

Intel[®] Server Board S1200BT Service Guide

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

Intel Order Number G16972-004

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

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Safety Information

Important Safety Instructions

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

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel-Serverplatinen und Servergehäusen auf der *Intel® Server Deployment Toolkit CD* oder unter <http://www.intel.com/support/motherboards/server/sb/cs-010770.htm>.

Consignes de sécurité

Lisez attentivement toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez Intel Server Boards and Server Chassis Safety Information sur le *Intel® Server Deployment Toolkit CD* ou bien rendez-vous sur le site <http://www.intel.com/support/motherboards/server/sb/cs-010770.htm>.

Instrucciones de seguridad importantes

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

重要安全指导

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

Warnings

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 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 happen.

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 Board S1200BT.

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this server board. 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 Title of document. For the latest version of this manual, see: <http://www.intel.com/support/motherboards/server>.

Manual Organization

Chapter 1 provides a brief overview of the Server Board S1200BTL and S1200BTS. In this chapter, you will find a list of the server board features, photos of the product, and product diagrams to help you identify components and their locations.

Chapter 2 provides instructions on using the utilities shipped with the board or that may be required to update the system. This includes how to navigate through the BIOS Setup screens, perform a BIOS update, and reset the password or CMOS. Information about the specific BIOS settings and screens is available in the Technical Product Specification. See "[Additional Information and Software](#)" for a link to the Technical Product Specification.

Chapter 3 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 memory, processor, control panel board, and battery, among other components.

Chapter 4 provides troubleshooting information. In this chapter, you will find BIOS error messages and POST code messages. You will also find suggestions for performing troubleshooting activities to identify the source of a problem.

Product Accessories

This server board is compatible with Intel® Server Chassis P4304XXSFCN and P4304XXSHCN.

You may need or want to purchase one or more of the following accessory items for your server.

Processor, memory DIMMs, hard drive, floppy drive, CD-ROM or DVD-ROM drive, RAID controller, operating system.

For information about which accessories, memory, processors, and third-party hardware were tested and can be used with your board, and for ordering information for Intel products, see: <http://www.intel.com/support/motherboards/server>.

Additional Information and Software

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

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 S1200BT.

Table 1. Additional Information and Software

For this information or software	Use this Document or Software
For in-depth technical information about this product, including BIOS settings and chipset information	<i>Intel® Server Board S1200BT Technical Product Specification</i>
If you just received this product and need to install it	<i>Intel® Server Board S1200BT Quick Start User's Guide</i> in the product box
Accessories or other Intel server products	<i>Spares/Parts List & Configuration Guide</i>
Hardware (peripheral boards, adapter cards, and so forth) and operating systems that were tested with this product	For the Tested Hardware Operating Systems List, you can go to the Intel® Server Configurator Tool: http://serverconfigurator.intel.com/default.aspx
Chassis that were tested with this product	Reference Chassis List
Processors that were tested with this product	Supported Processors
DIMMs that were tested with this product	Tested Memory List
To make sure your system falls within the allowed power budget	Power Budget Tool

Table 1. Additional Information and Software

For this information or software	Use this Document or Software
For software to manage your Intel® server	Intel Server Management Software
For drivers	<ul style="list-style-type: none">• Driver (for an extensive list of available drivers)• Operating System Driver (for operating system drivers)
For firmware and BIOS updates, or for BIOS recovery	Please go to mainpage on for “S1200BT”. It is under the Software and Drivers section for the most current BIOS, FRU/SDR, BMC, drivers and utilites
For diagnostics test software	Diagnostics

See also the *Intel® Server Deployment Toolkit CD* that came with your server board.

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1 Server Board Features

This chapter briefly describes the main features of the Intel® Server Board S1200BTL and S1200BTS. This chapter provides a photograph of the product, list of the server board features, and diagrams showing the location of important components and connections on the server board.

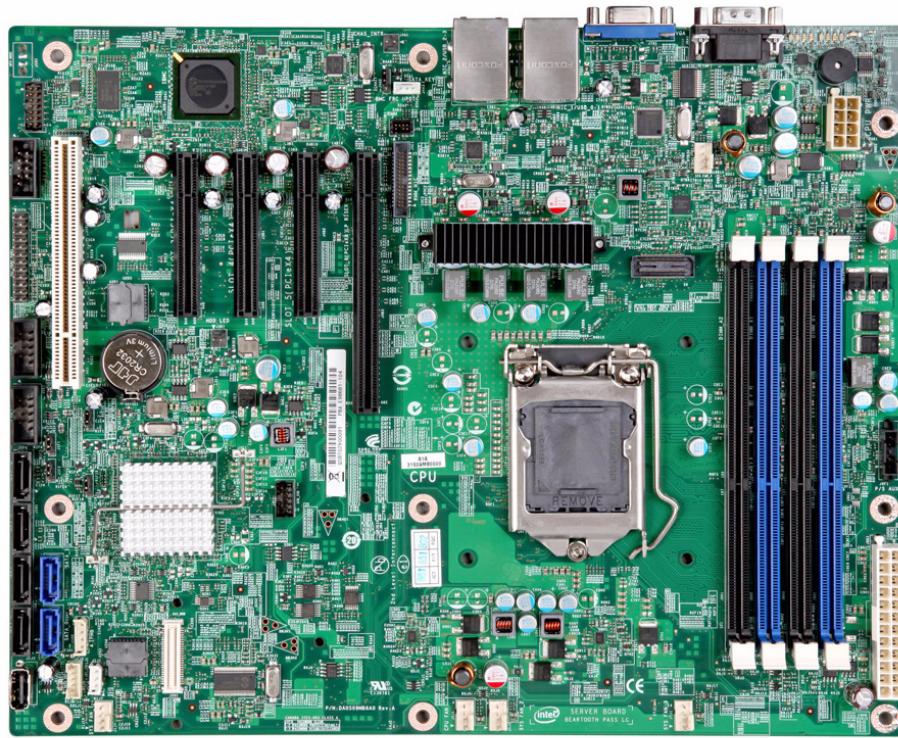


Figure 1. Intel® Server Board S1200BTL

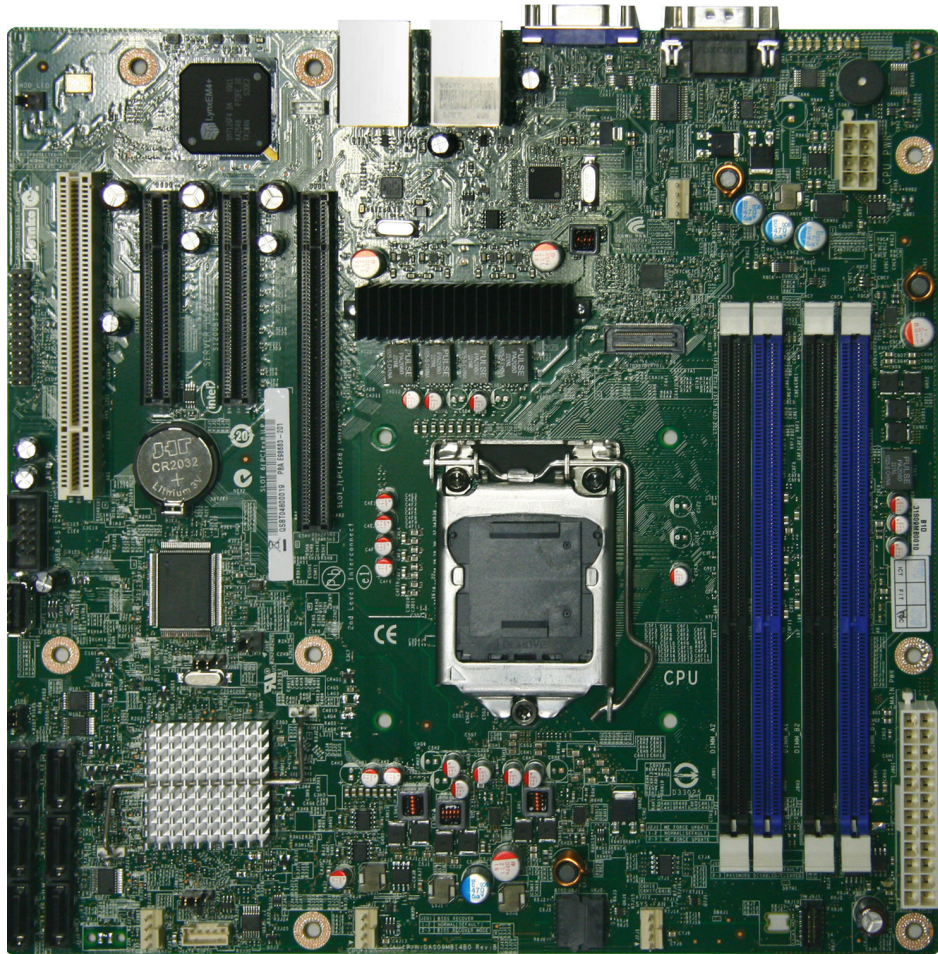


Figure 2. Intel® Server Board S1200BTS Picture

Table 2 summarizes the features of the server board.

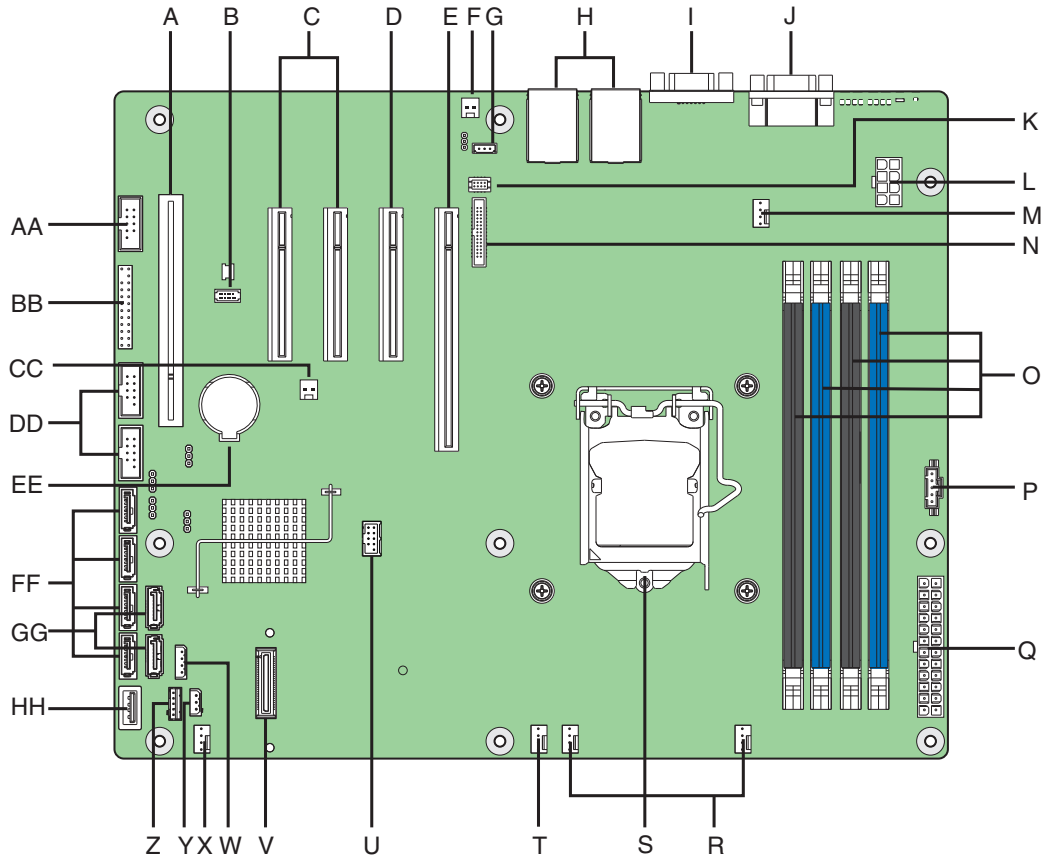
Table 2. Server Board Features

Feature	Description of S1200BTL	Description of S1200BTS
Processors	<p>Supports for one Intel® Xeon® E3-1200 Processors or the 2nd Generation Intel® Core™ i3 Processors in FC-LGA 1155 socket package.</p> <ul style="list-style-type: none"> • 5 GT/s point-to-point DMI interface to PCH • LGA 1155 pin socket <p>Supports for Intel® Xeon® E3-1200 V2 processors or the 3rd Generation Intel® Core™ i3 processors in FC-LGA 1155 socket package.</p> <ul style="list-style-type: none"> • 5 GT/s point-to-point DMI interface to PCH • LGA 1155 pin socket 	<p>Supports for one Intel® Xeon® E3-1200 Processors or the 2nd Generation Intel® Core™ i3 Processors in FC-LGA 1155 socket package.</p> <ul style="list-style-type: none"> • 5 GT/s point-to-point DMI interface to PCH • LGA 1155 pin socket <p>Supports for Intel® Xeon® E3-1200 V2 processors or the 3rd Generation Intel® Core™ i3 processors in FC-LGA 1155 socket package.</p> <ul style="list-style-type: none"> • 5 GT/s point-to-point DMI interface to PCH • LGA 1155 pin socket
Memory	<p>Two memory channels with support for 1066/1333 MHz (with Intel® Xeon® E3-1200 Processors or the 2nd Generation Intel® Core™ i3 Processors) or 1333/1600 MHz (with Intel® Xeon® E3-1200 V2 Processors or the 3rd Generation Intel® Core™ i3 Processors) ECC Unbuffered (UDIMM) DDR3.</p> <ul style="list-style-type: none"> • Up to 2 UDIMMs per channel • 32 GB max with x8 ECC UDIMM (2-Gb DRAM) • 64-bit wide channels • DDR3 I/O Voltage of 1.5 V 	<p>Two memory channels with support for 1066/1333 MHz (with Intel® Xeon® E3-1200 Processors or the 2nd Generation Intel® Core™ i3 Processors) or 1333/1600 MHz (with Intel® Xeon® E3-1200 V2 Processors or the 3rd Generation Intel® Core™ i3 Processors) ECC Unbuffered (UDIMM) DDR3.</p> <ul style="list-style-type: none"> • Up to 2 UDIMMs per channel • 32 GB max with x8 ECC UDIMM (2-Gb DRAM) • 64-bit wide channels • DDR3 I/O Voltage of 1.5 V
Chipset	<ul style="list-style-type: none"> • Support for Intel® C204 Platform Controller Hub (PCH) chipset • ServerEngines* LLC Pilot III BMC controller (Integrated BMC) 	<p>Support for Intel® C202 Platform Controller Hub (PCH) chipset</p>

Feature	Description of S1200BTL	Description of S1200BTS
I/O	<p>External connections:</p> <ul style="list-style-type: none"> • DB-15 video connectors • DB-9 serial Port A connector • Four ports on two USB/LAN combo connectors at rear of board <p>Internal connections:</p> <ul style="list-style-type: none"> • Two USB 2x5 pin headers, each supporting two USB 2.0 ports • One 2x5 Serial Port B headers • One I/O Module Connector • Two 6Gb/s SATA ports and four 3Gb/s SATA ports • One SAS mezzanine slot supports for optional SAS module • Smart Module connector 	<p>External connections:</p> <ul style="list-style-type: none"> • DB-15 video connectors • DB-9 serial Port A connector • Four ports on two USB/LAN combo connectors at rear of board <p>Internal connections:</p> <ul style="list-style-type: none"> • Two USB 2x5 pin headers, each supporting two USB 2.0 ports • One 2x5 Serial Port B headers • Six 3Gb/s SATA ports
Add-in PCI, PCI Express* Cards	<p>With Intel® Xeon® E3-1200 processors or the 2nd Generation Intel® Core™ i3 Processors:</p> <ul style="list-style-type: none"> • Slot1: One 5V PCI 32 bit/33 MHz connector • Slot3: One PCI Express* Gen2 x8 (x4 throughput) connector • Slot4: One PCI Express* Gen2 x8 (x4 throughput) connector • Slot5: One PCI Express* Gen2 x8 (x4 throughput) connector • Slot6: One PCI Express* Gen2 x16 (x8 throughput) connector <p>With Intel® Xeon® E3-1200 V2 processors or the 3rd Generation Intel® Core™ i3 Processors:</p> <ul style="list-style-type: none"> • Slot1: One 5V PCI 32 bit/33 MHz connector • Slot3: One PCI Express* Gen2 x8 (x4 throughput) Gen2 connector • Slot4: One PCI Express* Gen3 x8 (x4 throughput) connector • Slot5: One PCI Express* Gen3 x8 (x4 throughput) connector 	<p>With Intel® Xeon® E3-1200 processors or the 2nd Generation Intel® Core™ i3 Processors:</p> <ul style="list-style-type: none"> • Slot4: One 5V PCI 32 bit/33 MHz connector • Slot5: One PCI Express* Gen2 x8 (x4 throughput) connector • Slot6: One PCI Express* Gen2 x8 (x8 throughput) connector • Slot7: One PCI Express* Gen2 x16 (x8 throughput) connector <p>With Intel® Xeon® E3-1200 V2 processors or the 3rd Generation Intel® Core™ i3 Processors:</p> <ul style="list-style-type: none"> • Slot4: One 5V PCI 32 bit/33 MHz connector • Slot5: One PCI Express* Gen2 x8 (x4 throughput) connector • Slot6: One PCI Express* Gen3 x8 (x8 throughput) connector • Slot7: One PCI Express* Gen3 x16 (x8 throughput) connector
System Fan Support	Five 4-pin fan headers supporting four system fans and one processor	Four 4-pin fan headers supporting four system fans and one processor
Video	Onboard ServerEngines* LLC Pilot III BMC Controller	Silicon Motion SM712GX04LF02-BA

Feature	Description of S1200BTL	Description of S1200BTS
On-board Hard Drive	Support for six Serial ATA II hard drives through six onboard SATA II connectors with SW RAID 0, 1, 5, and 10. <ul style="list-style-type: none"> • Up to four SAS hard drives through option Intel® SAS Entry RAID Module card • Two 6Gb/s SATA ports and four 3Gb/s SATA ports 	Support for six Serial ATA II hard drives through six onboard SATA II connectors with SW RAID 0, 1, 5, and 10. Six 3Gb/s SATA ports
RAID Support	<ul style="list-style-type: none"> • Intel® Embedded Server RAID Technology II through onboard SATA connectors provides SATA RAID 0, 1, and 10 and optional RAID 5 support provided by the Intel® RAID Activation Key AXXRAKSW5 • Intel® Rapid Storage RAID through onboard SATA connectors provides SATA RAID 0, 1, 5, and 10 • One optional internal SAS module connector which supports AXXRMS2AF040, AXXRMS2LL040, and AXX4SASMOD 	<ul style="list-style-type: none"> • Intel® Embedded Server RAID Technology II through onboard SATA connectors provides SATA RAID 0, 1, and 10 and optional RAID 5 support provided by the Intel® RAID Activation Key AXXRAKSW5 • Intel® Rapid Storage RAID through onboard SATA connectors provides SATA RAID 0, 1, 5, and 10
LAN	One Gigabit Ethernet device 82574L connect to PCI-E x1 interfaces on the PCH One Gigabit Ethernet PHY 82579 connected to PCH through PCI-E x 1 interface	One Gigabit Ethernet device 82574L connect to PCI-E x 1 interfaces on the PCH One Gigabit Ethernet PHY 82579 connected to PCH through PCI-E x 1 interface
Server Management	Onboard LLC Pilot III Controller (iBMC) <ul style="list-style-type: none"> • Integrated Baseboard Management Controller (Integrated BMC), IPMI 2.0 compliant • Integrated 2D video controller on PCI-E x 1 Optional Intel® Remote Management Module 4 (RMM4) lite and optional dedicated NIC module	—
Security	TPM module connector	TPM module connector

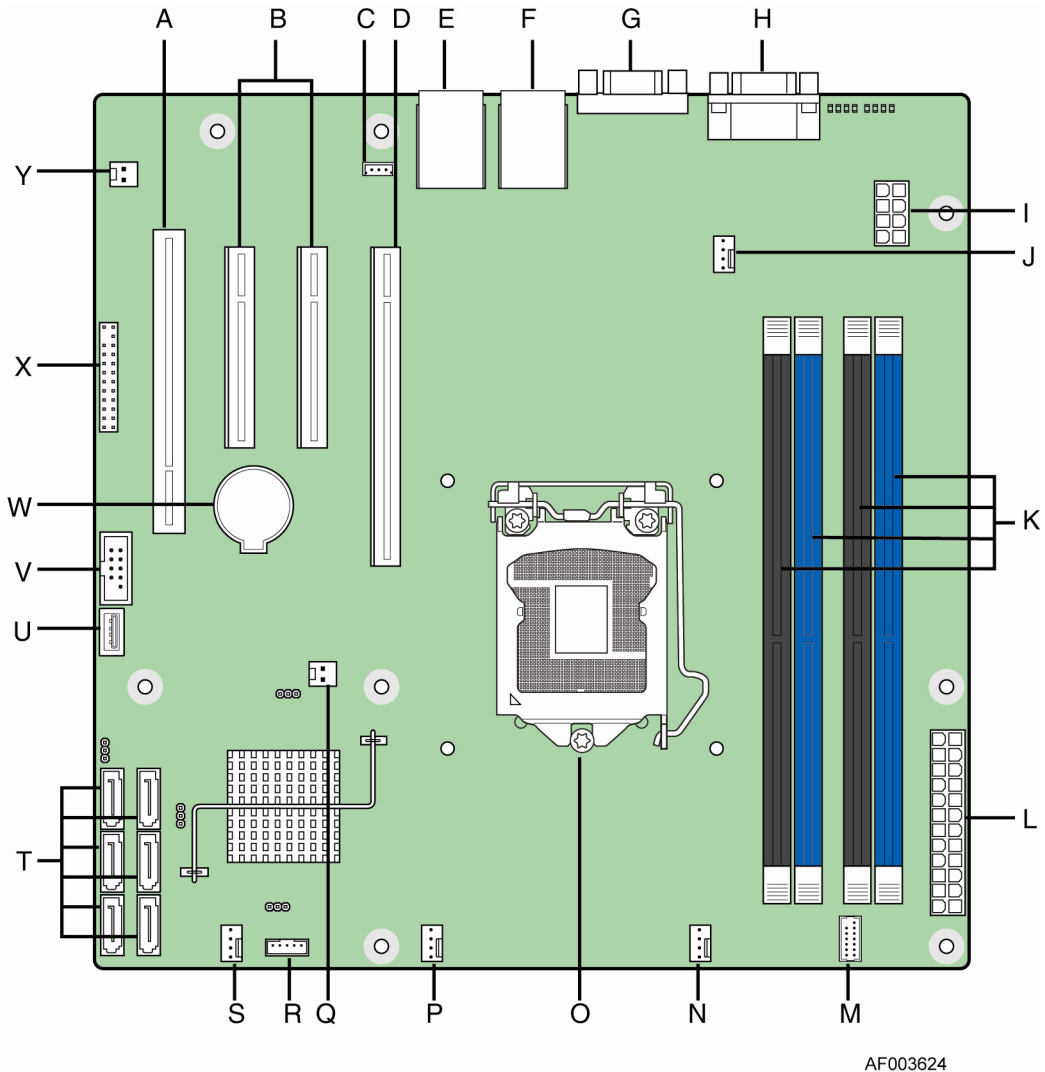
Connector and Header Locations



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A. Slot 1, 32 Mbit/33 MHz PCI	R. System FAN2 and System FAN3 Connector
B. TPM	S. CPU Connector
C. Slot 3/4, PCI Express* Gen2 x4 (x8 connector)	T. CPU Fan Connector
D. Slot 5, PCI Express* Gen2 x4 (x8 connector)	U. USB connector for smart module
E. Slot 6, PCI Express* Gen2 x8 (x16 connector) V SAS Module connector	V. SAS Module Connector
F. Chassis Intrusion	W. IPMB
G. SATA_KEY	X. SYS_FAN_1
H. Two Ethernet and Dual USB COMBO	Y. HSBP
I. Video Port	Z. SATA_SGPIO
J. External Serial port	AA. Internal Serial Connector
K. RMM4 Lite Connector	BB. Front Panel Connector
L. CPU Power Connector	CC. HDD LED
M. SYS_FAN_4	DD. Internal USB Connector
N. RMM4 Dedicated NIC connector	EE. CMOS Battery
O. Four DIMM Slots	FF. Four 3Gb/s SATA ports
P. P/S AUX	GG. Two 6Gb/s SATA ports
Q. MAIN POWER	HH. Smart Module

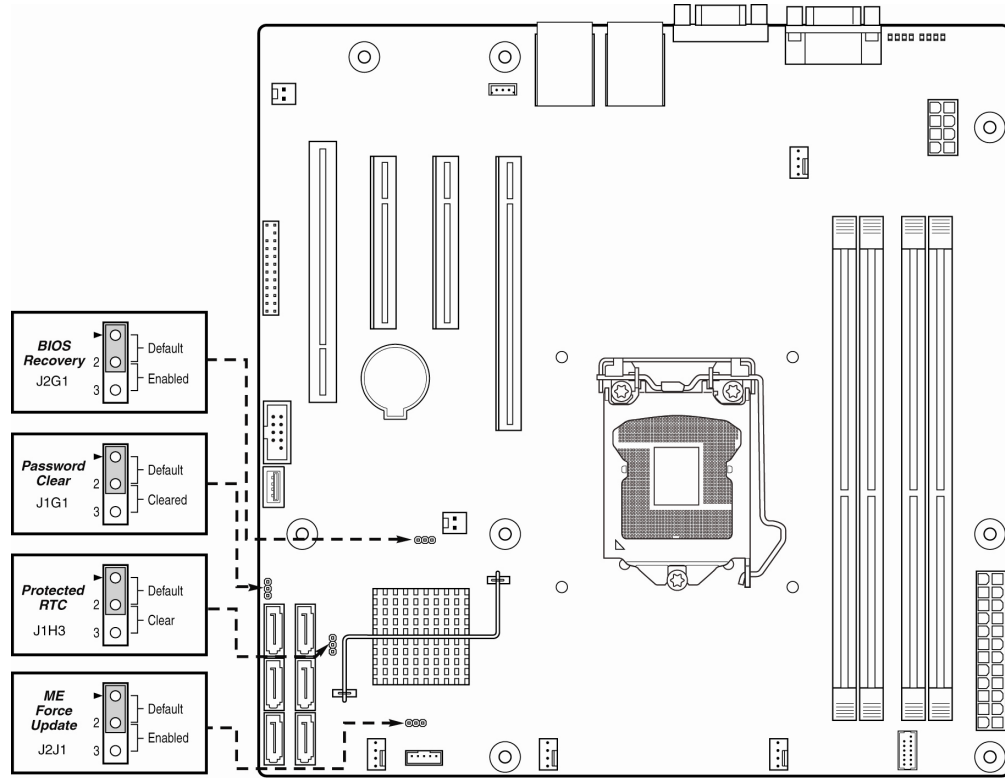
Figure 3. Connector and Component Location



A. Slot 4, 32 Mbit/33 MHz PCI	N. SYS FAN 1
B. Slot 5/6, PCI Express* Gen2 x4 (x8 connector)	O. CPU connector
C. SATA_KEY	P. CPU Fan connector
D. Slot 7, PCI Express* Gen2 x8 (x16 connector)	Q. Chassis Intrusion
E. Ethernet and Dual USB COMBO	R. SATA_SGPIO
F. Ethernet and Dual USB COMBO	S. SYS_FAN_3
G. Video port	T. Six 3Gb/s SATA ports
H. External Serial port	U. Low profile USB connector
I. CPU Power connector	V. Internal USB
J. SYS_FAN_2	W. CMOS battery
K. DIMM slots	X. Front Panel
L. MAIN power connector	Y. HDD LED
M. TPM connector	

Figure 4. Intel® Server Board S1200BTS Layout

Configuration Jumpers

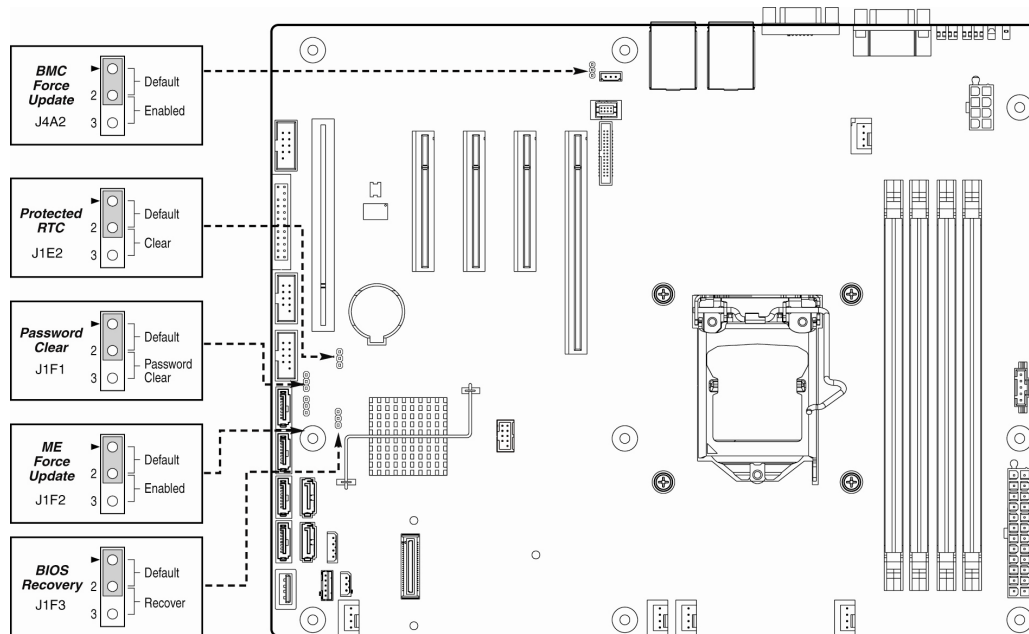


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Figure 5. Jumper Blocks (J2G1, J1G1, J1H3, and J2J1) on S1200BTS

Jumper Name	Pins	What happens at system reset...
J1H3: Protected RTC (CMOS clear)	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered with AC power plugged, the CMOS settings are cleared within five seconds. These pins should not be jumpered for normal operation.
J1J2: ME Force Update	1-2	ME Firmware Force Update Mode – Disabled (Default)
	2-3	ME Firmware Force Update Mode – Enabled

Jumper Name	Pins	What happens at system reset...
J1G1: Password Clear	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered, administrator and user passwords are cleared within 5-10 seconds after the system is powered on. These pins should not be jumpered for normal operation.
J2G1: BIOS Recovery	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	Given that the main system BIOS will not boot with these pins jumpered, system can only boot from EFI-bootable recovery media with the recovery BIOS image.



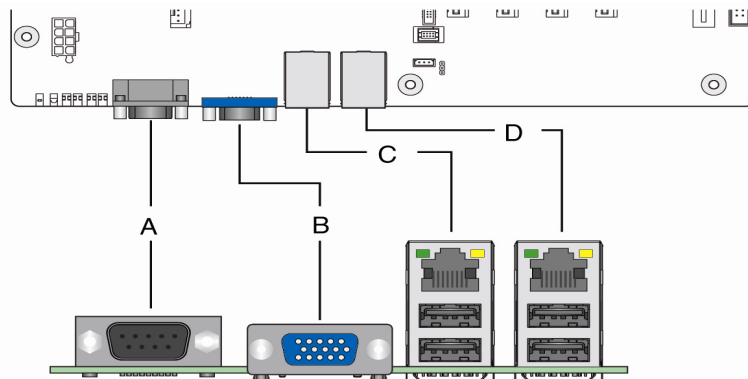
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Jumper Name	Pins	What happens at system reset...
J4A2: BMC Force Update	1-2	BMC Firmware Force Update Mode - Disabled (Default)
	2-3	BMC Firmware Force Update Mode - Enabled
J1F1: Password Clear	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered, administrator and user passwords will be cleared on the next reset. Note: These pins should not be jumpered for normal operation.

Jumper Name	Pins	What happens at system reset...
J1E2: Protected RTC (CMOS clear)	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	If these pins are jumpered, the CMOS settings are cleared on the next reset. Note: These pins should not be jumpered for normal operation.
J1F3: BIOS Recovery	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	The main system BIOS will not boot with these pins jumpered. Note: The system will boot from EFI-bootable recovery media with a recovery BIOS image.
J1F2: ME Force Recovery	1-2	These pins should have a jumper in place for normal system operation. (Default)
	2-3	ME force update model

Figure 6. Configuration Jumpers Location

Back Panel Connectors



AF003511

A. Serial Port A	C. NIC Port 1 (1 Gb) and Dual USB Port Connector
B. Video	D. NIC Port 2 (1 Gb) and Dual USB Port Connector

Figure 7. Back Panel Connectors

The NIC LEDs at the right and left of each NIC provide the following information.

Table 3. NIC LED Descriptions

LED	Color	Condition	Description
LAN 1-2	Green	On	LAN link/no access
	Green	Blink	LAN access
		Off	Idle

RAID Support

Both the Intel[®] Server Board S1200BTL and S1200BTS provide two embedded SATA controllers:

- Intel[®] Embedded Server RAID Technology II
- Intel[®] Rapid Storage RAID technology

The Intel[®] Embedded Server RAID Technology II provides RAID modes 0,1, 10, and 5 (with SW RAID key). The Intel[®] Rapid Storage RAID technology provides RAID modes 0, 1, 10, and 5.

The Intel[®] Server Board S1200BTL provides two 6Gb/s SATA ports and four 3Gb/s SATA ports.

The Intel[®] Server Board S1200BTS provides six 3Gb/s SATA ports.

For information on how to configure RAID, refer to the *RAID Software User's Guide* at: <http://www.intel.com/support/motherboards/server>.

Hardware Requirements

To avoid integration difficulties and possible board damage, your system must meet the following requirements outlined. For a list of qualified components, see the links under “Additional Information and Software”.

Processor

The Intel[®] Server Board S1200BT supports the Intel[®] Xeon[®] E3-1200 Processors or the 2nd Generation Intel[®] Core™ i3 Processors in FC-LGA 1155 socket package with 5GT/s point-to-point DMI interface to PCH and LGA 1155 pin socket.

Except for these two processors, the Intel® Server Board S1200BT also supports the Intel® Xeon® E3-1200 V2 Processors or the 3rd Generation Intel® Core™ i3 Processors in FC-LGA 1155 socket package with 5GT/s point-to-point DMI interface to PCH and LGA 1155 pin socket. For a complete list of supported processors, see the links under [“Additional Information and Software”](#).

Memory

The Intel® Server Board S1200BT supports a DDR3-based ECC UDIMM memory subsystem and up to two DIMM sockets per channel.

See the following figure for channel slot configuration. The minimal memory population is one DIMM in memory slot DIMM_A1. For a complete list of supported memory, see the links under [“Additional Information and Software”](#)

Table 4. Memory Configuration Table.

Configuration	DIMM_A1	DIMM_A2	DIMM_B1	DIMM_B2
1 DIMM Single Channel	A1 only Single Channel			
1 DIMM Single Channel			B1 only Single Channel	
2 DIMMs Single Channel	A1 Single Channel	A2 Single Channel		
2 DIMMs Single Channel			B1 Single Channel	B2 Single Channel
2 DIMMs Dual Channel Symmetric	A1 Dual Channel Symmetric		B1 Dual Channel Symmetric	
3 DIMMs Intel® Flex Memory	A1 Dual Channel Symmetric	A2 Dual Channel Symmetric	B1 Dual Channel Symmetric	
3 DIMMs Intel® Flex Memory	A1 Dual Channel Symmetric		B1 Dual Channel Symmetric	B2 Dual Channel Symmetric
4 DIMMs Dual Channel Symmetric	A1 Dual Channel Symmetric	A2 Dual Channel Symmetric	B1 Dual Channel Symmetric	B2 Dual Channel Symmetric

The Independent Channel Mode is the default Maximum Performance Mode preferred for Intel® Xeon® Processor E3-1200 Series based platforms. All two channels may be populated in any order and have no matching requirements. All channels must run at the same interface frequency, but individual channels may run at different DIMM timings (RAS latency, CAS latency, and so on).

Power Supply

A minimum of 350 W is required. Your supply must provide a minimum of 3 A of 5-V standby current or the board will not boot.

Optional Hardware

Intel® SAS RAID Module

The Intel® Server Board S1200BTL provides a SAS Mezzanine slot (J2H1) for the installation of an optional Intel® SAS RAID Module. Once the optional Intel® SAS Entry RAID Module is detected, the x4 PCI Express* links from the chipset to the SAS Mezzanine slot. Three modules are supported in this platform: AXXRMS2AF040, AXXRMS2LL040, and AXX4SASMOD.

The optional Intel® Integrated RAID Module AXXRMS2AF040 is an intelligent custom board-to-board PCI Express* 2.0 compliant interface RAID adapter with an integrated LSI* LSI SAS2008 Processor Chip, providing both a SAS controller and RAID engine. With four independent ports supporting 6 Gbps and 3 Gbps SAS data transfers using four individual SAS/SATA connectors.

The optional Intel® RAID Module AXXRMS2LL040 is an intelligent custom board-to-board PCI Express* 2.0 compliant interface RAID adapters with an integrated LSI* LSI SAS2008 Processor Chip, providing both a SAS controller and RAID engine. With four independent ports supporting 6-Gbps and 3 Gbps SAS data transfers using four individual SAS/SATA connectors, The Intel® RAID Module AXXRMS2LL040 provides reliable and fault-tolerant disk subsystem management based on the Intel® Entry Hardware RAID (IR) Stack.

The optional Intel® SAS Entry RAID Module AXX4SASMOD provides four SAS connectors that support up to four hard drives with a non-expander backplane or up to eight hard drives with an expander backplane. 4 ports full featured SAS/SATA hardware RAID through optional Intel® Integrated RAID Module SROMBSASMR (AXXRMBASMR), provides RAID 0, 1, 5, 6 and striping capability for spans 10, 50, 60.

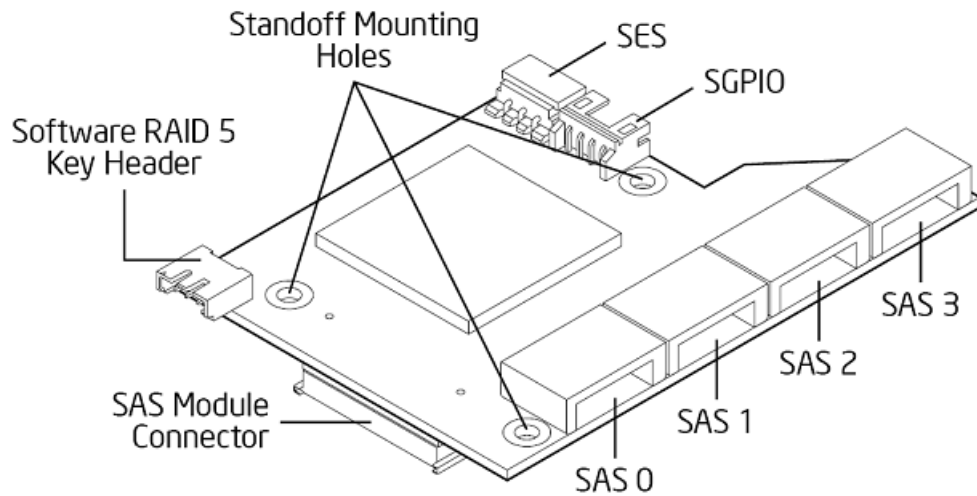


Figure 8. Intel® SAS Entry RAID Module

Intel® Remote Management Module 4

Intel® Server Board S1200BTL support Intel® Remote Management Module 4 solution. For the detail installation and configuration, please go to <http://www.intel.com/support/motherboards/server> to get the detail information.

IT/IR RAID Mode

Supports entry hardware RAID 0, RAID 1, and RAID10/10E and native SAS pass through mode.

When Intel® Embedded Server RAID Technology II is enabled with the SAS Module AXX4SASMOD, enclosure management is provided through the SAS_SGPIO or SES connector on the SAS Module AXX4SASMOD when a cable is attached between this connector and the backplane or I2C interface.

Note: For help with navigating the BIOS Setup utility, refer to the Intel® Server Board S1200BT Technical Product Specification.

TPM (Trusted Platform Module)

For the detail Intel® TPM module, please refer to *TPM Module User Guide*.

On-Board chip: ST19NP18

- Embedded TPM 1.2 firmware
- 33-MHz Low Pin Count (LPC) interface V1.1
- Compliant with TCG PC client specific TPM
- Implementation Specification (TIS) V1.2

2 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. See “[Additional Information and Software](#)” for a link to the Technical Product Specification where you will find details about specific BIOS setup screens.

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 5. BIOS Setup: Keyboard Command Bar

Key	Option	Description
<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 multi-valued 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.

Key	Option	Description		
<Esc>	Exit	<p>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 re-entered.</p> <p>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.</p>		
↑	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.		
↓	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.		
<←>	Select Menu	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a submenu or pick list is displayed.		
<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.		
-	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>	Setup Defaults	<p>Pressing the <F9> key causes the following to display:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Load Optimized Defaults?</td> </tr> <tr> <td style="text-align: center;">Yes No</td> </tr> </table> <p>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.</p>	Load Optimized Defaults?	Yes No
Load Optimized Defaults?				
Yes No				

Key	Option	Description
<F10>	Save and Exit	<p>Pressing the <F10> key causes the following message to display:</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Save configuration and reset?</p> <p>Yes No</p> </div> <p>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.</p>

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 follow 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)	2nd Level Screens	3rd Level Screens
Main Screen (Tab)		
Advanced Screen (Tab)		
↵	Processor Configuration	
↵	Memory Configuration	
↵	Mass Storage Controller Configuration	
↵	Serial Port Configuration	
↵	USB Configuration	
↵	PCI Configuration	
↵	System Acoustic and Performance Configuration	
Security Screen (Tab)		
Server Management Screen (Tab)		
↵	Console Redirection	
↵	System Information	
↵ [With BMC Only]	BMC LAN Configuration	
↵ [Non-BMC Only]	Hardware Monitor	
	↵ [Non-BMC Only]	Realtime Temperature and Voltage Status

Categories (Top Tabs)	2nd Level Screens	3rd Level Screens
Boot Options Screen (Tab)		
↳	Hard Disk Order	
↳	CDROM Order	
↳	Floppy Order	
↳	Network Device Order	
↳	BEV Device Order	
↳	Add EFI Boot Option	
↳	Delete EFI Boot Option	
Boot Manager Screen (Tab)		
Error Manager Screen (Tab)		
System Event Log Screen (Tab) [Non-BMC Only]		
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.

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
Logged in as:		Administrator/User			
Platform ID		<Platform Identification String>			
System BIOS					
BIOS Version		<Platform.86B.xx.yy.zzzz>			
Build Date		<MM/DD/YYYY>			
Memory					
Total Memory		<Amount of memory installed>			
Quiet Boot		Enabled/Disabled			
POST Error Pause		Enabled/Disabled			
System Date		[Day MM/DD/YYYY]			
System Time		[HH:MM:SS]			

Figure 9. Main Screen

Screen Field Descriptions:

1. Logged in as:

Option Values: <Administrator/User>

Help Text: <None>

Comments: Information only. Displays password level that setup is running in: Administrator or User. With no passwords set, Administrator is the default mode.

2. Platform ID

Option Values: < Platform ID>

Help Text: <None>

Comments: Information only. Displays the Platform ID for the board on which the BIOS is executing POST.

3. BIOS Version

Option Values: <Current BIOS version ID>

Help Text:<None>

Comments:Information only. The version information displayed is taken from the BIOS ID String, with the timestamp segment dropped off. The segments displayed are:

Platform:Identifies whether this is a Bromolow or Romley platform BIOS

86B:Identifies this BIOS as being an EPSD Intel® Server BIOS

xx: Major Revision level of the BIOS

yy: Release Revision level for this BIOS

zzzz: Release Number for this BIOS

4. Build Date

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

Help Text: <None>

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

5. Total Memory

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

Help Text: <None>

Comments:Information only. 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: **Enabled**

Disabled

Help Text:

[Enabled] – Display the logo screen during POST.

[Disabled] – Display the diagnostic screen during POST.

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.

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.

9. System Time

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

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.

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 selected.

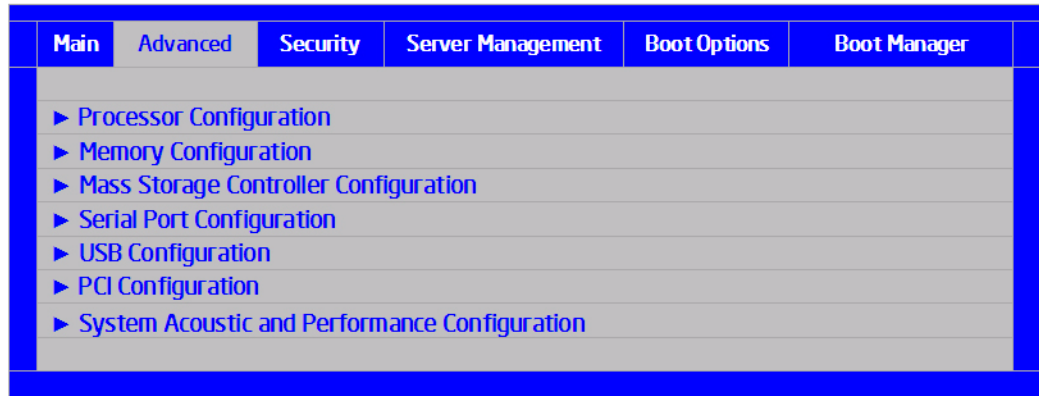


Figure 10. Advanced Screen

Screen Field Descriptions:

1. Processor Configuration

Option Values: <None>

Help Text: View/Configure processor information and settings.

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

2. Memory Configuration

Option Values: <None>

Help Text:

View/Configure memory information and settings.

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

3. Mass Storage Controller Configuration

Option Values: <None>

Help Text:

View/Configure mass storage controller information and settings.

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

4. Serial Port Configuration

Option Values: <None>

Help Text:

View/Configure serial port information and settings.

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

5. USB Configuration

Option Values: <None>

Help Text:

View/Configure USB information and settings.

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

6. PCI Configuration

Option Values: <None>

Help Text:

View/Configure PCI information and settings.

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

7. System Acoustic and Performance Configuration

Option Values: <None>

Help Text:

View/Configure system acoustic and performance information and settings.

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

8. Hardware Monitor

Help Text:

The Hardware Monitor screen allows the user to configure Fan Speed Control and to view displays of temperature and voltage status.

This screen is present only for boards without a BMC. There are two screen layouts, depending on whether Auto or Manual Fan Control is selected on the screen. “Auto” Fan Control is intended to support standard EPSD chassis options. “Manual” Fan Control is intended to support third-party chassis installations.

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

Processor Configuration

The **Processor Configuration** screen displays the processor identification and microcode level, core frequency, cache sizes, Intel® QuickPath Interconnect 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.

Advanced	
Processor Configuration	
Processor ID	<CPUID>
Processor Frequency	<Proc Freq>
Microcode Revision	<Rev data>
L1 Cache RAM	<L1 Cache Size>
L2 Cache RAM	<L2 Cache Size>
L3 Cache RAM	<L3 Cache Size>
Processor Version	<ID string from processor>
Intel® Turbo Boost Technology	Enabled/Disabled
Enhanced Intel® SpeedStep® Tech	Enabled/Disabled
Turbo Boost Performance/Watt Mode	Power Optimized/Traditional
Processor C3	Enabled/Disabled
Processor C6	Enabled/Disabled
Intel® Hyper-Threading Tech	Enabled/Disabled
Core Multi-Processing	All/1/2/3
Execute Disable Bit	Enabled/Disabled
Intel® Virtualization Technology	Enabled/Disabled
Intel® VT for Directed I/O	Enabled/Disabled
Interrupt Remapping	Enabled/Disabled
Pass-through DMA Support	Enabled/Disabled
Hardware Prefetcher	Enabled/Disabled
Adjacent Cache Line Prefetch	Enabled/Disabled

Figure 11. Processor Configuration Screen

Screen Field Descriptions:

1. Processor ID

Option Values:<CPUID>

Help Text:<None>

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

Option Values:<Current Processor Operating Frequency>

Help Text:<None>

Comments:Information only. Displays current operating frequency of the processor.

2. Microcode Revision

Option Values:<Microcode Revision Number>

Help Text:<None>

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

3. L1 Cache RAM

Option Values:<L1 cache size>

Help Text:<None>

Comments:Information only. 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 per core. There are two types of L1 cache for the SandyBridge processor family, this amount is the total of L1 Instruction Cache plus L1Data Cache for each core.

4. L2 Cache RAM

Option Values:<L2 cache size>

Help Text:<None>

Comments:Information only. 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.

5. L3 Cache RAM

Option Values:<L3 cache size>

Help Text:<None>

Comments:Information only. 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 per processor package. S1200BT boards have a single processor display. Romley boards have “N/A” for the second processor if not installed.

6. Processor Version

Option Values:<ID string from processor>

Help Text:<None>

Comments:Information only. Displays Brand ID string read from processor with CPUID instruction.

7. Intel® Turbo Boost Technology

Option Values:Enabled

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.

8. 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.

9. Turbo Boost Performance/Watt Mode

Option Values:Power Optimized

Traditional

Help Text:

When Power Optimized is selected, Intel® Turbo Boost Technology engages after performance state P0 is sustained for more than two seconds. When Traditional is selected, Intel® Turbo Boost Technology is engaged even for P0 requests less than two seconds.

Comments: Turbo Boost Power Optimization is not available on all processors, and is available only when Intel® Turbo Boost Technology and Enhanced Intel® SpeedStep® Technology are Enabled.

10. 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.

11. 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.

12. Intel® Hyper-Threading Tech

Option Values: Enabled

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.

13. Core Multi-Processing

Option Values: All

2

4

Help Text:

Enable 1, 2, 3, 4, 5, 6, 7 or all cores of installed processor packages.

Comments: The number of cores that appear as selections and in the Help text depends on the number of cores in the processors installed.

14. Execute Disable Bit

Option Values: Enabled

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.

15. 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.

16. 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.

17. Interrupt Remapping

Option Values:Enabled

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.

18. 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. Appears only on Romley boards.

19. Pass-through DMA Support

Option Values:Enabled

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.

20. 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 the best efficiency in L2 Cache and Memory Channel use, but disabling it may improve performance for some processing loads and on certain benchmarks. For more information.

21. MLC Spatial Prefetcher

Option Values:Enabled

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. For more information

22. 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. For more information.

23. 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. [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 I Cache and Memory Channel use, but disabling it may improve performance for some processing loads and on certain benchmarks. For more information.

24. Intel (SMX) Safer Mode Extensions

Option Values:Enabled

Disabled

Help Text:

When enabled, a SMX can utilize the additional hardware capabilities provided by Safer Mode Extensions.

Comments:Intel (SMX) Safer Mode Extensions is set of CPU instructions used by Intel TXT software.

Memory Configuration

The **Memory Configuration** screen allows the user to view details about the DDR3 DIMMs that are installed as system memory.

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.

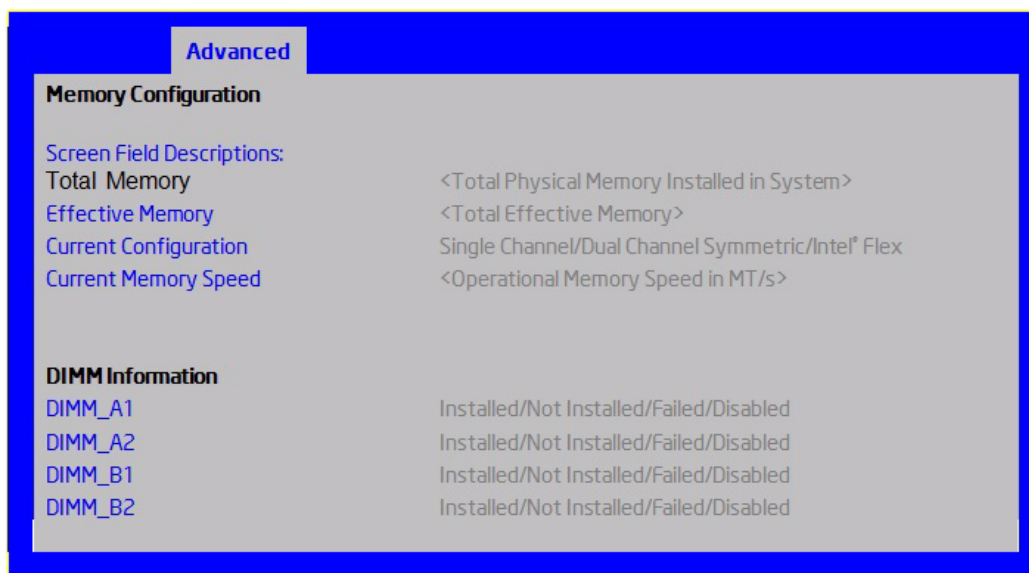


Figure 12. Memory Configuration Screen

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.

2. Effective Memory

Option Values:<Total Effective Memory>

Help Text:<None>

Comments:Information only. Displays the amount of memory available to the OS in MB or GB.

The Effective Memory is the difference between Total Physical Memory and the sum of all memory reserved for internal usage, RAS redundancy and SMRAM. This difference includes the sum of all DDR3 DIMMs that failed Memory BIST during POST or were disabled by the BIOS during the memory discovery phase in order to optimize memory configuration.

Note: *Some server operating systems do not display the total physical memory installed.*

3. Current Configuration

Option Values:Single Channel

Dual Channel Symmetric

Intel® Flex

Help Text:<None>

Comments: Displays one of the following:

- **Single Channel** – DIMMs are operating in Single Channel mode. This is the configuration when only one channel is populated with DIMMs.
- **Dual Channel Symmetric** – DIMMs are operating in Dual Channel Symmetric mode. This is the configuration when both channels are identically populated with DIMMs.
- **Intel® Flex** – DIMMs are configured according to Intel® Flex Memory Technology, where part of the memory is in Dual Channel Symmetric mode and part in Dual Channel Asymmetric mode. This is the configuration when both channels are populated, but with unequal amounts of memory.

4. Current Memory Speed

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

Help Text:<None>

Comments:Information only. Displays the speed in MT/s at which the memory is currently running.

For Intel® Xeon Processor E3-1200 Processors – supports memory speeds are 1066 MT/s and 1333 MT/s.

For Intel® Xeon Processor E3-1200 V2 Processors – supports memory speeds are 1333 MT/s and 1600 MT/s.

5. DIMM_A1
6. DIMM_A2
7. DIMM_B1
8. DIMM_B2

Option Values: Installed

Not Installed

Failed

Disabled

Help Text: <None>

Comments: Information only, for S1200 boards: Displays the state of each DIMM socket present on the board. Each DIMM socket field reflects one of the following possible states:

- **Installed** – There is a DDR3 DIMM installed in this slot.
- **Not Installed** – There is no DDR3 DIMM installed in this slot.

Mass Storage Controller Configuration

The Mass Storage Configuration screen allows the user to configure the SATA or SAS controller when it is present on the server board, midplane or backplane of an Intel[®] system.

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.

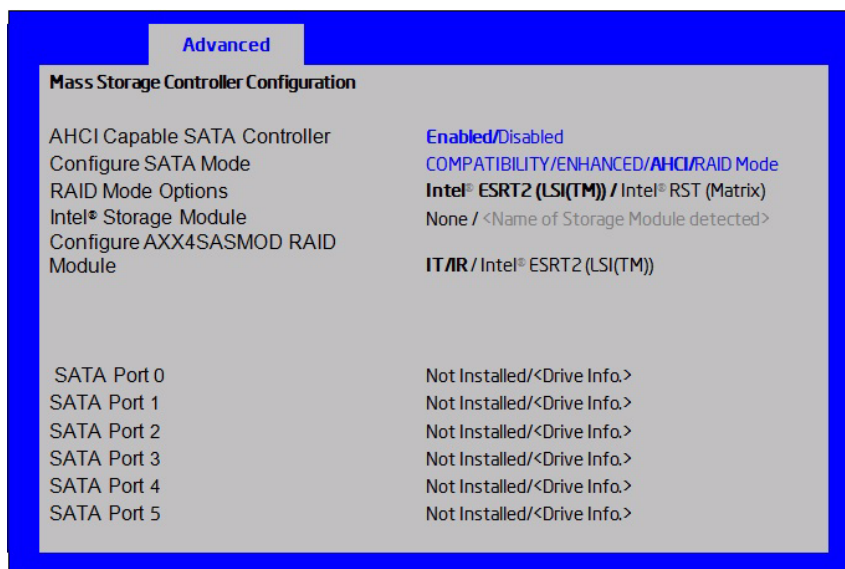


Figure 13. Mass Storage Controller Configuration Screen

1. AHCI Capable SATA Controller

Option Values:**Enabled**

Disabled

Help Text:AHCI capable SATA controller (also known as Onboard SATA Controller) refers to the Advanced Host Controller Interface SATA device integrated into the chipset. In order to utilize the AHCI capabilities, the AHCI option needs to be enabled in the SATA Mode menu.

Comments:If the SATA Controller is Enabled, then the mode of operation can be set using following options. If it is Disabled, the SATA Ports will not operate. and any installed SATA devices will be unavailable.

2. Configure SATA Mode

Option Values:Compatability

Enhanced

AHCI

RAID Mode

Help Text:

[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 operating systems.

[AHCI] enables the Advanced Host Controller Interface, which provides Enhanced SATA functionality plus additional functionality such as Native Command Queuing. Uses AHCI drivers available for the majority of current operating systems.

[RAID Mode] provides host based RAID support on the onboard SATA ports.

Comments: This option setting only appears when the SATA Controller is Enabled. In order to use the AHCI setting, any OS being booted must have AHCI drivers available. If the RAID Mode setting is chosen, then the following setting for RAID Mode Options will appear.

Note: *When the SATA Mode setting is changed, before attempting to set the Boot Order it is necessary to do a Save and Exit, and reboot to properly recognize any SATA hard drives.*

3. RAID Mode Options

Option Values: **Intel® ESRT2 (LSI(TM))**

Intel® RST (Matrix)

Help Text:

- Intel® ESRT2 (Powered By LSI(TM)): Supports RAID 0/1/10 and optional RAID 5 with Intel® Embedded Server RAID Technology 2 (ESRT2). Uses Intel® ESRT2 drivers (based on LSI(TM) MegaSR).
- Intel® RST (formerly known as Matrix RAID): Provides pass-through drive support with Intel® Rapid Storage Technology(RST). Also provides host based RAID 0/1/10/5 support. Uses Intel® RST iaStor drivers

Comments: This option setting only appears when the SATA Controller is enabled, and RAID Mode has been selected as the operational SATA Mode. If a RAID Volume has not previously been created, it will be necessary to Save and Exit and reboot in order to create a RAID Volume.

4. Intel® Storage Module

Option Values: **None**

<Name of Storage Module detected>

Help Text: Shows the name of the Storage Module detected, if one is installed.

Comments: Information only. 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 by listing this on the BIOS screen.

When an AXX4SASMOD Storage Module is detected, then (and only then) a following option will be available for switching between IT/IR and ESRT2 RAID settings.

5. Configure AXX4SASMOD RAID Module

Option Values:**IT/IR**

Intel[®] ESRT2 (LSI(TM))

Help Text:

- IT/IR: Provides pass-through drive support as well as HW RAID 0/1/1e support. Uses LSI(TM) mpt drivers.
- Intel[®] ESRT2 (Powered by LSI(TM)): Supports RAID 0/1/10 and optional RAID 5 with Intel[®] Embedded Server RAID Technology 2 (ESRT2). Uses Intel[®] ESRT2 drivers (based on LSI(TM) MegaSR).

Comments: This option setting only appears when an AXX4SASMOD Storage Module is installed. If a RAID Volume has not previously been created, it will be necessary to Save and Exit and reboot in order to create a RAID Volume.

6. SATA Port

Option Values:**Not Installed**

<Drive Information>

Help Text:

(Ports 0-1): 6Gb SATA capable port

(ports 2-5): 3Gb SATA capable port

Comments: Information only. This is repeated for all 6 SATA Port for the Onboard SATA Controller. This section for SATA Drive Information does not appear when the SATA Mode is RAID Mode.

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.

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

Figure 14. Serial Port Configuration Screen

USB Configuration

The USB Configuration screen allows the user to configure the 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.

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
Mass Storage Devices:	
<Mass storage devices one line/device>	Auto/Floppy/Forced FDD/Hard Disk/CD-ROM

Figure 15. USB 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 displays the NIC MAC Addresses in use.

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.



Advanced	
PCI Configuration	
Maximize Memory below 4GB	Enabled / Disabled
Memory Mapped I/O above 4GB	Enabled / Disabled
Onboard Video	Enabled / Disabled
Dual Monitor Video	Enabled / Disabled
Wake on LAN (PME)	Enabled / Disabled
Onboard NIC1 ROM	Enabled / Disabled
Onboard NIC2 ROM	Enabled / Disabled
Onboard NIC3 ROM	Enabled / Disabled
Onboard NIC4 ROM	Enabled / Disabled
Onboard NIC5 ROM	Enabled / Disabled
Onboard NIC iSCSI ROM	Enabled / Disabled
NIC 1 MAC Address	<MAC #>
NIC 2 MAC Address	<MAC #>
NIC 3 MAC Address	<MAC #>
NIC 4 MAC Address	<MAC #>
NIC 5 MAC Address	<MAC #>

Figure 16. PCI Configuration Screen

10. Wake on LAN (PME)

Option Values: Enabled

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.

System Acoustic and Performance Configuration (for Intel® Server Board S1200BTS)

The System Acoustic and Performance Configuration screen allows the user to configure the thermal control behavior of the system in order to balance performance and acoustics with power consumption and heat generation.

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.

Advanced	
System Acoustic and Performance Configuration	
Set Throttling Mode	Auto/CLTT/OLTT
Altitude	300m or less/301m-900m/901m - 1500m/Higher than 1500m
Set Fan Profile	Performance, Acoustic

Figure 17. System Acoustic and Performance Configuration

1. Set Throttling Mode

Option Values: **Auto**

Help Text:

[Auto] – Auto Throttling mode.

[CLTT] – Closed Loop Thermal Throttling Mode.

[OLTT] – Open Loop Thermal Throttling Mode.

Closed Loop Throttling Mode is supported only when ECC DIMM plugged. Open Loop Throttling Mode is not supported.

Comments: Information only, for S1200BT boards with BMC: CLTT Mode is the only mode supported. This will always be Auto, since there is no choice. If CLTT Mode cannot be established, then the fallback mode is no memory thermal-based throttling.

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.

3. Set Fan Profile

Option Values: **Acoustic**

Help Text:

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

Comments: Information only, for S1200BT boards with BMC: Acoustic Mode is the only Fan Profile supported. This will always be Acoustic, since there is no other choice.

Security Screen (Tab)

The **Security** screen allows the user to enable and set the user and administrative password 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.

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.

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
Administrator Password Status		<Installed/Not Installed>			
User Password Status		<Installed/Not Installed>			
Set Administrator Password		[1234aBcD]			
Set User Password		[1234aBcD]			
Front Panel Lockout		Enabled/Disabled			
TPM State		<Displays current TPM Device State>			
TPM Administrative Control		No Operation/Turn On/Turn Off/Clear Ownership			

Figure 18. Security Screen

1. Administrator Password Status

Option Values:Installed

Not Installed

Help Text:<None>

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

2. User Password Status

Option Values:Installed

Not Installed

Help Text:<None>

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

3. Set Administrator Password

Option Values: [Entry Field]

Help Text:

Administrator password is used to control change access in the BIOS Setup utility.

Only alphanumeric characters can be used. Maximum length is seven characters and it is case sensitive.

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

Comments: This option is only to control access to Setup. Administrator has full access to all Setup options. Clearing the Administrator Password also clears the User Password.

4. Set User Password

Option Values: [Entry Field]

Help Text:

User password is used to control entry access to the BIOS Setup utility.

Only alphanumeric characters can be used. Maximum length is seven characters and it is case sensitive.

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

Comments: Available only if the Administrator Password is 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.

5. Front Panel Lockout

Option Values: Enabled

Disabled

Help Text:

If enabled, locks the power button and reset button on the system's front panel. If [Enabled] is selected, power and reset must be controlled through a system management interface.

Comments: Note: This option does not appear on all boards. See Section Error! Reference source not found. for Product-Specific Information

6. TPM State

Option Values: <Displays current TPM Device State>

May be:

Enabled & Activated

Enabled & Deactivated

Disabled & Activated

Disabled & Deactivated

Help Text:<None>

Comments:nformation only. Shows the current TPM device state.

A **Disabled** TPM device does not execute commands that use the TPM functions and TPM security operations are not available.

An **Enabled & 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.*

7. 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.

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.

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
Assert NMI on SERR			Enabled / Disabled		
Assert NMI on PERR			Enabled / Disabled		
Resume on AC Power Loss			Stay Off / Last state / Power On		
Clear System Event Log			Enabled / Disabled		
FRB-2 Enable			Enabled / Disabled		
O/S Boot Watchdog Timer			Enabled / Disabled		
O/S Boot Watchdog Timer Policy			Power off / Reset		
O/S Boot Watchdog Timer Timeout			5 minutes / 10 minutes / 15 minutes / 20 minutes		
Plug & Play BMC Detection			Enabled / Disabled		
▶ Console Redirection					
▶ System Information					
▶ BMC LAN Configuration					

Figure 19. Server Management Screen (S1200BTL)

1. EuP LOT6 Off-Mode

Option Values:Enabled

Disabled

Help Text:

Enable/disable Ecodesign EuP LOT6 “Deep Sleep” Off-Mode for near-zero energy use when powered off.

Comments:This option controls whether the system goes into “Deep Sleep” or more conventional S5 “Soft-Off” when powered off. S5 can wake up faster and can Wake on LAN, but Deep Sleep uses less energy.

This option will not appear on platforms which do not support EuP LOT6 Off-Mode. For details on any platform.

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
Assert NMI on SERR			Enabled / Disabled		
Assert NMI on PERR			Enabled / Disabled		
Resume on AC Power Loss			Stay Off / Last state / Power On		
Clear System Event Log			Enabled / Disabled		
FRB-2 Enable			Enabled / Disabled		
O/S Boot Watchdog Timer			Enabled / Disabled		
O/S Boot Watchdog Timer Policy			Power off / Reset		
O/S Boot Watchdog Timer Timeout			5 minutes / 10 minutes / 15 minutes / 20 minutes		
▶ Console Redirection					
▶ System Information					
▶ Hardware Monitor					

Figure 20. Server Management Screen (S1200BTS)

Console Redirection

The Console Redirection screen allows the user to enable or disable console redirection and to configure the connection options for this feature.

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.

Server Management	
Console Redirection	
Console Redirection	Disabled / Serial Port A / Serial Port B
Flow Control	None / RTS/CTS
Baud Rate	9.6k / 19.2k / 38.4k / 57.6k / 115.2k
Terminal Type	PC-ANSI / VT100 / VT100+ / VT-UTF8
Legacy OS Redirection	Disabled / Enabled

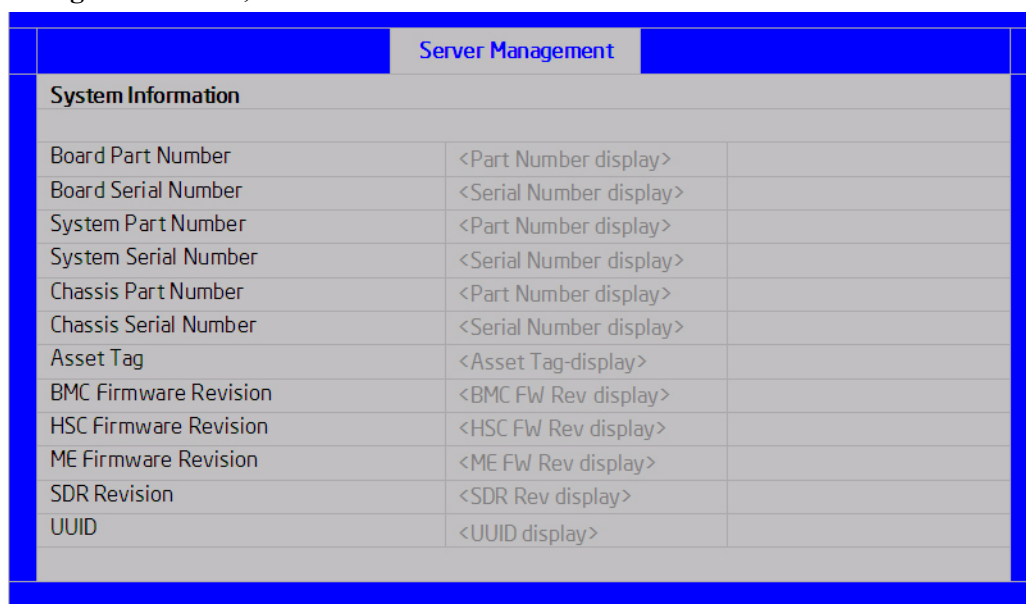
Figure 21. Console Redirection Screen

System Information

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

This screen may have fewer or more items displayed on it, depending on the system hardware configuration. For example, when the board does not include a BMC, this display does not include BMC Firmware Revision or SDR Version. Similarly, there is no HSC Firmware Revision displayed for systems which do not include an HSC.

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.



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>
HSC Firmware Revision	<HSC FW Rev display>
ME Firmware Revision	<ME FW Rev display>
SDR Revision	<SDR Rev display>
UUID	<UUID display>

Figure 22. System Information Screen (S1200BTL)

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>	
HSC Firmware Revision	<HSC FW Rev display>	
ME Firmware Revision	<ME FW Rev display>	
UUID	<UUID display>	

Figure 23. System Information Screen (S1200BTS)

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.

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]
Intel® RMM4 LAN configuration	
Intel® 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]
BMC DHCP Host Name	[DHCP Host Name display/edit]
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.	

Figure 24. BMC LAN Configuration Screen (S1200BTL)

Hardware Monitor

The **Hardware Monitor** screen allows the user to configure Fan Speed Control and to view displays of temperature and voltage status.

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

Server Management	
Hardware Monitor	
▶ Real-time Temperature and Voltage Status	
Fan Controller	Auto / Manual
CPU Fan Altitude	300m/900m/1500m/3000m
System Fan Altitude	300m/900m/1500m/3000m

Figure 25. Hardware Monitor Screen, Auto Fan Control (S1200BTS)

Server Management	
Hardware Monitor	
▶ Real-time Temperature and Voltage Status	
Fan Controller	Manual
CPU Fan Hysteresis Default Fan PWM	[2 Degree Celsius/3 Degree Celsius/4 Degree Celsius [40%/60%/80%/100%]
System Fan Hysteresis Default Fan PWM	[2 Degree Celsius/3 Degree Celsius/4 Degree Celsius [40%/60%/80%/100%]
Auxiliary Fan 1 Hysteresis Default Fan PWM	[2 Degree Celsius/3 Degree Celsius/4 Degree Celsius [40%/60%/80%/100%]
Auxiliary Fan 2 Hysteresis Default Fan PWM	[2 Degree Celsius/3 Degree Celsius/4 Degree Celsius [40%/60%/80%/100%]

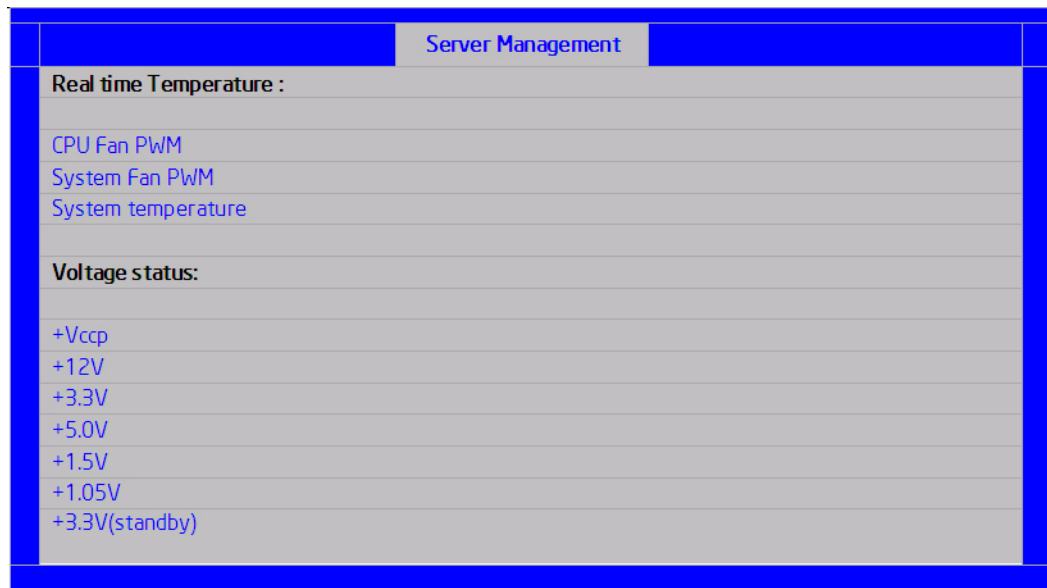
Figure 26. Hardware Monitor Screen, Manual Fan Control (S1200BTS)

Realtime Temperature and Voltage Status

The Realtime Temperature and Voltage Status screen allows the user to view displays of current processor and system fan speeds, current system temperature, and the status of various voltages which are monitored on the board.

This screen is present only for boards without a BMC.

To access this screen from the **Main** screen, select **Server Management > Hardware Monitor > Realtime Temperature and Voltage Status**. To move to another screen, press the <Esc> key to return to the **Hardware Monitor** screen, if necessary press the <Esc> key again to return to the **Server Management** screen, then select the desired screen.



Server Management
Real time Temperature :
CPU Fan PWM
System Fan PWM
System temperature
Voltage status:
+Vccp
+12V
+3.3V
+5.0V
+1.5V
+1.05V
+3.3V(standby)

Figure 27. Realtime Temperature and Voltage Status Screen (S1200BTS)

Boot Options Screen (Tab)

The Boot Options screen displays any 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 bootable during POST will be used to boot the system any time the system is rebooted after that.

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

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.

Main	Advanced	Security	Server Management	Boot Options	Boot Manager
System Boot Timeout		<0 - 65535>			
Boot Option #1		<Available Boot devices>			
Boot Option #2		<Available Boot devices>			
Boot Option #n		<Available Boot devices>			
▶ Hard Disk Order					
▶ CDRom Order					
▶ Floppy Order					
▶ Network Device Order					
▶ BEV Device Order					
▶ Add EFI Boot Option					
▶ Delete EFI Boot Option					
EFI Optimized Boot		Enabled/Disabled			
Use Legacy Video for EFI OS		Enabled/Disabled			
Boot Option Retry		Enabled/Disabled			
USB Boot Priority		Enabled/Disabled			

Figure 28. 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: A USB 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.

Boot Options	
Hard Disk Order	
Hard Disk #1	<Available Hard Disk devices>
Hard Disk #2	<Available Hard Disk devices>

Figure 29. Hard Disk Order 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 CDROM device will appear in this section.

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.

Boot Options	
CDROM Order	
CDROM #1	<Available CDROM devices>
CDROM #2	<Available CDROM devices>

Figure 30. CDROM Order 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: A USB Floppy 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.

Boot Options	
Floppy Order	
Floppy Disk #1	<Available Floppy Disk devices>
Floppy Disk #2	<Available Floppy Disk devices>

Figure 31. Floppy Order 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.

Boot Options	
Network Device Order	
Network Device #1	<Available bootable Network devices>
Network Device #2	<Available bootable Network devices>

Figure 32. Network Device Order 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.

This screen is the same for both Bromolow and Romley.

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.

Boot Options	
BEV Device Order	
BEV Device #1	<Available BEV devices>
BEV Device #2	<Available BEV devices>

Figure 33. BEV Device Order 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.

Boot Options	
Add EFI Boot Option	
Add boot option label	
Select File system	<Available File systems>
Path for boot option	
Save	

Figure 34. Add EFI Boot Option 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.

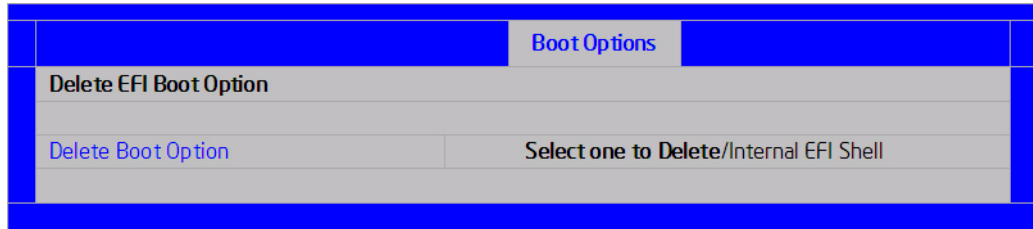


Figure 35. Delete EFI Boot Option Screen

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: *This list is not 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.

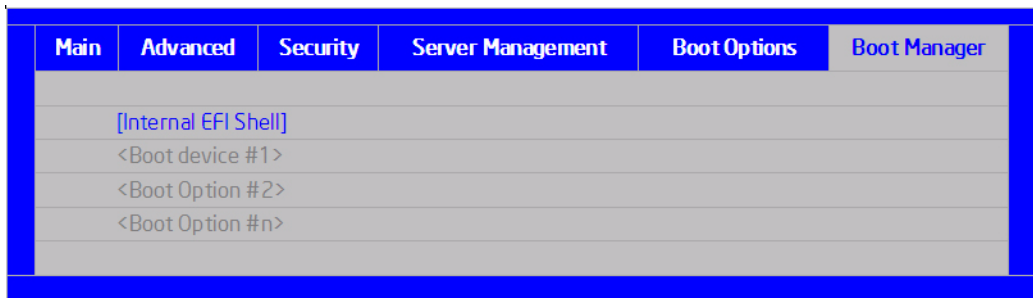


Figure 36. Boot Manager Screen

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 code.

This screen is the same for both Bromolow and Romley boards.

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.

Error Manager	Exit	
ERROR CODE	SEVERITY	INSTANCE

Figure 37. Error Manager Screen

System Event Log Screen (Tab)

The System Event Log screen appears only for server boards (other than Compute Module boards) which do not have an onboard Baseboard Management Controller. These boards maintain the System Event Log internally by using the SMBIOS Type 15 mechanism.

The System Event Log viewer can display as many log records as are stored in a single page. Each Event Record is displayed on one line. The most recent Event Record is displayed on the top. When there are more Event Records that can be displayed at once, the <PageUp> and <PageDown> keys can be used. There is also a scroll bar to allow users to view the logs from beginning to the end.

Note: When the System Event Log is full, or when the user wishes to remove the current Event Records, the user can choose Clear System Event Log in Setup.

System Event Log		
No.	Event Info	Time
005	M-BIT MEM ECC Error CPU0 Ch 0 Dimm0	10/15/09 15:12:23
004	S-BIT MEM ECC Error CPU0 Ch 0 Dimm0	10/15/09 15:11:25
003	PCIE UNCOR ERR Bus0 Dev 1C Fun0	10/15/09 15:08:36
002	MEM Parity Error CPU0 Ch 0 Dimm0	10/15/09 15:07:11
001	Thermal Trip Occurred.	10/15/09 15:05:05

Figure 38. System Event Log Screen (S1200BTS)

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 tables in this chapter) 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.

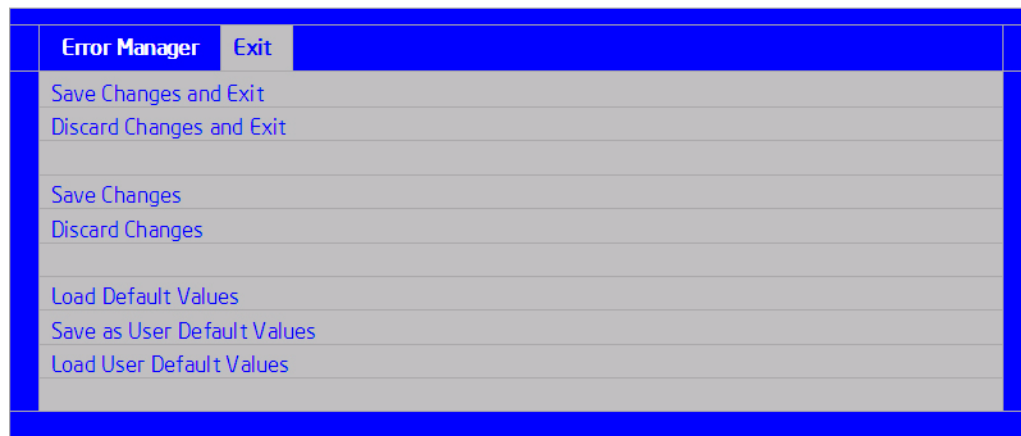


Figure 39. Exit Screen

Upgrading the BIOS

The upgrade utility allows you to upgrade the BIOS in flash memory. The code and data in the upgrade file include the following:

- On-board system BIOS, including the recovery code, BIOS Setup Utility, and strings.
- On-board video BIOS and other option ROMs for devices embedded on the server board.
- OEM binary area
- Microcode

Preparing for the Upgrade

The following steps explain how to prepare to upgrade the BIOS, including how to record the current BIOS settings and how to obtain the upgrade utility.

Note: In the unlikely event a BIOS error occurs during the BIOS update process, you may need to follow a recovery process to return the system to service. Refer to [“Additional Information and Software”](#) for a link to necessary software and instructions.

Recording the Current BIOS Settings

1. Boot the computer and press <F2> when you see the message:
Press <F2> Key if you want to run SETUP
2. Write down the current settings in the BIOS Setup program.

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

Obtaining the Upgrade

Download the BIOS image file to a temporary folder on your hard drive. Refer to [“Additional Information and Software”](#) for a link to the update software.

Note: Before attempting a BIOS upgrade, review the instructions and release notes provided in the readme file distributed with the BIOS image file. The release notes contain critical information regarding jumper settings, specific fixes, or other information to complete the upgrade.

Upgrading the BIOS

Follow the instructions in the readme file that came with the BIOS upgrade. When the update completes, remove the bootable media from which you performed the upgrade.

Caution: Do not power down the system during the BIOS update process! The system resets automatically when the BIOS update process is completed.

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

Recovering the BIOS

If an update to the system BIOS is not successful or if the system fails to complete POST and the BIOS is unable to boot an operating system, it may be necessary to run the BIOS recovery procedure.

To place the baseboard into recovery mode, move the boot option jumper (located on the baseboard) to the recovery position. The BIOS can then execute the recovery BIOS (also known as the boot block) instead of the normal BIOS. The recovery BIOS is a self-contained image that exists solely as a fail-safe mechanism for installing a new BIOS image.

Note: *During the recovery mode, video is not initialized. One high-pitched beep announces the start of the recovery process. The entire process takes two to four minutes. A successful update ends with two high-pitched beeps. Failure is indicated by a long series of short beeps.*

Recovering the BIOS

The following steps boot the recovery BIOS and flashes the normal BIOS:

1. Power down and unplug the system from the AC power source.
2. Move the recovery jumper at J1F3 from the spare location at pins 2 and 3 to cover pins 1 and 2. Refer to the following figure.

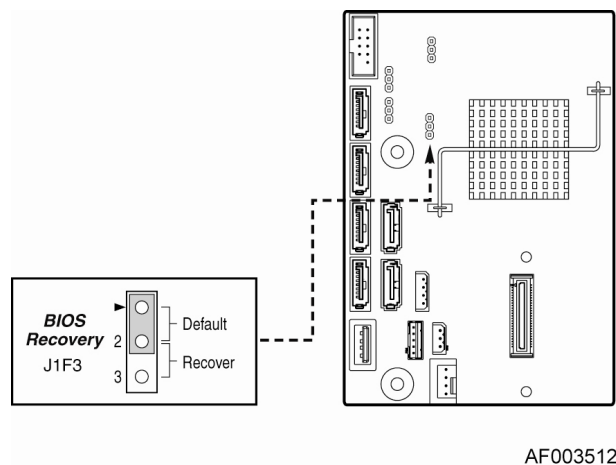


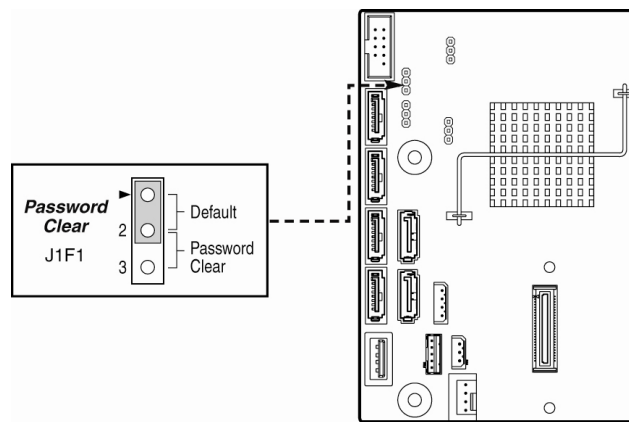
Figure 40. BIOS Recovery Jumper

3. Insert the bootable BIOS Recovery media containing the new BIOS image files. A BIOS recovery can be accomplished from SATA CD and USB Mass Storage device. Please note this platform does not support recovery from a USB floppy. The recovery media must contain the following files under the root directory:
 - FVMAIN.FV
 - UEFI iFlash32
 - *Rec.CAP
 - Startup.nsh (update accordingly to use proper *Rec.CAP file)
4. Plug the system into the AC power source and power it on.
5. The BIOS POST screen will appear displaying the progress, and the system will automatically boot to the EFI SHELL.
6. Remove the recovery media.
7. Power down and unplug the system from the AC power source.
8. Move the BIOS recovery jumper at J1A1 back to the original position, covering storage pins 1 and 2.
9. Plug the system into the AC power source and power it up to confirm the recovery was successful.
10. Do NOT interrupt the BIOS POST during the first boot.

Clearing the Password

If the user or administrator password(s) is lost or forgotten, moving the password clear jumper into the “clear” position clears both passwords. Before a new password(s) is set, you must restore the password clear jumper to its original position.

1. Power down the system and disconnect the AC power.
2. Open the server chassis.
3. Move the jumper from the normal operation position, Password Clear Protect, at pins 1 and 2 to the Password Clear Erase position, covering pins 2 and 3 as indicated in the following diagram.



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Figure 41. Password Recovery Jumper

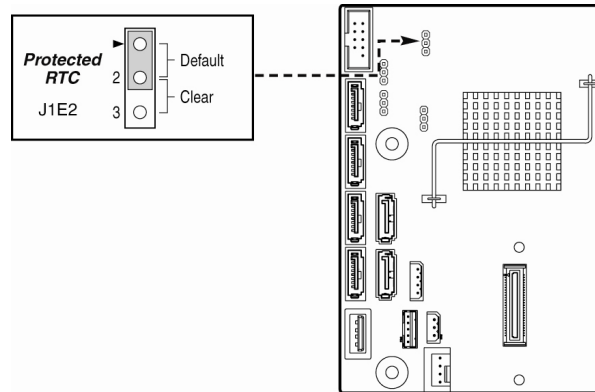
4. Reconnect the AC power, power up the system.
5. Power down the system and disconnect the AC power.
6. Return the Password Clear jumper to the Password Clear Protect position, covering pins 1 and 2.
7. Reconnect the AC power and power up the server.
8. Close the server chassis. The password is cleared and can be reset by going into the BIOS setup.

Clearing the CMOS

If you cannot access the BIOS setup screens, you must use the CMOS Clear jumper to reset the configuration RAM (Protected RTC on the board silkscreen is CMOS).

1. Power down the system and disconnect the AC power.
2. Open the server chassis. For instructions, see your server chassis documentation.

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

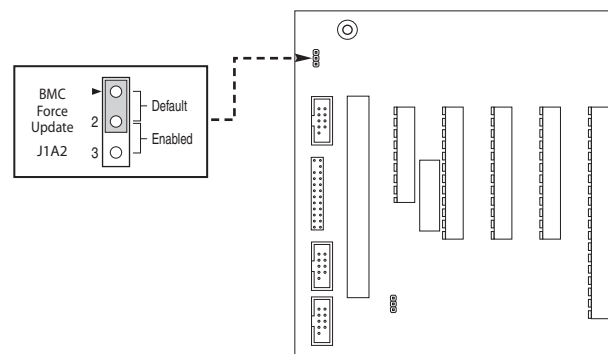


AF003514

Figure 42. CMOS Recovery Jumper

4. Wait five seconds.
5. Move the jumper back to default position, covering pins 1 and 2.
6. Close the server chassis.
7. Reconnect the AC power and power up the system. The CMOS is cleared and can be reset by going into the BIOS setup.

Updating the Integrated BMC



AF003291

Figure 43. BMC Force Update Jumper

When performing the standard Integrated BMC firmware update procedure, the update utility places the Integrated BMC into an update mode, allowing the firmware to load safely onto the flash device. In the unlikely event the Integrated BMC firmware update process fails (due to the Integrated BMC not being in the proper update state), the server

board provides an Integrated BMC Force Update jumper, which forces the Integrated BMC into the proper update state. You should complete the following procedure in the event the standard Integrated BMC firmware update process fails.

Note: *Normal Integrated BMC functionality is disabled with the Force Integrated BMC Update jumper set to the enabled position. The server should never be run with the Integrated BMC Force Update jumper set in this position. This jumper setting should only be used when the standard firmware update process fails. This jumper should remain in the default/disabled position when the server is running normally.*

1. Power down and remove the AC power cord.
2. Open the server chassis. For instructions, refer to your server chassis documentation.
3. Move the jumper from the default operating position (covering pins 1 and 2) to the enabled position (covering pins 2 and 3).
4. Close the server chassis.
5. Reconnect the AC cord and power up the server.
6. Perform the Integrated BMC firmware update procedure as documented in the README.TXT file included in the given Integrated BMC firmware update package. After successful completion of the firmware update process, the firmware update utility may generate an error stating the Integrated BMC is still in update mode.
7. Power down and remove the AC power cord.
8. Open the server chassis.
9. Move jumper from the enabled position (covering pins 2 and 3) to the disabled position (covering pins 1 and 2).
10. Close the server chassis.
11. Reconnect the AC cord and power up the server.

3 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.

Tools and Supplies Needed

- Phillips* (cross head) screwdriver (#1 bit and #2 bit)
- Needle nosed pliers
- A ruler
- Pen or pencil
- Antistatic wrist strap and conductive foam pad (recommended)

Installing and Removing Memory

The silkscreen on the board for the DIMMs displays DIMM_A1, DIMM_A2, DIMM_B1, and DIMM_B2 starting from the center of the board. DIMM_A1 is one of two blue sockets which is close to the processor. For two slots per channel configurations, the server board requires DDR3 DIMMs within a channel to be populated.

Installing DIMMs

To install DIMMs, follow these steps:

1. Observe the safety and ESD precautions in “[Safety Information](#)”.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the server's cover and locate the DIMM sockets (see letters “A” to “E” [Figure 44](#)).

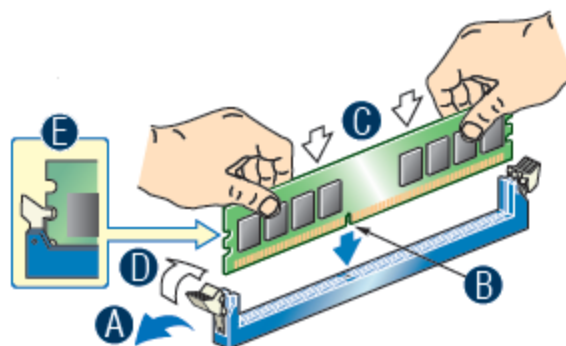


Figure 44. Installing Memory

5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position (see letter “A” in [Figure 44](#)).
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the two small notches in the bottom edge of the DIMM with the keys in the socket (letter “B” in [Figure 44](#)).
8. Insert the bottom edge of the DIMM into the socket (letter “C” in [Figure 44](#)).
9. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place ((letter “D” in [Figure 44](#)). Make sure the clips are firmly in place (letter “E” in [Figure 44](#)).
10. Replace the server's cover and reconnect the AC power cord. Refer to the documentation that came with your server chassis for instructions on installing the server's cover.

Removing DIMMs

To remove a DIMM, follow these steps:

1. Observe the safety and ESD precautions in “[Safety Information](#)”.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove the AC power cord from the server.
4. Remove the server's cover. See the documentation that came with your server chassis for instructions on removing the server's cover.
5. Gently spread the retaining clips at each end of the socket. The DIMM will lift from the socket.
6. Holding the DIMM by the edges, lift it from the socket, and store it in an anti-static package.
7. Reinstall and reconnect any parts you removed or disconnected to reach the DIMM sockets.

8. Replace the server's cover and reconnect the AC power cord. Refer to the documentation that came with your server chassis for instructions on installing the server's cover.

Installing or Replacing the Processor

Note: Use the following instructions to install or replace a processor instead of using the instructions that came with the processor.

Caution: Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server. See [“Additional Information and Software”](#) for a link to the list of compatible processor(s).

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.

Installing the Processor

To install a processor, follow these instructions:

1. Observe the safety and ESD precautions in [“Safety Information”](#).
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the server's cover. See the documentation that came with your server chassis for instructions on removing the server's cover.

5. Locate the processor socket and open the socket lever (see [Figure 45](#)).

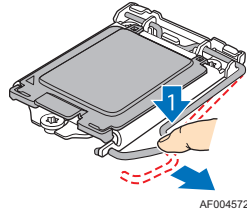


Figure 45. Lifting the Load Lever

6. Open the load plate (see letter “A” and “B” in [Figure 46](#)).

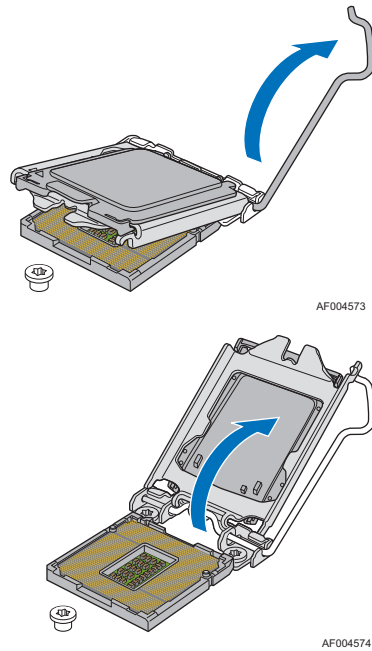


Figure 46. Open the Load Plate

7. Remove the socket protective cover ([Figure 47](#)).

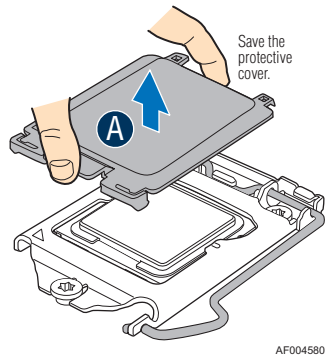


Figure 47. Remove the Socket Protective Cover

8. Take the processor out of the box and remove the protective shipping cover (Figure 48).



Figure 48. Remove the Processor Protective Cover

9. Align the processor cutouts to match the two socket pins, and insert the processor into the socket as shown in Figure 49.

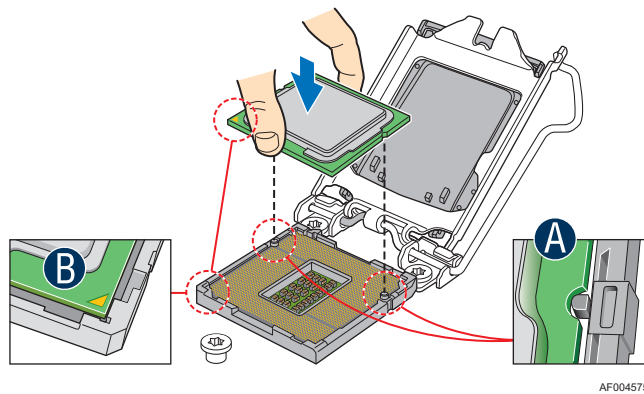


Figure 49. Installing the Processor

- Close the load plate (see letter “A” in Figure 50), close the socket lever, and ensure the load plate tab engages under the socket lever when fully closed (see letter “B” and “C” in Figure 50).

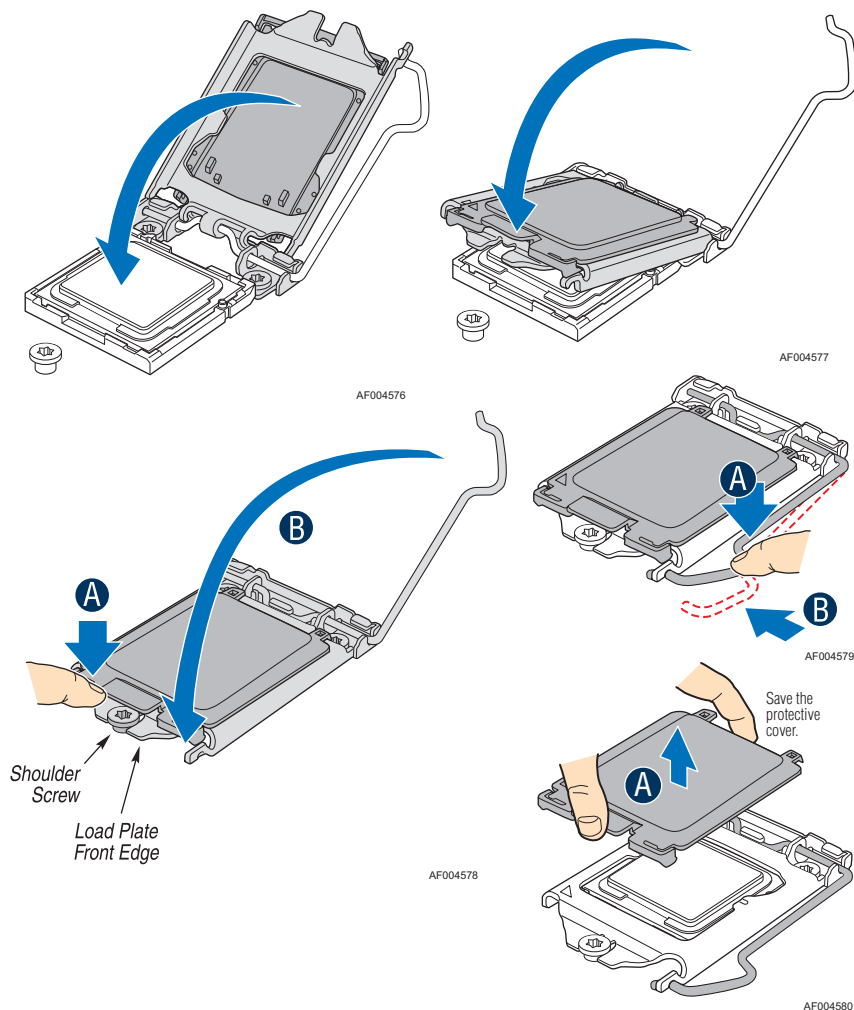


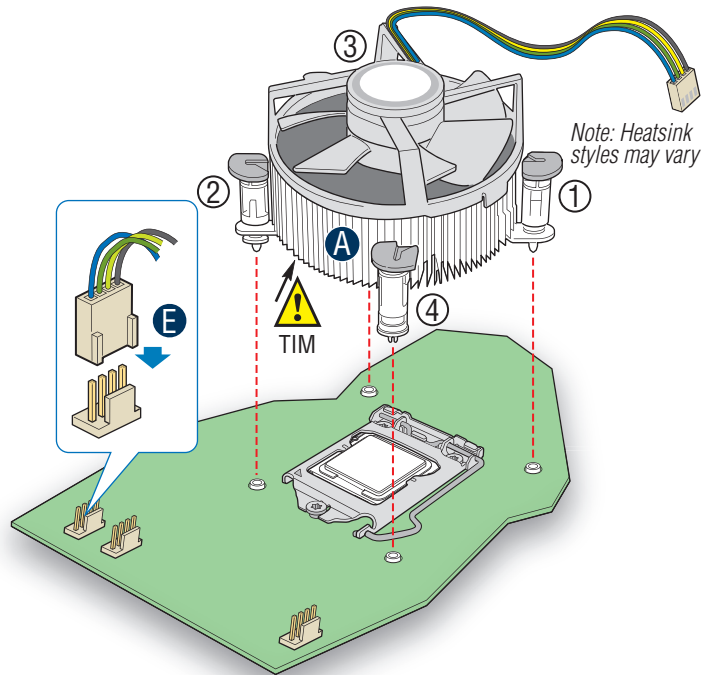
Figure 50. Close the Load Plate and Socket Lever

Note: Make sure the alignment triangle mark and the alignment triangle cutout align correctly. To assist in package orientation and alignment with the socket:

Installing the Heatsink(s)

- If a protective film covers the thermal interface material (TIM) on the underside of the heatsink, remove the protective film.
- Align heatsink fins to the front and back of the chassis for correct airflow. Airflow goes from front-to-back of chassis.
- Each heatsink has four captive fasteners and should be tightened as shown.

4. Using a #2 Phillips* screwdriver, finger-tighten each fastener diagonally, according to the white-circled numbers.
5. Securely re-tighten each fastener again in the same order as performed in Step 4.
6. Attach fan power cable to server board as shown.



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Figure 51. 2U Reference Heatsink Assembly

7. Reinstall and reconnect any parts you removed or disconnected to reach the processor sockets.
8. Replace the server's cover and reconnect the AC power cord. Refer to the documentation that came with your server chassis for instructions on installing the server's cover.

Removing a Processor

1. Observe the safety and ESD precautions in “[Safety Information](#)”.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove the AC power cord from the server.
4. Remove the server's cover. See the documentation that came with your server chassis for instructions on removing the server's cover.
5. Unplug the processor fan cable from the server board.
6. Untie the four captive fasteners from the corners of the heatsink.

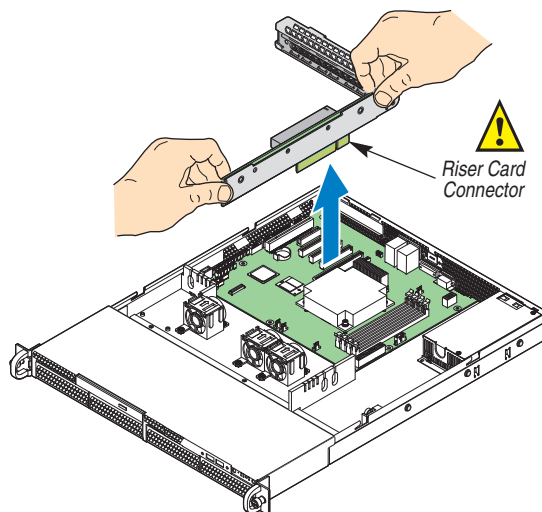
7. Twist the heatsink slightly to break the seal between the heatsink and the processor.
8. Lift the heatsink from the processor. If it does not pull up easily, twist the heatsink again. Do not force the heatsink from the processor. Doing so could damage the processor.
9. Lift the processor lever.
10. Raise the CPU load plate.
11. Remove the processor.
12. If installing a replacement processor, see “[Installing the Processor](#)”. Otherwise, install the protective socket cover over the empty processor socket and reinstall the chassis cover.

Installing a PCI Card

This system does not include peripherals and add-in cards; you must purchase them separately. The riser card at PCI slot 6 of the board supports a low-profile, half-length PCI Express* add-in card. Refer to the R1304BTLSEFAN/S1304BTLSEHBN System for more detailed information on how to install a PCI card.

Note: You must attach add-in cards to a riser card when the riser card is removed from the chassis.

1. Remove the screw that attaches the PCI bracket shield to the rear of the chassis to remove the shield. Retain the screw.



AF003683

Figure 52. Removing the PCI Riser Assembly from the Server System

2. Insert the PCI card edge connector in the slot on the PCI riser.

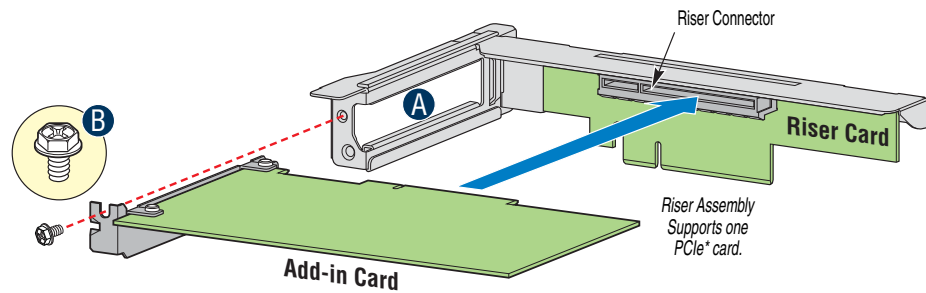


Figure 53. Installing a PCI Card in a Riser Card

3. Insert the riser card with the attached PCI card into the PCI slot on the server board. Press firmly on the riser card until it is fully seated. Press down on the riser card—do NOT press down on the PCI card.

Caution: Press the riser card straight down into the slot. Tipping it in the slot while installing it may damage the riser card or slot on the server board.

4. Use the screw removed in Step 1 to secure the riser card assembly to the chassis.

Replacing the Backup Battery

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

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

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

Advarsel: Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

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

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

1. Observe the safety and ESD precautions in “[Safety Information](#)”.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the server's cover and locate the battery. See the documentation that came with your server chassis for instructions on removing the server's cover.
5. Insert the tip of a small flat bladed screwdriver, or an equivalent, under the tab in the plastic retainer. Gently push down on the screwdriver to lift the battery.
6. Remove the battery from its socket.

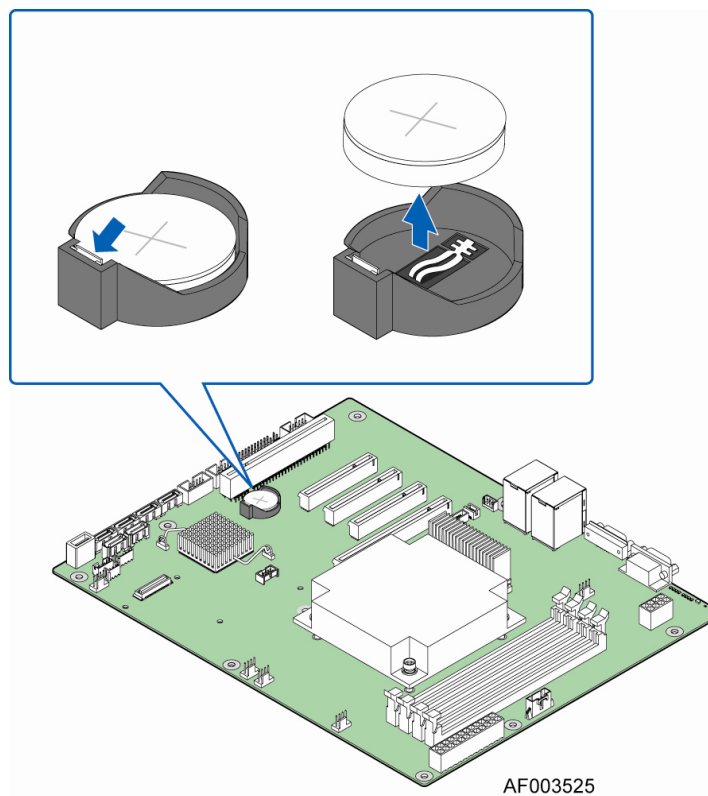


Figure 54. Replacing the Backup Battery

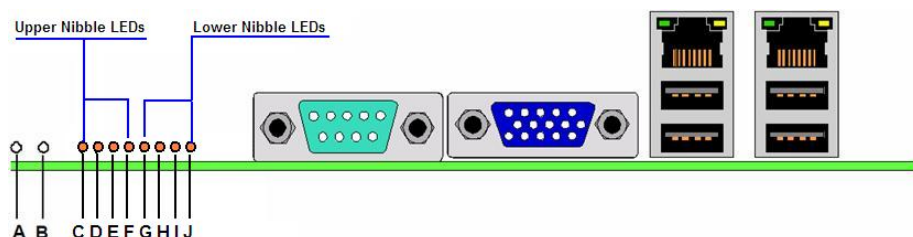
7. Dispose of the battery according to local ordinance.
8. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.
9. Close the chassis.
10. Run Setup to restore the configuration settings to the RTC.

Appendix A: 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, you can use the Diagnostic LEDs to identify the last POST process executed.

Each POST code is represented by the 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. Given the bit is set in the upper and lower nibbles, the corresponding LED is lit. If the bit is clear, corresponding LED is off.

The Diagnostic LED #7 is labeled as MSB, and the Diagnostic LED #0 is labeled with LSB.



A. ID LED (For Intel® Server Board S1200BTL)	B. Status LED (For Intel® Server Board S1200BTL)
C. Diagnostic LED #7 (MSB LED)	D. Diagnostic LED #6
E. Diagnostic LED #5	F. Diagnostic LED #4
G. Diagnostic LED #3	H. Diagnostic LED #2
I. Diagnostic LED #1	J. Diagnostic LED #0 (LSB LED)

Figure 55. Diagnostic LED Placement Diagram

In the following example, the BIOS sends a value of ACh to the diagnostic LED decoder. The LEDs are decoded as follows:

Table 6. POST Progress Code LED Example

LEDs	Upper Nibble LEDs				Lower Nibble LEDs			
	MSB							LSB
	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	OFF	ON	OFF
Results	1	0	1	0	1	1	0	0
	Ah				Ch			

- Upper nibble bits = 1010b = Ah; Lower nibble bits = 1100b = Ch; the two are concatenated as ACh.

Table 7. Diagnostic LED POST Code Decoder

Progress Code	Diagnostic LED Decoder O = On, X=Off								Description
	Upper Nibble MSB 8h 4h 2h 1h #7 #6 #5 #4				Lower Nibble 8h 4h 2h 1h LSB #3 #2 #1 #0				
SEC Phase									
0x01	X	X	X	X	X	X	X	O	First POST code after CPU reset
0x02	X	X	X	X	X	X	O	X	CPU Microcode load begin
0x03	X	X	X	X	X	X	O	O	Cache As RAM initialization begin
0x05	X	X	X	X	X	O	X	O	SEC Core at Power On Begin.
0x06	X	X	X	X	X	O	O	X	Early CPU initialization during Sec Phase
0x07	X	X	X	X	X	O	O	O	Early South Bridge initialization
0x08	X	X	X	X	O	X	X	X	Early North Bridge initialization
0x09	X	X	X	X	O	X	X	O	End Of Sec Phase
0x0E	X	X	X	X	O	O	O	X	CPU Microcode Not Found.
0x0F	X	X	X	X	O	O	O	O	CPU Microcode Not Loaded.
PEI Phase									
0x10	X	X	X	O	X	X	X	X	PEI Core Starts

Progress Code	Diagnostic LED Decoder O = On, X=Off		Description
	Upper Nibble MSB 8h 4h 2h 1h #7 #6 #5 #4	Lower Nibble 8h 4h 2h 1h LSB #3 #2 #1 #0	
0x11	X X X O	X X X O	CPU PEI Module Starts
0x15	X X X O	X O X O	North Bridge PEI Module Starts
0x19	X X X O	O X X O	South Bridge PEI Module Starts
0x31	X X O O	X X X O	Memory Installed
0x32	X X O O	X X O X	CPU PEI Module for CPU initialization
0x33	X X O O	X X O O	CPU PEI Module for Cache initialization
0x34	X X O O	X O X X	CPU PEI Module for Boot Strap Processor Select
0x35	X X O O	X O X O	CPU PEI Module for Application Processor initialization
0x36	X X O O	X O O X	CPU PEI Module for CPU SMM initialization
0x4F	X O X X	O O O O	Dxe IPL started
DXE Phase			
0x60	X O O X	X X X X	DXE Core started
0x61	X O O X	X X X O	DXE NVRAM initialization
0x62	X O O X	X X O X	SB RUN initialization
0x63	X O O X	X X O O	Dxe CPU initialization
0x68	X O O X	O X X X	DXE PCI Host Bridge initialization
0x69	X O O X	O X X O	DXE NB initialization
0x6A	X O O X	O X O X	DXE NB SMM initialization
0x70	X O O O	X X X X	DXE SB initialization
0x71	X O O O	X X X O	DXE SB SMM initialization
0x72	X O O O	X X O X	DXE SB devices initialization
0x78	X O O O	O X X X	DXE ACPI initialization
0x79	X O O O	O X X O	DXE CSM initialization
0x90	O X X O	X X X X	DXE BDS Started
0x91	O X X O	X X X O	DXE BDS connect drivers
0x92	O X X O	X X O X	DXE PCI Bus begin
0x93	O X X O	X X O O	DXE PCI Bus HPC initialization
0x94	O X X O	X O X X	DXE PCI Bus enumeration

Progress Code	Diagnostic LED Decoder O = On, X=Off								Description
	Upper Nibble MSB 8h 4h 2h 1h #7 #6 #5 #4				Lower Nibble 8h 4h 2h 1h LSB #3 #2 #1 #0				
0x95	O	X	X	O	X	O	X	O	DXE PCI Bus resource requested
0x96	O	X	X	O	X	O	O	X	DXE PCI Bus assign resource
0x97	O	X	X	O	X	O	O	O	DXE CON_OUT connect
0x98	O	X	X	O	O	X	X	X	DXE CON_IN connect
0x99	O	X	X	O	O	X	X	O	DXE SIO initialization
0x9A	O	X	X	O	O	X	O	X	DXE USB start
0x9B	O	X	X	O	O	X	O	O	DXE USB reset
0x9C	O	X	X	O	O	O	X	X	DXE USB detect
0x9D	O	X	X	O	O	O	X	O	DXE USB enable
0xA1	O	X	O	X	X	X	X	O	DXE IDE begin
0xA2	O	X	O	X	X	X	O	X	DXE IDE reset
0xA3	O	X	O	X	X	X	O	O	DXE IDE detect
0xA4	O	X	O	X	X	O	X	X	DXE IDE enable
0xA9	O	X	O	X	O	X	X	O	DXE verifying SETUP password
0xAB	O	X	O	X	O	X	O	O	DXE SETUP start
0xAC	O	X	O	X	O	O	X	X	DXE SETUP input wait
0xAD	O	X	O	X	O	O	X	O	DXE Ready to Boot
0xAE	O	X	O	X	O	O	O	X	DXE Legacy Boot
0xAF	O	X	O	X	O	O	O	O	DXE Exit Boot Services
0xB0	O	X	O	O	X	X	X	X	RT Set Virtual Address Map Begin
0xB1	O	X	O	O	X	X	X	O	RT Set Virtual Address Map End
0xB2	O	X	O	O	X	X	O	X	DXE Legacy Option ROM init
0xB3	O	X	O	O	X	X	O	O	DXE Reset system
0xB4	O	X	O	O	X	O	X	X	DXE USB Hot plug
0xB5	O	X	O	O	X	O	X	O	DXE PCI BUS Hot plug
0xB6	O	X	O	O	X	O	O	X	DXE NVRAM cleanup
0xB7	O	X	O	O	O	O	O	O	DXE Configuration Reset
0x00	X	X	X	X	X	X	X	X	INT19
BIOS Recovery									

Progress Code	Diagnostic LED Decoder O = On, X=Off								Description
	Upper Nibble MSB 8h 4h 2h 1h #7 #6 #5 #4				Lower Nibble 8h 4h 2h 1h LSB #3 #2 #1 #0				
0xF0	O	O	O	O	X	X	X	X	PEIM which detected forced Recovery condition
0xF1	O	O	O	O	X	X	X	O	PEIM which detected User Recovery condition
0xF2	O	O	O	O	X	X	O	X	Recovery PEIM (Recovery started)
0xF3	O	O	O	O	X	X	O	O	Recovery PEIM (Capsule found)
0xF4	O	O	O	O	X	O	X	X	Recovery PEIM (Capsule loaded)

Appendix B: 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: S1200BT or R1304BTLSFAN)

Server Chassis:

(Example P4304XXSFCN. If third-party chassis used, indicate make and model.)

Baseboard 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):

Intel® Management Module BMC Revision (if applicable):

BMC/mBMC 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):

=====

Processor information:

	Type	Speed	sSpec	Thermal Solution
Processor 1				
Processor 2				
Processor 3				
Processor 4				

Thermal solution (Heatsink) examples:

(1U, Passive w/air ducting, Active w/fan, etc.)

=====

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, etc.):

Type	Slot	Manufacturer	Model	Firmware

Third party hardware (Example: KVM, Chassis, etc.):

Description/Use	Manufacturer	Model	Firmware

Storage Devices (Example: SCSI, SATA, SAS, USB, Tape, etc.):

Manufacturer	Model	Type	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:

Troubleshooting tried:

Steps to replicate the issue:

Issue impact statements:

Do you have any potential Intel system, or component purchases that this issue is holding up? If yes, please provide a brief description below.

Do you have systems already purchased that are not being delivered to your customers because of this issue? If yes, please provide a brief description below.

Have you returned systems or components to your place of purchase because of this issue? If yes, please provide a brief description below.

*All other brands and names are property of their respective owners.

Appendix C: 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://www.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 support 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://supportmail.intel.com/scripts-emf/welcome.aspx>.
3. Lastly, you can contact an Intel support representative using one of the support phone numbers available at <http://www.intel.com/support/9089.htm> (charges may apply). Intel customer support suggests filling out the issue report form available at “[Intel® Server Issue Report Form](#)” on page 87 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/motherboards/server/sb/CS-010807.htm>.

Appendix D: Troubleshooting

This chapter helps you identify and solve problems that might occur while you are using the system.

For any issue, first ensure you are using the latest firmware and files. Firmware upgrades include updates for BIOS, the baseboard management controller (BMC), and the hot-swap controller (HSC). See [“Additional Information and Software”](#) for a link to the software updates. In addition to the server firmware and files, also update any drivers used for components you installed in your system, such as video drivers, network drivers, and SCSI drivers.

Intel provides a package called the "Platform Confidence Test" that may help with your diagnostics. See [“Additional Information and Software”](#) for a link to this software.

If you cannot resolve your server problems on your own, see [“Getting Help”](#) for assistance.

System Boot Quiet Time

The power-on self test (POST) process includes a quiet time, during which the system may appear to be hung. This may last as long as 20 seconds. Do not power off or reboot the system during this time. The POST LEDs will indicate activity—they may alternate blinking between amber and green. When the quiet time completes, the status LED will change to solid green.

Resetting the System

Before going through in-depth troubleshooting, attempt first to perform reset your system using one of the methods below.

Table 8. Resetting the System

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

Problems following Initial System Installation

Problems that occur at initial system startup are usually caused by an incorrect installation or configuration. Hardware failure is a less frequent cause. If the problem you are experiencing is with a specific software application, see [“Problems with Newly Installed Application Software”](#).

First Steps Checklist

- Is AC power available at the wall outlet?
- Are the power supplies plugged in? Check the AC cable(s) on the back of the chassis and at the AC source.
- Are all cables correctly connected and secured?
- Are the processors fully seated in their sockets on the server board?
- Are all standoffs in the proper location and not touching any components, causing a potential short?
- Are all add-in PCI boards fully seated in their slots on the server board?
- Are all jumper settings on the server board correct?
- Are all jumper and switch settings on add-in boards and peripheral devices correct? To check these settings, refer to the manufacturer's documentation that comes with them. If applicable, ensure that there are no conflicts—for example, two add-in boards sharing the same interrupt.
- Are all peripheral devices installed correctly?
- If the system has a hard disk drive, is it properly formatted or configured?
- Are all device drivers properly installed?
- Are the configuration settings made in Setup correct?
- Is the operating system properly loaded? See the operating system documentation.
- Did you press the system power on/off switch on the front panel to turn the server on (power on light should be lit)?
- Is the system power cord properly connected to the system and plugged into a NEMA 5 15R outlet for 100-120 V or a NEMA 6-15R outlet for 200-240 V?
- Are all integrated components from the tested components lists? Check the tested memory, and chassis lists, as well as the supported hardware and operating system list. See [“Additional Information and Software”](#) for links to the tested component lists.

Hardware Diagnostic Testing

This section provides a more detailed approach to identifying a hardware problem and locating its source.

Caution: *Turn off devices before disconnecting cables: Before disconnecting any peripheral cables from the system, turn off the system and any external peripheral devices. Failure to do so can cause permanent damage to the system and/or the peripheral devices.*

1. Turn off the system and all external peripheral devices. Disconnect each device from the system, except for the keyboard and the video monitor.
2. Make sure the system power cord is plugged into a properly grounded AC outlet.
3. Make sure your video display monitor and keyboard are correctly connected to the system. Turn on the video monitor. Set its brightness and contrast controls to at least two thirds of their maximum ranges (refer to the documentation supplied with your video display monitor).
4. If the operating system normally loads from the hard disk drive, make sure there is no diskette in drive A and no CD-ROM disk in the CD-ROM drive.
5. If the power LED does light, attempt to boot from a floppy diskette or from a CD-ROM disk.
6. Turn on the system. If the power LED does not light, see [“Power Light Does Not Light”](#).

Verifying Proper Operation of Key System Lights

As POST determines the system configuration, it tests for the presence of each mass storage device installed in the system. As each device is checked, its activity light should turn on briefly. Check for the following:

- Does the diskette drive activity light turn on briefly? If not, see [“Drive Activity Light Does Not Light”](#).
- If system LEDs are illuminated, see [“Make sure the BIOS is configured to allow the CD-ROM to be the first bootable device.”](#) for a description of the light and steps to take to correct the problem.

Confirming Loading of the Operating System

Once the system boots up, the operating system prompt displays on the screen. The prompt varies according to the operating system. If the operating system prompt does not display, see [“No Characters Display on Screen”](#).

Specific Problems and Corrective Actions

This section provides possible solutions for these specific problems:

- Power light does not light.
- No characters appear on screen.
- Characters on the screen appear distorted or incorrect.
- System cooling fans do not rotate.
- Hard disk drive activity light does not light.
- Optical drive activity light does not light.
- There are problems with application software.
- The bootable CD-ROM is not detected.

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

Power Light Does Not Light

Check the following:

- Did you press the power-on button?
- Is the system operating normally? If so, the power LED might be defective or the cable from the control panel to the server board might be loose.
- Have you securely plugged the server AC power cord into the power supply?
- Some ATX power supplies have a power switch on the back of the power supply, next to the fan. If your system has one, is it turned on?
- Remove all add-in cards and see if the system boots. If successful, add the cards back in one at a time with a reboot between each addition.
- Make sure the memory DIMMs comply with the system requirements.
- Make sure the memory DIMMs were populated according to the system requirements.
- Remove the memory DIMMs and re-seat them.
- Make sure the processor(s) comply with the system requirements.
- Make sure the processor(s) were populated according to the system requirements.
- Remove the processor(s) and re-seat them.
- Make sure the chassis standoffs are installed only below mounting holes. Misplaced standoffs can contact the pins on the bottom of the server board and cause a short.

No Characters Display on Screen

Check the following:

- Is the keyboard functioning? Test it by turning the “Num Lock” function on and off to make sure the Num Lock light is functioning.
- Is the video monitor plugged in and turned on? If you are using a switch box, is it switched to the correct system?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Is the video monitor signal cable properly installed?
- Does this video monitor work correctly if plugged into a different system?
- Is the onboard video controller enabled in the BIOS?
- Remove all add-in cards and see if the video returns. If successful, add the cards back in one at a time with a reboot between each addition.
- Make sure the memory DIMMs comply with the system requirements.
- Make sure the memory DIMMs were populated according to the system requirements.
- Remove the memory DIMMs and re-seat them.
- Make sure the processor(s) comply with the system requirements.
- Make sure the processor(s) were populated according to the system requirements.
- Remove the processor(s) and re-seat them.

If you are using an add-in video controller board, do the following:

1. Verify that the video works using the onboard video controller.
2. Verify that the video controller board is fully seated in the server board connector.
3. Reboot the system for changes to take effect.
4. If there are still no characters on the screen after you reboot the system and POST emits a beep code, write down the beep code you hear. This information is useful for your service representative.
5. If you do not receive a beep code and characters do not appear, the video display monitor or video controller may have failed. Contact your service representative or authorized dealer for help.

Characters Are Distorted or Incorrect

Check the following:

- Are the brightness and contrast controls properly adjusted on the video monitor? See the manufacturer's documentation.
- Are the video monitor's signal and power cables properly installed?
- Does this video monitor work correctly if plugged into a different system?

System Cooling Fans Do Not Rotate Properly

If the system cooling fans are not operating properly, it is an indication of possible system component failure.

Check the following:

- Is the power-on light lit? If not, see “[Power Light Does Not Light](#)”.
- If your system has LED lights for the fans, is one or more of these LEDs lit?
- Are any other control panel LEDs lit?
- Have any of the fan motors stopped? Use the server management subsystem to check the fan status.
- Have your fans speeded up in response to an overheating situation?
- Have your fans speeded up in response to a fan that has failed?
- Are the fan power connectors properly connected to the server board?
- Is the cable from the control panel board connected to the both the control panel board and to the server board?
- Are the power supply cables properly connected to the server board?
- Are there any shorted wires caused by pinched-cables or have power connector plugs been forced into power connector sockets the wrong way?

Drive Activity Light Does Not Light

Check the following:

- Are the diskette drive's power and signal cables properly installed?
- Are all relevant switches and jumpers on the diskette drive set correctly?
- Is the diskette drive properly configured?
- Is the diskette drive activity light always on? If so, the signal cable may be plugged in incorrectly.

If you are using the onboard diskette controller, use the BIOS setup to make sure that “Onboard Floppy” is set to “Enabled.” If you are using an add-in diskette controller, make sure that “Onboard Floppy” is set to “Disabled”.

CD-ROM Drive or DVD-ROM Drive Activity Light Does Not Light

Check the following:

- Are the CD-ROM/DVD-ROM drive's power and signal cables properly installed?
- Are all relevant switches and jumpers on the drive set correctly?
- Is the drive properly configured?

Cannot Connect to a Server

- Make sure the network cable is securely attached to the correct connector at the system back panel.
- Try a different network cable.
- Make sure you are using the correct and the current drivers. See [“Additional Information and Software”](#) for a link to the current drivers.
- Make sure the driver is loaded and the protocols are bound.
- Make sure the hub port is configured for the same duplex mode as the network controller.
- Make sure the correct networking software is installed.
- If you are directly connecting two servers (without a hub), you will need a crossover cable.
- Check the network controller LEDs next to the NIC connectors.

Problems with Network

The server hangs when the drivers are loaded

- Certain drivers may require interrupts that are not shared with other PCI drivers. For these drivers, it may be necessary to alter settings so that interrupts are not shared. See the documentation that came with your PCI card(s) for information on changing interrupts.

Diagnostics pass but the connection fails

- Make sure the network cable is securely attached.
- Make sure you specify the correct frame type in your NET.CFG file.
- The controller stopped working when an add-in adapter was installed.
- Make sure the cable is connected to the port from the onboard network controller.
- Make sure your BIOS is current. See [“Additional Information and Software”](#) for a link to the current version.
- Make sure the other adapter supports shared interrupts. Make sure your operating system supports shared interrupts.
- Try reseating the add-in adapter.

The controller stopped working when an add-in adapter was installed

- Make sure the cable is connected to the port from the on-board network controller.
- Make sure your BIOS is current. Refer to the [“Additional Information and Software”](#) for a link to the current version.

- Make sure the other adapter supports shared interrupts. Make sure your operating system supports shared interrupts.
- Try reseating the add-in adapter.

The add-in adapter stopped working without apparent cause

- Try reseating the adapter first; then try a different slot if necessary.
- The network driver files may be corrupt or deleted. Delete and then reinstall the drivers.
- Run the diagnostics.

System Boots when Installing PCI Card

System Server Management features require full-time “standby” power. This means some parts of the system have power going to them whenever the power cord is plugged in, even if you have turned the system power off with the power button on the front panel. If you install a PCI card with the AC power cord plugged in, a signal may be sent to command the system to boot. Before installing a PCI card, you should always:

- Turn off the server power by using the power button on the front of the system.
- Unplug the AC power cord(s) from the server.

Problems with Newly Installed Application Software

Problems that occur when you run new application software are usually related to the software, not the server hardware. Faulty equipment is unlikely, especially if other software runs correctly.

Check the following:

- Make sure the system meets the minimum hardware requirements for the software. See the software documentation.
- Make sure the software is properly installed and configured for the system. See the software documentation.
- Use only an authorized copy. Unauthorized copies often do not work.
- If you are running the software from a floppy disk, CD-ROM or DVD-ROM, try a different disk.
- Make sure the correct device drivers installed.

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

Problems with Application Software that Ran Correctly Earlier

Problems that occur after the system hardware and software have been running correctly sometimes indicate equipment failure. However, they can also be caused by file corruption or changes to the software configuration.

Check the following:

- If you are running the software from a floppy disk, CD-ROM or DVD-ROM, try a different disk.
- Check your system for a virus infection.
- Uninstall and reinstall the software. Make sure all necessary files are installed.
- If the problems are intermittent, there may be a loose cable, dirt in the keyboard (if keyboard input is incorrect), a marginal power supply, or other random component failures.
- If you suspect that a transient voltage spike, power outage, or brownout might have occurred, reload the software and try running it again. Symptoms of voltage spikes include a flickering video display, unexpected system reboots, and the system not responding to user commands.

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

Devices are not Recognized under Device Manager (Microsoft Windows* Operating System)

The Microsoft Windows* operating systems do not include all of the drivers for the Intel® chipsets, onboard NICs, and other components. See [“Additional Information and Software”](#) for a link to the current drivers and chipset files.

Hard Drive(s) are not Recognized

Check the following:

- Make sure the drive is not disabled in the BIOS Setup.
- Make sure the drive is connected correctly and that is plugged into the power supply.
- Make sure the drive is compatible. See [“Additional Information and Software”](#) for a link to the tested drives.
- Make sure you have not exceeded the power budget for the server. See [“Additional Information and Software”](#) for a link to software to check your power budget.
- If using SCSI drives, verify that each SCSI ID number is unique on the SCSI bus. Refer to your drive documentation for details on setting the SCSI ID for your drives.

- If using ATA drives, verify the master/slave settings are set correctly. Refer to your drive documentation for details on setting the master/slave settings.
- If using a RAID configuration with SCSI or SATA drives, make sure the RAID card is installed correctly.

Bootable CD-ROM Disk Is Not Detected

Check the following:

- Make sure the BIOS is configured to allow the CD-ROM to be the first bootable device.

LED Information

The Intel® Server Board S1200BT includes LEDs that can aid in troubleshooting your system. The following table lists these LEDs and provides a description of their use.

Table 9. LED Information

LED Name	Function	Location	LED Color	Notes
ID (for Intel® Server Board S1200BTL)	Aid in server identification from the back panel	Front panel and board rear left corner	Blue	Press ID LED button or use Server Management software to turn the LED on and off.
System Fault	Visible fault warning	Front panel and board rear left corner	Green or Amber	<ul style="list-style-type: none"> • On = No Fault • Green Blink = degraded • Amber = non-critical
Disk Activity	Front panel	Front panel and board left side	Green	Blinking = Activity. No action required.
POST Code 1-8	Display boot 80 POST code	Left rear of board	Each LED can be Off, Green, Amber, or Red	See the POST code table.
5-V Standby	Identify 5-V standby power on state	Front left board	Amber	On = 5-V standby power on
Power LED	Identify the power state of the system	Front panel	Green	<ul style="list-style-type: none"> • Off = Power is off (off or S5) • On = Power on or S0) • Slow Blink = Low power state (S1 - S3)

BIOS POST Beep Codes

The following table lists the POST error beep codes. Prior to system video initialization, the BIOS uses these beep codes to inform users of error conditions. The beep code is followed by a user-visible code on POST Progress LEDs.

Table 10. POST Error Beep Codes

Beeps	Error Message	POST Progress Code	Description
3	Memory error	Multiple	System halted because a fatal error related to the memory was detected.
The following Beep Codes are from the BMC, and are controlled by the Firmware team. They are listed here for convenience.			
1-5-2-1	CPU socket population error	N/A	CPU1 socket is empty.
1-5-2-4	MSID Mismatch	N/A	MSID mismatch occurs if a processor is installed into a system board that has incompatible power capabilities.
1-5-4-2	Power fault	N/A	DC power unexpectedly lost (power good dropout) - Power unit sensors report power unit failure offset
1-5-4-4	Power control fault	N/A	Power good assertion timeout - Power unit sensors report soft power control failure offset

In the case of POST error(s) that are listed as Major, the BIOS enters the error manager and waits for the user to press an appropriate key before booting the operating system or entering the BIOS Setup.

The user can override this option by setting the POST Error Pause option as disabled on the BIOS setup Main screen. If this option is disabled, the system boots the operating system without user intervention. The default is disabled.

