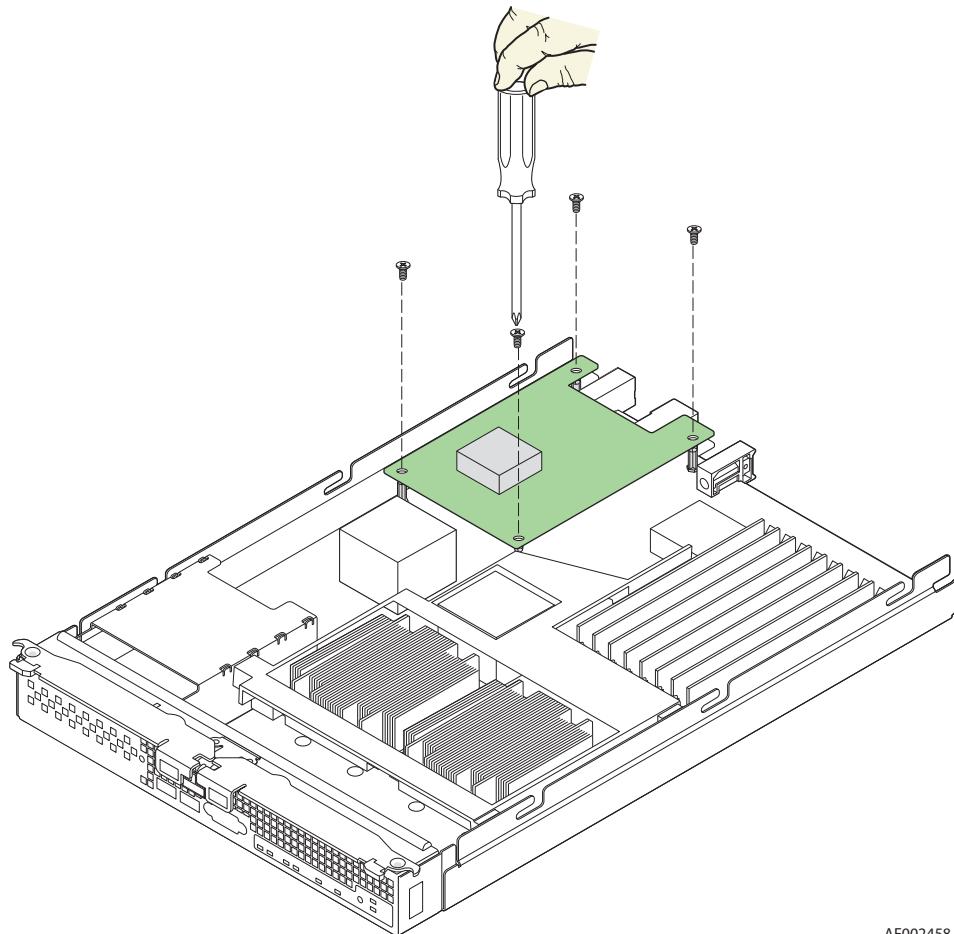
Figure 38. Securing Mezzanine Card to Standoffs

11. Reinstall the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

12. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10.

Removing the Intel® Dual Gigabit Ethernet I/O Expansion Mezzanine Card

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.
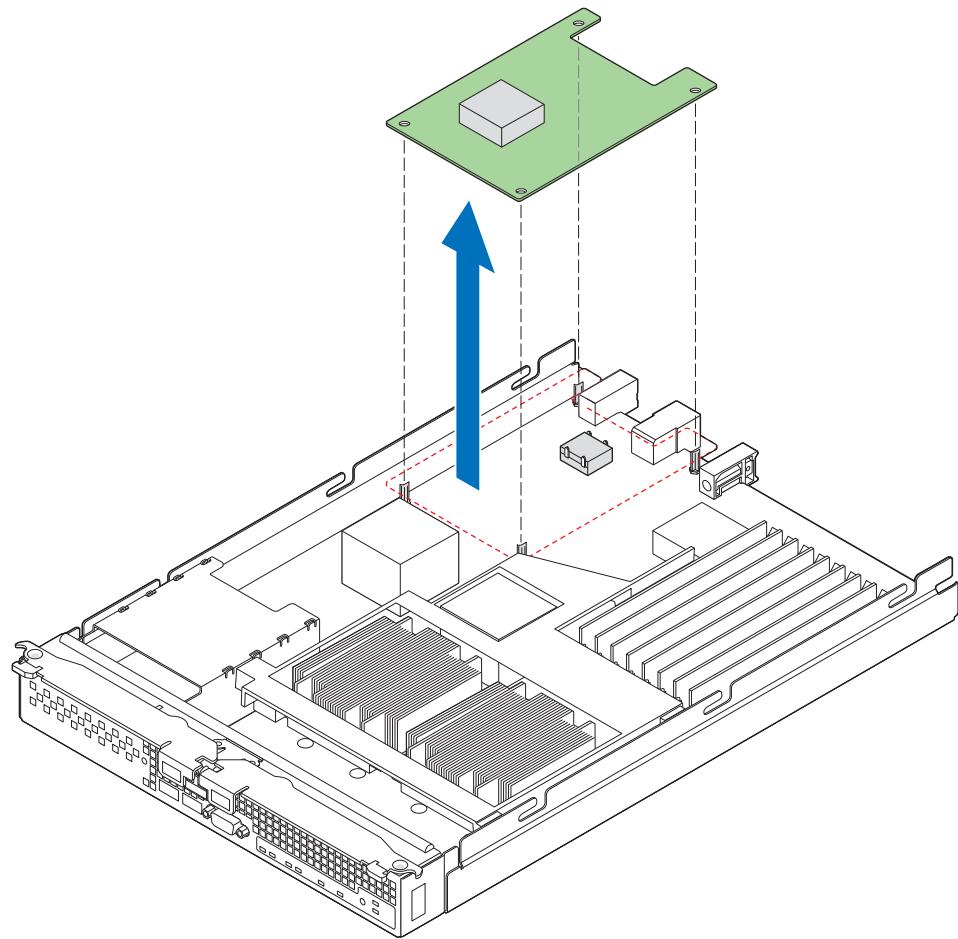
4. Locate the mezzanine card.

5. With a Phillips* screwdriver, remove the four screws securing the mezzanine card to the standoffs.

AF002458

Figure 39. Removing Screws from Mezzanine Card

Intel® Compute Module MFS5000SI User Guide
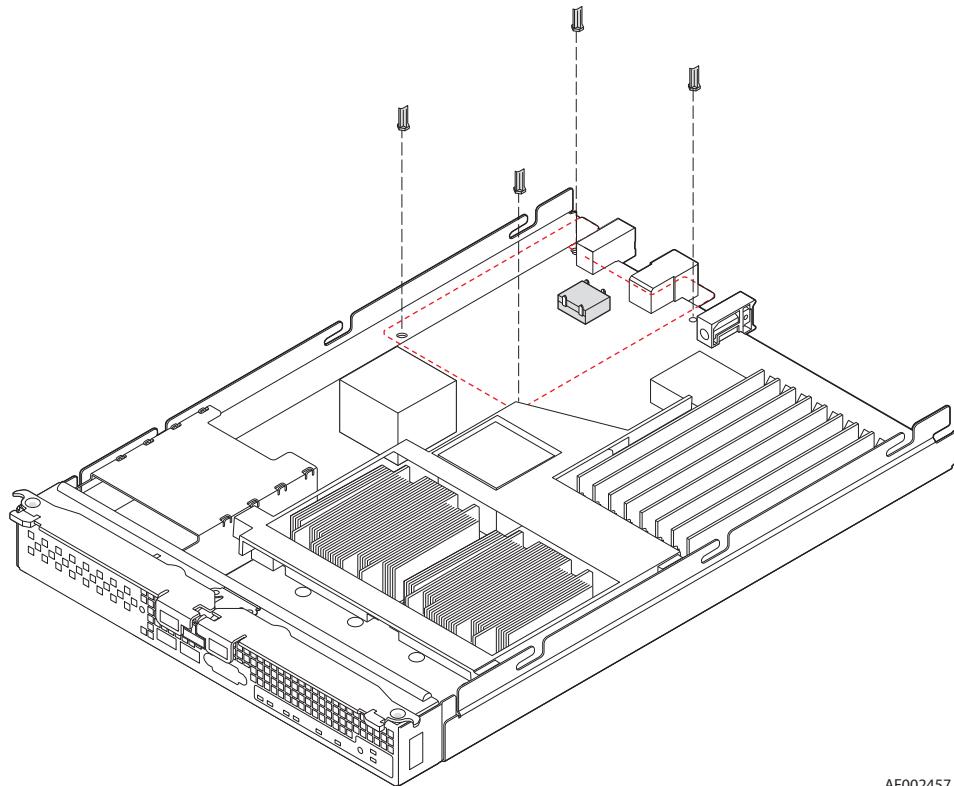
6. Holding the mezzanine card by its edges, gently lift it from the connector and store it in an anti-static package.

AF002406

Figure 40. Removing Mezzanine Card

7. With a 1/4-inch nut driver, remove the standoffs.

AF002457

Figure 41. Removing Standoffs

8. With a Phillips* screwdriver, secure the four screws previously removed into the holes vacated by the standoffs.

9. Reinstall the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

10. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10.

Replacing the CMOS Battery

The lithium battery on the server board powers the RTC for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings stored in the CMOS RAM (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved replacement batteries.

Warning: *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.*

Advarsel: *Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.*

Advarsel: *Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.*
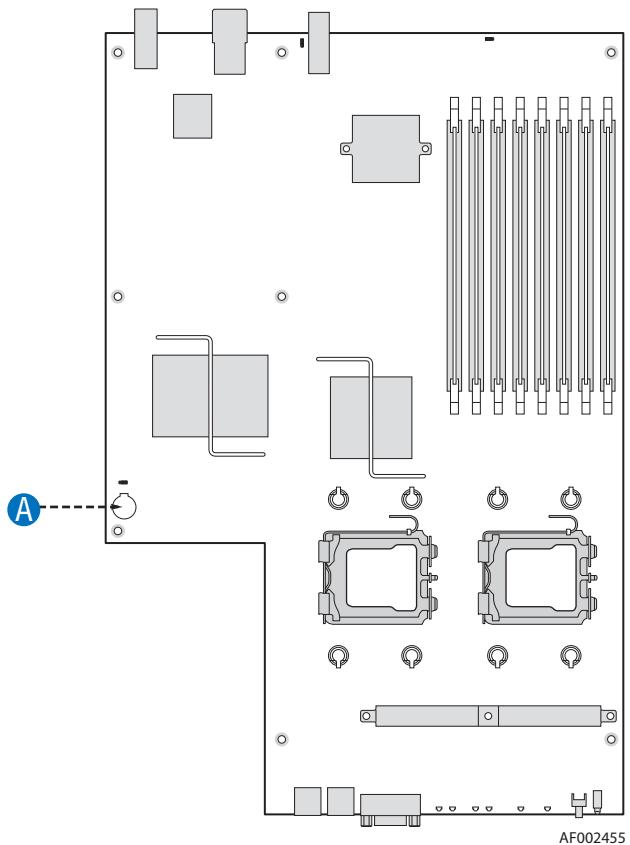
Varning: *Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.*

Varoitus: *Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.*

To replace the battery:

1. Observe the safety and ESD information at the beginning of this manual and in the appendices.

2. If the compute module is installed in a server system, remove it. For removal instructions, see "Removing a Compute Module from the Server System" on page 9.

3. Remove the top cover. For instructions, see "Opening and Removing the Top Cover" on page 10.

4. Locate the CMOS battery (see letter "A" in Figure 42).

AF002455

Figure 42. CMOS Battery Location

5. Insert the tip of a small flat-head screwdriver, or equivalent, under the tab in the plastic retainer. Gently push down on the screwdriver to lift the battery.

6. Remove the battery from its socket.

7. Dispose of the battery according to local ordinance.

8. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.

9. Replace the top cover. For instructions, see "Replacing and Closing the Top Cover" on page 12.

10. Reinstall the server compute blade in the server system. For instructions, see "Installing a Compute Module into the Server System" on page 10

11. Run the BIOS setup to restore the configuration settings to the RTC.

3   BIOS Setup Utility

This section describes the text-based BIOS Setup Utility. The BIOS Setup Utility is used to view and modify configuration settings for the Intel® Compute Module MFS5000SI built-in devices, boot manager, and error manager. You can run the BIOS Setup Utility with or without an operating system present.

Starting BIOS Setup Utility

To enter the BIOS Setup Utility, complete the following steps:

1. Before you begin either:
   a. Start a Remote KVM & CD session with the target compute module through the Intel® Modular Server Control UI. Refer to the *Intel® Modular Server System MFSYS25/MFSYS35 User Guide* for information on using the Intel® Modular Server Control UI.
   b. Connect a keyboard and monitor directly to the target compute module.
2. Power on or reboot the compute module using either the Intel® Modular Server Control UI or by manually pressing the compute module power button.
3. Press the <F2> function key when the below message is displayed during boot time.

   Press <F2> to enter SETUP

   The message above is displayed after POST completes the memory test either below the BIOS splash screen if quiet boot is enabled or on the diagnostic screen if quiet boot is disabled when you power on the compute module.
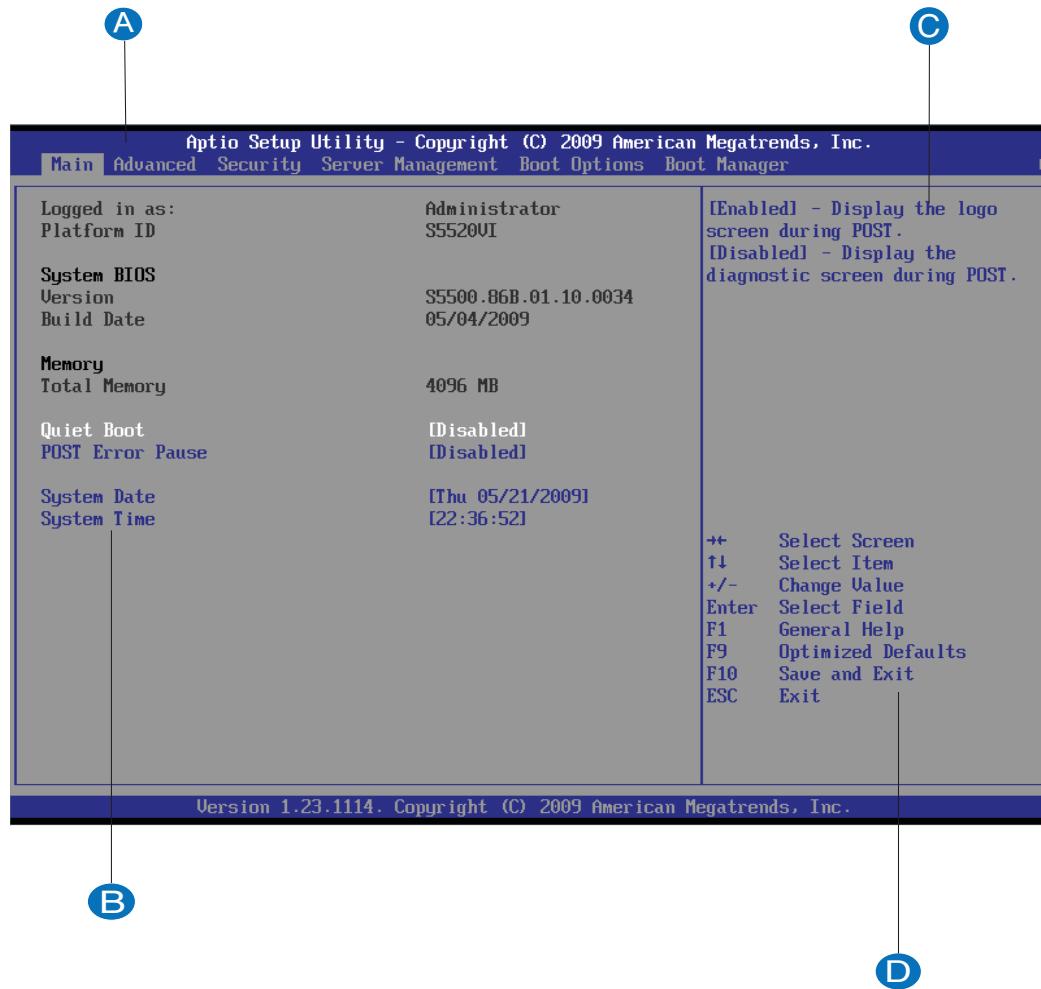
When the BIOS Setup Utility is entered, the Main screen is displayed by default. If serious errors have occurred, the Error Manager screen will be displayed instead of the Main screen.

If You Cannot Access Setup

If you cannot access the BIOS Setup, you might need to clear the CMOS memory. For instructions on clearing the CMOS, see .

General Layout and Navigation

The BIOS Setup page layout is sectioned into functional areas. Each occupies a specific area of the screen and has dedicated functionality. The following table lists and describes each functional area.

A

C

```
         Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
    Main  Advanced  Security  Server Management  Boot Options  Boot Manager                      ►

    Logged in as:                 Administrator          [Enabled] - Display the logo
    Platform ID                   S5520VI                screen during POST.
                                                         [Disabled] - Display the
    System BIOS                                          diagnostic screen during POST.
    Version                       S5500.86B.01.10.0034
    Build Date                    05/04/2009

    Memory
    Total Memory                  4096 MB

    Quiet Boot                    [Disabled]
    POST Error Pause              [Disabled]

    System Date                   [Thu 05/21/2009]
    System Time                   [22:36:52]
                                                         →←       Select Screen
                                                         ↑↓       Select Item
                                                         +/-      Change Value
                                                         Enter    Select Field
                                                         F1       General Help
                                                         F9       Optimized Defaults
                                                         F10      Save and Exit
                                                         ESC      Exit


            Version 1.23.1114. Copyright (C) 2009 American Megatrends, Inc.
```

B

D

	Functional Area	Description
A	Menu Selection Bar	The Menu selection bar is located at the top of the BIOS Setup Utility screen. It displays the major menu selections available to the user. By using the left and right arrow keys, the user can select the listed menus. Some menus are hidden and become available by scrolling to the left or right of the current selection.
B	Setup Item List	The Setup Item List is a set of controllable and informational items. Each item in the list occupies the left column of the screen. A Setup Item may also open a new window with more options for that functionality on the board.
C	Item-Specific Help Area	The Item-specific Help area is located on the right side of the screen and contains help text for the highlighted Setup Item. Help information may include the meaning and usage of the item, allowable values, effects of the options, and so on.
D	Keyboard Command Bar	The Keyboard Command Bar is located at the bottom right of the screen and continuously displays help for keyboard special keys and navigation keys.
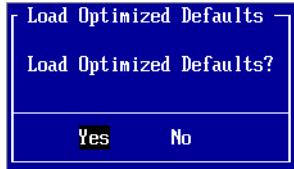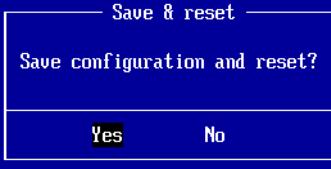
Figure 43. Setup Layout

Table 3, "Keyboard Commands" describes the keyboard commands you can use in the BIOS Setup menus.

Table 3. Keyboard Commands

Press	Description
<F1>	Help - Pressing F1 on any menu invokes the general Help window.
← →	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a submenu or pick list is displayed.
-	Select Item up - The up arrow is used to select the previous value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
¯	Select Item down - The down arrow is used to select the next value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
F5/-	Change Value - The minus key or the F5 function key is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.

Table 3. Keyboard Commands

Press	Description
F6/+	Change Value - The plus key or the F6 function key is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list.
<Enter>	Execute Command - The Enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the Enter key will undo the pick list, and allow another selection in the parent menu.
<Esc>	Exit - The ESC key provides a mechanism for backing out of any field. This key will undo the pressing of the Enter key. When the ESC key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.
<F9>	Setup Optimized Defaults - Pressing F9 causes the following to display: If "Yes" is selected and the Enter key is pressed, all Setup fields are set to their default values. If "No" is selected and the Enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.
<F10>	Save and Exit - Pressing F10 causes the following message to display: If "Yes" is selected and the Enter key is pressed, all changes are saved and Setup is exited. If "No" is selected and the Enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.

Setup Menus
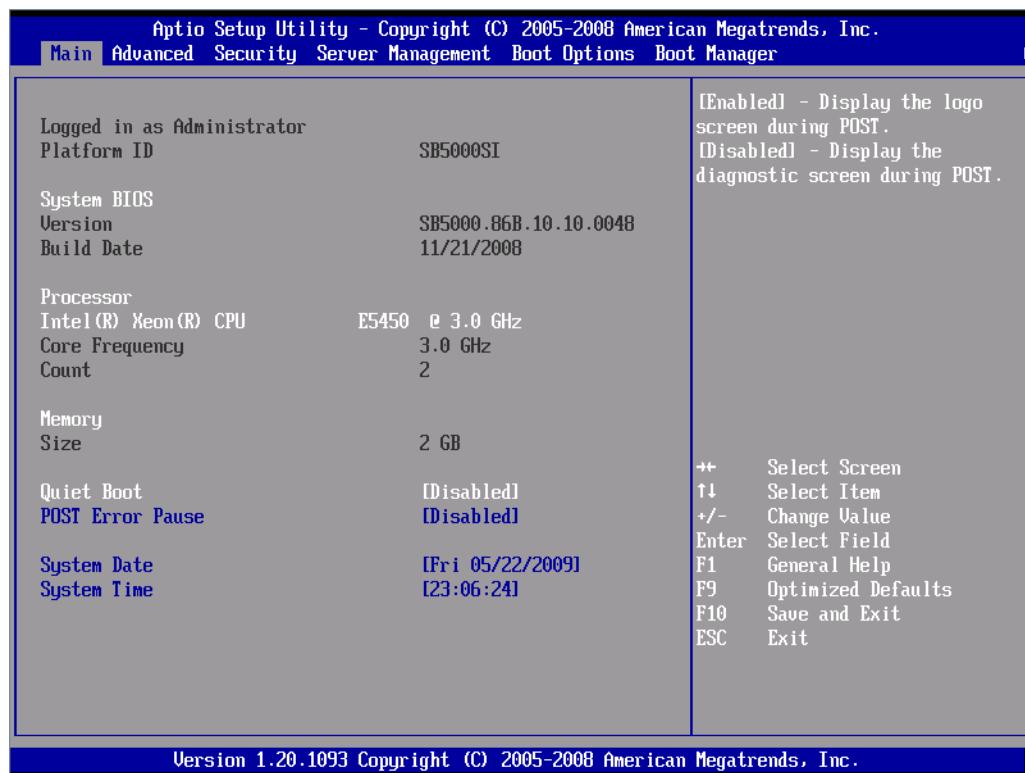
Each BIOS Setup menu page contains a number of features. Except for those features provided only to display automatically configured information, each feature is associated with a value field that contains user-selectable parameters. A user can change these parameters if they have adequate security rights. If a value cannot be changed for any reason, the feature's value field is inaccessible.

The following sections describe the look and behavior for the BIOS Setup Utility. In these sections, tables describe the contents of each screen. These tables follow the below guidelines:

- The text and values in the Setup Item and Options columns are displayed on the BIOS Setup screens.

- In the Options column, the default values are displayed in bold. These values do not appear in bold on the BIOS Setup screen. The bold text in this document is to serve as a reference point.

- Changes (except Date and Time) made in the Setup Utility are not applied until they have been saved and the compute module has been rebooted.

Main

The Main screen is the first screen that appears when the BIOS Setup is entered, unless an error has occurred. If an error has occurred, the Error Manager screen is displayed instead.

Figure 44. Main Screen

The following table describes the features of the Main Setup screen.

Table 4. Main Screen Details

Setup Item	Options	Description
Logged in as		**Information only**. Displays the current BIOS Setup password level, Administrator or User. If no passwords are set, Administrator is the default mode.
Platform ID		**Information only**. Displays the Platform ID S5520VI
System BIOS Version		**Information only**. Displays the current BIOS version.
System BIOS Build Date		**Information only**. Displays the current BIOS build date.
Processor Intel® Xeon® CPU		**Information only**. Displays the installed processor information
Processor Core Frequency		**Information only**. Displays the installed processor core frequency.
Processor Count		**Information only**. Displays the number of installed processors.
Memory Size		**Information only**. Displays the total physical memory installed in the compute module, in MB or GB. The term physical memory indicates the total memory discovered in the form of installed DIMMs.
Quiet Boot	**Enabled** Disabled	If Quiet Boot is enabled a logo screen is displayed during POST. By default, Quiet Boot is enabled in the BIOS setup. If the logo is displayed during POST, press <Esc> to hide the logo and display the diagnostic screen. If a logo screen is not present in the flash ROM, or if Quiet Boot is disabled, the summary and diagnostic screen is displayed during POST.
POST Error Pause	Enabled Disabled	If enabled, the POST Error Pause option takes the compute module to the error manager to review the critical POST errors when they occur. Minor and non-fatal error displays are not affected by this setting. If disabled the compute module will attempt to boot and will not go to the Error Manager for critical POST errors.
System Date	[Day of week MM/DD/YYYY]	System Date has configurable fields for Month, Day, and Year. Use [Enter] or [Tab] key to select the next field. Use [+] or [-] key to modify the selected field.
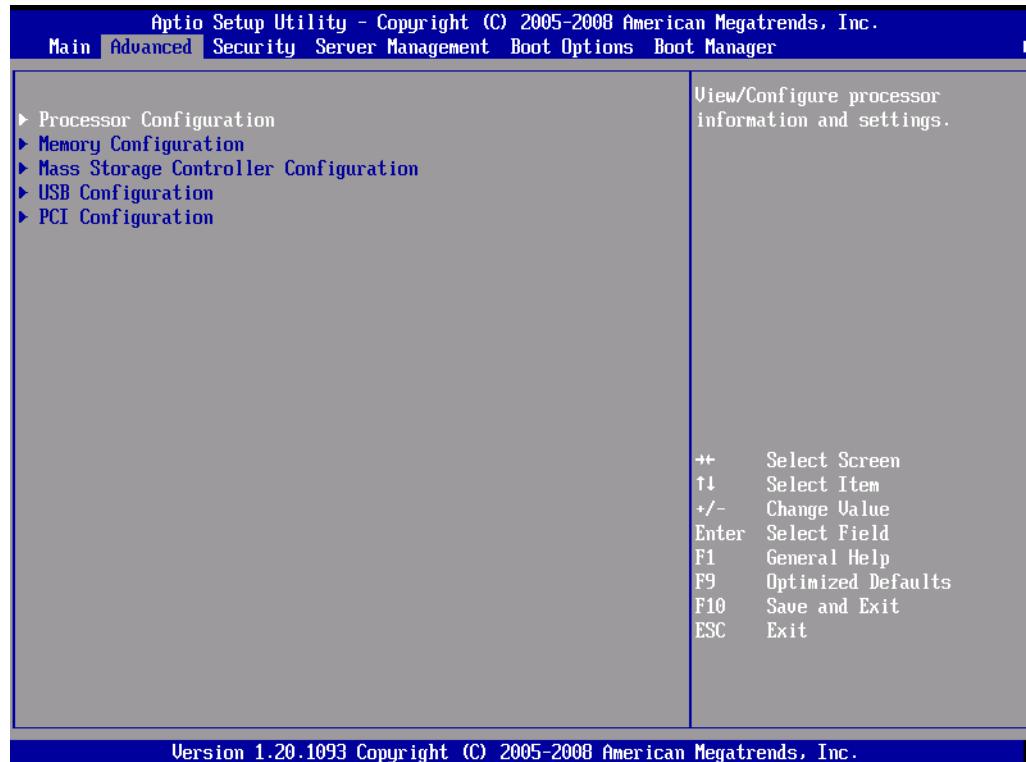
Table 4. Main Screen Details

Setup Item	Options	Description
System Time	[HH:MM:SS]	System Time has configurable fields for Hours, Minutes, and Seconds. Hours are in 24-hour format. Use the [Enter] or [Tab] key to select the next field. Use the [+] or [-] key to modify the selected field.

Advanced

The Advanced screen provides a list of categories that can be configured by the user. The categories act as links to the specific configuration screens for each option. Configuration changes are note performed directly on the Advanced screen.

To access this screen from the Main screen, press the right arrow until the Advanced menu option is selected.


```
          Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
     Main  Advanced  Security  Server Management  Boot Options  Boot Manager

                                                    View/Configure processor
                                                    information and settings.
 ▶ Processor Configuration
 ▶ Memory Configuration
 ▶ Mass Storage Controller Configuration
 ▶ USB Configuration
 ▶ PCI Configuration



                                                    →←      Select Screen
                                                    ↑↓      Select Item
                                                    +/-     Change Value
                                                    Enter   Select Field
                                                    F1      General Help
                                                    F9      Optimized Defaults
                                                    F10     Save and Exit
                                                    ESC     Exit


          Version 1.20.1093 Copyright (C) 2005-2008 American Megatrends, Inc.
```

Figure 45. Advanced Screen

The following sections provide detailed information including images of the configuration screens for each of the categories listed on the Advanced menu.

Processor Configuration

The Processor Configuration screen allows you to view detailed information for each installed processor as well as configure several processor options.

To access this screen from the Main screen press the right arrow until the Advanced menu option is selected then select Processor Configuration from the Advanced menu.

```
          Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
        Advanced

    Processor Configuration                                Enhanced Intel SpeedStep(R)
                                                           Technology allows the system to
    Core Frequency                  3.0 GHz                dynamically adjust processor
    System Bus Frequency            1.33 GHz               voltage and core frequency,
    Enhanced Intel SpeedStep(R) Tech   [Enabled]           which can result in decreased
    Deep C-state Support            [Enabled]              average power consumption and
    Core Multi-processing           [Enabled]              decreased average heat
    Intel(R) Virtualization Technology  [Disabled]         production.
    Simulated MSI Support           [Disabled]             Contact your OS vendor
    Execute Disable Bit             [Enabled]              regarding OS support of this
    Hardware Prefetcher             [Enabled]              feature.
    Adjacent Cache Line Prefetch    [Enabled]

    Processor Retest                [Disabled]

  ▶ Processor 1 Information                                →←     Select Screen
  ▶ Processor 2 Information                                ↑↓     Select Item
                                                           +/-    Change Value
                                                           Enter  Select Field
                                                           F1     General Help
                                                           F9     Optimized Defaults
                                                           F10    Save and Exit
                                                           ESC    Exit



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```

Figure 46. Advanced Processor Configuration Screen

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The following table describes the features of the Advanced Processor Configuration screen.

Table 5. Advanced Processor Configuration Details

Setup Item	Options	Description
Processor Configuration		Title
Core Frequency		Information only. Displays current frequency of the processor.
Enhanced Intel SpeedStep®Technology	**Enabled** Disabled	Enhanced Intel SpeedStep®Technology allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. Contact your OS vendor regarding OS support of this feature.
Deep C-state Support	**Enabled** Disabled	Significantly reduces the power of the processor during idle periods. Contact your OS vendor regarding OS support of this feature.
Core Multi-processing	**Enabled** Disabled	Core Multi-processing sets the state of the logical processor cores in a package. If disabled, BIOS sets only the logical processor core 0 as enabled in each processor package.
Intel® Virtualization Technology	Enabled **Disabled**	Intel® Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions. A change to this option does require the compute module to be rebooted before taking effect.
Simulated MSI Support	Enabled **Disabled**	By default simulation of Message Signaled Interrupt (MSI) support is disabled. However, if there is no OS support for Message Signaled Interrupts this feature can be enabled.
Execute Disable Bit	**Enabled** Disabled	Execute Disable Bit can help prevent certain classes of malicious buffer overflow attacks. Contact your OS vendor regarding OS support of this feature.
Hardware Prefetcher	**Enabled** Disabled	Hardware Prefetcher is a speculative prefetch unit within the processor(s). Modifying this setting may affect system performance.
Adjacent Cache Line Prefetch	**Enabled** Disabled	By default Adjacent Cache Line Prefetch is set to [Enabled]. When set to enabled the cache lines are fetched in pairs (even line + odd line). If set to [Disabled] then only the current cache line required is fetched. Modifying this setting may affect system performance.
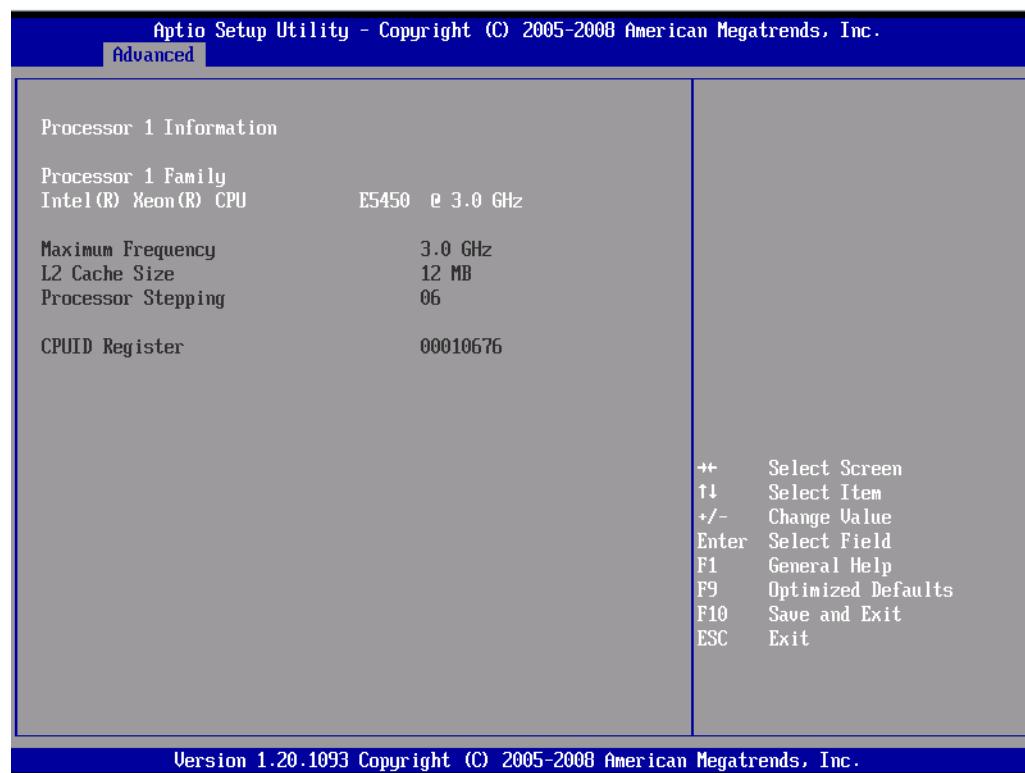
Table 5. Advanced Processor Configuration Details

Setup Item	Options	Description
Processor Retest	Enabled **Disabled**	When enabled the BIOS will activate and retest all installed processors during the next boot only. This option will automatically reset to [Disabled] on the next boot after all processors are retested

Processor 1 & 2 Information

The Processor 1 Information and Processor 2 Information screens provide the following information regarding the installed processors.

To access this screen from the Main screen press the right arrow until the Advanced menu option is selected then select Processor Configuration from the Advanced menu. On the Processor Configuration screen press the down or up arrow until Processor 1 Information or Processor 2 Information is highlighted and press <Enter>.

```
        Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
        Advanced

        Processor 1 Information

        Processor 1 Family
        Intel(R) Xeon(R) CPU          E5450  @ 3.0 GHz

        Maximum Frequency             3.0 GHz
        L2 Cache Size                 12 MB
        Processor Stepping            06

        CPUID Register                00010676

                                                    →←      Select Screen
                                                    ↑↓      Select Item
                                                    +/-     Change Value
                                                    Enter   Select Field
                                                    F1      General Help
                                                    F9      Optimized Defaults
                                                    F10     Save and Exit
                                                    ESC     Exit

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```

Figure 47. Advanced Processor Configuration - Processor 1 Information Screen

The following table describes the features of the Processor 1 and Processor 2 Information screens available from the Advanced > Processor Configuration screen.
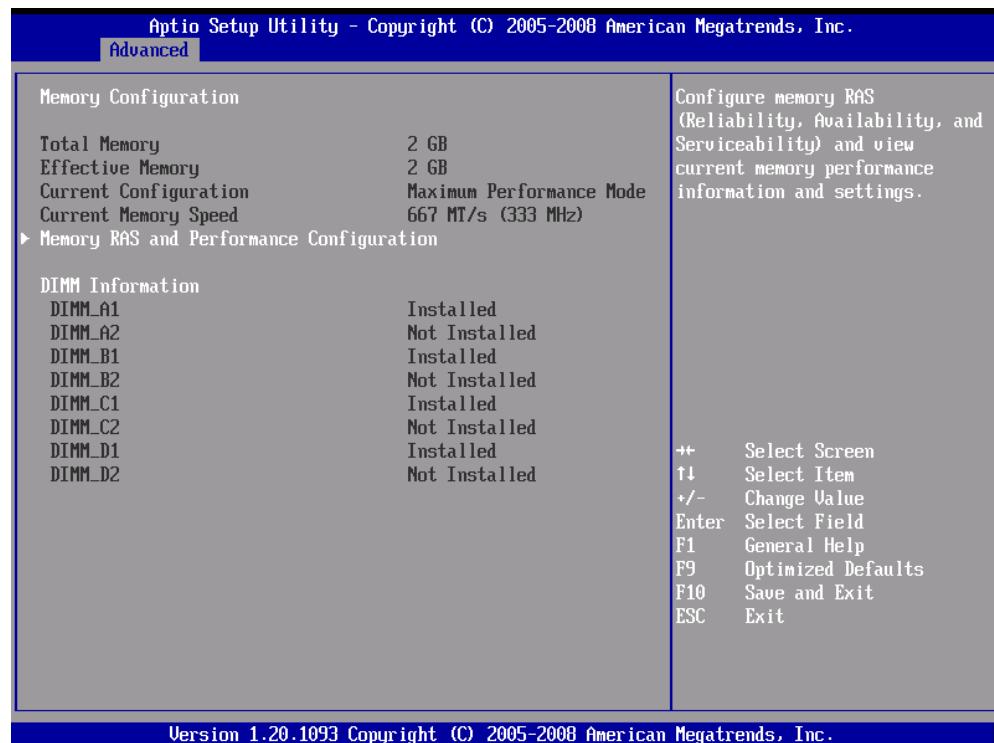
Table 6. Processor 1 and Processor 2 Information Screen Details

Setup Item	Options	Description
Processor x Configuration		Screen Title where x is either 1 or 2 depending on which option was selected on the previous screen.
Processor x Family		**Information only**. Displays the ID string from the Processor.
Maximum Frequency		**Information only**. Displays maximum frequency of the Processor.
L2 Cache Size		**Information only**. Displays the size of the Processor L2 Cache
Processor Stepping		**Information only**. Displays the current Processor stepping information
CPUID Register		**Information only**. Processor CPUID.

Memory Configuration

The Advanced Memory Configuration screen provides information about the installed memory modules. This screen also provides a link to configure memory RAS (Reliability, Availability and Serviceability) and view memory performance information and settings.

To access this screen from the Main screen press the right arrow until the Advanced menu option is selected then select Memory Configuration from the Advanced menu.

```
                 Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
    Advanced

   Memory Configuration                                          Configure memory RAS
                                                                 (Reliability, Availability, and
   Total Memory                      2 GB                        Serviceability) and view
   Effective Memory                  2 GB                        current memory performance
   Current Configuration             Maximum Performance Mode    information and settings.
   Current Memory Speed              667 MT/s (333 MHz)
 ▶ Memory RAS and Performance Configuration

   DIMM Information
    DIMM_A1                          Installed
    DIMM_A2                          Not Installed
    DIMM_B1                          Installed
    DIMM_B2                          Not Installed
    DIMM_C1                          Installed
    DIMM_C2                          Not Installed
    DIMM_D1                          Installed              →←      Select Screen
    DIMM_D2                          Not Installed          ↑↓      Select Item
                                                           +/-     Change Value
                                                           Enter   Select Field
                                                           F1      General Help
                                                           F9      Optimized Defaults
                                                           F10     Save and Exit
                                                           ESC     Exit




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```

Figure 48. Advanced Memory Configuration Screen

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The following table describes the features of the Advanced Memory Configuration screen.
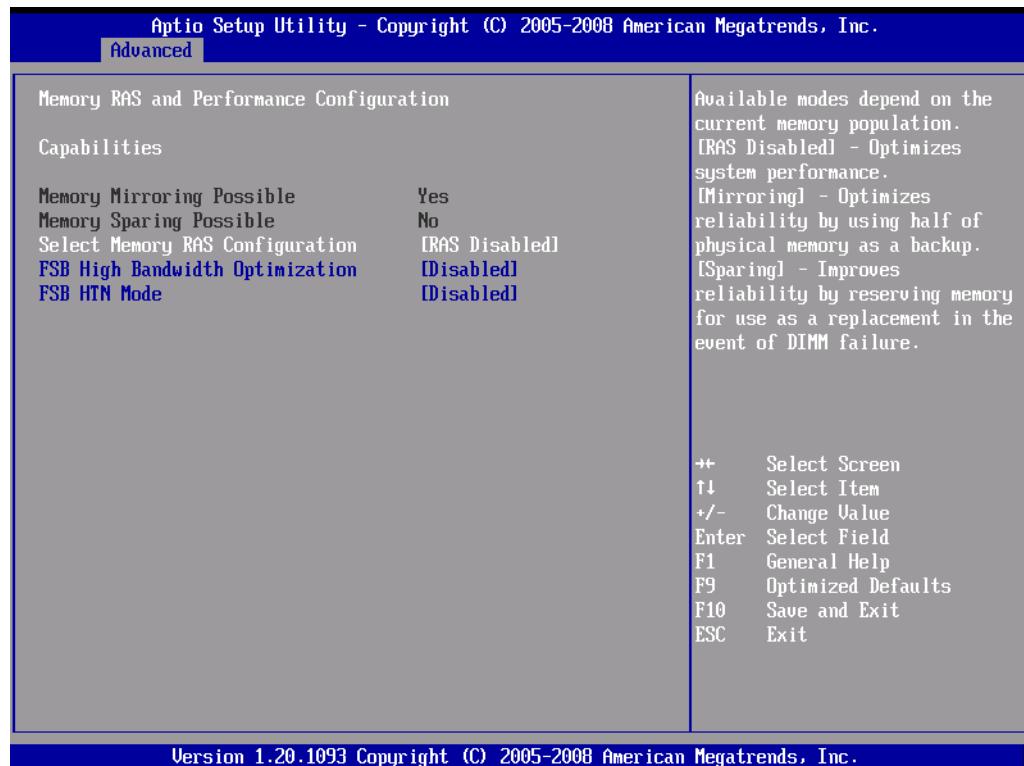
Table 7. Advanced Memory Configuration Screen Details

Setup Item	Options	Description
Total Memory		Information only. The amount of memory available in the system in the form of installed DIMMs, in units of MB or GB.
Effective Memory		Information only. The amount of memory available to the OS in MB or GB. The Effective Memory is the difference between Total Physical Memory and the sum of all memory reserved for internal usage, RAS redundancy and SMRAM. This difference includes the sum of all DIMMs that failed Memory BIST during POST or were disabled by the BIOS during the memory discovery phase in order to optimize memory configuration.
Current Configuration		Information only. Displays one of the following: • Maximum Performance Mode: System memory is configured for optimal performance and efficiency and no RAS is enabled. • Mirror Mode: Memory mirroring configures the system memory for maximum reliability by using half of the physical memory as a backup. • Sparing Mode: Memory sparing improves system memory reliability by reserving memory for use as a replacement in the event of a DIMM failure.
Current Memory Speed		Information only. Displays the speed at which the memory is running.
Memory RAS and Performance Configuration		Select to configure memory RAS (Reliability, Availability, and Serviceability) and view current memory performance information and settings. This takes the user to a different screen.
DIMM Information DIMM_ XY		Displays the state of each DIMM socket present on the board. Each DIMM socket field reflects one of the following possible states: • Installed: There is a DIMM installed in this slot. • Not Installed: There is no DIMM installed in this slot. • Disabled: The DIMM installed in this slot has been disabled by the BIOS in order to optimize memory configuration. • Failed: The DIMM installed in this slot is faulty / malfunctioning. **NOTE:** X denotes the Channel Identifier and Y denotes the DIMM Identifier within the Channel.

Memory RAS and Performance Configuration

The Memory RAS (Reliability, Availability, and Serviceability) and Performance Configuration screen displays current memory performance information and settings.

To access this screen from the Main screen press the right arrow key until the Advanced menu is selected then select Memory Configuration. From the Memory Configuration screen select Memory RAS and Performance Configuration and press <Enter>.



```
          Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
    Advanced

 Memory RAS and Performance Configuration             Available modes depend on the
                                                      current memory population.
 Capabilities                                         [RAS Disabled] - Optimizes
                                                      system performance.
 Memory Mirroring Possible        Yes                 [Mirroring] - Optimizes
 Memory Sparing Possible          No                  reliability by using half of
 Select Memory RAS Configuration  [RAS Disabled]      physical memory as a backup.
 FSB High Bandwidth Optimization  [Disabled]          [Sparing] - Improves
 FSB HTN Mode                     [Disabled]          reliability by reserving memory
                                                      for use as a replacement in the
                                                      event of DIMM failure.



                                                      →←     Select Screen
                                                      ↑↓     Select Item
                                                      +/-    Change Value
                                                      Enter  Select Field
                                                      F1     General Help
                                                      F9     Optimized Defaults
                                                      F10    Save and Exit
                                                      ESC    Exit



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```

Figure 49. Memory RAS and Performance Configuration Screen

The following table describes the features of the Memory RAS and Performance Configuration screen.
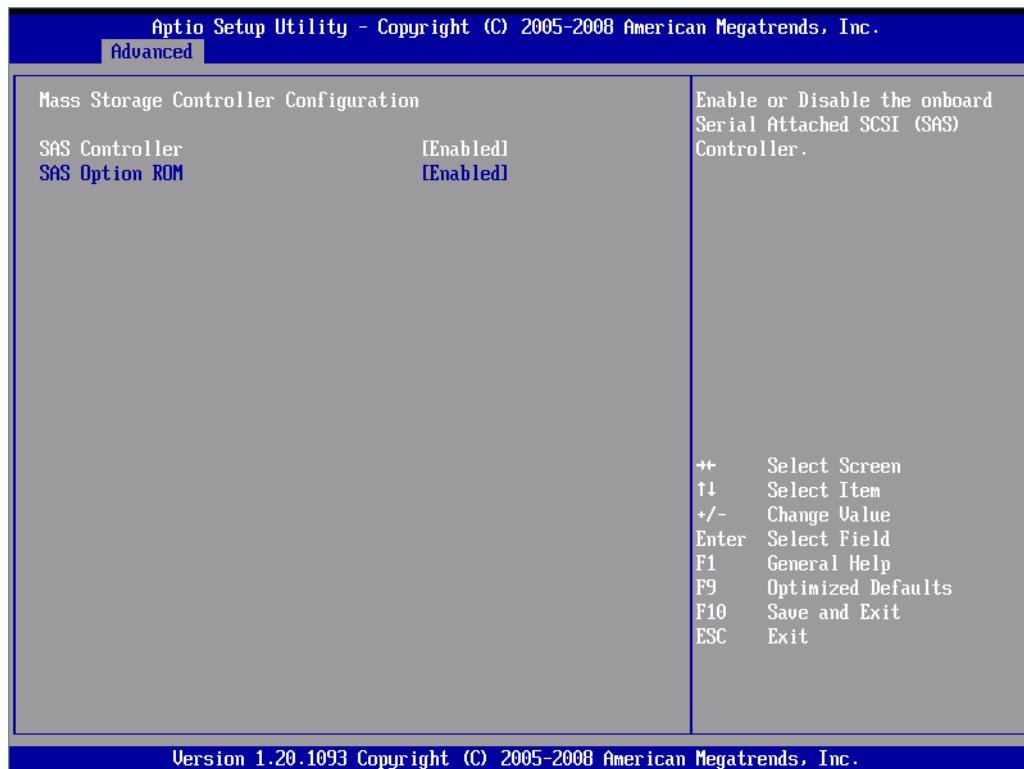
Table 8. Memory RAS and Performance Configuration Screen Details

Setup Item	Options	Description
Memory RAS and Performance Configuration		Title
Capabilities		Section heading. Displays information and configuration options
Memory Mirroring Possible		Information only. Displays if memory mirroring can be supported with the current memory configuration.
Memory Sparing Possible		Information only. Displays if memory sparing can be supported with the current memory configuration.
Select Memory RAS Configuration	**RAS Disabled** Mirroring Sparing	The modes available for selection depend on the current memory population configuration. By default RAS in Disabled. • Maximum Performance Mode: System memory is configured for optimal performance and efficiency and no RAS is enabled. By default RAS is disabled. • Mirror Mode: If memory mirroring is possible with the current memory configuration the option [Mirroring] will be available. Memory mirroring configures the system memory for maximum reliability by using half of the physical memory as a backup. • Sparing Mode: If memory sparing is possible with the current memory configuration the option [Sparing] will be available. Memory sparing improves system memory reliability by reserving memory for use as a replacement in the event of a DIMM failure.
FSB High Bandwidth Optimization	Enabled **Disabled**	If enabled this option optimizes the Front Side Bus (FSB) for higher bandwidth when 1333 MHz FSB processors) is installed. By default this is set to [Disabled]. **NOTE:** Some applications will benefit with this option [Enabled]. Configure based on performance results.
FSB HTN Mode	Enabled **Disabled**	If enabled the Front Side Bus (FSB) will be reduced to 1066MHz when dual 1333 Mhz Intel® Xeon®processor 5400 series are present. By default this is set to [Disabled].

Mass Storage Controller Configuration

The Mass Storage Controller Configuration screen allows you to enable or disable the SAS controller and SAS Option ROM. By default the SAS controller and SAS Option ROM are set to [Enabled]. This enables the compute module to access the system storage. If the SAS controller and or the SAS Option ROM is set to [Disabled] the compute module will not be able to access storage.

To access this screen from the Main menu press the right arrow key until the Advanced menu is selected the press the down arrow key until Mass Storage Controller Configuration is highlighted and press <Enter>.

```
                Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
        Advanced

  Mass Storage Controller Configuration                      Enable or Disable the onboard
                                                             Serial Attached SCSI (SAS)
     SAS Controller                    [Enabled]             Controller.
     SAS Option ROM                    [Enabled]




                                                             →←     Select Screen
                                                             ↑↓     Select Item
                                                             +/-    Change Value
                                                             Enter  Select Field
                                                             F1     General Help
                                                             F9     Optimized Defaults
                                                             F10    Save and Exit
                                                             ESC    Exit



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```

Figure 50. Mass Storage Controller Configuration Screen

USB Configuration

The USB Configuration screen allows you to configure the USB controller options.

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To access this screen from the Main screen press the right arrow key until the Advanced menu is selected then press the down or up arrow key until USB Configuration is highlighted and press <Enter>.

```
          Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
           Advanced

  USB Configuration                                    ▲  [Enabled] - All onboard USB
                                                          controllers will be turned on
                                                          and accessible by the OS.
  Detected USB Devices                                    [Disabled] - All onboard USB
          1 Drive, 1 Keyboard, 1 Mouse                    controllers will be turned off
                                                          and inaccessible by the OS.
  USB Controller                      [Enabled]
  Legacy USB Support                  [Enabled]
  Port 60/64 Emulation                [Disabled]

  USB Mass Storage Device Configuration
  Device Reset Timeout                [20 sec]

  Storage Emulation
          Virtual CDROM   1.00        [Auto]
                                                          →←     Select Screen
  USB 2.0 Controller                  [Enabled]           ↑↓     Select Item
                                                          +/-    Change Value
                                                          Enter  Select Field
                                                          F1     General Help
                                                          F9     Optimized Defaults
                                                          F10    Save and Exit
                                                          ESC    Exit
                                                       ▼

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```

Figure 51. Advanced USB Configuration Screen

The following table describes the features of the Advanced USB Configuration screen.
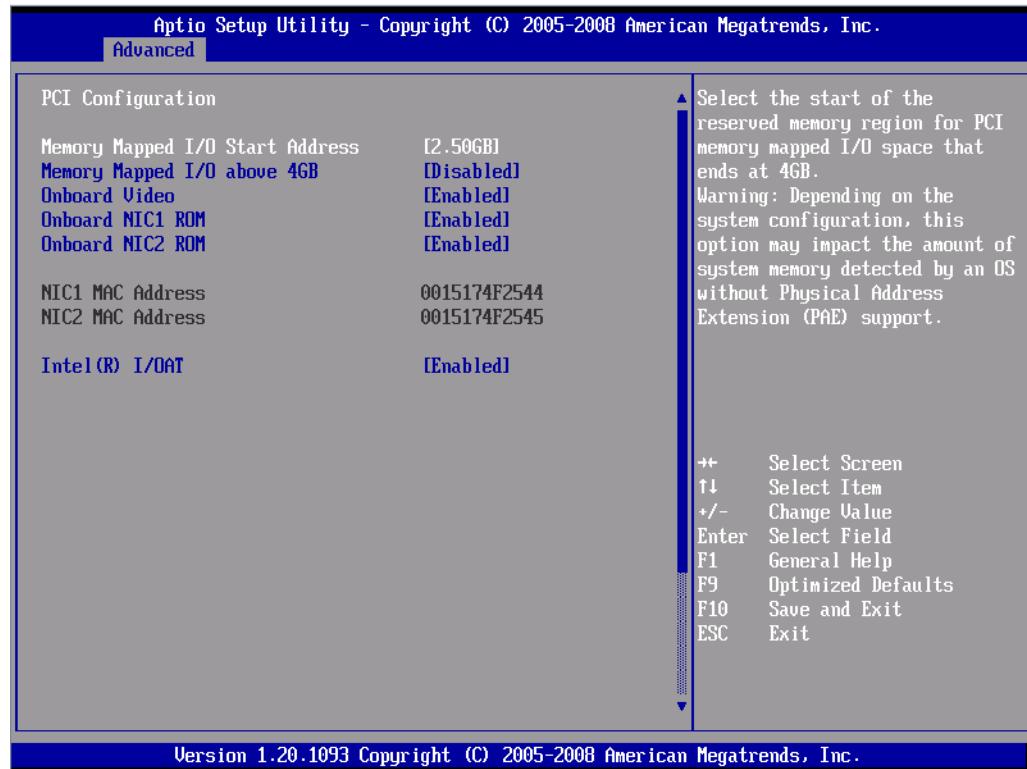
Table 9. USB Configuration Details

Setup Item	Options	Description
USB Configuration		Screen Title
Detected USB Devices		**Information only**. Displays the number and general description of USB devices detected.
USB Controller	**Enabled** Disabled	By default the USB Controller is enabled. When enabled all on-board USB controllers are turned on and accessible by the OS. If disabled all on-board USB controllers are turned off and inaccessible by the OS. If disabled the remaining configuration options on this screen will be grayed out.
Legacy USB Support	**Enabled** Disabled Auto	USB device boot support and PS/2 emulation for USB keyboard and USB mouse devices. If auto is selected, Legacy USB support is enabled if a USB device is attached.
Port 60/64 Emulation	Enabled **Disabled**	I/O port 60h/64h emulation support. **NOTE:** This may be needed for legacy USB keyboard support when using an OS that is USB unaware.
USB Mass Storage Device Configuration		Section Heading
Device Reset time-out	10 sec **20 sec** 30 sec 40 sec	USB Mass Storage device start unit command time-out. Setting to a larger value provides more time for a mass storage device to be ready, if needed.
Storage Emulation		Section Heading
Virtual CDROM 1.0	**Auto** Floppy Forced FDD Hard Disk CD-ROM	By default [Auto] is selected. When Auto is selected USB devices that are less then 530MB will be emulated as a floppy drive. If [Forced FDD] is selected a HDD formatted drive will be emulated as a floppy disk drive (FDD). For example: a zip drive.
USB 2.0 controller	**Enabled** Disabled	When enabled on-board USB ports are enabled to support USB 2.0 mode. Contact your OS vendor regarding OS support of this feature.

PCI Configuration

The PCI Configuration Screen allows you to configure the PCI memory usage and on-board NIC controllers.

To access this screen from the Main screen press the right arrow key until the Advanced menu is selected then press the down or up arrow key to highlight PCI Configuration and press <Enter>.

```
           Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
        Advanced

   PCI Configuration                                        Select the start of the
                                                            reserved memory region for PCI
   Memory Mapped I/O Start Address    [2.50GB]              memory mapped I/O space that
   Memory Mapped I/O above 4GB        [Disabled]            ends at 4GB.
   Onboard Video                      [Enabled]             Warning: Depending on the
   Onboard NIC1 ROM                   [Enabled]             system configuration, this
   Onboard NIC2 ROM                   [Enabled]             option may impact the amount of
                                                            system memory detected by an OS
   NIC1 MAC Address                   0015174F2544          without Physical Address
   NIC2 MAC Address                   0015174F2545          Extension (PAE) support.


   Intel(R) I/OAT                     [Enabled]


                                                            →←     Select Screen
                                                            ↑↓     Select Item
                                                            +/-    Change Value
                                                            Enter  Select Field
                                                            F1     General Help
                                                            F9     Optimized Defaults
                                                            F10    Save and Exit
                                                            ESC    Exit



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```

Figure 52. Advanced PCI Configuration

The following table describes the features of the Advanced PCI Configuration screen.
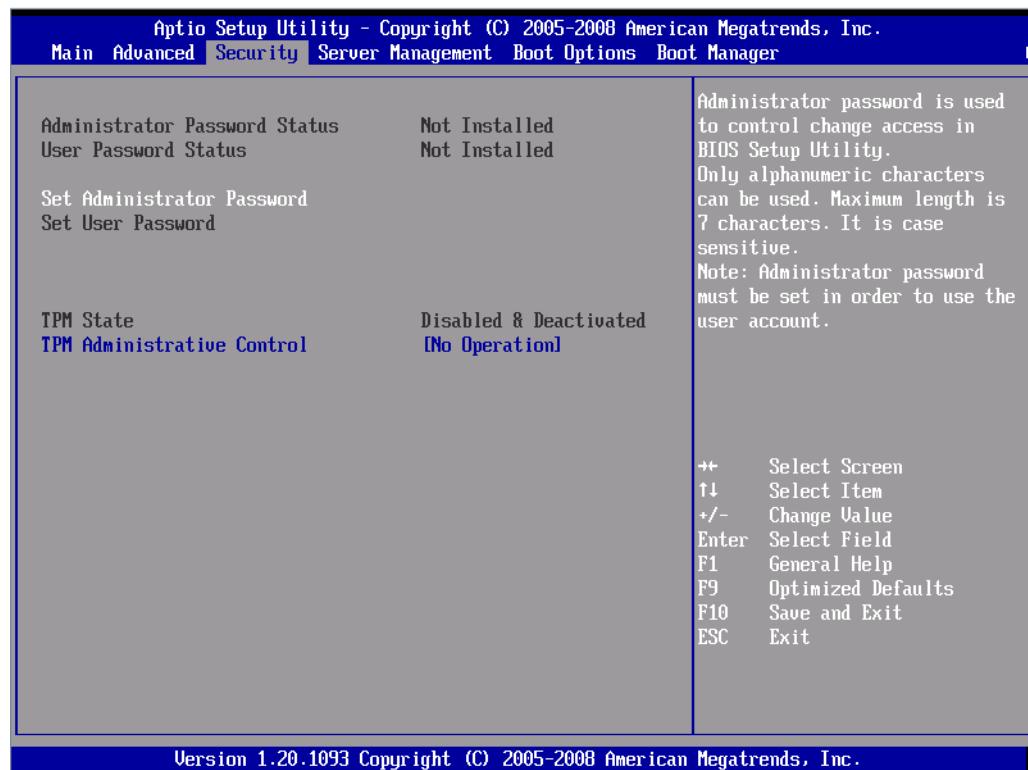
Table 10. Advanced PCI Configuration Details

Setup Item	Options	Help Text
PCI Configuration		Screen Title
Memory below 4GB	1.50GB 1.75GB 2.00GB 2.25GB **2.50GB** 2.75GB 3.00GB 3.25GB 3.50GB	Select the start of the reserved memory region for PCI memory mapped I/O space that ends at 4GB. **Warning:** Depending on the system configuration, this option may impact the amount of system memory detected by an OS without Physical Address Extension (PAE) support.
Memory Mapped I/O above 4GB	Enabled **Disabled**	Enable or disable memory mapped I/O of 64-bit PCI devices to 4 GB or greater address space.
Onboard Video	**Enabled** Disabled	Onboard video must be enabled for remote KVM support and local video support. By default the onboard video controller is enabled. **Warning**: System video will be completely disabled if this option is disabled.
Onboard NIC1 ROM	**Enabled** Disabled	Load the embedded option ROM for the onboard network controllers. **Warning**: If [Disabled] is selected, NIC1 cannot be used to boot or wake the system.
Onboard NIC2 ROM	**Enabled** Disabled	Load the embedded option ROM for the onboard network controllers. **Warning:** If [Disabled] is selected, NIC2 cannot be used to boot or wake the system.
NIC 1 MAC Address		Information only. 12 hex digits of the MAC address
NIC 2 MAC Address		Information only. 12 hex digits of the MAC address.
Intel® I/OAT	**Enabled** Disabled	Intel® I/O Acceleration Technology (I/OAT) accelerates TCP/IP processing for the onboard NICs, delivers data-movement efficiencies across the entire server platform, and minimizes system overhead.

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Security

The Security screen allows you to enable and set the user and administrative passwords. This screen also allows you to enable and activate the Trusted Platform Module (TPM) security settings.

To access this screen from the Main screen, press the right arrow key until the Security menu option is selected.

Figure 53. Security Screen

The following table describes the features of the Security screen.

Table 11. Security Screen Details

Setup Item	Options	Description
Administrator Password Status		**Information only**. Indicates the status of the administrator password.(Installed or Not Installed)
User Password Status		**Information only**. Indicates the status of the user password. (Installed or Not Installed)
Set Administrator Password	[123aBcD]	An Administrator password is used to control change access in the BIOS Setup utility. Administrator access provides full access to all the setup options. Only alphanumeric characters can be used. The maximum length is 7 characters and it is case sensitive. Clearing the Administrator password also clears the user password. **NOTE:** An Administrator password must be set in order to enable the user account.
Set User Password	[123aBcD]	The User password option is used to control entry access to the BIOS Setup utility only. Set User Password is available only if the administrator password is installed. The user password has limited access to the setup options. This option only protects the setup. Only alphanumeric characters can be used. Maximum length is 7 characters and it is case sensitive. **NOTE:** Removing the administrator password will also automatically remove the user password.
TPM State	Enabled and Activated Enabled and Deactivated Disabled and Activated **Disabled and Deactivated**	Information only. This Shows the current TPM device state. A disabled TPM device does not execute commands that use the TPM functions and TPM security operations are not available. An enabled and deactivated TPM is in the same state as a disabled TPM, except that setting of the TPM ownership is allowed if it is not present already. An enabled and activated TPM executes all commands that use the TPM functions and TPM security operations are also available.
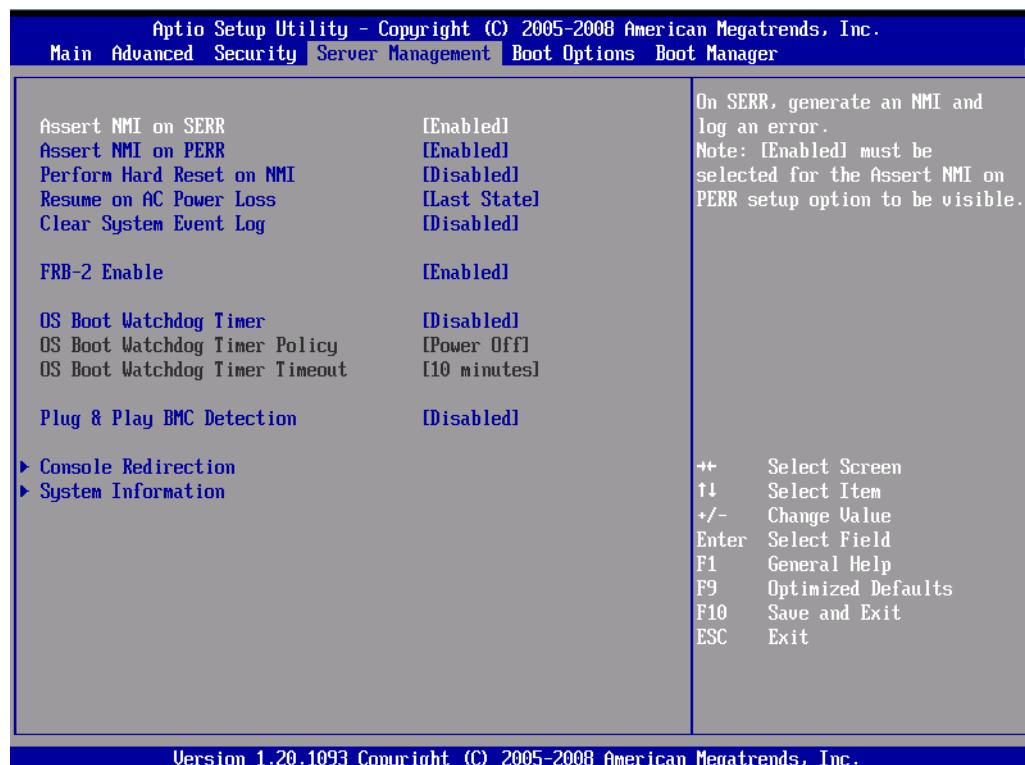
Table 11. Security Screen Details

Setup Item	Options	Description
TPM Administrative Control	**No Operation** Turn On Turn Off Clear Ownership	TPM Administrative control can be set to: • [No Operation] - No changes to current state. • [Turn On] - Enables and activates TPM. • [Turn Off] - Disables and deactivates TPM. • [Clear Ownership] - Removes the TPM ownership authentication and returns the TPM to the factory default state. **NOTE:** The BIOS setting will return to [No Operation] on every boot cycle by default.

Server Management

The Server Management screen allows you to configure several server management features. This screen also provides an access point to the screens for configuring console redirection and displaying system information.

To access this screen from the Main screen, press the right arrow until the Server Management menu option is selected.

Figure 54. Server Management Screen

The following table describes the features of the Server Management screen.

Table 12. Server Management Screen Details

Setup Item	Options	Description
Assert NMI on SERR	**Enabled** Disabled	On SERR, generate an NMI and log an error.
Assert NMI on PERR	**Enabled** Disabled	On PERR, generate an NMI and log an error. Note: This option is only active if the Assert NMI on SERR option has [Enabled] selected.
Perform Hard Reset on NMI	Enabled **Disabled**	If enabled a hard system reset is asserted for the compute module on detection of uncorrectable errors, instead of an NMI.
Resume on AC Power Loss	Stay Off **Last state** Reset	Compute module action to take on AC power loss recovery. [Stay Off] - compute module stays off. [Last State] - compute module returns to the same state before the AC power loss. [Reset] - compute module powers on.
Clear System Event Log	Enabled **Disabled**	If enabled this option clears the System Event Log. All current entries will be lost after saving changes and rebooting the compute module. **NOTE:** This option is reset to [Disabled] after a reboot.
FRB-2 Enable	**Enabled** Disabled	Fault Resilient Boot (FRB). If enabled, the BIOS programs the BMC watchdog timer for approximately 6 minutes. If the BIOS does not complete POST before the timer expires, the BMC will reset the compute module.
O/S Boot Watchdog Timer	Enabled **Disabled**	If enabled, BIOS programs the watchdog timer with the time-out value selected. If the OS does not complete booting before the timer expires, the BMC will reset the compute module and an error is logged. Requires OS support or Intel Management Software.
O/S Boot Watchdog Timer Policy	**Power Off** Reset	If the OS watchdog timer is enabled, this is the compute module action taken if the watchdog timer expires. [Reset] - Compute module performs a reset. [Power Off] - Compute module powers off. **NOTE:** This option is grayed out when O/S Boot Watchdog Timer is disabled.
O/S Boot Watchdog Timer Time-out	5 minutes **10 minutes** 15 minutes 20 minutes	If the OS watchdog timer is enabled, this is the time-out value BIOS will use to configure the watchdog timer. **NOTE:** This option is grayed out when O/S Boot Watchdog Timer is disabled.
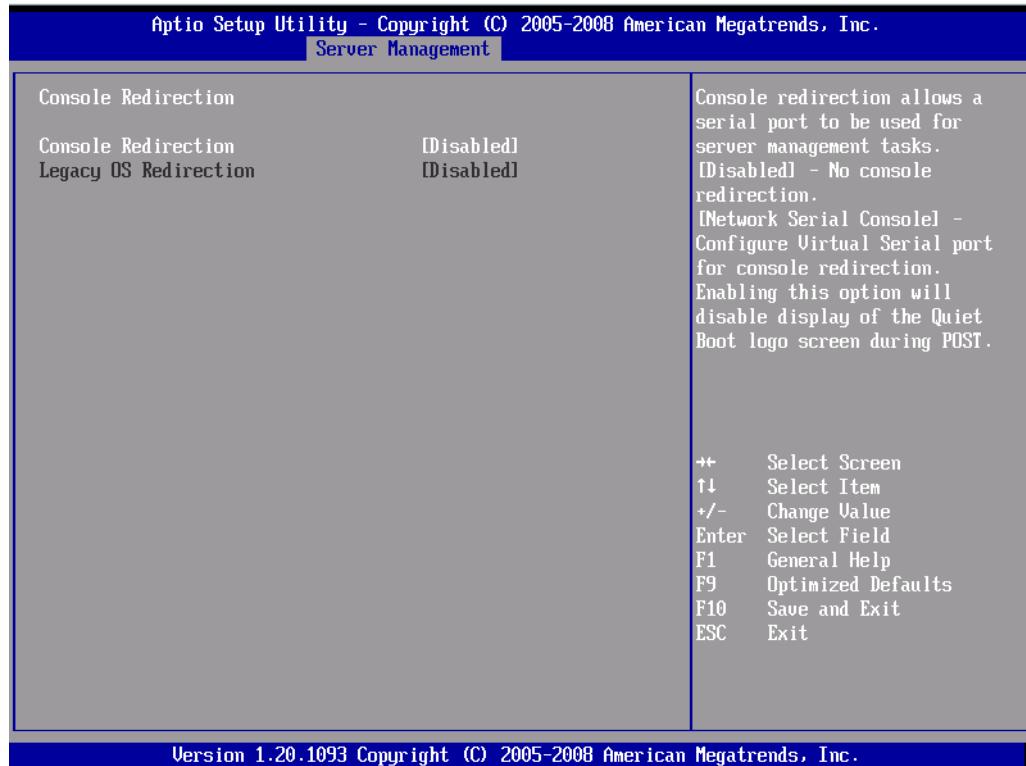
Table 12. Server Management Screen Details

Setup Item	Options	Description
Plug & Play BMC Detection	Enabled **Disabled**	If enabled, the BMC will be detectable by operating systems which support plug and play loading of an IPMI driver. Do not enable if your operating system does not support this driver.
Console Redirection		Press enter to access the Console Redirection screen to view/configure console redirection information and settings. This option takes the user to the Console Redirection screen.
System Information		Press enter to view system information. This option takes the user to the System Information screen.

Console Redirection

Console redirection enables a serial port to be used for server management tasks. The Console Redirection screen enables the user to either disable console redirection or enable console redirection via the Network Serial Console. Enabling console redirection will set the BIOS option Quiet Boot to [Disable]. The BIOS logo screen will not be displayed during POST while console redirection is enabled.

To access this screen from the Main screen, press the right arrow key until the Server Management menu option is selected then press the down or up arrow key to highlight Console Redirection and press <Enter>.

```
          Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
                          Server Management

  Console Redirection                                      Console redirection allows a
                                                           serial port to be used for
  Console Redirection               [Disabled]             server management tasks.
  Legacy OS Redirection             [Disabled]             [Disabled] - No console
                                                           redirection.
                                                           [Network Serial Console] -
                                                           Configure Virtual Serial port
                                                           for console redirection.
                                                           Enabling this option will
                                                           disable display of the Quiet
                                                           Boot logo screen during POST.


                                                           →←      Select Screen
                                                           ↑↓      Select Item
                                                           +/-     Change Value
                                                           Enter   Select Field
                                                           F1      General Help
                                                           F9      Optimized Defaults
                                                           F10     Save and Exit
                                                           ESC     Exit



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```

Figure 55. Server Management - Console Redirection Enabled

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The following table describes the features of the Console Redirection screen.

Table 13. Server Management Console Redirection Details

Setup Item	Options	Description
Console Redirection		Screen Title
Console Redirection	**Disabled** Network Serial Console	Console redirection allows a serial port to be used for server management tasks. If set to [Network Serial Console], the BIOS configures the Virtual Serial port for console redirection. **NOTE:** Enabling this option will set Quiet Boot to disable. The BIOS logo screen will not be displayed during POST while console redirection is enabled.
Legacy OS Redirection	**Disabled** Enabled	This option enables legacy OS redirection (i.e., DOS) on serial port. If it is enabled, the associated serial port is hidden from the legacy OS. **NOTE:** This option is available for configuration if Console Redirection is set to [Network Serial Console].
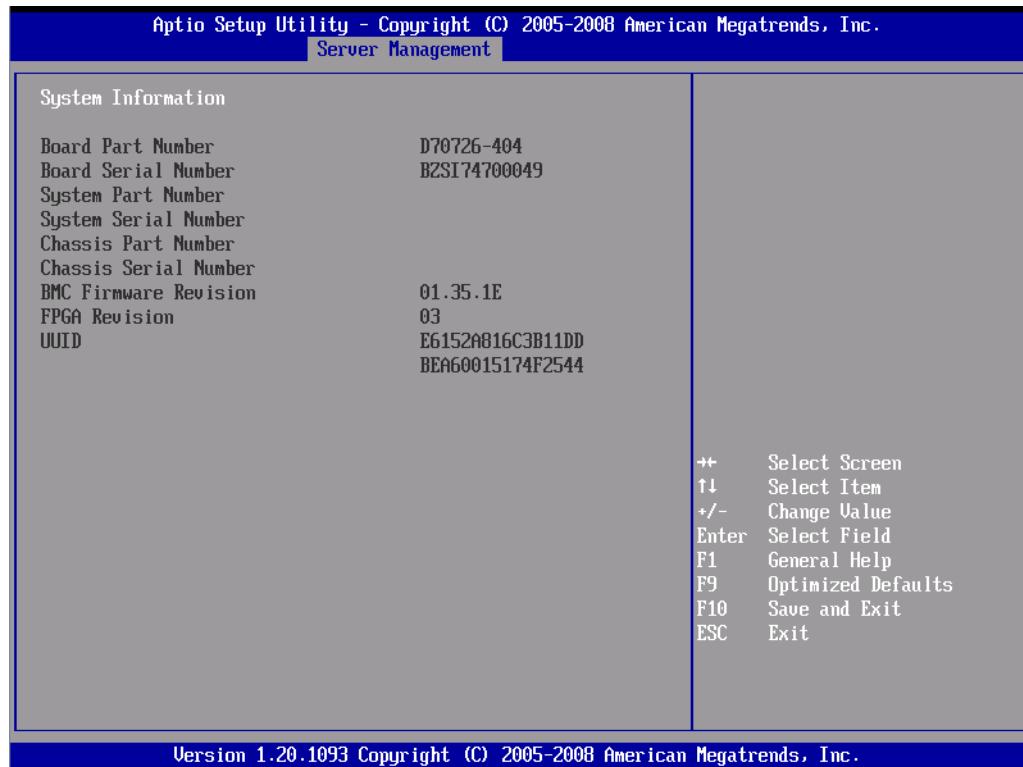
System Information

The System Information screen provides the below information for the Intel® Compute Module MFS5000SI.

- Board part number
- Board serial number
- BMC firmware revision
- FPGA Revision
- UUID

Note: *System Part Number, System Serial Number, Chassis Part Number and Chassis Serial Number are not displayed. These fields are not applicable for a compute module.*

To access this screen from the Main screen, press the right arrow key until the Server Management menu option is selected then press the down or up arrow key to highlight System Information and press <Enter>.

Figure 56. Server Management - System Information Screen

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Boot Options

The Boot Options screen displays any bootable media encountered during POST, and allows you to configure the desired order in which boot devices are to be tried. The first boot device in the specified boot order will be used to boot the compute module.

To access this screen from the Main screen, press the right arrow key until the Boot Options menu option is selected.

```
            Aptio Setup Utility - Copyright (C) 2005-2008 American Megatrends, Inc.
    Main  Advanced  Security  Server Management  Boot Options  Boot Manager              ▶

                                                          The number of seconds BIOS will
    Boot Timeout                      0                    pause at the end of POST to
                                                          allow the user to press the
    Boot Option #1                    [      Virtual CD...]  [F2] key for entering the BIOS
    Boot Option #2                    [#0400 ID0A LUN0 In...]  Setup Utility.
    Boot Option #3                    [IBA GE Slot 0500 v...]  Valid values are 0-65535. Zero
    Boot Option #4                    [[EFI Shell]]          is the default. A value of
                                                          65535 will cause the system to
    Hard Disk Order                                        go to the Boot Manager menu and
    Network Device Order                                   wait for user input for every
                                                          system boot.
    Boot Option Retry                 [Disabled]
    USB Boot Priority                 [Enabled]

                                                          →←     Select Screen
                                                          ↑↓     Select Item
                                                          +/-    Change Value
                                                          Enter  Select Field
                                                          F1     General Help
                                                          F9     Optimized Defaults
                                                          F10    Save and Exit
                                                          ESC    Exit



            Version 1.20.1093 Copyright (C) 2005-2008 American Megatrends, Inc.
```

Figure 57. Boot Options Screen

The following table describes the features of the Boot Options screen.
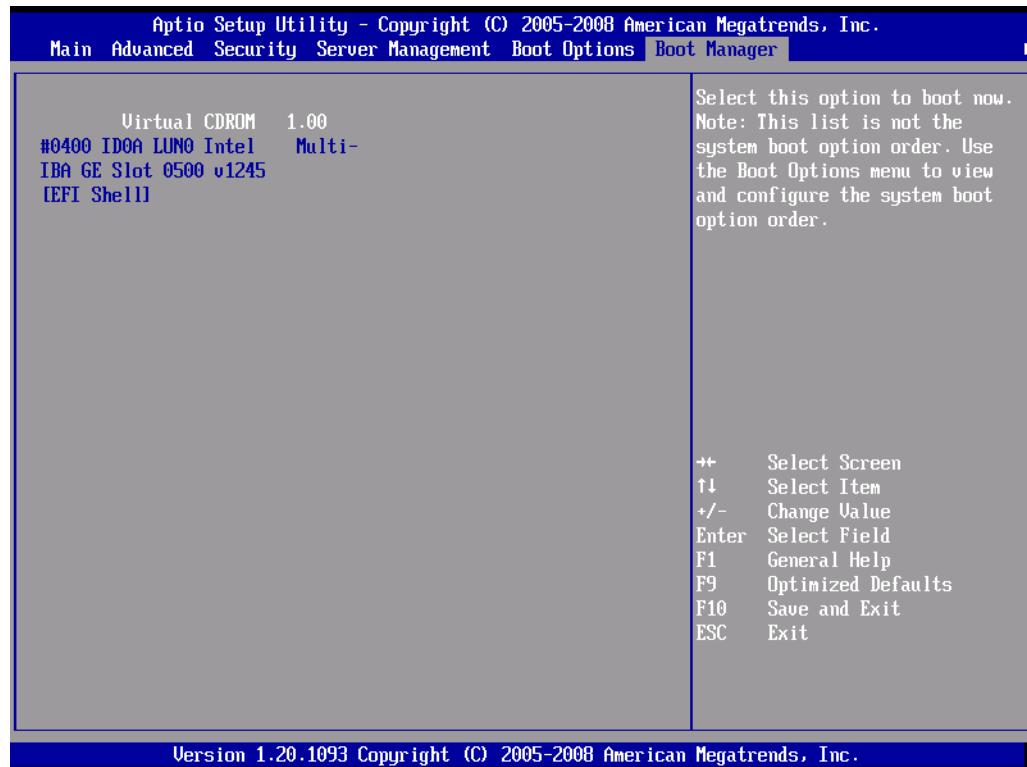
Table 14. Boot Options Details

Setup Item	Options	Help Text
Boot Timeout	0 - 65535	The number of seconds BIOS will pause at the end of POST to allow the user to press the [F2] key for entering the BIOS Setup utility. Valid values are 0-65535. Zero is the default. A value of 65535 causes the compute module to go to the Boot Manager menu and wait for user input for every boot. These settings are in seconds. After entering the desired timeout, press the <Enter> key to register that timeout value
Boot Option #x (where x = 1 - 4)	Selectable list of available boot devices	Set system boot order by selecting the boot option for this position.
Hard Disk Order		Press <Enter> to access the Hard Disk Drive Order screen in order to set the hard disk drive boot order. The Hard Disk Order screen allows the user to select the boot option for each boot order position (Hard Disk #1 and Hard Disk #2) from the available bootable devices. **NOTE:** This option takes the user to a separate screen.
Network Device Order		Press <Enter> to access the Network Device Boot Order screen in order to set the network device boot order The Network Device Order screen allows the user to select the boot option for each boot order position (Network Device #1 and Network Device #2) from the available bootable devices. **NOTE:** This option takes the user to a separate screen.
Boot Option Retry	Enabled **Disabled**	If enabled, the BIOS will continually retry non-EFI-based boot options without waiting for user input.
USB Boot Priority	**Enabled** Disabled	When enabled newly discovered USB devices will be put to the top of their boot device category. Set to [Enabled] by default. If disabled, newly discovered USB devices will be put at the bottom of their boot device cocreator.

Boot Manager

The Boot Manager screen allows you to view a list of devices available for booting, and to select a boot device for immediately booting the compute module. This list is not displayed in the order configured on the Boot Options menu. Use the Boot Options menu to view and configure the compute module boot option order.

To access this screen from the Main screen, press the right arrow key until the Boot Manager menu option is selected.
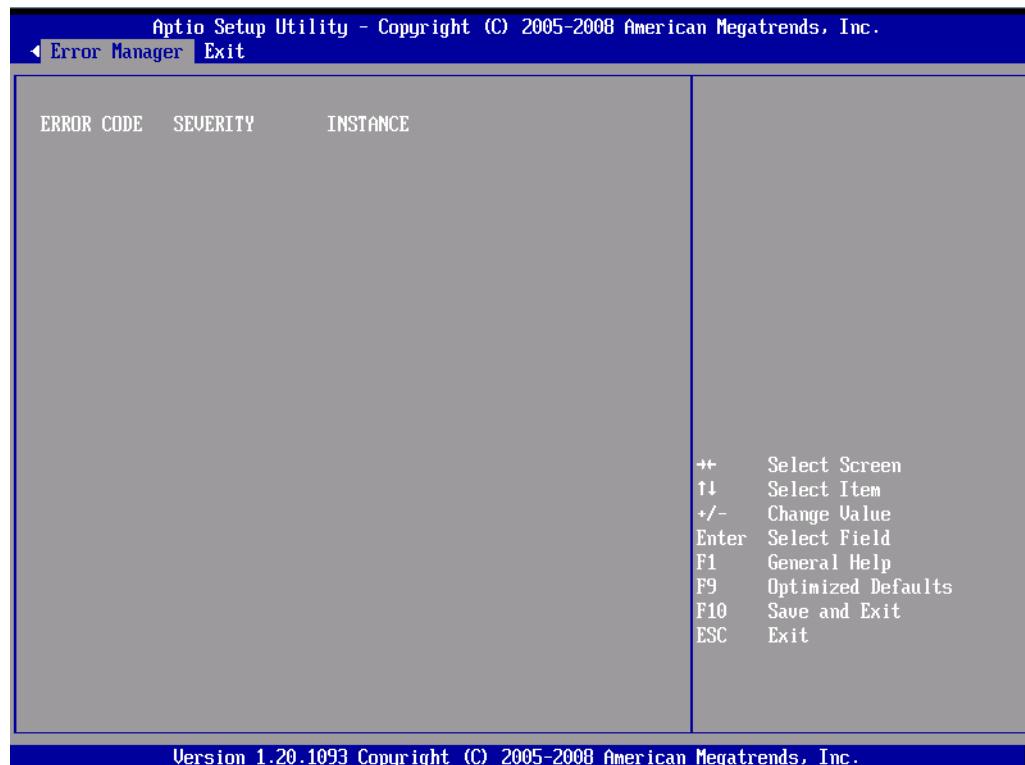
Figure 58. Boot Manager

Error Manager

The Error Manager screen displays any errors encountered during POST.
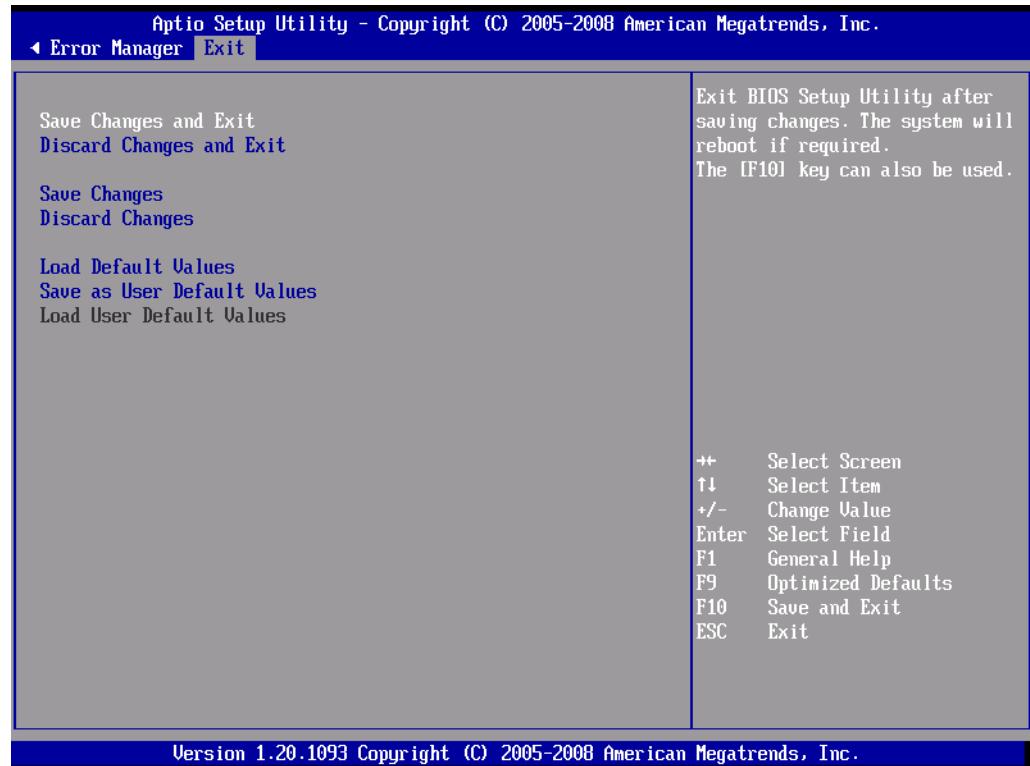
To access this screen from the Main screen, press the right arrow until the Error Manager menu option is selected.

Figure 59. Error Manager Screen

Exit

The Exit screen provides the user with the ability to save or discard changes before exiting the utility, to save changes as a user defined default configuration and to load either the factory or user defined default settings.

Figure 60. Exit Screen

The following table describes the options available on the Exit screen.

Table 15. Exit Screen Details

Setup Item	Description
Save Changes and Exit	If any of the setup fields were modified a confirmation prompt will be displayed before the changes are saved. After saving changes and exiting the BIOS Setup Utility the compute module will be rebooted if required. The <F10> key can also be used.
Discard Changes and Exit	Exit the BIOS Setup Utility without saving changes. A confirmation prompt will be displayed before exiting Setup if any Setup values were modified. The compute module will not be rebooted. The [Esc] key can also be used.
Save Changes	Saves changes without exiting the BIOS Setup Utility. Saved changes may require the compute module to be rebooted before taking effect.
Discard Changes	Discards all changes made since the last save change operation was performed without exiting the BIOS Setup Utility. The <Esc> key can also be used.
Load Default Values	If Load Default Values is selected, the factory default settings (noted in bold in the tables in this chapter) are applied. The <F9> key can also be used.
Save as User Default Values	Saves current BIOS Setup Utility values as a custom set of user-defined default BIOS values. Note: Clearing CMOS or NVRAM will cause the user default values to be reset to the factory default values.
Load User Default Values	If Load User Default Values is selected, the BIOS settings are restored to a previously saved user-defined set of default values.

Upgrading the BIOS

The Intel® Compute Module MFS5000SI BIOS and firmware is updated when the Intel® Modular Server System MFSYS25/MFSYS35 Unified Firmware Updates) is installed. The Intel® Modular Server System UFU updates all system firmware. When an Intel® Compute Module is inserted into the Intel® Modular Server System the compute module's BIOS and firmware is automatically updated to the installed UFU version. For detailed step-by-step instructions on how to upgrade the Intel® Compute Module MFS5000SI BIOS and firmware refer to the UFU release notes.

Preparing for the Upgrade

The following steps explain how to prepare to upgrade the BIOS and include how to:

- Record the current BIOS settings
- Obtain the latest Unified Firmware Update package

Recording the Current BIOS Settings

1. Boot the compute module and press <F2> when you see the message:

   *Press <**F2**> to enter SETUP*

2. Write down the current settings in the BIOS Setup Utility

Note: *Do not skip step 2. You need these settings to configure your compute module at the end of the procedure.*

Obtaining the Upgrade

Download the Intel® Modular Server System MFSYS25/MFSYS35 Unified Firmware Update (UFU) package to a temporary folder on your hard drive or a USB flash device. See "Additional Information and Software" for a link to the update software.

Note: *Before attempting a system firmware update, review the release notes distributed with the UFU package. The release notes may contain critical information regarding specific fixes, or other information needed to complete the update.*

Updating the BIOS and Firmware

Follow the step-by-step instructions provided in the Unified Firmware Update (UFU) Release Notes that came with the UFU package.

The Intel® Compute Module MFS5000SI BIOS and firmware update is performed as a part of the Intel® Modular Server System MFSYS25/MFSYS35 Unified Firmware Update process. The Unified Firmware Update process is started from within the Intel® Modular Server Control UI. Refer to the *Intel® Modular Server System MFSYS25/MFSYS35 User Guide* for information on how to access and use the Intel® Modular Server Control UI.
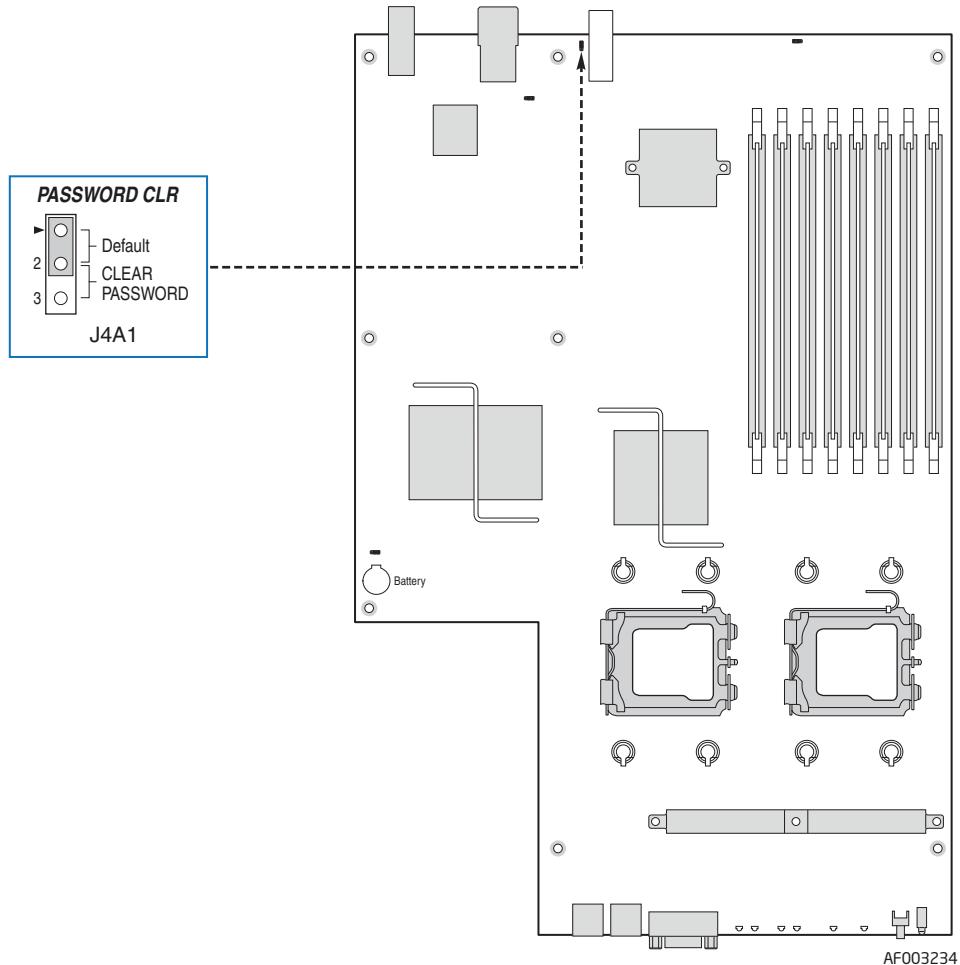
Caution: *Do not power down the system during the BIOS update process!*

Note: *You may encounter a CMOS Checksum error or other problem after reboot. If this happens, shut down the compute module and boot it again. CMOS checksum errors require that you enter Setup, check your settings, save your settings, and exit Setup.*

Clearing the Password

If the user or administrator password(s) is lost or forgotten, moving the password clear jumper into the "clear" position clears both passwords. You must restore the password clear jumper to its original position before you can set a new password(s). The password clear jumper is located on jumper block **J4A1**.

1. Power down the compute module.

2. Remove the compute module from the Intel® Modular Server System.

3. Remove the compute module cover. For instructions, refer to section Section , "Opening and Removing the Top Cover" on page -10.

4. Move the jumper (J4A1) from the default operating position, covering pins 1 and 2, to the password clear position, covering pins **2** and **3**.

PASSWORD CLR
Default
2 CLEAR
3 PASSWORD
J4A1

Battery

AF003234

Figure 61. Password Clear Jumper

5. Replace the compute module cover.

6. Insert the compute module into the Intel® Modular Server System.
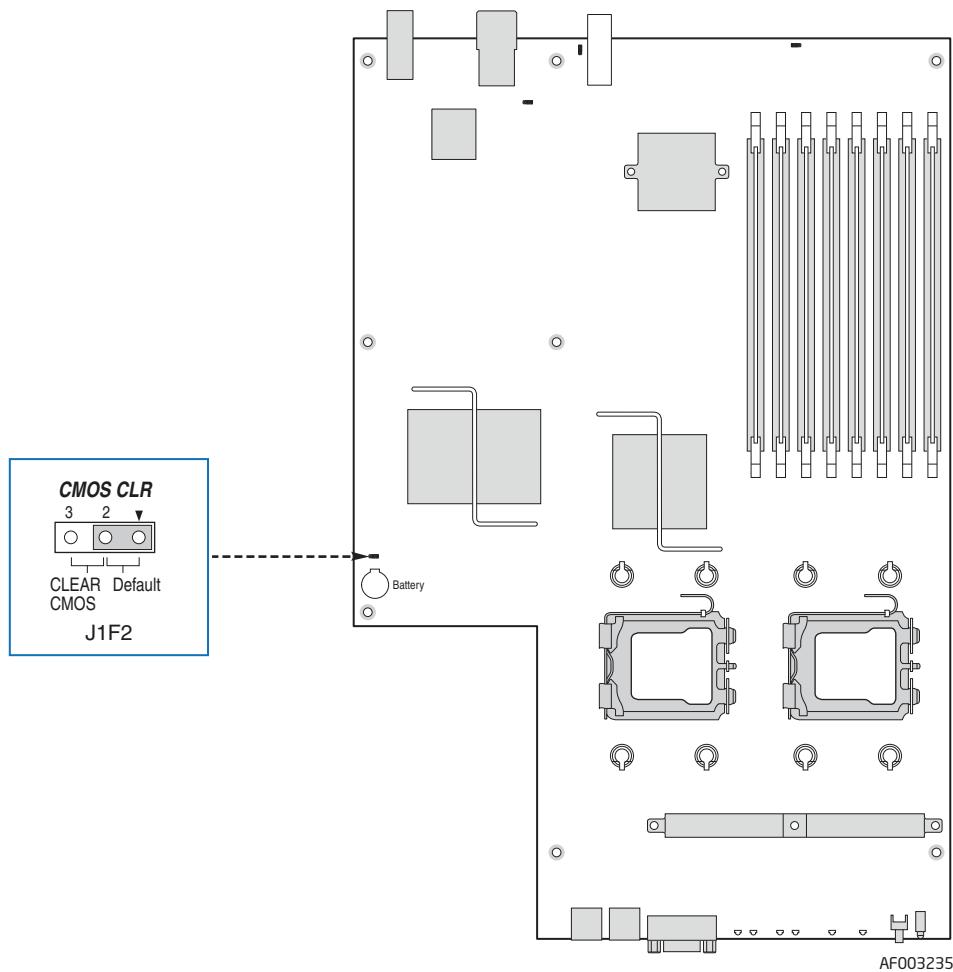
7. Power on the compute module and then press <F2> to enter the BIOS Setup Utility menu to check if the password is cleared.

8. Power down the compute module.

9. Remove the compute module from the Intel® Modular Server System.

10. Remove the compute module cover.

11. Move the Password Clear jumper back to its default position, covering pins 1 and 2.

12. Replace the compute module cover.

13. Insert the compute module into the Intel® Modular Server System.

14. Power on the compute module and then press <F2> to enter the BIOS Setup Utility menu to check if the password is cleared.

The password is now cleared and you can reset it by going into the BIOS Setup Utility.

Clearing the CMOS

If you cannot access the BIOS setup screens, you must use the CMOS Clear jumper to reset the configuration RAM. The CMOS Clear jumper is located on jumper block J1F2.

1. Power down the compute module.

2. Remove the compute module from the Intel® Modular Server System.

3. Remove the compute module cover. For instructions, refer to Section , "Opening and Removing the Top Cover" on page -10

4. Move the jumper (J1F2) from the default operating position (covering pins 1 and 2) to the reset / clear position (covering pins 2 and 3).

Figure 62. CMOS Clear Jumper

5. Wait 5 - 10 seconds.

6. Move the jumper back to default position, covering pins 1 and 2.

7. Replace the compute module cover

8. Insert the compute module into the Intel® Modular Server System.

9. Power on the compute module.

The CMOS is now cleared and you can reset it by going into the BIOS setup.

4　Troubleshooting

This chapter provides information to assist you in troubleshooting the Intel® Compute Module MFS5000SI.

A common cause of server function issues is outdated BIOS and BMC firmware, and outdated operating system level device drivers. Before performing extensive troubleshooting steps, ensure that the system BIOS and BMC firmware code, and device drivers are up to date.

One of the first steps to perform in troubleshooting a compute module is to reboot the system; try resetting your system using one of the methods below.

To do this:	Press:
Soft boot reset to clear the system memory and reload the operating system.	<Ctrl+Alt+Del>
Cold boot reset. Turn the system power off and then on. This clears system memory, restarts POST, reloads the operating system, and halts power to all peripherals.	Power off/on

First Steps Checklist

- Are the server system power LEDs on?
- Is the chassis properly connected to an AC power source?
- Are the power supplies fully seated in the chassis and the power cables fully seated in the power supplies?
- Is the compute module fully seated in the chassis?
- Are the processors fully seated in their sockets on the server board?
- Are the installed memory modules fully seated in their sockets on the server board?
- If installed, is the add-in mezzanine card fully seated in the connector on the server board?
- Are all jumper settings on the server board correct?
- Are the configuration settings defined in the BIOS Setup correct?
- Is the operating system properly loaded? Refer to the operating system documentation.
- Are all device drivers properly installed?
- Are all installed components and the installed operating system listed in the *Intel® Compute Module MFS5000SI Tested Hardware and Operating System List*?

Hardware Diagnostic Testing

This section provides a more detailed approach to identifying and correcting a hardware problem.

1. Turn off the compute module.

2. Connect a keyboard and video monitor to the USB and video ports located on the front of the compute module. Turn on the video monitor and set the brightness and contrast controls to at least two thirds of the maximum range (see the documentation supplied with your video display monitor).

3. Verify that the chassis power supplies are properly installed and connected to grounded AC outlets, and the chassis power LEDs are on.

4. Turn on the compute module.

5. If the power LED does light, but will not boot the operating system from the hard drive, attempt to boot from a bootable media in either a USB floppy drive or a USB CD-ROM drive.

6. If the power LED does not light, see "Power LED Does Not Light" on page 87."

7. If the system fails to boot and emits a series of patterned beeps, see "BIOS POST Beep Codes" on page 89.

8. If one or more system error LEDs are illuminated, see "Front Panel Indicators" on page 6 for a description of the LED and suggested corrective actions.

Specific Problems and Corrective Actions

This section provides possible solutions for the following problems:

- Power LED does not light

- No video display

- Characters on the screen appear distorted or incorrect

- No available storage

- Network problems

Try the solutions in the order given. If you cannot correct the problem, contact your service representative or authorized dealer for additional help.

Power LED Does Not Light

Check the following:

- Did you press the power-on button?

- Is the system operating normally? If so, the power LED might be defective.

- Is the chassis power LED lit? If not, refer to the troubleshooting section of the *Intel®
Modular Server System MFSYS25/MFSYS35 User Guide* for additional guidance.

- Is the compute module fully seated in the chassis?

No Video Display

Check the following:

- Is the power LED lit? If not, refer to .

- Verify that the video monitor is turned on and functioning properly.

- Verify that the brightness and contrast controls on the video monitor are properly
adjusted?

- Does this video monitor work correctly if plugged into a different system?

- Is the system emitting a series of patterned beeps? If so, refer to
.

- Verify that the installed processor(s) are validated for use in the compute module.

- If only a single processor is installed, verify that it is installed in the first processor
socket.

- Remove and re-seat the processor(s).

- Verify that the installed memory is validated for use in the compute module.

- Verify that the installed memory has been populated according to the system
requirements.

- Remove and re-seat the memory.

- Is the keyboard functioning? Test it by turning the "Num Lock" function on and off to
see if the Num Lock light is working.

- Is the on-board video controller enabled in the BIOS?

Characters are Distorted or Incorrect

Check the following:

- Is the video monitor properly adjusted? See the manufacturer's documentation for
operating instructions.

- Are the video signal and power cables connected properly?

- Does this video monitor work correctly if plugged into a different system?

No Available Storage

Check the following:

- Verify in the Intel® Modular Server Control GUI that virtual drive(s) are assigned to the compute module.

- Ensure drive(s) assigned to the compute module are installed and operating properly.

- Make sure the installed drives are validated for use with the Intel® Modular Server System MFSYS25/MFSYS35. Refer to the *Intel® Modular Server System MFSYS25/ MFSYS35 Tested Hardware and Operating System List* for validation information.

Cannot Connect to a Compute Module

- Ensure that the Ethernet switch module is properly installed, the power LED is lit, and the error LED is not lit.

- If the switch module is configured for multiple VLANS, verify that the network cable is securely attached to the correct switch port.

- Try a different network cable.

- Make sure you are using the correct and most current drivers.

- Make sure the operating system network settings are configured appropriately for the network the server is physically connected to.

Diagnostics Pass but Connection Fails

- Make sure that an Ethernet switch is properly installed in the bay associated with the network interface card.

- Verify that the network driver is configured properly within the operating system.

Controller Stops Working when a Mezzanine Card is Installed

- Verify that the system BIOS and firmware, on-board network interface card firmware and mezzanine card firmware are all current.

- Try re-seating the mezzanine card first, and then if possible, try installing the mezzanine card in a different compute module.

Mezzanine Card Stops Working Without Apparent Cause

- Try re-seating the mezzanine card first, and then if possible, try installing the mezzanine card in a different compute module.

- The network driver files may be corrupt or deleted. Try re-installing the drivers.

Problems with Newly Installed Application Software

Check the following:

- Make sure the system meets the minimum hardware requirements for the software. See the software documentation.

- Make sure the software is properly installed and configured for the system. See the software documentation.

- Use only an authorized copy. Unauthorized copies often do not work.

- If you are running the software from a diskette, CD-ROM or DVD-ROM, try a different media.

- Make sure the correct device drivers are installed.

If the problems persist, contact the software vendor's customer service representative.

Problems with Application Software that Previously Functioned Properly

Check the following:

- Uninstall and reinstall the software. Make sure all necessary files are installed.

- If you suspect that a transient voltage spike, power outage, or brown-out might have occurred, reload the software and try running it again. Symptoms of voltage spikes include a flickering video display, unexpected system reboots, and the system not responding to user commands.

Note: ***Random errors in data files:*** *If you are getting random errors in your data files, they may be getting corrupted by voltage spikes on your power line. If you are experiencing any of the above symptoms that might indicate voltage spikes on the power line, you may want to install a power conditioner between the power outlet and the system power cord.*

Devices are Not Recognized within the Operating System

Operating systems include a limited set of device drivers by default. Ensure that you install all necessary drivers at the time you install the operating system.

BIOS POST Beep Codes

At the beginning of the server boot-up process, the BIOS runs a power-on self test (POST) routine to check various system components for proper function. Prior to system video initialization, if POST encounters a fatal system error, such as a processor problem, memory problem or video controller problem, the BIOS will trigger a series of patterned beep codes to indicate the error conditions.

The following table contains a partial list of the POST error beep codes enabled for the Intel® Compute Module MFS5000SI. The beep code sounds only when a critical error occurs or when the BIOS fails to boot to the operating system. Please note that not all error conditions are supported by BIOS beep codes.

Table 16. POST Error Beep Codes

Beeps	Error Message	Description
3	Memory error	System halted because a fatal error related to the memory was detected.
6	BIOS rolling back error	System has detected a corrupted BIOS in the flash part and is rolling back to the last good BIOS.

A Getting Help

World Wide Web

http://support.intel.com/support/motherboards/server/blade.htm

Telephone

All calls are billed US $25.00 per incident, levied in local currency at the applicable credit card exchange rate plus applicable taxes. (Intel reserves the right to change the pricing for telephone support at any time without notice).

For an updated support contact list, see http://www.intel.com/support/9089.htm/

U.S. and Canada

1-800-404-2284

Europe

Belgium 02 714 3182

Denmark ... 38 487077

Finland 9 693 79297

France........ 01 41 918529

Germany ... 069 9509 6099

Holland...... 020 487 4562

Italy............ 02 696 33276

Norway 23 1620 50

Spain.......... 91 377 8166

Sweden....... 08 445 1251

UK.............. 870 6072439

In Asia-Pacific region

Australia.... 1800 649931

Cambodia.. 63 2 636 9797 (via Philippines)

China .... 800 820 1100 (toll-free)

.... 8 621 33104691 (not toll-free)

Hong Kong 852 2 844 4456

India........... 0006517 2 68303634 (manual toll-free. You need an IDD-equipped
                      telephone)

Indonesia... 803 65 7249

Korea 822 767 2595

Malaysia 1 800 80 1390

Myanmar... 63 2 636 9796 (via Philippines)

New Zealand 0800 444 365

Pakistan..... 632 63684 15 (IDD via Philippines)

Philippines 1 800 1 651 0117

Singapore .. 65 6213-1311

Taiwan 2 2545-1640

Thailand 1 800 631 0003

Vietnam ..... 632 6368416 (IDD via Philippines)

Japan

Domestic.... 0120 868686

Outside country   81 298 47 0800

Latin America

Argentina .. Contact AT&T USA at 0-800 222 1288. Once connected, dial 800 843 4481

Brazil 001-916 377 0180

Chile

> **Easter Island**. .... Contact AT&T USA at 800 800 311. Once
> connected, dial 800 843 4481
> **Mainland and Juan** .. Contact AT&T USA at 800 225 288. Once
> connected, dial 800 843 4481

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Colombia ... Contact AT&T USA at 01 800 911 0010. Once connected, dial 800 843 4481

Costa Rica . Contact AT&T USA at 0 800 0 114 114. Once connected, dial 800 843 4481

Ecuador

> **(Andimate)** .... Contact AT&T USA at 1 999 119. Once connected, dial 800 843 4481
> **(Pacifictel)** ..... Contact AT&T USA at 1 800 225 528. Once connected, dial 800 843 4481

Guatemala . Contact AT&T USA at 99 99 190. Once connected, dial 800 843 4481

Mexico .... Contact AT&T USA at 001 800 462 628 4240. Once connected, dial 800 843 4481

Miami 1 800 621 8423

Panama ...... Contact AT&T USA at 00 800 001 0109. Once connected, dial 800 843 4481

Paraguay ... 001 916 377 0114

Peru 001 916 377 0114

Uruguay 001 916 377 0114

Venezuela ... Contact AT&T USA at 0 800 2255 288. Once connected, dial 800 843 4481

A   Product Regulatory Requirements

Regulatory and Certification Information

The Intel® Compute Module MFS5000SI is evaluated as part of the Intel® Modular Server System MFSYS25/MFSYS35, which requires meeting all applicable system component regulatory requirements. Refer to the Intel® Modular Server System MFSYS25/MFSYS35 *User Guide* for a complete listing of all system and component regulatory requirements.

Product Regulatory Compliance and Safety Markings

No markings are required on the Intel® Compute Module MFS5000SI server board itself as it is evaluated as part of the Intel® Modular Server System MFSYS25/MFSYS35.

Product Environmental/Ecology Requirements

The Intel® Compute Module MFS5000SI is evaluated as part of the Intel® Modular Server System MFSYS25/MFSYS35, which requires meeting all applicable system component environmental and ecology requirements. For a complete listing of all system and component environment and ecology requirements and markings, refer to the Intel® Modular Server System MFSYS25/MFSYS35 *User Guide*.

Product Environmental/Ecology Markings

The following Product Ecology markings are required on the Intel® Compute Module MFS5000SI server board:

Requirement	Country	Marking
China Restriction of Hazardous Substance Environmental Friendly Use Period Mark	China	

C   Safety Information

English

Server Safety Information

This document applies to Intel® server boards, Intel® server chassis and installed peripherals. To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this document and observe all warnings and precautions in this guide before installing or maintaining your Intel® server product.

In the event of a conflict between the information in this document and information provided with the product or on the website for a particular product, the product documentation takes precedence.

Your server should be integrated and serviced only by technically qualified persons.

You must adhere to the guidelines in this guide and the assembly instructions in your server manuals to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL Listing and other regulatory approvals of the product, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

Safety Warnings and Cautions

To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following safety instructions and information. The following safety symbols may be used throughout the documentation and may be marked on the product and / or the product packaging.

CAUTION	Indicates the presence of a hazard that may cause minor personal injury or property damage if the CAUTION is ignored.
WARNING	Indicates the presence of a hazard that may result in serious personal injury if the WARNING is ignored.
	Indicates potential hazard if indicated information is ignored.
	Indicates shock hazards that result in serious injury or death if safety instructions are not followed.

⚠️	Indicates hot components or surfaces.
🌀	Indicates do not touch fan blades, may result in injury.
🌀	Indicates to unplug all AC power cord(s) to disconnect AC power
♻️	Please recycle battery

Intended Application Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment), other than an ITE application, may require further evaluation.

Site Selection

The compute module is designed to operate in a typical office environment. Choose a site that is:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your compute module into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

Equipment Handling Practices

Reduce the risk of personal injury or equipment damage:

- Conform to local occupational health and safety requirements when moving and lifting equipment.

- Use mechanical assistance or other suitable assistance when moving and lifting equipment.

- To reduce the weight for easier handling, remove any easily detachable components.

Power and Electrical Warnings

Caution: *The power button, indicated by the stand-by power marking, DOES NOT completely turn off the compute module AC power, 5V standby power is active whenever the compute module is plugged in. To remove power from compute module, you must unplug the AC power cord from the wall outlet. Your compute module may use more than one AC power cord. Make sure all AC power cords are unplugged. Make sure the AC power cord(s) is/ are unplugged before you open the chassis, or add or remove any non hot-plug components.*

Do not attempt to modify or use an AC power cord if it is not the exact type required. A separate AC cord is required for each compute module power supply.

Some power supplies in Intel® servers use Neutral Pole Fusing. To avoid risk of shock use caution when working with power supplies that use Neutral Pole Fusing.

The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.

When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the server.

To avoid risk of electric shock, turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it.

Access Warnings

Caution: *To avoid personal injury or property damage, the following safety instructions apply whenever accessing the inside of the product:*

- *Turn off all peripheral devices connected to this product.*

- *Turn off the compute module by pressing the power button off.*

- *Disconnect the AC power by unplugging all AC power cords from the chassis or wall outlet.*

- *Disconnect all cables and telecommunication lines that are connected to the compute module.*

- *Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.*

- *Do not access the inside of the power supply. There are no serviceable parts in the power supply. Return to manufacturer for servicing.*

- *Power down the chassis and disconnect all power cords before adding or replacing any non hot-plug component.*

- *When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing the power supply from the chassis.*

Caution: *If the compute module has been running, any installed processor(s) and heat sink(s) may be hot. Unless you are adding or removing a hot-plug component, allow the compute module to cool before opening the covers. To avoid the possibility of coming into contact with hot component(s) during a hot-plug installation, be careful when removing or installing the hot-plug component(s).*

Caution: *To avoid injury do not contact moving fan blades. If your chassis is supplied with a guard over the fan, do not operate the chassis without the fan guard in place.*

Electrostatic Discharge (ESD)

Caution: *ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground -- any unpainted metal surface -- on your server when handling parts.*

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Other Hazards

Battery Replacement

Caution: *There is the danger of explosion if the battery is incorrectly replaced. When replacing the battery, use only the battery recommended by the equipment manufacturer.*

Dispose of batteries according to local ordinances and regulations.

Do not attempt to recharge a battery.

Do not attempt to disassemble, puncture, or otherwise damage a battery.

Cooling and Airflow

Caution: *Carefully route cables as directed to minimize airflow blockage and cooling problems.*

For proper cooling and airflow, operate the chassis only with the chassis covers installed. Operating the chassis without the covers in place can damage chassis parts. To install the covers:

- *Check first to make sure you have not left loose tools or parts inside the chassis*
- *Check that cables, add-in boards, and other components are properly installed.*
- *Attach the covers to the chassis according to the product instructions.*

Laser Peripherals or Devices

Caution: *To avoid risk of radiation exposure and/or personal injury:*

- *Do not open the enclosure of any laser peripheral or device*
- *Laser peripherals or devices have are not user serviceable*
- *Return to manufacturer for servicing*

Deutsch

Sicherheitshinweise für den Server

Das vorliegende Dokument bezieht sich auf Intel® Serverplatinen, Intel® Servergehäuse (Standfuß und Rack) sowie installierte Peripheriegeräte. Es enthält Warnungen und Vorsichtsmaßnahmen zur Vermeidung von Gefahren durch Verletzung, Stromschlag, Feuer und Beschädigungen von Geräten. Lesen Sie diese Dokument daher sorgfältig, bevor Sie Ihr Intel® Serverprodukt installieren oder warten.

Bei Widersprüchen zwischen den hier vorliegenden Angaben und den Informationen im Lieferumfang des Produkts oder auf der Website des betreffenden Produkts hat die Produktdokumentation Vorrang.

Die Integration und Wartung des Servers darf nur durch technisch qualifizierte Personen erfolgen.

Um die Einhaltung der vorhandenen Zulassungen und Genehmigungen für das Produkt zu gewährleisten, sind die Richtlinien in diesem Handbuch sowie die Montageanleitungen in den Serverhandbüchern zu beachten. Verwenden Sie nur die beschriebenen, zugelassenen Komponenten, die im vorliegenden Handbuch angegeben werden. Die Verwendung anderer Produkte oder Komponenten führt zum Erlöschen der UL-Zulassung und anderer Genehmigungen für das Produkt. Dadurch kann das Produkt gegen Produktbestimmungen verstoßen, die im Verkaufsland gelten.

Sicherheitshinweise und Vorsichtsmaßnahmen

Um Verletzungen und Beschädigungen zu vermeiden, sollten Sie vor dem Beginn der Produktinstallation die nachfolgend aufgeführten Sicherheitshinweise und -informationen sorgfältig lesen und befolgen. In dem vorliegenden Handbuch sowie auf dem Produkt und auf der Verpackung werden folgende Sicherheitssymbole verwendet:

VORSICHT	Weist auf eine Gefahrenquelle hin, die bei Nichtbeachtung des VORSICHTSHINWEISES zu leichteren Verletzungen bzw. Sachbeschädigungen führen kann.
WARNUNG	Weist auf eine Gefahrenquelle hin, die bei Nichtbeachtung der WARNUNG zu ernsten Verletzungen führen kann.

	Weist auf potentielle Gefahr bei Nichtbeachtung der angezeigten Informationen hin.
	Weist auf die Gefahr eines Stromschlags hin, der bei Nichtbeachtung der Sicherheitshinweise zu schweren oder tödlichen Verletzungen führen kann.
	Weist auf Verbrennungsgefahr an heißen Bauteilen bzw. Oberflächen hin.
	Weist darauf hin, daß das Anfassen des Gebläses zu Verletzungen führen kann.
	Bedeutet, alle Netzkabel abzuziehen und das Gerät von der Netzspannung zu trennen.
	Bereiten Sie bitte Batterie auf

Zielbenutzer der Anwendung

Dieses Produkt wurde in seiner Eigenschaft als IT-Gerät getestet, das in Büros, Schulen, Computerräumen und ähnlichen öffentlichen Räumlichkeiten installiert werden kann. Die Eignung dieses Produkts für andere Einsatzbereiche als IT (z. B. Medizin, Industrie, Alarmsysteme oder Prüfgeräte) kann u. U. weitere Tests erfordern.

Standortauswahl

Das System ist für den Betrieb innerhalb normaler Büroumgebungen geeignet. Wählen Sie einen Standort, der folgenden Kriterien entspricht:

- Sauber, trocken und frei von Partikeln in der Luft (außer dem normalen Raumstaub).
- Gut belüftet, nicht in der Nähe von Wärmequellen und keiner direkten Sonnenbestrahlung ausgesetzt.
- Nicht in der Nähe von Vibrations- oder Erschütterungsquellen.
- Abgeschirmt von starken elektromagnetischen Feldern, die durch elektrische Geräte erzeugt werden.
- In gewittergefährdeten Gebieten sollten Sie das System an einen Überspannungsschutz anschließen und bei einem Gewitter die Telekommunikationskabel zum Modem abziehen.
- Eine ordnungsgemäß geerdete Wandsteckdose muß vorhanden sein.
- Ausreichender Freiraum für den Zugang zu den Netzkabeln, da diese die Hauptvorrichtung zum Trennen des Produkts von der Stromversorgung sind.

Handhabung von Geräten

Beachten Sie zur Vermeidung von Verletzungen oder Beschädigungen an den Geräten die folgenden Hinweise:

• Halten Sie beim Transportieren und Anheben von Geräten die örtlichen Gesundheits- und Sicherheitsvorschriften ein.

• Verwenden Sie mechanische oder andere geeignete Hilfsmittel zum Transportieren oder Anheben von Geräten.

• Entfernen Sie alle Komponenten, die sich leicht abnehmen lassen, um das Gewicht zu reduzieren und die Handhabung zu erleichtern.

Warnungen zu Netzspannung und Elektrizität

Vorsicht: *Durch Betätigen der mit dem Standby-Symbol gekennzeichneten Netztaste wird das System NICHT vollständig vom Netz getrennt. Es sind weiterhin 5 V aktiv, solange das System eingesteckt ist. Um das System vollständig vom Strom zu trennen, muß das Netzkabel aus der Steckdose abgezogen werden. Das System verfügt möglicherweise über mehrere Netzkabel. Vergewissern Sie sich in diesem Fall, daß alle Netzkabel abgezogen sind. Wenn Sie Komponenten ein- oder ausbauen möchten, die nicht hot-plug-fähig sind, stellen Sie sicher, daß zuvor alle Netzkabel abgezogen sind.*

Nehmen Sie keine Änderungen am Netzkabel vor, und verwenden Sie kein Kabel, das nicht genau dem geforderten Typ entspricht. Jedes Netzteil im System muß über ein eigenes Netzkabel angeschlossen werden.

Einige Netzteile von Intel Servern verwenden Nullleitersicherungen. Vorsicht ist geboten im Umgang mit Netzteilen, welche Nullleitersicherungen verwenden, um das Risiko eines elektrischen Schlages zu vermeiden

Das Netzteil in diesem Produkt enthält keine Teile, die vom Benutzer gewartet werden können. Öffnen Sie das Netzteil nicht. Im Netzteil bestehen gefährliche Spannungen, Ströme und Energiequellen. Schicken Sie das Gerät für Wartungsarbeiten an den Hersteller zurück.

Wenn Sie ein hot-plug-fähiges Netzteil austauschen, ziehen Sie dessen Netzkabel ab, bevor Sie es aus dem Server ausbauen.

Zur Vermeidung von Stromschlägen schalten Sie den Server aus, und trennen Sie vor dem Öffnen des Geräts das Netzkabel sowie alle an den Server angeschlossene Telekommunikationssysteme, Netzwerke und Modems.

Warnhinweise für den Systemzugang

Vorsicht: *Um Verletzungen und Beschädigungen zu vermeiden, sollten Sie vor Arbeiten im Produktinneren folgende Sicherheitsanweisungen beachten:*

- *Schalten Sie alle am Produkt angeschlossenen Peripheriegeräte aus.*

- *Schalten Sie das System mit dem Netzschalter aus.*

- *Trennen Sie das Gerät von der Stromquelle, indem Sie alle Netzkabel vom System bzw. aus der Steckdose ziehen.*

- *Ziehen Sie alle Kabel und alle an das System angeschlossenen Telekommunikationsleitungen ab.*

- *Bewahren Sie alle Schrauben und anderen Befestigungselemente gut auf, nachdem Sie die Gehäuseabdeckung entfernt haben. Wenn Sie Ihre Arbeiten im Systeminneren beendet haben, befestigen Sie die Gehäuseabdeckung mit den Originalschrauben bzw. -befestigungselementen.*

- *Führen Sie keine Arbeiten im Netzteil aus. Das Netzteil enthält keine für den Benutzer wartungsbedürftigen Teile. Schicken Sie das Gerät für Wartungsarbeiten an den Hersteller zurück.*

- *Schalten Sie den Server aus, und ziehen Sie alle Netzkabel ab, bevor Sie Komponenten ein- oder ausbauen, die nicht hot-plug-fähig sind.*

- *Wenn Sie ein hot-plug-fähiges Netzteil austauschen, ziehen Sie dessen Netzkabel ab, bevor Sie es aus dem Server ausbauen.*

Vorsicht: *War Ihr Server in Betrieb, können die installierten Prozessoren und Kühlkörper heiß sein. Sofern Sie keine Hot-Plug-Komponenten ein- oder ausbauen, warten Sie mit dem Abnehmen der Abdeckungen, bis das System abgekühlt ist. Gehen Sie beim Aus- oder Einbauen von Hot-Plug-Komponenten sorgfältig vor, um nicht mit heißen Komponenten in Berührung zu kommen.*

Vorsicht: *Berühren Sie nicht die rotierenden Lüfterflügel, um Verletzungen zu vermeiden. Falls Ihr System mit eine Lüfterabdeckung besitzt, darf es nicht ohne diese Abdeckung betrieben werden.*

Elektrostatische Entladungen (ESD)

Vorsicht: *Elektrostatische Entladungen können zur Beschädigung von Festplatten, Platinen und anderen Komponenten führen. Daher sollten Sie alle Arbeiten an einer ESD-Workstation ausführen. Steht ein solcher Arbeitsplatz nicht zur Verfügung, erzielen Sie einen gewissen Schutz vor elektrostatischen Entladungen durch Tragen einer Antistatik-Manschette, die Sie während der Arbeit zur Erdung an einem beliebigen unlackierten Metallteil des Computergehäuses befestigen.*

Gehen Sei bei der Handhabung von Platinen immer mit größter Vorsicht vor. Sie können äußerst empfindlich gegenüber elektrostatischer Entladung sein. Halten Sie Platinen nur an den Kanten fest. Legen Sie die Platinen nach dem Auspacken aus der Schutzhülle oder nach dem Ausbau aus dem Server mit der Bauelementseite nach oben auf eine geerdete, statisch entladene Unterlage.Verwenden Sie dazu, sofern verfügbar, eine leitfahige Schaumstoffunterlage, aber niche die Schutzhülle der Platine. Ziehen Sie die Platine nicht über eine Fläche.

Andere Gefahren

Batterieaustausch

Vorsicht: *Wird die Batterie unsachgemäß ausgetauscht, besteht Explosionsgefahr. Verwenden Sie als Ersatz nur die vom Gerätehersteller empfohlene Batterie.*

Beachten Sie bei der Entsorgung von Batterien die gültigen Bestimmungen.

Versuchen Sie nicht, eine Batterie aufzuladen.

Versuchen Sie nicht, eine Batterie zu öffnen oder sonstwie zu beschädigen.

Kühlung und Luftstrom

Vorsicht: *Verlegen Sie Kabel sorgfältig entsprechend der Anleitung, um Störungen des Luftstroms und Kühlungsprobleme zu vermeiden.*

Zur Gewährleistung des ordnungsgemäßen Kühlungs- und Luftstromverhaltens darf das System nur mit angebrachten Gehäuseabdeckungen betrieben werden. Die Inbetriebnahme des Systems ohne Abdeckung kann zur Beschädigung von Systemkomponenten führen. So bringen Sie die Abdeckung wieder an:

- Vergewissern Sie sich zunächst, daß Sie keine Werkzeuge oder Teile im Gehäuse vergessen haben.
- Prüfen Sie, ob Kabel, Erweiterungskarten sowie weitere Komponenten ordnungsgemäß angebracht sind.
- Befestigen Sie die Abdeckungen am Gehäuse des Produkts, wie in dessen Anleitung beschrieben.

Laser-Peripheriegeräte oder -Komponenten

Vorsicht: *Beachten Sie zur Vermeidung von Strahlung und Verletzungen die folgenden Hinweise:*

- *Öffnen Sie keinesfalls das Gehäuse von Laser-Peripheriegeräten oder Laser-Komponenten.*
- *Laser-Peripheriegeräte oder -Komponenten besitzen keine für den Benutzer wartungsbedürftigen Teile.*
- *Schicken Sie das Gerät für Wartungsarbeiten an den Hersteller zurück.*

Français

Consignes de sécurité sur le serveur

Ce document s'applique aux cartes serveur Intel®, au châssis de serveur Intel® (sur pieds et sur rack) et aux périphériques installés. Pour réduire les risques de dommages corporels, d'électrocution, d'incendie et de dommages matériels, lisez ce document et respectez tous les avertissements et précautions mentionnés dans ce guide avant d'installer ou de mettre à jour votre produit serveur Intel®.

En cas de conflit entre les informations fournies dans ce document et celles livrées avec le produit ou publiées sur le site Web pour un produit particulier, la documentation du produit prime.

Votre serveur doit être intégré et entretenu uniquement par des techniciens qualifiés.

Vous devez suivre les informations de ce guide et les instructions d'assemblage des manuels de serveur pour vérifier et maintenir la conformité avec les certifications et approbations de produit existantes. Utilisez uniquement les composants décrits et réglementés spécifiés dans ce guide. L'utilisation d'autres produits/composants annulera la liste UL et les autres approbations réglementaires du produit, et le produit peut ne pas être conforme aux autres lois et réglementations locales applicables au produit.

Sécurité: avertissements et mises en garde

Pour éviter de vous blesser ou d'endommager votre équipement, lisez et respectez toutes les informations et consignes de sécurité avant de commencer l'installation du produit. Les symboles de sécurité suivants peuvent être utilisés tout au long de cette documentation et peuvent figurer sur le produit ou sur son emballage.

ATTENTION	Indique la présence d'un risque pouvant entraîner des blessures physiques mineures ou endommager légèrement le matériel si la mise en garde n'est pas prise en compte.
AVERTISSEMENT	Indique la présence d'un risque pouvant entraîner des blessures corporelles graves si l'avertissement n'est pas pris en compte.
	Indique un risque potentiel si les informations signalées ne sont pas prises en compte.
	Indique des risques d'électrocution pouvant entraîner des blessures corporelles graves ou mortelles si les consignes de sécurité ne sont pas respectées.
	Signale des composants ou des surfaces soumis à des températures élevées.
	Indique de ne pas toucher aux pales de ventilateur, car cela peut entraîner des blessures.

	Indique de débrancher tous les cordons d'alimentation secteur pour déconnecter l'alimentation.
	Veuillez réutiliser la batterie

Domaines d'utilisation prévus

Ce produit a été testé comme équipement informatique (ITE) et peut être installé dans des bureaux, des écoles, des salles informatiques et des endroits commerciaux similaires. L'utilisation du présent produit dans des catégories et environnements de produits et domaines d'application (par exemple, le domaine médical, industriel, résidentiel, les systèmes d'alarme et les appareils de contrôle) autres qu'ITE doit faire l'objet d'évaluations supplémentaires.

Sélection d'un emplacement

Le système est conçu pour fonctionner dans un environnement standard de bureau. Choisissez un emplacement respectant les conditions suivantes :

- Propre, sec et exempt de particules en suspension (autres que la poussière normale d'une pièce).
- Bien ventilé et à l'écart des sources de chaleur telles que la lumière directe du soleil et les radiateurs.
- À l'écart des sources de vibration ou des chocs physiques.
- Isolé des champs électromagnétiques importants produits par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques, nous vous recommandons de brancher votre système à un suppresseur de surtension et de déconnecter les lignes de télécommunication de votre modem pendant les orages.
- Équipé d'une prise murale reliée à la terre.
- Équipé d'un espace suffisant pour accéder aux cordons d'alimentation secteur, car ils servent de disjoncteur principal d'alimentation du produit.

Pratiques de manipulation de l'équipement

Réduisez le risque de dommages personnels ou matériels :

- Conformez-vous aux exigences de médecine du travail et de sécurité lorsque vous déplacez et soulevez le matériel.
- Utilisez l'assistance mécanique ou toute autre assistance appropriée lorsque vous déplacez et soulevez le matériel.
- Pour réduire le poids en vue de faciliter la manipulation, retirez tout composant amovible.

Alimentation et avertissements en matière d'électricité

Attention: *Le bouton d'alimentation, indiqué par le symbole de mise en veille, NE COUPE PAS complètement l'alimentation secteur du système car le courant de veille 5 V reste actif lorsque le système est sous tension. Pour couper l'alimentation du système, vous devez débrancher le cordon d'alimentation secteur de la prise murale. Votre système peut utiliser plusieurs cordons d'alimentation secteur. Assurez-vous que tous les cordons d'alimentation sont débranchés. Vous devez les débrancher avant d'ouvrir le châssis, d'ajouter ou de supprimer un composant non connectable à chaud.*

Les alimentations de certains serveurs Intel sont munies de doubles fusibles pôle/neutre: veuillez observer les précautions d'usage afin d'éviter tout risque d'eléctrocution.

N'essayez pas de modifier ou d'utiliser un cordon d'alimentation secteur s'il ne s'agit pas du type exact requis. Un cordon secteur est requis pour chaque alimentation système.

Le bloc d'alimentation de ce produit ne contient aucun composant réparable par l'utilisateur. N'ouvrez pas le bloc d'alimentation. L'intérieur de celui-ci est soumis à des niveaux dangereux de tension, de courant et d'énergie. Renvoyez-le au fabricant en cas de problème.

Lorsque vous remplacez un bloc d'alimentation à chaud, débranchez le cordon du bloc d'alimentation en cours de remplacement avant de le retirer du serveur.

Pour éviter tout risque d'électrocution, mettez le système hors tension et débranchez les cordons d'alimentation ainsi que les systèmes de télécommunication, réseaux et modems reliés au système avant d'ouvrir ce dernier.

Avertissements sur l'accès au système

Attention: *Pour éviter de vous blesser ou d'endommager votre équipement, les consignes de sécurité suivantes s'appliquent chaque fois que vous accédez à l'intérieur du produit:*

- *Mettez hors tension tous les périphériques connectés à ce produit.*

- *Éteignez le système en appuyant sur le bouton d'alimentation.*

- *Déconnectez l'alimentation secteur en débranchant tous les cordons d'alimentation secteur du système ou de la prise murale.*

- *Déconnectez l'ensemble des câbles et lignes de télécommunication qui sont connectés au système.*

- *Mettez toutes les vis ou autres attaches de côté lorsque vous retirez les panneaux d'accès. Une fois que vous avez terminé d'accéder à l'intérieur du produit, refixez le panneau d'accès avec les vis ou attaches d'origine.*

- *N'essayez pas d'accéder à l'intérieur du bloc d'alimentation. Il ne contient aucune pièce réparable. Renvoyez-le au fabricant en cas de problème.*

- *Mettez le serveur hors tension et débranchez tous les cordons d'alimentation avant d'ajouter ou de remplacer tout composant non connectable à chaud.*

- *Lorsque vous remplacez le bloc d'alimentation à chaud, débranchez le cordon du bloc d'alimentation en cours de remplacement avant de retirer le bloc du serveur.*

Attention: *Si le serveur a été utilisé, les processeurs et dissipateurs de chaleur installés peuvent être chauds. À moins que vous n'ajoutiez ou ne retiriez un composant connectable à chaud, laissez le système refroidir avant d'ouvrir les panneaux. Pour éviter tout risque d'entrer en contact avec un composant chaud lors d'une installation à chaud, prenez toutes les précautions nécessaires lorsque vous retirez ou installez des composants connectables à chaud.*

Attention: *Pour éviter de vous blesser, ne touchez pas les pales de ventilateur en mouvement. Si votre système est fourni avec une protection sur le ventilateur, ne mettez pas le système en route sans la protection en place.*

Décharges électrostatiques (ESD)

Attention: *Les décharges électrostatiques (ESD) peuvent endommager les lecteurs de disque dur, les cartes et d'autres pièces. Il est fortement conseillé d'effectuer l'ensemble des procédures décrites à un poste de travail protégé contre les ESD. Au cas où aucun poste de ce type ne serait disponible, protégez-vous contre les ESD en portant un bracelet antistatique relié à la masse du châssis (n'importe quelle surface métallique non peinte) de votre serveur lorsque que vous manipulez les pièces.*

Manipulez toujours les cartes avec précaution. Elles peuvent être extrêmement sensibles aux ESD. Ne tenez les cartes que par leurs bords. Après avoir retiré une carte de son emballage de protection ou du serveur, placez-la sur une surface reliée à la terre, exempte de charge statique, composants orientés vers le haut. Utilisez si possible un tapi de mousse conducteru, mais pas l'emballage de la carte. Veillez à ce que la carte ne glisse sur aucune surface.

Autres risques

Remplacement de la pile

Attention: *Il existe un risque d'explosion si la pile n'est pas correctement remplacée. Lors du remplacement de la pile, utilisez uniquement celle recommandée par le fabricant du matériel.*

Mettez la pile au rebut en vous conformant aux réglementations locales.

N'essayez pas de recharger une pile.

N'essayez pas de démonter, de percer ou d'endommager la pile d'une quelconque façon.

Refroidissement et ventilation

Attention: *Routez les câbles avec précaution comme indiqué pour minimiser les blocages de circulation d'air et les problèmes de refroidissement.*

Afin de permettre une ventilation et un refroidissement corrects, ne mettez le système en marche que lorsque les panneaux du châssis sont en place. L'utilisation du système sans les panneaux peut endommager les composants système. Pour installer les panneaux :

- Vérifiez tout d'abord que vous n'avez pas oublié d'outils ou de composants détachés à l'intérieur du système.

- Vérifiez que les câbles, les cartes d'extension et les autres composants sont correctement installés.

- Fixez les panneaux au châssis en suivant les instructions du produit.

Périphériques laser

Attention: *Pour éviter tout risque d'exposition aux rayonnements et/ou de dommage personnel:*

- *N'ouvrez pas l'enceinte d'un périphérique laser.*

- *Les périphériques laser ne sont pas réparables par l'utilisateur.*

- *Retournez-les au fabricant en cas de problème.*

Español

Información de seguridad del servidor

Este documento se aplica a las tarjetas de servidor de Intel®, los gabinetes de servidor de Intel® (montaje en rack y en pedestal) y los dispositivos periféricos. Para reducir el riesgo de daños corporales, descargas eléctricas, fuego y en el equipo, lea este documento y preste atención a todos las advertencias y precauciones de esta guía antes de instalar o mantener el producto de servidor de Intel®.

En el caso de que haya diferencias entre la información para un producto en particular contenida en este documento y la información proporcionada con dicho producto o en el sitio Web, la documentación del producto es la que prevalece.

Sólo personal técnico calificado debe montar y prestar los servicios para el servidor.

Debe ceñirse a las directrices de esta guía y a las instrucciones de montaje de los manuales del servidor para asegurar y mantener el cumplimiento con las certificaciones y homologaciones existentes de los productos. Utilice sólo los componentes descritos y homologados que se especifican en esta guía. El uso de otros productos o componentes anulará la homologación UL y otras certificaciones oficiales del producto, pudiendo dejar de ser compatible con las normativas locales de los países en los que se comercializa.

Advertencias y precauciones sobre seguridad

Para reducir la posibilidad de que se produzcan lesiones personales o daños en la propiedad, antes de empezar a instalar el producto, lea, observe y cumpla toda la información e instrucciones de seguridad siguientes. Puede que se utilicen los siguientes símbolos de seguridad en la documentación y es posible que aparezcan en el producto o en su embalaje.

PRECAUCIÓN	Indica la existencia de un riesgo que podría causar lesiones personales o daños en la propiedad leves si no se tiene en cuenta la PRECAUCIÓN.
ADVERTENCIA	Indica la existencia de un riesgo que podría causar lesiones personales graves si no se tiene en cuenta la ADVERTENCIA.
	Indica un riesgo potencial si no se tiene en cuenta la información indicada.
	Indica riesgo de descargas eléctricas que podrían causar lesiones graves o la muerte si no se siguen las instrucciones de seguridad.
	Indica componentes o superficies calientes.
	Indica que no se deben tocar las aspas de los ventiladores, ya que de lo contrario se podrían producir lesiones.
	Indica que es necesario desenchufar los cables de alimentación de CA para desconectar la alimentación de CA
	Recicle por favor la batería

Aplicaciones y usos previstos

Este producto ha sido evaluado como equipo de tecnología informática (ITE) que puede instalarse en oficinas, escuelas, salas de equipos informáticos o lugares de ámbito comercial similares. Es posible que sea necesario llevar a cabo una evaluación adicional para comprobar si este producto es apropiado para otras categorías de productos y entornos además de las aplicaciones informáticas (por ejemplo, soluciones médicas, industriales, residenciales, sistemas de alarma y equipos de pruebas).

Selección de la ubicación

El sistema se ha diseñado para funcionar en un entorno normal de oficinas. Seleccione una ubicación que esté:

- Limpia, seca y libre de macropartículas en suspensión en el aire (que no sean el polvo habitual de la habitación).
- Bien ventilada y alejada de fuentes de calor, incluida la luz solar directa y los radiadores.
- Alejada de fuentes de vibración o de golpes físicos.
- Aislada de campos electromagnéticos producidos por dispositivos eléctricos.

- En zonas propensas a tormentas eléctricas, se recomienda que conecte el servidor a un supresor de sobretensiones y desconecte las líneas de telecomunicaciones al módem durante una tormenta eléctrica.

- Provista de una toma de corriente alterna correctamente conectada a tierra.

- Provista de espacio suficiente para acceder a los cables de la fuente de alimentación ya que constituyen la desconexión principal de la alimentación.

Manipulación del equipo

Reduzca el riesgo de daños personales o en el equipo:

- Respete los requisitos de sanidad y seguridad laborales de su país cuando traslade y levante el equipo.

- Utilice medios mecánicos u otros que sean adecuados al trasladar o levantar el equipo.

- Para que el peso sea menor para manipularlo con más facilidad, extraiga los componentes que sean de fácil extracción.

Advertencias de alimentación y eléctricas

Precaución: *El botón de encendido, indicado con la marca del modo de reposo o stand-by, NO DESCONECTA completamente la alimentación de CA del sistema, ya que el modo de reposo de 5 V sigue activo mientras el sistema está enchufado. Para desconectar el sistema debe desenchufar el cable de alimentación de CA de la toma de la pared. Puede usar más de un cable de alimentación de CA con el sistema. Asegúrese de que todos los cables de alimentación de CA están desenchufados. Asegúrese de que los cables de alimentación de CA estén desenchufado antes de abrir le gabinete, agregar o extraer cualquier componente que no es de conexión en funcionamiento.*

Algunas fuentes de alimentación de electricidad de los servidores de Intel utilizan el polo neutral del fuselaje. Para evitar riesgos de choques eléctricos use precauciones al trabajar con las fuentes de alimentación que utilizan el polo neutral de fuselaje.

No intente modificar ni utilizar un cable de alimentación de CA si no es del tipo exacto requerido. Se necesita un cable de CA para cada fuente de alimentación del sistema.

La fuente de alimentación de este producto no contiene piezas que puedan ser reparadas por el usuario. No abra la fuente de alimentación. Dentro de la fuente de alimentación

puede haber niveles de tensión, corriente y energía peligrosos. Devuélvala al fabricante para repararla.

Al reemplazar una fuente de alimentación de conexión en funcionamiento, desenchufe el cable de alimentación de la fuente de alimentación que va a reemplazar antes de extraerla del servidor.

Para evitar el riesgo de descargas eléctricas, antes de abrir el servidor, apáguelo, desconecte el cable de alimentación, los sistemas de telecomunicaciones, las redes y los módems conectados al mismo.

Advertencias el acceso al sistema

Precaución: *Para evitar lesiones personales o daños en la propiedad, se aplican las siguientes instrucciones de seguridad siempre que se acceda al interior del producto:*

- *Apague todos los dispositivos periféricos conectados a este producto.*

- *Pulse el botón de alimentación para apagar el sistema.*

- *Desconecte la alimentación de CA desenchufando los cables de alimentación de CA del sistema o de la toma de corriente alterna.*

- *Desconecte todos los cables y líneas de telecomunicación que estén conectados al sistema.*

- *Guarde todos los tornillos o elementos de fijación cuando retire las cubiertas de acceso. Cuando termine de operar en el interior del producto, vuelva a colocar los tornillos o los elementos de fijación originales de la cubierta de acceso.*

- *No acceda al interior de la fuente de alimentación. No hay elementos en la fuente de alimentación que usted pueda reparar y utilizar. Devuélvala al fabricante para repararla.*

- *Apague el servidor y desconecte todos los cables de alimentación antes de agregar o reemplazar cualquier componente que no es de conexión en funcionamiento.*

- *Al reemplazar una fuente de alimentación de conexión en funcionamiento, desenchufe el cable de alimentación de la fuente de alimentación que va a reemplazar antes de extraerla del servidor.*

Precaución: *Si el servidor se ha estado ejecutando, los procesadores y disipadores de calor estarán recalentados. A no ser que esté instalando o extrayendo un componente de conexión en funcionamiento, deje que el sistema se enfríe antes de abrir las cubiertas. Para que no llegue a tocar los componentes que estén calientes cuando esté realizando una instalación*

de conexión en funcionamiento, tenga cuidado al extraer o instalar los componentes de conexión en funcionamiento.

Precaución: *Para evitar posibles daños, no toque las aspas en movimiento de los ventiladores. Si el sistema se le ha suministrado con una protección para el ventilador, asegúrese de que cuando esté funcionando el sistema la protección esté en su sitio.*

Descarga electrostática (ESD)

Precaución: *Las descargas electrostáticas pueden dañar las unidades de disco, las tarjetas y otros componentes. Recomendamos que realice todos los procedimientos en una estación de trabajo protegida contra descargas electrostáticas. En caso de que no haya una disponible, protéjase de alguna forma contra las descargas llevando un brazalete antiestático conectado a la toma de tierra de la carcasa (cualquier superficie de metal que no esté pintada) del servidor cuando manipule las piezas.*

Manipule siempre las tarjetas con el máximo cuidado. Pueden ser sumamente sensibles a las descargas electrostáticas. Sujételas sólo por los bordes. Una vez extraída la tarjeta de su envoltorio de protección o del servidor, colóquela con el lado de los componentes hacia arriba sobre una superficie con toma de tierra y sin carga estática. Utilice una almohadilla de espuma conductora si dispone de ella, pero nunca el envoltorio de la tarjeta. No deslice la tarjeta sobre ninguna superficie.

Otros peligros

Sustitución de la batería

Precaución: *Existe el peligro de explosión si la batería no se reemplaza correctamente. Al reemplazar la batería, utilice sólo la batería recomendada por el fabricante del equipo.*

Deseche las baterías respetando la normativa local.

No intente recargar la batería.

No intente desmontar, pinchar o causar cualquier otro desperfecto a una batería.

Enfriamiento y circulación de aire

Precaución: *El tendido de los cables debe realizarse cuidadosamente tal y como se le indica para reducir al mínimo los problemas de obstrucción de la ventilación y de refrigeración.*

Para conseguir una refrigeración y corriente de aire adecuadas, compruebe que cuando sistema esté funcionando, las cubiertas de la carcasa están instaladas. Si utiliza el sistema sin las cubiertas, podría dañar sus componentes. Para instalar las cubiertas:

- *Compruebe primero que no ha dejado herramientas o piezas sueltas dentro del sistema.*
- *Compruebe que los cables, tarjetas adicionales y otros componentes están instalados correctamente.*
- *Sujete las cubiertas a la carcasa siguiendo las instrucciones del producto.*

Periféricos o dispositivos láser

Precaución: *Para evitar el riesgo de la exposición a radiaciones o de daños personales:*

- *No abra la caja de ningún periférico o dispositivo láser*
- *Los periféricos o dispositivos láser no pueden ser reparados por el usuario*
- *Haga que el fabricante los repare.*

简体中文

服务器安全信息

本文档适用于 Intel® 服务器主板、Intel® 服务器机箱（基座和机架固定件）和已安装的外设。为减少人身伤害、电击、火灾以及设备毁坏的危险，请在安装或维护 Intel® 服务器产品之前阅读本文档并遵循本指南中的所有警告和预防措施。

如果本文档中的信息与特定产品的随附信息或 Web 站点信息之间存在不一致，请以产品文档为准。

服务器须由合格的技术人员进行集成和维护。

必须遵守本指南的规定和服务器手册的装配指导，以确保符合现有的产品认证和审批。仅使用本指南中描述和规定的指定组件。使用其他产品 / 组件将使产品的 UL 认证和其他管理审批无效，并可能导致产品不符合销售地的产品法规。

安全警告与注意事项

为避免人身伤害与财产损失，安装本产品之前，请阅读以下所有安全指导和信息。下面所列的安全符号可能在整个文档中使用并可能标注于产品和 / 或产品包装之上。

注意	表示如果无视此 "？？？项" ？？？？？？？ 轻微人身伤害或财产损失的危险。
警告	表示如果无视此 "？？" ？？？？？？？ 严重人身伤害的危险。
⚠	表示如果无视所示信息，即存在潜在的危险。
⚡	表示如果不遵守安全指导，存在可导致严重伤害或死亡的电击危险。
⚠	表示灼热组件或表面。
✺	表示请勿触摸风机叶片，否则可能致伤。
🔌	表示拔下所有交流电线，断开交流电源

预期应用使用

根据评估，本产品为信息技术设备
（ITE），可安装在办公室、学校、计算机房和类似的商业场所。本产品对于非 ITE
应用的其他产品种类和环境（如医疗、工业、住宅、报警系统和测试设备）的适用
性尚有待进一步的评估。

场地选择

本系统专为在典型办公环境运行而设计。请选择符合以下条件的地点：

- 清洁、干燥，无气载微粒（而非一般的室内尘埃）。
- 通风良好，远离热源（包括直接日晒和散热器）。
- 远离振动源或物理震动。
- 与电气设备产生的强大电磁场隔离。
- 在易受闪电袭击的地区，我们建议将系统插入电涌抑制器并在闪电期间断开通信
  线路与调制解调器之间的连接。
- 提供正确接地的墙壁插座。
- 提供足够的空间，以便拿取电源供应线，因为这是本产品的主要电源断开器。

设备操作规范

减少人身伤害或设备受损的危险：

- 移举设备时遵守当地的职业健康与安全要求。
- 借助机械手段或其他合适的手段移举设备。
- 拆除一切易分离组件，以降低重量并方便操作。

电源与电气警告

⚠注意事项

电源按钮（如待机电源标记所示）并不能完全关闭系统的交流电源，只要系统已接
通电源，就存在 5V
待机电源。要从系统切断电源，须从墙壁电源插座中拔下交流电线。您的系统可能
不止使用一根交流电线。请确保所有的交流电线都已拔下。打开机箱或增加或去除
任何热插拔组件之前，确保交流电线已拔下。

若非所需的确切类型，请勿尝试修改或使用交流电线。系统的每个电源供应设备都
需要一根单独的交流电线。

本产品的电源供应设备包含非用户维修部件。请勿打开电源供应设备。电源供应设
备包含非常危险的电压级、电流级和能量级。请与生产商联系维修事宜。

替换热插拔电源供应设备时，请先拔下需替换的电源供应设备上的电源线，再将其
从服务器上移除。

为避免电击，请在打开服务器之前，关闭服务器并断开服务器上连接的电源线、电信系统、网络和调制解调器。

系统使用警告

⚠ **⚠注意事项**

为避免人身伤害或财产损失，无论何时检查产品内部，以下安全指导都适用：

- 关闭所有与本产品相连的外设。
- 按下电源按钮至关闭状态，关闭系统。
- 从系统或墙壁插座上拔下所有交流电线，断开交流电源。
- 断开与系统相连的所有线缆和通信线路。
- 卸除舱口盖时，保留所有螺钉及其他紧固件。完成产品内部检查之后，请用螺钉或紧固件重新固定舱口盖。
- 请勿打开电源供应设备。电源供应设备内没有可维修部件，请与生产商联系维修事宜。
- 增加或替换任何非热插拔组件之前，请关闭服务器电源并断开所有电源线。
- 替换热插拔电源供应设备时，请先拔下需替换的电源供应设备上的电源线，然后再从服务器上移除电源供应设备。

⚠ **⚠ 注意事项**

如果服务器一直在运行，任何已安装的处理器和吸热设备都可能很热。除非要增加或移除热插拔组件，否则请待系统冷却后再开盖。为避免在热插拔组件安装过程中接触灼热组件，移除或安装热插拔组件时务须小心。

⚠ **⚠注意事项**

为避免受伤，请勿触摸运转的风机叶片。如果系统的风机上配有防护装置，请勿卸下风机防护装置运行系统。

静电放电 (ESD)

⚠ ⚠注意事项

ESD 会损坏磁盘驱动器、主板及其他部件。我们建议您执行 ESD
工作站的所有步骤。如果没有 ESD
工作站，则采取一些静电放电保护措施，操作部件时，戴上与服务器上的机箱接地
或任何未喷漆金属表面连接的防静电腕带。

操作主板时始终保持小心。它们可能对 ESD
非常敏感。拿持主板时只接触边缘。从保护包装中或从服务器上取出主板后，请将
主板组件侧面朝上放置在无静电的接地表面上。请使用导电泡沫垫（若有），不要
使用主板包装。请勿将主板在任何表面上滑动。

其他危险

替换电池

⚠ 注意事项

不正确替换电池可能导致爆炸危险。替换电池时，请只使用设备生产商推荐使用的
电池。

请按当地法规处置电池。

请勿对电池充电。

请勿拆卸、刺穿或以其他方式损坏电池。

冷却和气流

⚠ 注意事项

按照说明小心布置线缆，尽量减少气流阻塞和冷却问题。

为保证适当的冷却和气流，运行系统时请确保机箱盖已安装。未安装机箱盖即运行
系统可能导致系统部件受损。安装机箱盖的步骤如下：

- 首先检查并确保系统内没有遗留的未固定工具或部件。
- 检查线缆、内插板和其他组件已正确安装。
- 按产品说明安装机箱盖。

激光外设或激光设备

⚠ 注意事项

为避免辐射暴露和 / 或人身伤害:

- 请勿打开任何激光外设或激光设备的外壳
- 激光外设或激光设备为非用户维修设备

请与生产商联系维修事宜

Intel® Compute Module MFS5520VI User Guide
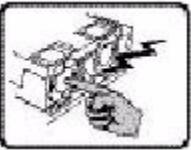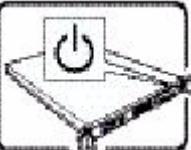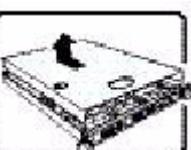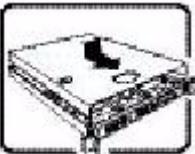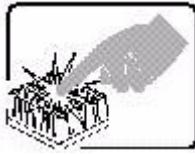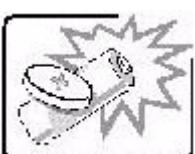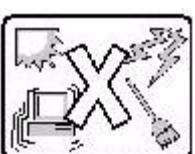
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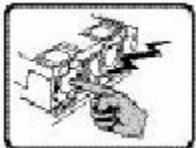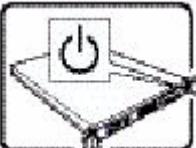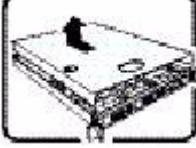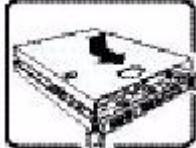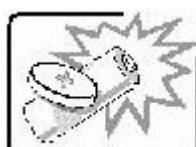
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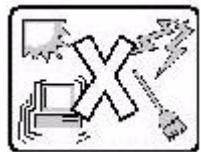
	The power supply in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.
	Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.
	The power button on the compute module does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply. The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.
	SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps: 1. Turn off all peripheral devices connected to the system. 2. Turn off each compute module by pressing the power button. 3. Unplug all AC power cords from the system or from wall outlets. 4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system. 5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system-any unpainted metal surface-when handling components. 6. Do not operate the system with the chassis covers removed.
	After you have completed the six SAFETY steps above, you can remove the system covers. To do this: 1. Unlock and remove the padlock from the back of the system if a padlock has been installed. 2. Remove and save all screws from the covers. 3. Remove the cover(s).

	For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:
	1. Check first to make sure you have not left loose tools or parts inside the system.
	2. Check that cables, add-in boards, and other components are properly installed.
	3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.
	4. Insert and lock the padlock to the system to prevent unauthorized access inside the system.
	5. Connect all external cables and the AC power cord(s) to the system.
	A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.
	Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.
	The system is designed to operate in a typical office environment. Choose a site that is:
	• Clean and free of airborne particles (other than normal room dust).
	• Well ventilated and away from sources of heat including direct sunlight.
	• Away from sources of vibration or physical shock.
	• Isolated from strong electromagnetic fields produced by electrical devices.
	• In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
	• Provided with a properly grounded wall outlet.
	• Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

Deutsch

	Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.
	Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.
	Der Wechselstrom des Rechenmoduls wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie alle Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluss des Systems zu unterbrechen. Die Stromkabel sind das "Unterbrechungsgerät" zur Hauptstromquelle. Die Steckdose, in die das System gesteckt wird, sollte sich in der Nähe des Gerätes befinden und leicht zugänglich sein.
	SICHERHEITSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten: 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das Rechenmodul mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.

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	SICHERHEITSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten: 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.
	Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen: 1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben. 2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation. 3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an. 4. Bringen Sie die Verschlußeinrichtung (Padlock) wieder an und schließen Sie diese, um ein unerlaubtes Öffnen des Systems zu verhindern. 5. Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.
	Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.
	Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.
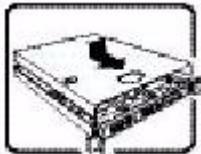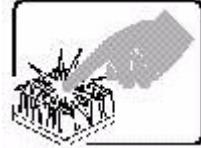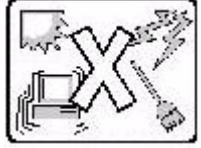
Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:
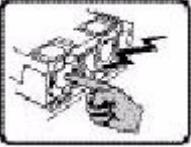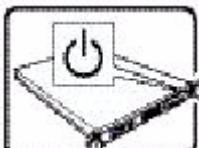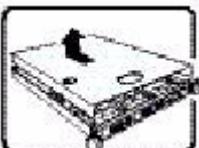
- "sauber und staubfrei sein (Hausstaub ausgenommen);

- "gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);

- "keinen Erschütterungen ausgesetzt sein;

- "keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;

- "in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen;

- "mit einer geerdeten Wechselstromsteckdose ausgerüstet sein;

- "über ausreichend Platz verfügen, um Zugang zu den Netzkabeln zu gewährleisten, da der Stromanschluß des Produkts hauptsächlich über die Kabel unterbrochen wird
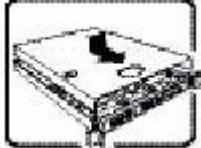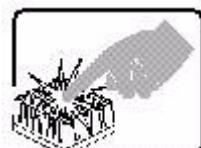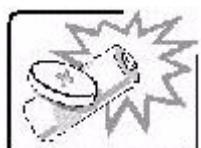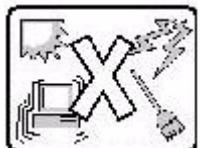
Français

	Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.
	Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit
	Notez que le commutateur CC de mise sous tension/hors tension du module n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise. C'est le câble d'alimentation qui est considéré comme le moyen de se déconnecter du CA. La prise à laquelle le système est branché doit se situer à proximité de l'équipement et être facilement accessible.
	CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes: 1. Mettez hors tension tous les périphériques connectés au système. 2. Mettez chaque module hors tension en mettant l'interrupteur en position OFF (bouton-poussoir). 3. Débranchez tous les cordons d'alimentation c.a. du système et des prises murales. 4. Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système. 5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier). 6. Ne faites pas fonctionner le système tandis que le boîtier est ouvert.
	Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit: 1. Si un cadenas a été installé sur à l'arrière du système, déverrouillez-le et retirez-le. 2. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr. 3. Retirez les panneaux.
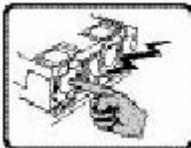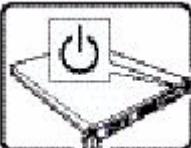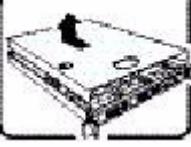
	Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit: 1. Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système. 2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés. 3. Revissez solidement les panneaux du boîtier avec les vis retirées plus tôt. 4. Remettez le cadenas en place et verrouillez-le afin de prévenir tout accès non autorisé à l'intérieur du système. 5. Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.
	Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.
	Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.
	Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être: • "Propre et dépourvu de poussière en suspension (sauf la poussière normale). • "Bien aéré et loin des sources de chaleur, y compris du soleil direct. • "A l'abri des chocs et des sources de vibrations. • "Isolé de forts champs électromagnétiques géenérés par des appareils électriques. • "Dans les régions sujettes aux orages magnétiques il est recomandé de brancher votre système à un supresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage. • "Muni d'une prise murale correctement mise à la terre. • "Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).
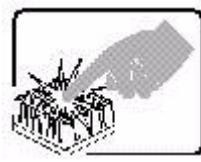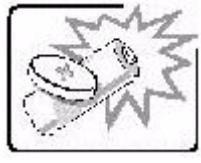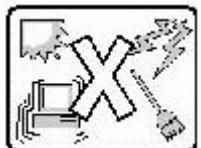
Español

	El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación
	No intente modificar ni usar el cable de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido. El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto
	Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del módulo de computación. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación. Estos cables actúan como dispositivo de desconexión. La toma de corriente deberá estar situada cerca del equipo y ser de fácil acceso.
	INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones: 1. Apague todos los dispositivos periféricos conectados al sistema. 2. Apague el módulo de computación presionando el interruptor encendido/ apagado. 3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna. 4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema. 5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujetada a la toma de tierra del chasis - o a cualquier tipo de superficie de metal sin pintar. 6. No ponga en marcha el sistema si se han extraído las tapas del chasis.
	Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello: 1. Desbloquee y extraiga el bloqueo de seguridad de la parte posterior del sistema, si se ha instalado uno. 2. Extraiga y guarde todos los tornillos de las tapas.Extraiga las tapas.

Intel® Compute Module MFS5520VI User Guide

	Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas: 1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema. 2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente. 3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente. 4. Inserte el bloqueo de seguridad en el sistema y bloquéelo para impedir que pueda accederse al mismo sin autorización. 5. Conecte todos los cables externos y los cables de alimentación CA al sistema.
	Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.
	Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.
	El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar: • "Limpio y libre de partículas en suspensión (salvo el polvo normal). • "Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa. • "Alejado de fuentes de vibración. • "Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos. • "En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltaje y desconectar el módem de las líneas de telecomunicación durante las tormentas. • "Provisto de una toma de tierra correctamente instalada. • "Provisto de espacio suficiente como para acceder a los cables de alimentación, ya que éstos hacen de medio principal de desconexión del sistema.

Italiano

	Rivolgersi ad un tecnico specializzato per la riparazione dei componenti dell'alimentazione di questo prodotto. È possibile che il prodotto disponga di più fonti di alimentazione.
	Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato
	Il pulsante non interrompe l'alimentazione in c.a. del modulo. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente. Il cavo è considerato il dispositivo d'interruzione dell'alimentazione principale (in c.a.). La presa alla quale si collega il sistema deve essere installata vicino all'unità e deve essere facilmente accessibile.
	PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi: 1. Spegnere tutti i dispositivi periferici collegati al sistema. 2. Spegnere ciascun modulo usando il pulsante di alimentazione. 3. Togliere tutte le spine dei cavi del sistema dalle prese elettriche. 4. Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema. 5. Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghia anti-statica da polso che è attaccata alla presa a terra del telaio del sistema - qualsiasi superficie non dipinta - . 6. Non far operare il sistema quando il telaio è senza le coperture.
	Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come seque: 1. Aprire e rimuovere il lucchetto dal retro del sistema qualora ve ne fosse uno installato. 2. Togliere e mettere in un posto sicuro tutte le viti delle coperture. 3. Togliere le coperture.

	Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio: 1. Controllare prima che non si siano lasciati degli attrezzi o dei componenti dentro il sistema. 2. Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente. 3. Attaccare le coperture al telaio con le viti tolte in precedenza e avvitarle strettamente. 4. Inserire e chiudere a chiave il lucchetto sul retro del sistema per impedire l'accesso non autorizzato al sistema. 5. Ricollegare tutti i cavi esterni e le prolunghe AC del sistema.
	Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.
	Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.
	Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia: • "Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente). • "Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta. • "Al riparo da urti e lontana da fonti di vibrazione. • "Isolata dai forti campi magnetici prodotti da dispositivi elettrici. • "In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente. In caso di temporali, scollegare le linee di comunicazione dal modem. • "Dotata di una presa a muro correttamente installata. • "Dotata di spazio sufficiente ad accedere ai cavi di alimentazione, i quali rappresentano il mezzo principale di scollegamento del sistema.