Intel® Server Board SE7320SP2 / SE7525GP2 User Guide

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

Order Number: C62033-002

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

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Preface

About this Manual

Thank you for purchasing and using the Intel® Server Board SE7320SP2 or SE7525GP2.

This manual is written for system technicians who are responsible for installing, troubleshooting, or upgrading one of these server boards. This document provides a brief overview of the features of the server boards, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the Intel Server Board SE7320SP2 / SE7525GP2. For the latest version of this manual, refer to http://www.support.intel.com/support/motherboards/server/se7320SP2/ or http://www.support.intel.com/support/motherboards/server/se7525GP2/.

Manual Organization

Chapter 1 provides a brief overview of the Server Boards SE7320SP2 and SE7525GP2. 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 adding and replacing components. Use this chapter for step-by-step instructions and diagrams for installing or replacing components such as the memory, processor, PCI card, and the battery, among other components.

Chapter 3 provides instructions on using the utilities that are shipped with the board or that may be required to update the system. This includes how to navigate through the BIOS Setup screens, how to perform a BIOS update, and how to 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 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

These server boards are compatible with the following Intel® Server Chassis:
- SC5300
- SC5275-E

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

Processors, 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 have been tested and can be used with your board, and for ordering information for Intel products, see http://www.support.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://support.intel.com/support/motherboards/server/SE7320SP2/

http://support.intel.com/support/motherboards/server/SE7320SP2/

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

For this information or software	Use this Document or Software
For in-depth technical information about this product, including BIOS settings and chipset information	Technical Product Specification
If you just received this product and need to install it	Intel® Server Board SE7320SP2 Quick Start User's Guide in the product box Intel® Server Board SE7525GP2 Quick Start User's Guide in the product box
For virtual system tours and interactive repair information	A link to the SMaRT Tool is available under "Other Resources" at the right side of the screen at http://support.intel.com/support/motherboards/server/SE7320SP2/ and http://support.intel.com/support/motherboards/server/SE7320SP2/
Accessories or other Intel server products	Spares and Configuration Guide
Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product	Tested Hardware and Operating System List
Chassis that have been tested with this product	Reference Chassis List
Processors that have been tested with this product	Supported Processors
DIMMs that have been tested with this product	Supported Memory
To make sure your system falls within the allowed power budget	Power Budget
For software to manage your Intel® server	Intel Server Management
For drivers	Driver (for an extensive list of drivers available) Operating System Driver (for operating system drivers)
For firmware and BIOS updates	Firmware Update
For diagnostics test software	Diagnostics

Safety Information

⚠ **WARNING**

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.

Emissions Disclaimer
To ensure EMC compliance with your local regional rules and regulations, the final configuration of your end system product may require additional EMC compliance testing. For more information please contact your local Intel Representative.

See "Regulatory and Integration Information" for product safety compliance and EMC regulatory compliance information. This is an FCC Class A device. Integration of it into a Class B chassis does not result in a Class B device.

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

EMC Testing
Before computer integration, make sure that the chassis, power supply, and other modules have passed EMC testing using a server board with a microprocessor from the same family (or higher) and operating at the same (or higher) speed as the microprocessor used on this server board.

⚠ **Warnings**

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 result.

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

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

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

Safety Cautions

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 Resource CD and/or at http://support.intel.com/support/motherboards/server/safecert.htm.

 SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:

1. Turn off all peripheral devices connected to the system.
2. Turn off the system by pressing the power button.
3. Unplug all AC power cords from the system or from wall outlets.
4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system.
5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system—any unpainted metal surface—when handling components.
6. Do not operate the system with the chassis covers removed.
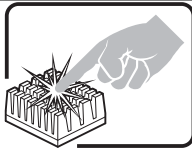
 A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warnund Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel-Serverplatinen und -Servergehäusen auf der Ressourcen-CD oder unter http://support.intel.com/support/motherboards/server/safecert.htm.
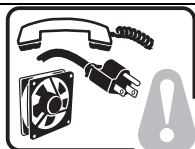
SICHERHEISMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:

1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus.
2. Schalten Sie das System mit dem Hauptschalter aus.
3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose.
4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab.
5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden.
6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.
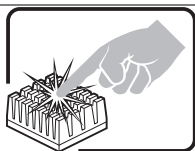
Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.

重要安全指导

在执行任何指令之前，请阅读本文档中的所有注意事项及安全声明。参见 Resource CD（资源光盘） 和/或 http://support.intel.com/support/motherboards/server/safecert.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》）。

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez *Intel Server Boards and Server Chassis Safety Information* sur le CD Resource CD ou bien rendez-vous sur le site http://support.intel.com/support/motherboards/server/safecert.htm.

CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:

1. Mettez hors tension tous les périphériques connectés au système.
2. Mettez le système hors tension en mettant l'interrupteur général en position OFF (bouton-poussoir).
3. Débranchez tous les cordons d'alimentation c.a. du système et des prises murales.
4. Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système.
5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier).
6. Ne faites pas fonctionner le système tandis que le boîtier est ouvert.
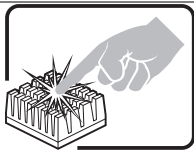
Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.

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 CD Resource y/o en http://support.intel.com/support/motherbords/server/safecert.htm.

INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:

1. Apague todos los dispositivos periféricos conectados al sistema.
2. Apague el sistema presionando el interruptor encendido/apagado.
3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna.
4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema.
5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujetada a la toma de tierra del chasis — o a cualquier tipo de superficie de metal sin pintar.
6. No ponga en marcha el sistema si se han extraído las tapas del chasis.
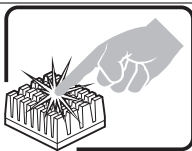
Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.

AVVERTENZA: Italiano

PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:

1. Spegnere tutti i dispositivi periferici collegati al sistema.
2. Spegnere il sistema, usando il pulsante spento/acceso dell'interruttore del sistema.
3. Togliere tutte le spine dei cavi del sistema dalle prese elettriche.
4. Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema.
5. Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghia anti-statica da polso che è attaccata alla presa a terra del telaio del sistema – qualsiasi superficie non dipinta – .
6. Non far operare il sistema quando il telaio è senza le coperture.
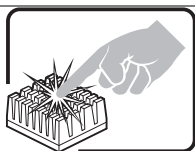
Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.

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1 Server Board Features

This chapter briefly describes the main features of Intel® Server Board SE7320SP2 / SE7525GP2. This chapter provides a photograph of the product, a list of server board features, and diagrams showing the location of important components and connections on the server board.

- The server boards SE7320SP2 and SE7525GP2 include dual-channel Serial ATA and dual-channel Parallel ATA support. RAID 0 and 1 support is provided for Serial ATA drives.
- The LX version of server board SE7320SP2 provides an additional PCI-Express device for 10/100/1000 Mbits/sec Ethernet LAN connectivity and a 4-port Silicon Image* Serial ATA controller: SI3124.

The Server Board SE7320SP2 is shown below.
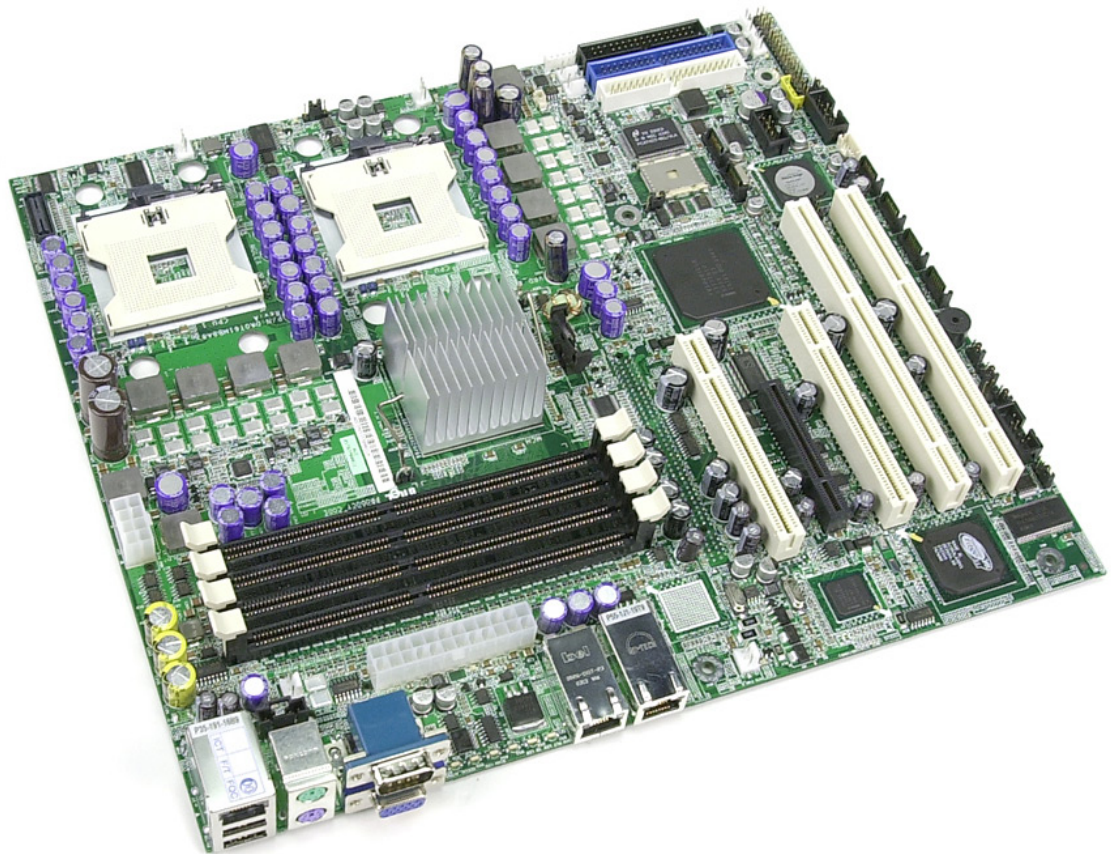
Figure 1. Intel® Server Board SE7320SP2

Table 1 summarizes the major features of the Server Board SE7320SP2.

Table 1.   Server Board SE7320SP2 Features

Feature	Description
Processors	Support for two Intel® Xeon™ processors in two 604-pin Intel Xeon processor sockets with an 800 MHz system bus
Memory	▪ Four 184-pin DDR SDRAM Dual Inline Memory Module (DIMM) sockets ▪ Support for up to 8 GB Registered ECC system memory ▪ Support for single-sided or double-sided DIMMs (DDR266/333)
Chipset	Intel® E7320 chipset, consisting of: ▪ Intel® 827320 Memory Controller Hub (MCH) ▪ Intel® 6300ESB I/O Controller Hub (ICH5-R)
Firmware Hub (FWH)	8 Megabit Firmware Hub (FWH).
I/O Control	National* PC87427 I/O controller chip
Peripheral Interfaces	▪ Two external USB 2.0 ports on the back panel with an additional internal header that provides support for two additional USB ports for support at the front of the chassis (four total possible USB 2.0 ports) ▪ One serial port and one serial port header ▪ Two ATA interfaces with Ultra 33, 66 and 100 DMA mode ▪ Two serial ATA connectors with support for RAID 0 and 1 (standard and LX version) ▪ Four serial ATA connectors with support for RAID 0 and 1 (LX version only) ▪ One floppy drive interface with support for one drive ▪ PS/2* keyboard and mouse ports
LAN	▪ One Intel® 82541 Platform LAN Connect (PLC) device for 10/100/1000 Mbits/sec Ethernet LAN connectivity ▪ One PCI-Express device for 10/100/1000 Mbits/sec Ethernet LAN connectivity (on the LX server board)
Expansion Capabilities	Three independent PCI buses (one x4 PCI-Express; one 64-bit/66 MHz PCI-X, 3.3 V; one 32-bit/33 MHz PCI, 5 V) with five bus connectors: ▪ One x8 PCI-Express* connector (attached to x4 bus) ▪ Two 64-bit/66MHz PCI-X connectors ▪ Two 32-bit/33MHz PCI connectors
Integrated Capabilities	▪ Integrated 2D/3D graphics controller: ATI Rage* XL Video Controller with 8 MB of SDRAM ▪ 4-port Silicon Image* Serial ATA controller: SI3124 (on the LX server board)
Fans	Support for up to six system fans and two processor fans
BIOS	Intel/AMI BIOS with support for: ▪ Advanced Configuration and Power Interface (ACPI) ▪ 8 megabit symmetrical flash memory ▪ Support for SMBIOS
Power Management	Support for ACPI: ▪ Wake on USB, PCI, RS-232, PS/2, LAN, and control panel
Server Management	Intel® Server Management 8.0 support via the National* Semiconductor PC87431M integrated management controller providing onboard platform instrumentation.
Leadership Technologies	▪ Intel® Light-Guided Diagnostics on some FRU devices (processors, power) ▪ Port-80 Diagnostic LEDs displaying POST Codes

Table 2 summarizes the major features of the Server Board SE7525GP2.

Table 2.   Server Board SE7525GP2 Features

Feature	Description
Processors	Support for two Intel® Xeon™ processors in two 604-pin Intel Xeon processor sockets with an 800 MHz system bus
Memory	▪ Four 184-pin DDR SDRAM Dual Inline Memory Module (DIMM) sockets ▪ Support for up to 8 GB Registered ECC system memory ▪ Support for single-sided or double-sided DIMMs (DDR266/333)
Chipset	Intel® E7525 chipset, consisting of: ▪ Intel® 827525 Memory Controller Hub (MCH) ▪ Intel® 6300ESB I/O Controller Hub (ICH5-R)
Firmware Hub (FWH)	8 Megabit Firmware Hub (FWH)
I/O Control	National* PC87427 I/O controller chip
Peripheral Interfaces	▪ Two external USB 2.0 ports on the back panel with an additional internal header, which provides support for two additional USB ports for support at the front of the chassis (four total possible USB 2.0 ports) ▪ One serial port and one serial header ▪ Two ATA interfaces with Ultra 33, 66 and 100 DMA mode ▪ Two Serial ATA connectors with support for RAID 0 and 1 ▪ One floppy drive interface with support for one drive ▪ PS/2* keyboard and mouse ports
LAN	One Intel® 82541 Platform LAN Connect (PLC) device for 10/100/1000 Mbits/sec Ethernet LAN connectivity
Expansion Capabilities	Four independent PCI buses (one x4 PCI-Express; one x16 PCI-Express; one 64-bit/66 MHz PCI-X, 3.3 V ; one 32-bit/33 MHz PCI, 5 V) with six bus connectors: ▪ One x 4 PCI-Express connector ▪ One x16 PCI-Express connector ▪ Two 64-bit/66MHz PCI-X connectors ▪ Two 32-bit/33MHz PCI connectors
Integrated Capabilities	Integrated 2D/3D graphics controller: ATI Rage* XL Video Controller with 8 MB of SDRAM
Fans	Support for up to six system fans and two processor fans
BIOS	Intel/AMI BIOS with support for: ▪ Advanced Configuration and Power Interface (ACPI) ▪ 8 megabit symmetrical flash memory ▪ Support for SMBIOS
Power Management	Support for ACPI: ▪ Wake on USB, PCI, RS-232, PS/2, LAN, and control panel
Server Management	Intel Server Management 8.0 support via the National* Semiconductor PC87431M integrated management controller providing onboard platform instrumentation.
Leadership Technologies	▪ Light Guided Diagnostics on some FRU devices (Processors, Power) ▪ Port-80 Diagnostic LEDs displaying POST Codes
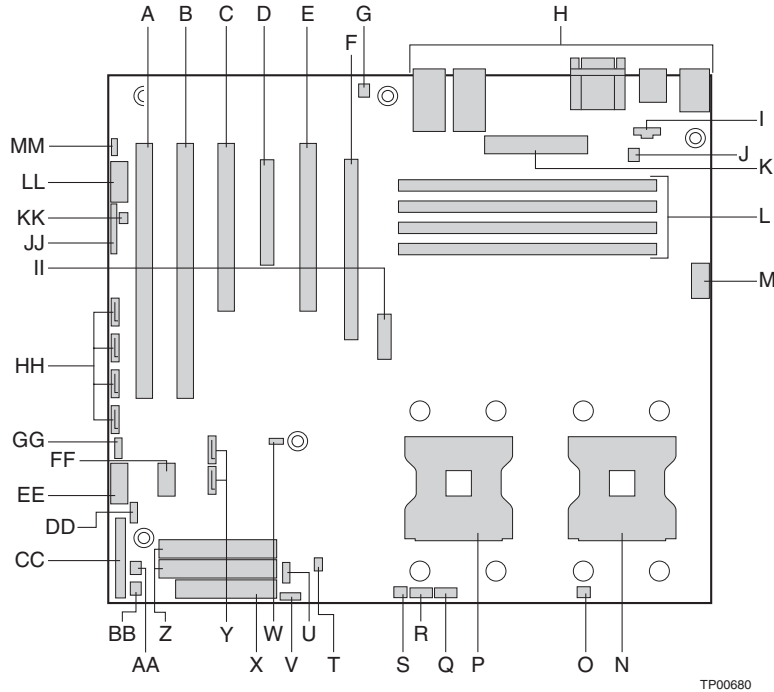
Server Board Connector and Component Locations

A: PCI-X Slot 1, 64-bit / 66MHz

B: PCI-X Slot 2, 64-bit / 66 MHz

C: PCI Slot 3, 32-bit / 33 MHz

D: x4 PCI-Express Slot 4,

E: PCI Slot 5, 32-bit / 33 MHz

F: x16 PCI-Express Slot 6; SE7525GP2 server board only

G: System Fan Header 2

H: Rear I/O (see figure 4 for details)

I: Auxiliary Power Connector

J: System Fan Header 1

K: Main Power Connector

L: DIMM Sockets (labeled from the top: 1B, 1A, 2B, 2A)

M: +12V CPU Power Connector

N: Processor Socket 1

O: Processor 1 Fan Header

P: Processor Socket 2

Q: System Fan Header 6

R: System Fan Header 5

S: Processor 2 Fan Header

T: ATA Power Connector

U: Hot Swap Backplane Header

V: IPMB Connector

W: BIOS Select Jumper

X: Floppy Drive Connector

Y: SATA A1, A2 Connectors

Z: Primary and Secondary ATA Connectors

AA: System Fan Header 3

BB: System Fan Header 4

CC: Front Panel Connector

DD: SATA Backplane Header

EE: Front Panel USB Header

FF: OEM Remote Management Card Connector

GG: LCD Header

HH: SATA B1, B2, B3, B4 Connectors; SE7320SP2 LX server board only

II: Battery

JJ: Jumper Block

KK: Chassis Intrusion Header

LL: Serial B Header

MM: SCSI LED Connector

Figure 2. Intel Server Board SE7320SP2 / SE7525GP2 Layout

Configuration and BIOS Select Jumpers
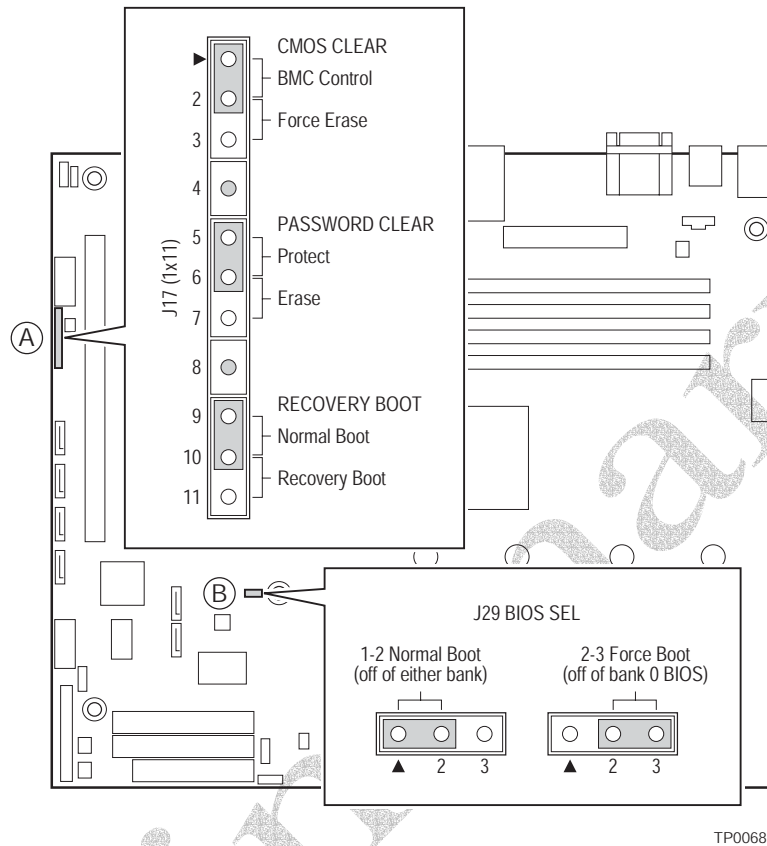
Figure 3. Configuration and BIOS Select Jumper Locations

Table 3.   Configuration Jumper [J17]

Jumper Name	Pins	What happens at system reset…
CMOS clear	2-3	If these pins are jumpered, the CMOS settings will be cleared on the next reset. These pins should be jumpered on 1-2 for normal operation.
Password Clear	6-7	If these pins are jumpered, administrator and user passwords will be cleared on the next reset. These pins should be jumpered on 5-6 for normal operation.
BIOS Recovery	10-11	If these pins are jumpered, the system will attempt to recover the BIOS by loading the BIOS code into the flash device from a floppy disk. This jumper is typically only used when the BIOS has become corrupted. These pins should be jumpered on 9-10 for normal operation.

Table 4.   BIOS Select Jumper [J29]

Operation	Pins	What happens at system reset…
Normal Boot	1-2	If these pins are jumpered, the board will boot off of either BIOS (bank.0 or bank 1) depending on which is available first.
Force Boot	2-3	If these pins are jumpered, the board will boot off of bank 0 BIOS.

Back Panel Connectors
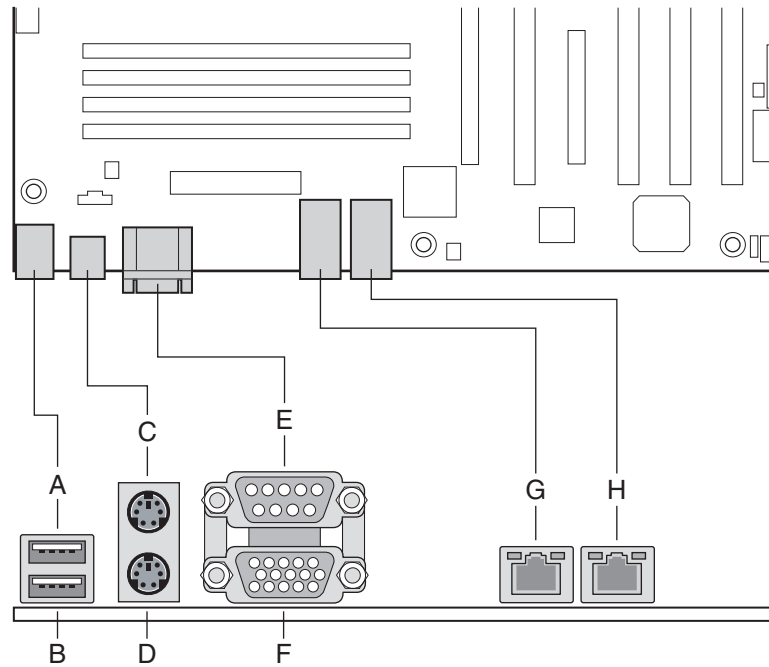
TP00682

A. USB 1	**E.** Serial port A
B. USB 2	**F.** Video
C. Mouse	**G.** NIC 2 (1Gbit. SE7320SP2 LX server board only)
D. Keyboard	**H.** NIC 1 (1Gbit)

Figure 4. Back Panel Connectors

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

Table 5. NIC LEDs

NIC	LED Color	LED State	Description
NIC1 / NIC2 (Gigabit)	Left LED	Off	No network connection
		Solid Amber	Network connection in place
		Blinking Amber	Transmit/receive activity
	Right LED	Off	10 Mbps connection (if left LED is on or blinking)
		Solid Amber	100 Mbps connection
		Solid Green	1000 Mbps connection

Making Connections to the Server Board

The connections you make depend on the chassis you are installing the board into and the components you are installing. You may not need to make all of the connections shown in Figure 5.

If you are installing your Server Board SE7320SP2 / SE7525GP2 into the Server Chassis SC5275-E, install the hard drive cage before making your connections. This is necessary because the hard drive cage contains one of the front system fans.
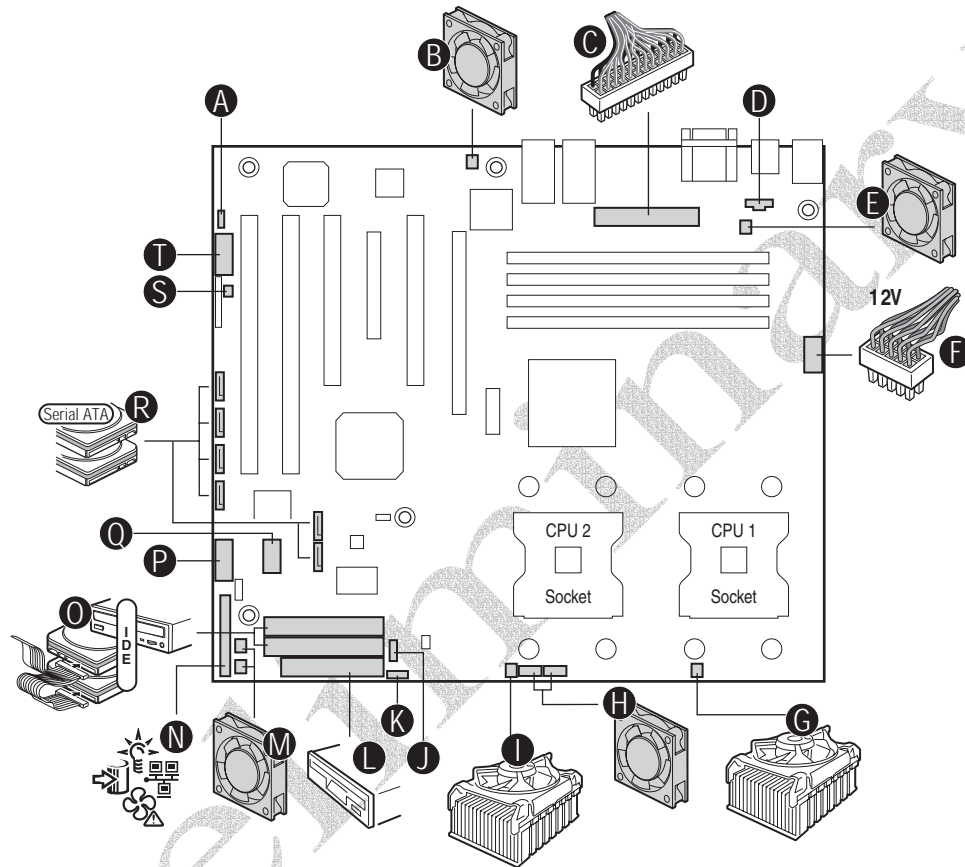
TP00683

A. SCSI LED Connector	**K.** IPMB Connector
B. System Fan Header 2	**L.** Floppy Drive Connector
C. Main Power Connector	**M.** System Fan Headers 3 & 4
D. Auxiliary Power Connector	**N.** Front Panel Connector
E. System Fan Header 1	**O.** ATA Connectors
F. +12V CPU Power Connector	**P.** Front Panel USB Header
G. Processor 1 Fan Header	**Q.** OEM RMC Connector
H. System Fan Headers 5 & 6	**R.** SATA Connectors
I. Hot Swap Backplane Header	**S.** Chassis Intrusion Connector
J. Processor 21 Fan Header	**T.** Serial B Header

Figure 5. Making Connections to the Server Board

Hardware Requirements

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

Processor

Both the SE7320SP2 and SE7525GP2 server boards are designed to support one or two Intel® Xeon™ processors utilizing an 800 MHz front side bus with frequencies starting at 2.8 GHz. Previous generations of the Xeon processor are not supported for use on server boards SE7320SP2 and SE7525GP2. Both server boards are designed to provide up to 120A of current per processor. Processors with higher current requirements are not supported.

For a complete list of supported processors, see the links under "Additional Information and Software."

Memory

The Server Boards SE7320SP2 and SE7525GP2 each provide four DDR266 / DDR333 DIMM sites in two DIMM banks. The maximum memory capacity is 8GB for either DDR266 or DDR333 memory. Memory DIMM technologies supported are: 128Mb, 256Mb, 512Mb, 1Gb and 2Gb.

Memory sizing and configuration is guaranteed only for qualified DIMMs approved by Intel. For a complete list of supported DIMMs, see the links under "Additional Information and Software."

The minimum memory configuration is one DIMM, installed in DIMM socket 1B (the socket farthest from the processors). However, for optimum performance and dual-channel interleave operation, a minimum of two DIMMs should be installed. DIMMs on channel A are paired with DIMMs on channel B to configure 2-way interleaving.

Both DIMMS in Bank 1 (DIMM1B and DIMM1A) must be populated before any DIMMs are installed in Bank 2 (DIMM2B and DIMM2A). Bank 2 must be populated in pairs.

Both DIMMs in a bank must be identical (same manufacturer, CAS latency, number of rows, columns and devices, timing parameters etc.). Although DIMMs within a bank must be identical, the BIOS supports various DIMM sizes and configurations allowing the banks of memory to be different.

The mixing of DDR266 and DDR333 memory is supported on the Server Boards SE7320SP2 and SE7525GP2. However, when mixing DIMM types, DDR333 will be treated as DDR266.

Power Supply

A minimum of 600 Watts is required. Your supply must provide a minimum of 2.0 A of 5 V standby current or the board will not boot.

2 Server Board 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
- Antistatic wrist strap and conductive foam pad

Installing and Removing Memory

The silkscreen on the board for the DIMMs displays DIMM1B, DIMM1A, DIMM2B, and DIMM2A, starting from the inside of the board. DIMM2A is the socket closest to the processor socket. For DIMM population rules, see "Memory."

Installing DIMMs

To install DIMMs, follow these steps:

1. Observe the safety and ESD precautions at the beginning of this book. See "Safety Information."
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord.
4. Remove the server's cover. See your chassis documentation for instructions.
5. Locate the DIMM sockets. See Figure 6.
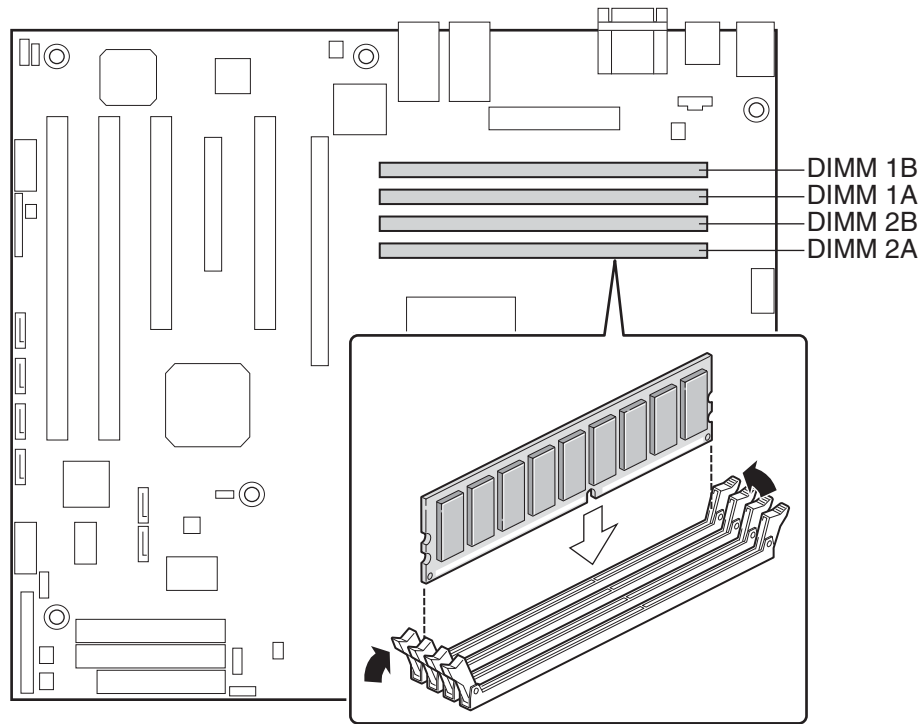
TP00684

Figure 6. Installing Memory

6. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
7. Holding the DIMM by the edges, remove it from its anti-static package.
8. Position the DIMM above the socket. Align the small notch in the bottom edge of the DIMM with the keys in the socket (see inset in Figure 6).
9. Insert the bottom edge of the DIMM into the socket.
10. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
11. Reconnect or replace any internal components you needed to disconnect or remove.
12. Replace the server's cover. Reconnect any external components you needed to disconnect.
13. Attach the AC power cord.

Removing DIMMs

To remove a DIMM, follow these steps:

1. Observe the safety and ESD precautions at the beginning of this book. See "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 your chassis documentation for instructions.
5. Gently spread the retaining clips at each end of the socket. The DIMM pops out of the socket.
6. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
7. Reconnect or replace any internal components you needed to disconnect or remove.
8. Replace the server's cover. Reconnect any external components you needed to disconnect.
9. Attach the AC power cord.

Installing or Replacing the Processor

⚠ **NOTES**

Use the instructions provided below to install or replace a processor instead of using the instructions that came with the processor.

If a single processor is to be used, it must be installed in the processor socket labeled CPU1. This socket is located closest to the corner of the server board.

When installing a second processor, verify that the processors are identical and of the same voltage and speed. Do not mix processors of different types or frequencies.

⚠ **CAUTIONS**

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 processors.

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

1. Observe the safety and ESD precautions above and at the beginning of this book. See "Safety Information."
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove power from your system by unplugging the AC power cord.
4. Remove the chassis cover. See your chassis documentation for instructions.
5. Lift the socket lever for the processor.
6. Align the pins of the processor with the socket, and insert the processor into the socket. Lower the socket lever completely.

✏ **NOTE**

> Make sure the alignment triangle mark and the alignment triangle cutout align correctly. See Figure 7.
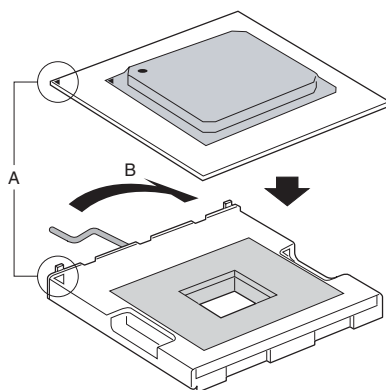
Figure 7. Opening Socket Lever and Attaching Processor

7. Remove the heat sink from its packaging. The heat sink has thermal interface material (TIM) applied to the bottom of it. Be careful not to damage the TIM when you handle the heat sink.
8. Set the heat sink on top of the processor, aligning the captive screws in the heat sink with the standoffs around the processor socket. See Figure 8, letter A. Your heat sink style may vary.
9. Finger-tighten each captive screw, working around the heat sink. Tighten the screws evenly. Do not fully tighten one screw at a time. Continue to gradually and evenly tighten each screw, working around the heat sink. See Figure 8, letter B.
10. Server Chassis SC5275-E only: Connect the heat sink fan cable to the processor fan connector.

TP00748
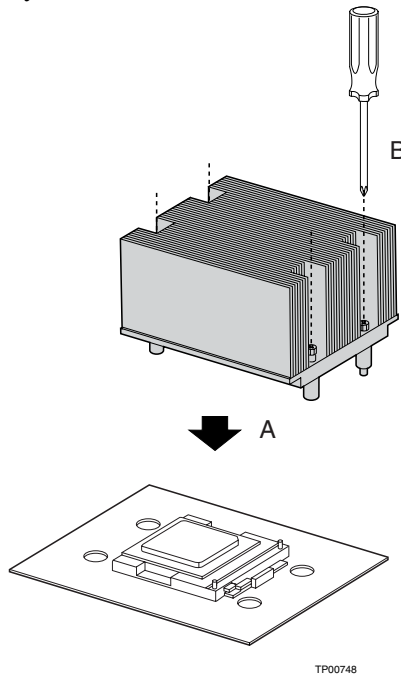
Figure 8. Installing Heat Sink over Processor

11. Reconnect or replace any internal components you needed to disconnect or remove.
12. Replace the server's cover. Reconnect any external components you needed to disconnect.
13. Attach the AC power cord.

Removing the Processor

To remove the processor, follow these instructions:

1. Observe the safety and ESD precautions at the beginning of this book. See "Safety Information."
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove power from your system by unplugging the AC power cord.
4. Remove the chassis cover. See your chassis documentation for instructions.
5. Server Chassis SC5275-E only: Disconnect the processor fan cable.
6. Fully loosen the four captive screws on the heat sink.
7. Twist the heat sink to break the seal between the TIM and the processor.

⚠ CAUTION

Do not attempt to lift the heat sink from the processor without first twisting it to break the seal between the TIM and the processor. Lifting the heat sink without breaking the seal may damage the processor or the processor socket.

8. Lift the heat sink from the processor.
9. Lift the processor lever.
10. Remove the processor.
11. Reconnect or replace any internal components you needed to disconnect or remove.
12. Replace the server's cover. Reconnect any external components you needed to disconnect.
13. Attach the AC power cord.

Installing a PCI Card

Peripherals and add-in cards are not included in your system and must be purchased separately. The PCI slots support full-height add-in cards or low-profile PCI add-in cards. If a low profile card is installed in the standard full-height riser card, it must be equipped with a standard full-height PCI mounting bracket.

1. Observe the safety and ESD precautions at the beginning of this book. See "Safety Information."
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove power from your system by unplugging the AC power cord.
4. Remove the chassis cover. See your chassis documentation for instructions.
5. Remove the screw that attaches the PCI bracket shield to the rear of the chassis to remove the shield. Retain the screw.
6. Insert the PCI card into the PCI slot.
7. Use the screw removed in step 1 to secure the PCI card to the chassis.
8. Reconnect or replace any internal components you needed to disconnect or remove.
9. Replace the server's cover. Reconnect any external components you needed to disconnect.
10. Attach the AC power cord.

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 above and at the beginning of this book. See "Safety Information."
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove power from your system by unplugging the AC power cord.
4. Remove the chassis cover. See your chassis documentation for instructions.
5. Locate the battery. See Figure 9.
6. Gently pull back on the metal tab to release the battery.
7. Remove the battery from its socket.
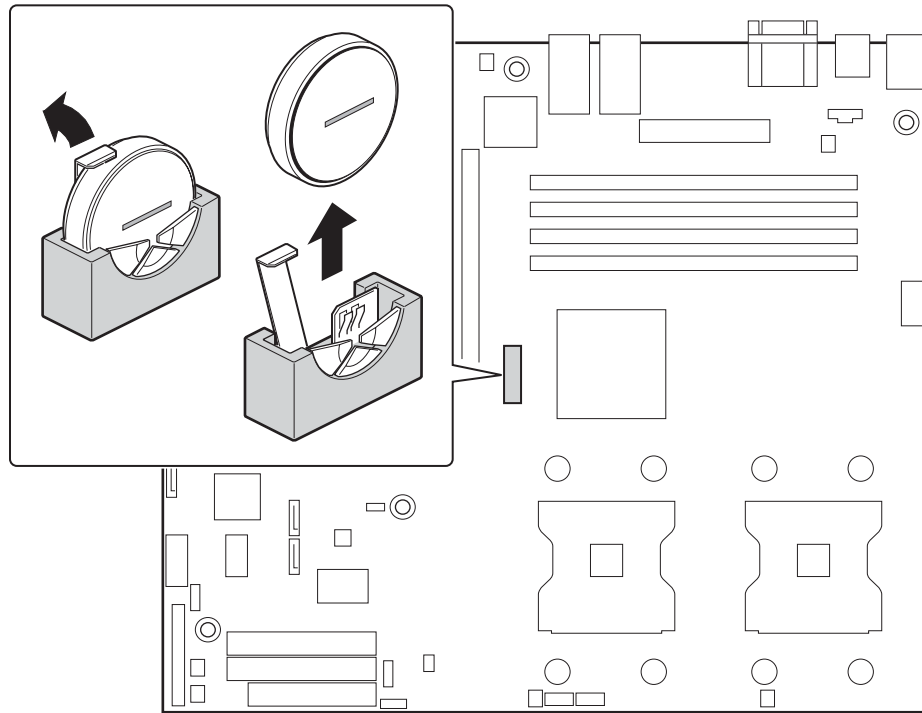
TP00685

Figure 9. Replacing the Battery

8. Dispose of the battery according to local ordinance.
9. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.
10. Reconnect or replace any internal components you needed to disconnect or remove.
11. Replace the server's cover. Reconnect any external components you needed to disconnect.
12. Attach the AC power cord.
13. Run Setup to restore the configuration settings to the RTC.

3 Server Utilities

Table 6. Keyboard Commands

Press	Description
<F1>	Help - Pressing F1 on any menu invokes the general Help window.
	The left and right arrow keys are used to move between the major menu pages. The keys have no affect if a submenu or pick list is displayed.
	Select Item up - The up arrow is used to select the previous value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
	Select Item down - The down arrow is used to select the next value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
F5/-	Change Value - The minus key or the F5 function key is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.
F6/+	Change Value - The plus key or the F6 function key is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but it has the same effect.
<Enter>	Execute Command - The Enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the Enter key will undo the pick list, and allow another selection in the parent menu.
<Esc>	Exit - The ESC key provides a mechanism for backing out of any field. This key will undo the pressing of the Enter key. When the ESC key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.
<F9>	Setup Defaults - Pressing F9 causes the following to appear: Setup Confirmation Load default configuration now? [Yes] [No] If "Yes" is selected and the Enter key is pressed, all Setup fields are set to their default values. If "No" is selected and the Enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.
<F10>	Save and Exit - Pressing F10 causes the following message to appear: Setup Confirmation Save Configuration changes and exit now? [Yes] [NO] If "Yes" is selected and the Enter key is pressed, all changes are saved and Setup is exited. If "No" is selected and the Enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.

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 BIOS, ATA-100 RAID BIOS, and PXE option ROMs for the devices that are embedded on the system board
- The Setup Utility
- The System BIOS

Preparing for the Upgrade

The steps below explain how to prepare to upgrade the BIOS, including how to:

- Record the current BIOS settings
- Obtain the upgrade utility
- Prepare a bootable diskette for the utility

In the unlikely event that a BIOS error occurs during the BIOS update process, see "Recovering the BIOS" for instructions on performing a BIOS recovery.

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 will 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. See "Additional Information and Software" for a link to the update software.

✏ **NOTE**

> Review the instructions distributed with the upgrade utility before attempting a BIOS upgrade. Review also any release notes in the release notes file that accompanies the new version of the BIOS. The release notes may contain critical information regarding jumper settings, specific fixes, or other information to complete the upgrade.

Creating a Bootable Diskette

Use a DOS system to create the diskette as follows:
1. Insert a diskette in diskette drive A.
2. At the C:\ prompt, for an unformatted diskette, type:

   `format a:/s`

   or, for a diskette that is already formatted, type:

   `sys a:`
4. Press <Enter>.

Creating the BIOS Upgrade Diskette

The BIOS upgrade file is a compressed self-extracting archive that contains the files you need to upgrade the BIOS.
1. Insert the bootable diskette into the diskette drive.
2. While in the directory into which you downloaded the upgrade file(s), type `[filename] a:` where "`[filename]`" is the name of the file that you downloaded. This command extracts the update files and places them onto the bootable diskette

Upgrading the BIOS

1. Place the bootable diskette containing the BIOS update files into the diskette drive of your system. Boot the system with the diskette in the drive.
2. A menu will appear with two options. Use option 1 to automatically update the system BIOS. Use option 2 to manually update the system BIOS and the User Binary.
3. If you selected option 1, to automatically update the system BIOS:
   The system will execute the AfuDOS update utility to update the BIOS. When the update is complete, the utility will display a green box with a message that says "Completed Successfully." The system will then reboot.
4. If you selected option 2, to manually update the BIOS or to update the flash memory, you can either select "Update Flash Memory From a File" or "Update System BIOS":
   - Update Flash Memory From a File: When prompted for a file name, type BIOS.wph and press Enter.
   - Update System BIOS: The system will warn you that the BIOS will be updated. Verify the BIOS version is correct and press Enter to continue. When the update is complete, the utility will display a green box with a message that says "Completed Successfully." The system will then reboot.
5. Wait while the BIOS files are updated. **Do not power down the system during the BIOS update process!** The system will reset automatically when the BIOS update process is completed. Remove the diskette from the diskette drive.
6. Check to make sure the BIOS version displayed during POST is the new version as the system reboots.
7. Enter Setup by pressing the F2 key during boot.
8. In Setup, press the F9 and <Enter> to set the parameters back to default values.

9. Re-enter the values you wrote down at the beginning of this process. Press F10 and <Enter> to exit BIOS Setup and Save Changes.
10. If you do not set the CMOS values back to defaults using the F9 key, the system may function erratically.

✏ **NOTE**

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

Changing the BIOS Language

You can use the BIOS upgrade utility to change the language the BIOS uses for messages and the Setup program. Use a bootable diskette containing the Intel flash utility and language files.

1. Boot the computer with the bootable diskette in drive A. The BIOS upgrade utility screen appears.
2. Select `Update Flash Memory From a File`.
3. Select `Update Language Set`. Press <Enter>.
4. Select drive A and use the arrow keys to select the correct `.lng` file. Press `<Enter>`.
5. When the utility asks for confirmation that you want to flash the new language into memory, select `Continue with Programming`. Press <Enter>.
6. When the utility displays the message `upgrade is complete`, remove the diskette. Press <Enter>.
7. The computer will reboot and the changes will take effect.

Recovering the BIOS

In the rare event that the BIOS becomes damaged, a recovery process needs to be followed to return the system to service. Two methods are available to recover the BIOS: automatically with the crisis recovery diskette, and manually by moving a jumper on the system board. These methods are described below.

✏ **NOTE**

> BIOS recovery is the mode of last resort, used only when the main system BIOS will not come up.

Manually Recovering the BIOS

A BIOS recovery can be manually initiated. This option would be used only when the BIOS is corrupt, but the ROM checksum error does not occur during POST. To manually initiate a BIOS recovery, use the following steps:

1. Power down and uplug the system from the AC power source.
2. Move the recovery jumper at J1D1 from pins 13 and 14 to cover pins 14 and 15.
3. Insert a bootable diskette containing the file AMIBOOT.ROM into the A: diskette drive.
4. Plug the system into the AC power source and power it on.
5. A blue screen will be displayed and the recovery process will automatically run. The system will continue to beep throughout the recovery process. The recovery process is complete when the beeping stops.
6. Remove the diskette.
7. Power down and unplug the system from the AC power source.
8. Move the BIOS recovery jumper at J1D1 back to the original position, covering pins 13 and 14.
9. Plug the system into the AC power source and power it up to confirm that the recovery was successful.

Clearing the CMOS

If you are not able to access the BIOS setup screens, the CMOS Clear jumper will need to be used to reset the configuration RAM. The CMOS Clear jumper is located on jumper block J17.

1. Power down the system and disconnect the AC power.
2. Open the server.
3. Move the jumper from pins 1 and 2 to the Clear CMOS position, covering pins 2 and 3.
4. Reconnect the AC power, power up the system.
5. When the system begins beeping, power it down and disconnect the AC power.
6. Return the CMOS Clear jumper to the original location, covering pins 1 and 2.
7. Close the server chassis, reconnect the AC power and power up the system.

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. The password clear jumper must be restored to its original position before a new password(s) can be set. The password clear jumper is located on jumper block J17.

1. Power down the system and disconnect the AC power.
2. Open the server chassis.
3. Move the jumper from pins 5 and 6 to the Clear Password position, covering pins 6 and 7.
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 original location, covering pins 5 and 6.
7. Close the server chassis.

4 Troubleshooting

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

For any problem that you are encountering, first ensure you are using the latest firmware and files. Firmware upgrades include updates for BIOS 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 have 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 are unable to resolve your server problems on your own, see "Getting Help" for assistance.

Resetting the System

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

To do this:	Press:
Soft boot reset to clear the system memory and reload the operating system.	<Ctrl+Alt+Del>
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

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? Refer to the operating system documentation.

❑ Did you press the system power on/off switch on the control 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 of 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 (see 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 "Diskette Drive Activity Light Does Not Light."

❑ If system LEDs are illuminated, see "LED Information" 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 appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear, see "No Characters Appear 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.
▪ Diskette drive activity light does not light.
▪ Hard disk drive activity light does not light.
▪ CD-ROM drive activity light does not light.
▪ There are problems with application software.
▪ The bootable CD-ROM is not detected.

Try the solutions below 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?

❑ Is the power supply correctly set to 110V or 235V, depending on your power output?

❑ Will other items plugged into the same power outlet function correctly?

❑ 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 cares 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 have been 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) have been 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 Appear 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 cares 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 have been 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) have been 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?

Diskette 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 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 control panel. If you install a PCI card with the AC power cord plugged in, a signal may be sent to the 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 diskette, CD-ROM or DVD-ROM, try a different diskette.

❑ 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 diskette, CD-ROM or DVD-ROM, try a different diskette.

❑ 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 (Windows* Operating System)

The 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 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. See your drive documentation for details on setting the SCSI ID for your drives.

❑ If using ATA drives, verify that the master/slave settings are set correctly. See 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 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 SE7320SP2 / SE7525GP2 includes LEDs that can aid in troubleshooting your system. A table of these LEDs with a description of their use is listed below.

LED Name	Function	Location	Color	Correction
ID	Aid in server identification from the back panel	Control panel and board rear left corner	Blue	Press ID LED button or user Server Management software to turn off the LED.
System fault	Visible fault warning	Control panel and board rear left corner	Green or Amber	▪ On = No Fault ▪ Green Blink = degraded ▪ Amber = critical error or non-recoverable ▪ Amber blink = non-critical
ATA activity	Control panel	Control panel and board left side	Green	Blinking = Activity. No action required.
Memory fault 1–6	Identify failing memory module	DIMM end front of board	Amber	On = Fault
POST code 1–4 (LSB, bit1, bit2, MSB)	Display boot 80 POST code	Left rear of board	Each LED can be Off, Green, Amber, Red	See the POST code table
Fan Pack Fault	Warn on fan failure	Front center board	Amber	On = Fault
CPU 1 & 2 Fan Fault	Identify fan failure	Front center board	Amber	On = Fault
CPU 1 & 2 Fault	Identify processor failure	1" behind processor socket	Amber	On = Fault
5v Standby	Identify 5v standby power on state	Front left board	Amber	On = 5v standby power on
Power LED	Identify the power state of the system	Control panel	Green	▪ Off = Power is off (off or S5) ▪ On = Power on or S0) ▪ Slow Blink = Low power state (S1 – S3)

BIOS Error Messages

When a recoverable error occurs during the POST, the BIOS displays an error message describing the problem (see Table 7).

Table 7.   BIOS Error Messages

Error Message	Explanation
GA20 Error	An error occurred with Gate A20 when switching to protected mode during the memory test.
Pri Master HDD Error Pri Slave HDD Error Sec Master HDD Error Sec Slave HDD Error	Could not read sector from corresponding drive.
Pri Master Drive - ATAPI Incompatible Pri Slave Drive - ATAPI Incompatible Sec Master Drive - ATAPI Incompatible Sec Slave Drive - ATAPI Incompatible	Corresponding drive is not an ATAPI device. Run Setup to make sure device is selected correctly.
A: Drive Error	No response from diskette drive.
CMOS Battery Low	The battery may be losing power. Replace the battery soon.
CMOS Display Type Wrong	The display type is different than what has been stored in CMOS. Check Setup to make sure type is correct.
CMOS Checksum Bad	The CMOS checksum is incorrect. CMOS memory may have been corrupted. Run Setup to reset values.
CMOS Settings Wrong	CMOS values are not the same as the last boot. These values have either been corrupted or the battery has failed.
CMOS Date/Time Not Set	The time and/or date values stored in CMOS are invalid. Run Setup to set correct values.
DMA Error	Error during read/write test of DMA controller.
FDC Failure	Error occurred trying to access diskette drive controller.
HDC Failure	Error occurred trying to access hard disk controller.
Checking NVRAM.....	NVRAM is being checked to see if it is valid.
Update OK!	NVRAM was invalid and has been updated.
Updated Failed	NVRAM was invalid but was unable to be updated.
Keyboard Error	Error in the keyboard connection. Make sure keyboard is connected properly.
KB/Interface Error	Keyboard interface test failed.

BIOS Error Messages (continued)

Error Message	Explanation
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
Memory Size Increased	Memory size has increased since the last boot. If no memory was added, there may be a problem with the system.
Memory Size Changed	Memory size has changed since the last boot. If no memory was added or removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.
Off Board Parity Error	A parity error occurred on an off-board card. This error is followed by an address.
On Board Parity Error	A parity error occurred in onboard memory. This error is followed by an address.
Parity Error	A parity error occurred in onboard memory at an unknown address.
NVRAM / CMOS / PASSWORD cleared by Jumper	NVRAM, CMOS, and passwords have been cleared. The system should be powered down and the jumper removed.
<CTRL_N> Pressed	CMOS is ignored and NVRAM is cleared. User must enter Setup.

BIOS POST Beep Codes

The table below 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 occurs only when a critical error occurs or when the BIOS fails to boot to the operating system. Please note that not all error conditions are supported by BIOS beep codes.

Table 8.   Beep Codes

Number of Beeps	Description
1	Refresh failure
2	Parity cannot be reset
3	First 64 Kb memory failure
4	Timer not operational
5	Processor failure (Reserved; not used)
6	8042 GateA20 cannot be toggled (memory failure or not present)
7	Exception interrupt error
8	Display memory R/W error
9	(Reserved; not used)
10	CMOS Shutdown register test error
11	Invalid BIOS (such as, POST module not found)

BIOS Recovery Beep Codes

Table 9.   BIOS Recovery Beep Codes

Beeps	Reason
1	One long beep – video is active.
1-2	One long beep and two short beeps: Insert the BIOS recovery diskette.

An error or warning condition at boot can result in a series of beeps being issued known as "beep codes. These beeps have a code that identifies system or PCI card events. For example, some Intel® RAID cards have beep codes. Before checking for a system beep code error make sure the PCI card is not causing the beeping.

Regulatory and Compliance Information

Product Regulatory Compliance

Product Safety Compliance

The Server Board SE7320SP2 / SE7525GP2 complies with the following safety requirements:

- UL60950 – CSA 60950(USA / Canada)
- EN60950 (Europe)
- IEC60950 (International)
- CB Certificate & Report, IEC60950 (report to include all country national deviations)
- GOST R 50377-92 – Listed on one System License (Russia)
- Belarus License – Listed on System License (Belarus)
- CE - Low Voltage Directive 73/23/EEE (Europe)
- IRAM Certification (Argentina)

Product EMC Compliance – Class A Compliance

Note: Legally the product is required to comply with Class A emission requirements as it is intended for a commercial type market place. Intel targets 10db margin to Class A Limits

The Server Board SE7320SP2 / SE7525GP2 has been has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed a compatible Intel® host system. For information on compatible host system(s) refer to Intel's Server Builder Web site or contact your local Intel representative.

- FCC /ICES-003 - Emissions (USA/Canada) Verification
- CISPR 22 – Emissions (International)
- EN55022 - Emissions (Europe)
- EN55024 - Immunity (Europe)
- CE – EMC Directive 89/336/EEC (Europe)
- AS/NZS 3548 Emissions (Australia / New Zealand)
- BSMI CNS13438 Emissions (Taiwan)
- GOST R 29216-91 Emissions - Listed on one System License (Russia)
- GOST R 50628-95 Immunity –Listed on one System License (Russia)
- Belarus License – Listed on one System License (Belarus)
- RRL MIC Notice No. 1997-41 (EMC) & 1997-42 (EMI) (Korea)

Certifications / Registrations / Declarations

- UL Certification (US/Canada)
- CE Declaration of Conformity (CENELEC Europe)
- FCC/ICES-003 Class A Attestation (USA/Canada)
- C-Tick Declaration of Conformity (Australia)
- MED Declaration of Conformity (New Zealand)
- BSMI Certification (Taiwan)
- GOST – Listed on one System License (Russia)
- Belarus – Listed on one System License (Belarus)
- RRL Certification (Korea)
- Ecology Declaration (International)

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Table 10.   Product Certification Markings

Regulatory Compliance	Country	Marking
UL Mark	USA/Canada	
CE Mark	Europe	
FCC Marking (Class A)	USA	This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. Manufactured by Intel Corporation
EMC Marking (Class A)	Canada	CANADA ICES-003 CLASS A CANADA NMB-003 CLASSE A
BSMI Marking (Class A)	Taiwan	 警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策
RRL MIC Mark	Korea	

Electromagnetic Compatibility Notices

FCC (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

> Intel Corporation
> 5200 N.E. Elam Young Parkway
> Hillsboro, OR 97124
> 1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and TV reception.

Industry Canada (ICES-003)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Apparelis Numériques", NMB-003 édictee par le Ministre Canadian des Communications.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled: "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

Europe (CE Declaration of Conformity)

This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

Taiwan Declaration of Conformity (BSMI)

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，
可能會造成射頻干擾，在這種情況下，使用者會
被要求採取某些適當的對策

The BSMI Certification Marking and EMC warning is located on the outside rear area of the product.

Korean Compliance (RRL)

1. 기기의 명칭(모델명) :
2. 인증번호 :
3. 인증받은 자의 상호 :
4. 제조년월일:
5. 제조자/제조국가 :

English translation of the notice above:

1. Type of Equipment (Model Name): On License and Product

2. Certification No.: On RRL certificate. Obtain certificate from local Intel representative

3. Name of Certification Recipient: Intel Corporation

4. Date of Manufacturer: Refer to date code on product

5. Manufacturer/Nation: Intel Corporation/Refer to country of origin marked on product

Getting Help

World Wide Web

http://www.support.intel.com/support/motherboards/server.

Telephone

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

Before calling, fill out an "Intel® Server Issue Report Form." A sample form is provided on the following pages. However, for the fastest service, please submit your form via the Internet.

In U.S. and Canada		1-800-404-2284	
In Europe			
UK	0870 6072439	Finland	9 693 79297
France	01 41 918529	Denmark	38 487077
Germany	069 9509 6099	Norway	23 1620 50
Italy	02 696 33276	Sweden	08 445 1251
Spain	91 377 8166	Holland	020 487 4562
Belgium	02 714 3182		
In Asia-Pacific region			
Australia	1800 649931	Indonesia	803 65 7249
Hong Kong	852 2 844 4456	Malaysia	1 800 80 1390
Korea	822 767 2595	New Zealand	0800 444 365
China	800 820 1100 (toll-free)	Pakistan	632 63684 15 (IDD via Philippines)
	8 621 33104691 (not toll-free)	Philippines	1 800 1 651 0117
Singapore	65 6213-1311	Thailand	1 800 631 0003
India	0006517 2 68303634 (manual	Vietnam	632 6368416 (IDD via Philippines)
	toll-free. From India, you need an	Myanmar	63 2 636 9796 (via Philippines)
	IDD-equipped telephone)	Cambodia	63 2 636 9797 (via Philippines)
Taiwan	2 2545-1640		
In Japan			
0120 868686 (Domestic)		81 298 47 0800 (outside country)	

In Latin America

Brazil	001-916 377 0180	Ecuador (Andimate)	Contact AT&T USA at 1 999 119. Once connected, dial 800 843 4481
Mexico	Contact AT&T USA at 001 800 462 628 4240. Once connected, dial 800 843 4481	Ecuador (Pacifictel)	Contact AT&T USA at 1 800 225 528. Once connected, dial 800 843 4481
Colombia	Contact AT&T USA at 01 800 911 0010. Once connected, dial 800 843 4481	Guatemala	Contact AT&T USA at 99 99 190. Once connected, dial 800 843 4481
Costa Rica	Contact AT&T USA at 0 800 0 114 114. Once connected, dial 800 843 4481	Venezuela	Contact AT&T USA at 0 800 2255 288. Once connected, dial 800 843 4481
		Argentina	Contact AT&T USA at 0-800 222 1288. Once connected, dial 800 843 4481
Panama	Contact AT&T USA at 00 800 001 0109. Once connected, dial 800 843 4481	Paraguay	001 916 377 0114
		Peru	001 916 377 0114
		Uruguay	001 916 377 0114
Chile (Easter Island)	Contact AT&T USA at 800 800 311. Once connected, dial 800 843 4481		
Chile (Mainland and Juan)	Contact AT&T USA at 800 225 288. Once connected, dial 800 843 4481		
Miami	1 800 621 8423		

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

Intel® Server Issue Report Form

NOTE

An on-line / automatic submission version of this form is available at
http://support.intel.com/support/motherboards/server/ . For the fastest service, please submit your
form via the Internet.

Date Submitted: _____

Company Name: _____

Contact Name: _____

Email Address: _____

Intel Server Product: _____

Priority (Critical, Hot, High, Low): _____

Brief Problem Description. Provide a brief description below. See the last page for space
to include a detailed problem description.

_____

_____

_____

Board / Chassis Information

Baseboard Revision – PBA#:	DIMM Configuration
Baseboard Serial Number:	DIMM1B MB:
CPU1 Speed/Stepping/Spec:	DIMM1B Vendor/part number:
CPU2 Speed/Stepping/Spec:	DIMM1A MB:
System BIOS Version:	DIMM1A Vendor/part number:
HSC Firmware Version:	DIMM2B MB:
Chassis Model	DIMM2B Vendor/part number:
❏ **Intel SC5300 Base**	DIMM2A MB:
❏ **Intel SC5275-E**	DIMM2A Vendor/part number:
❏ **Other (Vendor / Model):**	

Operating System Information

Operating System _____

Version _____

Service Pack _____

Peripheral Information

Check each box below that is used, and provide the requested information

Peripheral	Card Or Peripheral Description	Driver Revision	IRQ #	I/O Base Address	FW Rev#
PCI-Express (x16)					
☐ PCI Slot 6					
PCI-Express (x4)					
☐ PCI Slot 4					
PCI-X (64/66)					
☐ PCI Slot 1					
☐ PCI Slot 2					
PCI (32/33)					
☐ PCI Slot 3					
☐ PCI Slot 5					
Video					
☐ On-Board Video					
☐ Add-in Video					
NIC					
☐ On-Board NIC1 (1 Gb)					
☐ On-Board NIC2 (1 Gb)					

Hard Drive Information:

☐   ATA   # of drives installed: _____
Make/Model/Firmware Revision _____

☐   SCSI   # of drives installed: _____
Make/Model/Firmware Revision _____

☐   SATA   # of drives installed: _____
Make/Model/Firmware Revision _____

Complete Problem Description

In the space below, provide a **complete** description of the steps used to reproduce the problem or a complete description of where the problem can be found. Please also include any details on troubleshooting already done.