

Intel[®] Server Board X38ML User Guide

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

Intel Order Number E17594-004

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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 2.0 CD* and/or at <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

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 *Intel® Server Deployment Toolkit 2.0 CD* oder unter <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez Intel Server Boards and Server Chassis Safety Information sur le *Intel® Server Deployment Toolkit 2.0 CD* ou bien rendez-vous sur le site <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

Instrucciones de seguridad importantes

Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea Intel Server Boards and Server Chassis Safety Information en el *Intel® Server Deployment Toolkit 2.0 CD* y/o en <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

重要安全指导

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

Warnings

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 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.

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Preface

About this Manual

Thank you for purchasing and using the Intel® Server Board X38ML.

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 Intel® Server Board X38ML. For the latest version of this manual, see <http://support.intel.com/support/motherboards/server/X38ML/>.

Manual Organization

Chapter 1 provides a brief overview of the Server Board X38ML. 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, control panel board, 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.

Appendix A 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.

Appendix B provides information on obtaining help with the board.

Appendix C gives an overview of regulatory and compliance information.

Product Accessories

This server board is compatible with the Intel® Server System SR1520ML.

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

Processor, memory DIMMs, hard drive, USB floppy drive, USB CD-ROM or DVD-ROM drive, 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://support.intel.com/support/motherboards/server/X38ML/>.

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/X38ML/>.

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	Intel® Server Board X38ML Technical Product Specification
If you just received this product and need to install it	Intel® Server Board X38ML Quick Start User's Guide in the product box
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 Systems 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	Tested Memory List

Table 1. Additional Information and Software

For this information or software	Use this Document or Software
To make sure your system falls within the allowed power budget	Power Budget Tool
For software to manage your Intel® server	Intel® System Management Software 2.0
For drivers	Search for the word “driver” (for an extensive list of available drivers) Search for “operating system driver” (for operating system drivers)
For firmware and BIOS updates, or for BIOS recovery	Firmware Updates
For diagnostics test software	Diagnostics. See also the <i>Intel® Server Deployment Toolkit 2.0 CD</i> that came with your server board.

1 Server Board Features

This chapter briefly describes the main features of the Intel® Server Board X38ML, and provides a list of the server board features and diagrams, showing the location of important components and connections on the server board.

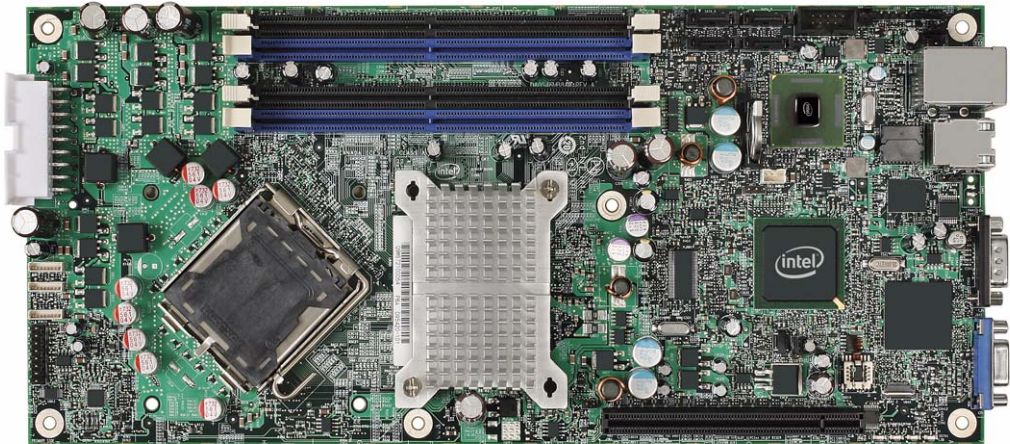


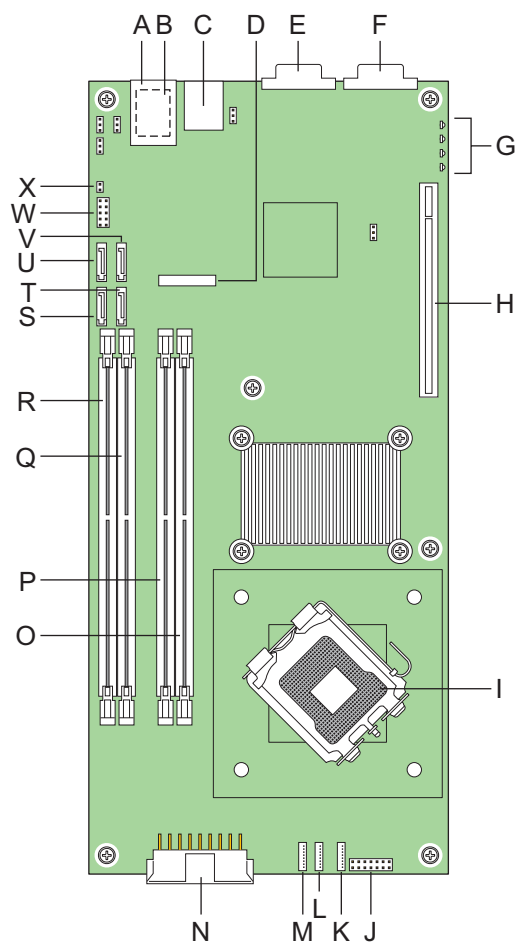
Figure 1. Intel® Server Board X38ML

Table 2 summarizes the features of the server board.

Table 2. Server Board Features

Feature	Description
Processor	Processor and Front Side Bus (FSB) support <ul style="list-style-type: none"> • You can install one processor on each server board. For supported Intel processors, see http://support.intel.com/support/motherboards/server/X38ML • Supports 800 / 1066 / 1333 MHz FSB
Memory	<ul style="list-style-type: none"> • Four DIMM sockets per server board supporting stacked DDR2 667 / 800 MHz ECC unbuffered memory or non-ECC memory • Each server board has two memory channels with two DIMM sockets per channel • Support for up to 8 GB of total system memory on each server board
Intel® X38 chipset	Intel® X38 chipset on each server board, consisting of: <ul style="list-style-type: none"> • Intel® X38 Memory Controller Hub (MCH) • Intel® I/O Controller Hub (ICH9R)
Expansion capabilities	One low-profile PCI Express* x16 riser card connector on each server board. Each supports one low-profile x1, x4, x8, or x16 adapter.
Video	Each server board has an on-board video controller with 32 MB DDR2 667 video memory
Hard drive	<ul style="list-style-type: none"> • Four SATA 3.0 Gb/s ports per server board.
USB	<ul style="list-style-type: none"> • Two external USB 2.0 ports on the rear I/O panel • Two internal USB 2.0 headers
LAN	<ul style="list-style-type: none"> • Dual gigabit Ethernet device that connects to the PCI Express* interface on the ICH9R • Two 10 / 100 / 1000 Base-TX interfaces through RJ45 connectors on the rear I/O panel
Floppy drive	USB external floppy drive may be attached
CD-ROM / DVD-ROM drive	USB external CD-ROM / DVD-ROM drive may be attached
Server Management	Intel® System Management Software 2.0

Connector and Header Locations

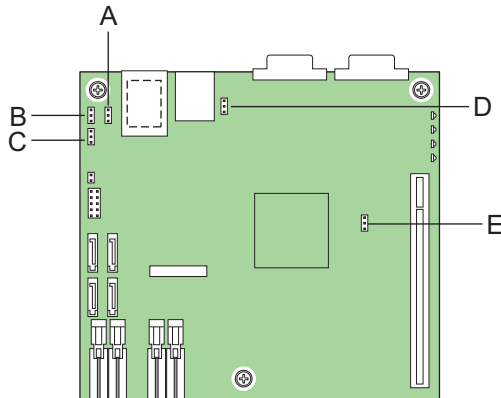


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A. NIC1 RJ45 connector (top)	I. Processor socket	Q. DIMM socket B1
B. USB port 0 (bottom) USB port 1 (center)	J. Front panel connector	R. DIMM socket B2
C. NIC2 RJ45 connector	K. System fan 3	S. SATA port 0
D. CMOS battery	L. System fan 2	T. SATA port 1
E. Serial A DB9 connector	M. System fan 1	U. SATA port 2
F. VGA connector	N. Main power connector	V. SATA port 3
G. POST LEDs	O. DIMM socket A1	W. USB header for USB 2 and 3
H. PCI Express* x16 riser slot	P. DIMM socket A2	X. Chassis intrusion header

Figure 2. Server Board Connector and Header Locations

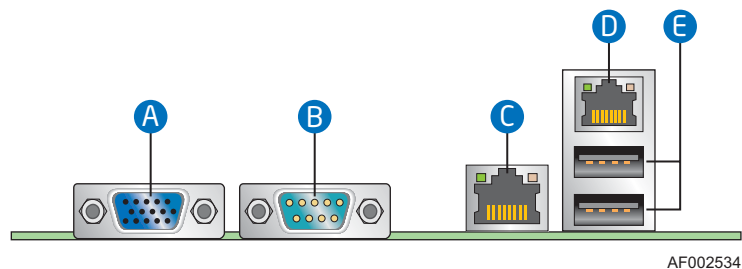
Configuration Jumpers



Callout	Location	Jumper Name	Jumper Purpose
A	J1A4	iBMC Boot Block Write Protect	When pins 2-3 are jumpered, the iBMC boot block is write enabled. When pins 1-2 are jumpered, the iBMC boot block is write protected. Pins 1-2 should be jumpered for normal operation.
B	J1A2	BIOS Recovery Mode	When pins 2-3 are jumpered, the BIOS will be recovered on the next boot. Pins 1-2 should be jumpered for normal operation.
C	J1A3	CMOS Clear	When pins 2-3 are jumpered, the CMOS settings will be cleared on the next boot. Pins 1-2 should be jumpered for normal operation.
D	J3A1	iBMC Force Update Mode	When pins 2-3 are jumpered, the iBMC firmware will be updated on the next boot. Pins 1-2 should be jumpered for normal operation.
E	J6B1	Password Clear	When pins 2-3 are jumpered, the administrator and user passwords will be reset on the next boot. Pins 1-2 should be jumpered for normal operation.

Figure 3. Configuration Jumpers

Back Panel Connectors



A. Video connector	D. NIC 1 (10 / 100 / 1000 Mb)
B. Serial port	E. USB ports 0-1
C. NIC 2 (10 / 100 / 1000 Mb)	

Figure 4. Back Panel Connectors

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

Table 3. NIC LEDs

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

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

Each server board must have one processor installed. Each board can use a different processor. For a list of supported Intel processors, see <http://support.intel.com/support/motherboards/server/X38ML>.

Memory

Each server board supports four DDR2 667 / 800 MHz unbuffered ECC or non-ECC DIMMs. The maximum memory capacity is 8 GB memory. The minimum is one 256 MB DIMM. The four slots are partitioned into Channel A and Channel B. Channel A consists of DIMM A1 and DIMM A2. Channel B consists DIMM B1 and DIMM B2. DIMM A1 is the closest to the MCH.

DIMMs must meet the following requirements:

- If dual-channel operation is desired, Channel A and Channel B must be populated identically (i.e., same capacity).
- Use DDR2 667 / 800 only.
- The speed used on all the channels is the slowest DIMM in the system.
- Use ECC or non-ECC DIMMs.
- You can mix different memory technologies (size and density).
- For single-channel mode, either channel may be used and DIMM sockets within the same channel can be populated in any order.
- For dual-channel interleaved mode, DIMM sockets may be populated in any order as long as the total memory in each channel is the same.
- For dual-channel asymmetric mode, DIMM sockets may be populated in any order.

For a complete list of supported memory DIMMs, see <http://support.intel.com/support/motherboards/server/X38ML>.

Power Supply

A minimum of 270 Watts is required. The power supply must provide a minimum of 1.5A of 5V standby current or the board will not boot.

2 Hardware Installations and Upgrades

Caution: *No components on the Intel® Server Board X38ML are hot swappable. Before removing or installing any component referenced in this document, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button(s), and unplug the AC power cord from the system or wall outlet.*

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 (recommended)

Installing and Removing Memory

The silkscreen on the board for the DIMMs displays DIMMB2, DIMMB1, DIMMA2, DIMMA1 starting from the edge of the board. DIMMA1 is the socket closest to the processor socket. See “[Memory](#)” on page 6 for a discussion of the memory requirements and options. See “[Additional Information and Software](#)” for a link to the list of tested DIMMs.

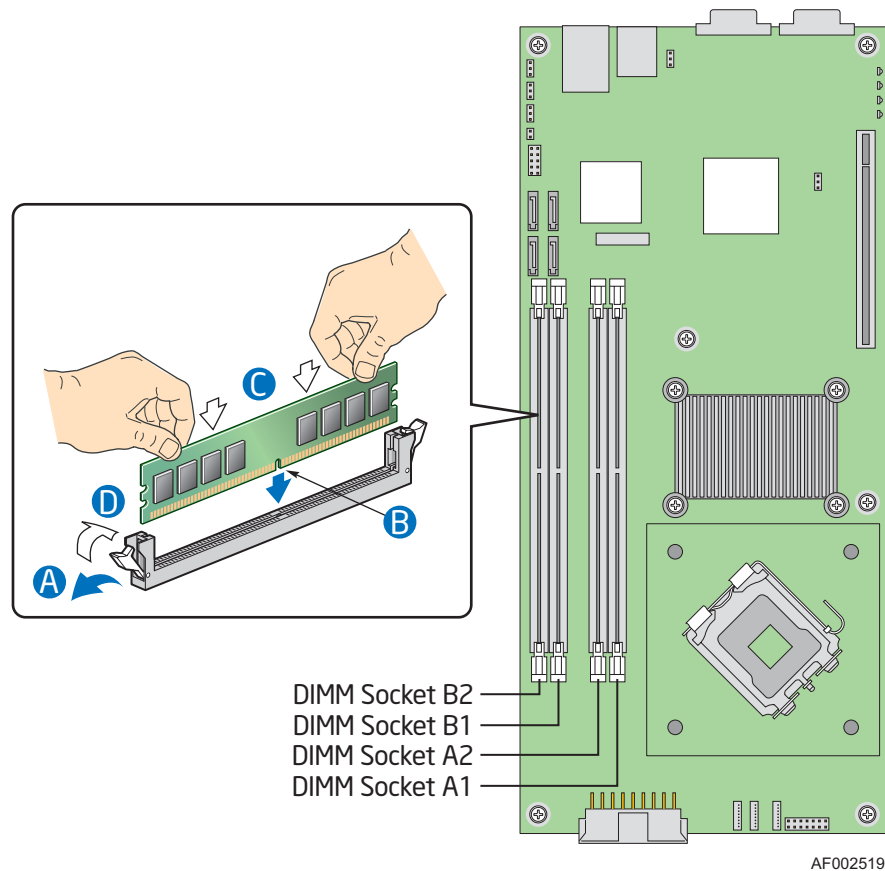
Note: *The DIMMs being installed match the correct version of the server board. DDR DIMMs will not physically fit into a server board designed to support DDR2 DIMMs. DDR2 DIMMs will not physically fit into a server board designed to support DDR DIMMs.*

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 the documentation that came with your server chassis for instructions on removing the server's cover and accessing the DIMM sockets.
5. Make sure the clips at both ends of the DIMM socket(s) are pushed outward to the open position. See letter "A" in [Figure 5](#).
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the notch on the bottom edge of the DIMM with the key in the DIMM socket. See letter "B" in the figure.
8. Insert the bottom edge of the DIMM into the socket. See letter "C" in the figure.
9. When the DIMM is correctly positioned, push down on the top edge until the retaining clips snap into place. See letter "D" in the figure.
10. Close the clips and make sure they are firmly in place. See letter "D" in the figure.



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Figure 5. Installing DIMMs

11. Replace the server cover and reconnect the AC power cord. See the server chassis documentation for instructions on installing the 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 and locate the DIMM sockets. See the documentation that came with your server chassis for instructions on removing the server's cover and accessing the DIMM sockets.
5. Gently open the retaining clips at each end of the socket. See letter “A” in the following figure.
6. Holding the DIMM by the edges, lift it from the socket and store it in an anti-static package. See letter “B” in the figure.
7. Close the DIMM socket clips at each edge of the socket. See letter “C”.

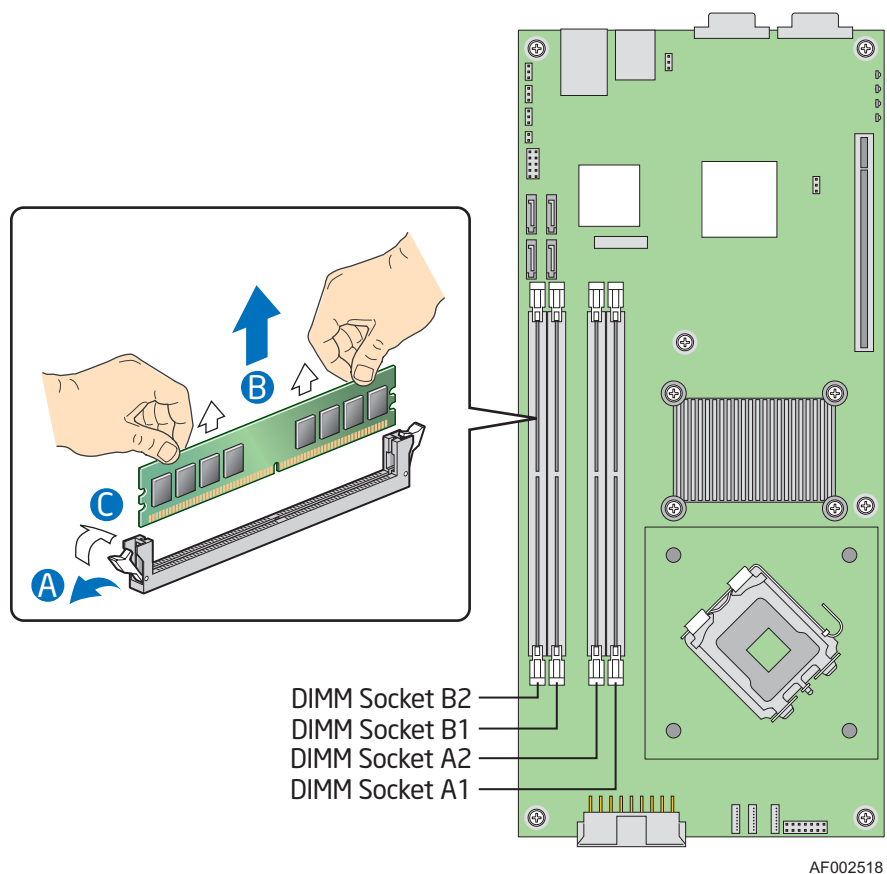


Figure 6. Removing DIMMs

8. Reinstall and reconnect any parts you removed or disconnected to reach the DIMM sockets. See your server system documentation for instructions.
9. Replace the server cover and reconnect the AC power cord. See the server chassis documentation for instructions on installing the cover.

Replacing the Processor

Note: *This manual assumes a processor is already installed and you are referring to these steps to replace your processor. If you are setting up this system for the first time, see the Quick Start User's Guide that was included in the product box.*

Caution: *Use only processors that have been validated to work with this server board. See “Additional Information and Software” on page xiv 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.*

Removing the Heat Sink and Processor

1. Observe the safety and ESD precautions at the beginning of this book. See “Safety Information” on page iii.
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 and locate the DIMM sockets. See the documentation that came with your server chassis for instructions on removing the server's cover and accessing the processor socket.
5. Loosen the four captive screws on the corners of the heat sink.
6. Twist the heat sink slightly to break the seal between the heat sink and the processor.
7. Lift the heat sink from the processor. If it does not pull up easily, twist the heat sink again. Do not force the heat sink from the processor. Doing so could damage the processor.
8. Raise the processor socket handle completely. See the following figure.

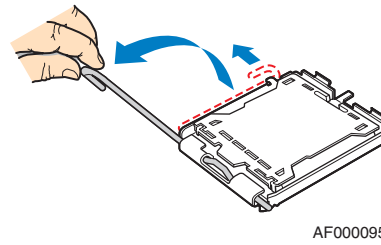


Figure 7. Opening the Processor Socket Handle

9. Push the rear tab with your finger to slightly lift the front of the load plate. Raise the load plate completely. Raise the CPU load plate. See the following figure.

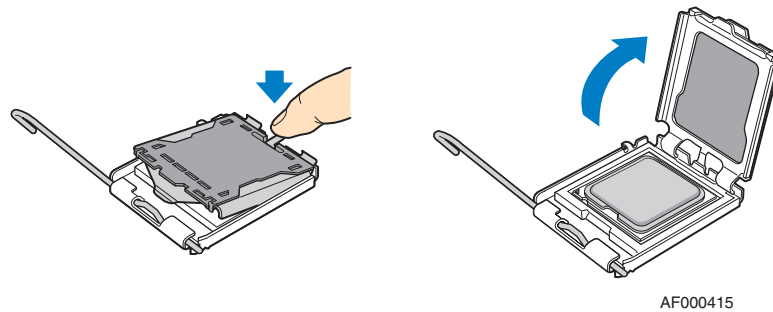


Figure 8. Opening the Load Plate

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

10. Lift the processor from the socket.

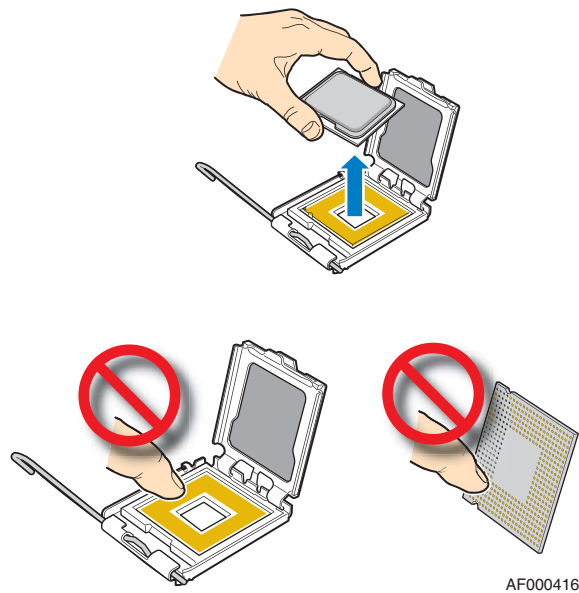


Figure 9. Removing the Processor

11. Continue with the steps under “[Installing the Processor](#)”.

Installing the Processor

These steps assume you have just removed your heat sink and processor and your server system is powered down and unplugged. If this is not true, see “[Removing the Heat Sink and Processor](#)” on page 10 before following these steps.

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

1. Remove the processor from the packaging box and remove the protective shipping cover.
2. Orient the processor with the socket so the processor cutouts match the socket notches, then set the processor into place.

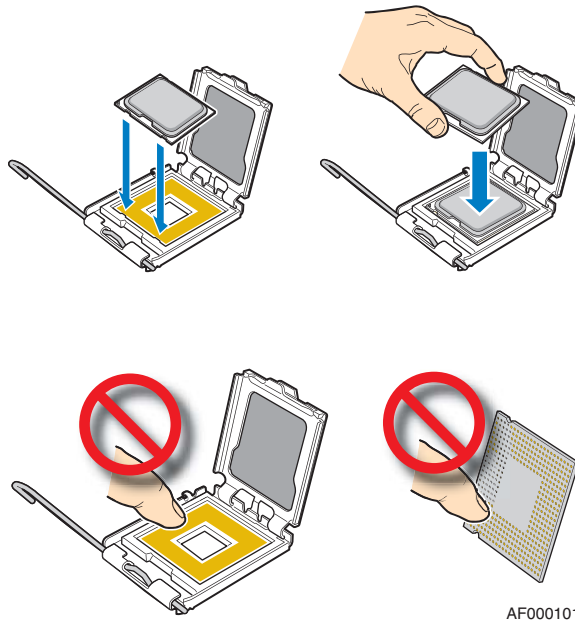


Figure 10. Installing the Processor

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

3. Lower the CPU load plate.
4. Lower the socket lever.
5. Install the heat sink. For instructions, see the following steps.

Installing the Heat Sink

Install the processor before installing the heat sink. For instructions, see [“Installing the Processor”](#) on page 12.

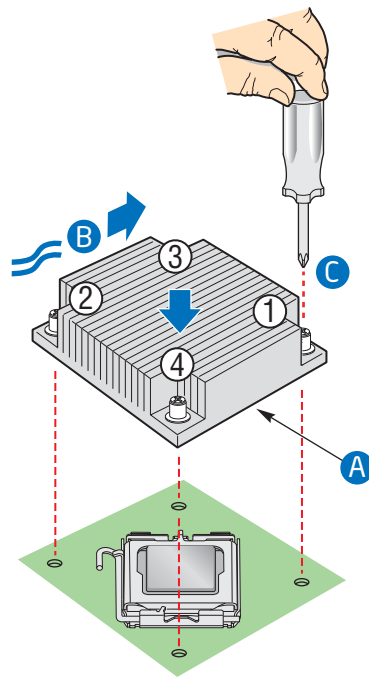
Caution: The heat sink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when you unpack the heat sink so you do not damage the TIM.

1. Remove the protective cover from the TIM on the underside of the heat sink and orient the heat sink over the processor as shown by letter “A” in [Figure 11](#).

Caution: Do not touch the TIM.

2. The fins must be positioned as shown by letter “B” to provide correct airflow through the system.
3. Set the heat sink over the processor, lining up the four captive screws with the four posts surrounding the processor. See letter “C” in the figure.

- Loosely screw in the captive screws on the heat sink corners in a diagonal manner as shown by the four circled numbers in the figure below. Do not fully tighten one screw before tightening another.
- Gradually and equally tighten each captive screw in the same order until each is firmly tightened.



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Figure 11. Installing the Heat Sink

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

Replacing the CMOS Battery

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

The lithium battery on the server board powers the RTC 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.

Warning: 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 at the beginning of this book. See [“Safety Information” on page iii](#).
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the server's cover and locate the battery. For instructions, see the documentation that came with your server system.
4. Pull back gently on the metal tab at the top of the battery.
5. Remove the battery from its socket.

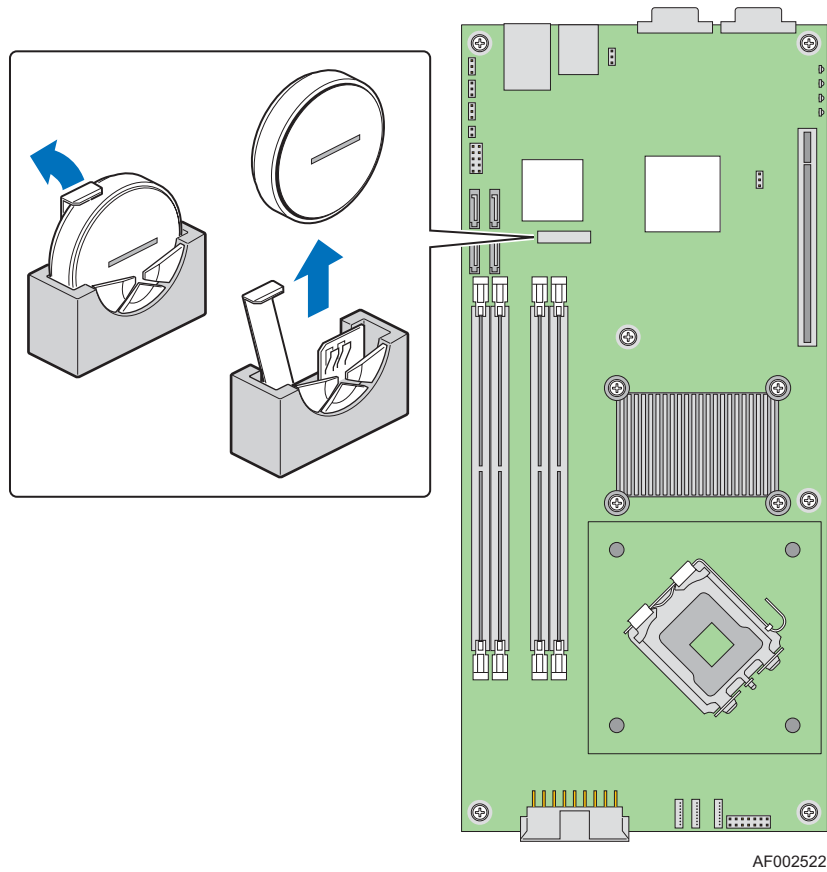


Figure 12. Replacing the CMOS Battery

6. Dispose of the battery according to local ordinance.
7. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket. The “+” sign needs to face the rear of the system.
8. Replace the server's cover and reconnect the AC power cord. See the documentation that came with your server chassis for instructions on installing the server's cover.
9. Run the BIOS Setup utility to restore the configuration settings.

3 Server Utilities

Using the BIOS Setup Utility

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

You can enter and start BIOS Setup under several conditions:

- When you turn on the server, after POST completes the memory test.
- When you have moved the CMOS jumper on the server board to the "Clear CMOS" position (enabled).

In the two conditions listed above, during the Power On Self Test (POST), you will see this prompt:

```
Press <F2> to enter SETUP
```

In a third condition, when CMOS/NVRAM has been corrupted, you will see other prompts but not the <F2> prompt:

```
Warning: CMOS checksum invalid  
Warning: CMOS time and date not set
```

In this condition, the BIOS will load default values for CMOS and attempt to boot.

If You Cannot Access Setup

If you are not able to access BIOS Setup, you might need to clear the CMOS memory. For instructions on clearing the CMOS, see ["Clearing the CMOS"](#).

Setup Menus

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

“Setup Menu Key Use” describes the keyboard commands you can use in the BIOS Setup menus.

Table 4. Setup Menu Key Use

Key to Press	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 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.
Left and right arrows	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.
Up arrow	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.
Down arrow	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.
<->	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.
<+>	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.
<F1>	Pressing <F1> on any menu invokes the general help window.
<F9>	Setup Defaults - Pressing <F9> causes the following to appear: <div style="text-align: center;"> Load Optimized Defaults? [Yes] [No] </div> 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.

Table 4. Setup Menu Key Use

Key to Press	Description
<F10>	Save and Exit - Pressing <F10> causes the following message to appear: Save Configuration and reset? [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.
<Tab>	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.

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, SATA BIOS, and other option ROMs for devices embedded on the server board.
- OEM binary area
- Microcode

Preparing for the Upgrade

The steps below 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 that a BIOS error occurs during the BIOS update process, a recovery process may need to be followed to return the system to service. See [“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 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 and release notes that are provided in the readme file distributed with the BIOS image file before attempting a BIOS upgrade. 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 will reset 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 boot it again. CMOS checksum errors require that you enter Setup, check your settings, save your settings, and exit Setup.*

Recovering the BIOS

1. Power down the system and disconnect the AC power.
2. Open the server.
3. Move the J1A2 BIOS Recovery Mode jumper from the default operation position, covering pins 1 and 2 to the BIOS Recovery position, covering pins 2 and 3 as indicated in the following diagram.

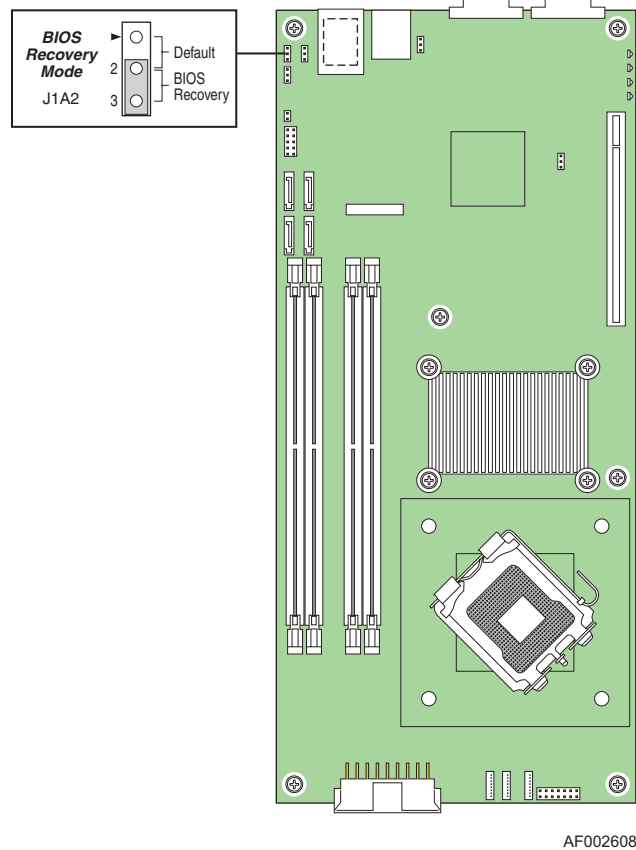


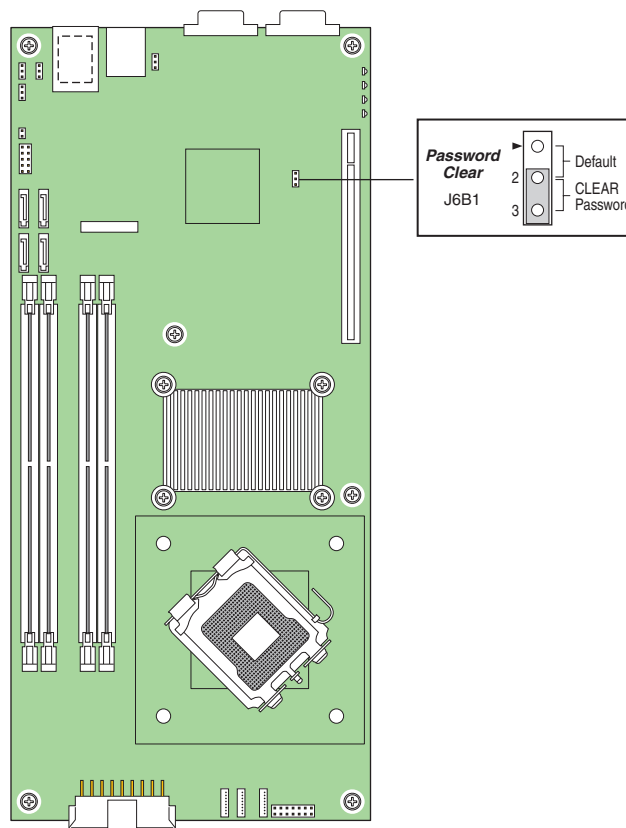
Figure 13. BIOS Recovery Mode Jumper in Recovery Position

4. Insert the BIOS recovery media.
5. Plug in the AC power and power on the system.
The BIOS starts the recovery process by loading and booting to the recovery image file. Then the BIOS POST screen appears and displays the progress.
6. Select to boot to the EFI SHELL.
7. Run Update.NSH. The system loads and executes the flash update application. A message displays success or failure upon completion.
8. Power down the system and unplug the AC power cord.
9. Return the J1A2 BIOS Recovery Mode jumper to the default position, covering pins 1 and 2.
10. Close the server chassis.
11. Reconnect the AC power and power up the server.

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.

1. Power down the system and disconnect the AC power.
2. Open the server chassis.
3. Move the J6B1 Password Clear 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.



AF002605

Figure 14. Password Clear Jumper in Clear Password Position

4. Reconnect the AC power and power up the system.
5. Power down the system and disconnect the AC power.
6. Return the J6B1 Password Clear jumper to the Password Clear Protect position, covering pins 1 and 2.

7. Close the server chassis.
8. Reconnect the AC power and power up the server.

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.

1. Power down the system and disconnect the AC power.
2. Open the server.
3. Move the J1A3 CMOS Clear jumper from the normal operation position, CMOS Clear by BMC, at pins 1 and 2 to the CMOS Clear Force Erase position, covering pins 2 and 3 as indicated in the following diagram.

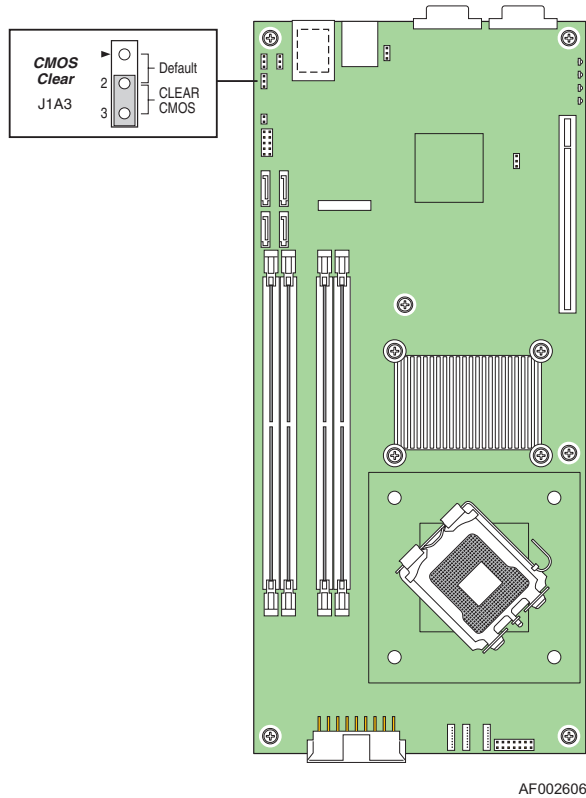


Figure 15. CMOS Clear Jumper in Clear CMOS Position

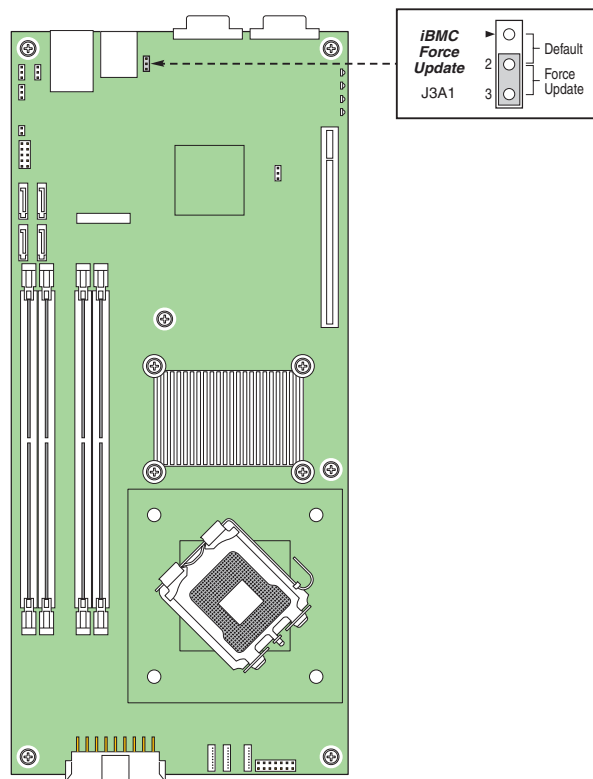
4. Reconnect the AC power, power up the system.
5. When the system begins beeping, power it down and disconnect the AC power.
6. Return the J1A3 CMOS Clear jumper to the CMOS Clear by BMC location, covering pins 1 and 2.

7. Close the server chassis.
8. Reconnect the AC power and power up the system.

Performing an iBMC Force Update

When performing a standard iBMC firmware update procedure, the update utility places the iBMC into an update mode, allowing the firmware to load safely onto the flash device. In the unlikely event that the iBMC firmware update process fails because the iBMC not in the proper update state, the server board provides a BMC Force Update jumper (J3A1) that will force the iBMC into the proper update state. Follow the procedure below if the standard iBMC firmware update process fails.

1. Power down the system and disconnect the AC power.
2. Open the server.
3. Move the J3A1 iBMC Force Update jumper from the default position, covering pins 1 and 2 to the Write Enable position, covering pins 2 and 3 as indicated in the following diagram.



AF002536

Figure 16. MiBMC Force Update Jumper in the Write Enable Position

4. Close the server system and reconnect AC power and power up the server.
5. Perform the standard iBMC firmware update procedure as documented in README.TXT file that is included in the given BMC Firmware Update package.
6. After successful completion of the firmware update process, the firmware update utility may generate an error stating that the iBMC is still in update mode.
7. Power down and remove AC power.
8. Open the server and move the jumper from the “enabled” position (pins 2-3) to the “disabled” position (pins 1-2).
9. Close the server system and reconnect AC power and power up the server.

Note: *Normal iBMC functionality is disabled when the force BMC update jumper is set to the “enabled” position. The server should never be run with the BMC force update jumper set in this position and 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.*

Using the iBMC Boot Block Write Protect Jumper (J1A4)

The iBMC boot block write protect jumper (J1A4) is protection for the boot block portion of the iBMC firmware. The default position of the jumper is covering pins 1-2. This protects the boot block from being written to during an iBMC firmware update. In most cases there is no need to update the boot block. Most update utilities are not built with the authority to access this section of code.

In the unlikely event that the boot block must be written to, complete the following steps.

1. Power down the system and disconnect the AC power.
2. Open the server.
3. Move the J1A4 iBMC Boot Block Write Protect jumper from the default position, covering pins 1 and 2 to the update position, covering pins 2 and 3 as indicated in the following diagram.

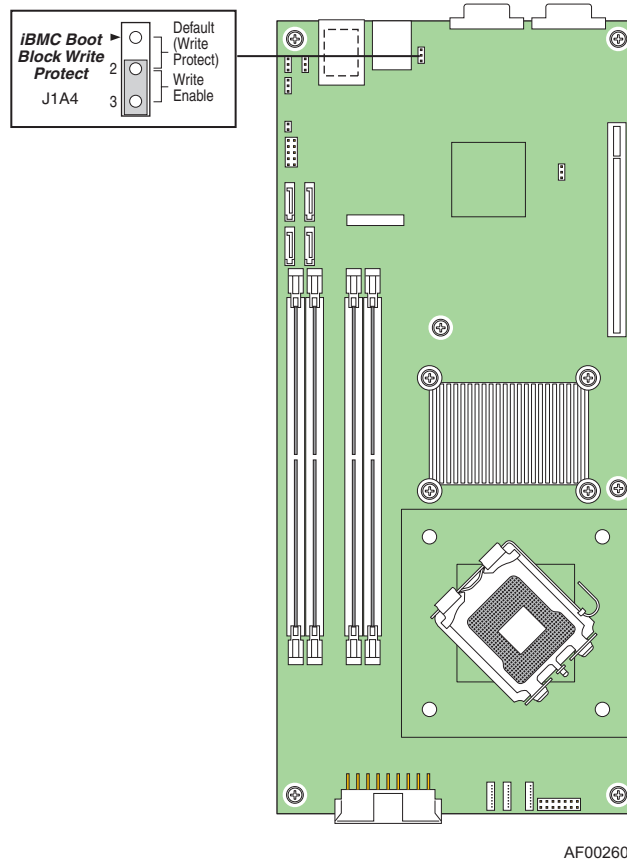


Figure 17. iBMC Boot Block Write Protect Jumper (J1A4)

4. Close the server system and reconnect AC power and power up the server and complete the update.
5. Once the update is complete follow steps 1-4 above and reposition the jumper back to 'write-protect' mode, covering pins 1 and 2.

Note: *The boot block is a critical section of the iBMC firmware that contains code to initialize the iBMC hardware. If this flash area becomes corrupted, then the iBMC may be rendered useless and inoperable. For this reason jumper protection is applied to this area of the flash so a user does not mistakenly write to this boot block.*

Appendix A: 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, and the baseboard management controller (BMC). 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 SATA 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.

Table 5. 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 100-120V or a NEMA 6-15R outlet for 200-240V ?
- 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 (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 [“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 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?
- 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 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 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 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

- Reseat the adapter.
- Put the adapter in a different slot.
- The network driver files may be corrupt or deleted. Delete and then reinstall the drivers.
- Run 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 (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 Disk Is Not Detected

Check the following:

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

Appendix B: Getting Help

World Wide Web

<http://support.intel.com/support/motherboards/server/X38ML>.

Telephone

All calls are billed 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 Issue Report Form, available at <http://support.intel.com/support/motherboards/server/X38ML>.

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

U.S. and Canada

See <http://support.intel.com/support/motherboards/server/X38ML>.

Europe

Belgium 02 714 3182
Denmark ... 38 487077
Finland 9 693 79297
France..... 01 41 918529
Germany ... 069 9509 6099
Holland..... 020 487 4562
Italy 02 696 33276
Norway 23 1620 50
Spain 91 377 8166
Sweden..... 08 445 1251
UK..... 870 6072439

In Asia-Pacific Region

Australia.... 1800 649931

Cambodia.. 63 2 636 9797 (via Philippines)

China 800 820 1100 (toll-free)
..... 8 621 33104691 (not toll-free)

Hong Kong 852 2 844 4456

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

Indonesia ... 803 65 7249

Korea 822 767 2595

Malaysia 1 800 80 1390

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

New Zealand 0800 444 365

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

Philippines 1 800 1 651 0117

Singapore .. 65 6213-1311

Taiwan 2 2545-1640

Thailand 1 800 631 0003

Vietnam 632 6368416 (IDD via Philippines)

Japan

Domestic.... 0120 868686

Outside country 81 298 47 0800

Latin America

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

Brazil 001-916 377 0180

Chile

Easter Island. Contact AT&T USA at 800 800 311. Once connected, dial 800 843 4481

Mainland and Juan .. Contact AT&T USA at 800 225 288. Once connected, dial 800 843 4481

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

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

Ecuador

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

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

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

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

Miami 1 800 621 8423

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

Paraguay ... 001 916 377 0114

Peru 001 916 377 0114

Uruguay..... 001 916 377 0114

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

Appendix C: Regulatory and Compliance Information

Product Regulatory Compliance

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. This is an FCC Class A device. Integration of it into a Class B chassis does not result in a Class B device.

Product Safety Compliance

The Intel[®] Server Board X38ML complies with the following safety requirements:

- UL60950 (USA)
- CE Declaration to EU Low Voltage Directive 93/68/EEC (Europe – EN60950)
- IEC60950 (International)
- CB Certificate & Report, IEC60950 (report to include all country national deviations)
- CSA 60950 Certification (Canada) or cUL

Product EMC Compliance - Class A Compliance

Note: This product requires complying with Class A EMC requirements. However, Intel targets a 10db margin to support customer enablement.

- FCC – Part 15 Emissions (USA) Verification
- CISPR 22 – Emissions (International)
- EN55022 – Emissions (Europe)
- EN61000-4-2 – ESD (Europe)

Certifications / Registrations / Declarations

- UL Certification (US/Canada)
- CB Certification (International)
- 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)
- RRL Certification (Korea)

Product Ecology Requirements

Intel has a system in place to restrict the use of banned substances in accordance with world wide product ecology regulatory requirements. Suppliers Declarations of Conformity to the banned substances must be obtained from all suppliers; and a Material Declaration Data Sheet (MDDS) must be produced to illustrate compliance. Due verification of random materials is required as a screening / audit to verify suppliers declarations. The server board complies with the following ecology regulatory requirements:

- All materials, parts and subassemblies must not contain restricted materials as defined in Intel's Environmental Product Content Specification of Suppliers and Outsourced Manufacturers – <http://supplier.intel.com/ehs/environmental.htm>.
- Europe - European Directive 2002/95/EC - Restriction of Hazardous Substances (RoHS)
 - Threshold limits and banned substances are noted below.
 - Quantity limit of 0.1% by mass (1000 PPM) for Lead, Mercury, Hexavalent chromium, Polybrominated Biphenyls Diphenyl Ethers (PBB/PBDE)
 - Quantity limit of 0.01% by mass (100 PPM) for Cadmium
- China RoHS
- All plastic parts that weigh >25gm shall be marked with the ISO11469 requirements for recycling. Example >PC/ABS<
- EU Packaging Directive
- German Green Dot
- Japan Recycling

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Table 6. Product Certification Markings












Regulatory Compliance	Region	Marking
UL Mark	USA/Canada	 C  US E139761
CE Mark	Europe	
EMC Mark	Canada	CANADA ICES-003 CLASS A CANADA NMB-003 CLASSE A
BSMI Marking	Taiwan	 D33025 <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>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</p> </div>
Ctick Marking	Australia / New Zealand	 N232
RLL MIC Mark	Korea	 <small>인용번호: CPU-S3000SH (A)</small>
Country of Origin	Exporting requirements	MADE IN xxxxx
PB Free Marking	Environmental requirements	 2nd lvl intct 

Table 6. Product Certification Markings

Regulatory Compliance	Region	Marking
China Recycling Package Marking (marked on packaging label)	China	
Other Recycling Package Mark (marked on packaging label)	Environmental requirements	
China RoHS Marking	China	

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 97124-6497
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.

ICES-003 (Canada)

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

VCCI (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

English translation of the notice above:

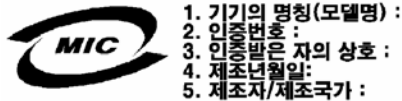
This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

BSMI (Taiwan)

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

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 (Korea)



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