Intel[®] Server Board S2600CP Family Intel[®] Server System P4000CP Family Service Guide

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

Order Number: G54899-001

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Warnings

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.

System power on/off: The power button DOES NOT turn off the system AC power. To remove power from the system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server 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 chapter only 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.

ESD and handling boards: 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.

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.

Preface

About this Manual

Thank you for purchasing and using the Intel® Server Chassis P4000M family products.

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this server chassis. This document provides a brief overview of the features of the board/chassis, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the Intel[®] Server Chassis P4000M family. For the latest version of this manual, refer to http://www.intel.com/p/en_US/support.

Manual Organization

Chapter 1 provides a brief overview of the Intel[®] Server Chassis P4000M family. In this chapter, you will find a list of the server chassis features, photos of the product, and product diagrams to help you identify components and their locations.

Chapter 2 provides instructions on adding and replacing components. Use this chapter for step-by-step instructions and diagrams for installing or replacing components such as the fan, power supply, front panel board, and battery, among other components.

Chapter 3 provides detail description of BIOS setup menu and help text.

The back of this manual provides technical specifications, regulatory information, LED Decoder, "getting help" information, and Intel[®] Server Issue Report Form.

Product Contents, Order Options, and Accessories

Your Intel[®] Server Board S2600CP ships with the following items:

- Intel[®] Server Board S2600CP2 or Intel[®] Server Board S2600CP4
- Cables, IO shield
- Documentations

Your Intel[®] Server System P4308CP4MHEN ships with the following items:

- Intel[®] Server Board S2600CP4
- Intel[®] Server Chassis P4308XXMHEN with one 550-W Fixed Power supply, two Fixed System Fans and 8x3.5" Hot-swap HDD Cage
- Documentations

Your Intel[®] Server System P4308CP4MHGC ships with the following items:

- Intel[®] Server Board S2600CP4
- Intel[®] Server Chassis P4308XXMHGC with 750-W Hotswap Power supply, five Hotswap System Fans and 8x3.5" Hot-swap HDD Cage
- Documentations

Your Intel[®] Server System P4208CP4MHGC ships with the following items:

- Intel[®] Server Board S2600CP4
- Intel[®] Server Chassis P4208XXMHGC with 750-W Hotswap Power supply, five Hotswap System Fans and 8x2.5" Hot-swap HDD Cage
- Documentations

For information about compatible accessories, memory, processors, and third-party hardware and ordering information for Intel products, see: http://www.intel.com/support.

Additional Information and Software

If you need more information about this product or information about the accessories that you can use with this server chassis, use the following resources. These files are available at: http://www.intel.com/support.

Unless otherwise indicated in the following table, once on this web page, type the document or software name in the search field at the left side of the screen and select the option to search "This Product".

Table 1. Server System References

For this information or software	Use this Document or Software
For in-depth technical information about this product.	Intel® Server Board S2600CP and Intel® Server System P4000CP Family Technical Product Specification
	See the section on the web page titled, "Document and Guides".
If you just received this product and need	Intel® Server Board S2600CP Quick Start User's Guide
to install it.	Intel® Server System P4000CP Family Quick Installation User's Guide
Accessories or other Intel [®] server products.	Spares and Configuration Guide
To quickly and efficiently select	Intel® Server Configurator tool
compatible components to design a complete system.	https://serverconfigurator.intel.com
To make sure your system falls within the allowed power budget.	Power Budget Analysis Tool
For software to manage your Intel® server.	Intel Server Management Software
For firmware and drivers.	Firmware and Drivers

Table of Contents

Sa	nfety Information	iii
Pr	reface	v
1	Server System Features	1
	Intel® Server System P4308CP4MHEN View	
	Intel® Server System P4308CP4MHGC View	
	Intel® Server System P4208CP4MHGC View	3
	Hot Swap Hard Drive Bay and Front Panel Options	
	Front Control Panel	
	Back Panel	5
	Server Board Components	6
	Intel® Light-Guided Diagnostics	
	System Jumpers	
	Hot-Swap SAS/SATA Backplane	
	Intel® RAID Expander Cards (Upgrade Option)	
	Advanced Management Options	
2	Hardware Installations and Upgrades	14
	Before You Begin	
	Tools and Supplies Needed	14
	System Reference	
	Cable Routing Recommendations	
	Removing and Installing the System Side Cover	
	Remvoing the System Side Cover	
	Installing the System Side Cover	
	Removing and Installing the Front Bezel	
	Remvoing the Front Bezel	
	Installing the Front Bezel	
	Removing and/or Installing Airduct	
	Removing the Airduct	
	Installing the Airduct	22
	Removing and Installing Processor	23
	Removing Processor Heatsink(s)	23
	Installing the Processor	24
	Installing Processor Heatsink(s)	26
	Installing and Removing Memory	27
	Installing Memory	
	Removing Memory	
	Installing and Removing Hot-swap Hard Drive	28
	Installing a Hard Disk Drive into 3.5" Hard Drive Carrier	
	Installing a Hard Disk Drive into 2.5" Hard Drive Carrier	
	Installing and Removing a PCI Add-in Card	
	Installing a PCI Add-in Card	
	Removing a PCI Add-in Card	
	Design A GPGPU Card Extender	
	Installing and Removing an Optical Drive	
	Installing an Optical Drive	

Table of Contents

Removing an Optical Drive	36
Installing and Removing the Intel® RAID C600 Upgrade Key	37
Installing the Intel® RAID C600 Upgrade Key	37
Removing the Intel® RAID C600 Upgrade Key	
Installing and Removing the Intel® Remote Management Module 4	38
Installing the Intel® RMM4 Lite	38
Install the Intel® RMM4 NIC	38
Removing the Intel® RMM4 Lite	39
Removing the Intel® RMM4 NIC	39
Installing and Removing the Intel® RAID Smart Battery	
Installing the Intel® RAID Smart Battery	39
Removing the Intel® RAID Smart Battery	
Removing and Installing the Fixed Power Supply	
Removing the Fixed Power Supply	
Installing the Fixed Power Supply	
Installing an Additional Hot-swap Power Supply Module	
Replacing a Hot Swap Power Supply Module	
Replacing the Power Distribution Board	43
Installing and Removing the Server Board	
Removing the Server Board	
Installing the Server Board	
Replacing a Fixed Fan	
Removing the Fixed Fan	
Installing the Fixed Fan	
Replacing a Hot-swap Fan	
Removing the Hot-swap Fan	
Installing the Hot-swap Fan	
Removing and Installing 8x3.5" Hot-swap Hard Drive Cage Assembly	
Removing 8x3.5" Hot-swap Hard Drive Cage Assembly	
Installing 8x3.5" Hot-swap Hard Drive Cage Assembly	
Removing and Installing 8x2.5" Hot-swap Hard Drive Cage Assembly	
Removing 8x2.5" Hot-swap Hard Drive Cage Assembly	
Installing 8x2.5" Hot-swap Hard Drive Cage Assembly	
Removing and Installing the Hot-swap HDD EMI Shiled	
Removing the Hot-swap HDD EMI Shiled	
Installing the Hot-swap HDD EMI Shiled	
Replacing the Backplane	
Removing the Backplane	
Installing the Backplane	
Removing and Installing the Top Cosmetic Cover	
Removing the Top Cosmetic Cover	
Installing the Top Cosmetic Cover	
Removing and Installing the Chassis Feet.	
Removing the Chassis Feet.	
Installing the Chassis Feet (Pedestal Configuration Only)	
Removing and Installing the Front Panel Tray	
Removing the Front Control Panel Tray	
Installing the Fron Panel Tray	
Replacing the Front Panel Board	
Installing Alternate Serial Port	
Installing and/or Removing a Expander card	

	Installing the Expander card	
	Removing the Expander card	71
3 5	Server Utilities	73
	Using the BIOS Setup Utility	
	Starting Setup	
	Setup Navigation Keyboard Commands	73
	Setup Screen Menu Selection Bar	74
	BIOS Setup Utility Screens	
	Map of Screens and Functionality	
	Main Screen (Tab)	
	Advanced Screen (Tab)	
	Processor Configuration	
	Memory Configuration	
	Memory RAS and Performance Configuration	
	PCI Configuration	
	NIC Configuration	
	Serial Port Configuration	
	USB Configuration	
	System Acoustic and Performance Configuration	
	Security Screen (Tab)	
	Server Management Screen (Tab)	
	Console Redirection	133
	System Information	
	BMC LAN Configuration	
	Boot Options Screen (Tab)	
	CDROM Order	
	Hard Disk Order	
	Floppy Order	
	Network Device Order	
	BEV Device OrderAdd EFI Boot Option	
	Delete EFI Boot Option	
	Boot Manager Screen (Tab)	
	Error Manager Screen (Tab)	
	Exit Screen (Tab)	
A nn	endix A: Technical Reference	
App	550-W Fixed Power Supply Input/Output Voltages	
	750-W Redundant Power Supply Input/Output Voltages	
	System Environmental Specifications	
App	endix B: Regulatory and Compliance Information	164
App	endix C: LED Decoder	165
App	endix D: Getting Help	
	Warranty Information	
Ann	endix E: Intel® Server Issue Report Form	171

List of Figures

Figure 1. Intel [®] Server System P4308CP4MHEN	1
Figure 2. Intel [®] Server System P4308CP4MHGC View	2
Figure 3. Intel® Server System P4208CP4MHGC View	3
Figure 4. Hot Swap Hard Drive Bay and Front Panel Options	
Figure 5. Front Control Panel	4
Figure 6. Bank Panel With 550-W PSU	5
Figure 7. Back Panel With 750-W PSU	
Figure 8. Server Board Connector and Component Locations	
Figure 9. Intel® Light-Guided Diagnostic LEDs - Server Board	
Figure 10. Configuration Jumpers	
Figure 11. 8x3.5 backplane – Front View	
Figure 12. 8x3.5 backplane – Rear View	
Figure 13. 8 x 2.5 backplane - Front View	
Figure 14. 8 x 2.5 backplane - Rear View	
Figure 15. Internal Inte ^{1®} RAID Expander Cards Components	
Figure 16. Cable connections for Intel® Server System P4308CP4MHEN	
Figure 17. Cable routing for Intel® Server System P4308CP4MHEN	16
Figure 18. Cable connections for Intel® Server System P4308CP4MHGC and P4208CP4MHGC	
Figure 19. Cable routing for Intel® Server System P4308CP4MHGC and P4208CP4MHGC	
Figure 20. Removing the Side Cover	
Figure 21. Installing the Side Cover	
Figure 22. Removing the Front Bezel	
Figure 23. Installing the Front Bezel	
Figure 24. Removing the Airduct	
Figure 25. Installing the Airduct	
Figure 26. Removing Processor Heatsink	
Figure 27. Installing Processor – Open the Socket Lever	
Figure 28. Installing Processor – Open the Load Plate	
Figure 29. Installing Processor – Install the Processor	
Figure 30. Installing Processor – Remove the Cover	
Figure 31. Installing Processor – Close the Load Plate	26
Figure 32. Installing Processor – Latch the Locking Lever	26
Figure 33. Installing Processor Heatsink	
Figure 34. Installing Memory	
Figure 35. Installing Hard Disk Drive – Removing 3.5" HDD carrier	
Figure 36. Installing Hard Disk Drive – Removing 3.5" HDD interface bracket	
Figure 37. Installing Hard Disk Drive – Installing 3.5" HDD	
Figure 38. Installing Hard Disk Drive – Installing 2.5" HDD	
Figure 39. Installing Hard Disk Drive – Inserting 3.5" HDD assembly	
Figure 40. Installing Hard Disk Drive – Removing 2.5" HDD carrier	
Figure 41. Installing Hard Disk Drive – Removing plastic drive blank	
Figure 42. Installing Hard Disk Drive – Installing 2.5" HDD	
Figure 43. Installing Hard Disk Drive – Inserting 2.5" HDD assembly	31
Figure 44. Remove PCI slot shield	31

Figure 45.	Open PCI card retainer	32
Figure 46.	Open PCI card retention device	32
	Install PCI card	
Figure 48.	Close PCI card retention device	33
Figure 49.	Close PCI card retainer.	33
Figure 50.	Installing the GPGPU Card Fixture	34
Figure 51.	Secure the GPGPU card with GPGPU bracket	34
	Side View of a GPGPU Card Extender Example	
Figure 53.	Top View of a GPGPU Card Extender Example	35
	Remove the Optical Drive filler	
Figure 55.	Installing an Optical Drive	36
	Remove an Optical Drive	
Figure 57.	Install optical drive filler.	37
	Installing the Intel® RAID C600 Upgrade Key	
	Removing the Intel® RAID C600 Upgrade Key	
Figure 60.	Installing the Intel® RMM4 Lite	38
	Installing the Intel® RMM4 NIC	
Figure 62.	Installing the Intel® RAID Smart Battery	40
	Removing the Intel® RAID Smart Battery	
	Removing Fixed Power Supply	
_	Installing Fixed Power Supply	
_	Removing Power Supply Filler Panel	
	Installing Additional Hot-swap Power Supply Module	
_	Removing Hot-swap Power Supply Module from Chassis	
	Installing Hot-swap Power Supply Module into Chassis	
	Removing Hot-swap Power Supply Module from Chassis	
	Loosing the Bracket with Power Distribution Board from Chassis	
	Removing the Bracket with Power Distribution Board from Chassis	
	Removing the Power Distribution Board from Bracket	
	Sliding the New Power Distribution Board in Bracket	
•	Securing the New Power Distribution Board in Bracket	
	Sliding the Bracket into Power Supply Cage	
_	Secruing the Bracket into Power Supply Cage	
	Installing Hot-swap Power Supply Module into Chassis	
	Removing the Server Board	
_	Installing the Server Board	
_	Disconnecting the fan power cable from the server board	
	Removing fixed system fan from chassis	
	Inserting the fan cable in the corresponding fan bracket	
	Installing the Fixed Fan	
Figure 85.	Removing Hot-swap Fan	52
	Installing Hot-swap Fan.	
Figure 87.	Removing the 8x3.5" Hot-swap HDD Cage Assembly	53
	Installing the 8x3.5" Hot-Swap Hard Drive Cage Assembly	
	8x3.5" Hot Swap Backplane Cable Connections	
	Removing the 8x2.5" HDD Cage Assembly	
•	Installing the 8x2.5" Hot-Swap Hard Drive Cage Assembly	
	8x2.5" Hot Swap Backplane Cable Connections	
	Removing the Hot-swap HDD EMI Shield	
	Installing the Hot-swap HDD EMI Shield	
	Removing 3.5" hard drive backplane – remove the hard drive cage	

List of Figures

Figure 96. Removing 3.5" hard drive backplane - remove the backplane	59
Figure 97. Removing 2.5" hard drive backplane – remove the stiffener	59
Figure 98. Removing 2.5" hard drive backplane – remove the backplane	60
Figure 99. Installing 3.5" hard drive backplane – install the backplane	61
Figure 100. Installing 3.5" hard drive backplane – install the hard drive cage	61
Figure 101. Installing 2.5" hard drive backplane – install backplane	62
Figure 102. Installing 2.5" hard drive backplane – install hard drive cage	62
Figure 103. Removing the Top Cosmetci Cover	
Figure 104. Installing the Top Cosmetci Cover	
Figure 105. Removing the Chassis Feet	64
Figure 106. Installing the Chassis Feet	
Figure 107. Disconnecting the Cables from the Server Board	65
Figure 108. Sliding the Front Panel Tray out from the Chassis	
Figure 109. Disconnecting the Cables from Front Panel Board	
Figure 110. Connecting the Cables to the Front Panel Board	67
Figure 111. Installing the Front Panel Tray in Chassis	
Figure 112. Connecting the Cables to Server Board the Front Panel Tray in Chassis.	
Figure 113. Removing the Front Panel Board	
Figure 114. Removing and Installing the Cap on Front Panel Board	
Figure 115. Installing the New Front Panel Board	69
Figure 116. Removing the Alternate Serial Port Knockout	
Figure 117. Installing the Alternate Serial Port Knockout	
Figure 118. Installing the Expander Card	
Figure 119. Removing the Expander card	
Figure 120. Main Screen	
Figure 121. Advanced Screen	
Figure 122. Processor Configuration Screen	84
Figure 123. Memory Configuration Screen	95
Figure 124. Memory RAS and Performance Configuration Screen	100
Figure 125. Mass Storage Controller Configuration Screen	103
Figure 126. PCI Configuration Screen	
Figure 127. NIC Configuration Screen	111
Figure 128. Serial Port Configuration Screen	115
Figure 129. USB Configuration Screen	117
Figure 130. System Acoustic and Performance Configuration	120
Figure 131. Security Screen	123
Figure 132. Server Management Screen	128
Figure 133. Console Redirection Screen.	134
Figure 134. System Information Screen	135
Figure 135. BMC LAN Configuration Screen	136
Figure 136. Boot Options Screen	146
Figure 137. CDROM Order Screen	152
Figure 138. Hard Disk Order Screen	153
Figure 139. Floppy Order Screen	
Figure 140. Network Device Order Screen	
Figure 141. BEV Device Order Screen	
Figure 142. Add EFI Boot Option Screen.	
Figure 143. Delete EFI Boot Option Screen	
Figure 144. Boot Manager Screen	
Figure 145. Error Manager Screen	
Figure 146. Exit Screen	160

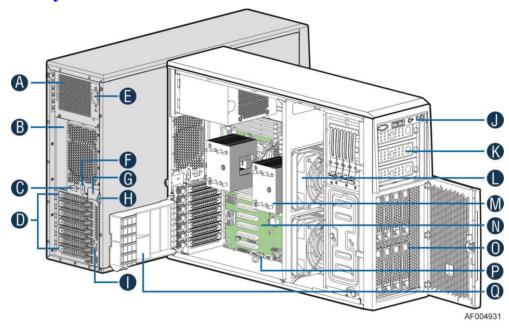
List of Tables

Table 1. Server System References	vi
Table 2. BIOS Setup: Keyboard Command Bar	73
Table 3. Screen Map	75
Table 4. AC Input Voltage Range	
Table 5. Over Voltage Protection Limits	
Table 6. Over Current Limits	161
Table 7. AC Input Voltage Range	162
Table 8. Over Voltage Protection (OVP) Limits	
Table 9. Over Current Protection	163
Table 10. System Environmental Limits Summary	
Table 11. POST Progress Code LED Example	

1 Server System Features

This section helps you identify the components of your server system. If you are near the system, you can also use the *Quick Reference Label* provided on the inside of the chassis cover to assist in identifying components.

Intel® Server System P4308CP4MHEN



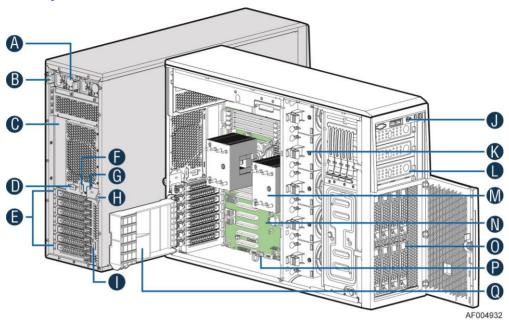
- A. 550-W Fixed Power supply
- B. I/O Ports
- C. Alternate RMM4 Knockout
- D. PCI Add-in Board Slot Covers
- E. AC Input Power Connector
- F. Serial Port Knockout
- G. A Kensington* Cable Lock Mounting Hole
- H. Padlock Loop
- I. Alternate RMM4 Knockout
- J. Front Control Panel
- K. 5.25" Peripheral Bays
- L. Fixed System Fan
- M. Heat-sink
- N. Intel® Server Board S2600CP
- O. 8x3.5" Hot-swap HDD Cage
- P. Intel® RAID C600 Upgrade Key
- Q. PCI-e Retainer

Figure 1. Intel® Server System P4308CP4MHEN

/ NOTE:

Airduct is not shown

Intel® Server System P4308CP4MHGC



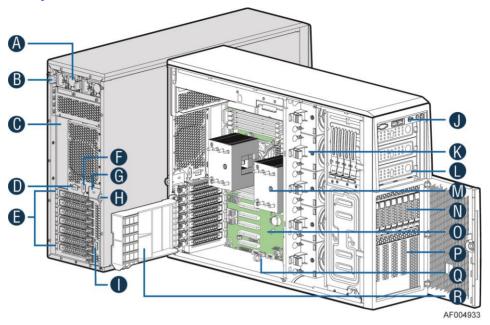
- A. 750-W Redundant Power Supply
- B. AC Input Power Connector
- C. I/O Ports
- D. Alternate RMM4 Knockout
- E. PCI Add-in Board Slot Covers
- F. Serial Port Knockout
- G. A Kensington* Cable Lock Mounting Hole
- H. Padlock Loop
- I. Alternate RMM4 Knockout
- J. Front Control Panel
- K. Hot-swap System Fan
- L. 5.25" Peripheral Bays
- M. Heat-sink
- N. Intel® Server Board S2600CP
- O. 8x3.5" Hot-swap HDD Cage
- P. Intel® RAID C600 Upgrade Key
- Q. PCI-e Retainer

Figure 2. Intel® Server System P4308CP4MHGC

NOTE:

Airduct is not shown.

Intel® Server System P4208CP4MHGC



- A. 750-W Redundant Power Supply
- B. AC Input Power Connector
- C. I/O Ports
- D. Alternate RMM4 Knockout
- E. PCI Add-in Board Slot Covers
- F. Serial Port Knockout
- G. A Kensington* Cable Lock Mounting Hole
- H. Padlock Loop
- I. Alternate RMM4 Knockout
- J. Front Control Panel
- K. Hot-swap System Fan
- L. 5.25" Peripheral Bays
- M. Heat-sink
- N. 8x3.5" Hot-swap HDD Cage
- O. Intel® Server Board S2600CP
- P. EMI Cover
- Q. Intel® RAID C600 Upgrade Key
- R. PCI-e Retainer

Figure 3. Intel[®] Server System P4208CP4MHGC

/ NOTE:

Airduct is not shown.

Hot Swap Hard Drive Bay and Front Panel Options

The figure below shows the 8x3.5" drive bay for Intel[®] Server System P4308CP4MHEN and P4308CP4MHGC, and 8x2.5" drive bay for Intel[®] Server System P4208CP4MHGC.

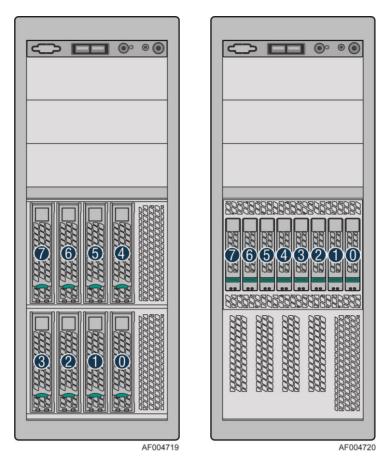


Figure 4. Hot Swap Hard Drive Bay and Front Panel Options

Front Control Panel

Below figure show the layout of components on Front Control Panel.

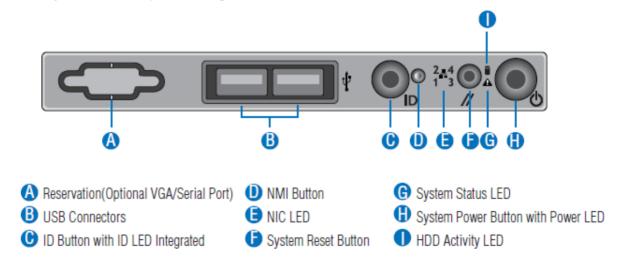
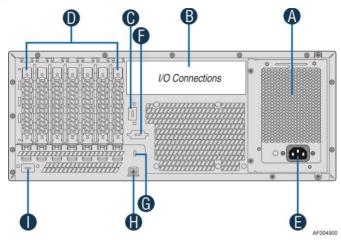


Figure 5. Front Control Panel

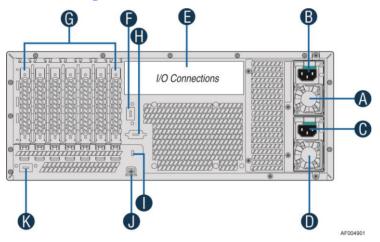
Back Panel

The following figures show the layout of Back Panel with 550-W fixed power supply and 750-W redundant power supplies.



A	Power Supply	F	Serial-B Port (Optional)
В	IO Connectors	G	Kensington* Cable Lock Mounting Hole
С	RMM4 NIC Port (Optional)	Н	Padlock Loop
D	Add in PCI-e cards	I	RMM4 NIC Port (Optional)
Е	Power Connector		

Figure 6. Back Panel with 550-W PSU

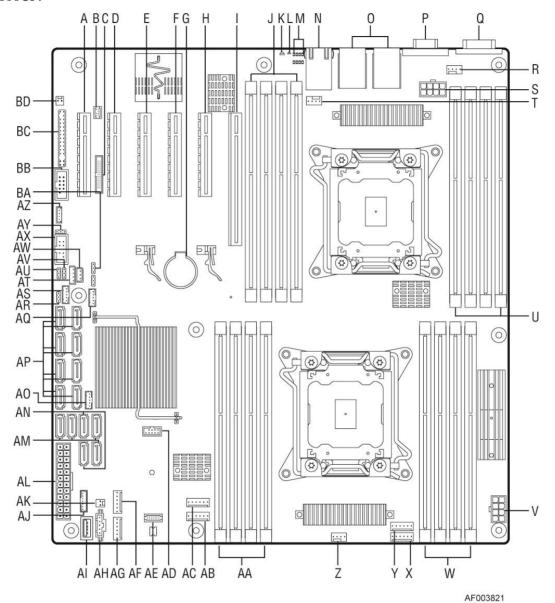


A		G	
	Power Supply		Add in PCI-e cards
В	Power Connector	Н	Serial-B Port (Optional)
C	Power Connector	I	Kensington* Cable Lock Mounting Hole
D	Power Supply	J	Padlock Loop
Е	IO Connectors	K	RMM4 NIC Port (Optional)
F	RMM4 NIC Port (Optional)		

Figure 7. Back Panel with 750-W PSU

Server Board Components

This section helps you identify the components and connectors on the $Intel^{\circledast}$ Server Board S2600CP.



Callout	Description	Callout	Description
Α	Slot 1, PCI Express* Gen3	AC	System Fan 4 connector
В	RMM4 LITE	AD	Internal eUSB SSD
С	RMM4 NIC	AE	TPM
D	Slot 2, PCI Express* Gen3	AF	System Fan 2
Е	Slot 3, PCI Express* Gen3, open-ended	AG	System Fan 1
F	Slot 4, PCI Express* Gen3	AH	PMBus
G	Battery	AI	Type-A USB

Callout	Description	Callout	Description
Н	Slot 5, PCI Express* Gen3, from second processor, open-ended	AJ	LCP
I	Slot 6, PCI Express* Gen3, support riser card	AK	HDD activity LED
J	DIMM E1/E2/F1/F2	AL	Main Power
K	System Status LED	AM	SATA 3G connector
L	ID LED	AN	SATA 6G connector
M	Diagnostic LED	AO	SATA SGPIO
N	NIC 3/4 (only on Quad NIC board)	AP	SATA/SAS connector
О	USB 0/1/2/3, NIC 1,2	AQ	SAS SGPIO 2
P	VGA	AR	Password Clear
Q	Serial Port A	AS	SAS SGPIO 1
R	Processor 2 Fan connector	AT	IPMB
S	Processor 2 Power connector	AU	ME Force Update
T	System Fan 7 connector	AV	BMC Force Update
U	DIMM H1/H2/G1/G2	AW	HSBP_I2C
V	Processor 1 Power connector	AX	USB to front panel
W	DIMM A1/A2/B1/B2	AY	BIOS Default
X	System Fan 5 connector	AZ	Intel C600 RAID Upgrade key connector
Y	System Fan 6 connector	BA	BIOS Recovery
Z	Processor 1 Fan connector	BB	Serial B connector
AA	DIMM C1/C2/D1/D2	ВС	SSI Front Panel (24-pin) and NIC 3/4 LED (4-pin)
AB	System Fan 3 connector	BD	Chassis Intrusion

Figure 8. Server Board Connector and Component Locations

Intel® Light-Guided Diagnostics

The figure in below shows the locations of Diagnostic LEDs on Intel® Server Board S2600CP.

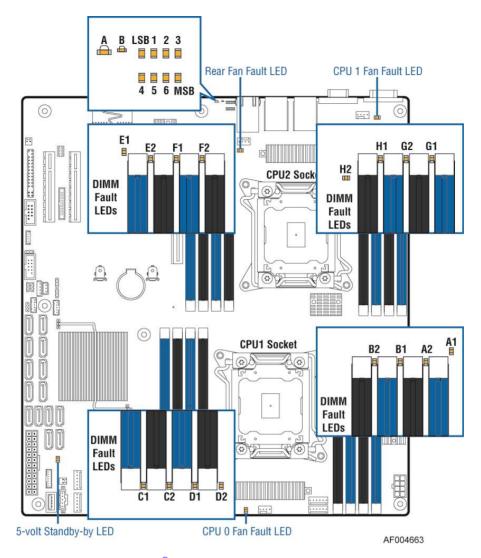


Figure 9. Intel[®] Light-Guided Diagnostic LEDs - Server Board

The server system contains the following diagnostic LEDs, each providing the following functions: A - The System Status LED on the front and back panels shows the overall health of the system (green, blinking green, blinking amber, amber and off).

B - The System Identification LED on the front and back panel helps identify the server from among several servers. The ID LED is off by default, and blue when activated by button or software.

POST Code Diagnostic LEDs on the server board change color or state (off, green, red and amber) according to the POST sequence.

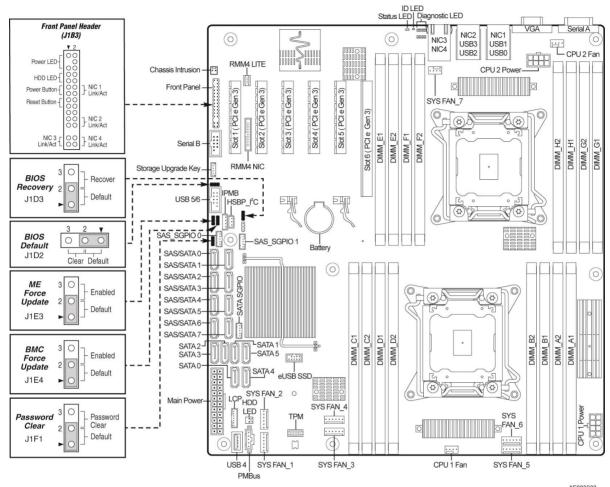
The 5V-STBY LED on the server board is illuminated (green) when power is applied.

CPU fault LEDs help identify the failure of CPU. The CPU fault LEDs turn on (amber) if there is a CPU fault.

DIMM Fault LEDs on the server board help identify failed and failing DIMM slots. The DIMM fault LEDs turn on (amber) if there is a DIMM fault.

System Jumpers

The figure below shows the locations of System Jumpers on Intel® Server Board S2600CP.



Jumper Name	Pins	System Results		
•	1-2	Pins 1-2 should be connected for normal system operation. (Default)		
BIOS Recovery	2-3	The main system BIOS does not boot with pins 2-3 connected. The system only boots from EFI-bootable recovery media with a recovery BIOS image present.		
BIOS Default	1-2	These pins should have a jumper in place for normal system operation. (Default)		
(a.k.a CMOS Clear)	2-3	If pins 2-3 are connected when AC power unplugged, the CMOS settings clear in 5 seconds. Pins 2-3 should not be connected for normal system operation.		
ME Force	1-2	ME Firmware Force Update Mode – Disabled (Default)		
Update	2-3	ME Firmware Force Update Mode – Enabled		
BMC Force	1-2	BMC Firmware Force Update Mode – Disabled (Default)		
Update	2-3	BMC Firmware Force Update Mode – Enabled		
	1-2	These pins should have a jumper in place for normal system operation. (Default)		
Password Clear	2-3	To clear administrator and user passwords, power on the system with pins 2-3 connected. The administrator and user passwords clear in 5-10 seconds after power on. Pins 2-3 should not be connected for normal system operation.		

Figure 10. Configuration Jumpers

Hot-Swap SAS/SATA Backplane

The Hot-Swap SAS/SATA backplane serves as an interface between the mother board and the system drives. The following diagrams show the location for each connector found on the backplane.

8 x 3.5-inch Hard Drive Backplane

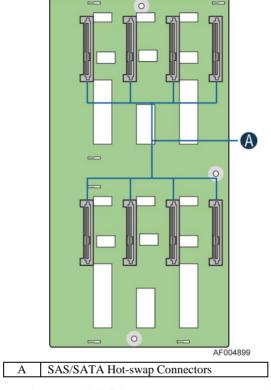
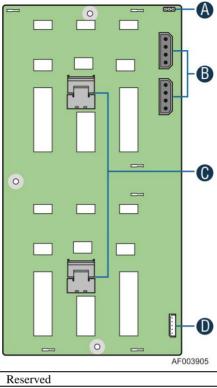


Figure 11. 8x3.5-inch backplane – Front View



A	Reserved
В	Power Connector
С	Mini-SAS Connectors
D	I ² C In Connector

Figure 12. 8x3.5-inch backplane – Rear View

8 x 2.5-inch Hard Drive Backplane

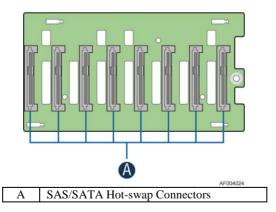


Figure 13. 8x2.5-inch backplane - Front View

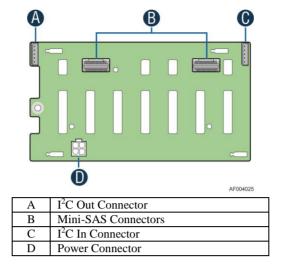
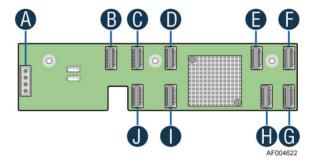


Figure 14. 8x2.5-inch backplane - Rear View

Intel® RAID Expander Cards (Upgrade Option)

Intel provides two types of internal RAID expander cards: 36 ports and 24 ports.



A	Power Connector
В	Mini-SAS Connector A
C	Mini-SAS Connector B
D	Mini-SAS Connector G (36 port sku only)
Е	Mini-SAS Connector H (36 port sku only)
F	Mini-SAS Connector I (36 port sku only)
G	Mini-SAS Connector F
Н	Mini-SAS Connector E
I	Mini-SAS Connector D
J	Mini-SAS Connector C

Figure 15. Internal Inte^{1®} RAID Expander Cards Components

Advanced Management Options

Intel® Remote Management Module 4

The Intel[®] Remote Management Module 4 plugs into a dedicated connector on the server board and provides additional server management functionality to the server board.

This module provides a dedicated web server for viewing server information and remote control of the system. It also provides Remote KVM Redirection and USB Media Redirection allowing USB devices attached to the remote system to be used on the managed server.

For instructions on installing the Intel[®] Remote Management Module 4, see "Installing and Removing the Intel[®] Remote Management Module 4".

2 Hardware Installations and Upgrades

Before You Begin

Before working with your server product, pay close attention to the "Safety Information" at the beginning of this manual.

/ NOTE

Whenever you service the system, you must first power down the server and unplug all peripheral devices and the power cord.

Tools and Supplies Needed

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

System Reference

All references to left, right, front, top, and bottom assume the reader is facing the front of the chassis as it would be positioned for normal operation.

Cable Routing Recommendations

When you add or remove components from your server system, make sure your cables are routed correctly before reinstalling the server system cover. Use caution to make sure no cables or wires are pinched and that the airflow from the fans is not blocked. Use the figures below to determine the correct cable routing.

/ NOTE:

To activate the port SATA/SAS 4-7 on the server board, a proper Intel[®] RAID C600 Upgrade Key must be installed. For instructions, see Intel[®] RAID C600 Upgrade Key Installation Guide.

Cable connections for Intel[®] Server System P4308CP4MHEN:

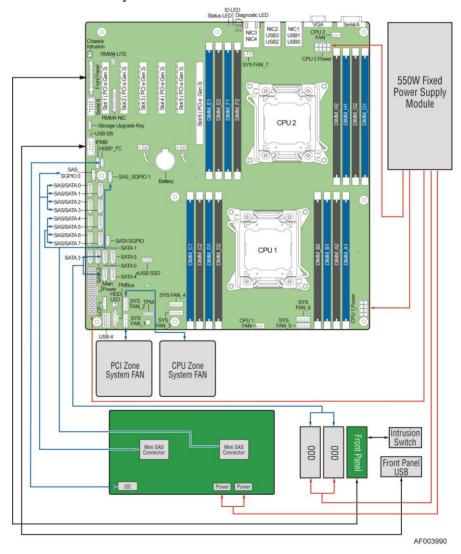
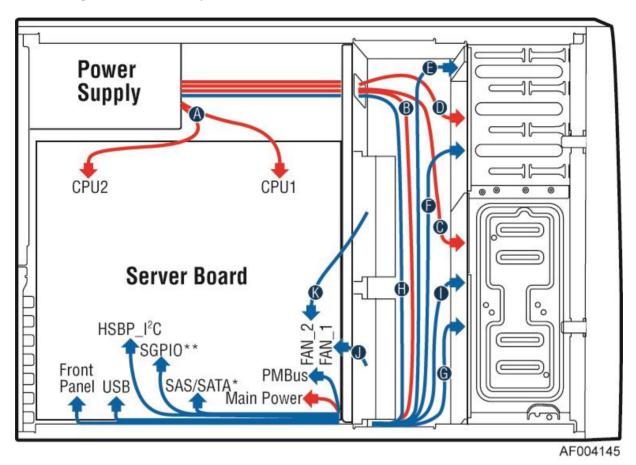


Figure 16. Cable connections for Intel® Server System P4308CP4MHEN

Cable routing for Intel® Server System P4308CP4MHEN:



Description Callout Description Callout CPU1/CPU2 Power Cable В Server Board Main Power Cable A C Hot-swap Backplane Power Cable D **ODD Power Cable** ODD Data Cable (Connect To White SATA 6G Е F Front Panel Cable, USB Cable Connectors On Server Board) G Mini-SAS and SGPIO Cable Η **PMBus** J I Hot-swap Backplane I2C Cable System Fan 1 Cable K System Fan 2 Cable

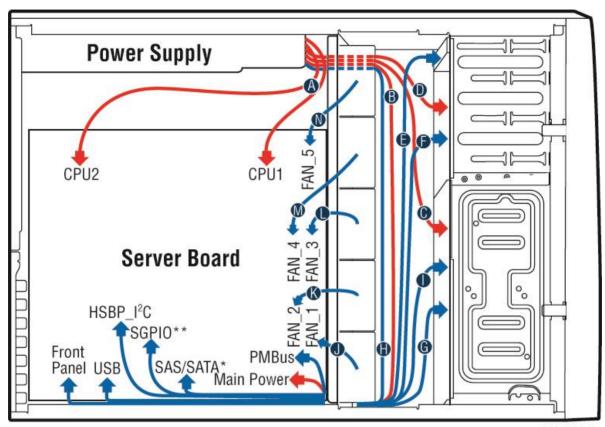
Figure 17. Cable routing for Intel® Server System P4308CP4MHEN

ID LED Status LED Diagnostic LED NIC2 USB3 NIC1 USB1 NIC3 NIC4 USB2 USB0 RMM4 LITE CPU 2 Power SYS FAN 7 Slot 4 (PCI e Gen 3) Slot 5 (PCI e Gen 3) Slot 3 (PCI e Gen 3) Hot Hot Slot 6 (PCI e Gen 3) do Swap 750W Swap 750W DIMM_E2 DIMM_G2 DIMM_G1 **CRPS CRPS** CPU 2 -Storage Upgrade Key USB 5/6 SAS SGPIO 0 SAS/SATA 0 PDB SAS/SATA 1 SAS/SATA 2 SAS/SATA 3 SAS/SATA 4-SAS/SATA 5-SAS/SATA 6-- SATA SGPIO SAS/SATA 7 SATA 1 CPU 1 -SATA 0 -SATA 4 eUSB SSD (\$ (D) PMBus SYS TPM USB 4 Hot-Swap System FAN 1 Hot-Swap System FAN 2 Hot-Swap System FAN 3 Hot-Swap System FAN 4 Hot-Swap System FAN 5 Intrusion Front Panel Switch Mini SAS Connector Mini SAS Connector 000 000 Front Panel USB 12C Power

Cable connections for Intel® Server System P4308CP4MHGC and P4208CP4MHGC:

Figure 18. Cable connections for Intel® Server System P4308CP4MHGC and P4208CP4MHGC

Cable routing for Intel® Server System P4308CP4MHGC and P4208CP4MHGC:



AF004144

Ca	llout Description	Callout	Description
A	CPU1/CPU2 Power Cable	В	Server Board Main Power Cable
С	Hot-swap Backplane Power Cable	D	ODD Power Cable
Е	Front Panel Cable, USB Cable	F	ODD Data Cable (Connect To White SATA 6G Connectors on Server Board)
G	Mini-SAS and SGPIO	Н	PMBus Cable
I	Hot-swap Backplane I2C Cable	J	System FAN 1
K	System FAN 2	L	System FAN 3
M	System FAN 4	N	System FAN5

Figure 19. Cable routing for Intel® Server System P4308CP4MHGC and P4208CP4MHGC

Removing and Installing the System Side Cover

Remvoing the System Side Cover

The Intel[®] Server System P4000CP family must be operated with the top cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside of the platform. Before removing the top cover, power down the server and unplug all peripheral devices and the AC power cable.

/ NOTE

A non-skid surface or a stop behind the chassis may be needed to prevent the chassis from slding on your work surface.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Turn off all peripheral devices connected to the server. Turn off the server.
- 3. Disconnect the AC power cord.
- 4. Remove the screws (see letter "A").
- 5. Slide the side cover back (see letter "B") and lift the cover outward to remove it.

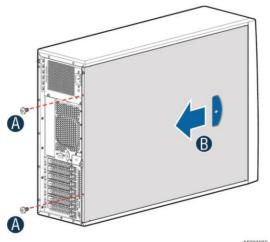


Figure 20. Removing the Side Cover

Installing the System Side Cover

- Slide the chassis cover on the chassis (see letter "A").
- Latch the cover securely to the chassis.
- Secure the chassis cover with the screws (see letter "B").

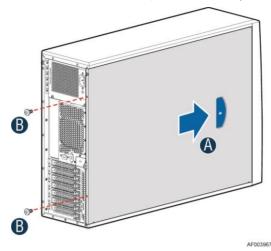


Figure 21. Installing the Side Cover

Removing and Installing the Front Bezel

Remvoing the Front Bezel

NOTE

For a rack configuration or chassis on its side, position the chassis hanging over the edge of a table or workbench before removing the bezel.

There are two type of bezel assembly. One type is for fixed HDD configuration, the other type is for Hot-swap HDD configuration.



A CAUTION

Do not rotate the bezel assembly more than 40 degrees or you will damage the bezel assembly.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the System Side Cover".
- 4. Release the two plastic tabs on the left side of the bezel assembly to disengage the tabs, and rotate the bezel assembly (see letter "A") no more than 40 degrees outward.
- 5. At a 40-degree angle, push the bezel assembly away from the chassis (see letter "B").

6. If the bezel assembly does not immediately disconnect from the chassis, tap the left-hand side of the bezel assembly to disengage the bezel hooks on the right-hand side of the chassis.

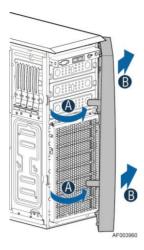


Figure 22. Removing the Front Bezel

Installing the Front Bezel

- 1. Fit the right edge of the bezel assembly against the right side of the chassis.
- 2. Engage the plastic bezel hooks (see letter "A") into the raised metal slots at the chassis edge.
- 3. Rotate the bezel assembly toward the chassis.
- 4. Latch the two plastic tabs (see letter "B") on the left side of the bezel assembly to the chassis.

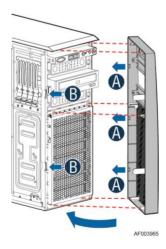


Figure 23. Installing the Front Bezel

Removing and/or Installing Airduct

Always operate your server system with the airduct in place. The airduct is required for proper airflow within the server system.

Removing the Airduct

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct by gentlely by lifting the airduct out of chassis.

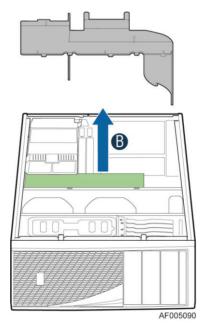


Figure 24. Removing the Airduct

Installing the Airduct

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Install the airduct by matching the alignment tabs on airduct and the alignment holes on chassis bracket.

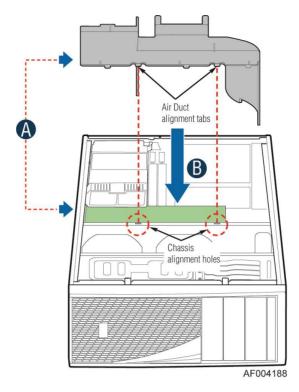


Figure 25. Installing the Airduct

Removing and Installing Processor

The heatsink has thermal interface material (TIM) on the underside of it. Use caution so that you do not damage the thermal interface material. Use gloves to avoid sharp edges.

Removing Processor Heatsink(s)

The heatsink is attached to the server board/processor socket with captive fasteners. Using a #2 Phillips* screwdriver, loosen the four screws located on the heatsink corners in a diagonal manner using the following procedure:

- 1. Using a #2 Phillips* screwdriver, start with screw 1 and loosen it by giving it two rotations and stop (see letter "A"). (IMPORTANT: Do not fully loosen.)
- 2. Proceed to screw 2 and loosen it by giving it two rotations and stop (see letter "B"). Similarly, loosen screws 3 and 4. Repeat steps A and B by giving each screw two rotations each time until all screws are loosened.
- 3. Lift the heatsink straight up (see letter "C").

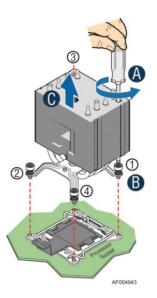


Figure 26. Removing Processor Heatsink

Installing the Processor

Caution: Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server. For a web link to the list of compatible processor(s), see "Additional Information and Software".

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 server board. 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 system.

1. Open the Socket Lever. Push down the lever handle on the **OPEN 1st** side and away from the socket to release it (see letter "A"). Repeat the steps to release the lever on the other side (see letter "B").

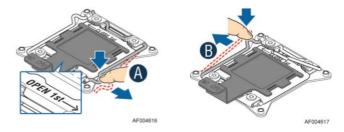


Figure 27. Installing Processor – Open the Socket Lever

2. Open the Load Plate. Press the locking lever slightly to raise the load plate (see letter "A"). Open the load plate all the way (see letter "B").

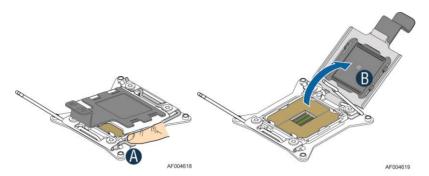


Figure 28. Installing Processor - Open the Load Plate

3. Install the Processor. Take the processor out of the box and remove the protective shipping cover (see letter "A"). Orient the processor with the socket so that the processor cutouts match the four orientation posts on the socket (see letter "B"). Note location of gold key at corner of processor (see letter "C").

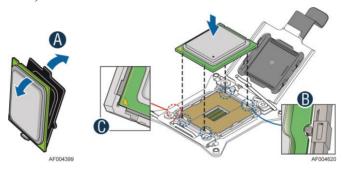


Figure 29. Installing Processor – Install the Processor

/ NOTE

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

4. Remove the Cover. Press the cover to remove it. Save the protective cover.

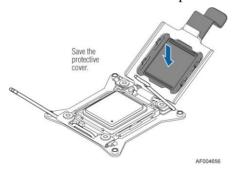


Figure 30. Installing Processor – Remove the Cover

5. Close the Load Plate. Carefully lower the load plate over the processor.

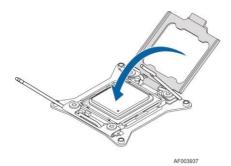


Figure 31. Installing Processor - Close the Load Plate

6. Latch the Locking Lever. Push down on the locking lever on the CLOSE 1st side (see letter "A"). Slide the tip of the lever under the notch in the load plate (see letter "B"). Make sure the load plate tab engages under the socket lever when fully closed. Repeat the steps to latch the locking lever on the other side (see letter "C"). Latch the levers in the order as shown.

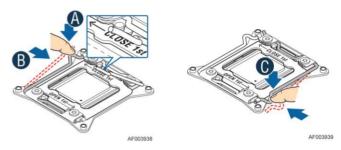


Figure 32. Installing Processor – Latch the Locking Lever

Installing Processor Heatsink(s)

- 1. Remove the protective film on the TIM if present.
- 2. Align heatsink fins to the front and back of the chassis for correct airflow (see letter "A"). Airflow goes from front-to-back of chassis.
 - Each heatsink has four captive fasteners and should be tightened in a diagonal manner using the following procedure:
- 3. Using a #2 Phillips* screwdriver, start with screw 1 and engage screw threads by giving it two rotations and stop (see letter "B"). (Do not fully tighten.)
- 4. Proceed to screw 2 and engage screw threads by giving it two rotations and stop. Similarly, engage screws 3 and 4 (see letter "C").
- 5. Repeat these steps on each screw with two rotations each time until each screw is lightly tightened up to a maximum of 8 inch-lbs torque.

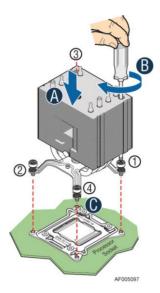


Figure 33. Installing Processor Heatsink

Installing and Removing Memory

Installing Memory

- 1. Locate the DIMM sockets. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position (see letter "A").
- 2. Holding the DIMM by the edges, remove it from its anti-static package. 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").
- 3. Insert the bottom edge of the DIMM into the socket (see letter "C"). When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place (see letter "D"). Make sure the clips are firmly in place (see letter "E").

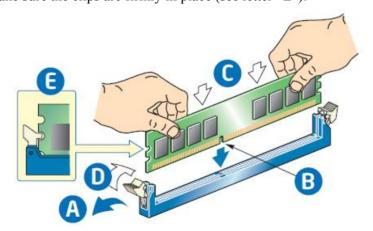


Figure 34. Installing Memory

Removing Memory

- 1. Locate the DIMM sockets. Gently spread the retaining clips at each end of the socket. The DIMM lifts from the socket.
- 2. Holding the DIMM by the edges, lift it from the socket, and store it in an anti-static package.

Installing and Removing Hot-swap Hard Drive

Caution: If you don't install all drives, empty drive bays must be occupied by carriers with plastic drive blank provided to maintain proper system cooling.

Installing a Hard Disk Drive into 3.5" Hard Drive Carrier

1. Remove the drive carrier by pressing the green button and opening the lever (see letter "A"). Slide the carrier out (see letter "B").

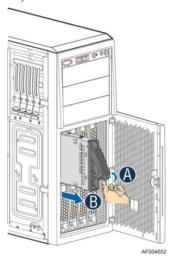


Figure 35. Installing Hard Disk Drive – Removing 3.5" HDD carrier

2. Remove the four screws securing the HDD interface bracket and remove the HDD interface bracket (see letter "C").

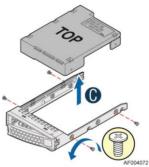


Figure 36. Installing Hard Disk Drive – Removing 3.5" HDD interface bracket

3. Install the hard disk drive using the same four screws as shown. Make sure the connector end of the drive matches the backplane connector (see letter "D").

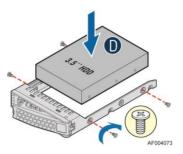


Figure 37. Installing Hard Disk Drive – Installing 3.5" HDD

For installing 2.5" Hard Disk Drive as option:

Break off the tab on the HDD interface bracket (see letter "d1"). Install the HDD interface bracket from top. Secure the bracket with three screws as shown (see letter "d2"). Slide the 2.5" HDD into the bracket to align the screw holes with the right and left rail (see letter "d3"). Secure the hard disk drive using the four screws for 2.5" HDD (see letter "d4").

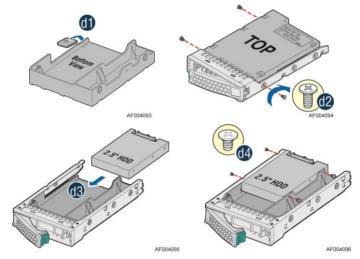


Figure 38. Installing Hard Disk Drive – Installing 2.5" HDD

4. With the lever open, insert the hard disk drive assembly into the chassis (see letter "A"). Push in the lever to lock it into place (see letter "B").

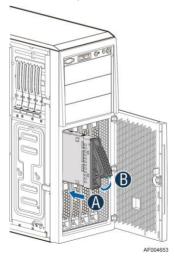


Figure 39. Installing Hard Disk Drive – Inserting 3.5" HDD assembly

Installing a Hard Disk Drive into 2.5" Hard Drive Carrier

1. Remove the drive carrier by pressing the green latch to unlock (see letter "A"). Pull out the black lever and slide the carrier out (see letter "B").

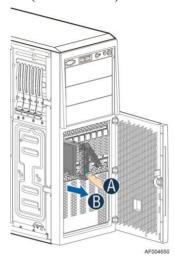


Figure 40. Installing Hard Disk Drive - Removing 2.5" HDD carrier

2. Remove the four screws securing the plastic drive blank from the 2.5" HDD carrier (see letter "C"). Disengage the plastic drive blank from the HDD carrier. Remove the plastic drive blank from the 2.5" HDD carrier (see letter "D").

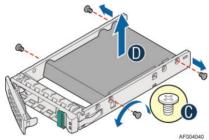


Figure 41. Installing Hard Disk Drive – Removing plastic drive blank

3. Install the hard disk drive using the four screws as shown. Make Sure the connector end of the drive matches the backplane connector (see letter "E").

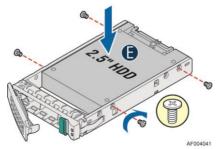


Figure 42. Installing Hard Disk Drive – Installing 2.5" HDD

4. With the lever open, insert the hard disk drive assembly into the chassis (see letter "G"), then push in the lever to lock it into place (see letter "H").

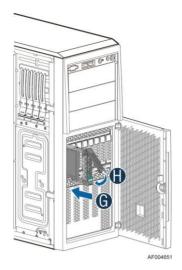


Figure 43. Installing Hard Disk Drive – Inserting 2.5" HDD assembly

Installing and Removing a PCI Add-in Card

Installing a PCI Add-in Card

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct by gentlely lifting the airduct out of chassis.
- 5. Remove the PCI slot shield from the chassis rear end. See letter A.

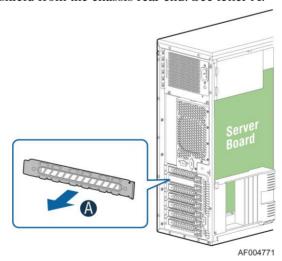


Figure 44. Remove PCI slot shield

6. Open the PCI card retainer. See letter B.

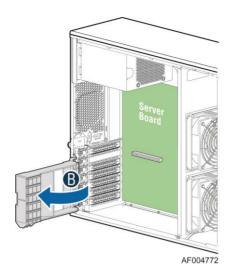


Figure 45. Open PCI card retainer

7. Open the PCI card retention device. See letter C.

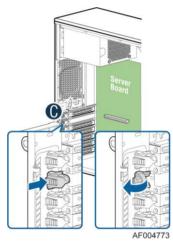


Figure 46. Open PCI card retention device

8. Align the PCI card and insert into place. See letter D.

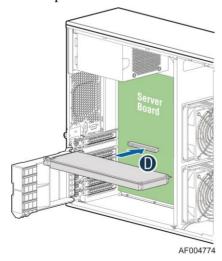


Figure 47. Install PCI card

9. Close the PCI card retention device. See letter E. Recommend to secure the PCI card with a screw.

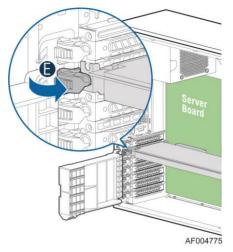


Figure 48. Close PCI card retention device

10. Close the PCI retainer and secure the PCI card.

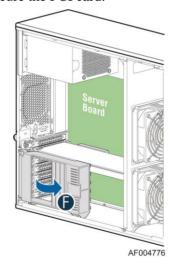


Figure 49. Close PCI card retainer.

Removing a PCI Add-in Card

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct by gentlely lifting the airduct out of chassis.
- 5. Open the PCI card retainer.
- 6. Release PCI card retention device, remove screw if there is.

- 7. Gentlely lift the PCI card from PCI slot.
- 8. Install a PCI slot shielter. Restore the PCI card retention device and PCI card retainer back to original position.

Design A GPGPU Card Extender

A GPGPU card bracket can help better secure a heavy GPGPU card, the bracket can be installed on position as shown by below figure.

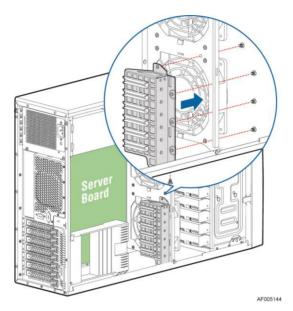


Figure 50. Installing the GPGPU Card Fixture

Users need to design a GPGPU card extender to make a non-full length GPGPU card to be full length, in order to take advandage of the GPGPU card bracket.

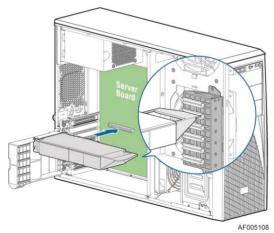


Figure 51. Secure the GPGPU card with GPGPU bracket

The following figures show an example of the GPGPU bracket:

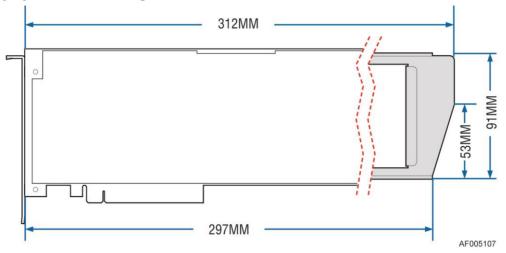


Figure 52. Side View of a GPGPU Card Extender Example

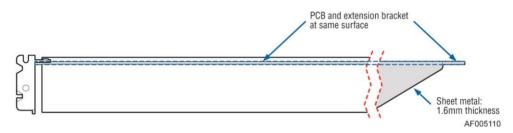


Figure 53. Top View of a GPGPU Card Extender Example

Installing and Removing an Optical Drive

Cautions: Before removing or replacing the drive, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the power cord from the system or wall outlet.

To maintain proper system cooling, a filler panel must be installed if you do not install a device at this location.

Installing an Optical Drive

1. Remove the O filler (see letter "A").

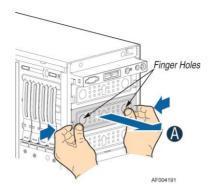


Figure 54. Remove the Optical Drive filler

2. Get the two optical drive rails from chassis side (see letter "B") and affix them to both optical drive sides, make sure the pinches on the optical drive rail are aligned with the alignment holes on the ODD (see letter "C"). Insert the optical drive into chassis opening and push all the way until it stops (see letter "D"). Connect the power and data cables to optical drive.

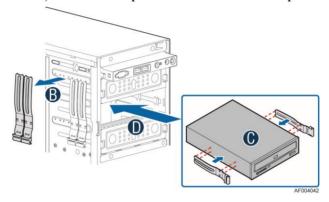


Figure 55. Installing an Optical Drive

Removing an Optical Drive

- 1. Remove the cables from optical drive.
- 2. Press the latching end of optical drive rails (see letter "A") and pull the optical drive out (see letter "B").
- 3. Remove the optical drive rail from the drive (see letter "C").

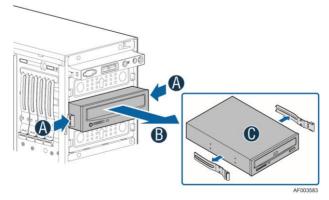


Figure 56. Remove an Optical Drive

4. Install the optical drive filler.

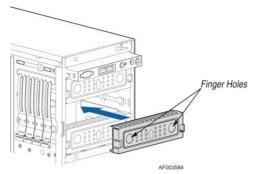


Figure 57. Install optical drive filler.

Installing and Removing the Intel[®] RAID C600 Upgrade Key

Installing the Intel® RAID C600 Upgrade Key

Locate the white 4-pin key header. Carefully pickup the Intel® RAID C600 Upgrade Key. Match the Key and connector orientation and press down to install.

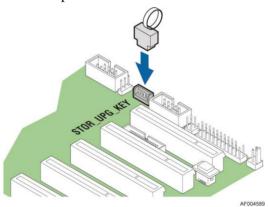


Figure 58. Installing the Intel® RAID C600 Upgrade Key

Removing the Intel® RAID C600 Upgrade Key

Pull up the key to remove it from the mother board.

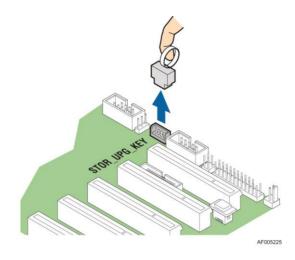


Figure 59. Removing the Intel® RAID C600 Upgrade Key

Installing and Removing the Intel[®] Remote Management Module 4

Installing the Intel® RMM4 Lite

Locate the RMM4 Lite connector next to RISER SLOT_1, carefully pickup the Intel® RMM4 Lite module, match the alignment pin of the module and the connector on server board, then press to install.

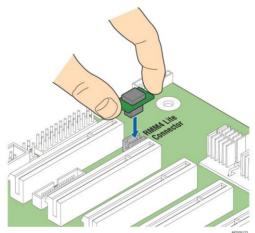


Figure 60. Installing the Intel® RMM4 Lite

Install the Intel® RMM4 NIC

- 1. Push out and remove the metal cover on the chassis where the NIC RJ-45 receptacle will align (see letter "B").
- 2. Connect the cable to the module (see letter "C").
- 3. Secure the module to the chassis with the two screws (see letter "D").

4. Connect the cable to the server board connector (see letter "E").

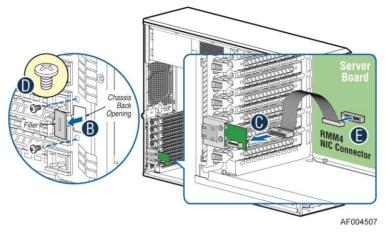


Figure 61. Installing the Intel® RMM4 NIC

Removing the Intel® RMM4 Lite

Pull up the RMM4 Lite module to remove it from the mother board.

Removing the Intel® RMM4 NIC

- 1. Unplug the cable from module and server board.
- 2. Remove the screws and remove the module from the server chassis.

Installing and Removing the Intel® RAID Smart Battery

Installing the Intel® RAID Smart Battery

- 1. Connect the cable between the BBU and the RAID card. For details, see *Intel*® *RAID Smart Battery User's Guide*.
- 2. Locate the mounting holes inside the chassis.
- 3. Align the tabs on the plastic battery holder with the mounting holes in the chassis and slide the plastic battery holder until the tabs engage with the mounting holes.

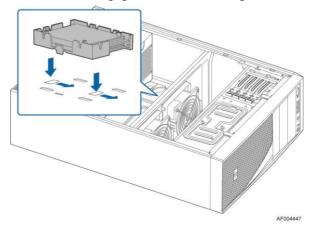


Figure 62. Installing the Intel® RAID Smart Battery

Removing the Intel® RAID Smart Battery

- 1. Pull the tab until the tab is disengaged from the chassis cut.
- 2. Slide the battery from the server chassis side wall and move it out of the opening in the fan bulkhead.
- 3. Lift the battery up to remove it from the server chassis.

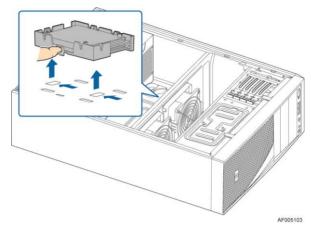


Figure 63. Removing the Intel® RAID Smart Battery

Removing and Installing the Fixed Power Supply



MARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

Removing the Fixed Power Supply

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct if it is installed. For instructions, see "Installing the Airduct".
- 5. Disconnect all internal power cables from chassis components and server board.
- 6. Rotate the power supply locking device counter-clockwise (see letter "A") and remove the fixed power supply (see letter "B").

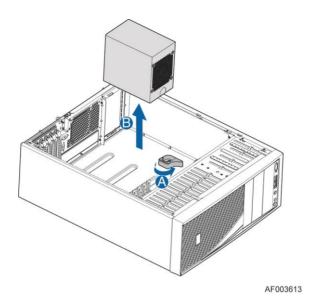


Figure 64. Removing Fixed Power Supply

Installing the Fixed Power Supply

1. Insert new fixed power supply and rotate the power supply locking device clockwise (see letter "A" and "B").

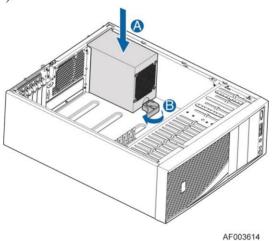


Figure 65. Installing Fixed Power Supply

- 2. Reconnect power cables to other chassis components as appropriate.
- 3. Install the airduct. For instructions, see "Installing the Airduct".
- 4. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
- 5. Plug all peripheral devices and the AC power cable into the server.
- 6. Power up the server.

Installing an Additional Hot-swap Power Supply Module

Λ

WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Insert finger into finger hole in middle of filler panel and remove the filler panel from chassis.

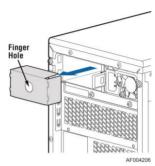


Figure 66. Removing Power Supply Filler Panel

3. Insert the power supply module into the power supply cage and push all the way until it clicks into place.

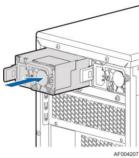


Figure 67. Installing Additional Hot-swap Power Supply Module

Replacing a Hot Swap Power Supply Module



WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Remove power cable from defective power supply.
- 3. Press up on green latch in the direction shown while pulling on handle to remove hot swap power supply from chassis.

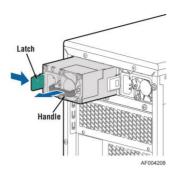


Figure 68. Removing Hot-swap Power Supply Module from Chassis

4. Insert new power supply module into the power supply cage and push all the way until it clicks into place.

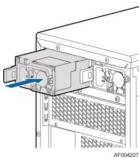


Figure 69. Installing Hot-swap Power Supply Module into Chassis

Replacing the Power Distribution Board

A

WARNING

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct. For instructions, see "Installing the Airduct".
- 5. Disconnect all internal power cables from chassis components and server board.
- 6. If present, press on green latch in the direction shown while pulling on handle to remove power supply from chassis. Repeat this step for the second hot-swap power supply if it is installed.

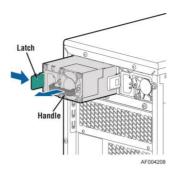


Figure 70. Removing Hot-swap Power Supply Module from Chassis

7. Loosen screws securing the bracket with power distribution board to the chassis (see letter "A" and "B").

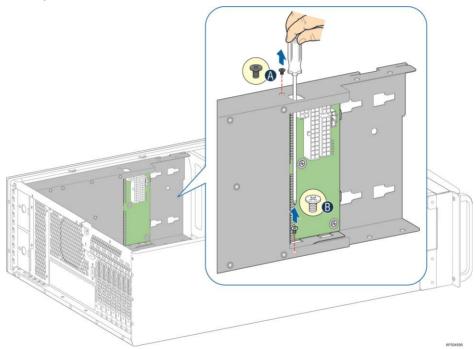


Figure 71. Loosing the Bracket with Power Distribution Board from Chassis

8. Push the bracket forward to release the latch which secure the bracket then pull out the bracket from the chassis (see letter "C").

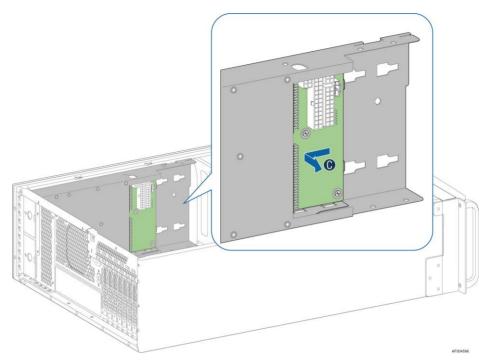


Figure 72. Removing the Bracket with Power Distribution Board from Chassis

9. Loosen screws securing the power distribution board to the bracket, and then remove it from the bracket (see letter "D").

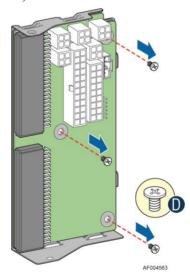


Figure 73. Removing the Power Distribution Board from Bracket

10. Slide the new power distribution board to the bracket (see letter "E") and secure the new power distribution board to the bracket using the same screws (see letter "F").

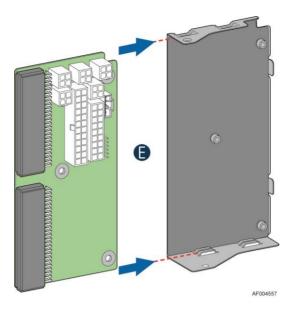


Figure 74. Sliding the New Power Distribution Board in Bracket

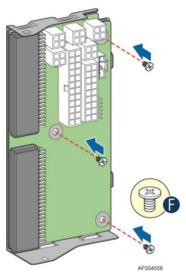


Figure 75. Securing the New Power Distribution Board in Bracket

11. Slide the bracket with the new power distribution board all the way into the power supply cage (see letter "G").

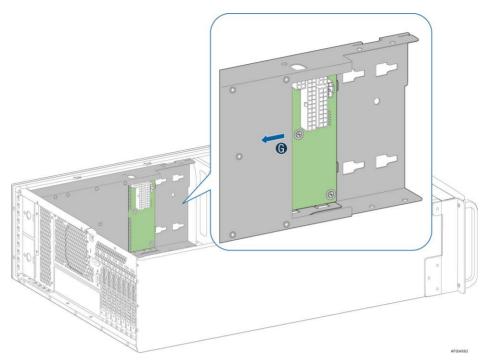


Figure 76. Sliding the Bracket into Power Supply Cage

12. Then pull back until the latch on the bracket is engaged with the power supply cage and make sure the screw holes on the bracket is aligned with the screw holes on power supply cage (see letter "H"). And then secure the bracket with the screws (see letter "I" and "J").

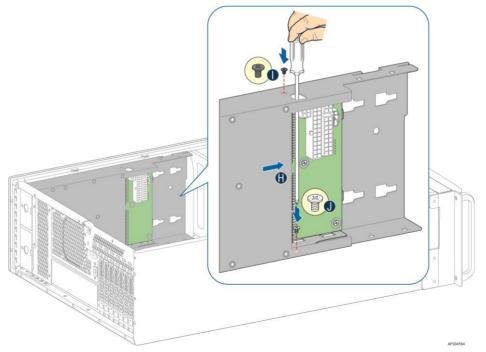


Figure 77. Secruing the Bracket into Power Supply Cage

13. Reconnect the power cables as appropriate.

14. Insert the power supply(s) into the power supply cage and push all the way until it clicks into place.

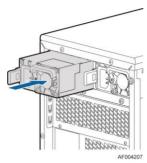


Figure 78. Installing Hot-swap Power Supply Module into Chassis

- 15. Reinstall the airduct. For instructions, see "Installing the Airduct".
- 16. Re-install the chassis cover. For instructions, see "Installing the Chassis Cover".
- 17. Plug all peripheral devices and the AC power cable into the server.
- 18. Power up the server.

Installing and Removing the Server Board

Removing the Server Board

- 1. Disconnect all cables from the server board.
- 2. Remove the four screws to release the airduct side wall.
- 3. Lift the airduct side wall to remove from the server board.
- 4. Remove the nine screws from the server board (see letter "A").
- 5. Lift the server board from the server system (see letter "B").

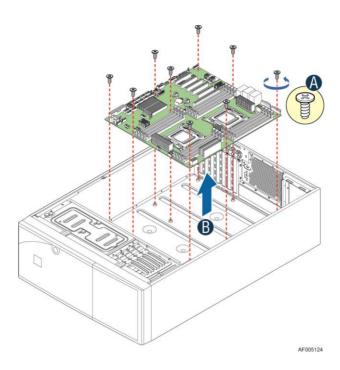


Figure 79. Removing the Server Board

Installing the Server Board

- 1. Make sure the server board bottom side have been attached with bumpers, and screw stand-offs are installed correctly on chassis.
- 2. Place the server board into the server system (see letter "A").
- 3. Secure the server board with nine screws (see letter "B").

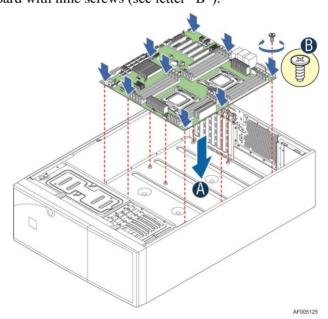


Figure 80. Installing the Server Board

Replacing a Fixed Fan

/ NOTE

Please pay attention to the fan cable connector color. The fan with blue connector should be installed in fan 2 bracket and the fan with white connector should be installed in fan 1 bracket. The fan numbering is inscribed on the chassis.

This procedure applies only to the Intel[®] Server Chassis P4000M family with fixed fan configuration.

Removing the Fixed Fan

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct if the airduct is installed. For instructions, see "Removing the Airduct".
- 5. Disconnect the appropriate fan power cable from the server board (see letter "A").

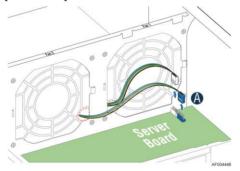


Figure 81. Disconnecting the fan power cable from the server board

6. Remove system fan by pushing the tabs outward and disengaging from its snap-in bracket (see letter "B").

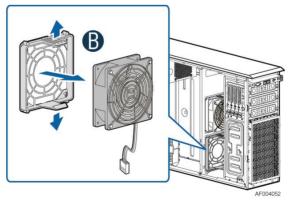


Figure 82. Removing fixed system fan from chassis

Installing the Fixed Fan

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the airduct if the airduct is installed. For instructions, see "Removing the Airduct".
- 5. Insert the fan cable in the fan bracket as the figure 15 show (see letter "A"). Pay attention to the fan cable connector color. The fan with blue fan cable connector should be installed in fan 2 bracket; the fan with white fan connector should be installed in fan 1 bracket.

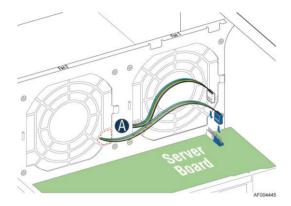


Figure 83. Inserting the fan cable in the corresponding fan bracket

6. Install the fixed fan in the corresponding fan bracket (see letter "B").

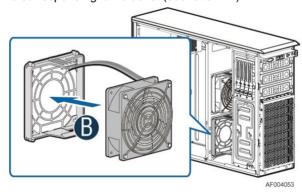


Figure 84. Installing the Fixed Fan

7. Connect fan power cable to the server/workstation board. See the *Quick Start User's Guide* or *Service Guide* provided with your Intel server/workstation board for appropriate connection location.

Replacing a Hot-swap Fan

/ NOTE

This procedure applies only to the Intel[®] Server Chassis P4000M family with hot-swap fan configuration.

Removing the Hot-swap Fan

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Press latch on fan and pull on handle to remove hot-swap fan from chassis.

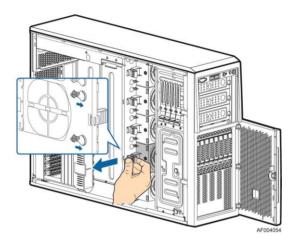


Figure 85. Removing Hot-swap Fan

Installing the Hot-swap Fan

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Insert hot-swap fan into corresponding chassis slot until it clicks into place.

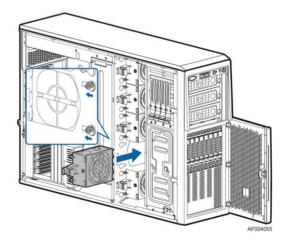


Figure 86. Installing Hot-swap Fan

Removing and Installing 8x3.5" Hot-swap Hard Drive Cage Assembly

Removing 8x3.5" Hot-swap Hard Drive Cage Assembly

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedestal Only)".
- 5. Disconnect the power and data cables to the backplane.
- 6. Use screwdriver to release the hot-swap hard drive cage (see letter "A") from the chassis and remove the hot-swap hard drive cage (see letter "B").

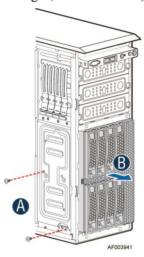


Figure 87. Removing the 8x3.5" Hot-swap HDD Cage Assembly

Installing 8x3.5" Hot-swap Hard Drive Cage Assembly

± CAUTION

It is critical that you connect the SAS/SATA data cables correctly from the SAS/SATA backplane to your server board or RAID controller card. Failure to do so may result in data loss.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedestal Only)".

- 5. Remove the Fixed HDD EMI Shield and Fixed HDD Tray if they are installed. For instructions, see "Removing the Fixed HDD Tray" and "Removing the Fixed HDD EMI Shield"
- 6. Install the 8x3.5" Hot-Swap Hard Drive Cage.
 - A. Slide the 8x3.5" Hot-Swap Drive Cage into the slot (see letter "A").
 - B. Secure the Hard Drive Cage with the Screw (see letter "B").

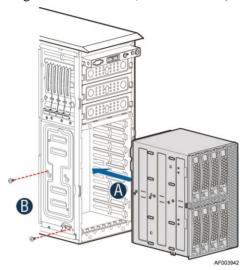


Figure 88. Installing the 8x3.5" Hot-Swap Hard Drive Cage Assembly

- 7. Make the backplane and server board/RAID controller card cable connections. Refer to the documentation for your server board and/or RAID controller card for instructions on connecting backplane cables to your server board or RAID controller card.
 - A. Connect an I2C cable (letter "A").
 - B. Connect Mini-SAS data cables (letter "B").
 - C. Connect power cable (letter "C").

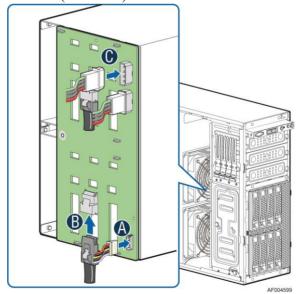


Figure 89. 8x3.5" Hot Swap Backplane Cable Connections

8. Install the front bezel. For instructions, see "Installing the Front Bezel (Pedestal Only)".

- 9. Install the airduct if the airduct is removed. For instructions, see "Installing the Airduct".
- 10. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
- 11. Plug all peripheral devices and the AC power cable into the server.
- 12. Power up the server.

Removing and Installing 8x2.5" Hot-swap Hard Drive Cage Assembly

Removing 8x2.5" Hot-swap Hard Drive Cage Assembly

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedesal Only)".
- 5. Disconnect the power and data cables to the backplane.
- 6. Use screwdriver to release the hot-swap hard drive cage (see letter "A") from the chassis and remove the hot-swap hard drive cage (see letter "B").

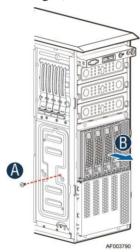


Figure 90. Removing the 8x2.5" HDD Cage Assembly

Installing 8x2.5" Hot-swap Hard Drive Cage Assembly

A CAUTION

It is critical that you connect the SAS/SATA data cables correctly from the SAS/SATA backplane to your server board or RAID controller card. Failure to do so may result in data loss.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.

- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel (Pedestal Only)".
- 5. Install the 8x2.5" Hot-Swap Hard Drive Cage.
 - A. Slide the 8x2.5" Hot-Swap Drive Cage into the slot (see letter "A").
 - B. Secure the Hard Drive Cage with the Screw (see letter "B").

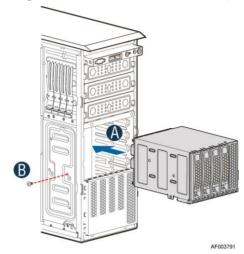


Figure 91. Installing the 8x2.5" Hot-Swap Hard Drive Cage Assembly

- 6. Make the backplane and server board/RAID controller card cable connections. Refer to the documentation that came with your server board and/or RAID controller card for instructions on connecting backplane cables to your server board or RAID controller card.
 - A. Connect an I²C IN cable (letter A)
 - B. Connect Mini-SAS data cables (letter B)
 - C. Connect power cable (letter C)

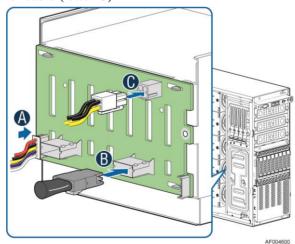


Figure 92. 8x2.5" Hot Swap Backplane Cable Connections

- 7. Install the front bezel. For instructions, see "Installing the Front Bezel (Pedestal Only)".
- 8. Install the airduct if the airduct is removed. For instructions, see "Installing the Airduct"
- 9. Install the chassis cover. For instructions, see "Installing the Chassis Cover".

- 10. Plug all peripheral devices and the AC power cable into the server.
- 11. Power up the server.

Removing and Installing the Hot-swap HDD EMI Shiled

/ NOTE

This procedure applies only to the Intel[®] Server Chassis P4000M family with 8x2.5" hot-swap hard disk drive cage configuration.

Removing the Hot-swap HDD EMI Shiled

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel. For instructions, see "Removing the front bezel (Pedestal Only)".
- 5. Remove the 8x2.5" Hot-swap HDD cage. For instructions, see "Removing 8x2.5" Hot-swap Hard Disk Drive Cage with Backplane"
- 6. Lift the EMI shield (see letter "A") and move EMI shield outward from the chassis (see letter "B").



Figure 93. Removing the Hot-swap HDD EMI Shield

Installing the Hot-swap HDD EMI Shiled

- 1. Fit the edges of the EMI Shield against the sides of the chassis (see letter "A").
- 2. While pressing the EMI Shield, slide the EMI Shield downwards until the latches on the EMI Shield are engaged with the chassis (see letter "B").

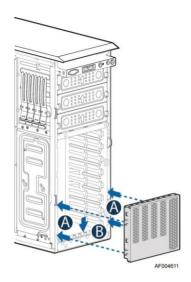


Figure 94. Installing the Hot-swap HDD EMI Shield

Replacing the Backplane

Removing the Backplane

- 1. Remove all hot-swap drive carriers, regardless of whether or not a drive is installed in the carrier.
- 2. Disconnect all cables from the backplane.
- 3. For server system with 3.5" hard drive bay, do the following:
 - A. Remove the screw to release the hard drive cage (see letter "A");
 - B. Slide the hard drive cage out of the server chass (see letter "B");



Figure 95. Removing 3.5" hard drive backplane - remove the hard drive cage

- C. Remove the screw as shown (see letter "A");
- D. Slide the backplane (see letter "B");
- E. Remove the backplane from the server chassis (see letter "C").

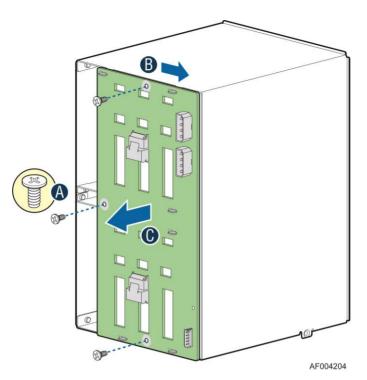


Figure 96. Removing 3.5" hard drive backplane - remove the backplane

- 4. For server system with 2.5" hard drive bay, do the following:
 - A. Remove the three screws to release the hard drive cage;
 - B. Slide the hard drive cage out of the server chassis;

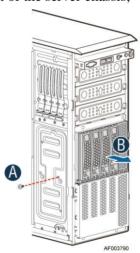


Figure 97. Removing 2.5" hard drive backplane – remove the stiffener

- C. Remove the screw from the backplane board (see letter "A");
- D. Slide the backplane board to release it (see letter "B");
- E. Remove the backplane board from the four hooks and pull out of the hard drive cage (see letter "C").

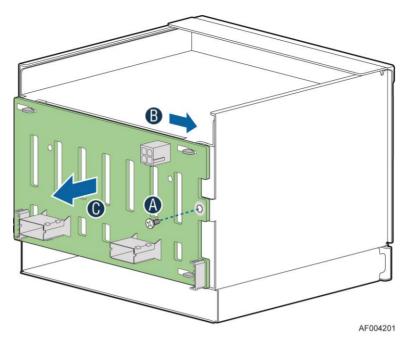


Figure 98. Removing 2.5" hard drive backplane – remove the backplane

Installing the Backplane

- 1. Remove all hot-swap drive carriers, regardless of whether or not a drive is installed in the carrier.
- 2. For server system with 3.5" hard drive bay, do the following:
 - A. Align the backplane board with the hooks on the hard drive cage (see letter "A");
 - B. Slide the backplane into the drive cage (see letter "B");
 - C. Secure the backplane with screws (see letter "C");

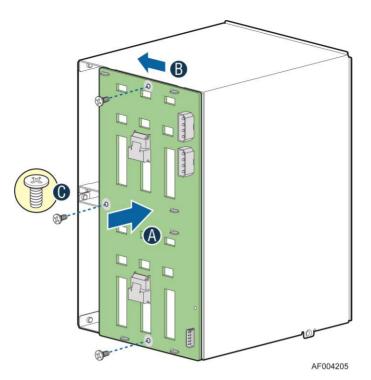


Figure 99. Installing 3.5" hard drive backplane – install the backplane

- D. Insert the hard drive cage into server chassis (see letter "A");
- E. Secure the hard drive cage with the screws (see letter "B");

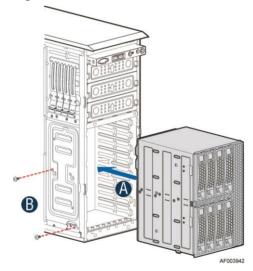


Figure 100. Installing 3.5" hard drive backplane - install the hard drive cage

- 3. For server system with 2.5" hard drive bay, do the following:
 - A. Align the backplane board with the hooks on the hard drive cage (see letter "A");
 - B. Slide the backplane board in the direction shown to lock it in place (see letter "B");
 - C. Secure the backplane with the screw as shown (see letter "C");

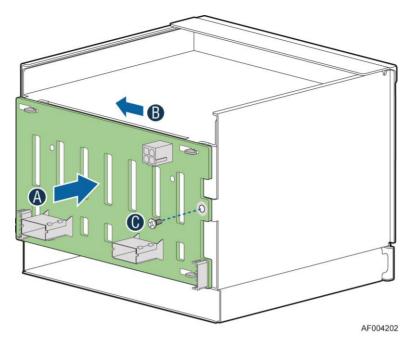


Figure 101. Installing 2.5" hard drive backplane – install backplane

- F. Insert the hard drive cage into server chassis (see letter "A");
- G. Secure the hard drive cage with the screws (see letter "B");

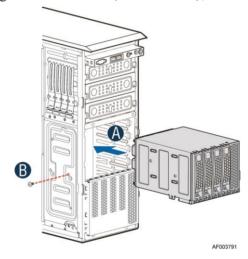


Figure 102. Installing 2.5" hard drive backplane – install hard drive cage

Removing and Installing the Top Cosmetic Cover

Removing the Top Cosmetic Cover

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Slide the top cosmetic cover towards front panel direction until the latches on top cosmetic cover are released from the chassis.

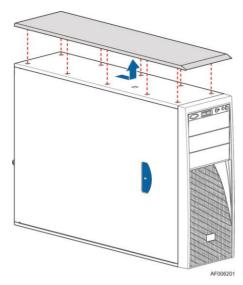


Figure 103. Removing the Top Cosmetci Cover

Installing the Top Cosmetic Cover

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Attach the top cosmetic cover to the chassis and make sure the edges of the top cosmetic cover fit the sides of the chassis top. Then slide the top cosmetic cover forward until the latches on the top cosmetic cover are engaged with the chassis.

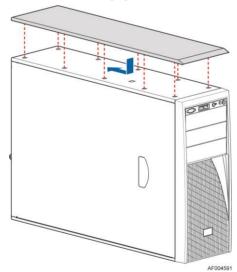


Figure 104. Installing the Top Cosmetci Cover

Removing and Installing the Chassis Feet

Removing the Chassis Feet

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Lay the chassis down on its right side.

3. Loose the screws securing the rubber foot to the chassis and then remove the rubber foot from chassis.

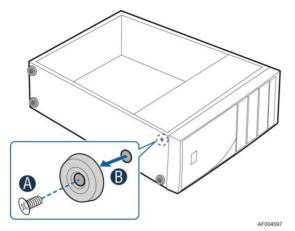


Figure 105. Removing the Chassis Feet

4. Repeat above steps until all four feet are removed.

Installing the Chassis Feet (Pedestal Configuration Only)

/ NOTE

Do not install feet on your Intel[®] Server Chassis P4000M family if it is to be installed in a rack. Only install feet on a pedestal-configured chassis.

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Lay the chassis down on its right side.
- 4. Insert rubber foot into chassis hole (see letter "A").
- 5. Secure foot by inserting screw through the rubber foot (see letter "B").
- 6. Repeat above steps until all four feet are installed.

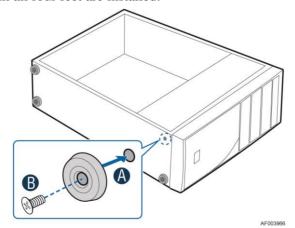


Figure 106. Installing the Chassis Feet

- 7. Put chassis in the upright position.
- 8. Reconnect all peripheral devices and the AC power cable to the server. Power up the server.

Removing and Installing the Front Panel Tray

A CAUTION

The front panel is NOT hot swappable. Before removing or replacing the control panel, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet.

Removing the Front Control Panel Tray

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel".
- 5. Remove the airduct if it is installed.
- 6. Disconnect the front panel cable, USB cable from the server board

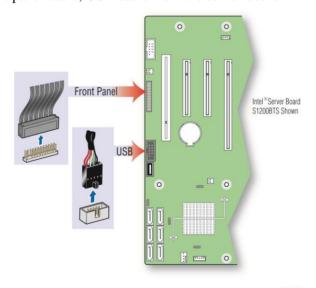


Figure 107. Disconnecting the Cables from the Server Board

- Loose the front panel cable and USB cable from the wire clip on chassis
- 8. Press the latch at the sides of the front panel (see Letter "A") and carefully slide the front panel out (see Letter "B").



CAUTION

Do not slide the front panel out far from the front of the chassis before you disconnect the instruction cable from the front panel board.

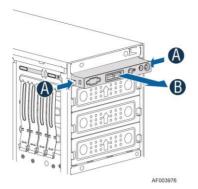


Figure 108. Sliding the Front Panel Tray out from the Chassis

9. Slide the front panel out from the front of the chassis to the place (see Letter "C") so that you can reach the front panel cable and instruction cable connectors at the rear of the front panel. Then disconnect the front panel cable and intrusion switch cable from the front panel board (see Letter "D").

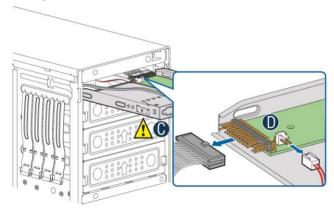


Figure 109. Disconnecting the Cables from Front Panel Board

10. Slide the front panel tray out.

Installing the Fron Panel Tray

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel".
- 5. Remove the airduct if it is installed.
- 6. Attach the front panel cable and the chassis intrusion cable (see Letter "A") to the front panel board.

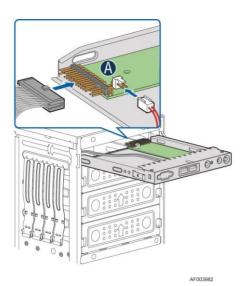


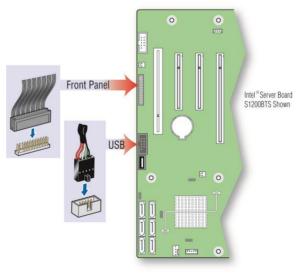
Figure 110. Connecting the Cables to the Front Panel Board

7. Slide the front panel tray in chassis



Figure 111. Installing the Front Panel Tray in Chassis

8. Connect the front panel and USB cables to server board.



AF003984

Figure 112. Connecting the Cables to Server Board the Front Panel Tray in Chassis

- 9. Install the front bezel. For instructions, see "Removing and Installing the Front Bezel".
- 10. Install the airduct based on board requirement.
- 11. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
- 12. Plug all peripheral devices and the AC power cable into the server.
- 13. Power up the server.

Replacing the Front Panel Board

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the front bezel if it is installed. For instructions, see "Removing the Front Bezel".
- 5. Remove the front panel tray if it is installed. For instructions, see "Removing the Front Panel Tray".
- 6. Loose the screw (see Letter "A") securing the front panel board and remove the front panel board (see Letter "B").

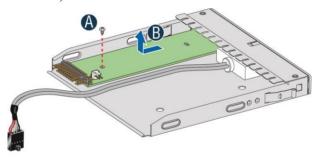


Figure 113. Removing the Front Panel Board

7. Remove the cap on the front panel board power button and install the new cap on the new front panel board power button.

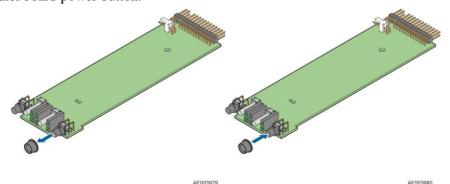


Figure 114. Removing and Installing the Cap on Front Panel Board

8. Attach the new front panel board in the front panel tray (see letter "A") and secure the new front panel board with the screw (see letter "B").

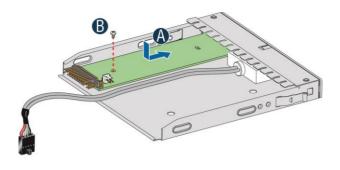


Figure 115. Installing the New Front Panel Board

- 9. Installing the front panel tray with the front panel board. For instructions, see "Installing the Front Panel Tray".
- 10. Install the front bezel. For instructions, see "Removing and Installing the Front Bezel".
- 11. Install the airduct based on board requirement.
- 14. Install the chassis cover. For instructions, see "Installing the Chassis Cover".
- 15. Plug all peripheral devices and the AC power cable into the server.
- 16. Power up the server.

Installing Alternate Serial Port

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, see "Removing the Chassis Cover".
- 4. Remove the alternate serial port knockout by pressing the knockout from inside the chassis.

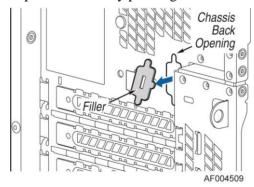


Figure 116. Removing the Alternate Serial Port Knockout

5. Install the serial port on the rear panel of the chassis. And connect the cable to the Serial B Connector on your motherboard.

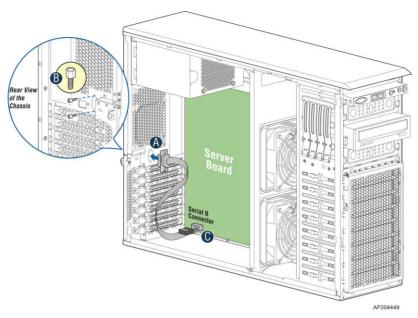


Figure 117. Installing the Alternate Serial Port Knockout

Installing and/or Removing a Expander card

Installing the Expander card

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, "Removing the Chassis Cover".
- 4. Remove the fans. For instructions, see "Removing the Fixed Fan" or "Removing the Hot-swap Fans".
- 5. Remove the Fixed HDDs or Hotswap drive cages. For instructions, see "Remove Fixed Hard Drives", or "Remove 8x3.5 Hotswap Drive Cage Assemble", or "Remove 8x2.5 Hotswap Drive Cage Assemble"
- 6. Locate the expander card bracket in the chassis. Mount the expander card to the bracket with screws.

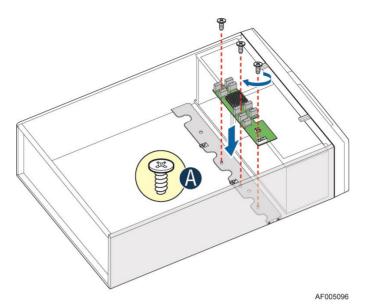


Figure 118. Installing the Expander Card

- 7. Connect the data cable between server board and expander card, and between expander and backplane(s). See documents for your server boards for instructions.
- 8. Install the Fixed HDDs or Hotswap drive cages. For instructions, see "Install Fixed Hard Drives", or "Install 8x3.5 Hotswap Drive Cage Assemble", or "Install 8x2.5 Hotswap Drive Cage Assemble"
- 9. Install the fans. For instructions, see "Install the Fixed Fan" or "Install the Hot-swap Fans".
- 10. Install the chassis cover. For instructions, "Install the Chassis Cover".

Removing the Expander card

- 1. Observe the safety and ESD precautions at the beginning of this book.
- 2. Power down the server and unplug all peripheral devices and the AC power cable.
- 3. Remove the chassis cover. For instructions, "Removing the Chassis Cover".
- 4. Remove the fans. For instructions, see "Removing the Fixed Fan" or "Removing the Hot-swap Fans".
- 5. Remove the Fixed HDDs or Hotswap drive cages. For instructions, see "Remove Fixed Hard Drives", or "Remove 8x3.5 Hotswap Drive Cage Assemble", or "Remove 8x2.5 Hotswap Drive Cage Assemble"
- 6. Unplug all the cables connected to the expander card.
- 7. Remove the expander card from expander card bracket by releasing the securing screws.

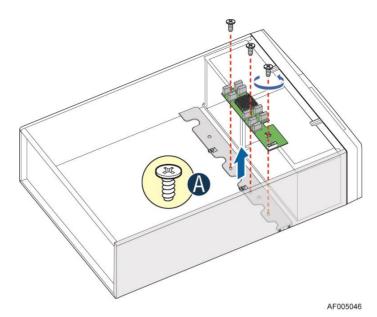


Figure 119. Removing the Expander card

- 8. Install the Fixed HDDs or Hotswap drive cages. For instructions, see "Install Fixed Hard Drives", or "Install 8x3.5 Hotswap Drive Cage Assemble", or "Install 8x2.5 Hotswap Drive Cage Assemble"
- 9. Install the fans. For instructions, see "Install the Fixed Fan" or "Install the Hot-swap Fans".
- 10. Install the chassis cover. For instructions, see "Install the Chassis Cover".

3 Server Utilities

Using the BIOS Setup Utility

This section describes the BIOS Setup Utility options, which is used to change server configuration defaults. You can run BIOS Setup with or without an operating system being present.

Starting Setup

To enter the BIOS Setup using a keyboard (or emulated keyboard); press the <F2> function key during boot time when the OEM or Intel[®] logo is displayed. The following message is displayed on the diagnostics screen and under the Quiet Boot logo screen:

Press <F2> to enter setup

When the Setup Utility is entered, the Main screen is displayed. However, serious errors cause the system to display the Error Manager screen instead of the Main screen.

Setup Navigation Keyboard Commands

The bottom right portion of the Setup screen provides a list of commands that are used to navigate through the Setup utility. These commands are displayed at all times.

Each Setup menu page contains a number of features. Each feature is associated with a value field, except those used for informative purposes. Each value field contains configurable parameters. Depending on the security option chosen and in effect by the password, a menu feature's value may or may not be changed. If a value cannot be changed, its field is made inaccessible and appears grayed out.

Table 2. BIOS Setup: Keyboard Command Bar

Key	Option	Description	
<enter></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 option has a value field, or to select a subfield for multivalued features like time and date. If a pick list is displayed, the <enter> key selects the currently highlighted item, undoes the pick list, and returns the focus to the parent menu.</enter></enter>	
<esc></esc>	Exit	The <esc> key provides a mechanism for backing out of any field. When the <esc> key is pressed while editing any field or selecting features of a menu, the parent menu is reentered.</esc></esc>	
		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. 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 <esc> was pressed, without affecting any existing settings. If "Yes" is selected and the <enter> key is pressed, the setup is exited and the BIOS returns to the main System Options Menu screen.</enter></esc></esc></enter></esc></esc>	
↑	Select Item	The up arrow is used to select the previous value in a pick list, or the previous option in a menu item's option list. The selected item must then be activated by pressing the <enter> key.</enter>	
	Select Item	The down arrow is used to select the next value in a menu item's option list, or a value field's pick list. The selected item must then be activated by pressing the <enter> key.</enter>	
□←/→	Select Menu	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a sub-menu or pick list is displayed.	

Key	Option	Description		
<tab></tab>	Select Field	The <tab> key is used to move between fields. For example, <tab> can be used to move from hours to minutes in the time item in the main menu.</tab></tab>		
-	Change Value	The minus key on the keypad 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.		
+	Change Value	The plus key on the keypad 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. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboards, but will have the same effect.		
<f9></f9>	Setup Defaults	Pressing the <f9> key causes the following to display:</f9>		
		Load Setup Defaults? Yes No		
		If "Yes" is highlighted and <enter> is pressed, all Setup fields are set to their default values. If "No" is highlighted and <enter> 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.</f9></esc></enter></enter>		
<f10></f10>	Save and Exit	Pressing the <f10> key causes the following message to display:</f10>		
		Save configuration and reset? Yes No		
		If "Yes" is highlighted and <enter> is pressed, all changes are saved and the Setup is exited. If "No" is highlighted and <enter> 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.</f10></esc></enter></enter>		

Setup Screen Menu Selection Bar

The Setup Screen Menu selection bar is located at the top of the BIOS Setup Utility screen. It displays tabs showing the major screen selections available to the user. By using the left and right arrow keys, the user can select the listed screens. Some screen selections are out of the visible menu space, and become available by scrolling to the left or right of the current selections displayed.

BIOS Setup Utility Screens

The following sections describe the screens available in the BIOS Setup utility for the configuration of the server platform.

For each of these screens, there is an image of the screen with a list of Field Descriptions which describe the contents of each item on the screen. Each item on the screen is hyperlinked to the relevant Field Description. Each Field Description is hyperlinked back to the screen image.

These lists adhere to the following guidelines:

- The text heading for each Field Description is the actual text as displayed on the BIOS Setup screen. This screen text is a hyperlink to its corresponding Field Description.
- The text shown in the Option Values and Help Text entries in each Field Description are the actual text and values are displayed on the BIOS Setup screens.

- In the Option Values entries, the text for default values is shown with an underline. These values do not appear underline on the BIOS Setup screen. The underlined text in this document is to serve as a reference to which value is the default value.
- The Help Text entry is the actual text which appears on the screen to accompany the item when the item is the one in focus (active on the screen).
- The Comments entry provides additional information where it may be helpful. This information does not appear on the BIOS Setup screens.
- Information enclosed in angular brackets (< >) in the screen shots identifies text that can vary, depending on the option(s) installed. For example, <*Amount of memory installed>* is replaced by the actual value for "Total Memory".
- Information enclosed in square brackets ([]) in the tables identifies areas where the user must type in text instead of selecting from a provided option.
- Whenever information is changed (except Date and Time), the systems requires a save and reboot to take place in order for the changes to take effect. Alternatively, pressing <ESC> discards the changes and resumes POST to continue to boot the system according to the boot order set from the last boot.

Map of Screens and Functionality

There are a number of screens in the entire Setup collection. They are organized into major categories. Each category has a hierarchy beginning with a top-level screen from which lower-level screens may be selected. Each top-level screen appears as a tab, arranged across the top of the Setup screen image of all top-level screens.

There are more categories than will fit across the top of the screen, so at any given time there will be some categories which will not appear until the user has scrolled across the tabs which are present.

The categories and the screens included in each category are listed below, with links to each of the screens named.

Categories (Top Tabs)	2 nd Level Screens	3 rd Level Screens
Main Screen (Tab)		
Advanced Screen (Tab)		
#	Processor Configuration	
#	Memory Configuration	
	#	Memory RAS and Performance Configuration
#	Mass Storage Controller Configuration	
#	PCI Configuration	
#	Serial Port Configuration	

Table 3. Screen Map

Categories (Top Tabs)	2 nd Level Screens	3 rd Level Screens
₩	USB Configuration	
\$	Power & Performance	
♥[With BMC Only]	System Acoustic and Performance Configuration	
■ \$ [Non-BMC Only]	Hardware Monitor	
	♥[Non-BMC Only]	Realtime Temperature and Voltage Status
Security Screen (Tab)		
Server Management Screen (Tab)		
ψ,	Console Redirection	
₩	System Information	
♥[With BMC Only]	BMC LAN Configuration	
Boot Options Screen (Tab)		
\$	CDROM Order	
\$	Hard Disk Order	
₩,	Floppy Order	
<i>p</i>	Network Device Order	
<i>p</i>	BEV Device Order	
\$	Add EFI Boot Option	
\$	Delete EFI Boot Option	
Boot Manager Screen (Tab)		
Error Manager Screen (Tab)		
♥[Non-BMC Only]	View Event Log Screen	
Exit Screen (Tab)		

Main Screen (Tab)

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

Figure 120. Main Screen

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
Logged in as: Platform ID		Administrator/User <platform identification="" string=""></platform>			
System BIOS V Build D	ersion		<platform.86b.x< th=""><th>3 3</th><th></th></platform.86b.x<>	3 3	
Memor Total N	y 1emory		<amount me<="" of="" th=""><th>mory installed></th><th></th></amount>	mory installed>	
Quiet E	Boot Error Pause		Enabled /Disable Enabled/ Disable		
Systen Systen			[Day MM/DD/YY [HH:MM:SS]	YY]	
_				YY]	

Screen Field Descriptions:

1. Logged in as:

Option Values: <Administrator / User>

Help Text: <*None>*

Comments: <u>Information only.</u> Displays password level that setup is running in:

Administrator or User. With no passwords set, Administrator is the default mode.

Hardware Installations and Upgrades

2. Platform ID

Option Values: < *Platform ID*>

Help Text: <*None>*

Comments: <u>Information only</u>. Displays the Platform ID (Board ID) for the board on which the BIOS is executing POST.

The Platform ID is limited to 8 characters, because it is also used in the ACPI Tables which have that limitation. In some cases, this means that the Platform ID is abbreviated from the marketing designation.

Back to [Main Screen]

3. BIOS Version

Option Values: <*Current BIOS version ID>*

Help Text: <*None*>

Comments: <u>Information only</u>. The BIOS version displayed uniquely identifies the BIOS that is currently installed and operational on the board. The version information displayed is taken from the BIOS ID String, with the timestamp segment dropped off. The segments displayed are:

Platform: Identifies that this is the correct platform BIOS 86B: Identifies this BIOS as being an Intel Server BIOS

xx: Major Revision level of the BIOSyy: Release Revision level for this BIOSzzzz: Release Number for this BIOS

Back to [Main Screen]

4. Build Date

Option Values: < Date and time when the currently installed BIOS was created (built)>

Help Text: <*None*>

Comments: <u>Information only</u>. The time and date displayed are taken from the timestamp segment of the BIOS ID String.

Back to [Main Screen]

5. Total Memory

Option Values: <Amount of memory installed in the system>

Help Text: <*None>*

Comments: <u>Information only</u>. Displays the total physical memory installed in the system, in MB or GB. The term physical memory indicates the total memory discovered in the form of installed DDR3 DIMMs.

6. Quiet Boot

Option Values: <u>Enabled</u>

Disabled

Help Text:

[Enabled] – Display the logo screen during POST. [Disabled] – Display the diagnostic screen during POST.

Comments: This field controls whether the full diagnostic information is displayed on the screen during POST.

Back to [Main Screen]

7. POST Error Pause

Option Values: Enabled

Disabled

Help Text:

[Enabled] – Go to the Error Manager for critical POST errors.
[Disabled] – Attempt to boot and do not go to the Error Manager for critical POST errors.

Comments: If enabled, the POST Error Pause option takes the system to the error manager to review the errors when major errors occur. Minor and fatal error displays are not affected by this setting.

Back to [Main Screen]

8. System Date

Option Values: <System Date initially displays the current system calendar date, including the day of the week>

Help Text:

System Date has configurable fields for the current Month, Day, and Year.

The year must be between 2005 and 2099.

Use [Enter] or [Tab] key to select the next field.

Use [+] *or* [-] *key to modify the selected field.*

Comments: This field will initially display the current system day of week and date. It may be edited to change the system date. When the System Date is reset by the "BIOS Defaults" jumper, BIOS Recovery Flash Update, or other method, the date will be the earliest date in the allowed range – Saturday 01/01/2005.

Hardware Installations and Upgrades

9. System Time

Option Values: <System Time initially displays the current system time of day, in 24-

 $hour \textit{ format}{>}$

Help Text:

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.*

Comments: This field will initially display the current system time (24 hour time). It may be edited to change the system time. When the System Time is reset by the "BIOS Defaults" jumper, BIOS Recovery Flash Update, or other method, the time will be the earliest time of day in the allowed range -00:00:00 (although the time will be updated beginning from when it is reset early in POST).

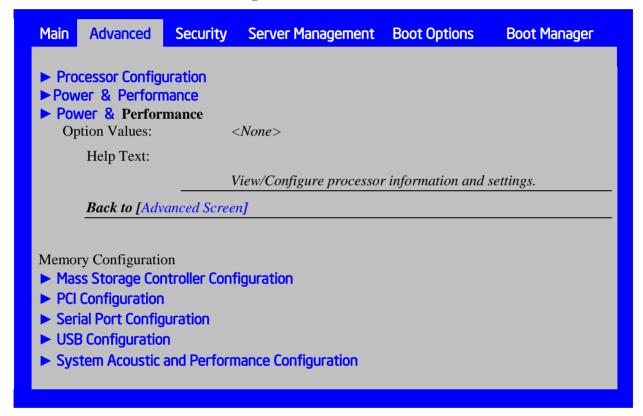
Advanced Screen (Tab)

The Advanced screen provides an access point to configure several groups of options. On this screen, the user can select the option group to be configured. Configuration actions are performed on the selected screen, and not directly on the Advanced screen.

This screen is the same for all board series, selecting between the same groups of options, although the options for different boards are not necessarily identical.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Advanced* screen is s elected.

Figure 121. Advanced Screen



Screen Field Descriptions:

1. Processor Configuration

Option Values: <*None>*

Help Text: View/Configure processor information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the

Processor Configuration group of configuration settings.

Back to [Advanced Screen]

2. Power & Performance

Option Values: <*None>*

Help Text:

View/Configure processor information and settings.

Back to [Advanced Screen]

3. Memory Configuration

Option Values: <*None>*

Help Text:

View/Configure memory information and settings.

Comments: <u>Selection only.</u> Position to this line and press the <Enter> key to go to the

Memory Configuration group of configuration settings.

Back to [Advanced Screen]

4. Mass Storage Controller Configuration

Option Values: <*None>*

Help Text:

View/Configure mass storage controller information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **Mass Storage Controller Configuration** group of configuration settings.

Back to [Advanced Screen]

5. PCI Configuration

Option Values: <*None>*

Help Text:

View/Configure PCI information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **PCI Configuration** group of configuration settings.

Back to [Advanced Screen]

6. Serial Port Configuration

Option Values: <*None>*

Help Text:

View/Configure serial port information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **Serial Port Configuration** group of configuration settings.

Back to [Advanced Screen]

7. USB Configuration

Option Values: <*None>*

Help Text:

View/Configure USB information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **USB Configuration** group of configuration settings.

Back to [Advanced Screen]

8. System Acoustic and Performance Configuration

Option Values: <*None>*

Help Text:

View/Configure system acoustic and performance information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **System Acoustic and Performance Configuration** group of configuration settings.

Back to [Advanced Screen]

9. Power & Performance

Option Values: <None>

Help Text:

View/Configure processor information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the *Power & Performance* group of configuration settings.

Back to [Advanced Screen]

Processor Configuration

The Processor Configuration screen displays the processor identification and microcode level, core frequency, cache sizes, Intel[®] QuickPath Interconnect (QPI) information for all processors currently installed. It also allows the user to enable or disable a number of processor options.

To access this screen from the *Main* screen, select *Advanced* > *Processor Configuration*. To move to another screen, press the <Esc> key to return to the *Advanced* screen, then select the desired screen.

Figure 122. Processor Configuration Screen

Advanced

Processor Configuration

Processor Socket CPU 1 CPU₂ <CPUID>*I <CPUID> Processor ID Processor Frequency <Proc Frea> I <Proc Freq> Microcode Revision <Rev data> <Rev data> L1 Cache RAM <L1 Cache Size> I <L1 Cache Size> L2 Cache RAM <L2 Cache Size> | <L2 Cache Size> L3 Cache RAM <L3 Cache Size> I <L3 Cache Size> Processor 1 Version <ID string from Processor 1>

Processor 2 Version <ID string from Processor 2>

Current Intel* QPI Link Speed
Intel* QPI Link Frequency
Intel* QPI Frequency Select
Intel* Turbo Boost Technology
Enhanced Intel SpeedStep* Tech

Processor C3 Processor C6

Intel* Hyper-Threading Tech Active Processor Cores Execute Disable Bit

Intel® Virtualization Technology

Intel® VT for Directed I/O MI C Streamer

MLC Spatial Prefetcher DCU Data Prefetcher

DCU Instruction Prefetcher Direct Cache Access (DCA)

Enhanced Error Containment Mode

SMM Wait Timeout

Slow/Fast

N/A / 6.4 GT/s / 7.2 GT/s / 8.0 GT/s / Unknown GT/s

Auto Max / 6.4 GT/s / 7.2 GT/s / 8.0 GT/s

Enabled/Disabled
Enabled/Disabled
Enabled/Disabled
Enabled/Disabled
Enabled/Disabled
All/1/2/3/4/5/6/7
Enabled/Disabled

[0 - 3000ms, 3 is default]

Enabled/Disabled

Enabled/Disabled

Screen Field Descriptions:

1. Processor ID

Option Values: <*CPUID>*Help Text: <*None>*

Comments: <u>Information only</u>. Displays the Processor Signature value (from the CPUID instruction) identifying the type of processor and the stepping.

For multi-socket boards, the processor selected as the Bootstrap Processor (BSP) has an asterisk ("*") displayed beside the Processor ID. "N/A" will be displayed for a processor if not installed.

S1400 or S1600 series boards have a single Processor ID display

S2400 or S2600 series boards have 2 Processor ID displays.

S4600 series boards have 4 Processor ID displays.

Back to [Processor Configuration Screen] — [Advanced Screen]

2. Processor Frequency

Option Values: < Current Processor Operating Frequency>

Help Text: <*None>*

Comments: <u>Information only.</u> Displays current operating frequency of the processor.

Single socket boards have a single processor display, 2 sockets or 4 sockets boards have a display column for each socket, showing "N/A" for empty sockets where processors are not installed.

Back to [Processor Configuration Screen] — [Advanced Screen]

3. Microcode Revision

Option Values: < Microcode Revision Number>

Help Text: <*None>*

Comments: Information only. Displays Revision Level of the currently loaded

processor microcode.

Single socket boards have a single processor display, 2 sockets or 4 sockets boards have a display column for each socket, showing "N/A" for empty sockets where processors are not installed.

Back to [Processor Configuration Screen] — [Advanced Screen]

4. L1 Cache RAM

Option Values: <L1 cache size>

Help Text: <*None*>

Comments: <u>Information only</u>. Displays size in KB of the processor L1 Cache. Since L1 cache is not shared between cores, this is shown as the amount of L1 cache <u>per core</u>. There are two types of L1 cache, so this amount is the total of <u>L1 Instruction Cache</u> plus <u>L1 Data Cache</u> for each core.

Single socket boards have a single processor display, 2 sockets or 4 sockets boards have a display column for each socket, showing "N/A" for empty sockets where processors are not installed.

Hardware Installations and Upgrades

5. L2 Cache RAM

Option Values: <L2 cache size>

Help Text: <*None*>

Comments: <u>Information only</u>. Displays size in KB of the processor L2 Cache. Since L2 cache is not shared between cores, this is shown as the amount of L2 cache per core.

L2 cache is not shared between cores, this is shown as the amount of L2 cache per core.

Single socket boards have a single processor display, 2 sockets or 4 sockets boards have a display column for each socket, showing "N/A" for empty sockets where processors are not installed.

Back to [Processor Configuration Screen] — [Advanced Screen]

6. L3 Cache RAM

Option Values: <L3 cache size>

Help Text: <*None*>

Comments: <u>Information only</u>. Displays size in MB of the processor L3 Cache. Since L3 cache is shared between all cores in a processor package, this is shown as the total amount of L3 cache <u>per processor package</u>.

Single socket boards have a single processor display, 2 sockets or 4 sockets boards have a display column for each socket, showing "N/A" for empty sockets where processors are not installed.

Back to [Processor Configuration Screen] — [Advanced Screen]

7. Processor Version

See following...

8. Processor 1 Version

See following...

9. Processor 2 Version

Option Values: <ID string from processor>

Help Text: <*None>*

Comments: <u>Information only.</u> Displays Brand ID string read from processor with

CPUID instruction.

Single socket boards have a single processor display, 2 sockets or 4 sockets boards have a display line for each socket, showing "N/A" for empty sockets where processors are not installed.

10. Current Intel® QPI Link Speed

Option Values: Slow

Fast

Help Text: <*None>*

Comments: <u>Information only</u>. Displays current Link Speed setting for the QPI Links. *Appears only on multi-socket boards*.

QPI Link Speed should display as "Slow" only when running at the "Boot Speed" of 50 MT/s, or when a multi-socket board has only one processor installed, so QPI is not functional. It should always be "Fast" when the QPI Link Frequency is in the normal functional range of 6.4 GT/s or above.

Back to [Processor Configuration Screen] — [Advanced Screen]

11. Intel® QPI Link Frequency

Option Values: N/A

6.4 GT/s 7.2 GT/s 8.0 GT/s

Unknown GT/s

Help Text: <*None>*

Comments: <u>Information only</u>. Displays current frequency at which the QPI Links are operating. <u>Appears only on multi-socket boards</u>.

When a multi-socket board has only one processor installed, QPI Link Frequency will be shown as "N/A".

Back to [Processor Configuration Screen] — [Advanced Screen]

12. Intel[®] OPI Frequency Select

Option Values: <u>Auto Max</u>

6.4 GT/s 7.2 GT/s 8.0 GT/s

Help Text:

Allows for selecting the Intel [®] QuickPath Interconnect Frequency. Recommended to leave in [Auto Max] so that BIOS can select the highest common Intel [®] QuickPath Interconnect frequency.

Comments: Lowering the QPI frequency may improve performance per watt for some processing loads and on certain benchmarks. [Auto Max] will give the maximum QPI performance available. *Appears only on multi-socket boards*.

When a multi-socket board has only one processor installed, this will be grayed out, with the previous value remaining displayed.

Changes in QPI Link Frequency will not take effect until the system reboots, so this will not immediately change the QPI Link Frequency display. Changing QPI Link Frequency does not affect the QPI Link Speed.

13. Intel[®] Turbo Boost Technology

Option Values: <u>Enabled</u>

Disabled

Help Text:

Intel[®] Turbo Boost Technology allows the processor to automatically increase its frequency if it is running below power, temperature, and current specifications.

Comments: This option is only visible if all processors installed in the system support Intel[®] Turbo Boost Technology. In order for this option to be available, Enhanced Intel[®] SpeedStep[®] Technology must be **Enabled**.

Back to [Processor Configuration Screen] — [Advanced Screen]

14. Enhanced Intel SpeedStep® Tech

Option Values: Enabled

Disabled

Help Text:

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.

Comments: When Disabled, the processor setting reverts to running at Max TDP Core Frequency (rated frequency).

This option is only visible if all processors installed in the system support Enhanced Intel[®] SpeedStep[®] Technology. In order for the Intel[®] Turbo Boost option to be available, Enhanced Intel[®] SpeedStep[®] Technology must be **Enabled**.

Back to [Processor Configuration Screen] — [Advanced Screen]

15. Processor C3

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Processor C3 (ACPI C2/C3) report to OS

Comments: This is normally **Disabled**, but can be **Enabled** for improved performance on certain benchmarks and in certain situations.

Back to [Processor Configuration Screen] — [Advanced Screen]

16. Processor C6

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Processor C6 (ACPI C3) report to OS

Comments: This is normally **Enabled** but can be **Disabled** for improved performance on certain benchmarks and in certain situations.

17. Intel[®] Hyper-Threading Tech

Option Values: <u>Enabled</u>

Disabled

Help Text:

Intel [®] Hyper-Threading Technology allows multithreaded software applications to execute threads in parallel within each processor.

Contact your OS vendor regarding OS support of this feature.

Comments: This option is only visible if all processors installed in the system support Intel[®] Hyper-Threading Technology.

Back to [Processor Configuration Screen] — [Advanced Screen]

18. Active Processor Cores

Option Values: <u>All</u>

2

3

4 5

6

7

Help Text:

Number of cores to enable in each processor package.

Comments: The number of cores that appear as selections depends on the number of cores available in the processors installed. Boards may have as many as 8 cores in each of 1, 2, or 4 processors.

Back to [Processor Configuration Screen] — [Advanced Screen]

19. Execute Disable Bit

Option Values: <u>Enabled</u>

Disabled

Help Text:

Execute Disable Bit can help prevent certain classes of malicious buffer overflow attacks.

Contact your OS vendor regarding OS support of this feature.

Comments: This option is only visible if all processors installed in the system support the Execute Disable Bit. The OS and applications installed must support this feature in order for it to be enabled.

20. Intel[®] Virtualization Technology

Option Values: Enabled

Disabled

Help Text:

Intel[®] Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions.

/ NOTE

A change to this option requires the system to be powered off and then back on before the setting takes effect.

Comments: This option is only visible if all processors installed in the system support Intel[®] VT. The software configuration installed on the system must support this feature in order for it to be enabled.

Back to [Processor Configuration Screen] — [Advanced Screen]

21. Intel® VT for Directed I/O

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Intel® Virtualization Technology for Directed I/O (Intel® VT-d).

Report the I/O device assignment to VMM through DMAR ACPI Tables.

Comments: This option is only visible if all processors installed in the system support Intel[®] VT-d. The software configuration installed on the system must support this feature in order for it to be enabled.

Back to [Processor Configuration Screen] — [Advanced Screen]

22. Interrupt Remapping

Option Values: <u>Enabled</u>

Disabled

Help Text:

Enable/Disable Intel® VT-d Interrupt Remapping support.

Comments: This option only appears when Intel[®] Virtualization Technology for Directed I/O is **Enabled**. For some processors this will be enabled unconditionally whenever Intel[®] VT-d is enabled. In that case, this option will be shown as "Enabled", and grayed out and not changeable.

23. Coherency Support

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Intel ® VT-d Coherency support.

Comments: This option only appears when Intel® Virtualization Technology for

Directed I/O is **Enabled**.

Back to [Processor Configuration Screen] — [Advanced Screen]

24. ATS Support

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Intel® VT-d Address Translation Services (ATS) support.

Comments: This option only appears when Intel[®] Virtualization Technology for

Directed I/O is Enabled.

Back to [Processor Configuration Screen] — [Advanced Screen]

25. Pass-through DMA Support

Option Values: <u>Enabled</u>

Disabled

Help Text:

Enable/Disable Intel[®] VT-d Pass-through DMA support.

Comments: This option only appears when Intel® Virtualization Technology for Directed I/O is **Enabled**. For some processors this will be enabled unconditionally whenever Intel® VT-d is enabled. In that case, this option will be shown as "Enabled", and grayed out and not changeable.

Back to [Processor Configuration Screen] — [Advanced Screen]

26. Intel® TXT

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Intel® Trusted Execution Technology. Takes effect after reboot.

Comments: Intel® TXT only appears when Intel Virtualization Technology is enabled.

This option appears only on models equipped with a TPM. The TPM must be active in order to support Intel[®] TXT.

/ NOTE

Changing the setting for Intel[®] TXT will require the system to perform a Hard Reset in order for the new setting to become effective.

Back to [Processor Configuration Screen] — [Advanced Screen]

27. Enhanced Error Containment Mode

Option Values: Enabled

Disabled

Help Text:

Enable Enhanced Error Containment Mode (Data Poisoning) - Erroneous data coming from memory will be poisoned. If disabled (default), will be in Legacy Mode - No data poisoning support available.

Comments: Enhanced Error Containment (Data Poisoning) is not supported by all models of processors, and this option will not appear unless all installed processors support Enhanced Error Containment. This option globally enables or disables both Core and Uncore Data Poisoning, for processors which support them.

Back to [Processor Configuration Screen] — [Advanced Screen]

28. MLC Streamer

Option Values: Enabled

Disabled

Help Text:

MLC Streamer is a speculative prefetch unit within the processor(s).

/ NOTE

Modifying this setting may affect performance.

Comments: MLC Streamer is normally **Enabled**, for best efficiency in L2 Cache and Memory Channel use, but disabling it may improve performance for some processing loads and on certain benchmarks.

29. MLC Spatial Prefetcher

Option Values: <u>Enabled</u>

Disabled

Help Text:

[Enabled] – Fetches adjacent cache line (128 bytes) when required data is not currently in cache.

[Disabled] – Only fetches cache line with data required by the processor (64 bytes).

Comments: MLC Spatial Prefetcher is normally **Enabled**, for best efficiency in L2 Cache and Memory Channel use, but disabling it may improve performance for some processing loads and on certain benchmarks.

Back to [Processor Configuration Screen] — [Advanced Screen]

30. DCU Data Prefetcher

Option Values: Enabled

Disabled

Help Text:

The next cache line will be prefetched into L1 data cache from L2 or system memory during unused cycles if it sees that the processor core has accessed several bytes sequentially in a cache line as data.

[Disabled] – Only fetches cache line with data required by the processor (64 bytes).

Comments: DCU Data Prefetcher is normally **Enabled**, for best efficiency in L1 Data Cache and Memory Channel use, but disabling it may improve performance for some processing loads and on certain benchmarks.

Back to Processor Configuration Screen] — [Advanced Screen]

31. DCU Instruction Prefetcher

Option Values: Enabled

Disabled

Help Text:

The next cache line will be prefetched into L1 instruction cache from L2 or system memory during unused cycles if it sees that the processor core has accessed several bytes sequentially in a cache line as data.

Comments: DCU Data Prefetcher is normally **Enabled**, for best efficiency in L1 I Cache and Memory Channel use, but disabling it may improve performance for some processing loads and on certain benchmarks.

32. Direct Cache Access (DCA)

Option Values: <u>Enabled</u>

Disabled

Help Text:

Allows processors to increase the I/O performance by placing data from I/O devices directly into the processor cache.

Comments: System performance is usually best with Direct Cache Access Enabled. In certain unusual cases, disabling this may give improved results.

Back to [Processor Configuration Screen] — [Advanced Screen]

33. SMM Wait Timeout

Option Values: [Entry Field 0 - 3000ms, $\underline{3}$ is default]

Help Text:

Millisecond timeout waiting for BSP and APs to enter SMM. Range is 1ms to 3000ms.

Comments: Amount of time to allow for the SMI Handler to respond to an SMI. If exceeded, BMC generates an SMI Timeout and resets the system.

/ NOTE

This field is temporary, and will be removed when no longer required.

Back to [Processor Configuration Screen] — [Advanced Screen]

Memory Configuration

The Memory Configuration screen allows the user to view details about the DDR3 DIMMs that are installed as system memory, and alter BIOS Memory Configuration settings where appropriate.

For S1400, S1600, S2400, S2600, and S4600 series boards this screen shows memory system information, has options to select, and allows the user to select the "Memory RAS and Performance Configuration" screen for further system memory information and configuration.

This screen differs somewhat between different boards which have different memory configurations. Some boards have one processor socket and fewer DIMMs, while other boards have two sockets or four sockets, more DIMMs, and the boards may have RAS and Performance options if configured for them

To access this screen from the *Main* screen, select *Advanced* > *Memory Configuration*. To move to another screen, press the <Esc> key to return to the *Advanced* screen, then select the desired screen.

Figure 123. Memory Configuration Screen

Advanced

Memory Configuration

Effective Memory < Total Effective Memory >

Current Configuration Lockstep

Current Memory Speed < Operational Memory Speed in MT/s>

Memory Operating Speed Selection Auto/800/1066/1333/1600

Patrol Scrub Enabled/Disabled
Demand Scrub Enabled/Disabled
Correctable Error Threshold 20/10/5/All/None

► Memory RAS and Performance Configuration

DIMM Information

~~ (repeated for B2-H2, omitted) ~~

Error! Reference source not found. <DIMM Size> <DIMM Status>

Screen Field Descriptions:

1. Total Memory

Option Values: < Total Physical Memory Installed in System>

Help Text: <*None*>

Comments: Information only. Displays the amount of memory available in the

system in the form of installed DDR3 DIMMs, in units of GB.

Back to [Memory Configuration Screen] — [Advanced Screen]

2. Effective Memory

Option Values: < Total Effective Memory>

Help Text: <*None*>

Comments: <u>Information only</u>. Displays the amount of memory available to the OS in

MB or GB.

The Effective Memory is the Total Physical Memory minus the sum of all memory reserved for internal usage, RAS redundancy and SMRAM.

NOTE

<u>Some</u> server operating systems do not display the total physical memory installed.

Back to [Memory Configuration Screen] — [Advanced Screen]

3. Current Configuration

Option Values: Independent Channel

Mirror

Rank Sparing Lockstep

Help Text: <*None*>

Comments: <u>Information only</u>: Displays one of the following:

- *Independent Channel* DIMMs are operating in Independent Channel Mode, the default configuration when there is no RAS Mode configured.
- *Mirror* Mirroring RAS Mode has been configured and is operational.
- Rank Sparing Rank Sparing RAS Mode has been configured and is operational
- Lockstep Lockstep RAS Mode has been configured and is operational

Back to [Memory Configuration Screen] — [Advanced Screen]

4. Current Memory Speed

Option Values: < Operational Memory Speed in MT/s>

Help Text: <*None>*

Comments: <u>Information only</u>. Displays the speed in MT/s at which the memory is

currently running.

The supported memory speeds are 800 MT/s, 1066 MT/s, 1333 MT/s, and 1600 MT/s. The actual memory speed capability depends on the memory configuration.

Back to [Memory Configuration Screen] — [Advanced Screen]

5. Memory Operating Speed Selection

Option Values: <u>Auto</u>

Help Text: Force specific Memory Operating Speed or use Auto setting.

Comments: Allows the user to select a specific speed at which memory will operate. Only speeds that are legitimate are available, that is, the user can only specify speeds less that or equal to the auto-selected Memory Operating Speed. The default **Auto** setting will select the highest achievable Memory Operating Speed consistent with the DIMMs and processors installed

1600 MT/s memory speed is available only on certain models, Information about memory support for each board can be found in in TPS.

Back to [Memory Configuration Screen] — [Advanced Screen]

6. Patrol Scrub

Option Values: <u>Enabled</u>

Disabled

Help Text:

When enabled, performs periodic checks on memory cells and proactively walks through populated memory space, to seek and correct soft ECC errors.

Comments: When enabled, Patrol Scrub is initialized to read through all of memory in a 24-hour period, correcting any Correctable ECC Errors it encounters by writing back the corrected data to memory.

Back to [Memory Configuration Screen] — [Advanced Screen]]

7. Demand Scrub

Option Values: Enabled

Disabled

Help Text:

When enabled, executes when an ECC error is encountered during a normal read/write of data and corrects that data.

Comments: When enabled, Demand Scrub automatically corrects a Correctable ECC Error encountered during a fetch from memory by writing back the corrected data to memory.

Back to [Memory Configuration Screen] — [Advanced Screen]

8. Correctable Error Threshold

Option Values: 20

10 5 All None

Help Text:

Threshold value for logging Correctable Errors (CE) – Threshold of 10 (default) logs 10th CE, "All" logs every CE and "None" means no CE logging. All and None are not valid with Rank Sparing.

Comments: Specifies how many Correctable Errors must occur before triggering the logging of a SEL Correctable Error Event. Only the first threshold crossing is logged, unless "All" is selected. "All" causes every CE that occurs to be logged. "None" suppresses CE logging completely.

When Rank Sparing RAS Mode is configured, "All" and "None" are not valid, so they will not be presented as choices.

This threshold is applied on a per-rank basis. The Correctable Error occurrences are counted for each memory rank. When any one rank accumulates a CE count equal to the CE Threshold, then a single CE SEL Event is logged, and all further CE logging is suppressed.

Note that the CE counts are subject to a "leaky bucket" mechanism that reduces the count as a function of time, to keep from accumulating counts unnecessarily over the term of a long operational run.

This is also the Correctable Error threshold used when Rank Sparing RAS Mode is configured. When a CE threshold crossing occurs in Rank Sparing Mode on a channel which is in Redundant state, it causes a Sparing Fail Over (SFO) event to occur. That threshold crossing will also be logged as a Correctable Error event if it is the first to occur on the system.

An SFO event causes the rank with the error to be replaced by the spare rank for that channel, and the channel goes to a non-redundant state (with a "Redundancy Degraded" SEL Event logged). There may be an SFO for each channel in the system, although only the first one can be logged as a CE event.

Back to [Memory Configuration Screen] — [Advanced Screen]

9. Memory RAS and Performance Configuration

Option Values: <*None>*

Help Text:

Configure memory RAS (Reliability, Availability, and Serviceability) and view current memory performance information and settings.

Comments: <u>Selection only.</u> Position to this line and press the <Enter> key to go to the **Memory RAS and Performance Configuration** group of configuration settings.

Back to [Memory Configuration Screen] — [Advanced Screen]]

10. DIMM_A1

11. DIMM_A2

(DIMM_B1 through DIMM_H2 omitted)

/ NOTE

In "DIMM_XY", X denotes the Channel Identifier A - H, and Y denotes the DIMM Slot identifier I - 3 within the Channel. DIMM_A2 is the DIMM socket on Channel A, Slot 2. Not all boards have the same number of channels and slots – this is dependent on the board features.

S1400 boards can have DIMMs A1, A2 to C1, C2 (max 3 channels/2 DPC)

S1600 boards can have DIMMs A1, A2, A3 to D1, D2, D3 (max 4 channels/3 DPC)

S2400 boards can have DIMMs A1, A2 to F1, F2 (max 2 CPU/3 channels/2 DPC)

S2600 boards can have DIMMs A1, A2, A3 to H1, H2, H3 (max 2 CPU/4 chan/3 DPC)

S4600 boards can have DIMMs A1, A2, A3 to P1, P2, P3 (max 4 CPU/4 chan/3 DPC)

Back to [Memory Configuration Screen] — [Advanced Screen]

Memory RAS and Performance Configuration

The Memory RAS and Performance Configuration screen allows the user to customize several memory configuration options, such as whether to use Memory Mirroring or Memory Sparing.

To access this screen from the *Main* screen, select *Advanced* > *Memory Configuration* > *Memory RAS* and *Performance Configuration*. To move to another screen, press the <Esc> key to return to the *Memory Configuration* screen, if necessary press the <Esc> key again to return to the *Advanced* screen, then select the desired screen.

Figure 124. Memory RAS and Performance Configuration Screen

Advanced

Memory RAS and Performance Configuration

Capabilities

Screen Field Descriptions:

Memory Mirroring Possible Memory Rank Sparing Possible

Memory Lockstep Possible

Select Memory RAS Configuration

NUMA Optimized

Yes/No

Yes/No

Yes/No

Maximum Performance/Mirroring/Rank

Sparing/Lockstep **Enabled**/Disabled

Screen Field Descriptions:

1. Memory Mirroring Possible

Option Values: Yes

No

Help Text: <*None*>

Comments: <u>Information only</u>. Displays whether the current DIMM configuration is capable of Memory Mirroring. For Memory Mirroring to be possible, DIMM configurations on all paired channels must be identical between the channel pair (Mirroring Domain).

Back to [Memory RAS and Performance Configuration Screen] — [Memory Configuration Screen] — [Advanced Screen]

2. Memory Rank Sparing Possible

Option Values: Yes

No

Help Text: <*None>*

Comments: <u>Information only</u>. Displays whether the current DIMM configuration is capable of Rank Sparing. For Rank Sparing to be possible, DIMM configurations on all channels must be capable of supporting Rank Sparing.

/ NOTE

The Correctable Error Threshold value is also the Sparing Fail Over threshold value. Threshold values of "All" or "None" are not valid for Rank Sparing. If the Correctable Error Threshold is set to either of those values, Rank Spring will not be possible. See Memory Configuration Setup screen, Figure 123.

Back to [Memory RAS and Performance Configuration Screen] — [Memory Configuration Screen] — [Advanced Screen]

3. Memory Lockstep Possible

Option Values: Yes

No

Help Text: <*None*>

Comments: <u>Information only</u>. Displays whether the current DIMM configuration is capable of Memory Lockstep. For Memory Lockstep to be possible, DIMM configurations on all paired channels must be identical between the channel pair.

Back to [Memory RAS and Performance Configuration Screen] — [Memory Configuration Screen] — [Advanced Screen]

4. Select Memory RAS Configuration

Option Values: <u>Maximum Performance</u>

Mirroring Rank Sparing Lockstep

Help Text:

Allows the user to select the memory RAS Configuration to be applied for the next boot.

Comments: Available modes depend on the current memory population. Modes which are not listed as "possible" should not be available as choices. If the only valid choice is "Maximum Performance", then this option should be grayed out and unavailable.

<u>Maximum Performance</u> – (default) no RAS, but best memory utilization since full amount of memory is available, operating in Independent Channel Mode.

<u>Mirroring</u> - most reliability by using half of memory as a mirror image, can survive an Uncorrectable ECC Error.

<u>Rank Sparing</u> – offers reliability by reserving spare ranks to replace failing ranks which are generating excessive Correctable ECC Errors.

<u>Lockstep</u> – allows SDDC capability with x8 DIMMs installed. No memory size impact, but does have a performance and power penalty.

/ NOTE

Since only RAS Modes which are listed as "possible" are available for selection, it is not possible to select a RAS Mode without first installing an appropriate DIMM configuration.

Back to [Memory RAS and Performance Configuration Screen] — [Memory Configuration Screen] — [Advanced Screen]

5. NUMA Optimized

Option Values: <u>Enabled</u>

Disabled

Help Text:

If enabled, BIOS includes ACPI tables that are required for NUMA-aware Operating Systems.

Comments: This option is only present for boards which have two or more processor sockets. When a multi-socket board has only a single processor installed, this option is grayed out and set as Disabled.

When enabled, the SRAT and SLIT ACPI tables are provided that show the locality of systems resources, especially memory, which allows a "NUMA Aware" OS to optimize which processor threads are used by processes which can benefit by having the best access to those resources.

Back to [Memory RAS and Performance Configuration Screen] — [Memory Configuration Screen] — [Advanced Screen]

Mass Storage Controller Configuration

The Mass Storage Configuration screen allows the user to configure the Mass Storage controllers that are integrated into the server board on which the BIOS is executing. This includes only onboard Mass Storage controllers. Mass Storage controllers on add-in cards are not included in this screen, nor are other storage mechanisms such as USB-attached storage devices or Network Attached Storage.

There are two types of onboard controller configured in this screen, the AHCI SATA controller and the Storage Control Unit (SCU) with SATA or SAS drive support and RAID support. There are also informational displays of AHCI and SCU controller configuration, and SATA Drive Information when applicable. If the presence of an Intel[®] Storage Module is detected, the type of Storage Module is displayed as information-only.

To access this screen from the *Main* screen, select *Advanced > Mass Storage Controller Configuration*. To move to another screen, press the <Esc> key to return to the *Advanced* screen, then select the desired screen.

Figure 125. Mass Storage Controller Configuration Screen

Advanced Mass Storage Controller Configuration AHCI Controller Configuration SATA/SAS Controller Configuration AHCI HDD Staggered Spin-Up SATA Port 0 SATA Port 0 SATA Port 1 Not Installed / < Drive Information > Not Installed / < Drive Information >

Screen Field Descriptions:

1. AHCI Controller Configuration

Option Values: <AHCI Port Configuration>

One of these strings:

Controller is disabled 2 ports of 6Gb/s SATA

2 ports of 6Gb/s SATA plus 4 ports of 3Gb/s SATA

Help Text: <*None>*

Comments: <u>Information only</u>. This is a display showing which ports are available

through the onboard AHCI capable SATA controller, if the controller is enabled.

This information is also displayed during POST in the POST Diagnostic Screen.

The number of SATA ports available from the integrated AHCI-capable SATA Controller is dependent on the specific server board installed in the system. Different server board designs expose different SATA port configurations.

Back to [Mass Storage Controller Configuration Screen]

2. SATA/SAS Controller Configuration

Option Values: <SCU SAS/SATA Port Configuration>

One of these strings:

Controller is disabled 4 ports in SATA mode 4 ports in SAS mode 8 ports in SATA mode 8 ports in SAS mode

Help Text: <*None>*

Comments: <u>Information only</u>. This is a display showing the number of ports which are available through the SCU controller, and whether they are configured for SATA or SAS.

This information is also displayed during POST in the POST Diagnostic Screen.

Various SATA/SAS Capable Controller configurations require the installation of Intel[®] RAID C600 Upgrade Keys:

4 port SATA requires no key or AXXRKSATA4R5 key

4 port SAS requires AXXRKSAS4 or AXXRKSAS4R5 key

8 port SATA requires AXXRKSATA8 or AXXRKSATA8R5 key

8 port SAS requires AXXRKSAS8 or AXXRKSAS8R5 key

Back to [Mass Storage Controller Configuration Screen]

3. AHCI HDD Staggered Spin-Up

Option Values: **Disabled**

EnabledHelp Text:

-If enabled for the AHCI Capable SATA Controller, Staggered Spin-Up will be performed —on drives attached to it. Otherwise these drives will all spin up at boot.

4. AHCI Capable SATA Controller

Option Values: Disabled

Compatibility
Enhanced
AHCI
RAID Mode

Help Text:

- Compatibility provides PATA emulation on the SATA device
- Enhanced provides Native SATA support
- AHCI enables the Advanced Host Controller Interface, which provides Enhanced SATA functionality
- RAID Mode provides host based RAID support on the onboard SATA ports

Comments: This option configures the onboard AHCI-capable SATA controller which is distinct from the SCU.

If the SATA Controller is *Disabled*, the SATA Ports will not operate. and any installed SATA devices will be unavailable.

Compatibility provides PATA emulation on the SATA device, allowing the use of legacy IDE/PATA drivers. Enhanced provides Native SATA support, using native SATA drivers included with the vast majority of current OSes. AHCI enables the Advanced Host Controller Interface, which provides Enhanced SATA functionality plus possible additional functionality (Native Command Queuing, Hot Plug, Staggered Spin Up). It uses AHCI drivers available for the majority of current OSes.

RAID Mode provides host based RAID support on the onboard SATA ports. RAID levels supported and required drivers depend on the RAID stack selected

Back to [Mass Storage Controller Configuration Screen]

5. AHCI Capable RAID Options

Intel® ESRT2 (LSI*) Option Values:

Intel® RSTe

Help Text:

- Intel® ESRT2 (Powered By LSI*): Supports RAID 0/1/10 and optional RAID 5 with Intel® RAID C600 Upgrade Keys. Uses Intel ESRT2 drivers (based on LSI* MegaSR). - Intel® RSTe: Provides pass-through drive support. Also provides host based RAID 0/1/10/5 support. Uses Intel® RSTe iastor drivers.

This option only appears when the SATA Controller is enabled, and Comments: RAID Mode has been selected as the operational SATA Mode. This setting selects the RAID stack to be used for SATA RAID with the onboard AHCI SATA controller.

If a RAID Volume has not previously been created that is compatible with the RAID stack selected, it will be necessary to Save and Exit and reboot in order to create a RAID Volume.

6. Back to [Mass Storage Controller Configuration Screen] SAS/SATA Capable Controller

Option Values: Disabled

 $\begin{array}{l} \text{Intel}^{\tiny{(0)}} \ ESRT2 \ (LSI(TM)) \\ \underline{\textbf{Intel}^{\tiny{(0)}} \ RSTe} \end{array}$

Help Text:

- Intel[®] ESRT2: Provides host based RAID 0/1/10 and optional RAID 5. Uses Intel[®] ESRT2 drivers (based on LSI* MegaSR).
- Intel® RSTe: Provides pass-through drive support. Also provides host based RAID 0/1/10 support, and RAID 5 (in SATA mode only). Uses Intel® RSTe iastor drivers.

This option selects the RAID stack to be used with the SCU. If Disabled Comments: is selected, any drives connected to the SCU will not be usable.

Intel[®] ESRT2 provides host based RAID 0/1/10 and optional RAID 5. For a RAID 5 configuration, this requires one of the Intel[®] RAID C600 Upgrade Keys AXXRKSATA4R5, AXXRKSATA8R5, AXXRKSAS4R5, or AXXRKSAS8R5. Uses Intel[®] ESRT2 drivers (based on LSI* MegaSR), and is also supported by Linux MDRAID.

Intel[®] RSTe provides pass-through drive support and provides host based RAID 0/1/10 support, and RAID 5 (in SATA mode only). Uses Intel RSTe drivers in Windows, and MDRAID stack in Linux. The Intel[®] RSTe RAID stack is required if it is necessary to provide pass-through support for non-RAID drives, or if support is needed for more than 8 drives.

Back to [Mass Storage Controller Configuration Screen]

7. RSTe Boot Configuration

Option Values: None

AHCI Capable Ctrlr SAS/SATA Capable Ctrlr

Help Text:

This selects the device that will support Bootable Drives, whether they are in RAID arrays or individual pass-through SAS/SATA drives. Once selected and set up (if necessary), individual bootable devices will be listed in the Bootable Devices menu display.

Comments: This option appears only when Intel[®] RSTe has been selected as the operational mode on both the AHCI and SCU controllers. In that case there is a conflict and only one controller can be selected as having bootable drives attached.

Once selected and set up (if necessary), individual bootable logical or physical drives available on the selected controller will be listed in the Bootable Devices menu display.

If only one device selects RSTe, it will be available as a boot device along with any other devices – this option is only necessary to distinguish between which RSTe device runs the OpROM instance.

BIOS is required to designate the OpROM for the boot device selected here. Two iterations of the OpROM cannot FULLY load simultaneously, and the version fully loaded will only show devices connected to the given controller, so OpROM load order is based on BIOS selecting the correct device.

/ NOTE

If RSTe is selected, then only one CONTROLLER can be bootable, so there will be situations where the boot drive *OR* an optical device will be bootable, but not both.

Please also see the product System Guide for restrictions on expander boot support.

Back to [Mass Storage Controller Configuration Screen]

8. Intel[®] Storage Module

Option Values: <u>None</u>

<Name of Storage Module detected>

Names of Storage Modules supported at this time are:

Intel[®] Integrated RAID Module

Intel® Integrated RAID Module RMS25PB040

Intel[®] Integrated RAID Module RMT3PB080

Intel® Integrated RAID Module RMS25CB080

Intel® Integrated RAID Module RMS25CB040

Intel® Integrated RAID Module RMT3CB080

Intel® Integrated RAID Module RMS25JB080

Intel® Integrated RAID Module RMS25JB040

Intel[®] Integrated RAID Module RMS25KB080

Intel® Integrated RAID Module RMS25KB040

Help Text: <*None*>

Comments: <u>Information only</u>. If no Storage module is detected, then **None** is displayed. This shows the customer the product name of the module installed, which helps in identifying drivers, support, documentation, etc.

Back to [Mass Storage Controller Configuration Screen]

9. SATA Port

(For Port numbers 0-1)

Option Values: Not Installed

<Drive Information>

Help Text: <*None>*

Comments: <u>Information only</u>. The Drive Information, when present, will typically consist of the drive model identification and size for the disk drive installed on a particular port.

This Drive Information line is repeated for all 2 SATA Porst for the onboard AHCI capable SATA Controller. However, for any given board, only the ports which are physically populated on the board are shown. That is, a board which only implements the two 6 GB/s ports 0 and 1 will only show those two ports in this Drive Information list.

This section for Drive Information does not appear at all when the SCU is set to *Disabled* or the SATA operational mode is *RAID Mode*, nor for any drives attached to the SCU SATA or SAS ports. In these cases the BBS information is not available to display.

Back to [Mass Storage Controller Configuration Screen]

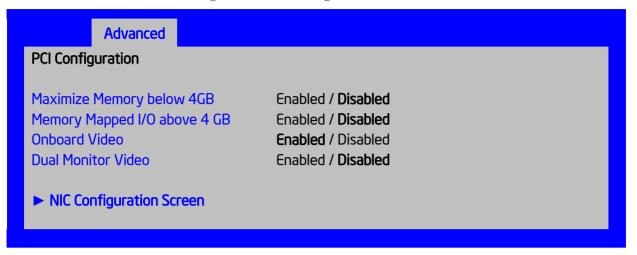
PCI Configuration

The PCI Configuration screen allows the user to configure the PCI memory space used for onboard and add-in adapters, configure video options, and configure onboard adapter options.

It also includes a selection option to go to the NIC Configuration screen.

To access this screen from the Main screen, select Advanced > PCI Configuration. To move to another screen, press the <Esc> key to return to the Advanced screen, then select the desired screen.

Figure 126. PCI Configuration Screen



Screen Field Descriptions:

1. Maximize Memory below 4GB

Option Values: Enabled

Disabled

Help Text:

BIOS maximizes memory usage below 4GB for an OS without PAE support, depending on the system configuration. Only enable for an OS without PAE support.

Comments: When this option is enabled, BIOS makes as much memory available as possible in the 32-bit (4GB) address space, by limiting the amount of PCI/PCIe Memory Address Space and PCIe Extended Configuration Space. This option should only be enabled for a 32-bit OS without PAE capability or without PAE enabled.

Back to [PCI Configuration Screen] — [Advanced Screen]

2. Memory Mapped I/O above 4 GB

Option Values: Enabled

Disabled

Help Text:

Enable or disable memory mapped I/O of 64-bit PCI devices to 4 GB or greater address space.

Comments: When enabled, PCI/PCIe Memory Mapped I/O for devices capable of 64-bit addressing is allocated to address space above 4GB, in order to allow larger allocations and avoid impacting address space below 4G.

Back to [PCI Configuration Screen] — [Advanced Screen]

3. Onboard Video

Option Values: <u>Enabled</u>

Disabled

Help Text:

On-board video controller.

Warning: System video is completely disabled if this option is disabled and an add-in video adapter is not installed.

Comments: When disabled, the system requires an add-in video card for the video to be seen.

If the Legacy VGA Socket option is set to CPU Socket 2, this option is grayed out and unavailable, with a value set to Disabled. When Legacy VGA Socket is set back to CPU Socket 1, this option becomes available again, set to its default value.

/ NOTE

This option does not appear on some models.

Back to [PCI Configuration Screen] — [Advanced Screen]

4. Dual Monitor Video

Option Values: Enabled

Disabled

Help Text:

If enabled, both the on-board video controller and an add-in video adapter are enabled for system video. The on-board video controller becomes the primary video device.

Comments: This option must be enabled to use an add-in card as the POST Legacy Video device. If this is intended to be the <u>only</u> video display, set the Onboard Video option to Disabled.

If the Legacy VGA Socket option is set to CPU Socket 2, this option is grayed out and unavailable, with a value set to Enabled. When Legacy VGA Socket is set back to CPU Socket 1, this option becomes available again, set to its default value.

NOTE

This option does not appear on some models.

Back to [PCI Configuration Screen] — [Advanced Screen]

Hardware Installations and Upgrades

5. NIC Configuration Screen

Option Values: <*None>*

Help Text:

View/Configure PCI information and settings.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the

NIC Configuration group of configuration settings.

Back to [PCI Configuration Screen] — [Advanced Screen]

NIC Configuration

The NIC Configuration screen allows the user to configure the NIC adapter options. It also displays the NIC MAC Addresses currently in use.

To access this screen from the *Main* screen, select *Advanced* > *PCI Configuration* > *NIC Configuration*. To move to another screen, press the <Esc> key to return to the *PCI Configuration* screen, if necessary press the <Esc> key again to return to the *Advanced* screen, then select the desired screen.

Figure 127. NIC Configuration Screen

Advanced NIC Configuration Enabled / Disabled Wake on LAN (PME) PXE 1GbE Option ROM **Enabled** / Disabled iSCSI 1GbE/10GbE Option ROM Enabled / Disabled **PXE 1GbE** Option ROM Option Values: **Enabled** Disabled Help Text: Enable/Disable Onboard/IOM NIC PXE Option ROM Load. Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen] 1. iSCSI 1GbE/10GbE Option **ROM** Option Values: Enabled **Disabled** Help Text: This selection is to enable/disable the discs Option ROM that is used by all Onboard and IO Module 1 GbE and 10 GbE controllers. Comments: This section will be displayed only when the PXE 1GbE Option ROM is selected by Disabled. Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen] **Enabled / Disabled**

Onboard NIC Controller

Onboard

NIC1 Port1 Enabled / Disabled
Onboard NIC1 Port2 Enabled / Disabled
Onboard NIC1 Port3 Enabled / Disabled
Onboard NIC1 Port4 Enabled / Disabled

Onboard NIC1 Port1 MAC Address <MAC #>
Onboard NIC1 Port2 MAC Address <MAC #>
Onboard NIC1 Port3 MAC Address <MAC #>
Onboard NIC1 Port4 MAC Address <MAC #>

Screen Field Descriptions:

2. Wake on LAN (PME)

Option Values: <u>Enabled</u>

Disabled

Help Text:

Enables or disables PCI PME function for Wake on LAN capability from LAN adapters.

Comments: Enables/disables PCI/PCIe PME# signal to generate Power Management Events (PME) and ACPI Table entries required for Wake on LAN (WOL). However, note that this will enable WOL only with an ACPI-capable Operating System which has the WOL function enabled.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

3. PXE 1GbE Option ROM

Option Values: Enabled
Disabled

Help Text:

Enable/Disable Onboard/IOM NIC PXE Option ROM Load.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

4. iSCSI 1GbE/10GbE Option ROM

Option Values: Enabled

Disabled

Help Text:

This selection is to enable/disable the discs Option ROM that is used by all Onboard and IO Module 1 GbE and 10 GbE controllers.

Comments: This section will be displayed only when the PXE 1GbE Option ROM is selected by Disabled.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

5. Onboard NIC Controller

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Onboard Network Controller 1

Comments: This will disable Onboard Network Controller 1, including all NIC1 Ports and the associated options. The NIC Ports and PXE options and the MAC Address displays will not appear.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

- 6. NIC1 Port1
- 7. NIC1 Port2
- 8. NIC1 Port3
- 9. NIC1 Port4

Option Values: **Enabled**

Disabled

Help Text:

Enable/Disable Onboard NIC<n> Port<x>

Comments: This will enable or disable Port <x = 1-4> of Onboard Network Controller <n = 1-2>, including associated options. The NIC<n> Port<x> PXE option and MAC Address display will not appear when this option is disabled.

This option will not appear when NIC<n> is disabled.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

- 10. NIC1 Port1 PXE
- 11. NIC1 Port2 PXE
- 12. NIC1 Port3 PXE
- 13. NIC1 Port4 PXE

Option Values: <u>Enabled</u>
Disabled

Help Text:

Enable/Disable Onboard NIC<n> Port<x> LOM PXE Boot

Comments: This will enable or disable PXE Boot capability for Port $\langle x = 1-4 \rangle$ of Onboard Network Controller $\langle n = 1-2 \rangle$. The NIC $\langle n \rangle$ Port $\langle x \rangle$ PXE option and MAC Address display will not appear when this option is disabled.

This option will not appear when NIC<n> is disabled or when NIC<n> Port<x> is disabled.

In order to disable the PXE Boot OPROM for NIC1 (1Gb) or NIC2 (10Gb), PXE Boot must be disabled for all ports on the corresponding NIC1 or NIC2.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

- 14. NIC1 Port1 MAC Address
- 15. NIC1 Port2 MAC Address
- 16. NIC1 Port3 MAC Address
- 17. NIC1 Port4 MAC Address

Option Values: <Mac #>
Help Text: <None>

Comments: <u>Information only</u>. 12 hex digits of the MAC address of Onboard Network Controller <n = 1-2> Port <x = 1-4>.

This option will not appear when NIC<n> is disabled or when NIC<n> Port<x> is disabled.

Back to [NIC Configuration Screen] — [PCI Configuration Screen] — [Advanced Screen]

Serial Port Configuration

The Serial Port Configuration screen allows the user to configure the Serial A [COM 1] and Serial B [COM2] ports.

To access this screen from the *Main* screen, select *Advanced* > *Serial Port Configuration*. To move to another screen, press the <Esc> key to return to the *Advanced* screen, then select the desired screen.

Figure 128. Serial Port Configuration Screen

Advanced

Serial Port Configuration

Serial A Enable Enabled/Disabled

Address 3F8h/2F8h/3E8h/2E8h

IRQ 3 or 4

Serial B Enable Enabled/Disabled

Address 3F8h/2F8h/3E8h/2E8h

IRQ 3 or 4

Screen Field Descriptions:

1. Serial A Enable

Option Values: <u>Enabled</u>

Disabled

Help Text:

Enable or Disable Serial port A.

Enable of Disable Serial port 11.

Comments: Redirection.

Serial Port A can be used for either Serial Over LAN or Serial Console

Back to [Serial Port Configuration]

2. Address

Option Values: **3F8h**

2F8h 3E8h 2E8h

Help Text:

Select Serial port A base I/O address.

Comments: Legacy I/O port address.

Back to [Serial Port Configuration]

3. IRQ

Option Values: 3

4

Help Text:

Select Serial port A interrupt request (IRQ) line.

Comments: Legacy IRQ

Back to [Serial Port Configuration]

4. Serial B Enable

Option Values: <u>Enabled</u>

Disabled

Help Text:

Enable or Disable Serial port B.

Comments: Serial Port B can be used for Serial Console Redirection. SOL cannot be

routed to Serial B.

Back to [Serial Port Configuration]

5. Address

Option Values: 3F8h

2F8h 3E8h 2E8h

Help Text:

Select Serial port B base I/O address.

Comments: Legacy I/O port address.

Back to [Serial Port Configuration]

6. IRO

Option Values:

4

Help Text:

Select Serial port B interrupt request (IRQ) line.

Comments: Legacy IRQ

Back to [Serial Port Configuration]

USB Configuration

The USB Configuration screen allows the user to configure the available USB controller options.

To access this screen from the *Main* screen, select *Advanced* > *USB Configuration*. To move to another screen, press the <Esc> key to return to the *Advanced* screen, then select the desired screen.

This screen should display all USB Mass Storage devices which have been detected in the system. These include USB-attached Hard Disk Drives (HDDs), Floppy Disk Drives (FDDs), CDROM and DVDROM drives, and USB Flash Memory devices (USB Key, Keyfob, etc).

Each USB Mass Storage device may be set to allow the media emulation for which it is formatted, or an emulation may be specified. For USB Flash Memory devices in particular, there are some restrictions:

- A USB Key formatted as a CDROM drive will be recognized as an HDD.
- A USB Key formatted without a Partition Table will be forced to FDD emulation.
- A USB Key formatted with one Partition Table, and less than 528 MB in size, will be forced to FDD emulation – otherwise if it is 528 MB or greater in size, it will be forced to HDD emulation.

/ NOTE

USB devices cannot be "hotplugged" during POST – to be detected, they must be inserted before the system is booted.

Figure 129. USB Configuration Screen

Advanced

USB Configuration

Detected USB Devices

<Total USB Devices in System>

USB Controller Enabled/Disabled
Legacy USB Support Enabled/Disabled/Auto
Port 60/64 Emulation Enabled/Disabled
Make USB Devices Non-Bootable Enabled/Disabled

USB Mass Storage Device Configuration

Device Reset timeout 10 seconds/20 seconds/30 seconds/40 seconds

Screen Field Descriptions:

1. Detected USB Devices

Option Values: <*Number of USB devices detected in system>*

Help Text: <*None*>

Comments: Information only. Displays the total number of USB devices of all types

which have been detected in POST.

Back to [USB Configuration]

2. USB Controller

Option Values: <u>Enabled</u>

Disabled

Help Text:

[Enabled] - All on-board USB controllers are turned on and accessible by the OS. [Disabled] - All on-board USB controllers are turned off and inaccessible by the OS.

Comments: When the USB controllers are <u>Disabled</u>, there is no USB IO available for either POST or the OS. In that case, all following fields on this screen are grayed out and inactive.

Back to [USB Configuration]

3. Legacy USB Support

Option Values: Enabled

Disabled Auto

Help Text:

Enables Legacy USB device boot support and PS/2 emulation for USB keyboard and mouse devices.

[Auto] - Legacy USB support is enabled if a USB device is attached.

Comments: When <u>Legacy USB Support</u> is <u>Disabled</u>, USB devices are available only through OS drivers.

If the <u>USB controller</u> setting is <u>Disabled</u>, this field is grayed out and inactive.

Back to [USB Configuration]

4. Port 60/64 Emulation

Option Values: **Enabled**

Disabled

Help Text:

Enables I/O port 60h/64h emulation support.

This may be needed for legacy USB keyboard support when using an OS that is USB unaware.

Comments: inactive.

If the <u>USB controller</u> setting is <u>Disabled</u>, this field is grayed out and

Back to [USB Configuration]

5. Make USB Devices Non-Bootable

Option Values: **Enabled**

Disabled

Help Text:

Exclude USB in Boot Table.

[Enabled]- This will remove all USB Mass Storage devices as Boot options.

[Disabled] - This will allow all USB Mass Storage devices as Boot options.

Comments: This is a security option. When <u>Disabled</u>, the system cannot be booted directly to a USB device of any kind. USB Mass Storage devices may still be used for data storage.

If the *USB controller* setting is *Disabled*, this field is grayed out and inactive.

Back to [USB Configuration]

6. Device Reset Timeout

Option Values: 10 seconds

20 seconds 30 seconds 40 seconds

Help Text:

USB Mass Storage device Start Unit command timeout.

Setting to a larger value provides more time for a mass storage device to be ready, if needed.

Comments:

If the <u>USB controller</u> setting is <u>Disabled</u>, this field is grayed out and

inactive.

Back to [USB Configuration]

System Acoustic and Performance Configuration

The System Acoustic and Performance Configuration screen allows the user to configure the thermal control behavior of the system with respect to what parameters are used in the system's Fan Speed Control algorithms.

This screen is only available for platforms which have a BMC. Non-BMC platforms use a different Fan Speed Control mechanism configured from the Hardware Monitor screen.

To access this screen from the *Main* screen, select *Advanced* > *System Acoustic and Performance Configuration*. To move to another screen, press the <Esc> key to return to the *Advanced* screen, then select the desired screen.

Figure 130. System Acoustic and Performance Configuration

Advanced

System Acoustic and Performance Configuration

Set Throttling Mode Auto/DCLTT/SCLTT/SOLTT

Altitude 300m or less/301m-900m/901m - 1500m/Higher than 1500m

Set Fan Profile Performance/Acoustic
Fan PWM Offset [0 - 100, 0 is default]
Quiet Fan Idle Mode Enabled/Disabled

Screen Field Descriptions:

1. Set Throttling Mode

Option Values: <u>Auto</u>

DCLTT SCLTT SOLTT

Help Text:

Sets Thermal Throttling mode for memory, to control fans and DRAM power as needed to control DIMM temperatures.

[Auto] – BIOS selects mode.

[DCLTT] – Dynamic Closed Loop Thermal Throttling.

[SCLTT] - Static Closed Loop Thermal Throttling.

[SOLTT] - Static Open Loop Thermal Throttling.

Comments: The Thermal Throttling Mode chosen reflects whether the DIMMs have Temperature Sensors (TSOD), and whether the chassis is an Intel chassis for which thermal data are available. Note that this is for thermal throtting only, independent of any controls imposed for the purpose of power limiting.

- DCLTT is the expected mode for a board in an Intel chassis with inlet and outlet air temperature sensors and TSOD. The firmware can update the offset registers for closed loop during runtime, as BIOS sends the dynamic CLTT offset temperature data.
- <u>SCLTT</u> would be used with an OEM chassis and DIMMs with TSOD. The firmware does not change the offset registers for closed loop during runtime, although the Management Engine can do so.
- <u>SOLTT</u> is intended for a system with UDIMMs which do not have TSOD. The thermal control registers are configured during POST, and the firmware does not change them.

Back to [System Acoustic and Performance Configuration]

2. Altitude

Option Values: 300m or less

301m-900m 901m-1500m Higher than 1500m

Help Text:

[300m or less] (980ft or less)

Optimal performance setting near sea level.

[301m - 900m] (980ft - 2950ft)

Optimal performance setting at moderate elevation.

[901m - 1500m] (2950ft - 4920ft)

Optimal performance setting at high elevation.

[Higher than 1500m] (4920ft or greater)

Optimal performance setting at the highest elevations.

Comments: This option sets an altitude value in order to choose a Fan Profile that is optimized for the air density at the current altitude at which the system is installed.

Back to [System Acoustic and Performance Configuration]

3. Set Fan Profile

Option Values: **Performance**

Acoustic

Help Text:

[Performance] - Fan control provides primary system cooling before attempting to throttle memory.

[Acoustic] - The system will favor using throttling of memory over boosting fans to cool the system if thermal thresholds are met.

Comments: This option sets an altitude value in order to choose a Fan Profile that is optimized for the air density at the current altitude at which the system is installed.

Back to [System Acoustic and Performance Configuration]

4. Fan PWM Offset

Option Values: [Entry Field 0 - 100, $\boldsymbol{0}$ is default]

Help Text:

Valid Offset 0 - 100. This number is added to the calculated PWM value to increase Fan Speed.

Comments: This is a percentage by which the calculated fan speed will be increased. The user can apply positive offsets that result in increasing the minimum fan speeds.

Back to [System Acoustic and Performance Configuration]

5. Quiet Fan Idle Mode

Hardware Installations and Upgrades

Option Values: Enabled

Disabled

Help Text:

-Enabling this option allows the system fans to operate in Quiet 'Fan Off' mode

-while still maintaining sufficient system sooling. In this mode, fan sensors

-become unavailable and cannot be monitored. There will be limited fan related

-event generation.

Security Screen (Tab)

The Security screen allows the user to enable and set the Administrator and User passwords and to lock out the front panel buttons so they cannot be used. This screen also allows the user to enable and activate the Trusted Platform Module (TPM) security settings on those boards that support TPM.

Note that it is necessary to activate the TPM in order be able to enable Intel[®] Trusted Execution Technology (TXT) on boards that support it. Changing the TPM state in Setup will require a Hard Reset for the new state to become effective. For enabling Intel[®] TXT, see the **Processor Configuration** screen.

This BIOS supports (but does not require) "Strong Passwords" for security. The "Strong Password" criteria for both Administrator and User passwords require that passwords be between 8 and 14 characters in length, and a password must contain at least one case-sensitive alphabetic character, one numeric character, and one special character. A warning is given when a password is set which does not meet the Strong Password criteria, but the password is accepted.

For further security, the BIOS optionally may require a Power on Password to be entered in early POST in order to boot the system. When Power On Password is enabled, POST is halted soon after power on while the BIOS queries for a Power On Password. Either the Administrator or the User password may entered for a Power on Password.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Security* screen is selected.

Figure 131. Security Screen

Main Advanced Server Management **Boot Options Boot Manager** Security Administrator Password Status <Installed/Not Installed> **User Password Status** <Installed/Not Installed> Set Administrator Password [123aBcDeFqH\$#@] Set User Password [123aBcDeFgH\$#@] Power On Password Enabled/Disabled Front Panel Lockout Enabled/Disabled

Screen Field Descriptions:

1. Administrator Password Status

Option Values: Installed

Not Installed

Help Text: <*None>*

Comments: <u>Information only.</u> Indicates the status of the Administrator Password.

Back to [Security Screen]

2. User Password Status

Option Values: Installed

Not Installed

Help Text: <*None>*

Comments: Information only. Indicates the status of the User Password.

Back to [Security Screen]

3. Set Administrator Password

Option Values: [Entry Field – 0-14 characters]

Help Text:

Administrator password is used if Power On Password is enabled and to control change access in BIOS Setup. Length is 1-14 characters. Case sensitive alphabetic, numeric and special characters!@#\$%^&*()-_+=? are allowed.

Note: Administrator password must be set in order to use the User account.

Comments: This password controls "change" access to Setup. The Administrator has full access to change settings for any Setup options, including setting the Administrator and User passwords.

When Power On Password protection is enabled, the Administrator password may be used to allow the BIOS to complete POST and boot the system.

Deleting all characters in the password entry field removes a password previously set. Clearing the Administrator Password also clears the User Password.

If invalid characters are present in the password entered, it will not be accepted, and there will be popup error message:

Password entered is not valid. Only case sensitive alphabetic, numeric and special characters $!@\#\$\%^*(-+=? are allowed.$

The Adminstrator and User passwords must be different. If the password entered is the same as the User password, it will not be accepted, and there will be popup error message:

Password entered is not valid. Administrator and User passwords must be different.

Strong passwords are encouraged, although not mandatory. If a password is entered which does not meet the "Strong Password" criteria, there will be a popup warning message:

Warning – a Strong Password should include at least one each case sensitive alphabetic, numeric, and special character. Length should be 8 to 14 characters.

Back to [Security Screen]

4. Set User Password

Option Values: [Entry Field – 0-14 characters]

Help Text:

User password is used if Power On Password is enabled and to allow restricted access to BIOS Setup. Length is 1-14 characters. Case sensitive alphabetic, numeric and special characters!@#\$%^&*()-_+=? are allowed.

Note: Removing the administrator password also removes the user password.

Comments: The User password is available only if the Administrator Password has ben installed. This option protects Setup settings as well as boot choices. The User Password only allows limited access to the Setup options, and no choice of boot devices.

When Power On Password protection is enabled, the User password may be used to allow the BIOS to complete POST and boot the system.

The password format and entry rules and popup error and warning message are the same for the User password as for the Administrator password (see above).

Back to [Security Screen]

5. Power On Password

Option Values: Enabled

Disabled

Help Text:

Enable Power On Password support. If enabled, password entry is required in order to boot the system.

Comments: When Power On Password security is enabled, the system will halt soon after power on and the BIOS will ask for a password before continuing POST and booting. Either the Administrator or User password may be used.

If an Administrator password has not been set, this option will be grayed out and unavailable. If this option is enabled and the Administrator password is removed, that will also disable this option.

Back to [Security Screen]

6. Front Panel Lockout

Option Values: Enabled

Disabled

Help Text:

If enabled, locks the power button OFF function and the reset and NMI Diagnostic Interrupt buttons on the system's front panel. If [Enabled] is selected, power off and reset must be controlled via a system management interface, and the NMI Diagnostic Interrupt is not available.

Comments: This option does not appear on all boards.

Back to [Security Screen]

7. TPM State

Option Values: < Displays current TPM Device State>

May be:

Enabled & Activated Enabled & Deactivated Disabled & Activated Disabled & Deactivated

Help Text: <*None*>

Comments: <u>Information only</u>. Shows the current TPM device state.

A <u>Disabled</u> TPM device does not execute commands that use the TPM functions and TPM security operations are not available.

An **Enabled & Deactivated** TPM is in the same state as a disabled TPM, except that setting of the TPM ownership is allowed if it is not present already.

An **Enabled & Activated** TPM executes all commands that use the TPM functions and TPM security operations are also available.

/ NOTE

This option appears only on boards equipped with a TPM.

Back to [Security Screen]

8. TPM Administrative Control

Option Values: **No Operation**

Turn On Turn Off

Clear Ownership

Help Text:

[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 factory default state.

Note: BIOS setting will return to [No Operation] on every boot cycle by default.

Comments: Any Administrative Control operation selected will require the system to perform a Hard Reset in order to become effective.

/ NOTE

This option appears only on boards equipped with a TPM.

Back to [Security Screen] Server Management Screen (Tab)

The Server Management screen allows the user to configure several server management features. This screen also provides an access point to the screens for configuring Console Redirection, displaying system information, and controlling the BMC LAN configuration.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Server Management* screen is selected.

Figure 132. Server Management Screen

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
Assert NMI on SERR Assert NMI on PERR PCIe AER Support			Enabled / Disabled Enabled / Disabled Enabled / Disabled		
Assert NMI on SERR Option Values: Enabled					
	Disabled				
	Help Text:				
	On SE NMI and log a	RR, generate n error.	an		
	Note: [Enabled selected for the PERR setup of visible.	e Assert NMI	on		
	Back to [Server Screen]	Management	<u></u>		
1.	Assert NMI on	PERR			
Option Values: <u>Enabled</u>		Enabled / Disabled			
	Disabled				
	Help Text:				
	On PE NMI and log a	RR, generate n error.	an		
:	Note: This option of the Assert NM OPTION HAS [I selected.	II on SERR	e		
	Back to [Serve Screen]	er Managemen	nt		
2.	PCIe AER Sup	pport			
O _l	otion Values: Enabled				

Disabled

Help Text:

[Enabled] - PCIe AER(Advanced Error Reporting) is enabled.

[Disabled] – PCIe AER is disabled, PCIE AER error will be masked once PCIE AER is disabled.

Back to [Server Management Screen]

4.Reset on CATERR

5.Reset on ERR2

Enabled / Disabled

6.Resume on AC Power Loss

Power Restore Delay

Power Restore Delay Value

Clear System Event Log

Stay Off / Last State / Power On

Disabled/Auto/Fixed

25

Enabled / Disabled

FRB-2 Enable

Enabled / Disabled

OS Boot Watchdog Timer

OS Boot Watchdog Timer Policy

OS Boot Watchdog Timer Timeout

Enabled / Disabled Power off / Reset

5 minutes / 10 minutes / 15 minutes / 20 minutes

Plug & Play BMC Detection EuP LOT6 Off-Mode

Enabled / Disabled Enabled / Disabled

- ► Console Redirection
- ▶ System Information
- **▶** BMC LAN Configuration

Screen Field Descriptions:

3. Assert NMI on SERR

Option Values: **Enabled**

Disabled

Help Text:

On SERR, generate an NMI and log an error.

Note: [Enabled] must be selected for the Assert NMI on PERR setup option to be visible.

Back to [Server Management Screen]

4. Assert NMI on PERR

Option Values: Enabled

Disabled

Help Text:

On PERR, generate an NMI and log an error.

Note: This option is noly active if the Assert NMI on SERR OPTION HAS [Enabled] selected.

Back to [Server Management Screen]

5. PCIe AER Support

Option Values: Enabled

Disabled

Help Text:

[Enabled] – PCIe AER(Advanced Error Reporting) is enabled.

[Disabled] – PCIe AER is disabled. PCIE AER error will be masked once PCIE AER is disabled.

Back to [Server Management Screen]

4.Reset on CATERR

Option Values: <u>Enabled</u>

Disabled

Help Text:

When enabled system gets reset upon encountering Catastrophic Error (CATERR); when disabled system does not get reset on CATERR.

Comments: This option controls whether the system will be reset when the "Catastrophic Error" CATERR# signal is held asserted, rather than just pulsed to generate an SMI. This indicates that the processor has encountered a fatal hardware error.

Back to [Server Management Screen]

5. Reset on ERR2

Option Values: <u>Enabled</u>

Disabled

Help Text:

When enabled system gets reset upon encountering ERR2 (Fatal error); when disabled system does not get reset on ERR2

Comments: This option controls whether the system will be reset if the BMC's ERR2 Monitor times out, that is, the ERR2 signal has been continuously asserted long enough to indicate that the SMI Handler is not able to service the condition

Back to [Server Management Screen]

6. 6.Resume on AC Power Loss

Option Values: Stav Off

Last State Power On

Help Text:

System action to take on AC power loss recovery.

[Stay Off] - System stays off.

[Last State] - System returns to the same state before the AC power loss.

[Power On] - System powers on.

Comments: This option controls the policy that the BMC will follow when AC power is restored after an unexpected power outage. The BMC will either hold DC power off or turn it on to boot the system, depending on this setting – and in the case of "Last State", whether the power was on and the system was running before the AC power went off.

Back to [Server Management Screen]

7. Power Restor Delay

Option Values: **Disabled**

Auto Fixed

Help Text:

Allows a delay in powering up after a power failure, to reduce peak power requirement. The delay can be fixed or automatic between 25-300 seconds.

Note:

This option is active only when the Resume on AC Power Loss is selected as Power On.

Back to [Server Management Screen]

8. Clear System Event Log

Hardware Installations and Upgrades

Option Values: Enabled

Disabled

Help Text:

Clears the System Event Log. Allcurrent entries will be lost.

Note:

This option will be reset to [Disabled] after a reboot.

Back to [Server Management Screen]

9. FRB-2 Enabled

Option Values: Enabled

Disabled

Help Text:

Fault Resilient Boot(FRB). BIOS programs the BMC watchdog timer for approximately 6 minutes. If BIOS does not complete POST before the timer expires, the BMC will reset the system.

Back to [Server Management Screen]

10. OS Boot Watchdog Timer

Option Values: Enabled

Disabled

Help Text:

BIOS programs the watchdog timer with the timeout value selected, If the OS does not complete booting before the time expires, the BMC will reset the system and an error will be logged. Requires OS support or Intel Management Software Support.

Back to [Server Management Screen]

11. OS Boot Watchdog Timer Policy

Option Values: Reset

Power Off

Help Text:

If the OS watchdog timer is enabled, this is the system action taken if the watchdog timer expires.

[Reset] – System performs a reset.

[Power Off] – System powers off.

Note: This section will be displayed only when the OS Boot Watchdog Timer is enabled.

Back to [Server Management Screen]

12. OS Boot Watchdog Timer Timeout

Option Values: 5 minutes

10 minutes

15 minutes

20 minutes

Help Text:

If the OS watchdog timer is enabled, this is the timeout value BIOS will use to configure the watchdog timer.

Back to [Server Management Screen]

13. Plug & Play BMC Detection

Option Values: Enabled

Disabled

Help Text:

If enabled, BMC will be detectable by OSes which support plug and play loading of an IPMI driver. Do not enable if your OS does not support this driver.

Back to [Server Management Screen]

14. EuP LOT6 Off-Mode

Option Values: Enabled

Disabled

Help Text:

Enable/Disable Ecodesign EuP LOT 6 "Deep Sleep" Off-Mode for near-zero emergy use when powerd off.

Back to [Server Management Screen]

Console Redirection

The Console Redirection screen allows the user to enable or disable Console Redirection for Remote System Management, and to configure the connection options for this feature.

When Console Redirection is active, all POST and Setup displays are in Text Mode. The Quiet Boot setting is disregarded, and the Text Mode POST Diagnostic Screen will be displayed regardless of the Quiet Boot setting. This is due to the limitations of Console Redirection, which is using data transfer based on serial data terminal emulation.

To access this screen from the *Main* screen, select *Server Management > Console Redirection*. To move to another screen, press the <Esc> key to return to the *Server Management* screen, then select the desired screen.

Figure 133. Console Redirection Screen

Console Redirection

Console Redirection

Disabled / Serial Port A / Serial Port B

Screen Field Descriptions:

1. Console Redirection

Option Values: <u>Disabled</u>

Serial Port A Serial Port B

Help Text:

Console redirection allows a serial port to be used for server management tasks. [Disabled] - No console redirection.

[Serial Port A] - Configure serial port A for console redirection.

Enabling this option will disable display of the Quiet Boot logo screen during POST.

Comments: Serial Console Redirection can use either Serial Port A or Serial Port B. If SOL is also going to be configured, note that SOL is only supported through Serial Port A.

When Console Redirection is set to <u>Disabled</u>, all other options on this screen will be grayed out and unavailable.

Only Serial Ports which are <u>Enabled</u> should be available to choose for Console Redirection. If neother Serial A nor Serial B is set to <u>Enabled</u>, then Console Redirection will be forced to <u>Disabled</u>, and grayed out as inactive. In that case, all other options on this screen will also be grayed

Back to [Console Redirection]

System Information

The System Information screen allows the user to view part numbers, serial numbers, and firmware revisions. This is an *Information Only* screen

To access this screen from the *Main* screen, select *Server Management > System Information*. To move to another screen, press the <Esc> key to return to the *Server Management* screen, then select the desired screen.

Figure 134. System Information Screen

Server Management **System Information Board Part Number** <Part Number display> **Board Serial Number** <Serial Number display> System Part Number <Part Number display> System Serial Number <Serial Number display> Chassis Part Number <Part Number display> Chassis Serial Number <Serial Number display> Asset Tag <Asset Tag-display> **BMC Firmware Revision** <BMC FW Rev display> ME Firmware Revision <ME FW Rev display> **SDR Revision** <SDR Rev display> UUID <UUID display>

Screen Field Descriptions:

BMC LAN Configuration

The BMC configuration screen allows the Setup user to configure the BMC Baseboard LAN channel and the RMM4 LAN channel, and to manage BMC User settings for up to five BMC Users.

To access this screen from the *Main* screen, select *Server Management > System Information*. To move to another screen, press the <Esc> key to return to the *Server Management* screen, then select the desired screen.

Figure 135. BMC LAN Configuration Screen

Server Management

BMC LAN Configuration

Baseboard LAN configuration

IP Source Static/Dynamic

IP Address[0.0.0.0 IP display/edit]Subnet Mask[0.0.0.0 IP display/edit]Gateway IP[0.0.0.0 IP display/edit]

Baseboard LAN IPV6 configuration

IPV6 Enable/Disabled

Intel (R) RMM4 IPV4 LAN configuration

Intel (R) RMM4 < Present/Not Present>

IP Source Static/**Dynamic**

IP Address[0.0.0.0 IP display/edit]Subnet Mask[0.0.0.0 IP display/edit]Gateway IP[0.0.0.0 IP display/edit]

Intel (R) RMM4 IPV4 LAN configuration

Intel (R) RMM4 < Present/Not Present>

IP Source Static/Dynamic

IP Address [0.0.0.0 IP display/edit]
Subnet Mask [0.0.0.0 IP display/edit]
Gateway IP [0.0.0.0 IP display/edit]
IPV6 Prefix Length

User Configuration

User ID anonymous/root/User3/User4/User5
Privilege Callback/ User/Operator/Administrator
User status Disable/Enable

User name [User Name display/edit]
User password

Screen Field Descriptions:

1. IP Source

Option Values: Static

Dynamic

Help Text:

Select BMC IP Source: If [Static], IP parameters may be edited. If [Dynamic], these fields are display-only and IP address is acquired automatically (DHCP).

Comments: This specifies the IP Source for IPv4 addressing for the Baseboard LAN. There is a separate IP Source field for the Intel® RMM4 LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC, and its setting determines whether the other Baseboard LAN IPv4 addressing fields are display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

2. IP Address

Option Values: [Entry Field 0.0.0.0, **0.0.0.0** is default]

Help Text:

View/Edit IP Address. Press <Enter> to edit.

Comments: This specifies the IPv4 Address for the Baseboard LAN. There is a separate IPv4 Address field for the Intel® RMM4 LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IP Source* determines whether this field is display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

3. Subnet Mask

Option Values: [Entry Field 0.0.0.0, **0.0.0.0** is default]

Help Text:

View/Edit Subnet Mask. Press <Enter> to edit.

Comments: This specifies the IPv4 addressing Subnet Mask for the Baseboard LAN. There is a separate IPv4 Subnet Mask field for the Intel® RMM4 LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IP Source* determines whether this field is display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

4. Gateway IP

Option Values: [Entry Field 0.0.0.0, <u>0.0.0.0</u> is default]

Help Text:

View/Edit Gateway IP. Press <Enter> to edit.

Comments: This specifies the IPv4 addressing Gateway IP for the Baseboard LAN. There is a separate IPv4 Gateway IP field for the Intel® RMM4 LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IP Source* determines whether this field is display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

5. IPv6

Option Values: Enabled

Disabled

Help Text:

Option to Enable/Disable IPv6 addressing and any IPv6 network traffic on these channels

Comments: The initial value for this field is acquired from the BMC. It may be changed in order to switch between IPv4 and IPv6 addressing technologies.

When this option is set to *Disabled*, all other IPv6 fields will not be visible for the Baseboard LAN and Intel[®] RMM4 DMN (if installed). When IPv6 addressing is *Enabled*, all IPv6 fields for the Baseboard LAN and Intel[®] RMM4 DMN will become visible, and all IPv4 fields will be grayed out and inactive.

Back to [BMC LAN Configuration]

6. IPv6 Source

Option Values: Static

Dynamic

Auto

Help Text:

Select BMC IPv6 source: If [Static], IPv6 parameters may be edited. If [Dynamic], these fields are display-only and IPv6 address is acquired automatically (DHCP). If [Auto], these fields are display-only and IPv6 address is acquired using ICMPv6 router / neighbor discovery.

Comments: This specifies the IP Source for IPv6 addressing for the Baseboard LAN configuration. There is a separate IPv6 Source field for the Intel® RMM4 LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is *Enabled*, the initial value for this field is acquired from the BMC, and its setting determines whether the other Baseboard LAN IPv6 addressing fields are display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

7. IPv6 Address

Help Text:

View/Edit IPv6 address. Press < Enter> to edit. IPv6 addresses consist of 8 hexadecimal 4 digit numbers separated by colons.

Comments: This specifies the IPv6 Address for the Baseboard LAN. There is a separate IPv6 Address field for the Intel[®] RMM4 LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IPv6 Source* determines whether this field is display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

8. Gateway IPv6

0000.0000.0000.0000.0000.0000.0000 is default]

Help Text:

View/Edit Gateway IPv6 address. Press <Enter> to edit. Gateway IPv6 addresses consist of 8 hexadecimal 4 digit numbers separated by colons.

Comments: This specifies the Gateway IPv6 Address for the Baseboard LAN. There is a separate Gateway IPv6 Address field for the Intel[®] RMM4 LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IPv6 Source* determines whether this field is display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

9. IPv6 Prefix Length

Option Values: [Entry Field 0 - 128, 64 is default]

Help Text:

View/Edit IPv6 Prefix Length from zero to 128 (default 64). Press <Enter> to edit.

Comments: This specifies the IPv6 Prefix Length for the Baseboard LAN. There is a separate IPv6 Prefix Length field for the Intel® RMM4 LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IPv6 Source* determines whether this field is display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

10. Intel® RMM4

Option Values: Not Present

Intel[®] RMM4-Lite Intel[®] RMM4 + DMN

Help Text: <*None>*

Comments: <u>Information only</u>. Displays whether an Intel[®] RMM4 component is currently installed. This information may come from querying the BMC.

Intel[®] *RMM4-Lite* is the Management Module without the Dedicated Server Management NIC Module. When this is present, or if the Management Module is *Not Present* at all, the fields for Intel[®] RMM4 LAN Configuration will not be visible.

When an *Intel*® *RMM4* + *DMN* is installed, the options for *Intel*® *RMM4 LAN Configuration* will be visible. When *IPv6* is *Disabled*, the IPv4 configuration fields will be visible and the IPv6 configuration fields will not be visible. When *IPv6* is *Enabled*, the IPv4 fields will be grayed out and inactive, while the IPv6 Configuration fields will be visible.

In either case, the Intel[®] RMM4 section *IP Source* or *IPv6 Source* will determine whether the IPv4 or IPv6 address fields are display-only or can be edited.

Back to [BMC LAN Configuration]

11. IP Source

Option Values: Static

Dynamic

Help Text:

Select RMM4 IP source: If [Static], IP parameters may be edited. If [Dynamic], these fields are display-only and IP address is acquired automatically (DHCP).

Comments: This specifies the IP Source for IPv4 addressing for the Intel® RMM4 DMN LAN connection. There is a separate IP Source field for the Baseboard LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC, and its setting determines whether the other Intel[®] RMM4 DMN LAN IPv4 addressing fields are display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

12. IP Address

Option Values: [Entry Field 0.0.0.0, **0.0.0.0** is default]

Help Text:

View/Edit IP Address. Press <Enter> to edit.

Comments: This specifies the IPv4 Address for the Intel® RMM4 DMN LAN. There is a separate IPv4 Address field for the Baseboard LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IP Source* determines whether this field is display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

13. Subnet Mask

Option Values: [Entry Field 0.0.0.0, <u>0.0.0.0</u> is default]

Help Text:

View/Edit Subnet Mask. Press <Enter> to edit.

Comments: This specifies the IPv4 addressing Subnet Mask for the Intel[®] RMM4 DMN LAN. There is a separate IPv4 Subnet Mask field for the Baseboard LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IP Source* determines whether this field is display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is grayed out and inactive.

Back to [BMC LAN Configuration]

14. Gateway IP

Option Values: [Entry Field 0.0.0.0, <u>0.0.0.0</u> is default]

Help Text:

View/Edit Gateway IP. Press <Enter> to edit.

Comments: This specifies the IPv4 addressing Gateway IP for the Intel[®] RMM4 DMN LAN. There is a separate IPv4 Gateway IP field for the Baseboard LAN configuration.

When IPv4 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IP Source* determines whether this field is display-only (when *Dynamic*) or can be edited (when *Static*).

When IPv6 addressing is enabled, this field is graved out and inactive.

Back to [BMC LAN Configuration]

15. IPv6 Source

Option Values: Static

Dynamic Auto

Help Text:

Select Intel® RMM4 IPv6 source: If [Static], IPv6 parameters may be edited. If [Dynamic], these fields are display-only and IPv6 address is acquired automatically (DHCP). If [Auto], these fields are display-only and IPv6 address is acquired using ICMPv6 router / neighbor discovery.

Comments: This specifies the IP Source for IPv6 addressing for the Intel® RMM4 DMN LAN configuration. There is a separate IPv6 Source field for the Baseboard LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is *Enabled*, the initial value for this field is acquired from the BMC, and its setting determines whether the other Intel[®] RMM4 DMN LAN IPv6 addressing fields are display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

16. IPv6 Address

0000.0000.0000.0000.0000.0000.0000 is default]

Help Text:

View/Edit IPv6 address. Press <Enter> to edit. IPv6 addresses consist of 8 hexadecimal 4 digit numbers separated by colons.

Comments: This specifies the IPv6 Address for the Intel[®] RMM4 DMN LAN. There is a separate IPv6 Address field for the Baseboard LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IPv6 Source* determines whether this field is display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

17. Gateway IPv6

0000.0000.0000.0000.0000.0000.0000 is default]

Help Text:

View/Edit Gateway IPv6 address. Press <Enter> to edit. Gateway IPv6 addresses consist of 8 hexadecimal 4 digit numbers separated by colons.

Comments: This specifies the Gateway IPv6 Address for the Intel[®] RMM4 DMN LAN. There is a separate Gateway IPv6 Address field for the Baseboard LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IPv6 Source* determines whether this field is display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

18. IPv6 Prefix Length

Option Values: [Entry Field 0 - 128, <u>64</u> is default]

Help Text:

View/Edit IPv6 Prefix Length from zero to 128 (default 64). Press <Enter> to edit.

Comments: This specifies the IPv6 Prefix Length for the Intel® RMM4 DMN LAN. There is a separate IPv6 Prefix Length field for the Baseboard LAN configuration.

This option is only visible when the *IPv6* option is set to *Enabled*.

When IPv6 addressing is used, the initial value for this field is acquired from the BMC. The setting of *IPv6 Source* determines whether this field is display-only (when *Dynamic* or *Auto*) or can be edited (when *Static*).

Back to [BMC LAN Configuration]

19. BMC DHCP Host Name

Option Values: [Entry Field, 2-63 characters]

Help Text:

View/Edit BMC DHCP host name. Press <Enter> to edit. Host name should start with an alphabetic, remaining can be alphanumeric characters. Host name length may be from 2 to 63 characters.

Comments: This field is active and may be edited whenever at least one of the *IP Source* or *IPv6 Source* options is set to *Dynamic*. This is the name of the DHCP Host from which dynamically assigned IPv4 or IPv6 addressing parameters are acquired.

The initial value for this field is supplied from the BMC, if there is a DHCP Host available. The user can edit the existing Ho or enter a different DHCP Host Name.

If none of the *IP/IPv6 Source* fields is set to *Dynamic*, then this *BMC DHCP Host Name* field will be grayed out and inactive.

Back to [BMC LAN Configuration]

20. User ID

Option Values: anonymous

root User3 User4 User5

Help Text:

Select the User ID to configure: User1 (anonymous), User2 (root), and User3/4/5 are supported.

Comments: These 5 User IDs are fixed choices and cannot be changed. The BMC supports 15 User IDs natively, but only the first 5 are supported through this interface.

Back to [BMC LAN Configuration]

Hardware Installations and Upgrades

21. Privilege

Option Values: Callback

User Operator

Administrator

Help Text:

View/Select user privilege. User2 (root) privilege is "Administrator" and cannot be changed.

Comments: The level of privilege that is assigned for a User ID affects which functions that user may perform.

Back to [BMC LAN Configuration]

22. User Status

Option Values: Enabled

Disabled

Help Text:

Enable / Disable LAN access for selected user. Also enables/disables SOL, KVM, and media redirection.

Comments: Note that status setting is *Disabled* by default until set to *Enabled*.

Back to [BMC LAN Configuration]

23. User Name

Option Values: [Entry Field, 4 - 15 characters]

Help Text:

Press <Enter> to edit User Name. User Name is a string of 4 to 15 alphanumeric characters, and must begin with an alphabetic character. User Name cannot be changed for User1 (anonymous) and User2 (root).

Comments: User Name can only be edited for users other than "anonymous" and "root". Those two User Names may not be changed.

Back to [BMC LAN Configuration]

24. User Password

Option Values: [Popup Entry Field, 0 - 15 characters]

Help Text:

Press <Enter> key to enter password. Maximum length is 15 characters. Any ASCII printable characters can be used: case-sensitive alphabetic, numeric, and special characters.

**Note: Password entered will override any previously set password.

Comments: This field will not indicate whether there is a password set already. There is no display - just press <Enter> for a popup with an entry field to enter a new password. Any new password entered will override the previous password, if there was one.

Back to [BMC LAN Configuration]

Boot Options Screen (Tab)

The Boot Options screen displays all bootable media encountered during POST, and allows the user to configure the desired order in which boot devices are to be tried.

The first boot device in the specified Boot Order which is present and is bootable during POST will be used to boot the system, and will continue to be used to reboot the system until the boot device configuration has changed (that is, which boot devices are present), or until the system has been powered down and booted in a "cold" power-on boot.

There are two main types of boot order control, Legacy Boot and EFI Optimized boot. These are mutually exclusive – when EFI Optimized Boot is enabled, Legacy Boot (the default) is disabled. Within Legacy Boot operation, there are two further methods of ordering boot devices, Dynamic Boot Order and Static Boot Order.

The default for Boot Order control is Legacy Boot, with Dynamic Boot Order. If all types of bootable devices are installed in the system, then the default Boot Order is as follows:

- CD/DVD-ROM
- Floppy Disk Drive
- Hard Disk Drive
- PXE Network Device
- BEV (Boot Entry Vector) Device
- EFI Shell and EFI Boot paths

In this default Boot Order, a USB device may appear in any of several Device Classes, due to the flexibility of USB connections and USB emulation of various types of devices.

/ NOTE

A USB Key ("Thumb Drive", "Key Fob") can be formatted to emulate either a Floppy Drive or a Hard Drive. and will appear in that Boot Device Class. However, although it can be formatted as a CDROM Drive, it will not be detected as such. It will be treated as a Hard Disk and will appear in the list of available Hard Drives.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Boot Options* screen is selected.

Figure 136. Boot Options Screen

Main Advanced Security	Server Management Boot Options	Boot Manager
System Boot Timeout	[0 - 65535, 0 is default]	
Boot Option #1 Boot Option #2 Boot Option <#n>	<available boot="" devices=""> <available boot="" devices=""> <available boot="" devices=""></available></available></available>	
Network Device OrderHard Disk Order		
► Delete EFI Boot Option		
EFI Optimized Boot Boot Option Retry USB Boot Priority Static Boot Ordering Reset Static Boot Order	Enabled/ Disabled Enabled/ Disabled Enabled /Disabled Enabled/ Disabled Yes/ No Action	

Screen Field Descriptions:

1. System Boot Timeout

Option Values: [Entry Field 0 - 65535, $\underline{0}$ is default]

Help Text:

The number of seconds BIOS should pause at the end of POST to allow the user to press the [F2] key for entering the BIOS Setup utility.

Valid values are 0-65535. Zero is the default. A value of 65535 causes the system to go to the Boot Manager menu and wait for user input for every system boot.

Comments: After entering the desired timeout, press the <Enter> key to register that timeout value to the system. These settings are in seconds. The timeout value entered will take effect on the next boot.

This timeout value is independent of the FRB2 setting for BIOS boot failure protection. The FBR2 countdown will be suspended during the time that the Boot Timeout countdown is active.

Also, if the <Pause> key is pressed during the time that the Boot Timeout is active, the Boot Timeout countdown will be suspended until the Pause state has been dismissed and normal POST processing has resumed.

Back to [Boot Options Screen]

- 2. Boot Option #1
- 3. Boot Option #2
- **4.** Boot Option <#n>

Option Values: <*Available Boot Device #n>*

Help Text:

Set system boot order by selecting the boot option for this position.

Comments: When the Boot order has been chosen, it will take effect on the next boot. The system will go down the list and boot from the first device on the list which is available and bootable.

This establishes the Boot Order <u>only with respect to the normal boot path</u>. This order has no effect on the Boot Manager selection list or the <F6> BIOS Boot Menu popup, both of which simply list all bootable devices available in the order in which they were detected. Whether or not a potential Boot Device is in this list has no bearing on the presence or order of Boot Devices shown for Boot Manager or the BIOS Boot Menu.

Back to [Boot Options Screen]

5. CDROM Order

Option Values: <*None*>

Help Text:

Set the order of the legacy devices in this group.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **CDROM Order Screen**.

This option appears when one or more bootable CDROM drives are available in the system. This includes USB CDROM devices, <u>but not</u> USB Keys formatted for CRDOM emulation, which are seen as Hard Disk drives.

6. Hard Disk Order

Option Values: <*None>*

Help Text:

Set the order of the legacy devices in this group.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **Hard Disk Order Screen**.

This option appears when one or more bootable Hard Disk drives are available in the system. This includes USB Hard Disk devices and USB Keys formatted for Hard Disk or CRDOM emulation.

Back to [Boot Options Screen]

7. Floppy Order

Option Values: <*None>*

Help Text:

Set the order of the legacy devices in this group.

Comments: <u>Selection only.</u> Position to this line and press the <Enter> key to go to the **Floppy Order Screen**.

This option appears when one or more bootable Floppy Disk drives are available in the system. This includes USB Floppy Disk devices and USB Keys formatted for Floppy Disk emulation.

Back to [Boot Options Screen]

8. Network Device Order

Option Values: <*None>*

Help Text:

Set the order of the legacy devices in this group.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **Network Device Order Screen**.

This option appears when one or more bootable Network Devices are available in the system.

Back to [Boot Options Screen]

9. BEV Device Order

Option Values: <*None>*

Help Text:

Set the order of the legacy devices in this group.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the **BEV Device Order Screen**.

This option appears when one or more bootable BEV Devices are available in the system.

10. Add EFI Boot Option

Option Values: <None>

Help Text:

Add a new EFI boot option to the boot order.

Comments: Selection only. Position to this line and press the <Enter> key to go to the Add EFI Boot Option Screen.

This option is only displayed if an EFI bootable device is available to the system.

Back to [Boot Options Screen]

11. Delete EFI Boot Option

<None> Option Values:

Help Text:

Remove an EFI boot option from the boot order.

Comments: <u>Selection only</u>. Position to this line and press the <Enter> key to go to the Delete EFI Boot Option Screen.

This option is only displayed if an EFI boot path is included in the Boot Order.

Back to [Boot Options Screen]

12. EFI Optimized Boot

Enabled **Option Values:**

Disabled

Help Text:

If enabled, the BIOS only loads modules required for booting EFI-aware Operating Systems.

If this option is enabled, the system will not boot successfully to a non-

EFI-aware OS.

Comments:

Back to [Boot Options Screen]

13. Use Legacy Video for EFI OS

Option Values: Enabled

Disabled

Help Text:

If enabled, the BIOS uses the legacy video ROM instead of the EFI video ROM.

Comments: This option appears only when EFI Optimized Boot is enabled.

14. Boot Option Retry

Option Values: Enabled

Disabled

Help Text:

If enabled, this continually retries non-EFI-based boot options without waiting for user input.

Comments: This option is intended to keep retrying for cases where the boot devices could possibly be slow to initially respond, e.g. if the device were "asleep" and did not wake quickly enough. However, if none of the devices in the Boot Order <u>ever</u> responds, the BIOS will continue to reboot indefinitely.

Back to [Boot Options Screen]

15. USB Boot Priority

Option Values: Enabled

Disabled

Help Text:

If enabled, newly discovered USB devices are moved to the top of their boot device category.

If disabled, newly discovered USB devices are moved to the bottom of their boot device catergory.

Comments: This option enables or disables the "USB Reorder" functionality. USB Boot Priority, if enabled, is intended for the case where a user wants to be able to plug in a USB device and immediately boot to it, for example in case of a maintenance or System Administration operation. If a User Password is installed, USB Boot Priority action is suspended when a User Password is installed.

Back to [Boot Options Screen]

16. Static Boot Ordering

Option Values: Enabled

Disabled

Help Text:

[Disabled] - Devices removed from the system are deleted from Boot Order Tables. [Enabled] - Devices removed have positions in Boot Order Tables retained for later reinsertion.

Comments: When the option changes to "Enabled" from "Disabled", it will enable Static Boot Ordering (SBO) from the next boot onward, and also the current Boot Order will be stored as the SBO template.

When the option changes from "Enabled" to "Disabled", this will disable SBO and the SBO template will be cleared.

Otherwise it will retain the current Enabled/Disabled state.

17. Reset Static Boot Order

Option Values: Yes

No Action

Help Text:

[Yes] Take snapshot of current boot order to save as Static Boot Order Template.

Comments: This option will allow you to save the Boot Order list as the Static Boot Order template without disabling and re-enabling the Static Boot Ordering option.

Select <u>Yes</u> to snapshot the current Boot Options list into the Static Boot Options list on the next boot. After saving Static Boot Options list, this option will change back to <u>NoAction</u> automatically.

This option is available only when the Static Boot Ordering option is *Enabled*. Otherwise it will grayed out and unavailable.

Back to [Boot Options Screen]

CDROM Order

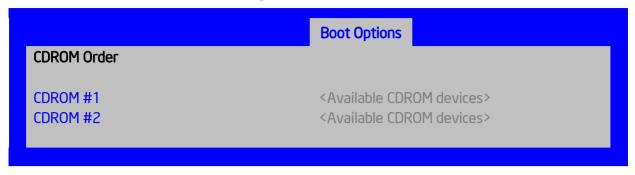
The CDROM Order screen allows the user to control the order in which BIOS attempts to boot from the CDROM drives installed in the system. This screen is only available when there is at least one CDROM device available in the system configuration.

/ NOTE

A USB attached CDROM device will appear in this section. However, a USB Key formatted as a CRDOM device will not – it will be detected as a Hard Disk device and will be included in the Hard Disk Order Screen.

To access this screen from the *Main* screen, select *Boot Options* > *CDROM Order*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 137. CDROM Order Screen



Screen Field Descriptions:

- 1. CDROM #1
- **2.** CDROM #2

Option Values: <Available CDROM devices>

Help Text:

Set the system boot order.

Comments: Choose the order of booting among CDROM devices by choosing which available CDROM device should be in each position in the order.

Back to [CDROM Order Screen] — [Boot Options Screen]

Hard Disk Order

The Hard Disk Order screen allows the user to control the order in which BIOS attempts to boot from the hard disk drives installed in the system. This screen is only available when there is at least one hard disk device available in the system configuration. Note that a USB attached Hard Disk drive or a USB Key device formatted as a hard disk will appear in this section.

To access this screen from the *Main* screen, select *Boot Options* > *Hard Disk Order*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 138. Hard Disk Order Screen



Screen Field Descriptions:

- 1. Hard Disk #1
- 2. Hard Disk #2

Option Values: <Available Hard Disk devices>

Help Text:

Set the system boot order.

Comments: Choose the order of booting among Hard Disk devices by choosing which available Hard Disk device should be in each position in the order.

Back to [Hard Disk Order Screen] — [Boot Options Screen]

Floppy Order

The Floppy Order screen allows the user to control the order in which BIOS attempts to boot from the Floppy Disk drives installed in the system. This screen is only available when there is at least one Floppy Disk (diskette) device available in the system configuration. Note that a USB attached diskette drive or a USB Key device formatted as a diskette drive will appear in this section.

To access this screen from the *Main* screen, select *Boot Options* > *Floppy Order*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 139. Floppy Order Screen

Floppy Order

Floppy Disk #1

Floppy Disk #2

Available Floppy Disk devices>
Available Floppy Disk devices>

Screen Field Descriptions:

- 1. Floppy Disk #1
- 2. Floppy Disk #2

Option Values: <Available Floppy Disk devices>

Help Text:

Set the system boot order.

Comments: Choose the order of booting among Floppy Disk devices by choosing which available Floppy Disk device should be in each position in the order.

Back to [Floppy Order Screen] — [Boot Options Screen]

Network Device Order

The Network Device Order screen allows the user to control the order in which BIOS attempts to boot from the network bootable devices installed in the system. This screen is only available when there is at least one network bootable device available in the system configuration.

To access this screen from the *Main* screen, select *Boot Options > Network Device Order*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 140. Network Device Order Screen

Network Device Order

Network Device #1

Network Device #2

Available bootable Network devices>
Available bootable Network devices>

Screen Field Descriptions:

- 1. Network Device #1
- 2. Network Device #2

Option Values: <Available Network Devices>

Help Text:

Set the system boot order.

Comments: Choose the order of booting among Network Devices by choosing which available Network Device should be in each position in the order.

Back to [Network Device Order Screen] — [Boot Options Screen]

BEV Device Order

The BEV Device Order screen allows the user to control the order in which BIOS attempts to boot from the BEV Devices installed in the system. This screen is only available when there is at least one BEV device available in the system configuration.

To access this screen from the *Main* screen, select *Boot Options* > *BEV Device Order*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 141. BEV Device Order Screen

Screen Field Descriptions:

- 1. BEV Device #1
- 2. BEV Device #2

Option Values: <Available BEV Devices>

Help Text:

Set the system boot order.

Comments: Choose the order of booting among BEV Devices by choosing which available BEV Device should be in each position in the order.

Back to [BEV Device Order Screen] — [Boot Options Screen]

Add EFI Boot Option

The Add EFI Boot Option screen allows the user to add an EFI boot option to the boot order. This screen is only available when there is at least one EFI bootable device present in the system configuration. The "Internal EFI Shell" Boot Option is permanent and cannot be added or deleted.

To access this screen from the *Main* screen, select *Boot Options* > *Add EFI Boot Option*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 142. Add EFI Boot Option Screen

Add EFI Boot Option

Add boot option label
Select File system
Path for boot option
Save

Boot Options

[Enter label]
<Available Filesystems>
[Enter boot path]

Screen Field Descriptions:

1. Add boot option label

Option Values: [Enter label]

Help Text:

Create the label for the new boot option.

Comments: This label becomes an abbreviation for this Boot Path.

Back to [Add EFI Boot Option Screen] — [Boot Options Screen]

2. Select File system

Option Values: <Available Filesystems>

Help Text:

Select one filesystem from this list.

Comments: Choose the filesystem on which this boot path resides.

Back to [Add EFI Boot Option Screen] — [Boot Options Screen]

3. Path for boot option

Option Values: [Enter Boot Path]

Help Text:

Enter the path to the boot option in the format fs0:\path\filename.efi.

Comments: This will be the Boot Path, residing on the filesystem chosen, which will entered into the Boot Order with the Label entered above.

Back to [Add EFI Boot Option Screen] — [Boot Options Screen]

4. Save

Option Values: <*None>*

Help Text:

Save the boot option..

Comments: Selection only. This will save the new Boot Option into the Boot Order.

Back to [Add EFI Boot Option Screen] — [Boot Options Screen]

Delete EFI Boot Option

The Delete EFI Boot Option screen allows the user to remove an EFI boot option from the boot order. The "Internal EFI Shell" Boot Option will not be listed, since it is permanent and cannot be added or deleted.

To access this screen from the *Main* screen, select *Boot Options > Delete EFI Boot Option*. To move to another screen, press the <Esc> key to return to the *Boot Options* screen, then select the desired screen.

Figure 143. Delete EFI Boot Option Screen



Screen Field Descriptions:

1. Delete Boot Option

Option Values: <Available EFI Boot Options>

Help Text:

Select one to delete.

Comments: This will not allow a user to delete the EFI Shell.

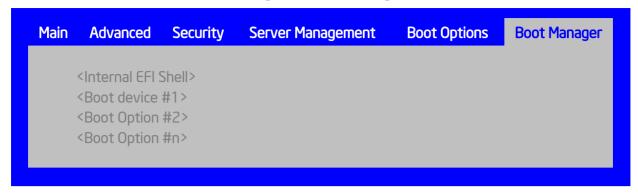
Back to [Delete EFI Boot Option Screen] — [Boot Options Screen]

Boot Manager Screen (Tab)

The Boot Manager screen allows the user to view a list of devices available for booting, and to select a boot device for immediately booting the system. Note that this list is <u>not</u> in order according to the system Boot Option order. The "Internal EFI Shell" will always be available, regardless of whether any other bootable devices are available.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Boot Manager* screen is selected.

Figure 144. Boot Manager Screen



Screen Field Descriptions:

Error Manager Screen (Tab)

The Error Manager screen displays any POST Error Codes encountered during BIOS POST, along with an explanation of the meaning of the Error Code in the form of a Help Text. This is an *Information Only* screen.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Error Manager* screen is selected.

Figure 145. Error Manager Screen



Screen Field Descriptions:

Exit Screen (Tab)

The Exit screen allows the user to choose whether to save or discard the configuration changes made on other Setup screens. It also allows the user to restore the BIOS settings to the factory defaults or to save or restore them to a set of user-defined default values. If Load Default Values is selected, the factory default settings (noted in bold in the Setup screen images) are applied. If Load User Default Values is selected, the system is restored to previously saved user-defined default values.

To access this screen from the *Main* screen or other top-level "Tab" screen, press the right or left arrow keys to traverse the tabs at the top of the Setup screen until the *Exit* screen is selected.

Figure 146. Exit Screen

Error Manager Save and Exit
Save Changes and Exit

Discard Changes and Exit

Save Changes
Discard Changes

Load Default Values Save as User Default Values Load User Default Values

*Certain brands and names may be claimed as the property of others.

Appendix A: Technical Reference

550-W Fixed Power Supply Input/Output Voltages

550-W Fixed Power Supply AC Input Voltage

Table 4. AC Input Voltage Range

Parameter	Min	Rated	Vmax	Start up vac	Power off vac
Voltage (110)	90 Vrms	100-127 Vrms	140 Vrms	85VAC +/- 4VAC	70VAC +/- 5VAC
Voltage (220)	180 Vrms	200-240 Vrms	264 Vrms		
Frequency	47 Hz	50/60	63 Hz		

Notes:

- 1. Maximum input current at low input voltage range shall be measured at 90VAC, at max load.
- 2. Maximum input current at high input voltage range shall be measured at 180VAC, at max load.
- 3. This requirement is not to be used for determining agency input current markings.

550-W Fixed Power Supply DC Output Voltage

Table 5. Over Voltage Protection Limits

Parameter	Min	Max.	Peak	Unit
3.3V	0.5	18.0		A
5V	0.3	15.0		A
12V1	0.7	24.0	28.0	A
12V2	0.7	24.0	28.0	A
12V3	1.5	18.0		
3.3V	0.5	18.0		A
- 12V	0.0	0.5		A
5Vstby	0.0	3.0	3.5	A

Notes:

- 1. Max combined power for all output shall not exceed 550W.
- 2. Peak combined power for all outputs shall not exceed 630W for 20 seconds.
- 3. Max combined power of 12V1, 12V2 and 12V3 shall not exceed 530W.
- 4. Max combined power on 3.3V and 5V shall not exceed 120W.

Table 6. Over Current Limits

Output	Min OCP	Max OCP
+3.3V	19 A	30 A
+5V	16 A	30 A
+12V1,2	29 A	36 A
+12V3 (240VA limited)	18.5 A	20 A
-12V	No damage	
5Vstby	No damage	

550-W Fixed Power Supply Supported Configurations

When installing HDDs and PCI-e add-in cards, please check below table for the supported configuration with 550-W Fixed Power Supply. The information can also be found in the Power Budget Tool.

PCI/GPU	6x15W PCI/1x75w PCI			
	4x15W PCI			
	3x15W PCI			
	2x15W PCI			
	1x15W PCI			
HDD	12x3.5" HDD			
	16x2.5" HDD/8x3.5" HDD			
	7x3.5" HDD			
	12x2.5" HDD/6x3.5" HDD			
	5x3.5" HDD			
	8x2.5" HDD/4x3.5" HDD			
	6x2.5" HDD/3x3.5" HDD			
	4x2.5" HDD/2x3.5" HDD			
	2x2.5" HDD/1x3.5" HDD			

Note: This config limitation table is suitable for all mother boards which support 550w PSU.

The recommended config is based on data from various types of HDDs.

There is low to medium level risk of degrading system power reliability when installing 8x3.5" HDD + 30w add-in card

There is medium to high level risk of degrading system power reliability when installing 8x3.5" HDD + 45w add-in card.

750-W Redundant Power Supply Input/Output Voltages

750-W Redundant Power Supply Input Voltage

Table 7. AC Input Voltage Range

Parameter	MIN	Rated	V _{MAX}	Start up VAC	Power Off VAC
Voltage (110)	90 Vrms	100-127 Vrms	140 Vrms	85VAC +/- 4VAC	70VAC +/- 5VAC
Voltage (220)	180 Vrms	200-240 Vrms	264 Vrms		
Frequency	47 Hz	50/60	63 Hz		

Notes:

- 1. Maximum input current at low input voltage range shall be measured at 90VAC, at max load.
- 2. Maximum input current at high input voltage range shall be measured at 180VAC, at max load.
- 3. This requirement is not to be used for determining agency input current markings.

750-W Redundant Power Supply Input Voltage

Table 8. Over Voltage Protection (OVP) Limits

Output voltage	Min (v)	Max (v)

+12V	13.3	14.5
+12VSB	13.3	14.5

Table 9. Over Current Protection

Output Voltage range		Over Current Limits
+12V	90 – 264VAC	72A min; 78A max
12VSB	90 – 264VAC	2.5A min; 3.5A max

System Environmental Specifications

The following table defines the system level operating and non-operating environmental limits.

Table 10. System Environmental Limits Summary

Parameter	Limits
Operating Temperature	+10°C to +35°C with the maximum rate of change not to exceed 10°C per hour
Non-Operating Temperature	-40°C to +70°C
Non-Operating Humidity	90%, non-condensing at 35°C
Acoustic noise	Sound power: 7.0 BA in an idle state at typical office ambient temperature. (23 +/- 2 degrees C)
Shock, operating	Half sine, 2 g peak, 11 milliseconds
Shock, unpackaged	Trapezoidal, 25 g, velocity change 136 inches/second (≥40 lbs to < 80 lbs)
Shock, packaged	Non-palletized free fall in height 24 inches (≧40 lbs to < 80 lbs)
Vibration, unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
ESD	+/-15 KV except I/O port +/- 8 KV per Intel® Environmental test specification
System Cooling Requirement in BTU/Hr	460 Watt Max – 1570 BTU/hour 750 Watt Max – 2560 BTU/hour

Appendix B: Regulatory and Compliance Information

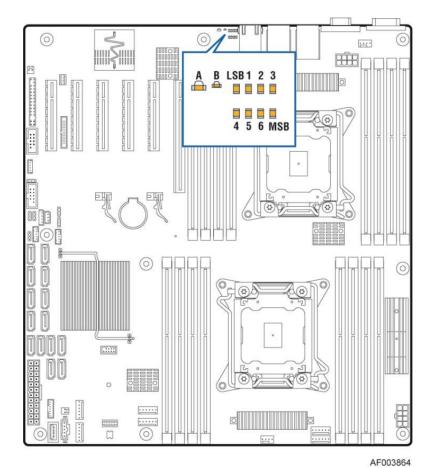
Please refer to the Server Products Regulatory and Safety document for the product regulatory compliance reference. The document can be downloaded from http://www.intel.com/support/motherboards/server/.

Appendix C: LED Decoder

During the system boot process, the BIOS executes a number of platform configuration processes, each of which is assigned a specific hex POST code number. As each configuration routine is started, the BIOS displays the POST code to the POST Code Diagnostic LEDs on the back edge of the server board. To assist in troubleshooting a system hang during the POST process, the Diagnostic LEDs can be used to identify the last POST process that was executed.

Each POST code is represented by a sequence of eight amber diagnostic LEDs. The POST codes are divided into two nibbles, an upper nibble and a lower nibble. The upper nibble bits are represented by diagnostic LEDs #4, #5, #6, and #7. The lower nibble bits are represented by diagnostics LEDs #0, #1, #2, and #3. If the bit is set in the upper and lower nibbles, then the corresponding LED is lit. If the bit is clear, then the corresponding LED is off.

The diagnostic LED #7 is labeled as "MSB", and the diagnostic LED #0 is labeled as "LSB".



A	System Status LED
В	System Identification LED
LSB 123456 MSB	POST Code Diagnostic LEDs

Figure 147. Diagnostic LED Placement Diagram

The LEDs are decoded as follows:

Table 11. POST Progress Code LED Example

	Upper Nibble AMBER LEDs			Lower Nibble GREEN LEDs				
	MSB	7	6	5	4	3	2	LSB
LEDs	LED #7	LED #6	LED #5	LED #4	LED #3	LED #2	LED #1	LED #0
	8h	4h	2h	1h	8h	4h	2h	1h
Status	ON	OFF	ON	OFF	ON	ON	OFF	OFF
Decode	1	0	1	0	1	1	0	0
Result	Ah	•	•	•	Ch	•	•	

The following table provides a list of all POST progress codes.

Table 12. POST Progress Code Decoder

	Diag	gnosti	ic LE	D De	code	r			
	1 = 1	LED	On, 0	= L	ED O	ff			
Checkpoint	Upp	er Ni	bble	1	Low	er N	ibble	:	
	MSI	В						LSB	
	8h	4h	2h	1h	8h	4h	2h	1h	
LED#	#7	#6	#5	# 4	#3	#2	#1	#0	Description
SEC Phase									
01h	0	0	0	0	0	0	0	1	First POST code after CPU reset
02h	0	0	0	0	0	0	1	0	Microcode load begin
03h	0	0	0	0	0	0	1	1	CRAM initialization begin
04h	0	0	0	0	0	1	0	0	Pei Cache When Disabled
05h	0	0	0	0	0	1	0	1	SEC Core At Power On Begin.
06h	0	0	0	0	0	1	1	0	Early CPU initialization during Sec Phase.
07h	0	0	0	0	0	1	1	1	Early SB initialization during Sec Phase.
08h	0	0	0	0	1	0	0	0	Early NB initialization during Sec Phase.
09h	0	0	0	0	1	0	0	1	End Of Sec Phase.
0Eh	0	0	0	0	1	1	1	0	Microcode Not Found.
0Fh	0	0	0	0	1	1	1	1	Microcode Not Loaded.
PEI Phase									
10h	0	0	0	1	0	0	0	0	PEI Core
11h	0	0	0	1	0	0	0	1	СРИ РЕІМ
15h	0	0	0	1	0	1	0	1	NB PEIM
19h	0	0	0	1	1	0	0	1	SB PEIM
MRC Process	s Cod	les – I	MRC	Prog	ress (Code	Sequ	ence is	s executed - See Table 63
PEI Phase co	ntinu	ed							

	Diag	nosti	c LE	D De	code	r			
	1 = I	ED (On, 0	= LI	ED O	ff			
Checkpoint	Uppe	er Nil	bble		Low	er Ni	ibble		
	MSB							LSB	
	8h	4h	2h	1h	8h	4h	2h	1h	
LED#	# 7	#6	#5	# 4	#3	#2	#1	#0	Description
31h	0	0	1	1	0	0	0	1	Memory Installed
32h	0	0	1	1	0	0	1	0	CPU PEIM (Cpu Init)
33h	0	0	1	1	0	0	1	1	CPU PEIM (Cache Init)
34h	0	0	1	1	0	1	0	0	CPU PEIM (BSP Select)
35h	0	0	1	1	0	1	0	1	CPU PEIM (AP Init)
36h	0	0	1	1	0	1	1	0	CPU PEIM (CPU SMM Init)
4Fh	0	1	0	0	1	1	1	1	Dxe IPL started
DXE Phase									
60h	0	1	1	0	0	0	0	0	DXE Core started
61h	0	1	1	0	0	0	0	1	DXE NVRAM Init
62h	0	1	1	0	0	0	1	0	SB RUN Init
63h	0	1	1	0	0	0	1	1	Dxe CPU Init
68h	0	1	1	0	1	0	0	0	DXE PCI Host Bridge Init
69h	0	1	1	0	1	0	0	1	DXE NB Init
6Ah	0	1	1	0	1	0	1	0	DXE NB SMM Init
70h	0	1	1	1	0	0	0	0	DXE SB Init
71h	0	1	1	1	0	0	0	1	DXE SB SMM Init
72h	0	1	1	1	0	0	1	0	DXE SB devices Init
78h	0	1	1	1	1	0	0	0	DXE ACPI Init
79h	0	1	1	1	1	0	0	1	DXE CSM Init
90h	1	0	0	1	0	0	0	0	DXE BDS Started
91h	1	0	0	1	0	0	0	1	DXE BDS connect drivers
92h	1	0	0	1	0	0	1	0	DXE PCI Bus begin
93h	1	0	0	1	0	0	1	1	DXE PCI Bus HPC Init
94h	1	0	0	1	0	1	0	0	DXE PCI Bus enumeration
95h	1	0	0	1	0	1	0	1	DXE PCI Bus resource requested
96h	1	0	0	1	0	1	1	0	DXE PCI Bus assign resource
97h	1	0	0	1	0	1	1	1	DXE CON_OUT connect
98h	1	0	0	1	1	0	0	0	DXE CON_IN connect
99h	1	0	0	1	1	0	0	1	DXE SIO Init
9Ah	1	0	0	1	1	0	1	0	DXE USB start

	Diag	nosti	ic LE	D De	code	r					
	1 = I	LED	On, 0) = L	ED O	ff					
Checkpoint	Upp	er Ni	bble		Low	er N	ibble				
_	MSI	3						LSB			
	8h	4h	2h	1h	8h	4h	2h	1h			
LED#	#7	#6	#5	#4	#3	#2	#1	#0	Description		
9Bh	1	0	0	1	1	0	1	1	DXE USB reset		
9Ch	1	0	0	1	1	1	0	0	DXE USB detect		
9Dh	1	0	0	1	1	1	0	1	DXE USB enable		
A1h	1	0	1	0	0	0	0	1	DXE IDE begin		
A2h	1	0	1	0	0	0	1	0	DXE IDE reset		
A3h	1	0	1	0	0	0	1	1	DXE IDE detect		
A4h	1	0	1	0	0	1	0	0	DXE IDE enable		
A5h	1	0	1	0	0	1	0	1	DXE SCSI begin		
A6h	1	0	1	0	0	1	1	0	DXE SCSI reset		
A7h	1	0	1	0	0	1	1	1	DXE SCSI detect		
A8h	1	0	1	0	1	0	0	0	DXE SCSI enable		
A9h	1	0	1	0	1	0	0	1	DXE verifying SETUP password		
ABh	1	0	1	0	1	0	1	1	DXE SETUP start		
ACh	1	0	1	0	1	1	0	0	DXE SETUP input wait		
ADh	1	0	1	0	1	1	0	1	DXE Ready to Boot		
AEh	1	0	1	0	1	1	1	0	DXE Legacy Boot		
AFh	1	0	1	0	1	1	1	1	DXE Exit Boot Services		
B0h	1	0	1	1	0	0	0	0	RT Set Virtual Address Map Begin		
B1h	1	0	1	1	0	0	0	1	RT Set Virtual Address Map End		
B2h	1	0	1	1	0	0	1	0	DXE Legacy Option ROM init		
B3h	1	0	1	1	0	0	1	1	DXE Reset system		
B4h	1	0	1	1	0	1	0	0	DXE USB Hot plug		
B5h	1	0	1	1	0	1	0	1	DXE PCI BUS Hot plug		
B6h	1	0	1	1	0	1	1	0	DXE NVRAM cleanup		
B7h	1	0	1	1	0	1	1	1	DXE Configuration Reset		
00h	0	0	0	0	0	0	0	0	INT19		
S3 Resume											
E0h	1	1	0	1	0	0	0	0	S3 Resume PEIM (S3 started)		
E1h	1	1	0	1	0	0	0	1	S3 Resume PEIM (S3 boot script)		
E2h	1	1	0	1	0	0	1	0	S3 Resume PEIM (S3 Video Repost)		
E3h	1	1	0	1	0	0	1	1	S3 Resume PEIM (S3 OS wake)		

Checkpoint	1 = 1	LED	On, () = L	ED C		(ihhle	1	
Checkpoint	MSI				201	, , ,		LSB	
	8h	4h	2h	1h	8h	4h	2h	1h	
LED#	#7	#6	#5	#4	#3	#2	#1	#0	Description
BIOS Recov	ery								
F0h	1	1	1	1	0	0	0	0	PEIM which detected forced Recov
F1h	1	1	1	1	0	0	0	1	PEIM which detected User Recovery
F2h	1	1	1	1	0	0	1	0	Recovery PEIM (Recovery started)
F3h	1	1	1	1	0	0	1	1	Recovery PEIM (Capsule found)
F4h	1	1	1	1	0	1	0	0	Recovery PEIM (Capsule loaded)

Appendix D: Getting Help

If you encounter an issue with your server system, follow these steps to obtain support:

1. Visit the following Intel support web page:

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

This web page provides 24x7 support when you need it to get the latest and most complete technical support information on all Intel Enterprise Server and Storage Platforms. Information available at the support site includes:

- Latest BIOS, firmware, drivers and utilities.
- Product documentation, installation and quick start guides.
- Full product specifications, technical advisories and errata.
- Compatibility documentation for memory, hardware add-in cards, chassis support matrix and operating systems.
- Server and chassis accessory parts list for ordering upgrades or spare parts
- A searchable knowledgebase to search for product information throughout the su.pport site.
- 2. If you are still unable to obtain a solution to your issue, send an email to Intel's technical support center using the online form available at http://www.intel.com/support/feedback.htm?group=server.
- 3. Lastly, you can contact an Intel support representative using one of the support phone numbers available at http://www.intel.com/support/feedback.htm?group=server (charges may apply). Intel customer support suggests filling out the issue report form available at "Intel® Server Issue Report Form" to better service the issue.

Intel also offers Channel Program members around-the-clock 24x7 technical phone support on Intel[®] server boards, server chassis, server RAID controller cards, and Intel[®] Server Management at http://www.intel.com/reseller/.

/ NOTE

You will need to log in to the Reseller site to obtain the 24x7 number.

Warranty Information

To obtain warranty information, visit the following Intel web site: http://www.intel.com/support/warranty

Appendix E: Intel® Server Issue Report Form

Issue Report Form (Rev 3.6)

/ NOTE

Filling out this form completely is required for any escalation.

Customer Contact Information:

Customer Support Case#:

Intel® Server Board or System:

(Example: S2600CP, P4000CP)

Server Chassis:

(Example P4000M. If third-party chassis used, indicate make and model.)

Base Board Information: (some information maybe found by accessing BIOS & going through the Server Management menu -> System Information)

Baseboard PBA/TA/AA # (Example: 123456-789):

- can be found on the white sticker label on the baseboard.

System BIOS Version:

Intel® Remote Management Module Firmware Version (if applicable):

BMC Version:

FRU/SDR Version:

HSC Version:

Has the latest BIOS been tried? (Yes/No):

Has the latest BMC/mBMC been tried? (Yes/No):

Has the latest IMM BMC been tried? (Yes/No):

Has the latest RMM Firmware been tried? (Yes/No):

Has the latest FRU/SDR been tried? (Yes/No):

Has the latest HSC been tried? (Yes/No):

Th.			4 •
Processor	ınt	arma	tian'
1 1 0 C C 3 3 O I	ш	vi ina	uvn.

	Туре	Speed	sSpec	Thermal Solution
Processor 1				
Processor 2				

Thermal solution (Heat sink) examples:
(1U, Passive w/airducting, and so on)

Memory:

Manufacturer	Part Number	DRAM Part Number	On Intel tested list?

Add-in adapters (Example: NICs, Management Adapters, Serial Expansion Cards, PCI-Express* Adapters, RAID Controllers, SCSI Controllers, and so on):

Туре	Slot	Manufacturer	Model	Firmware

Other third part hardware (Example: Example: KVM, Chassis, and so on):

Description/Use	Manufacturer	Model	Firmware

Storage Devices (Example: SCSI, SATA, SAS, USB, Tape, and so on):

Manufacturer	Model	Туре	Size	Firmware	In Hot Swap Bay?

Operating System Information (Example:	RedHat*	Enterprise	Linux,	Microsoft*	Windows*
Server 2003, Service pack 1, OEM CD):					

Manufacturer:

Version:

Language version (English, Arabic, Chinese (Simplified)):

Service Pack Level or Kernel Revision:

Distribution (OEM/Retail):

Intel® RAID Controller: (Example SRCU42E)

RAID controller part number (PBA number):

RAID controller firmware version:

Has the latest RAID firmware been tried? (Yes/No):

RAID driver version:

Has the latest RAID driver been tried? (Yes/No):

RAID volumes configuration (disks & RAID level):

RAID volume use (Boot device/Data Volume):

Is BBU (Battery Backup Unit) installed? (Yes/No):

BBU part number:

Detailed description of issue:

Apper	ppendix E: Intel [®] Server Issue Report Form	
	Troubleshooting tried:	
	Steps to replicate the issue:	
	Steps to replicate the issue:	

*All other brands and names are property of their respective owners.