

Intel[®] Compute Module MFS5520VI User Guide

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

Intel Order Number E60459-006

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Preface

About this Manual

Thank you for purchasing and using the Intel[®] Compute Module MFS5520VI.

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/MFS5520VI/>.

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 MFS5520VI. 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.

Contents

Preface	iii
About this Manual	iii
Manual Organization	iii
Safety Information	v
Important Safety Instructions	v
Wichtige Sicherheitshinweise	v
Consignes de sécurité	v
Instrucciones de seguridad importantes	v
Warnings.....	vi
Compute Module Features	1
Feature Overview	3
Connector and Component Locations	4
Configuration Jumpers.....	5
Front Panel Connectors and Indicators	7
Front Panel Indicators	7
Hardware Requirements	8
Processor	8
Memory	8
Power Supply	9
Additional Information and Software	10
Hardware Installations and Upgrades	13
Before You Begin	13
Tools and Supplies Needed	13
Installation Guidelines	13
Removing and Installing an Intel® Compute Module MFS5520VI	13
Removing a Compute Module from the Chassis	13
Installing a Compute Module into the Chassis	14
Removing or Installing the Top Cover	14
Removing the Top Cover	14
Installing the Top Cover	16
Installing or Replacing a Processor	17
Installing a Processor	17
Replacing a Processor	25
Installing and Removing Memory Modules.....	33
Supported Memory	33
Memory Map and Population Rules	33
Installing DIMMs	35
Removing DIMMs	38

Installing and Removing Mezzanine Card	42
Installing the Mezzanine Card	42
Removing a Mezzanine Card	46
Replacing the CMOS Battery	49
BIOS Setup Utility	53
Starting BIOS Setup Utility	53
If You Cannot Access Setup	53
General Layout and Navigation	53
Setup Menus	57
Main	58
Advanced	60
Security	73
Server Management	76
Boot Options	81
Boot Manager	84
Error Manager	85
Exit	86
Upgrading the BIOS	88
Preparing for the Upgrade	88
Clearing the Password	89
Clearing the CMOS	92
BIOS Recovery Procedure	93
Troubleshooting	95
First Steps Checklist	95
Hardware Diagnostic Testing	96
Specific Problems and Corrective Actions	96
Power LED Does Not Light	97
No Video Display	97
Characters are Distorted or Incorrect	97
No Available Storage	97
Cannot Connect to a Compute Module	98
Problems with Newly Installed Application Software	98
Problems with Application Software that Previously Functioned Properly	99
Devices are Not Recognized within the Operating System	99
A Getting Help	101
World Wide Web	101
Telephone	101
U.S. and Canada	101
Europe	101
In Asia-Pacific region	102
Japan	102
Latin America	102
B Product Regulatory Requirements	105

Regulatory and Certification Information	105
Product Regulatory Compliance and Safety Markings	105
Product Environmental/Ecology Requirements	105
Product Environmental/Ecology Markings	105
C Safety Information	107
English	107
Server Safety Information	107
Safety Warnings and Cautions	107
Intended Application Uses	108
Site Selection	108
Equipment Handling Practices	108
Power and Electrical Warnings	108
Access Warnings	109
Electrostatic Discharge (ESD)	110
Other Hazards	110
Deutsch	111
Sicherheitshinweise für den Server	111
Sicherheitshinweise und Vorsichtsmaßnahmen	111
Zielbenutzer der Anwendung	112
Standortauswahl	112
Handhabung von Geräten	112
Warnungen zu Netzspannung und Elektrizität	113
Warnhinweise für den Systemzugang	113
Elektrostatische Entladungen (ESD)	114
Andere Gefahren	115
Français	116
Consignes de sécurité sur le serveur	116
Sécurité: avertissements et mises en garde	116
Domaines d'utilisation prévus	117
Sélection d'un emplacement	117
Pratiques de manipulation de l'équipement	117
Alimentation et avertissements en matière d'électricité	118
Avertissements sur l'accès au système	118
Décharges électrostatiques (ESD)	119
Autres risques	119
Español	120
Información de seguridad del servidor	120
Advertencias y precauciones sobre seguridad	120
Aplicaciones y usos previstos	121
Selección de la ubicación	121
Manipulación del equipo	122
Advertencias de alimentación y eléctricas	122
Advertencias el acceso al sistema	122
Descarga electrostática (ESD)	123
Otros peligros	124

D Installation/Assembly Safety Instructions	131
English	131
Deutsch	133
Français	136
Español	138
Italiano	140

List of Figures

Figure 1. Intel® Compute Module MFS5520VI	1
Figure 2. Server Board	2
Figure 3. Component and Connector Locations.....	4
Figure 4. Configuration Jumper Locations	5
Figure 5. Front Panel Connectors and Indicators.....	7
Figure 6. Removing Top Cover	15
Figure 7. Installing Top Cover	16
Figure 8. Removing Processor Air Duct.....	18
Figure 9. Removing the Heatsink.....	19
Figure 10. Lifting the Processor Socket Lever	20
Figure 11. Opening the Load Plate	20
Figure 12. Removing the Protective Socket Cover	21
Figure 13. Removing the Processor Protective Cover	21
Figure 14. Installing the Processor.....	22
Figure 15. Closing the Load Plate.....	22
Figure 16. Installing the Heatsink.....	23
Figure 17. Reinstalling Processor Air Duct.....	24
Figure 18. Removing Processor Air Duct.....	25
Figure 19. Removing the Heatsink.....	26
Figure 20. Lifting Processor Socket Handle	27
Figure 21. Opening the Load Plate	27
Figure 22. Removing the Processor.....	28
Figure 23. Removing Protective Shipping Cover	29
Figure 24. Orienting and Installing Processor	29
Figure 25. Closing the Load Plate and Socket Lever.....	30
Figure 26. Reinstalling Heatsink.....	31
Figure 27. Reinstalling Processor Air Duct.....	32
Figure 28. DIMM Nomenclature	33
Figure 29. DIMM Slot Order	35
Figure 30. Removing Processor Air Duct.....	36
Figure 31. Installing DIMMs.....	37
Figure 32. Reinstalling Processor Air Duct.....	38
Figure 33. Removing Processor Air Duct.....	39
Figure 34. Removing DIMMs.....	40
Figure 35. Reinstalling Processor Air Duct.....	41
Figure 36. Removing Screws from Server Board.....	43
Figure 37. Installing Standoffs for Mezzanine Card	44
Figure 38. Installing and Securing the Mezzanine Card.....	45
Figure 39. Removing Screws from Mezzanine Card.....	46
Figure 40. Removing Mezzanine Card.....	47
Figure 41. Removing Standoffs.....	48
Figure 42. CMOS Battery Location	50

Figure 43. Setup Layout.....	54
Figure 44. Main Screen.....	58
Figure 45. Advanced Screen	60
Figure 46. Advanced Processor Configuration Screen.....	61
Figure 47. Advanced Memory Configuration Screen.....	64
Figure 48. Memory RAS and Performance Configuration Screen.....	66
Figure 49. Advanced Mass Storage Controller Configuration Screen	67
Figure 50. Advanced Serial Port Configuration Screen	68
Figure 51. Advanced USB Configuration Screen.....	69
Figure 52. Advanced PCI Configuration Screen	71
Figure 53. Advanced System Acoustics and Performance Configuration Screen	73
Figure 54. Security Screen	74
Figure 55. Server Management Screen.....	76
Figure 56. Server Management - Console Redirection Enabled Screen	79
Figure 57. Server Management - System Information Screen.....	81
Figure 58. Boot Options Screen.....	82
Figure 59. Boot Manager Screen.....	84
Figure 60. Error Manager Screen	85
Figure 61. Exit Screen	86
Figure 62. Password Clear Jumper	90
Figure 63. CMOS Clear Jumper	92
Figure 64. BIOS Recover Jumper.....	94

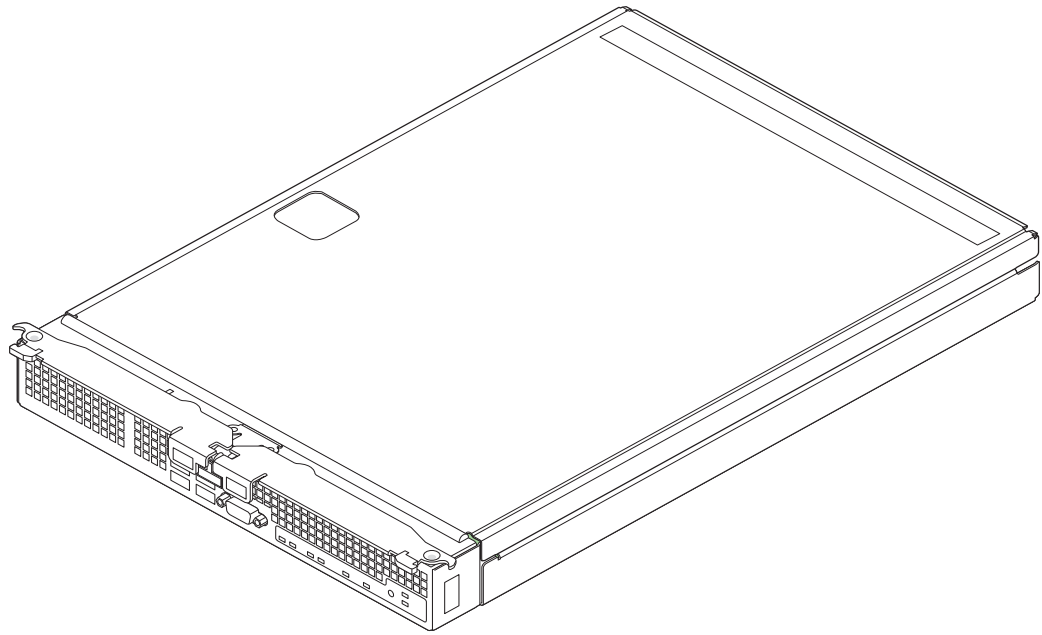
List of Tables

Table 1. Compute Module Features.....	3
Table 2. Configuration Jumper Description.....	6
Table 3. Diagnostic LED Information.....	7
Table 4. Keyboard Commands.....	55
Table 5. Main Screen Details.....	59
Table 6. Advanced Processor Configuration Details.....	62
Table 7. Advanced Memory Configuration Screen Details.....	65
Table 8. USB Configuration Details.....	70
Table 9. Advanced PCI Configuration Details.....	72
Table 10. Security Screen Details.....	75
Table 11. Server Management Screen Details.....	77
Table 12. Server Management Console Redirection Details.....	80
Table 13. Boot Options Details.....	83
Table 14. Exit Screen Details.....	86

1 Compute Module Features

This chapter briefly describes the main features of the Intel® Compute Module MFS5520VI, as well as provides illustrations showing the location of important components and connections on the compute module.

The Intel® Compute Module MFS5520VI is shown in the following pictures.



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Figure 1. Intel® Compute Module MFS5520VI

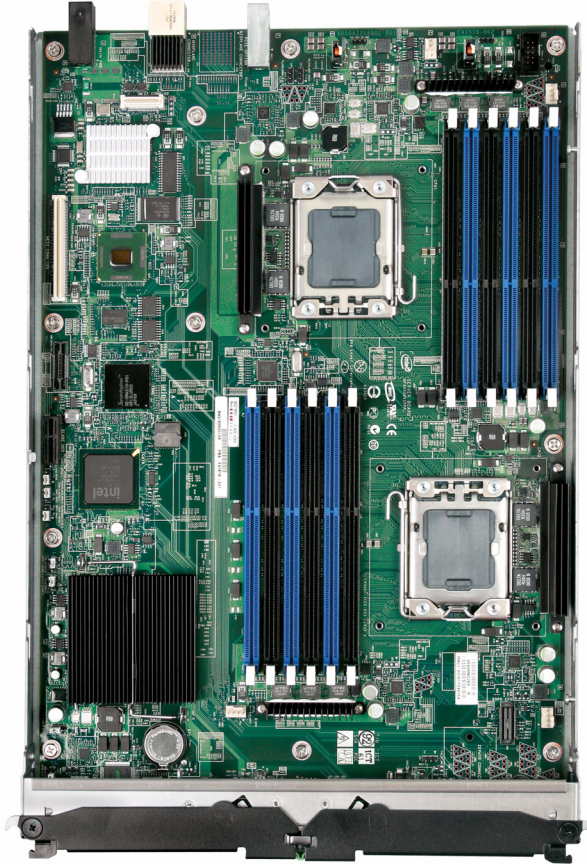


Figure 2. Server Board

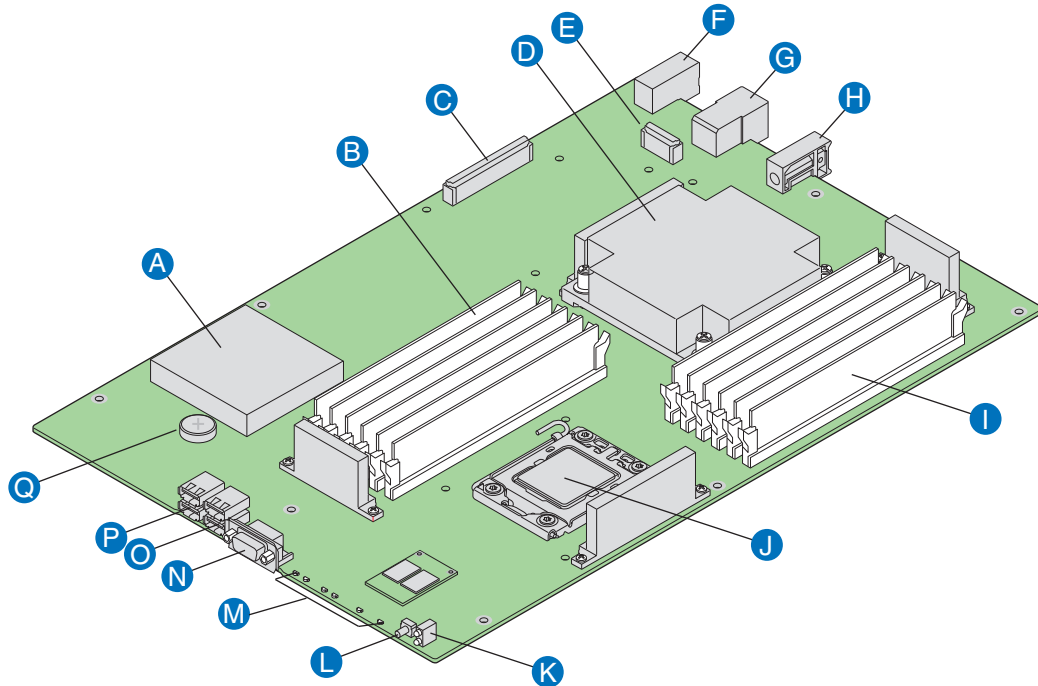
Feature Overview

The following table summarizes the major features of the compute module.

Table 1. Compute Module Features

Feature	Description
Processor	Support for one or two Intel® Xeon® Processors 5500 Series or two Intel® Xeon® Processor 5600 Series in FC-LGA 1366 Socket B package with up to 95 W Thermal Design Power (TDP) <ul style="list-style-type: none"> • 4.8 GT/s, 5.86 GT/s and 6.4 GT/s Intel® QuickPath Interconnect (Intel® QPI) • Enterprise Voltage Regulator-Down (EVRD) 11.1
Memory	<ul style="list-style-type: none"> • Twelve DIMMs across six memory channels (three channels per processor) • Support for 1066/1333-MT/s ECC registered (RDIMM) or unbuffered (UDIMM) DDR3 memory
Chipset	<ul style="list-style-type: none"> • Intel® 5520 Chipset I/O Hub • Intel® 82801Jx I/O Controller Hub
Video	On-board ServerEngines* LLC Pilot II Controller <ul style="list-style-type: none"> • Integrated 2D Video Controller • 32 MB DDR2 Memory
LAN	One 10/100/1000 Intel® 82575 Gigabit Ethernet Controller
Hard Drive	LSI* 1064e SAS Controller
Server Management	On-board ServerEngines* LLC Pilot II Controller <ul style="list-style-type: none"> • Integrated Baseboard Management Controller (Integrated BMC), IPMI 2.0 compliant • Integrated Super I/O on LPC interface

Connector and Component Locations

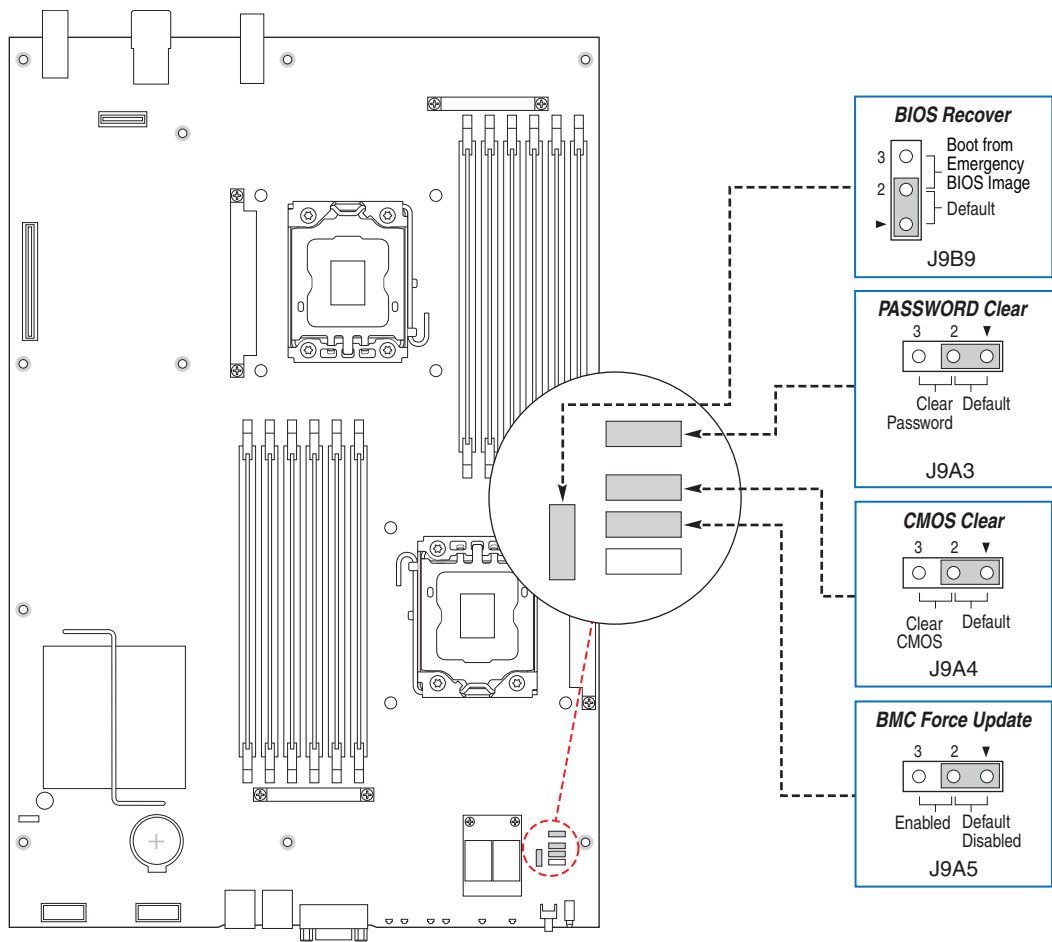


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A	Intel® 5520 Chipset I/O Hub	J	CPU 2 Socket
B	CPU2 DIMM Slots	K	Power/Fault LEDs
C	Mezzanine Card Connector 1	L	Power Switch
D	CPU 1 with Heatsink	M	Activity and ID LEDs
E	Mezzanine Card Connector 2	N	Video Connector
F	Midplane Power Connector	O	USB Ports 2 and 3
G	Midplane Signal Connector	P	USB Ports 0 and 1
H	Midplane Guide Pin Receptacle	Q	CMOS Battery
I	CPU 1 DIMM Slots		

Figure 3. Component and Connector Locations

Configuration Jumpers



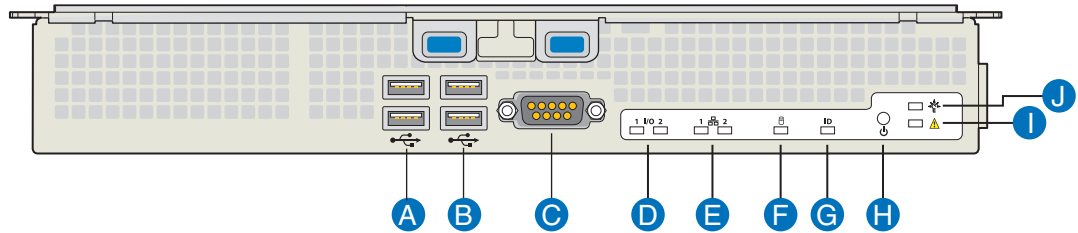
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Figure 4. Configuration Jumper Locations

Table 2. Configuration Jumper Description

Jumper Name	Pins	What happens at reset...
J9B9: BIOS Recover	1-2	These pins should have a jumper in place for normal operation. (Default)
	2-3	If these pins are jumpered, the compute module boots from the emergency BIOS image. These pins should not be jumpered for normal operation.
J9A3: Password Clear	1-2	These pins should have a jumper in place for normal operation (Default)
	2-3	If these pins are jumpered, administrator and user passwords are cleared immediately. These pins should not be jumpered for normal operation.
J9A4: CMOS Clear	1-2	These pins should have a jumper in place for normal operation. (Default)
	2-3	If these pins are jumpered, the CMOS settings are cleared immediately. These pins should not be jumpered for normal operation. To clear the CMOS, you must only momentarily move the jumper to position 2-3 . You must then move the jumper back to the default position 1-2 and reinstall the compute module into the chassis.
J9A5: BMC Force Update	1-2	BMC Firmware Force Update Mode - Disabled (Default)
	2-3	BMC Firmware Force Update Mode - Enabled

Front Panel Connectors and Indicators



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A	USB Ports 0 and 1	B	USB2 Ports 2 and 3
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 MFS5520VI includes a number of diagnostic LEDs on the front of the compute module to aid in troubleshooting. The following table lists these LEDs along with a usage description of each LED.

Table 3. Diagnostic LED Information

LED Name	Function	Color	Indicator
Power LED	Identifies power state of compute module	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

Table 3. Diagnostic LED Information

LED Name	Function	Color	Indicator
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 server compute module must meet the requirements outlined below.

Processor

The Intel® Compute Module MFS5520VI supports up to two Intel® Xeon® Processors 5500 series or two Intel® Xeon® Processor 5600 series in FC-LGA 1366 Socket B package with up to 95-W Thermal Design Power (TDP):

- 4.8 GT/s, 5.86 GT/s and 6.4 GT/s Intel® QuickPath Interconnect (Intel® QPI)
- Enterprise Voltage Regulator-Down (EVRD) 11.1

Memory

The Intel® Compute Module MFS5520VI supports six DDR3 memory channels (three per processor socket) with two DIMMs per channel, thereby supporting up to 12 DIMMs with dual-processor sockets.

The compute module supports DDR3 1066 and DDR3 1333 memory technologies and supports both registered DIMMs (RDIMMs) and unbuffered DIMMs (UDIMMs). RDIMMs must be ECC only, while UDIMMs can be ECC or non-ECC.

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 chassis.

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

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

Any additional power supplies above the minimum required (based on configuration) provide 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	<p><i>Intel® Compute Module MFS5520VI Quick Start User's Guide</i></p> <p>Available in the product box or for download at: http://www.intel.com/support/motherboards/server/mfs5520vi/</p>
For in-depth technical information about the compute module, including chipset information and mechanical drawings	<p><i>Intel® Compute Module MFS5520VI Technical Product Specification</i></p> <p>Available at: http://www.intel.com/support/motherboards/server/mfs5520vi/</p>
If you just received this product and you need to assemble your modular server system and install components	<p><i>Intel® Modular Server System MFSYS25/MFSYS35 Quick Start User's Guide</i></p> <p>Available in the product box or for download at: http://www.intel.com/support/motherboards/server/mfsys25/</p> <p><i>Intel® Modular Server System MFSYS25/MFSYS35 User's Guide</i></p> <p>Available at: http://www.intel.com/support/motherboards/server/mfsys25/</p>
For in-depth technical information about the modular server system, including subsystem overviews and mechanical drawings	<p><i>Intel® Modular Server System MFSYS25/MFSYS35 Technical Product Specification</i></p> <p>Available at: http://www.intel.com/support/motherboards/server/mfsys25/</p>
Accessories or other Intel server products	<p>Spares, Parts List, and Configuration Guide</p> <p>Available at: http://www.intel.com/support/motherboards/server/mfs5520vi/ or by using the Server Configurator Tool</p> <p>Available at: http://serverconfigurator.intel.com/default.aspx</p>

For this information or software	Use this Document or Software
<p>Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product</p> <p>Processors that have been tested with this product</p> <p>DIMMs that have been tested with this product</p> <p>Hard Drives that have been tested with this product</p>	<p>Tested Product Lists</p> <p>Available at: http://www.intel.com/support/motherboards/server/mfs5520vi/ or by using Server Configurator Tool</p> <p>Available at: http://serverconfigurator.intel.com/default.aspx</p>
<p>Latest drivers, Unified Firmware Update packages and utilities</p>	<p>Available for download at: http://www.intel.com/support/motherboards/server/mfs5520vi/ Click the "Software and Drivers" link on the left side of the web page.</p>
<p>For software to manage your Intel® Modular Server System</p>	<p>Intel® Modular Server Control UI</p> <p>The Intel® Management Module integrated management interface for the modular server system. For instructions and information refer to the <i>Intel® Modular Server System MFSYS25/MFSYS35 User Guide</i></p> <p>Available at: http://www.intel.com/support/motherboards/server/mfsys25/</p> <p>Intel® System Management Software</p> <p>Available at: http://www.intel.com/go/servermanagement/</p>

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
- 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.
3. Take note of the following color coding on components:
 - Blue on a component indicates a touch point, where you can grip the component to install or remove it from the server.
 - Green on a component indicates that the component may be hot-swapped. For a complete list of installation or removal steps, see the instructions included with the hot-swap component.

Removing and Installing an Intel® Compute Module MFS5520VI

Removing a Compute Module from the Chassis

To remove a compute module from the chassis, follow these steps:

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 chassis and to ensure proper chassis cooling.

Installing a Compute Module into the Chassis

To install a compute module into the chassis, follow these steps:

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 chassis 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 chassis and slide it in until it stops.
5. Close the retention lever handles on the front of the compute module.

Removing or Installing the Top Cover

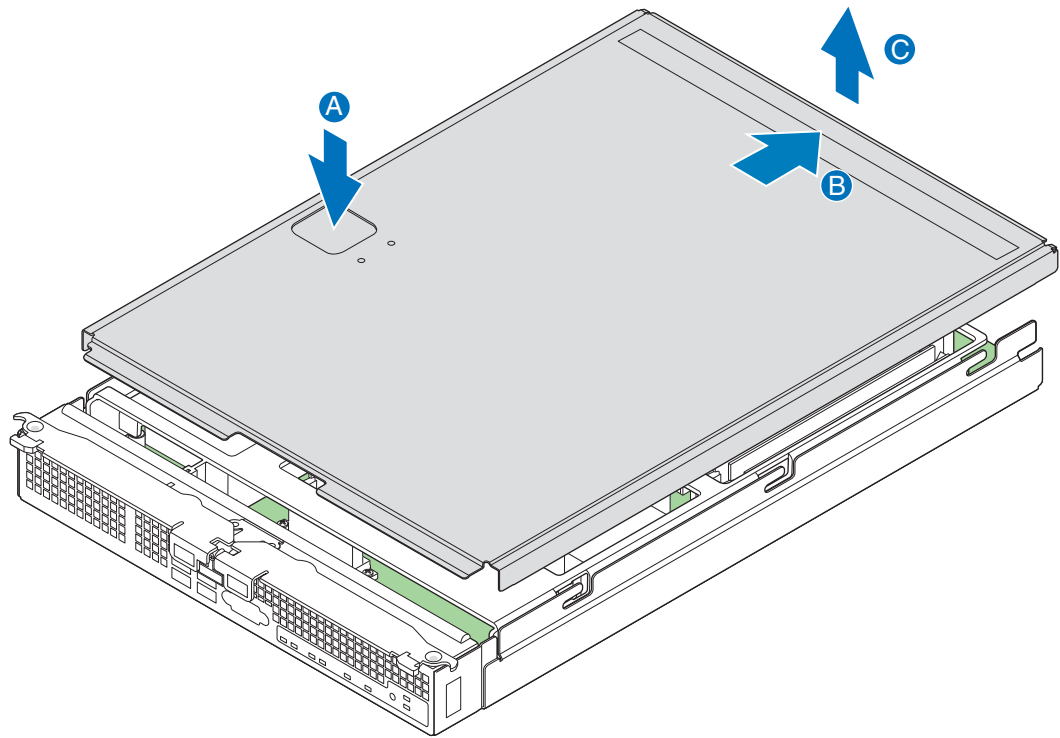
Removing the Top Cover

To remove the top cover, follow these steps:

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 chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis” on page 13](#).
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).
5. Lift the top cover up and off the compute module (see letter “C” in Figure 6) .

Caution: Always install the top cover before installing the compute module into a chassis.



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Figure 6. Removing Top Cover

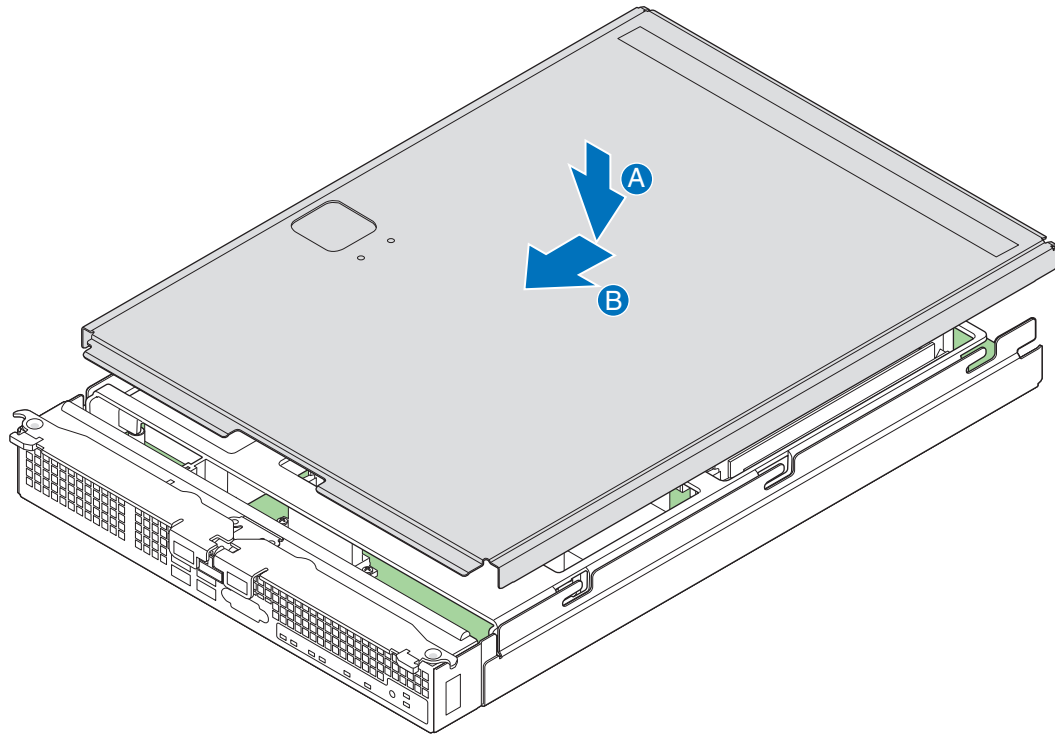
Installing the Top Cover

To install the top cover, follow these steps:

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 (see letter “A” in [Figure 7](#)).

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 (see letter “B” in [Figure 7](#)).



AF003089

Figure 7. Installing Top Cover

Installing or Replacing a Processor

Caution: *Processor must be appropriate: You may damage the compute module if you install an inappropriate processor.*

Caution: *ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or compute module. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.*

Caution: *Protective socket cover needs to be removed for proper cooling of the processor; failure to remove the cover could result in damage to the compute module.*

Installing a Processor

To install a processor, follow these steps:

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

Removing Components

2. If the compute module is installed in a chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis” on page 13](#).
3. Remove the top cover. For instructions, see [“Removing the Top Cover” on page 14](#).

Removing the Heatsink

Caution: Improper removal can damage the heatsink. Pay close attention to the steps and perform each step exactly as indicated to avoid damage.

Note: This procedure assumes that you are removing the heatsink for the first time.

Note: If you are installing only a single processor on your server board, do not remove the heatsink and spacer over the second processor.

5. Loosen the four captive screws on the heatsink corners in a diagonal manner according to the numbers shown in Figure 9 as follows:
 - a. Starting with the screw at location 1, loosen it by giving it two rotations in the anticlockwise direction (see letter “A” in Figure 9) and stop. (**IMPORTANT:** Do not fully loosen.)
 - b. Proceed to the screw at location 2 and loosen it by giving it two rotations and stop.
 - c. Loosen screws at locations 3 and 4 by giving each screw two rotations and then stop.
 - d. Repeat steps 5a through 5c by giving each screw two rotations each time until all screws are loosened.
6. Lift the heatsink from the board (see letter “B” in Figure 9).
7. Remove and discard the spacer (see letter “C” in Figure 9).

Note: The system is shipped with a spacer installed between the heatsink and the processor socket to protect the socket protective cover. This spacer will need to be removed and discarded before installing the processor.

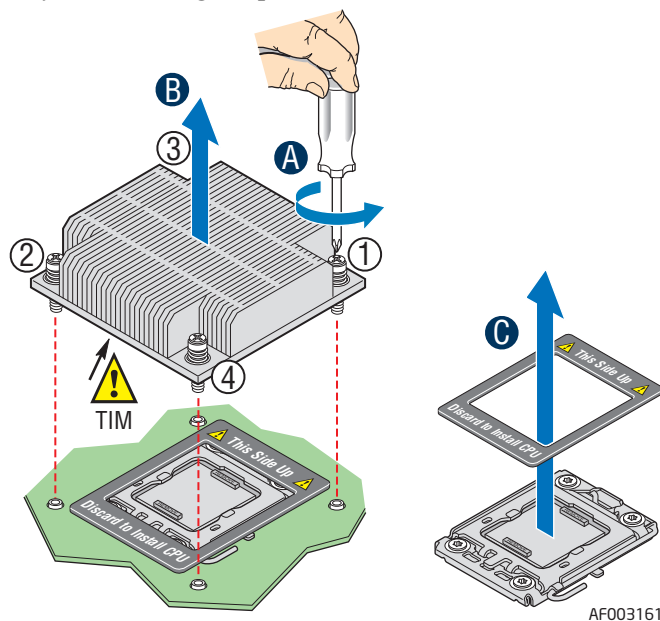


Figure 9. Removing the Heatsink

Installing the Processor

8. Locate the processor socket.
9. Push the lever handle down and away from the socket to release it (see letter “A” in [Figure 10](#)).
10. Rotate the lever open all the way (see letter “B” in [Figure 10](#)).

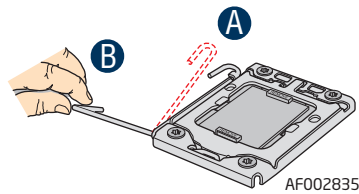


Figure 10. Lifting the Processor Socket Lever

11. Push the rear tab with your finger tip to bring the front end of the load plate open slightly (see letter “A” in [Figure 11](#)).
12. Open the load plate (see letter “B” in [Figure 11](#)).

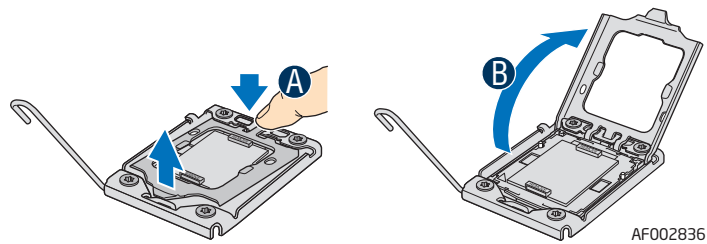


Figure 11. Opening the Load Plate

13. Remove the protective socket cover (see [Figure 12](#)).

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

Note: Retain the protective socket cover for use when removing a processor that will not be replaced.

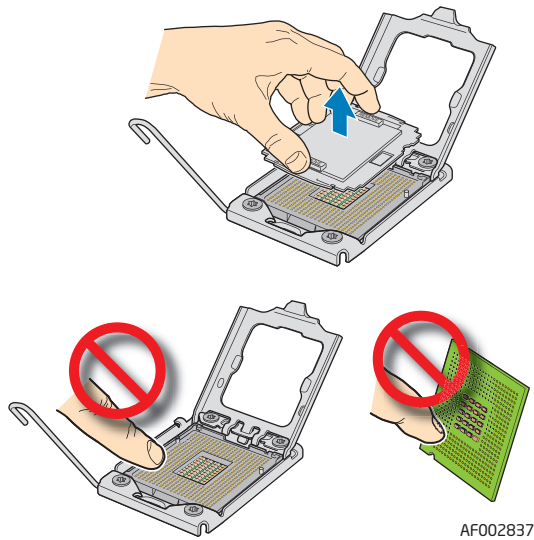


Figure 12. Removing the Protective Socket Cover

14. Remove the processor from the packaging box and remove the protective shipping cover (see [Figure 13](#)).



Figure 13. Removing the Processor Protective Cover

15. Orient the processor with the socket so that the processor cutouts match the two socket pins, and insert the processor into the socket (see [Figure 14](#)).

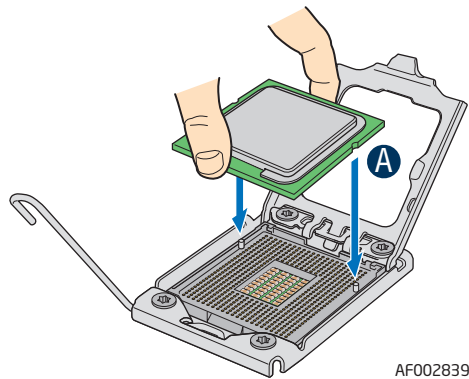


Figure 14. Installing the Processor

Note: Make sure the alignment triangle mark and the alignment triangle cutout align correctly.

16. Close the CPU load plate all the way (see letter “A” in Figure 15).
17. Close the socket lever completely and ensure that the load plate tab engages under the socket lever when fully closed (see letter “B” in Figure 15).

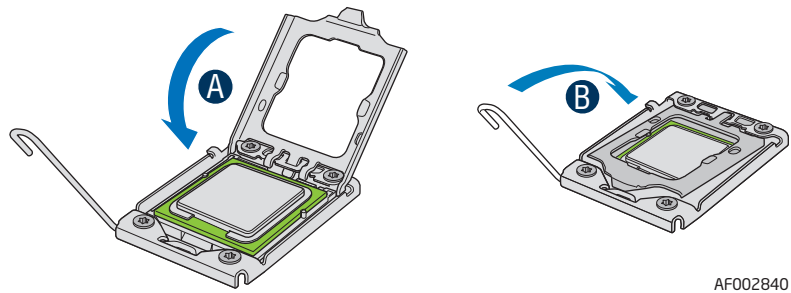


Figure 15. Closing the Load Plate

Installing the Heatsink

Caution: Improper installation can damage the heatsink. Pay close attention to the steps and perform each step exactly as indicated to avoid damage.

Caution: The heatsink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when you unpack the heatsink so you do not damage the TIM.

Note: New unused heatsinks have adequate TIM on the bottom. If you are reusing a heatsink from replacing a processor, make sure there is adequate TIM present on the heatsink to support processor cooling.

18. Remove the protective film on the TIM, if present.
19. Orient the heatsink over the processor as shown in Figure 16. The heatsink fins must be positioned as shown to provide correct airflow through the system. Airflow goes from front-to-back of the compute module.

Note: *Figure 16 illustrates the heatsink orientation for CPU 1. The heatsink over CPU 2 should be oriented in a reverse direction so as to provide correct airflow through the compute module.*

20. Set the heatsink over the processor, lining up the four captive screws with the four posts surrounding the processor.
21. Loosely screw in the captive screws on the heatsink corners in a diagonal manner according to the numbers shown in [Figure 16](#) as follows:
 - a. Starting with the screw at location 1, engage the screw threads by giving it two rotations in the clockwise direction and stop. (**IMPORTANT: Do not fully tighten.**)
 - b. Proceed to the screw at location 2 and engage the screw threads by giving it two rotations and stop.
 - c. Engage screws at locations 3 and 4 by giving each screw two rotations and then stop.
 - d. Repeat steps 21a through 21c by giving each screw two rotations each time until all screws are lightly tightened upto a maximum of 8 inch-lbs torque.

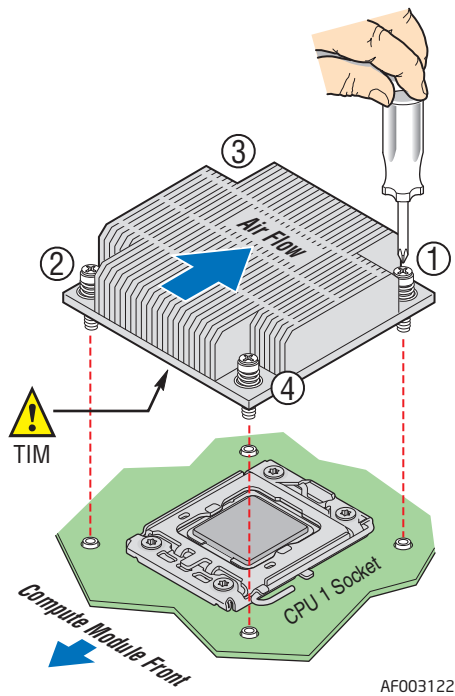
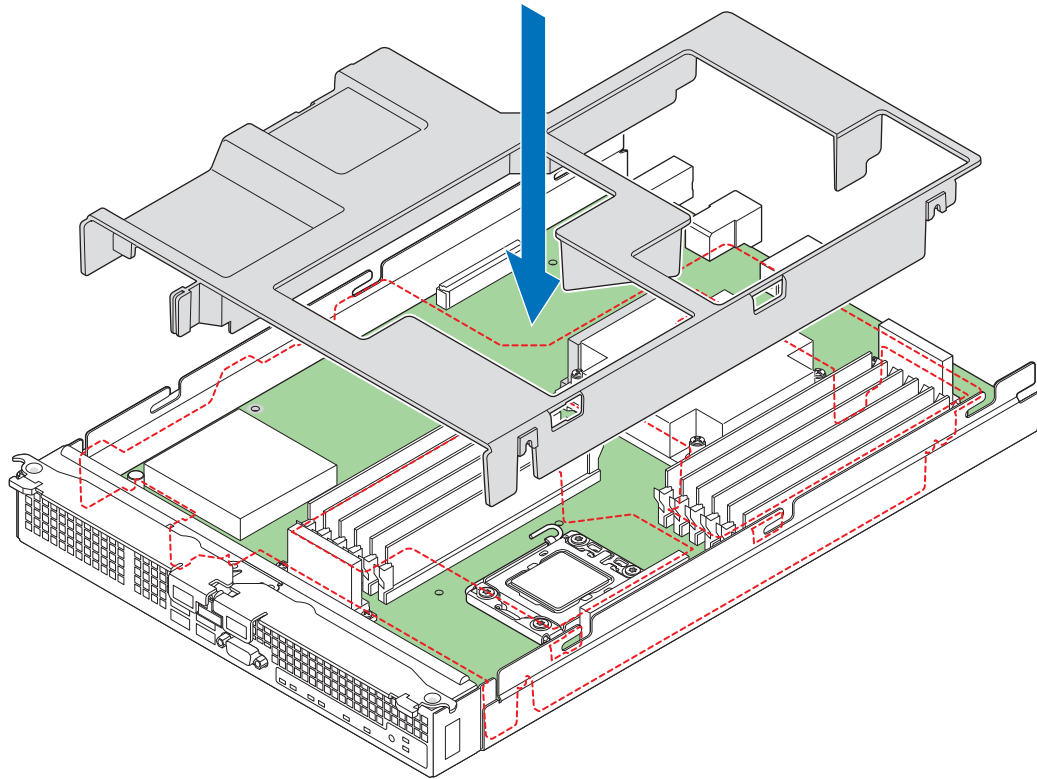


Figure 16. Installing the Heatsink

Reinstalling components

22. Reinstall the processor air duct.



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Figure 17. Reinstalling Processor Air Duct

23. Reinstall the top cover. For instructions, see [“Installing the Top Cover”](#) on page 16.
24. Reinstall the server compute module in the chassis. For instructions, see [“Installing a Compute Module into the Chassis”](#) on page 14.

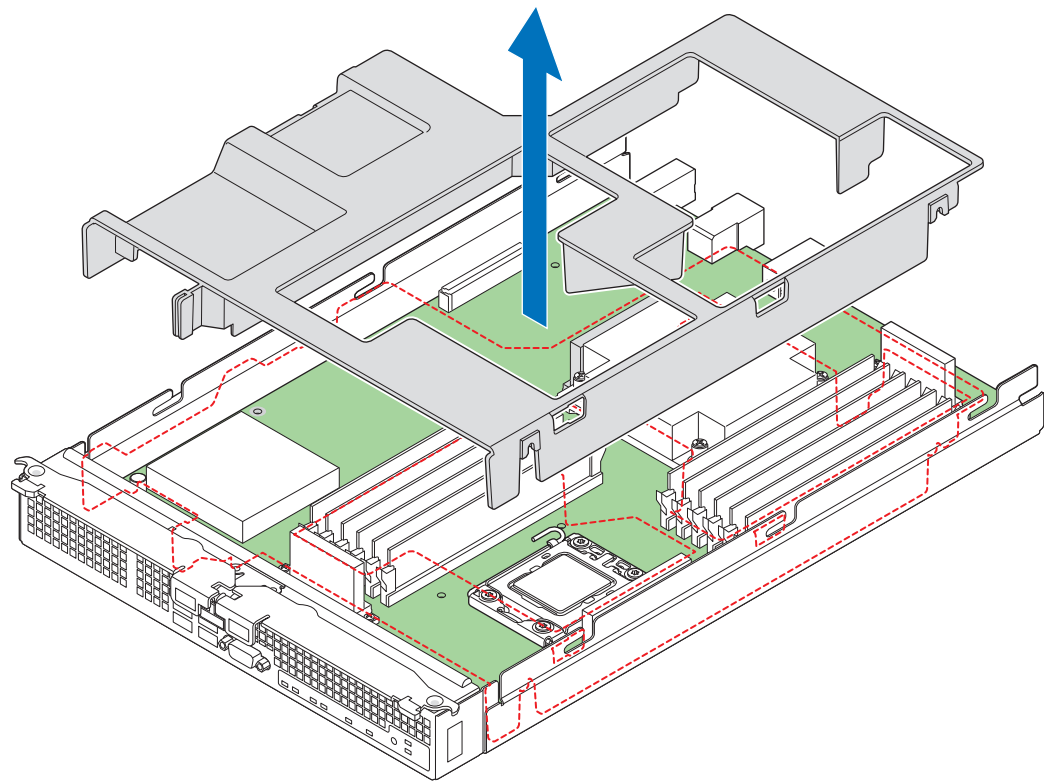
Replacing a Processor

To replace a processor, follow these steps:

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

Removing Components

2. If the compute module is installed in a chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis”](#) on page 13.
3. Remove the top cover. For instructions, see [“Removing the Top Cover”](#) on page 14.
4. Remove the processor air duct (see [Figure 18](#)).



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Figure 18. Removing Processor Air Duct

Removing the Heatsink

5. Loosen the four captive screws on the heatsink corners in a diagonal manner according to the numbers shown in Figure 19 as follows:
 - a. Starting with the screw at location 1, loosen it by giving it two rotations in the anticlockwise direction (see letter “A” in Figure 19) and stop. (**IMPORTANT:** Do not fully loosen.)
 - b. Proceed to the screw at location 2 and loosen it by giving it two rotations and stop.
 - c. Loosen screws at locations 3 and 4 by giving each screw two rotations and then stop.
 - d. Repeat steps 5a through 5c by giving each screw two rotations each time until all screws are loosened.
6. Twist the heatsink slightly to break the seal between the heatsink and the processor.
7. Lift the heatsink from the processor (see letter “B” in Figure 19). If it does not pull up easily, twist the heatsink again. Do not force the heatsink from the processor. Doing so could damage the processor.

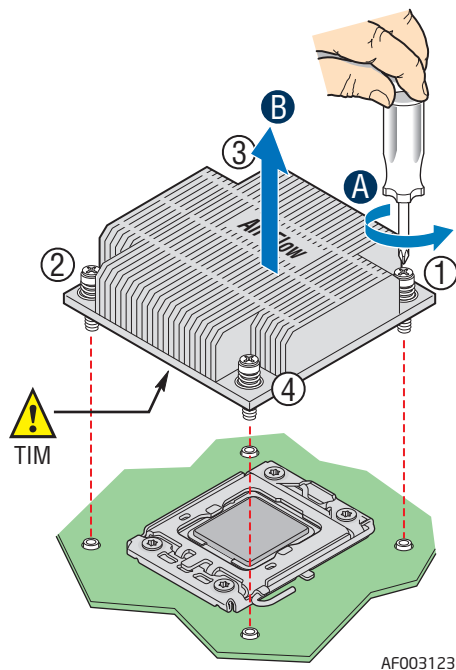


Figure 19. Removing the Heatsink

Removing the Old Processor

8. Push the lever handle down and away from the socket to release it (see letter “A” in Figure 20).
9. Rotate the lever open all the way (see letter “B” in Figure 20).

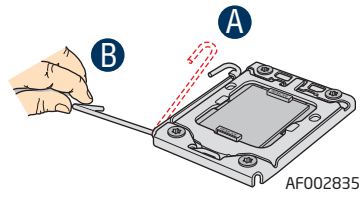


Figure 20. Lifting Processor Socket Handle

10. Push the rear tab with your finger tip to bring the front end of the load plate open slightly (see letter “A” in Figure 21).
11. Open the load plate (see letter “B” in Figure 21).

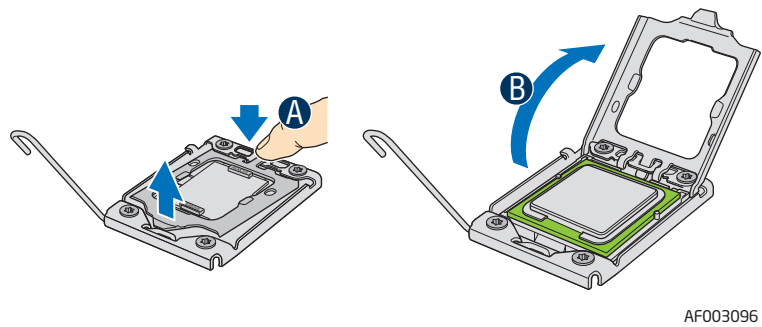
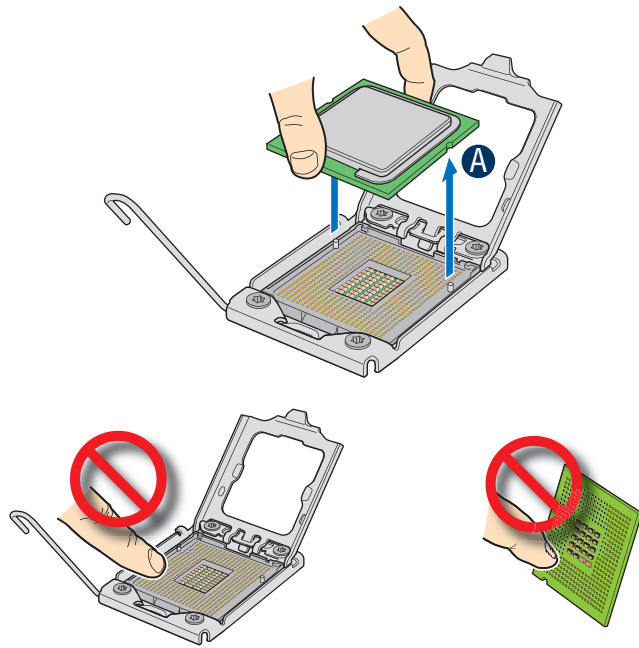


Figure 21. Opening the Load Plate

12. Remove the processor.

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



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Figure 22. Removing the Processor

Installing the Replacement Processor

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



Figure 23. Removing Protective Shipping Cover

14. Orient the replacement processor with the processor socket so that the processor cutouts match the socket notches. Install the replacement processor (see [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.*

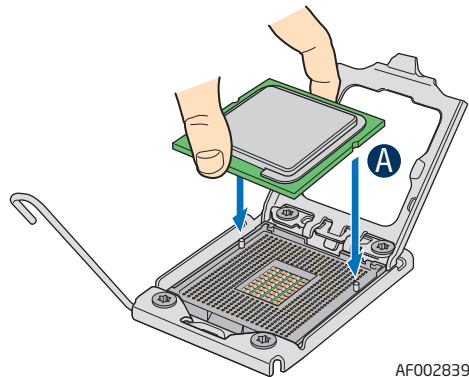
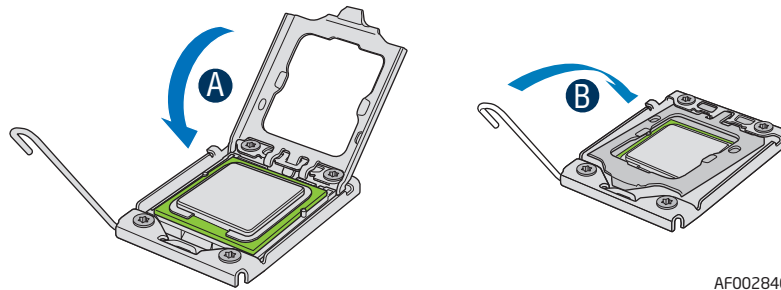


Figure 24. Orienting and Installing Processor

15. Close the processor load plate (see letter “A” in [Figure 25](#)).
16. Close the socket lever completely and ensure that the load plate tab engages under the socket lever when fully closed (see letter “B” in [Figure 25](#)).



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Figure 25. Closing the Load Plate and Socket Lever

Installing the Heatsink

Caution: *Improper installation can damage the heatsink. Pay close attention to the steps and perform each step exactly as indicated to avoid damage.*

Caution: *The heatsink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when you unpack the heatsink so you do not damage the TIM.*

Note: *New unused heatsinks have adequate TIM on the bottom. If you are reusing a heatsink from replacing a processor, make sure there is adequate TIM present on the heatsink to support processor cooling.*

17. Remove the protective film on the TIM, if present.
18. Orient the heatsink over the processor as shown in [Figure 26](#). The heatsink fins must be positioned as shown to provide correct airflow through the system. Airflow goes from front-to-back of the compute module.

Note: *[Figure 26](#) illustrates the heatsink orientation for CPU 1. The heatsink over CPU 2 should be oriented in a reverse direction so as to provide correct airflow through the compute module.*

19. Set the heatsink over the processor, lining up the four captive screws with the four posts surrounding the processor.
20. Loosely screw in the captive screws on the heatsink corners in a diagonal manner according to the numbers shown in [Figure 26](#) as follows:
 - a. Starting with the screw at location 1, engage the screw threads by giving it two rotations in the clockwise direction and stop. (**IMPORTANT:** *Do not fully tighten.*)
 - b. Proceed to the screw at location 2 and engage the screw threads by giving it two rotations and stop.
 - c. Engage screws at locations 3 and 4 by giving each screw two rotations and then stop.
 - d. Repeat steps 20a through 20c by giving each screw two rotations each time until all screws are lightly tightened upto a maximum of 8 inch-lbs torque.

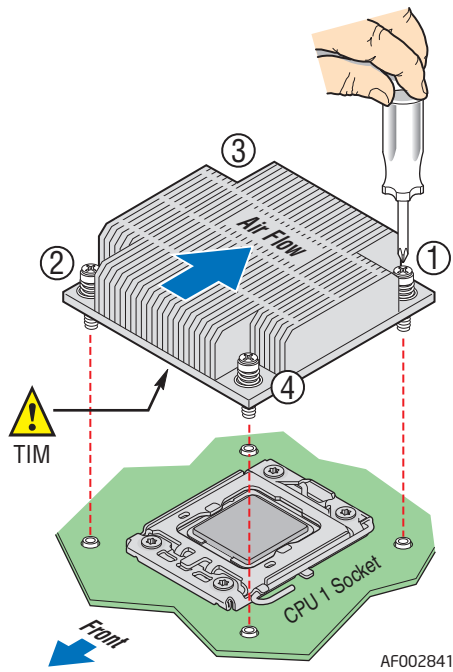
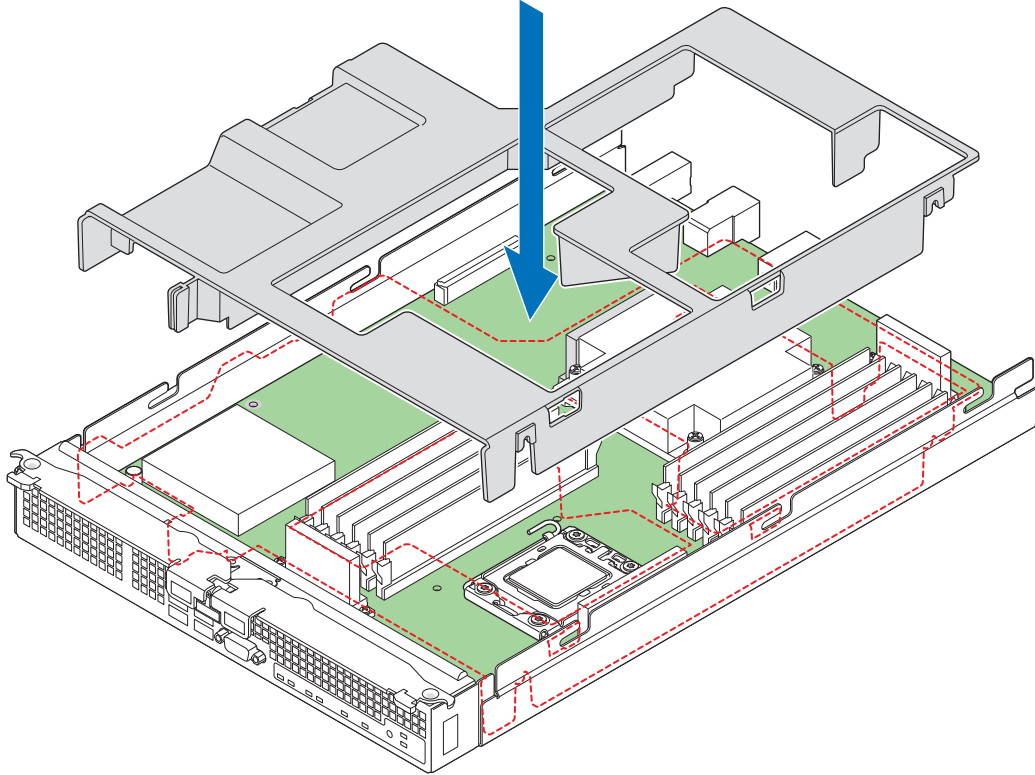


Figure 26. Reinstalling Heatsink

Reinstalling Components

21. Reinstall the processor air duct.



AF003080

Figure 27. Reinstalling Processor Air Duct

22. Reinstall the top cover. For instructions, see [“Installing the Top Cover”](#) on page 16.
23. Reinstall the server compute module in the chassis. For instructions, see [“Installing a Compute Module into the Chassis”](#) on page 14.

Installing and Removing Memory Modules

Supported Memory

The compute module provides support for up to twelve DIMMs across six memory channels (three channels per processor).

DIMMs must be populated in pairs across consecutive channels starting with the lowest numbered slot in each channel.

Memory Map and Population Rules

The nomenclature for DIMM sockets implemented on the Intel® Compute Module MFS5520VI is detailed in the following figure.

Processor Socket 1						Processor Socket 2					
Channel A		Channel B		Channel C		Channel D		Channel E		Channel F	
A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2

Figure 28. DIMM Nomenclature

The following general rules must be observed when selecting and configuring memory to obtain the best performance from the compute module.

- Mixing RDIMMs and UDIMMs is not supported.
- DIMMs are organized into physical slots on DDR3 memory channels that belong to processor sockets.
- The memory channels from processor socket 1 are identified as Channel A, B, and C. The memory channels from processor socket 2 are identified as Channel D, E, and F.
- The DIMM slot identifiers on the compute module Quick Reference Label provide information about the channel, and therefore the processor to which they belong. For example, DIMM_A1 is the first DIMM slot on Channel A on processor 1; DIMM_D1 is the first DIMM socket on Channel D on processor 2.
- When CPU Socket 1 is empty, any DIMM memory in Channel A through Channel C is unavailable.
- When CPU Socket 2 is empty, any DIMM memory in Channel D through Channel F is unavailable.
- If both processor sockets are populated but Channel A through Channel C is empty, the platform can still function with remote memory in Channel D through Channel F. However, platform performance suffers latency due to remote memory.
- The memory operational mode is configurable at the channel level. Two modes are supported: Independent Channel Mode and Mirrored Channel Mode.

- The memory slots of each DDR3 channel from the Intel® Xeon® processor 5500 series or Intel® Xeon® Processor 5600 series are populated on a farthest first fashion. This holds true even for the Independent Channel mode. Therefore, if A1 is empty, A2 cannot be populated or used.
- The BIOS selects the Independent Channel mode by default, which enables all installed memory on all channels simultaneously.
- Mirrored Channel mode is not available when only one processor is populated (CPU Socket 1).
- If both processor sockets are populated and the installed DIMMs are associated with both processor sockets, then a given RAS mode is selected only if both the processor sockets are populated to conform to that mode.
- The minimum memory population possible is one DIMM in slot A1. In this configuration, the compute module operates in the Independent Channel mode; RAS is not available.
- If both processor sockets are populated, the next upgrade from the Single Channel mode installs DIMM_D1. This configuration results in an optimal memory thermal spread, as well as Non-Uniform Memory Architecture (NUMA) aware interleaving. The BIOS selects the Independent Channel mode of operation.
- If only one processor socket is populated, the next upgrade from the Single Channel mode is installing DIMM_B1 to allow channel interleaving. The compute module operates in the Independent Channel mode.
- If an installed DDR3 DIMM has faulty or incompatible SPD data, it is ignored during memory initialization and is (essentially) disabled by the BIOS. If a DDR3 DIMM has no SPD data or is missing SPD information, the slot in which it is placed is treated as empty by the BIOS.
- The DIMM parameter matching requirements for memory RAS is local to a socket. For example, while Channels A/B/C can have one match of timing, technology, and size, Channels D/E/F can have a different set of parameters and RAS still functions.
- DDR3 DIMMs on adjacent slots on the same channel do not need to be identical.
- For the Mirrored Channel mode, the memory in Channels A and B of Socket 1 must be identical and Channel C should be empty. Similarly, the memory in Channels D and E of Socket 2 must be identical and Channel F should be empty.
 - The minimum population upgrade for the Mirrored Channel mode is DIMM_A1, DIMM_B1, DIMM_D1, and DIMM_E1 with both processor sockets populated. DIMM_A1 and DIMM_B1 as a pair must be identical, and so must DIMM_D1 and DIMM_E1, but the DIMMs on different processor sockets do not need to be identical. Failing to comply with these rules results in a switch back to the Independent Channel mode.
 - If Mirrored Channel mode is selected and the third channel of each processor socket is not empty, the BIOS disables the memory in the third channel of each processor socket.

- In the Mirrored Channel mode, both sockets must simultaneously satisfy the DIMM matching rules on their respective adjacent channels. If the DDR3 DIMMs on adjacent channels of a socket are not identical, the BIOS configures both the processor sockets to default to the Independent Channel mode. If DIMM_D1 and DIMM_E1 are not identical, then the compute module switches to the Independent Channel Mode.

Installing DIMMs

DIMM slots are numbered as follows:

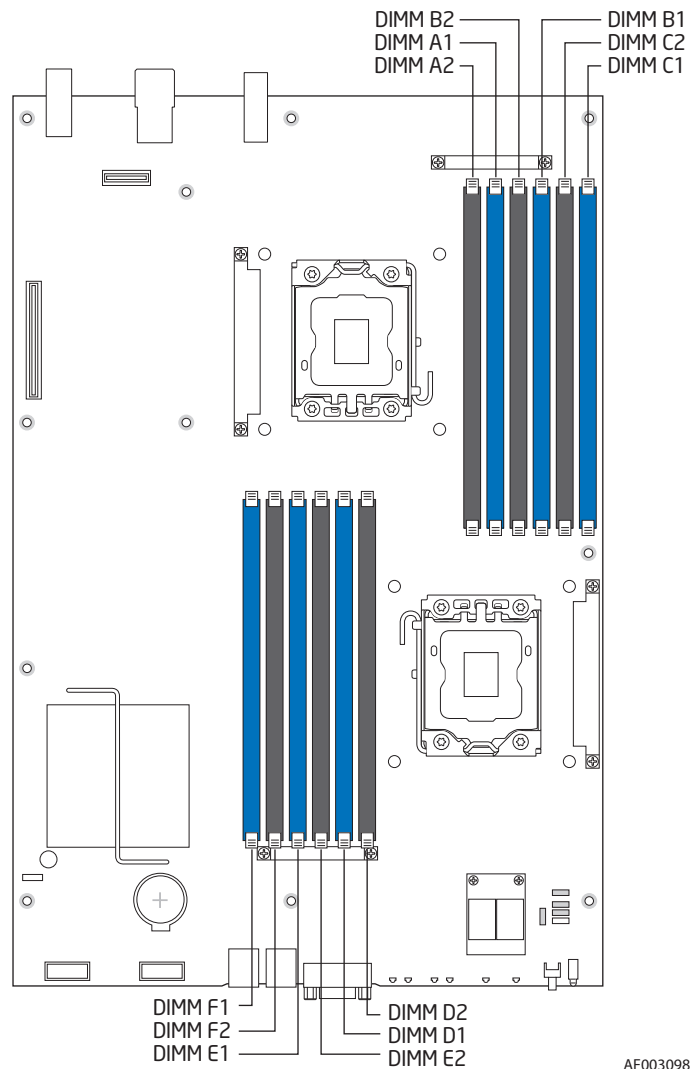
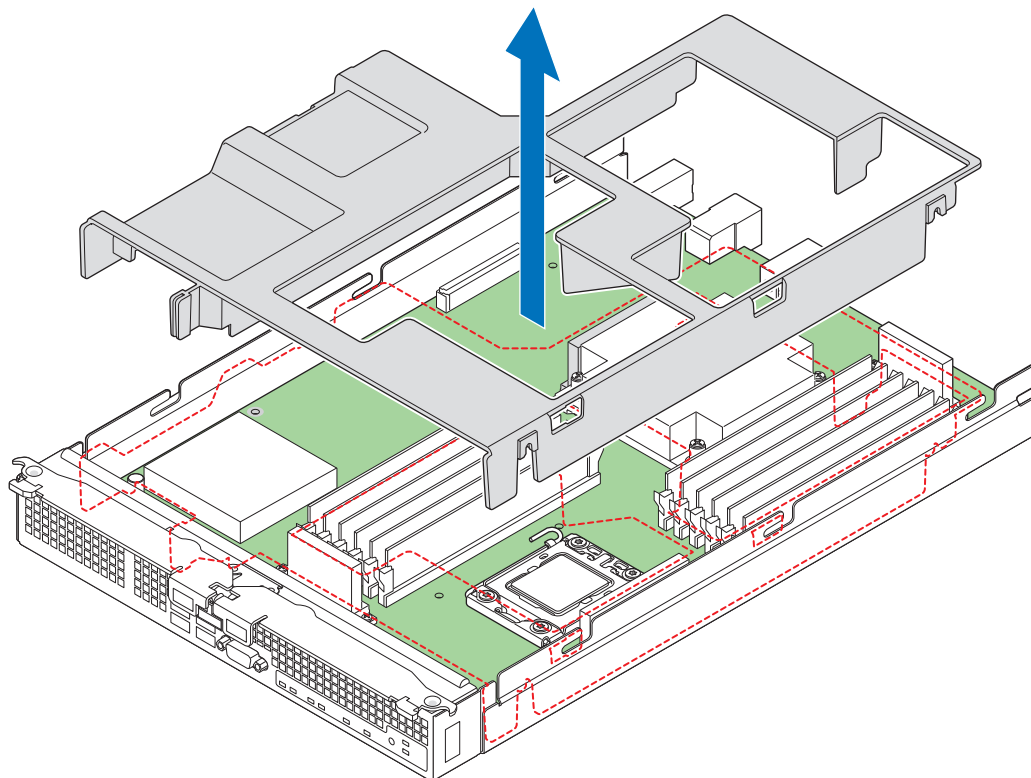


Figure 29. DIMM Slot Order

To install DIMMs, follow these steps:

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 chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis”](#) on page 13.
3. Remove the top cover. For instructions, see [“Removing the Top Cover”](#) on page 14.
4. Remove the processor air duct (see [Figure 30](#)).



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Figure 30. Removing Processor Air Duct

5. Locate the DIMM sockets.
6. Holding the DIMM by the edges, remove it from the package.
7. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position (see letter “A” in [Figure 31](#)).
8. Holding the DIMM by the edges, remove it from its anti-static package.
9. Position the DIMM above the socket. Align the notch on the bottom edge of the DIMM with the key in the DIMM socket (see letter “B” in [Figure 31](#) - the arrow is pointing to the key in the socket).
10. Insert the bottom edge of the DIMM into the socket.
11. When the DIMM is correctly positioned, push down on the top edge of the DIMM until the retaining clips snap into place (see letter “C” in [Figure 31](#)).

12. Make sure the clips are firmly in place (see letter “D” in [Figure 31](#)).

Important: Visually check that each latch is fully closed and correctly engaged with each DIMM edge slot (see letter “E” in [Figure 31](#)).

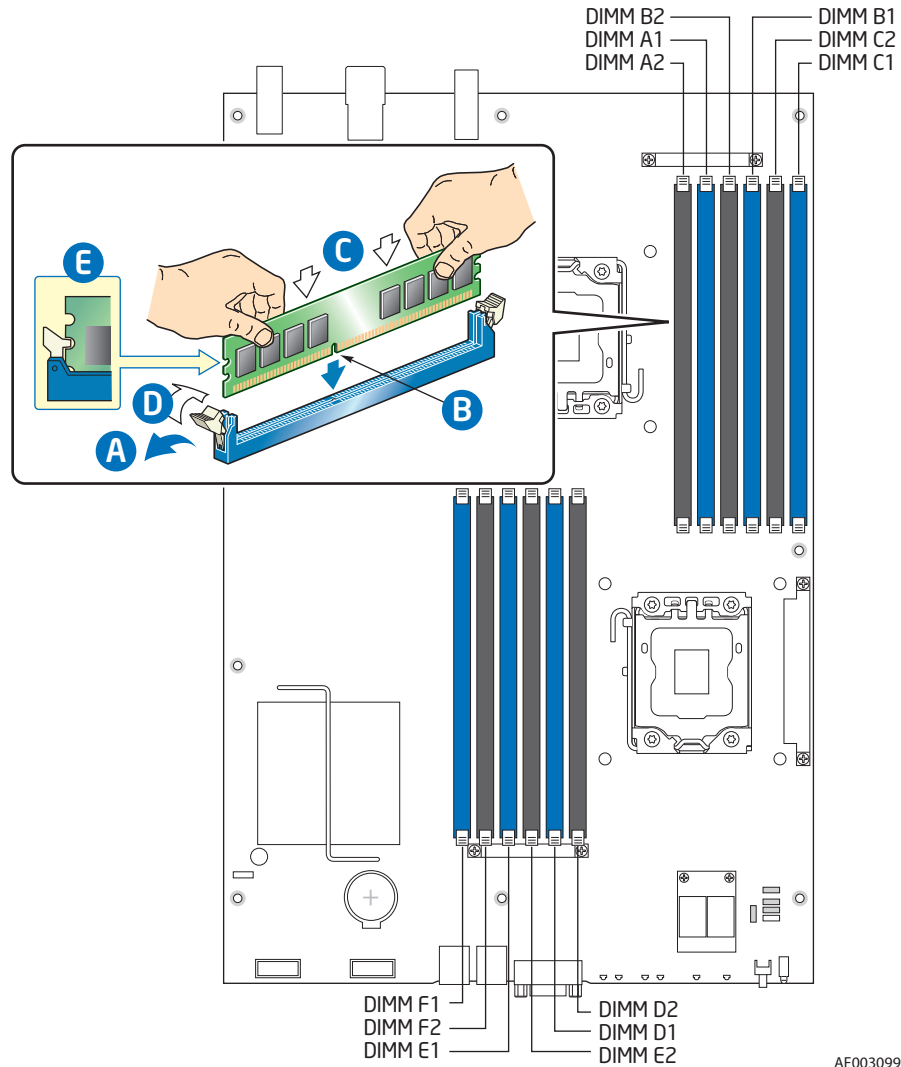
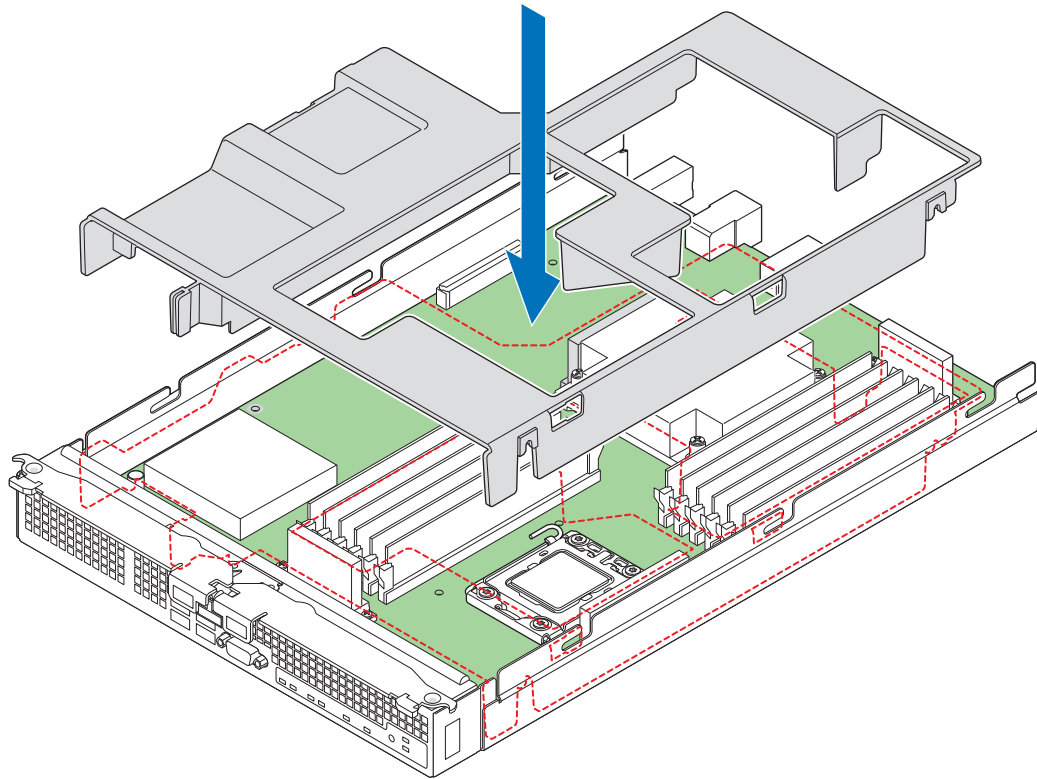


Figure 31. Installing DIMMs

13. Reinstall the processor air duct (see [Figure 32](#)).



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Figure 32. Reinstalling Processor Air Duct

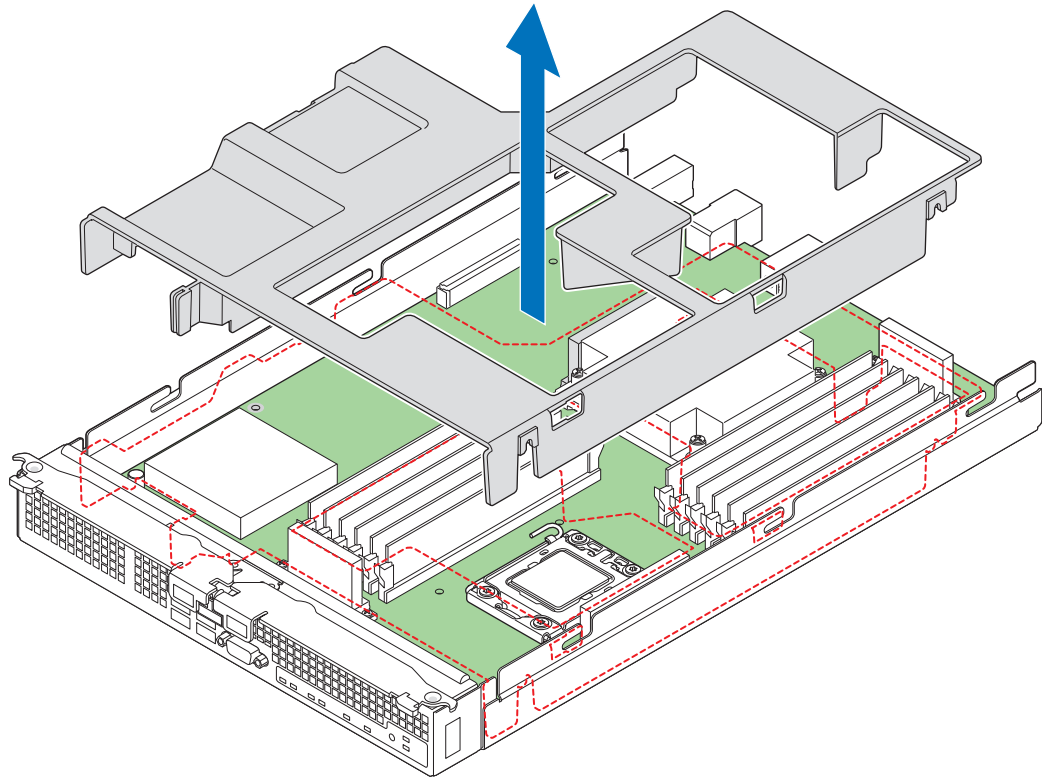
14. Reinstall the top cover. For instructions, see [“Installing the Top Cover”](#) on page 16.
15. Reinstall the server compute module in the chassis. For instructions, see [“Installing a Compute Module into the Chassis”](#) on page 14.

Removing DIMMs

To remove DIMMs, follow these steps:

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 chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis”](#) on page 13.
3. Remove the top cover. For instructions, see [“Removing the Top Cover”](#) on page 14.

4. Remove the processor air duct (see [Figure 33](#)).



AF003080

Figure 33. Removing Processor Air Duct

5. Locate the DIMM socket.
6. Gently open the retaining clips at each end of the socket (see letter “A” in [Figure 34](#)). This slightly lifts the DIMM from its socket.
7. Holding the DIMM by the edges, remove it from the socket (see letter “B” in [Figure 34](#)).

Important: Store the removed DIMM in an anti-static package.

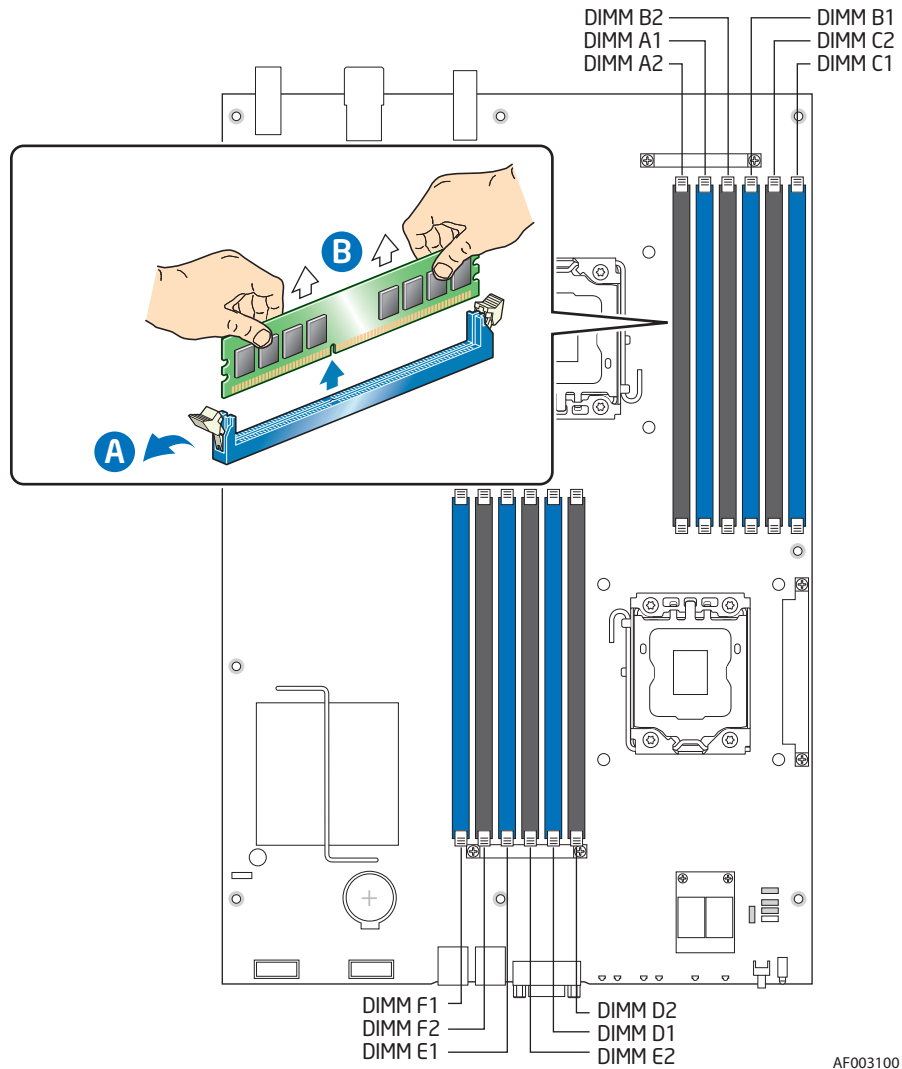
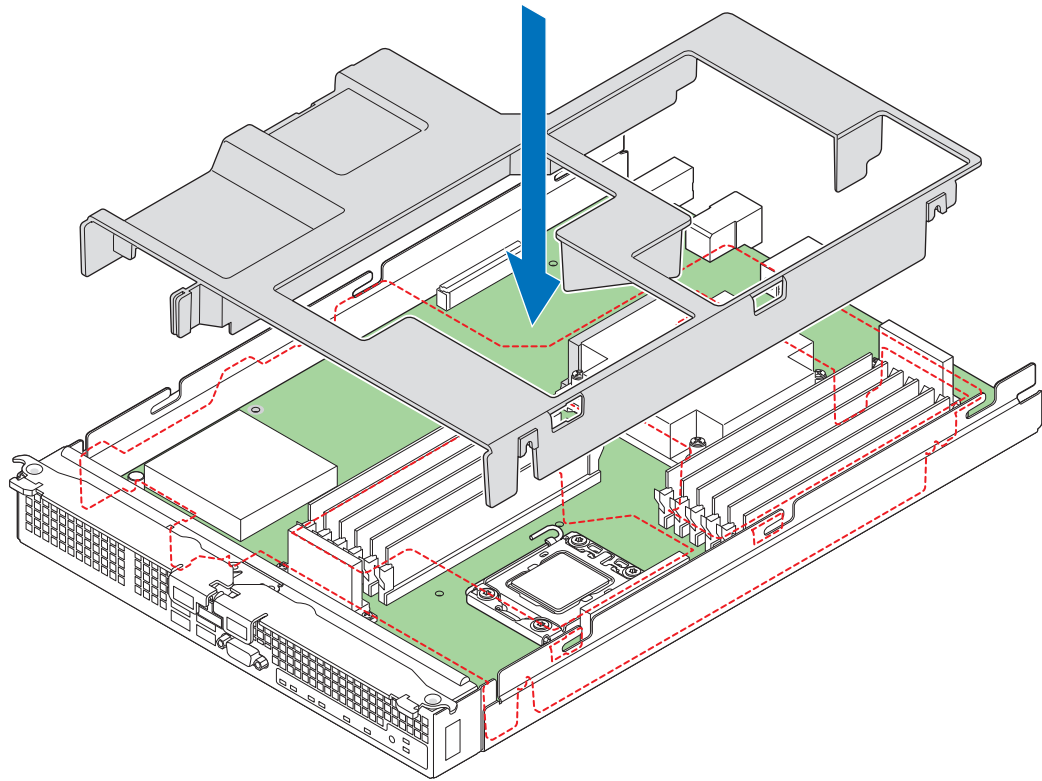


Figure 34. Removing DIMMs

8. Reinstall the processor air duct (see [Figure 35](#)).



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Figure 35. Reinstalling Processor Air Duct

9. Reinstall the top cover. For instructions, see [“Installing the Top Cover”](#) on page 16.
10. Reinstall the server compute module in the chassis. For instructions, see [“Installing a Compute Module into the Chassis”](#) on page 14.

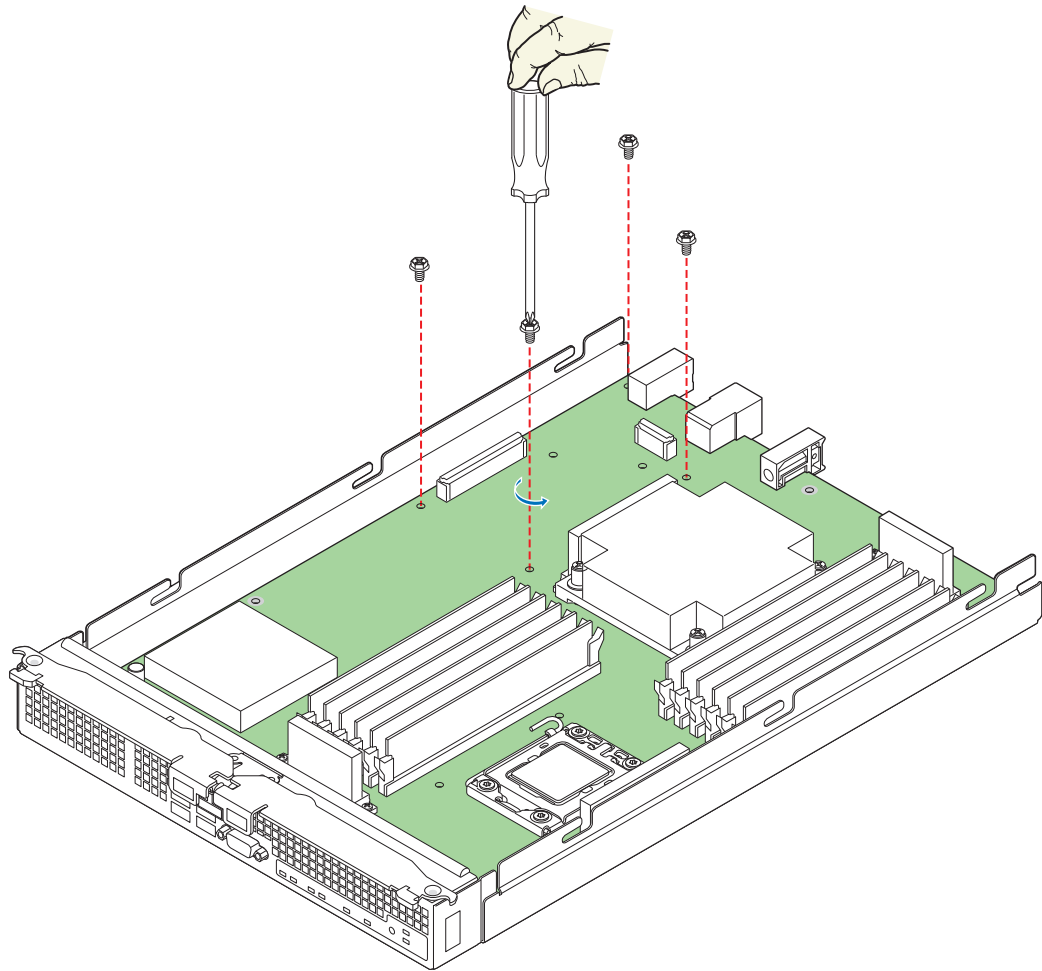
Installing and Removing Mezzanine Card

Installing the Mezzanine Card

To install the mezzanine card, follow these steps:

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 chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis” on page 13](#).
3. Remove the top cover. For instructions, see [“Removing the Top Cover” on page 14](#).
4. Holding the mezzanine card by its edges, remove it from the packaging.
5. Remove the protective connector cover from the mezzanine card.
6. Locate the mezzanine card connectors on the server board.

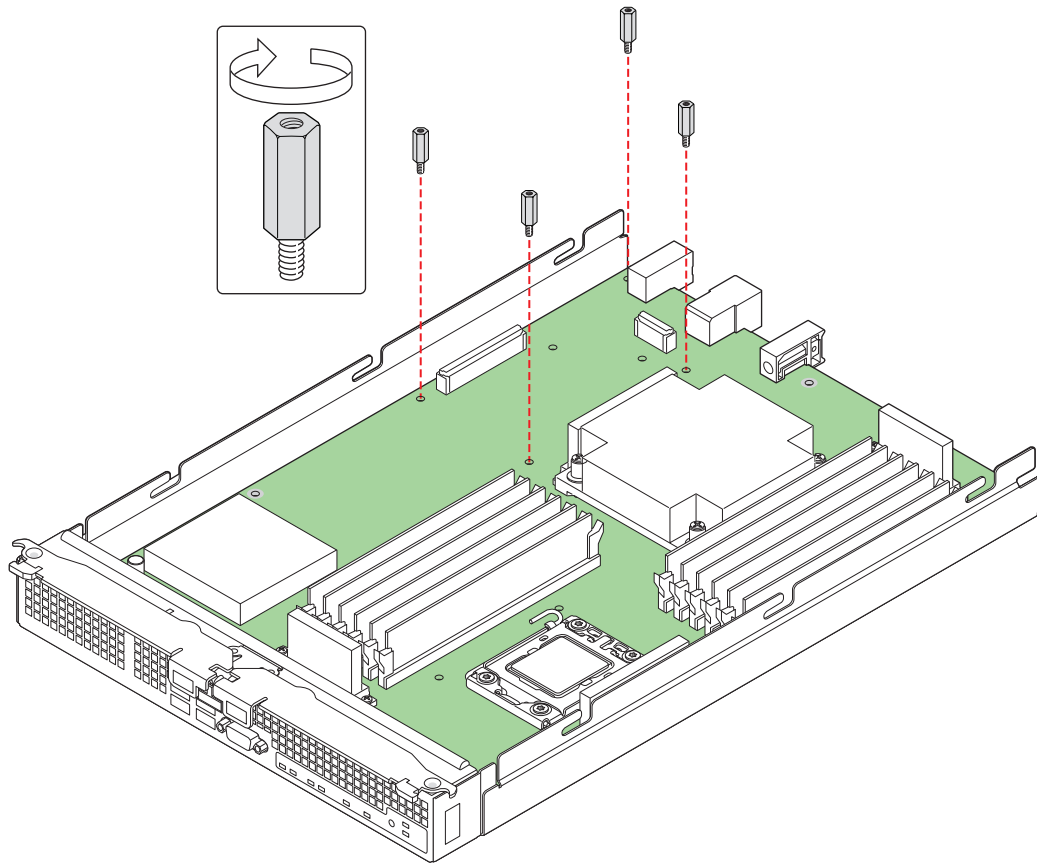
- Using a Phillips* screwdriver, remove four screws from the server board (see [Figure 36](#)).



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Figure 36. Removing Screws from Server Board

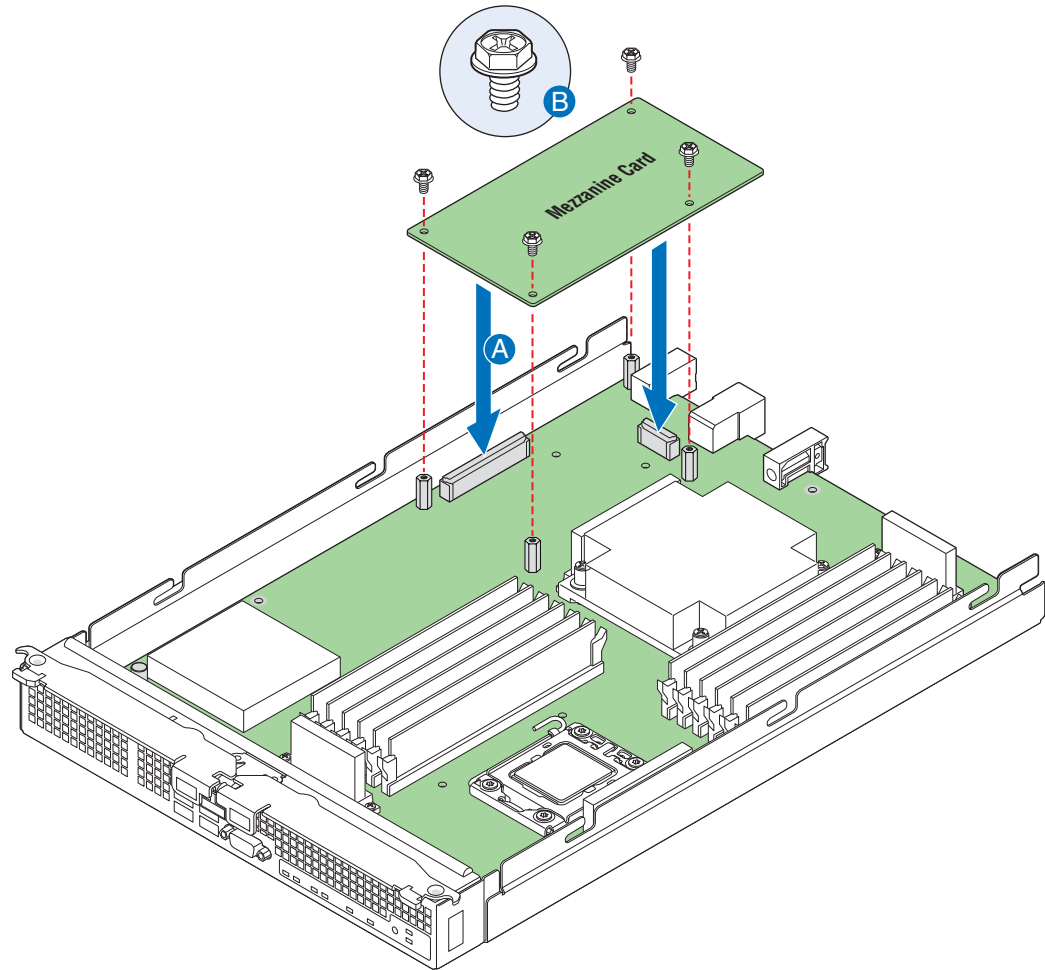
- Using a 1/4-inch nut driver, install the four standoffs that shipped with the mezzanine card (see [Figure 37](#)).



AF003082

Figure 37. Installing Standoffs for Mezzanine Card

9. Position the mezzanine card above the mezzanine card connectors on the server board and align the four screw holes with the standoffs taking care to position each connector housing on the mezzanine card with the connectors on the server board (see letter “A” in [Figure 38](#)).
10. Carefully press the mezzanine card into place until it is fully seated in the connectors and resting on the standoff supports.
11. Secure the mezzanine card to the standoffs with the four screws previously removed (see letter “B” in [Figure 38](#)).



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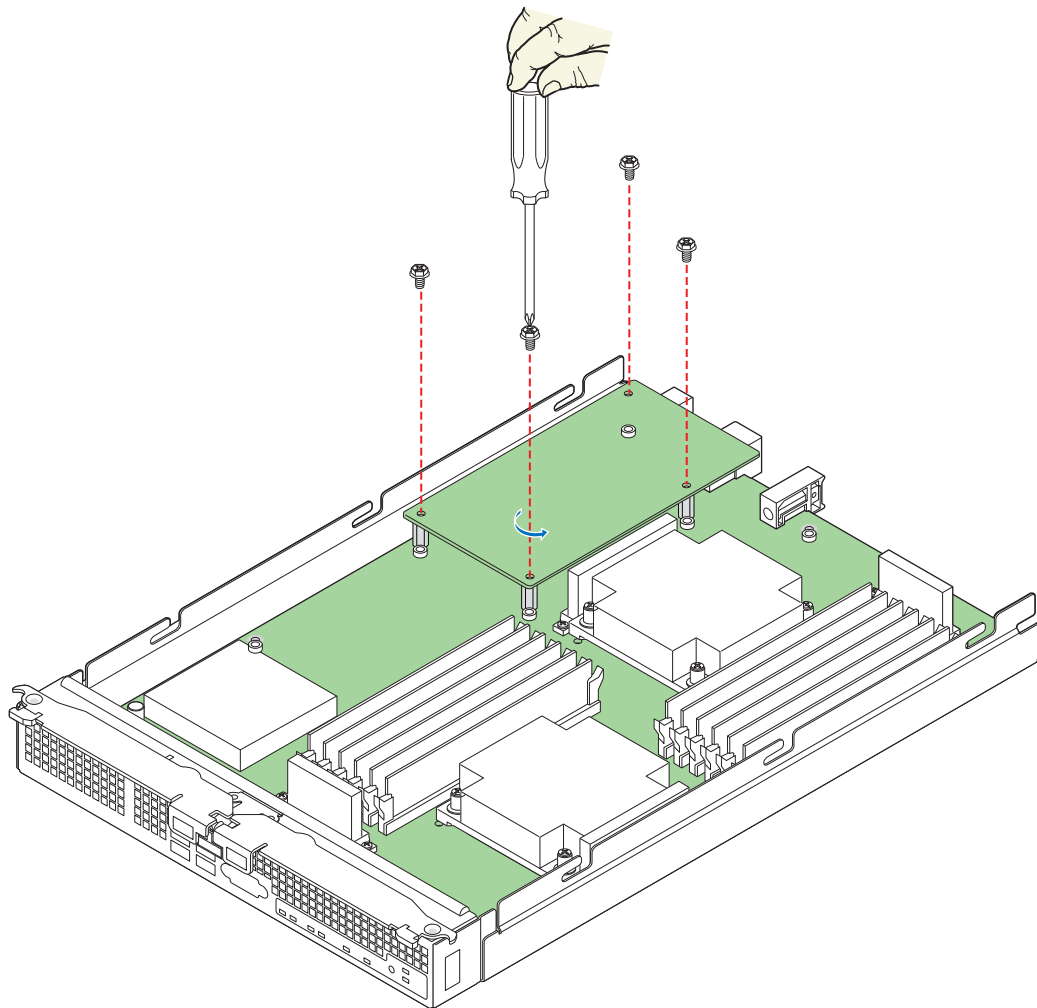
Figure 38. Installing and Securing the Mezzanine Card

12. Reinstall the top cover. For instructions, see “[Installing the Top Cover](#)” on page 16.
13. Reinstall the server compute module in the chassis. For instructions, see “[Installing a Compute Module into the Chassis](#)” on page 14.

Removing a Mezzanine Card

To remove a mezzanine card, follow these steps:

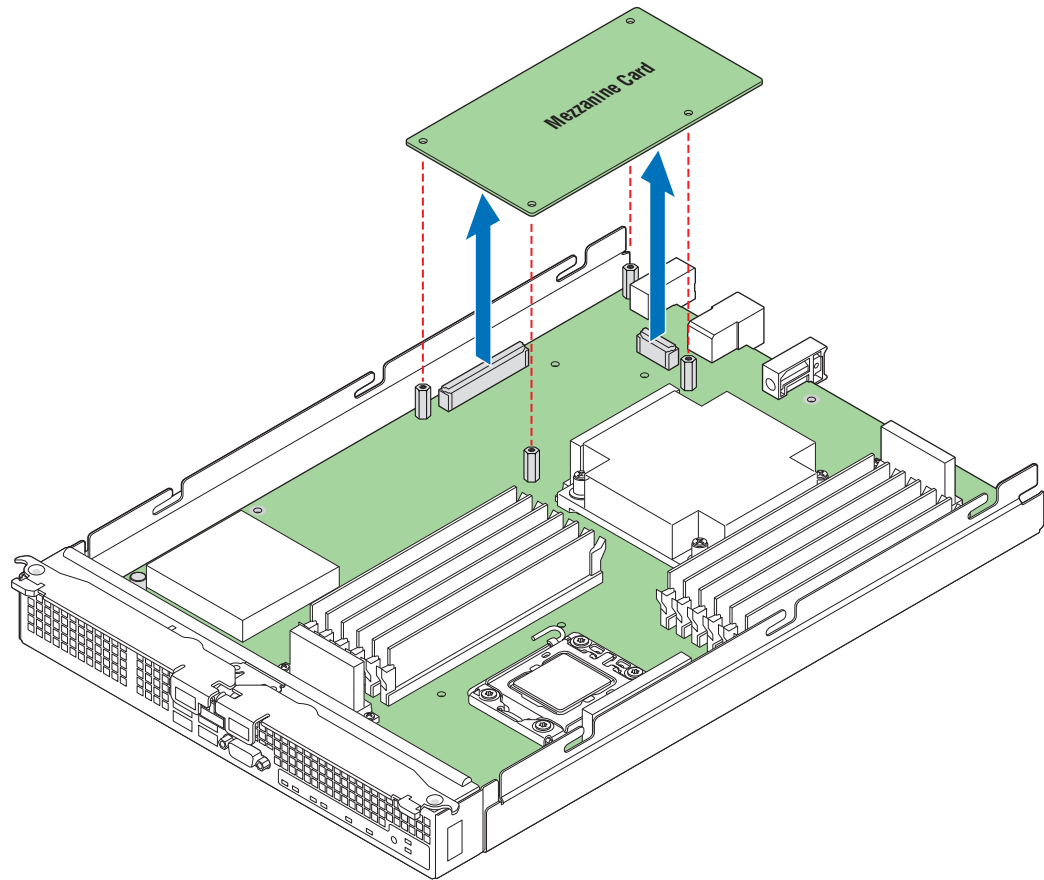
1. Observe the safety and ESD information at the beginning of this manual and in the appendices.
2. If the compute module is installed in a chassis, remove it. For instructions, see “[Removing a Compute Module from the Chassis](#)” on page 13.
3. Remove the top cover. For instructions, see “[Removing the Top Cover](#)” on page 14.
4. Locate the mezzanine card.
5. Using a Phillips* screwdriver, remove the four screws securing the mezzanine card to the standoffs (see [Figure 39](#)).



AF003091

Figure 39. Removing Screws from Mezzanine Card

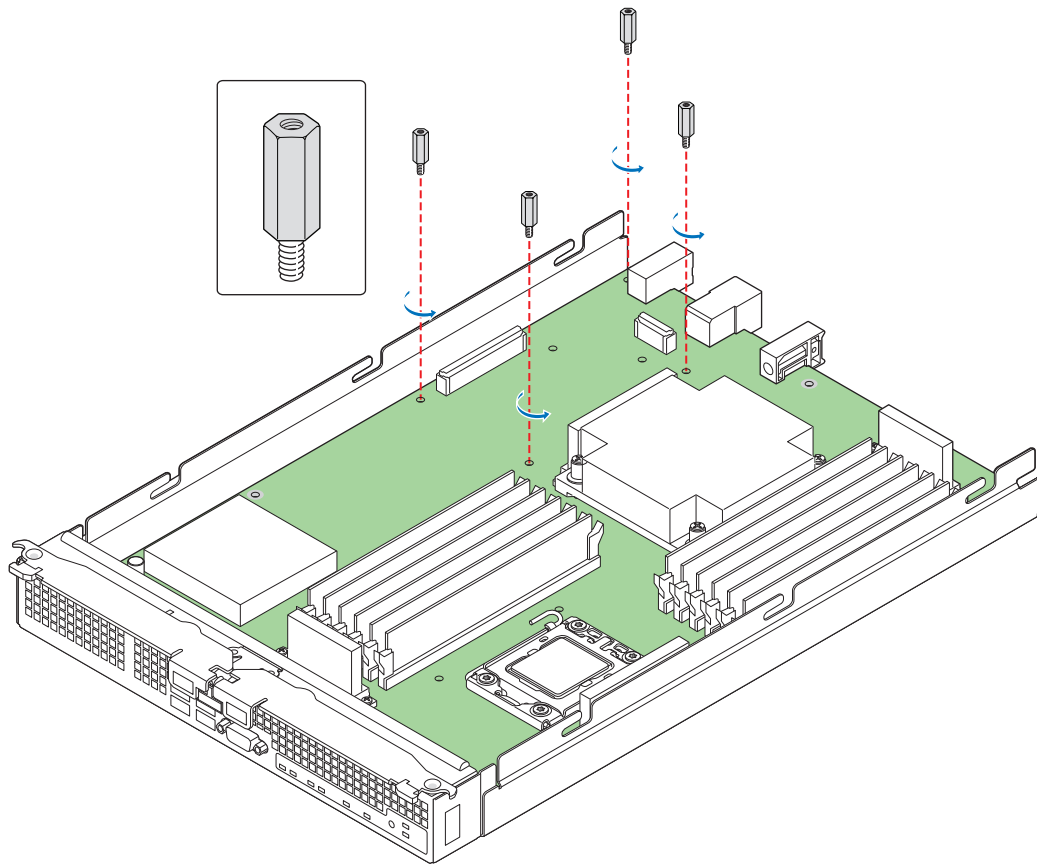
6. Holding the mezzanine card by its edges, gently lift it from the connectors and store it in an anti-static package (see [Figure 40](#)).



AF003092

Figure 40. Removing Mezzanine Card

7. Using a 1/4-inch nut driver, remove the standoffs (see [Figure 41](#)).



AF003093

Figure 41. Removing Standoffs

8. Using a Phillips* screwdriver, secure the four screws (that were previously removed) into the holes vacated by the standoffs.
9. Reinstall the top cover. For instructions, see [“Installing the Top Cover” on page 16](#).
10. Reinstall the server compute module in the chassis. For instructions, see [“Installing a Compute Module into the Chassis” on page 14](#).

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.*

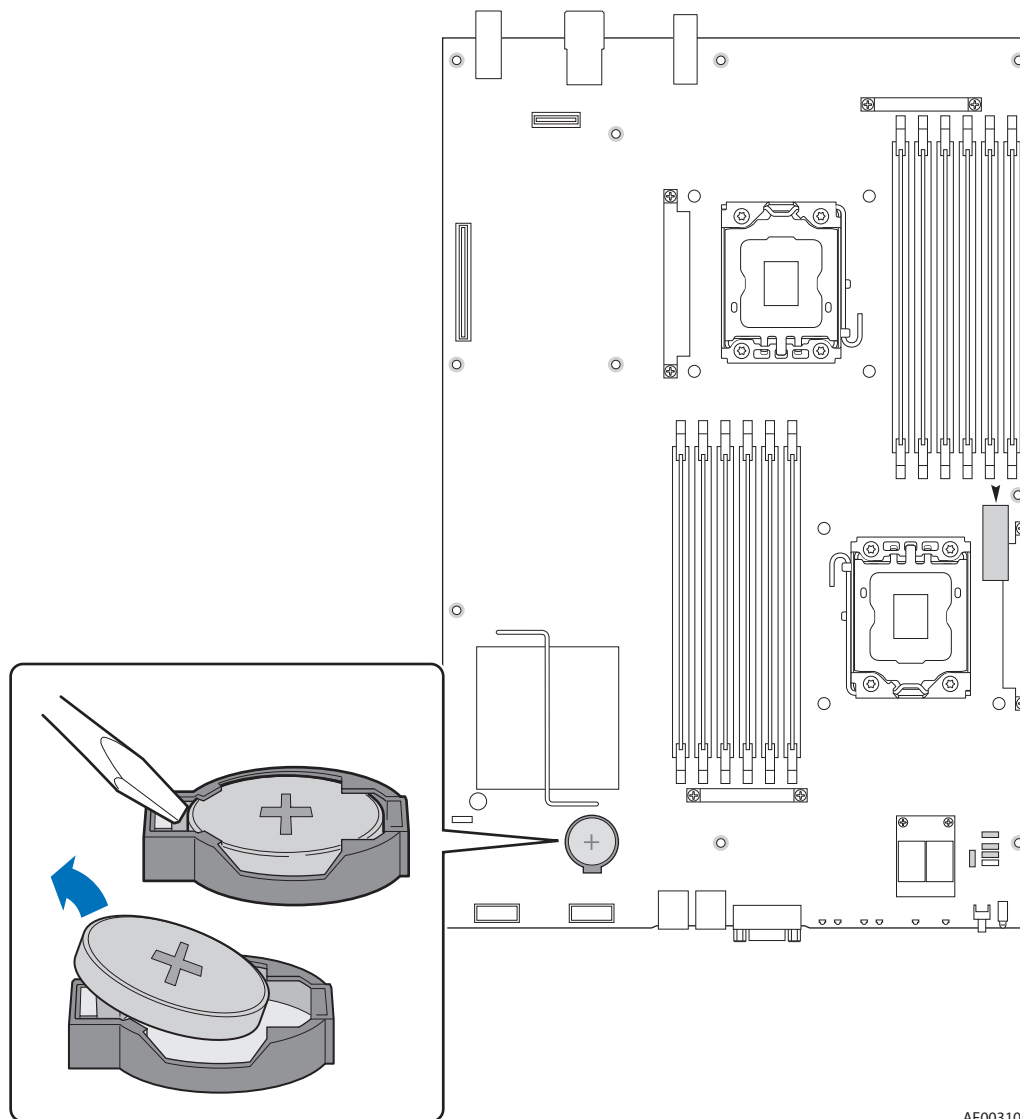
Varning: *Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.*

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, follow these steps:

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 chassis, remove it. For instructions, see [“Removing a Compute Module from the Chassis” on page 13](#).
3. Remove the top cover. For instructions, see [“Removing the Top Cover” on page 14](#).

4. Locate the CMOS battery (see letter “A” in [Figure 41](#)).



AF003101

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. Reinstall the top cover. For instructions, see [“Installing the Top Cover”](#) on page 16.
10. Reinstall the server compute module in the chassis. For instructions, see [“Installing a Compute Module into the Chassis”](#) on page 14

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 MFS5520VI's 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 and 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. Or, 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.

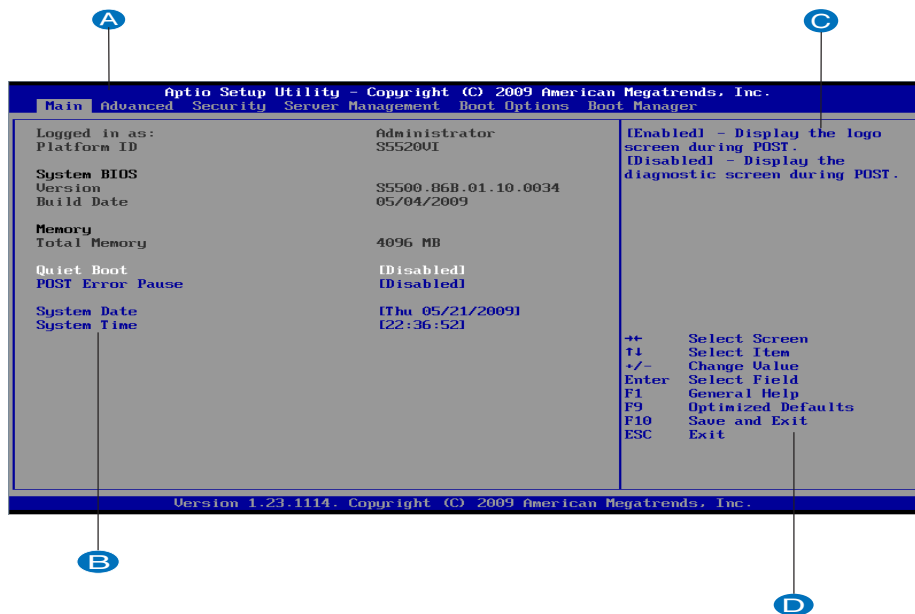
When the BIOS Setup Utility is entered, the Main screen is displayed by default. If serious errors have occurred, the Error Manager screen is displayed instead of the Main screen.

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 [Section , “Clearing the CMOS” on page -92.](#)

General Layout and Navigation

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



	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 4, “Keyboard Commands”, describes the keyboard commands you can use in the BIOS Setup menus.

Table 4. 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.
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: <div data-bbox="846 1331 1133 1503" data-label="Image"> <p>The image shows a blue dialog box with white text. The title bar at the top says 'Load Optimized Defaults'. Below the title bar, the main text asks 'Load Optimized Defaults?'. At the bottom of the dialog box, there are two buttons: 'Yes' and 'No'.</p> </div> <p>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.</p>

Table 4. Keyboard Commands

Press	Description
<F10>	<p>Save and Exit - Pressing F10 causes the following message to display:</p> <div data-bbox="803 405 1136 573" style="border: 1px solid black; background-color: #000080; color: white; padding: 5px; text-align: center;"><p>Save & reset</p><p>Save configuration and reset?</p><p>Yes No</p></div> <p>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.</p>

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 mentioned 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.

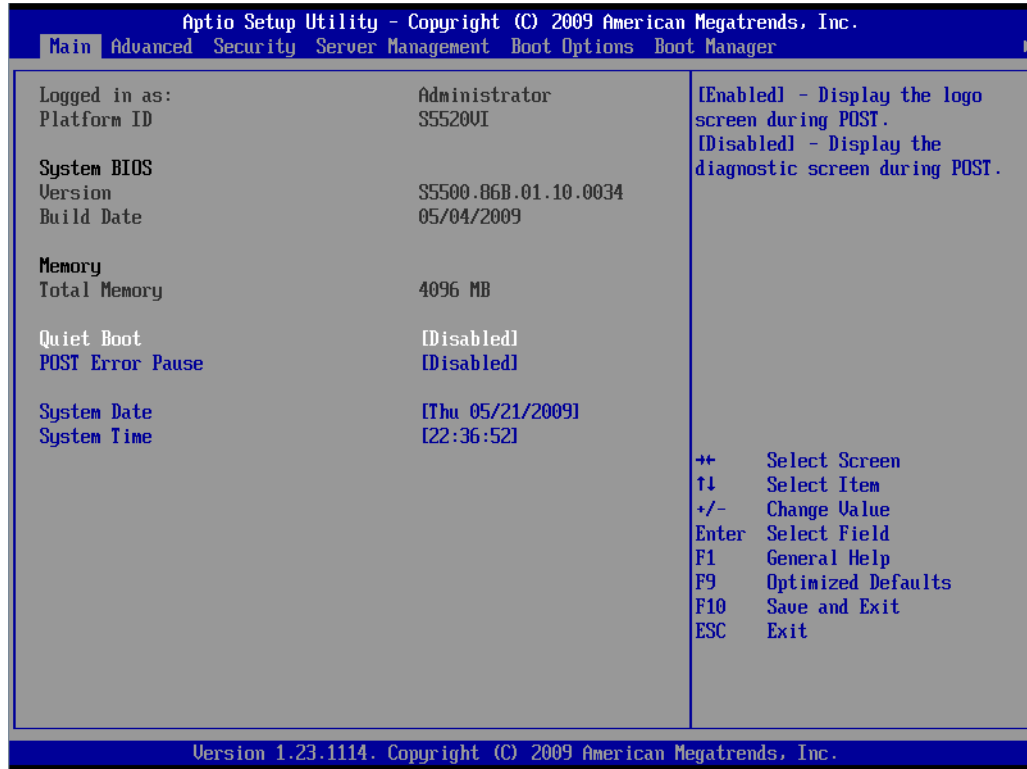


Figure 44. Main Screen

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

Table 5. 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.
Total Memory		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 fatal error displays are not affected by this setting. If disabled the compute module attempts to boot and does 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.
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 not performed directly on the Advanced screen.

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

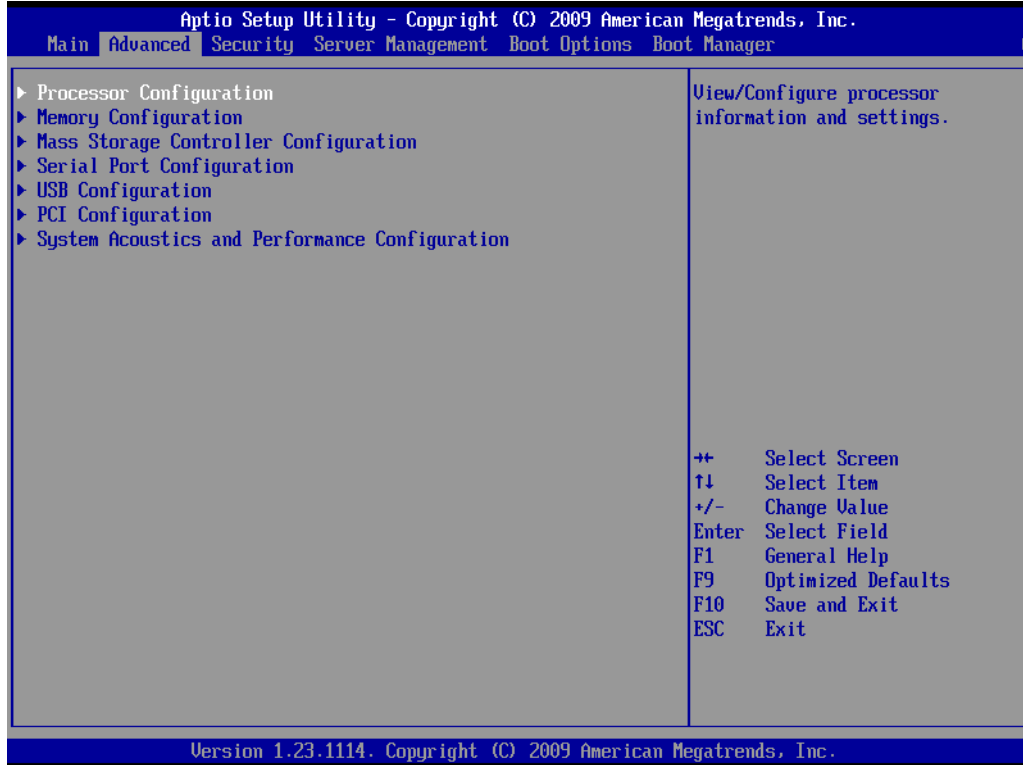


Figure 45. Advanced Screen

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 key until the Advanced menu option is selected then select Processor Configuration from the Advanced menu..

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Processor Configuration		Intel(R) Turbo Boost Technology allows the processor to automatically increase its frequency if it is running below power, temperature, and current specifications. ++ Select Screen ↑↓ Select Item +/- Change Value Enter Select Field F1 General Help F9 Optimized Defaults F10 Save and Exit ESC Exit
Processor Socket	CPU 1 CPU 2	
Processor ID	106A5* 106A5	
Processor Frequency	2.80GHz 2.80GHz	
Microcode Revision	F F	
L1 Cache RAM	128KB 128KB	
L2 Cache RAM	1024KB 1024KB	
L3 Cache RAM	8192KB 8192KB	
Processor 1 Version	Intel(R) Xeon(R) CPU X5560 @ 2.80GHz	
Processor 2 Version	Intel(R) Xeon(R) CPU X5560 @ 2.80GHz	
Current Intel(R) QPI Link Speed	Fast	
Intel(R) QPI Link Frequency	6.4 GT/s	
Intel(R) Turbo Boost Technology	[Enabled]	
Enhanced Intel SpeedStep(R) Tech	[Enabled]	
Intel(R) Hyper-Threading Tech	[Enabled]	
Core Multi-Processing	[All]	
Execute Disable Bit	[Enabled]	
Intel(R) Virtualization Technology	[Disabled]	
Intel(R) VT for Directed I/O	[Disabled]	
Hardware Prefetcher	[Enabled]	
Adjacent Cache Line Prefetch	[Enabled]	
Direct Cache Access (DCA)	[Enabled]	
Version 1.23.1114. Copyright (C) 2009 American Megatrends, Inc.		

Figure 46. Advanced Processor Configuration Screen

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

Table 6. Advanced Processor Configuration Details

Setup Item	Options	Description
Processor Configuration		Title
Processor Socket		Separates processor socket CPU1 and CPU2 information into two columns for the page layout.
Processor ID		Information only. Processor CPUID.
Processor Frequency		Information only. Current frequency of the processor.
Microcode Revision		Information only. Revision of the loaded microcode.
L1 Cache RAM		Information only. Size of the Processor L1 Cache.
L2 Cache RAM		Information only. Size of the Processor L2 Cache
L3 Cache RAM		Information only. Size of the Processor L3 Cache.
Processor 1 Version		Information only. ID string from the Processor.
Processor 2 Version		Information only. ID string from the Processor.
Current Intel® QPI Link Speed		Information only. Current speed used by the QPI Link.
Intel® QPI Link Frequency		Information only. Current frequency used by the QPI Link.
Intel® Turbo Boost Technology	Enabled Disabled	Intel® Turbo Boost Technology allows the processor to automatically increase its frequency if it is running below power, temperature, and current specifications.
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.
Intel® Hyper-Threading Tech	Enabled Disabled	Intel® Hyper-Threading Technology allows multi threaded software applications to execute threads in parallel within each processor. Contact your OS vendor regarding OS support of this feature.
Core Multi-Processing	All 1 2	Enable 1, 2, or all cores of the installed processor packages.

Table 6. Advanced Processor Configuration Details

Setup Item	Options	Description
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.
Intel® Virtualization Technology	Enabled Disabled	Intel® Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions.
Intel® Virtualization Technology for Directed I/O	Enabled Disabled	Enable/Disable Intel® Virtualization Technology for Directed I/O.
Hardware Prefetcher	Enabled Disabled	Hardware Prefetcher is a speculative prefetch unit within the processor(s). NOTE: Modifying this setting may affect system performance.
Adjacent Cache Line Prefetch	Enabled Disabled	[Enabled] - Cache lines are fetched in pairs (even line + odd line). [Disabled] - Only the current cache line required is fetched. NOTE: Modifying this setting may affect system performance.
Direct Cache Access (DCA)	Enabled Disabled	Allows processors to increase the I/O performance by placing data from I/O devices directly into the processor cache.

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 key until the Advanced menu option is selected then select Memory Configuration from the Advanced menu.

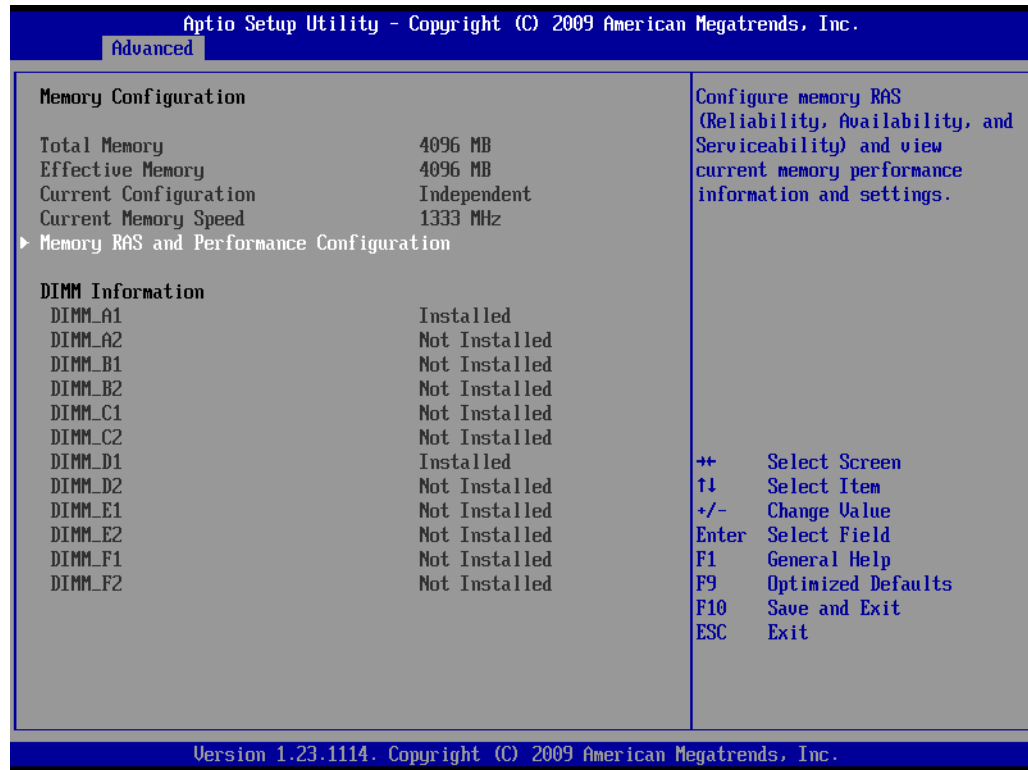


Figure 47. Advanced Memory Configuration Screen

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 the 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: <ul style="list-style-type: none"> • Independent Mode: System memory is configured for optimal performance and efficiency and no RAS is enabled. • Mirror Mode: System memory is configured for maximum reliability in the form of memory mirroring.
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_ XY		Displays the state of each DIMM socket present on the board. Each DIMM socket field reflects one of the following possible states: <ul style="list-style-type: none"> • 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. Under capabilities, this screen displays whether memory mirroring is possible (Yes / No) and allows the user to enable or disable NUMA optimization.

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>.

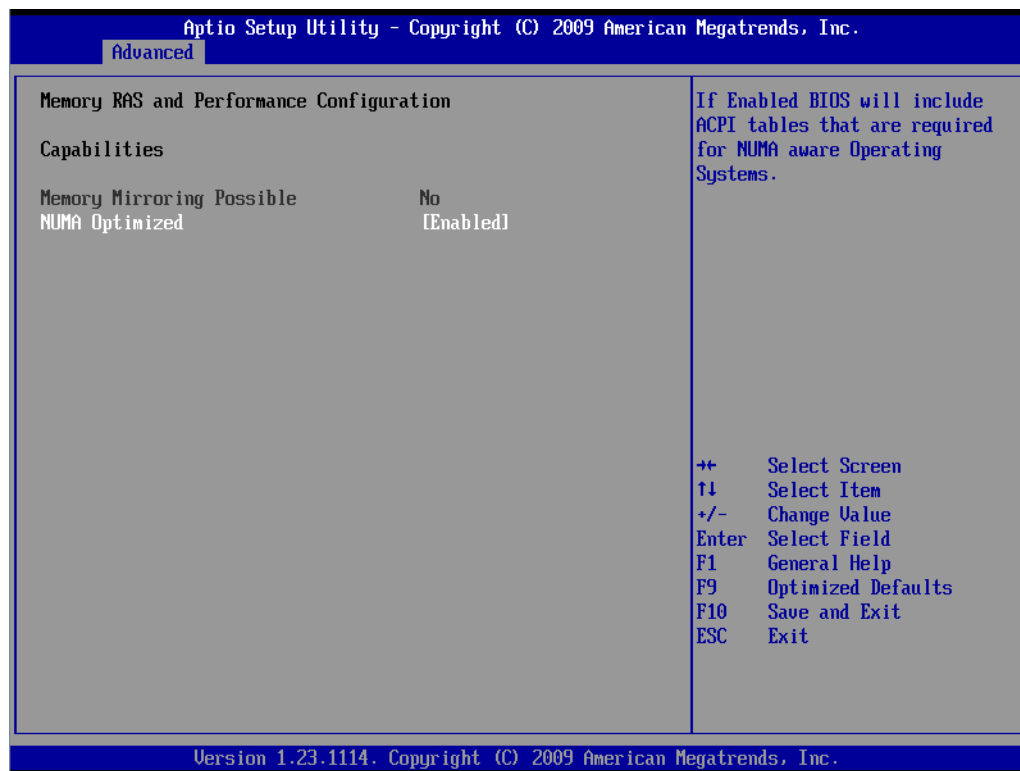


Figure 48. Memory RAS and Performance Configuration Screen

Mass Storage Controller Configuration

The Mass Storage Controller Configuration screen allows you to enable or disable the SAS controller. By default, the SAS controller is set to [Enabled]. This enables the compute module to access the system storage. If the SAS controller 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>.

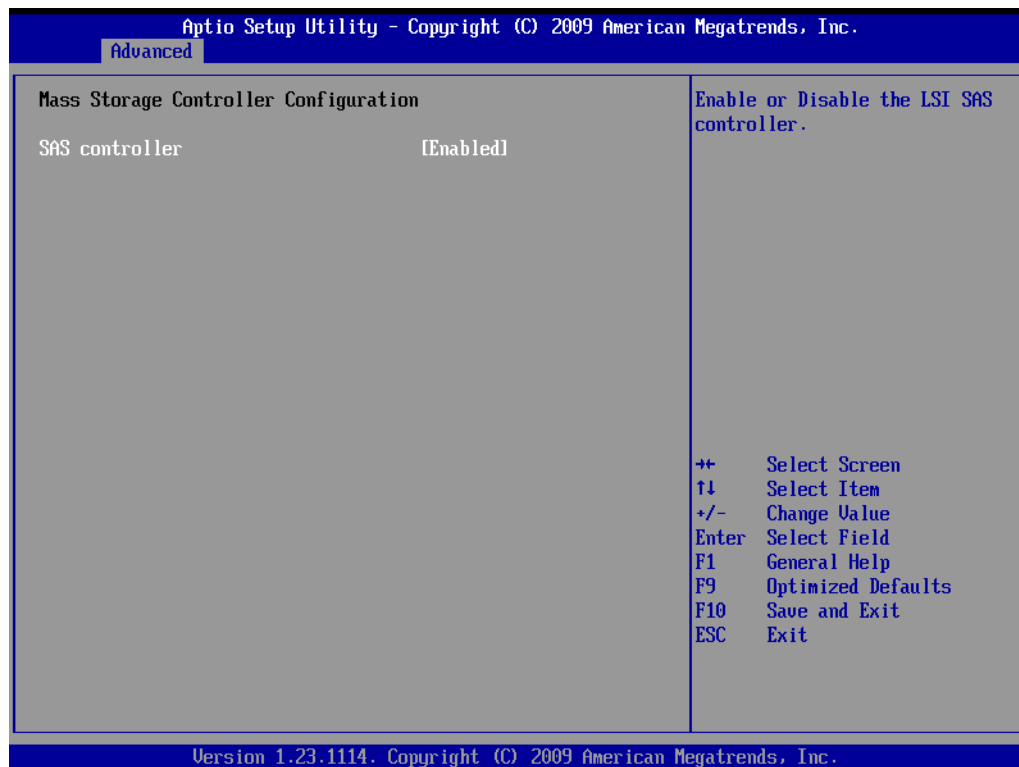


Figure 49. Advanced Mass Storage Controller Configuration Screen

Serial Port Configuration

The Serial Port Configuration screen enables the user to configure the Network Serial Console and the Debug Serial Port. To configure both the Network Serial Console and the Debug Serial Port, the user can modify the following settings:

- Enable or Disable the serial port (Network Serial Console or Debug Serial Port)
- Select the base I/O address
- Select the interrupt request (IRQ) line

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 Serial Port Configuration is highlighted and press <Enter>..

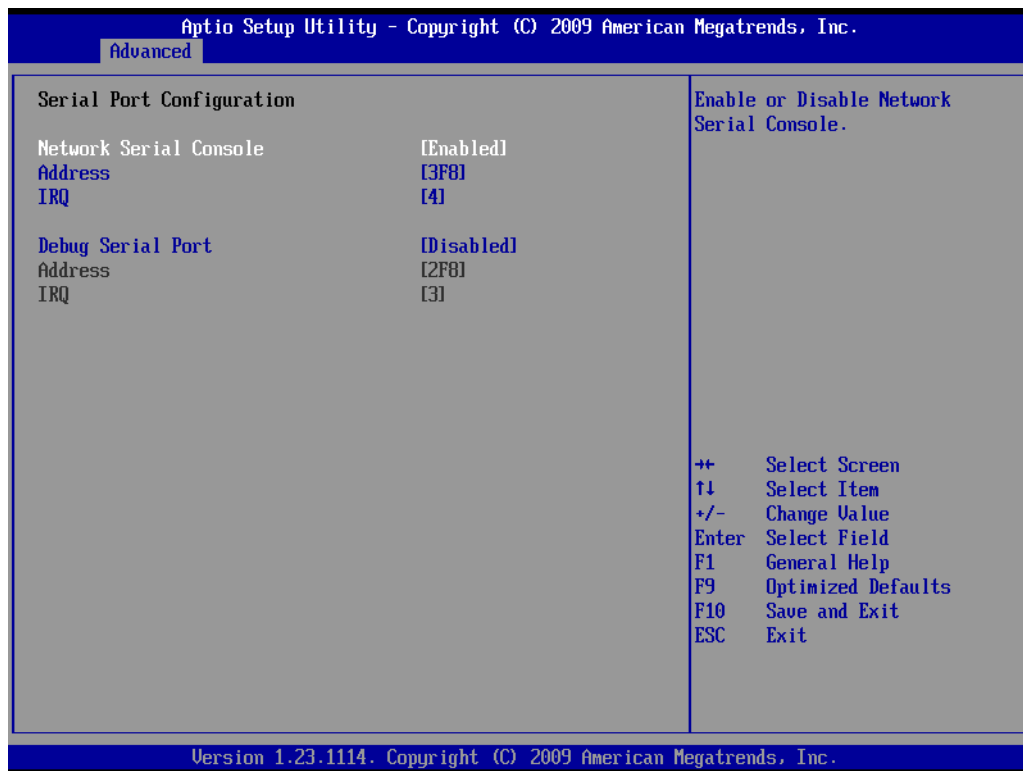


Figure 50. Advanced Serial Port Configuration Screen

USB Configuration

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

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>.

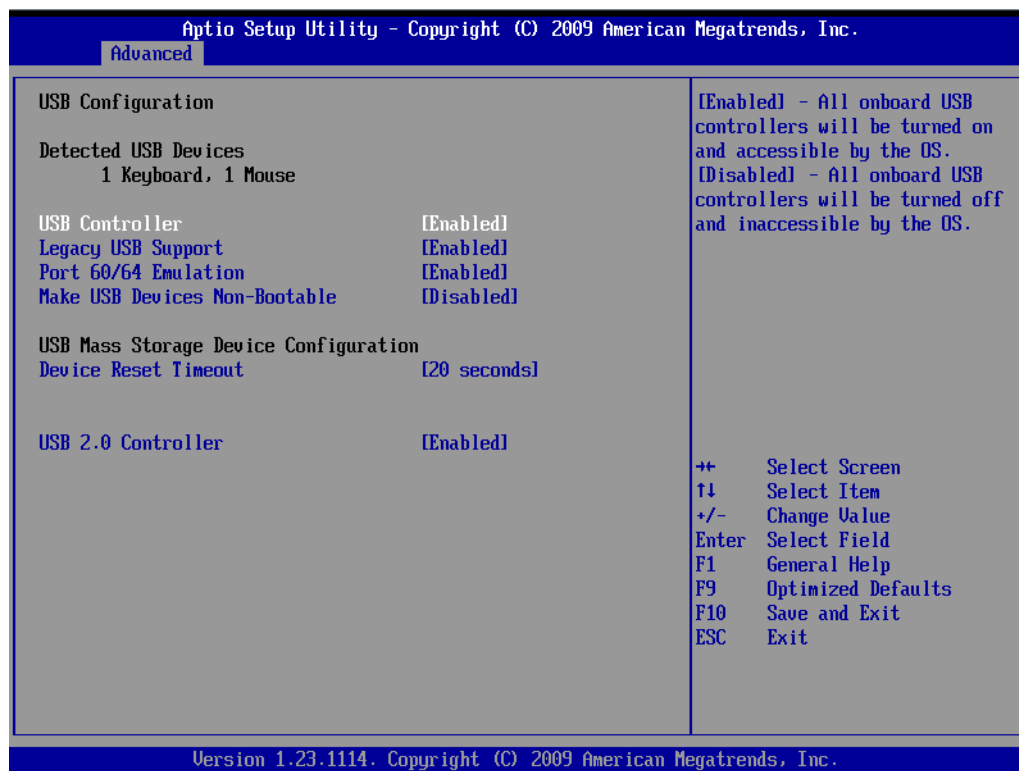


Figure 51. Advanced USB Configuration Screen

The following table describes the features of the Advanced USB Configuration screen

Table 8. USB Configuration Details

Setup Item	Options	Description
Detected USB Devices		Information only. Displays the number and general description of USB devices detected for the compute module.
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 are 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.
Make USB Devices Non-Bootable	Enabled Disabled	Exclude USB in Boot Table. If enabled, this will remove all USB Mass Storage devices as Boot options. If disabled, this allows all USB Mass Storage devices as Boot options.
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.
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 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>..

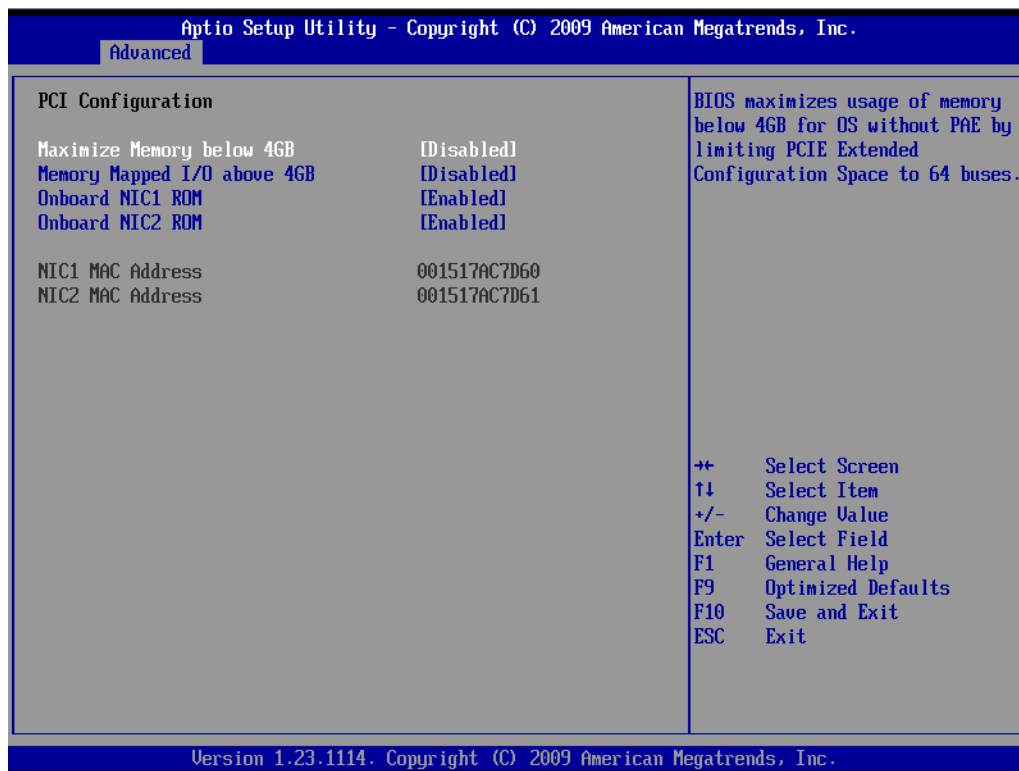


Figure 52. Advanced PCI Configuration Screen

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

Table 9. Advanced PCI Configuration Details

Setup Item	Options	Help Text
Maximize Memory below 4GB	Enabled Disabled	If enabled, BIOS maximizes usage of memory below 4 GB for an OS without PAE by limiting PCIe* Extended Configuration Space to 64 buses.
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 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.

System Acoustics and Performance Configuration

The System Acoustic and Performance Configuration screen allows the user to configure the DIMM thermal management option for the Intel® Compute Module MFS5520VI. Specifically the System Acoustics and Performance Configuration screen allows the user to set the DIMM throttling mode to Auto (default), Static Closed Loop Thermal Throttling (CLTT) or Static Open Loop Thermal Throttling (OLTT). By default this field is set to Auto. When set to Auto the BIOS will configure the system for Static Closed Loop Thermal Throttling (CLTT) as long as the installed DIMMs have Module Thermal Sensors. With the Throttling mode set to CLTT the system is able to accurately control memory temperatures, which is necessary to manage system performance within thermal parameters. To set the throttling mode, select one of the following configuration options:

- [Auto] – Auto Throttling mode
- [CLTT] – Closed Loop Thermal Throttling Mode
- [OLTT] – Open Loop Thermal Throttling Mode

Notes: *The OLTT option is shown for informational purposes only. If the user selects OLTT, the BIOS overrides that selection if the system can support CLTT. OLTT is configured only when unbuffered DIMMs (UDIMMs)UDIMMs without Thermal Sensors are installed.*

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 System Acoustics and Performance Configuration and press <Enter>.

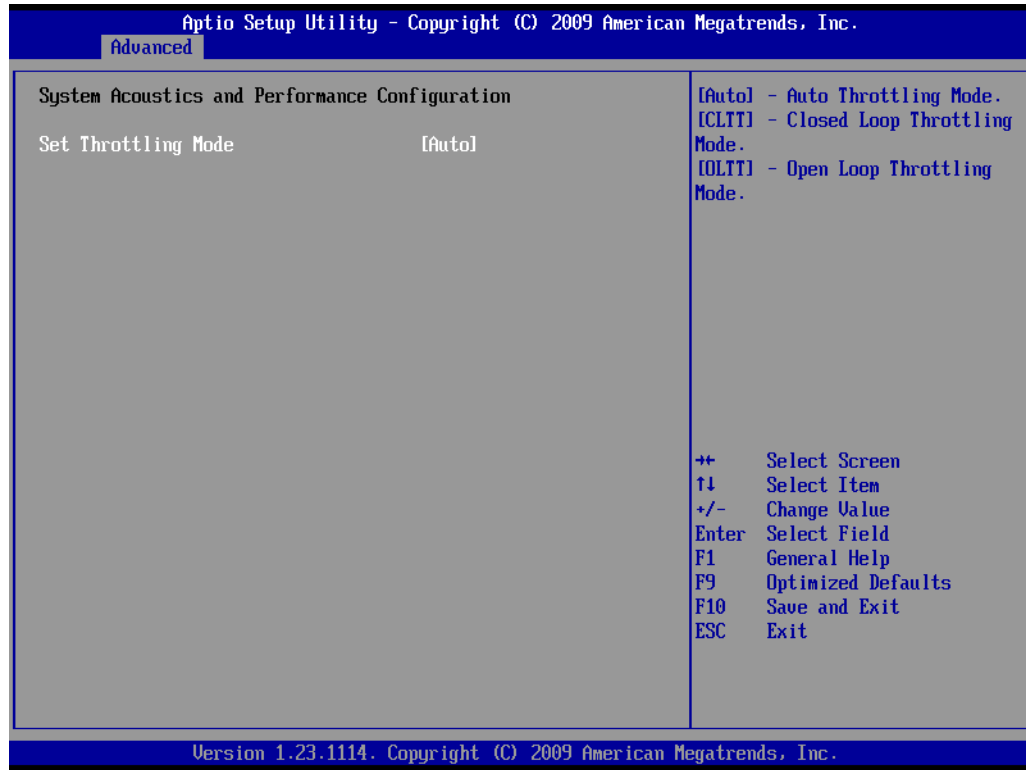


Figure 53. Advanced System Acoustics and Performance Configuration Screen

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.

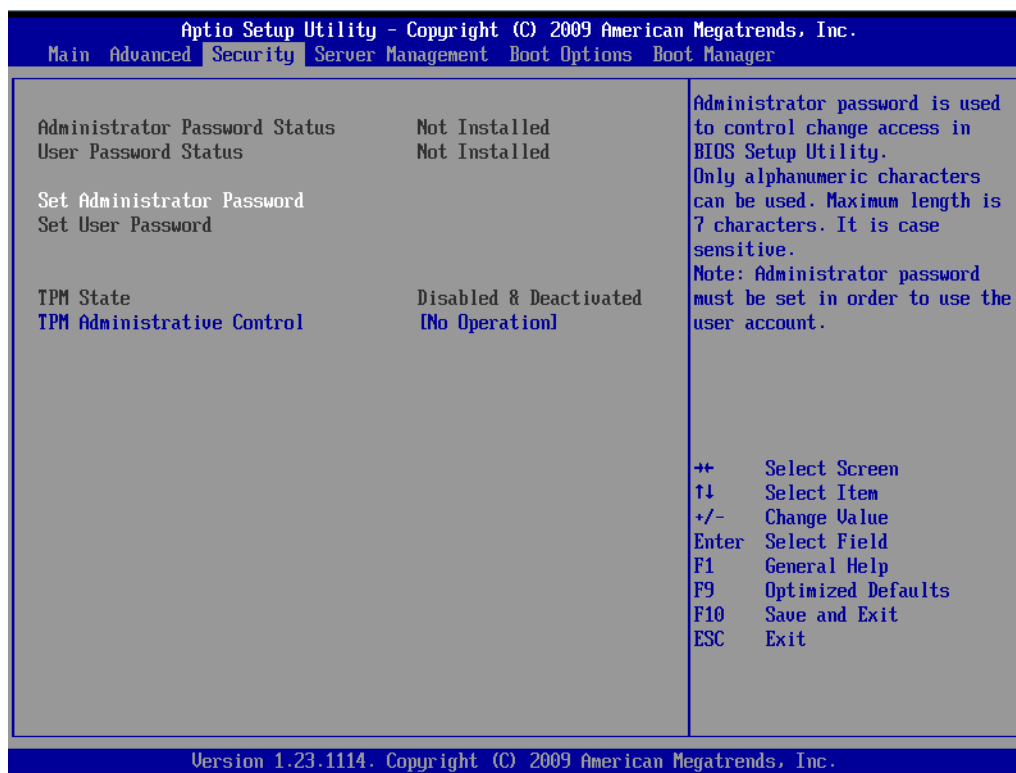


Figure 54. Security Screen

The following table describes the features of the Security screen.

Table 10. 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]	<p>An Administrator password is used to control change in access in the BIOS Setup utility. Administrator access provides full access to all the setup options.</p> <p>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.</p> <p>NOTE: An Administrator password must be set in order to enable the user account.</p>
Set User Password	[123aBcD]	<p>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.</p> <p>Only alphanumeric characters can be used. Maximum length is 7 characters and it is case sensitive.</p> <p>NOTE: Removing the administrator password also automatically removes the user password.</p>
TPM State	<p>Enabled and Activated</p> <p>Enabled and Deactivated</p> <p>Disabled and Activated</p> <p>Disabled and Deactivated</p>	<p>Information only.</p> <p>This Shows the current TPM device state.</p> <p>A disabled TPM device does not execute commands that use the TPM functions and TPM security operations are not available.</p> <p>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.</p> <p>An enabled and activated TPM executes all commands that use the TPM functions and TPM security operations are also available.</p>

Table 10. Security Screen Details

Setup Item	Options	Description
TPM Administrative Control	<p>No Operation</p> <p>Turn On</p> <p>Turn Off</p> <p>Clear Ownership</p>	<p>TPM Administrative control can be set to:</p> <ul style="list-style-type: none"> • [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. <p>NOTE: The BIOS setting returns to [No Operation] on every boot cycle by default.</p>

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 key until the Server Management menu option is selected.

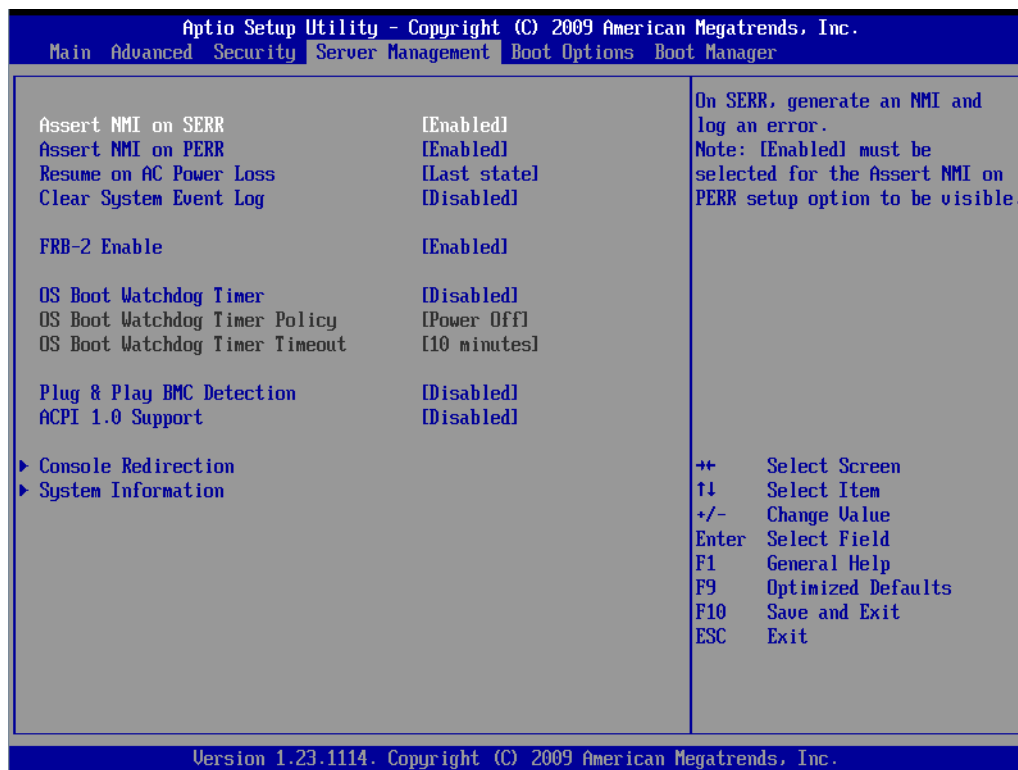


Figure 55. Server Management Screen

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

Table 11. 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 is [Enabled] selected.
Resume on AC Power Loss	Stay Off Last state Reset	Set the 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 are 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 resets the compute module.
O/S Boot Watchdog Timer	Enabled Disabled	BIOS programs the watchdog timer with the timeout value selected. If the OS does not complete booting before the timer expires, the BMC resets 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 Timeout	5 minutes 10 minutes 15 minutes 20 minutes	If the OS watchdog timer is enabled, this is the timeout value BIOS will use to configure the watchdog timer. NOTE: This option is grayed out when O/S Boot Watchdog Timer is disabled.
Plug & Play BMC Detection	Enabled Disabled	If enabled, BMC will be detectable by OSs which support plug and play loading of an IPMI driver. Do not enable if your OS does not support this driver.

Table 11. Server Management Screen Details

Setup Item	Options	Description
ACPI 1.0 Support	Enabled Disabled	[Enabled] - Publish ACPI 1.0 version of FADT in Root System Description Table. This may be required for compatibility with OS versions that only support ACPI 1.0. NOTE: Set to [Enabled] for Microsoft Windows Server 2000* support.
Console Redirection	<Enter>	Select Console Redirection to view/configure console redirection information and settings. This option takes the user to the Console Redirection screen.
System Information	<Enter>	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 through the Network Serial Console. If Console Redirection is set to Network Serial Console, the console redirection configuration options Flow Control, Baud Rate, Terminal Type, and Legacy OS Redirection are displayed on the Console Redirection Setup screen. Enabling console redirection sets the BIOS option Quiet Boot to [Disable]. The BIOS logo screen is not 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 select Console Redirection.

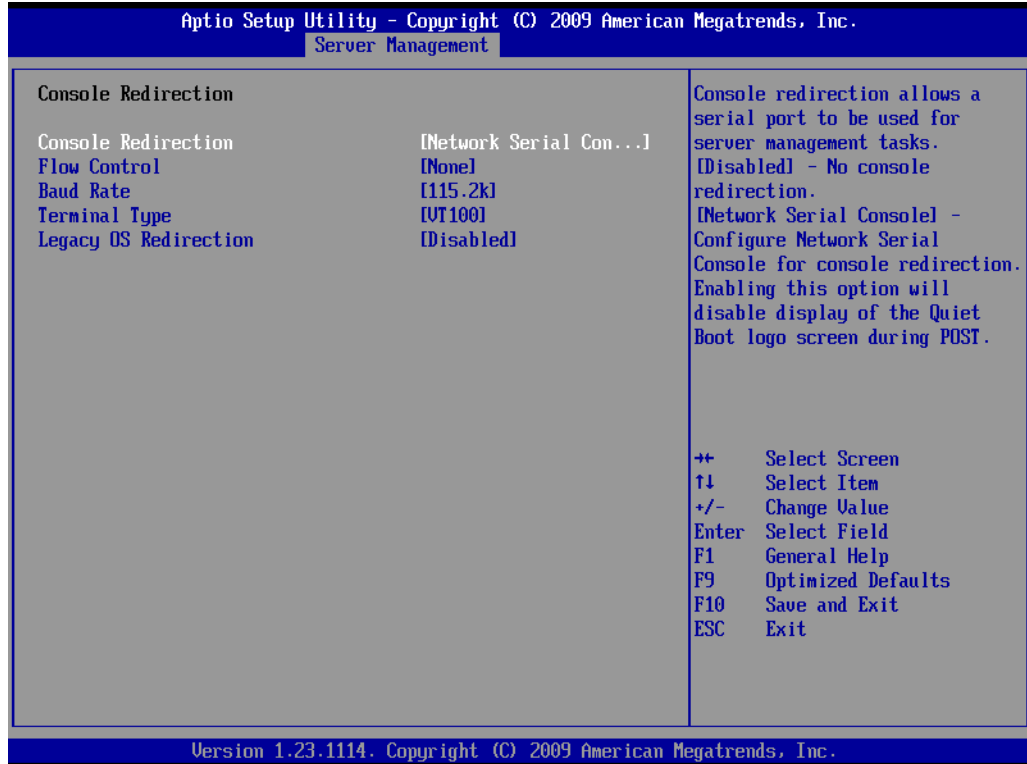


Figure 56. Server Management - Console Redirection Enabled Screen

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

Table 12. Server Management Console Redirection Details

Setup Item	Options	Description
Console Redirection	Disabled Network Serial Console	Console redirection allows a serial port to be used for server management tasks. If disabled the console redirection configuration options will not be displayed. If set to [Network Serial Console], console redirection is enabled and the configuration options will be displayed. 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.
Flow Control	None RTS/CTS	Flow control is the handshake protocol. This setting must match the remote terminal application. [None] - Configure for no flow control. [RTS/CTS] - Configure for hardware flow control.
Baud Rate	9600 19.2K 38.4K 57.6K 115.2K	Serial port transmission speed. This setting must match the remote terminal application.
Terminal Type	PC-ANSI VT100 VT100+ VT-UTF8	Character formatting used for console redirection. This setting must match the remote terminal application.
Legacy OS Redirection	Disabled Enabled	This option enables legacy OS redirection (that is, DOS) on serial port. If it is enabled, the associated serial port is hidden from the legacy OS.

System Information

The System Information screen provides the following information for the compute module:

- Board part number
- Board serial number
- Asset tag
- BMC firmware revision
- SDR revision
- UUID

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>.

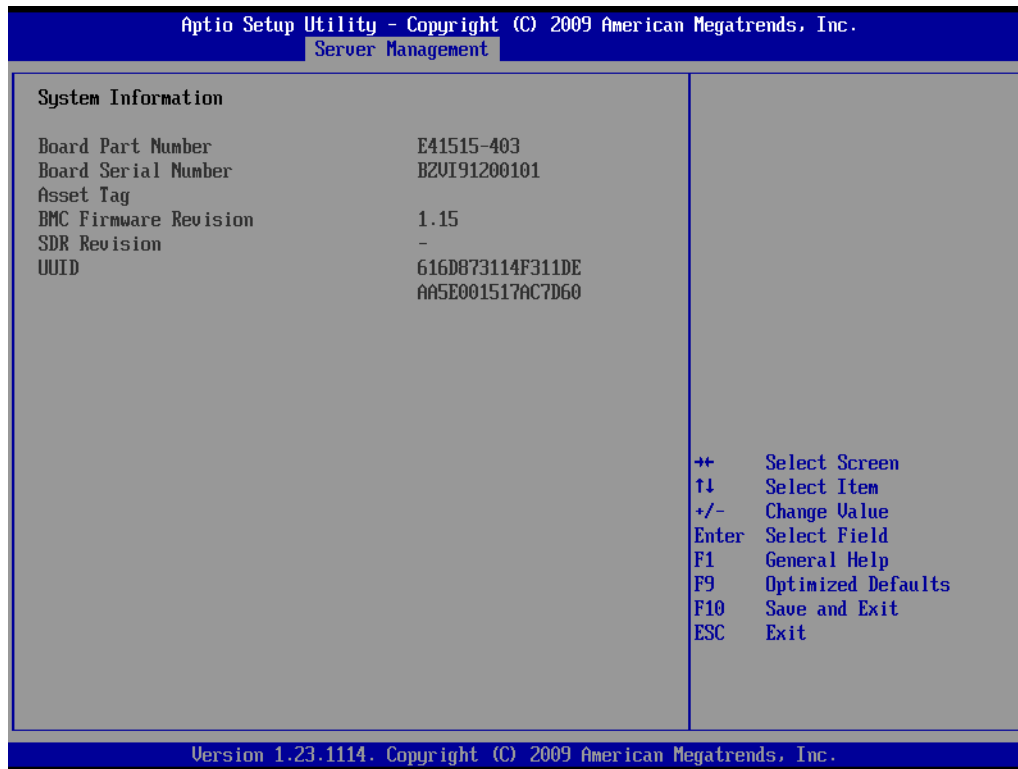


Figure 57. Server Management - System Information Screen

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.

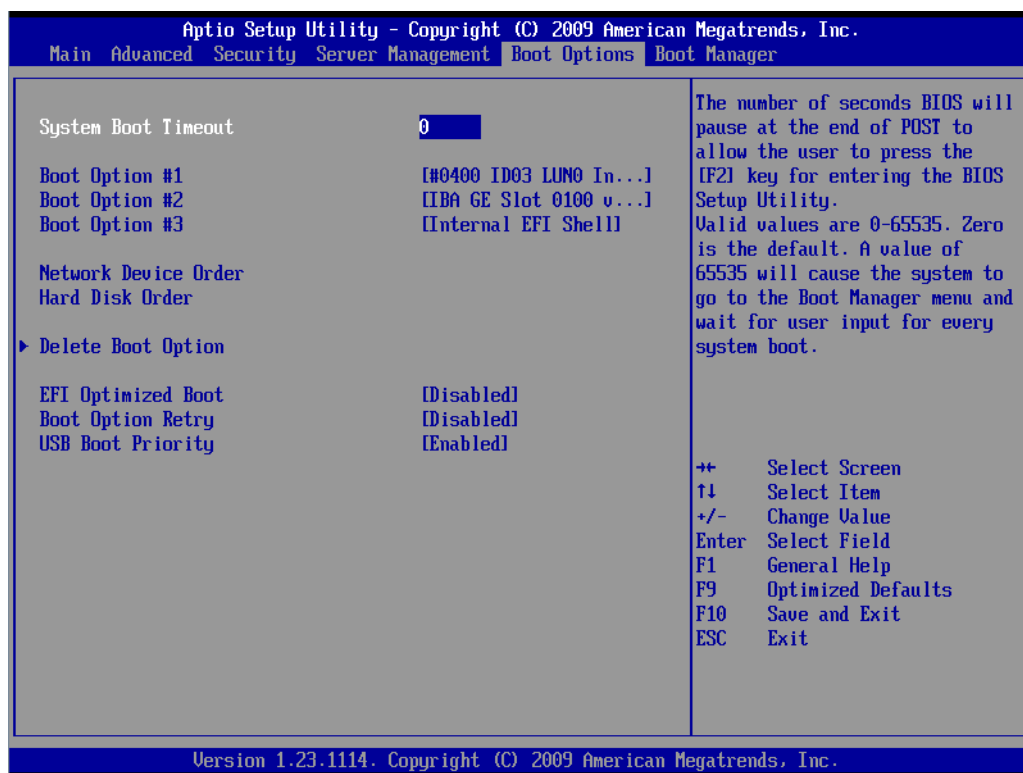


Figure 58. Boot Options Screen

The following table describes the features of the Boot Options screen.

Table 13. Boot Options Details

Setup Item	Options	Help Text
Boot Timeout	0 - 65535	<p>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.</p> <p>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.</p> <p>After entering the desired timeout, press the <Enter> key to register that timeout value.</p>
Boot Option #x	Available boot devices	Set system boot order by selecting the boot option for this position.
Network Device Order	<Enter>	<p>Set network device boot order.</p> <p>This option takes the user to a separate screen. The Network Device Order screen which allows the user to select the boot order for the available network bootable devices.</p>
Hard Disk Order	<Enter>	Set the hard disk drive boot order. This option takes the user to a separate screen. The Hard Disk Order screen which allows the user to select the boot order for the available bootable devices.
Delete Boot Option	<Enter>	<p>Remove an EFI boot option from the boot order.</p> <p>This option takes the user to a new screen titled Delete Boot Option. This new screen allows the user to select an EFI boot option from the boot order for deletion.</p> <p>If the EFI shell is deleted, it is restored on the next compute module reboot. It cannot be permanently deleted.</p>
EFI Optimized Boot	Enabled Disabled	If enabled, the BIOS will only load modules required for booting EFI-aware Operating Systems.
Boot Option Retry	Enabled Disabled	This will continually retry non-EFI-based boot options without waiting for user input.
USB Boot Priority	Enabled Disabled	<p>If enabled, newly discovered USB devices will be put to the top of their boot device category.</p> <p>If disabled, newly discovered USB devices will be put at the bottom of their boot device category.</p>

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 59. Boot Manager Screen

Error Manager

The Error Manager screen displays any errors encountered during POST.

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

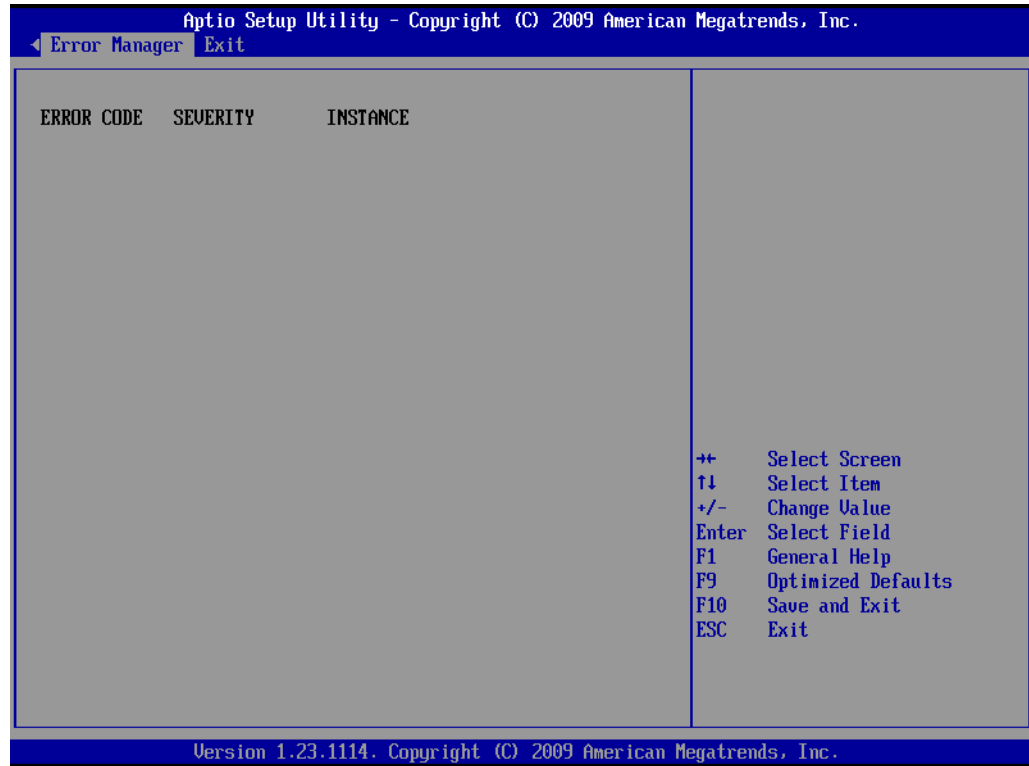


Figure 60. Error Manager Screen

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.

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

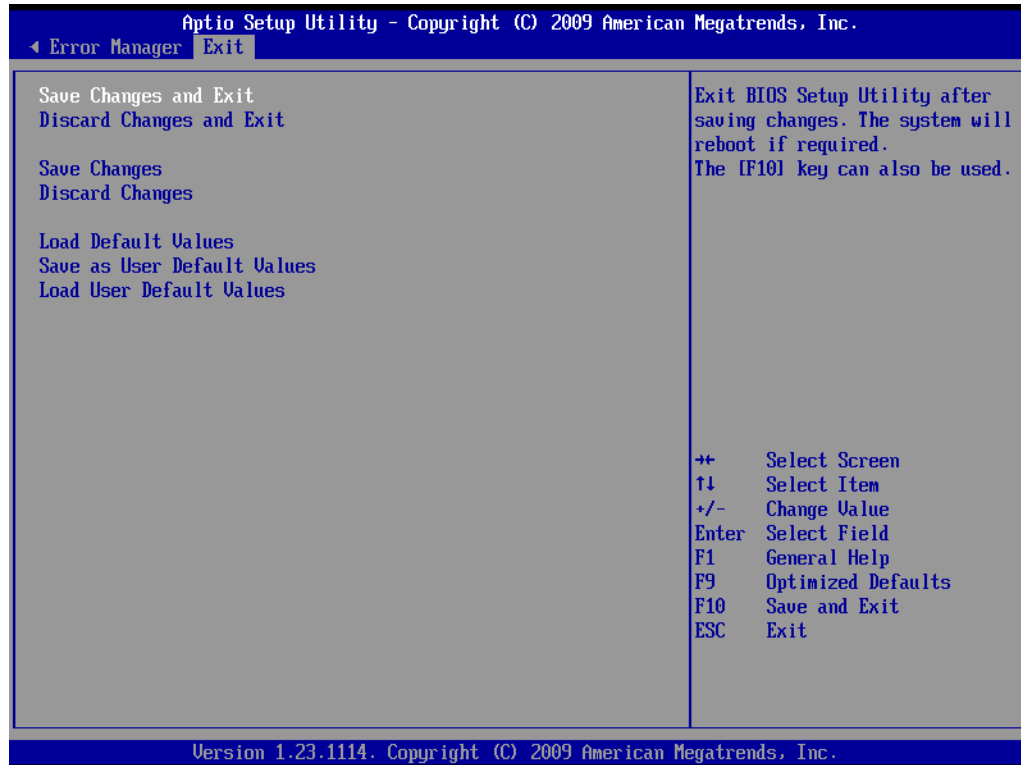


Figure 61. Exit Screen

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

Table 14. 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.

Table 14. Exit Screen Details

Setup Item	Description
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 BIOS and firmware is updated when the Intel® Modular Server System MFSYS25/MFSYS35 Unified Firmware Update(UFU) 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 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 upgrade utility

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 to complete the update.*

Updating the BIOS

The Intel® Compute Module MFS5520VI 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.

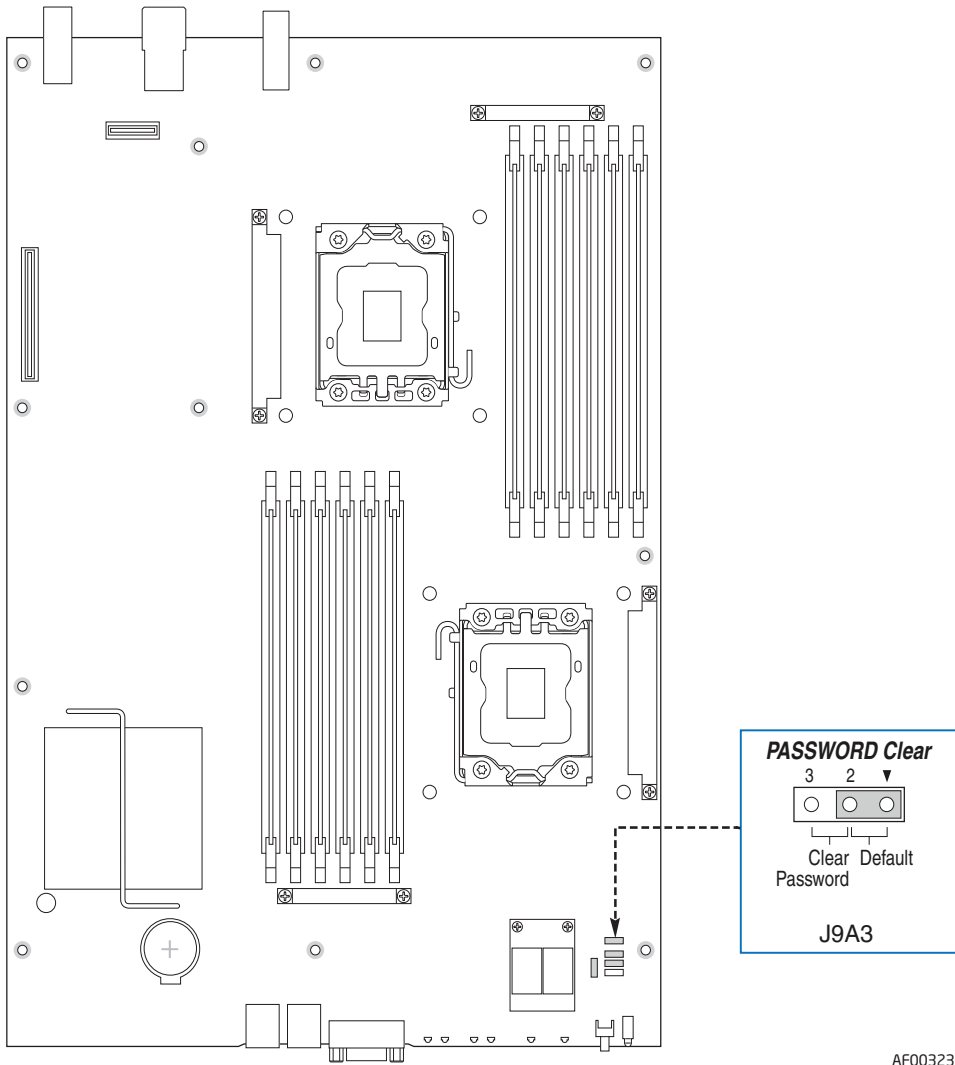
Caution: Do not power down the system during the BIOS update process!

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 **J9A3**.

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 , “Removing the Top Cover” on page -14](#)
4. Move the jumper (J9A3) from the default operating position, covering pins 1 and 2, to the password clear position, covering **pins 2 and 3**.



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Figure 62. Password Clear Jumper

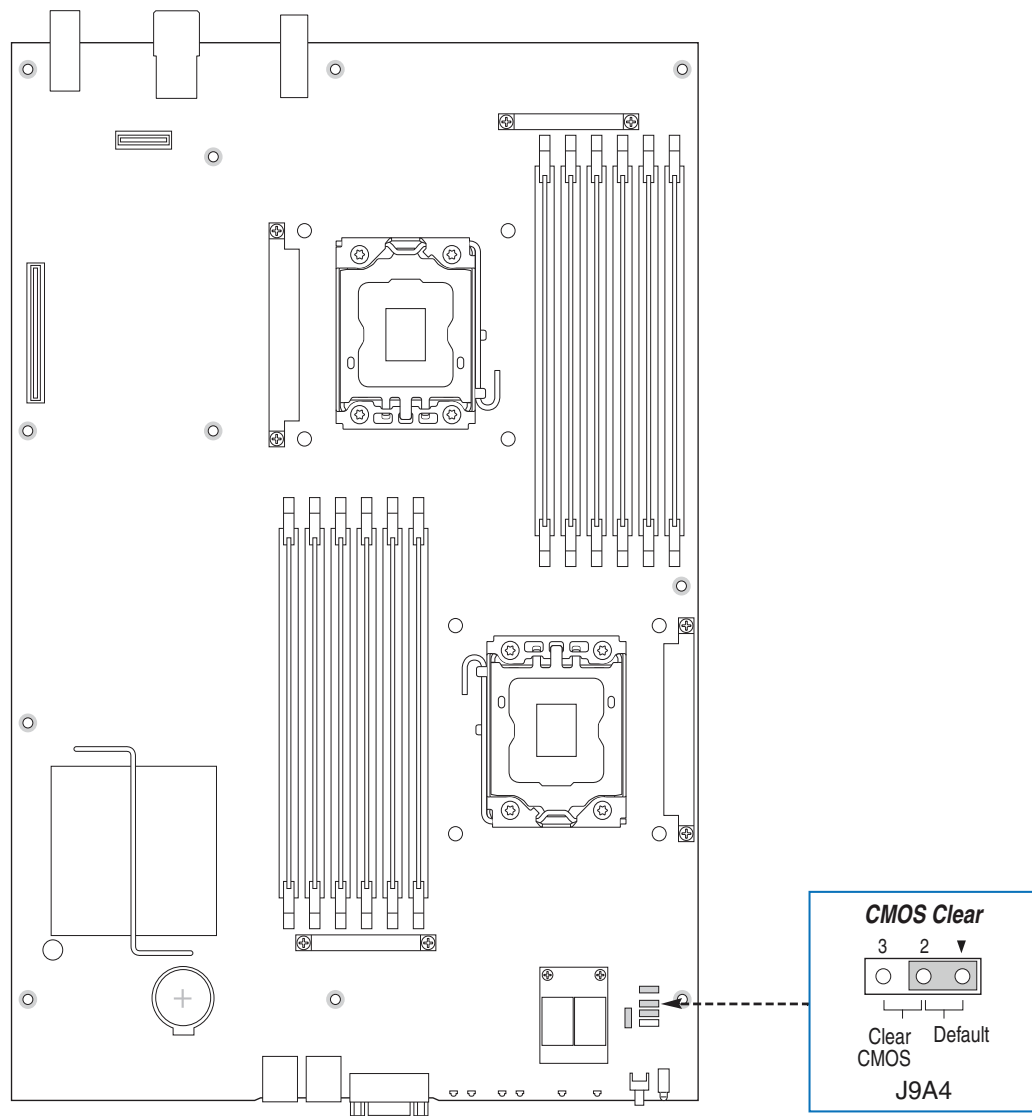
5. Replace the compute module cover.
6. Insert the compute module into the Intel[®] Modular Server System.
7. Power on the compute module and then press <F2> to enter the BIOS Setup Utility menu to check if the password is cleared.
8. Repeat steps 1- 3.
9. Move the Password Clear jumper back to its default position, covering pins 1 and 2.
10. Replace the compute module cover.
11. Insert the compute module into the Intel[®] Modular Server System.
12. 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 **J9A4**.

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 , “Removing the Top Cover”](#) on page -14
4. Move the jumper (J9A4) from the default operating position (covering pins 1 and 2) to the reset / clear position (**covering pins 2 and 3**).



AF003232

Figure 63. CMOS Clear Jumper

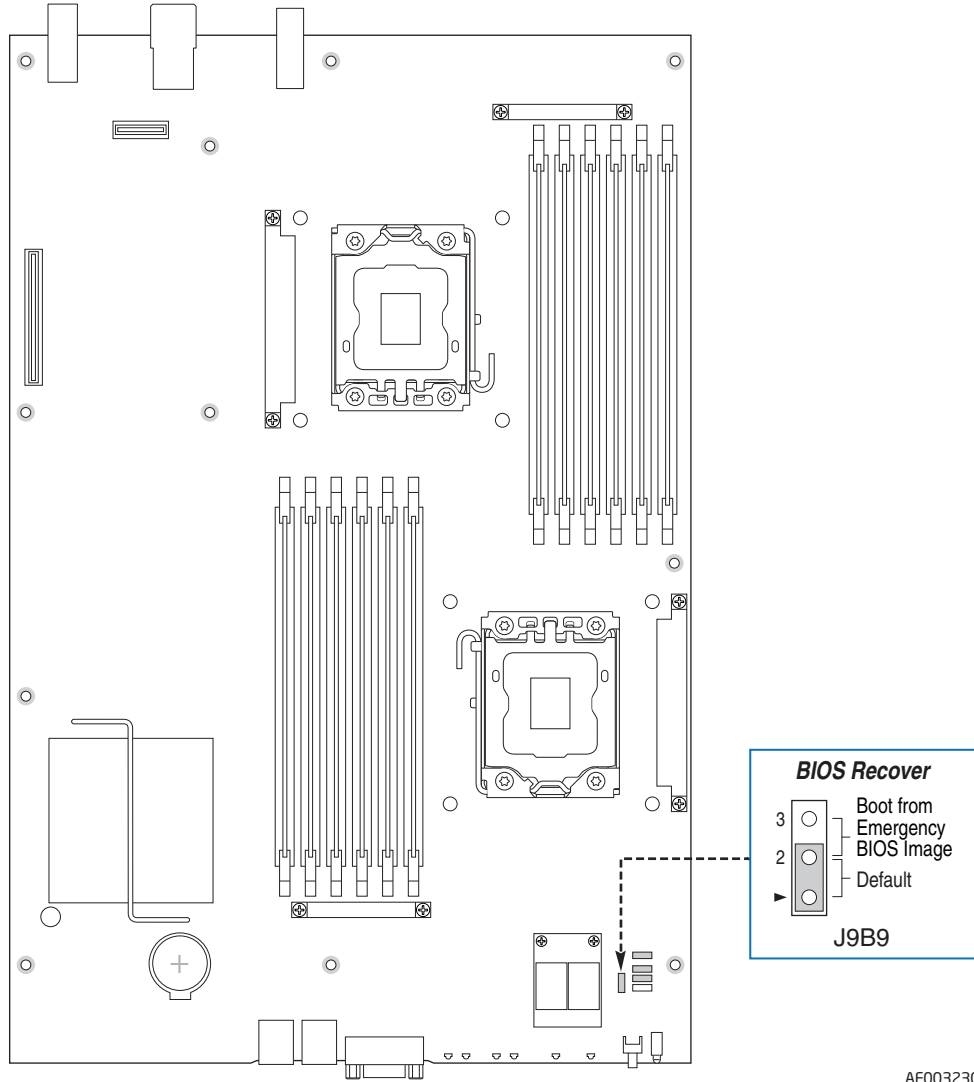
5. Wait 5 - 10 seconds.
6. Move the jumper back to default position, covering pins 1 and 2.
7. Replace the compute module cover
8. Insert the compute module into the Intel® Modular Server System.
9. Power on the compute module.

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

BIOS Recovery Procedure

1. Download the BIOS image file to a temporary folder on your hard drive.
2. Copy all the files in the BIOS recovery package to the root directory of a bootable USB disk-on-key device.
3. Power off the compute module.
4. Remove the compute module from the modular server system.
5. Remove the compute module cover. For instructions, refer to Section , [“Removing the Top Cover” on page 14.](#)
6. Switch the BIOS recovery jumper (J9B9) to the ‘Boot from emergency BIOS’ position (pins 2-3). Details regarding the jumper ID and location can be obtained from the compute module *Technical Product Specification* and the *Quick Start Guide*.
7. Replace compute module cover.
8. Insert compute module back into the modular server system.
9. Insert the recovery media into one of the compute modules USB ports.
10. Power on the compute module.
11. The BIOS POST screen will appear displaying the progress, and the system automatically boots to the EFI SHELL.
12. Startup.nsh file executes automatically, and initiates the BIOS update with the recovery BIOS capsule file. The message of the ‘BIOS has been updated successfully’ displays once the recovery process is complete.
13. Power OFF the compute module.
14. Remove the recovery media.
15. Remove the compute module from the modular server system.
16. Open the compute module cover.
17. Move the BIOS Recovery jumper back to the normal operation (default) position covering pins 1 and 2.
18. Replace compute module cover.
19. Insert the compute module into the Intel® Modular Server System.
20. Power ON the compute module.

Caution: DO NOT interrupt the BIOS POST during the first boot after recovery!



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Figure 64. BIOS Recover Jumper

4 Troubleshooting

This chapter provides information to assist you in troubleshooting the Intel® Compute Module MFS5520VI.

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 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 compute module. Try resetting your compute module using one of the following methods:

- Soft boot reset: Shut down the operating system gracefully and restart the compute module to clear the memory and reload the operating system.
- Cold boot reset: Turn the compute module power button off and then turn it back on to clear the memory, restart POST, reload the operating system, and halt power to all peripherals.

First Steps Checklist

- Are the compute module 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 connectors 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® Modular Server System MFSYS25/MFSYS35 and Intel® Compute Module MFS5000SI/MFS5520VI 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 97](#).

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 compute module 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 [“Power LED Does Not Light” on page 97](#).
- 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 compute module?
- 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 compute module 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 compute module?

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 and Intel® Compute Module MFS5000SI/MFS5520VI 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 compute module BIOS and firmware, on-board network interface card firmware and mezzanine card firmware are all current.
- Try re-seating the mezzanine card.

Mezzanine Card Stops Working Without Apparent Cause

- Try re-seating the mezzanine card.
- 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 compute module meets the minimum hardware requirements for the software. See the software documentation.
- Make sure the software is properly installed and configured for the compute module. 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 reboots, and the compute module 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 compute module 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.

A Getting Help

World Wide Web

<http://support.intel.com/support/motherboards/server/>

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
Russia 7 495 642 8537
Spain..... 91 377 8166
Sweden..... 08 445 1251
United Kingdom ... 0870 607 2439

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

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

B Product Regulatory Requirements

Regulatory and Certification Information

The Intel® Compute Module MFS5520VI 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 MFS5520VI itself as it is evaluated as part of the Intel® Modular Server System MFSYS25/MFSYS35.

Product Environmental/Ecology Requirements

The Intel® Compute Module MFS5520VI 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 MFS5520VI:

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 ernstesten 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.



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 Nulleitersicherungen. Vorsicht ist geboten im Umgang mit Netzteilen, welche Nulleitersicherungen 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 Sie 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 leitfähige Schaumstoffunterlage, aber nicht 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.
	Veillez 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'électrocution.

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 todas 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 el 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于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

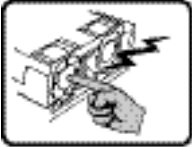
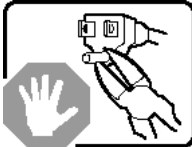
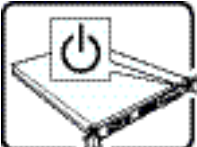

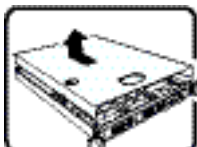
为避免幅射暴露和 / 或人身伤害:

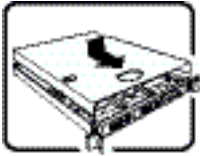
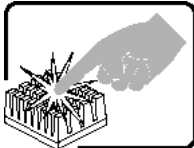

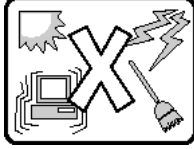
- 请勿打开任何激光外设或激光设备的外壳
- 激光外设或激光设备为非用户维修设备

请与生产商联系维修事宜

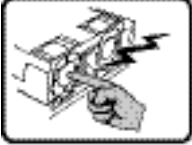
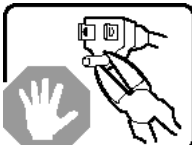
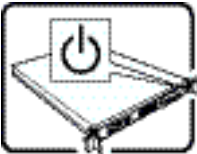

D Installation/Assembly Safety Instructions

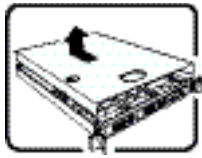
English

	<p>The power supply in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.</p>
	<p>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.</p>
	<p>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.</p> <p>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.</p>
	<p>SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:</p> <ol style="list-style-type: none"> 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.
	<p>After you have completed the six SAFETY steps above, you can remove the system covers. To do this:</p> <ol style="list-style-type: none"> 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).

	<p>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:</p> <ol style="list-style-type: none"> 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.
	<p>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.</p>
	<p>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.</p>
	<p>The system is designed to operate in a typical office environment. Choose a site that is:</p> <ul style="list-style-type: none"> • 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.

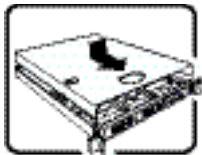
Deutsch

	<p>Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.</p>
	<p>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.</p>
	<p>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.</p> <p>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.</p>
	<p>SICHERHEITSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:</p> <ol style="list-style-type: none">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.



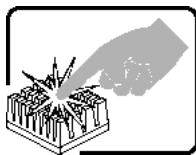
SICHERHEITSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:

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.

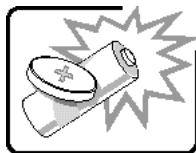


Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen:

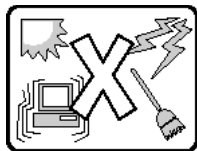
1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben.
2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation.
3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben 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.

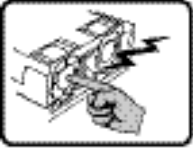
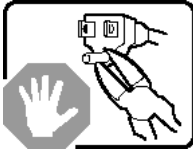
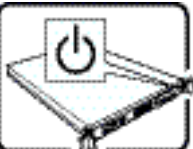

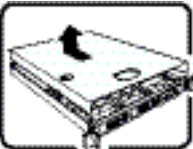


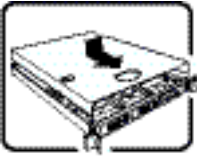
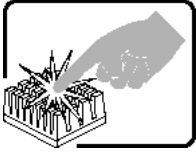
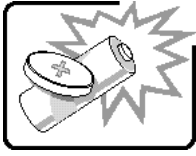
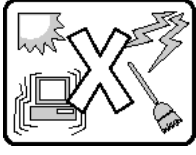
Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.

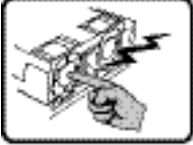
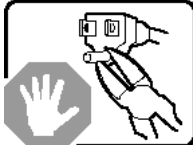


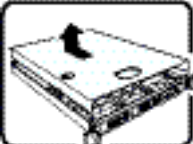


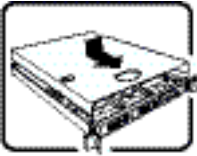
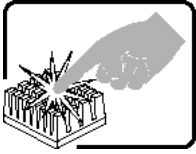
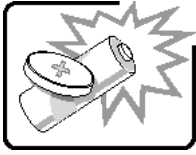
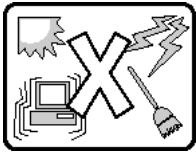
Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:

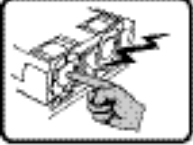
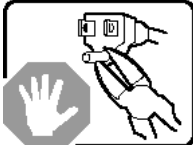



- "sauber und staubfrei sein (Hausstaub ausgenommen);
- "gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);
- "keinen Erschütterungen ausgesetzt sein;
- "keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;
- "in Regionen, 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

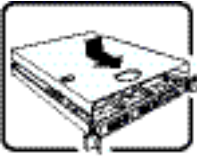
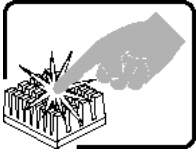
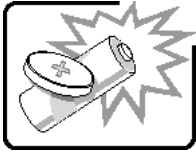
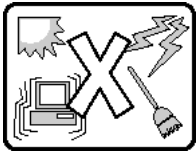
	<p>Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.</p>
	<p>Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, 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</p>
	<p>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.</p> <p>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.</p>
	<p>CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:</p> <ol style="list-style-type: none"> 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.
	<p>Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit:</p> <ol style="list-style-type: none"> 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.

	<p>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:</p> <ol style="list-style-type: none"> 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.
	<p>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.</p>
	<p>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.</p>
	<p>Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:</p> <ul style="list-style-type: none"> • "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).

	<p>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</p>
	<p>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</p>
	<p>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.</p>
	<p>INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:</p> <ol style="list-style-type: none"> 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 sujeta 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.
	<p>Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:</p> <ol style="list-style-type: none"> 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.

	<p>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:</p> <ol style="list-style-type: none"> 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.
	<p>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.</p>
	<p>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.</p>
	<p>El sistema está diseñado para funcionar en un entorno de trabajo normal. escoja un lugar:</p> <ul style="list-style-type: none"> • "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 sobrevoltage 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.

	<p>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.</p>
	<p>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</p>
	<p>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.</p> <p>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.</p>
	<p>PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:</p> <ol style="list-style-type: none"> 1. Spegner tutti i dispositivi periferici collegati al sistema. 2. Spegner 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.
	<p>Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come segue:</p> <ol style="list-style-type: none"> 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.

	<p>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:</p> <ol style="list-style-type: none"> 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.
	<p>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.</p>
	<p>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.</p>
	<p>Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:</p> <ul style="list-style-type: none"> • "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.

