

MAXDATA PLATINUM Server Board

User Manual

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1 Description

Server Board Features

Table 1. Server Board Features

Feature	Description
Processors	Dual processor slots supporting Intel® Xeon™ processors in an INT3/FCPGA Socket 604 package
Chipset	Intel® chipset E7501: Supports 533 MHz Front Side Bus (FSB) MCH memory controller (Northbridge) ICH3 I/O controller (Southbridge) P64H2 64-bit I/O hub
Memory	Six dual inline memory module (DIMM) slots support: <ul style="list-style-type: none">• DDR 266 compliant, ECC, registered, 72-bit, 168-pin, DIMMs• From 256 MB to 12 GB of memory
Graphics	Integrated onboard ATI RAGE XL PCI SVGA controller
Video Memory	8 MB SDRAM of video memory
PCI bus	Two PCI riser slots capable of supporting either of the following configurations: <ul style="list-style-type: none">• 1U configuration: one full-length, full-height 64-bit PCI riser slot and one Low Profile (LP) 64-bit PCI riser slot• 2U configuration: three full-length, full-height 64-bit PCI riser slots and three LP 64-bit PCI riser slots
Network	Dual on-board 10/100/1000 Network Interface Controller (NIC)
System I/O	One PS/2 keyboard/mouse port (6 pin DIN connectors) One VGA video port (15 pin connector) Two external USB ports, internal connector providing two additional USB One external serial port (RJ-45), one internal COM 1 header One external SCSI port (SCSI server board only), one internal Two NIC ports (RJ-45)
Form Factor	Server ATX form factor

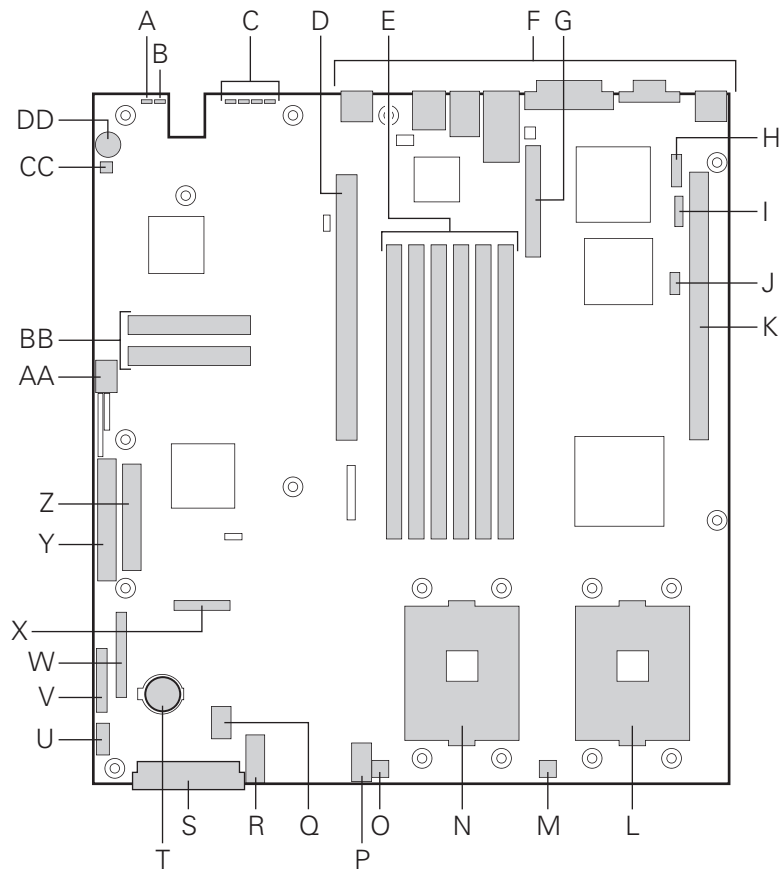


Figure 1. Server Board Connector and Component Locations

- | | |
|---|--|
| A. System status LED | P. Auxiliary signal connector |
| B. ID LED | Q. Sys fan 1 connector |
| C. Diagnostic LEDs (POST code) | R. Sys fan 2 connector |
| D. 64-bit PCI riser slot for PCI-X bus B (full height) | S. Main power connector |
| E. DIMM slots | T. Battery |
| F. I/O ports | U. Power supply signal connector |
| G. SCSI channel B connector (SCSI version only) | V. ATX front panel connector |
| H. COM 1 serial header | W. SSI front panel connector |
| I. ICMB connector | X. Floppy/FP/IDE connector |
| J. IPMB connector | Y. ATA/IDE connector |
| K. 64-bit PCI riser slot for PCI-X bus C (low profile) Radios enabled. Modular ROM-B card support is provided via the riser card (SCSI only) | Z. Floppy drive connector |
| L. Secondary processor socket | AA. USB 2 & 3 connector |
| M. Secondary processor fan connector | BB. ATA-100 connectors (ATA version only) |
| N. Primary processor socket | CC. Hard Disk Drive LED header |
| O. Primary processor fan connector | DD. Speaker |

Back Panel Connectors

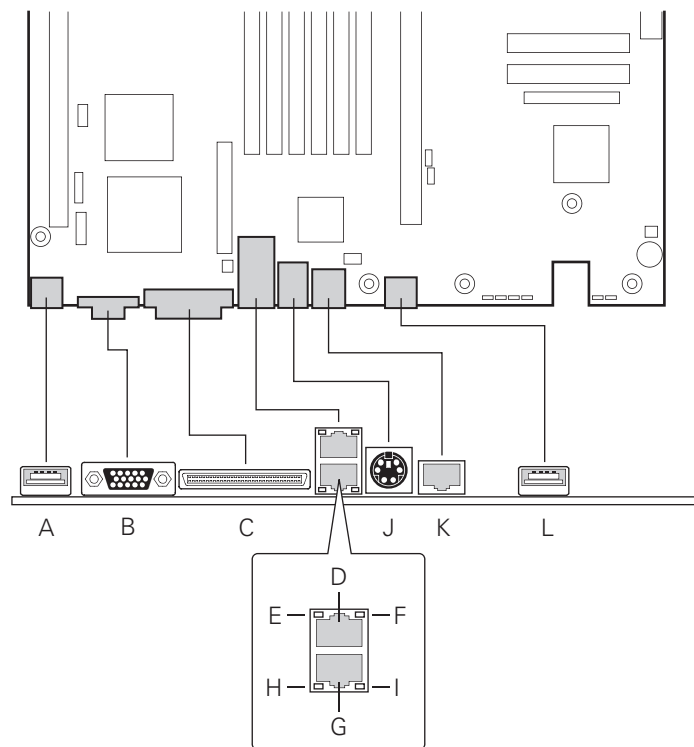


Figure 2. Back Panel Connectors

- A.** USB 0 connector
- B.** Video connector
- C.** SCSI channel A connector (SCSI server board only)
- D.** NIC 2 RJ-45 connector
- E.** Status LED
- F.** Speed LED
- G.** NIC 1 RJ-45 connector
- H.** Status LED
- I.** Speed LED
- J.** PS/2 keyboard/mouse connector
- K.** RJ-45 serial port
- L.** USB 1 connector

Processor

The MAXDATA PLATINUM Server Board accommodates one or two Intel® Xeon™ processors with 512 k cache in the INT3/FCPGA Socket 604 package. This processor uses the .13 micron technology.

Memory

The system board has six 168-pin DIMM slots each supporting 72-bit ECC registered DDR DIMMs (DDR 200 or DDR 266 compatible). Memory is partitioned in three banks. You may install a minimum of 256 MB (128 MB x 2) and as much as 12 GB. Memory must be installed in pairs, starting with bank 1 (slots 1B and 1A).

The controller automatically detects, sizes, and initializes the memory array, depending on the type, size, and speed of the installed DIMMs, and reports memory size and allocation to the server via configuration registers.

PCI Riser Slots

The server board has two PCI riser slots. Riser slot B provides the following features:

- 184-pin, 5 volt keyed, 64-bit expansion slot connector
- Support for either a 1-slot or a 3-slot PCI riser card
- Support for both full size and low profile PCI cards

Riser C provides the following features:

- 184-pin, 5 volt keyed, 64-bit expansion slot connector
- Support for either a 1-slot or a 3-slot PCI riser card
- Support for only low profile PCI cards
- Radios Enabled for use with zero channel RAID cards (SCSI version only)

Video

The MAXDATA PLATINUM Server Board uses an ATI RAGE XL PCI graphics accelerator with 8 MB of video SDRAM. The embedded SVGA video subsystem supports:

- Resolutions up to 1600 x 1200 under 2D and 1024 x 768 under 3D
- CRT and LCD monitors up to 100 Hz vertical refresh rate

The server board supports disabling of the onboard video through the BIOS setup menu or when a plug in video card is installed in any of the PCI slots.

SCSI Controller

The SCSI version of the server board includes an embedded Adaptec AIC-7902W controller providing dual Ultra 320 Low Voltage Differential (LVD) SCSI channels.

The SCSI bus is terminated on the server board with active terminators that cannot be disabled. The onboard device must always be at one end of the bus. The device at the other end of the cable must also be terminated. LVD devices generally do not have termination built-in and need to have a termination source provided. Non-LVDs devices generally are terminated through a jumper or resistor pack on the device itself.

Network Controller

NOTE

To ensure EMC product regulation compliance, the system must be used with a shielded LAN cable.

The server board uses the Intel® Fast Ethernet Controller, 82546EB, and supports two 10Base-T/1000Base-TX network subsystems.

The 82546EB controller supports the following features:

- 32-bit PCI master interface
- Integrated IEEE 802.3 10Base-T, 100Base-TX and 1000Base-TX compatible PHY
- IEEE 802.3u auto-negotiation support
- Full duplex support at 10 Mbps, 100 Mbps, and 1000 Mbps operation
- Low power +3.3 V device

On the MAXDATA PLATINUM Server Board, NIC 1 can be used as both a network interface and server management interface.

NIC Connector and Status LEDs

The E82546 controller drives LEDs on the network interface connector that indicate link/activity on the LAN and speed of operation. The green status LED indicates network connection when on and TX/RX activity when blinking. The speed LED indicates 1000 Mbps when amber, 100 Mbps when green, and 10 Mbps when off.

Keyboard and Mouse

The keyboard/mouse controller is PS/2-compatible. If specified through the System Setup Utility (SSU), the server may be locked automatically if there is no keyboard or mouse activity for a predefined length of time. Once the inactivity (lockout) timer has expired, the keyboard and mouse do not respond until the previously stored password is entered. A Y-cable can be used if both a PS/2 mouse and keyboard are required at the same time.

RJ-45 Serial Port

The rear RJ-45 serial port is a fully functional serial port that supports any standard serial device and provides support for serial concentrators. For server applications that use a serial concentrator to access the server management features of the baseboard, a standard 8-pin CAT-5 cable from the serial concentrator is plugged directly into the rear RJ-45 serial port. The 8-pins of the RJ-45 connector can be configured to match either of two pin-out standards used by serial port devices. To accommodate either standard, the J5A2 jumper block located directly behind the rear RJ-45 serial port must be jumpered appropriately according to the desired standard.

NOTE

By default, the RJ-45 serial port is configured to support a DSR signal.

For serial devices that require a DSR signal (default), the J5A2 jumper must be configured in position 3-4 (Figure 3, B).

For serial devices that require a DCD signal, the jumper must be in position 1-2 (Figure 3, A).

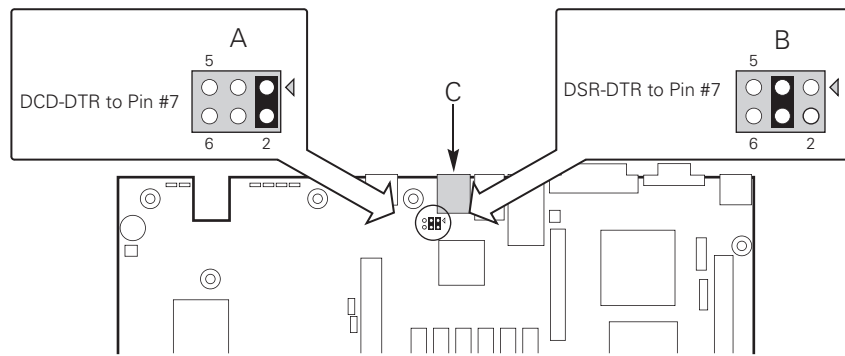


Figure 3. J5A2 Jumper Block for DSR Signal

For server applications that require a DB9 serial connector, you must use an 8-pin RJ-45-to-DB9 adapter. The following table defines the pin-out required for the adapters to provide RS232 support.

Table 2. Rear Serial 2 Port Adapter Pin-out

RJ-45	Signal	Abbreviation	DB9
1	Request to Send	RTS	7
2	Data Terminal Ready	DTR	4
3	Transmitted Data	TD	3
4	Signal Ground	SGND	5
5	Ring Indicator	RI	9
6	Received Data	RD	2
7	DCD or DSR	DCD/DSR	1 or 6
8	Clear To Send	CTS	8

ACPI

The MAXDATA PLATINUM Server Board supports the Advanced Configuration and Power Interface (ACPI) as defined by the ACPI 2.0 specification. An ACPI aware operating system can put the system into a state where the hard drives spin down, the system fans stop, and all processing is halted. However, the power supply will still be on and the processors will still be dissipating some power, so the power supply fans will still run.

The MAXDATA PLATINUM Server Board supports sleep states s0, s1, s4, and s5:

- s0: Normal running state.
- s1: Processor sleep state. No context will be lost in this state and the processor caches will maintain coherency.
- s4: Hibernate or Save to Disk: The memory and machine state are saved to disk. Pressing the power button or other wakeup event will restore the system state from the disk and resume normal operation. This assumes that no hardware changes have been made to the system while it was off.
- s5: Soft off: Only the RTC section of the CSB and the BMC are running in this state. No context is saved by the OS or hardware.



CAUTION

The system is off only when the AC power cord is disconnected.

System Management

MAXDATA integrates system management features into the hardware and provides additional features through Intel® Server Management software.

Baseboard Management Controller

MAXDATA server boards incorporate a baseboard management controller (BMC), which is a dedicated microcontroller for system management activities. The BMC performs the following functions:

- Monitors system components and sensors, including processors, memory, fans, power supplies, temperature sensors, and chassis intrusion sensors.
- Manages nonvolatile storage for the system event log (SEL), sensor data records (SDRs), and baseboard field-replaceable unit (FRU) inventory.
- Interfaces with the emergency management port (EMP) and LAN1 port to send alerts and interact with remote management systems.
- Provides the main front panel control functions (power on/off, reset, and so on).

Field Replaceable Units and Sensor Data Records

Field replaceable units (FRUs) are major modules in the chassis that contain active electronic circuitry. FRUs can store information—such as board serial number, part number, name, and asset tag—that can be read using the System Setup Utility. The BMC stores FRU information for the baseboard in a nonvolatile storage component on the board.

The BMC uses Sensor Data Records (SDRs) to identify the sensors in the system for monitoring. SDRs provide a list of the sensors, their characteristics, location, type, and type-specific information, such as default threshold values, factors for converting a sensor reading into the appropriate units (mV, rpm, degrees Celsius), and information on the types of events that a sensor can generate. The BMC stores SDR information in a nonvolatile storage component on the baseboard.

You can use the FRU/SDR Load Utility to initialize or update the FRU and SDR information. You should run the FRU/SDR Load Utility whenever you change the number of fans, processors, or power supplies in the server.

System Event Log

The BMC manages a system event log (SEL), where it records significant or critical system events. These events include temperatures and voltages out of range, fan failures, and other sensor-related events. The BIOS, software, and other devices can also log events by sending messages to the BMC. The SEL is stored in nonvolatile storage.

You can view the current contents of the SEL by using the System Setup Utility.

Platform Event Management

Events can trigger alerts and other actions by the BMC. The server is configured with the following set of standard events:

- Temperature sensor out of range
- Voltage sensor out of range
- Fan failure
- Chassis intrusion
- Power supply failure
- Memory error
- POST error
- Processor fault resilient booting (FRB) failure
- Fatal nonmaskable interrupt (NMI) from a source other than the front panel switch
- Watchdog timer reset, power down, or power cycle
- System restart (reboot)

Alerts can take either of these forms:

- Platform Event Pages – the BMC dials a paging service and sends a predefined paging string. To use platform event paging (PEP), you must attach an external modem to the emergency management port (Serial B).
- BMC LAN alerts – the BMC sends an alert to a predefined destination on the LAN.

You can configure PEP and BMC LAN alerts by using the Server Configuration Wizard or the System Setup Utility.

Emergency Management Port

The emergency management port (EMP) refers to the use of the Serial 2 port, with either an external modem or direct serial connection, for remote management. The BMC controls the port and interfaces with remote access software, such as the Direct Platform Control or the Client System Setup Utility applications in Intel® Server Management.

You can configure the EMP by using the Server Configuration Wizard or the System Setup Utility.

EMP and Serial Over LAN

The Serial B port 10-pin header on the board can be configured in several different ways: as a standard serial port, as an Emergency Management Port, or for serial output redirection over a LAN. You can configure these settings using either the SSU or the SCW.



NOTES

If you have configured the Serial 2 port for use as an Emergency Management Port and “always available”, the Serial 2 port will be accessible only by remote server management software. The operating system will never be able to access the port.

If you have configured the Serial 2 port for Serial Over LAN, the port’s functionality will only be impacted when there is an active Serial Over LAN session from a remote console. At all other times either the operating system or EMP will control the port, depending on your configuration.

Intel® Server Management

Intel® Server Management (ISM) is a system management package that is included on the ISM CD. ISM applications interact with the integrated hardware system management features of the server to allow you to monitor and manage a server from a remote workstation:

- Remote connection from a Windows®-based client workstation over a LAN, or over a modem or direct serial connection to the emergency management port on the server.
- Real-time monitoring and alerting for server hardware sensors.
- Emergency management when the server is off (but still connected to AC power) lets you verify the state of the server, diagnose hardware problems, and power on/off or reset the server.
- Ability to Run the Client System Setup Utility to change the configuration of the managed server.

ISM can use an optional service partition on the server that you are managing. The service partition is a special disk partition on the system drive that contains a ROM-DOS operating system and DOS-based utilities, including the System Setup Utility, FRU/SDR Load Utility, and Remote Diagnostics. The server can be booted to the service partition, either locally or remotely, to provide access to the utilities.

For more information on Intel® Server Management and the individual ISM applications, see the ISM CD.

Security

Intrusion Switch Monitoring

To help prevent unauthorized entry or use of the server, Intel® Server Management server management software monitors the chassis intrusion switch if one is installed. Opening an access cover will transmit an alarm signal to the server board, where BMC firmware and server management software process the signal. The system can be configured through ISM to respond to an intrusion a number of ways, including powering down or locking the keyboard.

Software Locks

The BIOS Setup and the System Setup Utility (SSU) provide a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, you can access the system only after you enter the correct password(s). For example:

- Enable the keyboard lockout timer so that the server requires a password to reactivate the keyboard and mouse after a specified time out period 1 to 120 minutes.
- Set and enable a supervisor password.
- Set and enable a user password.
- Set secure mode to prevent keyboard or mouse input and to prevent use of the front panel reset and power switches.
- Activate a hot key combination to enter secure mode quickly.
- Disable writing to the diskette drive when secure mode is set.
- Disable access to the boot sector of the operating system hard disk drive.

Using Passwords

You can set either the user password, the supervisor password, or both passwords. If only the user password is set, you:

- Must enter the user password to enter BIOS Setup or the SSU.
- Must enter the user password to boot the server if Password on Boot is enabled in either the BIOS Setup or SSU.
- Must enter the user password to exit secure mode.

If only the supervisor password is set, you:

- Must enter the supervisor password to enter BIOS Setup or the SSU.
- Must enter the supervisor password to boot the server if Password on Boot is enabled in either the BIOS Setup or SSU.
- Must enter the supervisor password to exit secure mode.

If both passwords are set, you:

- May enter the user password to enter BIOS Setup or the SSU. However, you will not be able to change many of the options.
- Must enter the supervisor password if you want to enter BIOS Setup or the SSU and have access to all of the options.
- May enter either password to boot the server if Password on Boot is enabled in either the BIOS Setup or SSU.
- May enter either password to exit secure mode.

Secure Mode

Configure and enable the secure boot mode by using the SSU. When secure mode is in effect:

- You can boot the server and the operating system will run, but you must enter the user password to use the keyboard or mouse.
- You cannot turn off system power or reset the server from the front panel switches.

Secure mode has no effect on functions enabled via remote server management or power control via the watchdog timer.

Taking the server out of secure mode does not change the state of system power. That is, if you press and release the power switch while secure mode is in effect, the system will not be powered off when secure mode is later removed. However, if the front panel power switch remains depressed when secure mode is removed, the server will be powered off.

Summary of Software Security Features

The table below lists the software security features and describes what protection each offers. In general, to enable or set the features listed here, you must run the SSU and go to the Security Subsystem Group, menu. The table also refers to other SSU menus and to the Setup utility.

Table 3. Software Security Features

Feature	Description
Secure mode	<p>How to enter secure mode:</p> <ul style="list-style-type: none">• Setting and enabling passwords automatically places the system in secure mode.• If you set a hot-key combination (through Setup), you can secure the system simply by pressing the key combination. This means you do not have to wait for the inactivity time-out period. <p>When the system is in secure mode:</p> <ul style="list-style-type: none">• The server can boot and run the operating system, but mouse and keyboard input is not accepted until the user password is entered.• At boot time, if a CD is detected in the CD-ROM drive or a diskette in drive A, the system prompts for a password. When the password is entered, the server boot from CD or diskette and disables the secure mode.• If there is no CD in the CD-ROM drive or diskette in drive A, the server boots from drive C and automatically goes into secure mode. All enabled secure mode features go into effect at boot time. <p>To leave secure mode: Enter the correct password(s).</p>
Disable writing to diskette	<p>In secure mode, the server will not boot from or write to a diskette unless a password is entered.</p> <p>To write protect access to diskette whether the server is in secure mode or not, use the Setup main menu, Floppy Options, and specify Floppy Access as read only.</p>
Set a time out period so that keyboard and mouse input are not accepted Also, screen can be blanked, and writes to diskette can be inhibited	<p>Specify and enable an inactivity time out period of from 1 to 120 minutes.</p> <p>If no keyboard or mouse action occurs for the specified period, attempted keyboard and mouse input will not be accepted.</p> <p>The monitor display will go blank, and the diskette drive will be write protected (if these security features are enabled through Setup).</p> <p>To resume activity: Enter the correct password(s).</p>
Control access to using the SSU: set supervisor password	<p>To control access to setting or changing the system configuration, set a supervisor password and enable it through Setup.</p> <p>If both the supervisor and user passwords are enabled, either can be used to boot the server or enable the keyboard and/or mouse, but only the supervisor password will allow Setup to be changed.</p> <p>To disable a password, change it to a blank entry or press CTRL-D in the Change Password menu of the Supervisor Password Option menu found in the Security Subsystem Group.</p> <p>To clear the password if you cannot access Setup, change the Clear Password jumper (see Chapter 6).</p>

continued

Table 4. Software Security Features (continued)

Feature	Description
Control access to the system other than SSU: set user password	<p>To control access to using the system, set a user password and enable it through Setup.</p> <p>To disable a password, change it to a blank entry or press CTRL-D in the Change Password menu of the User Password Option menu found in the Security Subsystem Group.</p> <p>To clear the password if you cannot access Setup, change the Clear Password jumper.</p>
Boot without keyboard	The system can boot with or without a keyboard. During POST, before the system completes the boot sequence, the BIOS automatically detects and tests the keyboard if it is present and displays a message.
Specify the boot sequence	The sequence that you specify in setup will determine the boot order. If secure mode is enabled (a user password is set), then you will be prompted for a password before the server fully boots. If secure mode is enabled and the secure Boot Mode option is also enabled, the server will fully boot but will require a password before accepting any keyboard or mouse input.

2 Server Board Installations and Upgrades

Tools and Supplies Needed

- Jumper removal tool or needle nosed pliers
- Phillips (cross head) screwdriver (#1 bit and #2 bit)
- Pen or pencil
- Antistatic wrist strap and conductive foam pad (recommended)



CAUTIONS

These warnings and cautions apply throughout this chapter. Only a technically qualified person should configure the server board.



CAUTIONS

System power on/off: The power button DOES NOT completely turn off the system AC power, 5 V standby is still active whenever the system is plugged in. 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 & 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) & 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 stake pins on the board.

Memory

Only DDR266 compliant SDRAM is supported by the server board. Install from 256 MB to 12 GB of registered, ECC memory, using up to six DIMMs. A 1U chassis requires low-profile (LP) 1.2-inch DIMMs.



NOTE

Only DDR 266 is supported with a 533 MHz Front Side Bus.

DIMMs must be installed in pairs and in the following order: 1B and 1A, 2B and 2A, 3B and 3A.

Installed DIMMs must be the same speed and must all be registered.

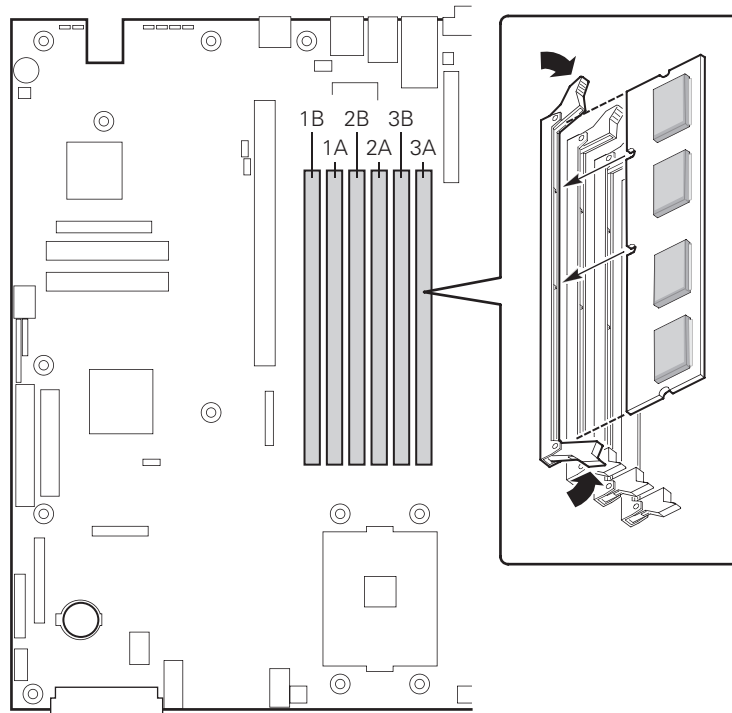


Figure 4. Installing Memory

Replacing the Back up Battery

The lithium battery on the server board powers the real time clock (RTC) in the absence of AC 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 instructions.

To replace the battery:

1. Before proceeding, record your custom BIOS settings.
2. Observe the safety and ESD precautions at the beginning of this chapter.
3. Open the chassis and locate the battery.
4. Push the upper end of the metal retainer away from the battery-the battery pops up.
5. Remove the battery from its socket.
6. Dispose of the battery according to local ordinance.
7. Remove the new lithium battery from its package.
8. Being careful to observe the correct polarity, lay the battery in the socket.
9. Push the battery down-the metal retainer locks the battery in the socket.
10. Close the chassis.
11. Run Setup to restore the configuration settings to the RTC.
12. Restore your custom BIOS settings.

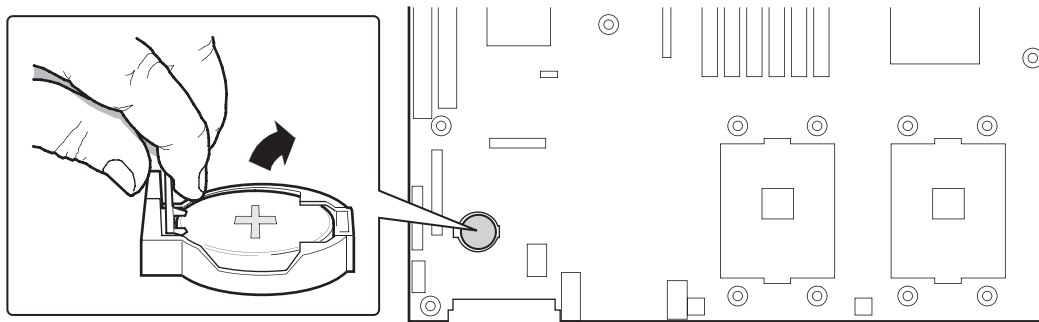


Figure 5. Replacing the Back up Battery

3 POST and BIOS Setup Utilities

This chapter describes the POST and BIOS setup utilities provided with the MAXDATA PLATINUM Server Board. It includes information about the Adaptec SCSI Utility and the Promise FastBuild Utility.

Hot Keys

Use the numeric pad of the keyboard to enter numbers and symbols.

Table 4. Hot Keys

To Do This:	Press These Keys
Secure your system immediately.	<Ctrl+Alt>+hot key (Set your hot key combination with the SSU or BIOS Setup)
Enter the Adaptec SCSI Utility during POST.	<Ctrl+A> (SCSI version only)
Enter BIOS Setup during POST.	<F2>
Abort memory test during POST.	<ESC> (Press while BIOS is updating memory size on screen)
Display a menu for selecting the boot device.	<ESC> (Press anytime after memory check)
To remove the splash screen.	<ESC>

Power-On Self-Test (POST)

Each time you turn on the system, the BIOS begins executing the Power-On Self-Test (POST), which is stored in flash memory. POST discovers, configures, and tests the processors, memory, keyboard, and most installed peripheral devices. During the memory test, POST displays the amount of memory that it is able to access and test. The time needed to test memory depends on the amount of memory installed.

1. Turn on your server and monitor. After a few seconds, POST begins to run and displays a splash screen.
2. While the splash screen is displayed, make one of the following selections:
 - Press <F2> to enter the BIOS Setup.
 - Press <Ctrl-A> to enter the Adaptec SCSISelect Utility.
 - Press <Esc> to view POST diagnostic messages and change the boot device priority for this boot only.
3. If you do not make one of the above selections and do NOT have a device with an operating system loaded, the boot process continues and the system beeps once. The following message is displayed:

Operating System not found

What appears on the screen after this depends on whether you have an operating system loaded and if so, which one.

If the system halts before POST completes running, it emits a beep code indicating a fatal system error that requires immediate attention. If POST can display a message on the video display screen, it causes the speaker to beep twice as the message appears.

Write down both the screen display and the beep code you hear; this information is useful for your service representative. For a listing of common beep codes and error messages that POST can generate, see the "Solving Problems" chapter in this manual.

Temporarily Changing the Boot Device Priority

During POST, you can change the boot device priority for the current boot process. The changes are not saved for the next boot process.

1. Boot the server.
2. At any time during POST, press <Esc>. When POST completes, a popup Boot menu displays.
3. Use the arrow keys to highlight the device you want the server system to boot from first. For example, if you want the server system to boot from the CD-ROM first, you select TAPI CD-ROM Drive.
4. Press <Enter> and the boot process continues.



NOTE

If you boot to a CD-ROM, make sure the CD is in the CD drive before selecting. One of the options on the popup Boot menu is Enter Setup. Selecting this option brings you into the BIOS Setup.

The Adaptec SCSI Select Utility

Each host adapter includes an onboard SCSI Select configuration utility that allows you to configure/view the settings of the host adapter and devices in the server.

The system finds the Adaptec AIC-7902 SCSI host adapter and displays the message Adaptec AIC-7902 SCSI BIOS V x.xxx where x.xxx is the version number of the SCSISelect utility. Pressing <Ctrl+A> at this time allows you to configure the Adaptec AIC-7902 SCSI host adapter.

When to Run the Adaptec SCSI Select Utility

Use the SCSISelect utility to:

- Change default values
- Check and/or change SCSI device settings that may conflict with those of other devices in the server
- Do a low-level format on SCSI devices installed in the server

Running the SCSI Select Utility

1. When this message appears on the video monitor:
<<<Press <Ctrl><A> for SCSI Select(TM) Utility!>>>
2. Press <Ctrl+A> to run the utility. When the main menu for the host adapter appears, choose the device that you want to configure—each SCSI bus accepts up to 15 devices.

Use the following keys to navigate through the menus and submenus:

Table 5. SCSI Select Navigation Keys

Press	To
ESC	Exit the utility
Enter	Select an option
↑	Return to a previous option
↓	Move to the next option
F5	Switch between color and monochrome
F6	Reset to host adapter defaults

Configuring the Adaptec AIC-7902 SCSI Adapter

The Adaptec AIC-7902 SCSI adapter has two busses. Select the bus from the following menu:

Table 6. Adaptec Main Menu

Menu Item	Options
You have an AIC-7902 adapter in your system. Move the cursor to the bus:device:channel of the one for configuration and press <Enter>.	Bus:Device:Channel 01:06:A 01:06:B
<F5> - Toggle color/monochrome.	

After selecting the bus, the following menu displays:

Table 7. Menu for each SCSI Channel

Host Adapter	Option	Comment
AIC-7902 at Bus: Device:Channel 01:06:A (or 01:06:B)	Configure/View Host Adapter Settings	Press <Enter> to view the Configuration Menu.
	SCSI Disk Utilities	Press <Enter> to view the SCSI Disk Utilities Menu. This menu allows you to format hard disks and/or verify disk media.

When you are finished, press <Esc> and make your selection from the following menu:

Table 8. Exit Menu

Feature	Option	Comment
Exit Utility?	Yes No	When you finish configuring your SCSI devices, press <Esc>. Then select Yes and press <Enter>. When this message appears: Please press any key to reboot. Press any key, and the server reboots.

BIOS Setup

You can run BIOS Setup with or without an operating system being present. BIOS Setup stores most of the configuration values in battery-backed CMOS; the rest of the values are stored in flash memory. The values take effect when the system is booted. POST uses these values to configure the hardware. If the values and the actual hardware do not agree, POST generates an error message.

Record your BIOS Setup settings. If default values ever need restoring (after a CMOS clear, for example), you must run BIOS Setup again. Your record will make this much easier.

If BIOS Setup Is Inaccessible

If you are not able to access BIOS Setup, you might need to clear the CMOS memory. To clear CMOS, either of two methods can be used:

- Press the reset button and hold it down for four seconds or more, and then, while holding the reset button down, press the power button. Release both buttons at the same time

OR

- Move the Clear CMOS jumper found on the configuration jumper block on the base-board.

Starting Setup

You can enter and start 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). For instructions on moving the jumper, see Chapter 6, CMOS Jumper

In these two conditions, after rebooting, you will see this prompt:

Press <F2> to enter SETUP

- In a third condition, when CMOS/NVRAM has been corrupted, you will see other messages 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.

Setup Menus

Each Setup menu page contains a number of features. Except those used for information purposes, each feature is associated with a value field that contains user-selectable parameters. Parameters may be changed depending upon the security option chosen. If a value is not changeable due to insufficient security privileges (or other reasons), the feature's value field becomes inaccessible.

The bottom portion of the Setup screen provides a list of commands that are used for navigating the Setup utility.

Table 9. 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: <div style="text-align: center;">Setup Confirmation</div> <div style="text-align: center;">Load default configuration now?</div> <div style="text-align: center;">[Yes] [No]</div> <p>If "Yes" is selected and the Enter key is pressed, all Setup fields are set to their default values. If "No" is selected and the Enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.</p>
<F10>	Save and Exit - Pressing F10 causes the following message to appear: <div style="text-align: center;">Setup Confirmation</div> <div style="text-align: center;">Save Configuration changes and exit now?</div> <div style="text-align: center;">[Yes] [No]</div> <p>If "Yes" is selected and the Enter key is pressed, all changes are saved and Setup is exited. If "No" is selected and the Enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.</p>

Table 10. On-Screen Options

When you see this:	What it means:
On screen, an option is shown but you cannot select it or move to that field.	You cannot change or configure the option in that menu screen. Either the option is auto-configured or auto-detected, or you must use a different Setup screen.
On screen, the phrase Press Enter appears next to the option.	Press <Enter> to display a submenu that is either a separate full screen menu or a popup menu with one or more choices.

4 Configuration Software and Utilities

Server Configuration Wizard

The Server Configuration Wizard (SCW) is a utility that is provided to help you configure your server. The Server Configuration Wizard is located on the System Resource CD-ROM shipped with the server and it runs automatically when you boot your server to this CD-ROM. The Server Configuration Wizard includes a help system that can be accessed by clicking the Help button.

Run the Configuration to:

- Create or update a Service Partition and install service partition files, including files that are necessary to run the System Setup Utility
- Load FRUs and SDRs
- Set the System Asset Tag
- Set Server Management settings, including an IP address, emergency management port (EMP) settings, platform event paging (PEP) settings, and LAN/Alert settings
- Execution utility applications that can be used to manually configure the server
- Create startup or installation diskettes for hardware device drivers and server configuration utility applications

When it is first executed, the SCW probes the server for installed devices, firmware, chassis information, hard disks, and other relevant data. This information is used to determine the questions the application needs to ask you to complete the configuration.

When you select the options Server Configuration Wizard > Run Wizard, you will be shown a selection window allowing you to choose the items you want to configure. You can select one or more options to configure at the same time. Some options have dependencies that make you select multiple options. These are:

- If you select Configure this server for LAN Alerting, the option for Configure this server for remote Server Management over a LAN connection will automatically be selected.
- If you select Configure this server for Serial/Modem alerting, the option for Configure this server for remote Server Management over a Serial/Modem connection will automatically be selected.

In addition, you can select only one of the following at a time:

- Load SDRs only onto this server

OR

- Load FRUs and SDRs onto this server

If you select multiple options, the Server Configuration Wizard will run each option to completion.

Direct Platform Control (DPC) Console

Direct Platform Control (DPC) Console is part of Intel® Server Management. Direct Platform Control is a server management application that supports remote system management via LAN, or an RS-232 serial connection to the server Serial B port over a modem or a direct serial cable. The Direct Platform Control Console provides the ability for remote management of MAXDATA servers via modem or LAN with a capability to run DOS-based programs.

DPC console runs on a client workstation and is independent of the server operating system. It communicates with a server by:

- Accessing the server management capabilities of the on-board NIC
- A Windows® 2000 compatible modem
- An RS-232 connection to the server's Serial B port

Even when the server is off, you can use DPC Console to verify the state of a server or diagnose a problem with the server hardware. DPC console features allows you to:

- Establish connection to remote servers
- Server Control: Power on, power off, and reset operations
- Retrieve and display entries in the System Event Log (SEL)
- Retrieve and display Sensor Data Records (SDR)
- Retrieve and display Field Replaceable Unit (FRU) information
- Retrieve and display current Remote Sensor Access (RSA) information
- Access a phonebook for remote connection management
- Remote control of the service partition
- File transfer from/to the server

DPC Console Modes of Operation

There are four DPC console modes of operation:

- EMP mode. Access the DPC console features using the DPC console window menus and/or toolbar. Active when a connection is established through the EMP port (Serial B).
- DPC over LAN mode. Access the DPC console features using the DPC console window menus and/or toolbar. Active when a connection is established through the LAN.
- Redirect mode. Active when the server is running BIOS console redirection. In this mode, the DPC console launches a separate window. The window operates as an ANSI terminal and communicates with the server through the port. Character-based commands you type in the DPC Console go directly to the server, and the DPC Console displays the text that you would normally see on the server console.

To use this mode, you must configure the Console Redirection option of BIOS Setup for Redirect mode. Enabling Console Redirection requires that the Boot Time Diagnostics Screen be Enabled in BIOS Setup. If the redirection window does not display information, the Console Redirection is either incorrectly configured or disabled, the EMP is disabled in BIOS Setup, or the server is in protected mode. For DPC to function in this mode, the server must NOT be in graphics mode.

If the DPC console fails to connect in EMP within 10 seconds and the server can operate in Re-direct mode, a prompt is displayed with the option to switch to Re-direct mode.

- Service Partition mode. Entered when the server reboots from the service partition and the DPC Console has successfully connected to the server. This mode allows running of DOS-based programs that are stored on the service partition and transferring of files.

Running the DPC Console

For more information about setting up and running the DPC Console, see the ISM Installation User Guide. This document is in the ISM-DOCS-[language] directory on the ISM CD accompanying the MAXDATA PLATINUM Server Board.

Using the System Setup Utility

The System Setup Utility (SSU) is located on the System Resource CD-ROM that is shipped with the server.

Run the System Setup Utility to:

- Set boot device priority
- Set passwords and security options
- View system events
- View FRU information
- View sensor data records
- Update system firmware and BIOS
- Save and restore the system configuration
- Set up the server to send alerts for platform events
- Set up the server for remote management

Using either the System Setup Utility or BIOS Setup, you can specify the boot device sequence and set up system passwords and security options. Both utilities access the same stored configuration data for these items, and the result of making a change to these settings using either utility is identical.

The SSU consists of a collection of task-oriented modules plugged into a common framework called the Application Framework (AF). The Application Framework provides a launching point for individual tasks and a location for setting customization information.

Creating SSU Diskettes

You can run the SSU from the Server Configuration Utilities menu of the Server Configuration Wizard, from a set of DOS diskettes, or from the service partition of the hard disk.

If you choose to run the SSU from a set of DOS diskettes, you must create the SSU diskettes from the Resource CD-ROM as follows:

1. Boot the System Resource CD-ROM to the Server Configuration Wizard.
2. Choose Create Diskettes > Create Diskettes by Device/Function > System Setup Utility.
3. Follow the instructions displayed.

Alternatively, if you have a workstation with the Microsoft® Windows® operating system, you can insert the CD into that system and create the diskettes on that system.

Running the SSU

When the SSU starts in the default local execution mode, it accepts input from the keyboard or mouse. The SSU presents a VGA-based GUI on the primary monitor.

If you run the SSU from read-only media you cannot save user preference settings (such as screen colors).

The SSU supports ROM-DOS version 6.22. The SSU will not operate from a OS box running under an operating system such as Windows®.

Start the SSU using one of the following methods:

- From diskettes: Insert the first SSU diskette in drive A and boot the server from the diskette. You are prompted to insert the second diskette. After loading completes the SSU starts automatically.
- From the System Resource CD: Boot the server to the Server Configuration Wizard and start the SSU from the Server Configuration Utilities menu.
- From the Service Partition: Boot the server to the Service Partition and execute the following DOS commands:

```
C:\ cd ssu
```

```
C:\SSU ssu.bat
```

The mouse driver loads if it is available; press <Enter> to continue.

When the SSU title appears on the screen, press <Enter> to continue.

Working with the SSU Interface

You can access features of the SSU interface using the mouse or keyboard:

- Mouse: Click once to choose menu items and buttons or to select items in a list, such as the Available Tasks list. To run a list item, such as one of from the Available Tasks list, select the item and click OK or double-click the item.
- Keyboard: Use the tab and arrow keys to highlight buttons and press the spacebar or <Enter> to execute. You can also execute a menu or button by using the <Alt> key in combination with the underlined letter in the name of the menu or button.

You can have more than one task open at the same time, although some tasks might require complete control to avoid possible conflicts. The tasks achieve complete control by keeping the task as the center of operation until you close the task window.

The SSU has a build-in help system, which you access by clicking a Help button or choosing the Help menu.

Customizing the SSU Interface

The SSU lets you customize your interface using the Preferences section of the main window. The AF sets these preferences and saves them in the AF.INI file so that they take effect the next time you start the SSU. There are four user customizable settings:

- Color: Lets you change the default colors associated with different items on the screen using predefined color combinations. The color changes take effect immediately.
- Mode: Lets you set the desired expertise level: novice, intermediate, or expert. The expertise level determines which tasks are visible in the Available Tasks section and which actions each task performs. For a new mode setting to take effect, you must exit the SSU and restart it.
- Language: Lets you change the text in the SSU to the appropriate language. For a new language setting to take effect, you must exit the SSU and restart it.
- Other: Lets you show or hide the status bar at the bottom of the SSU main window. The change takes effect immediately.



NOTE

If you run the SSU from read-only media (CD-ROM, for example), these preferences are lost when you exit the SSU.

Setting Boot Device Priority

To change the boot priority of a device:

1. From the SSU Main window, choose Boot Devices.
2. In the Multiboot Options Add-in window, select a device.
3. Click the Move Up button to move it up in the list. Click the Move Down button to move it down.

Setting Passwords and Security Options

You can set a user password and an administrator password for the server. You must set an administrator password before you can set a user password. On other systems, the passwords are independent. You can set the same passwords and security options by using BIOS Setup.

Setting the Administrator Password

The Admin Password button lets you set or change the administrator password used by both the SSU and the system BIOS. This option is not available if both an administrator and a user password are set and you entered only the user password when you started the SSU. All changes to the administrator password take effect immediately.

To change or clear the administrator password:

1. From the SSU Main window, choose Security.
2. Click the Admin Password button.
3. If you are changing passwords, enter the old password.
4. Enter the new password (or leave blank to clear).
5. Confirm the password by entering it again (or leave blank to clear).
6. Click OK to save the password and return to the Security window.

Setting the User Password

The User Password button lets you set or change the user password used by both the SSU and the system BIOS. All changes to the user password take effect immediately.

To change or clear the user password:

1. From the SSU Main window, choose Security.
2. Click the User Password button.
3. If you are changing passwords, enter the old password in the first box.
4. Enter the new password (or leave blank to clear).
5. Confirm the password by entering it again (or leave blank to clear).
6. Click OK to save the password and return to the Security window.

Setting Security Options

To set the security options:

1. In the Security window, click the Options button.
2. For each option, select the desired setting from the list. The options are:
 - Security Hot Key: The key combination that can be used to put the server into secure mode.
 - Secure Mode Timer: If no keyboard or mouse activity occurs during the chosen time interval, the server enters secure mode.
 - Secure Mode Boot: Enable forces the server to boot directly into secure mode.
 - Video Blanking: Enable turns off the video when the server is in secure mode.
 - Floppy Write: Enable prevents writing to the diskette drive while the server is in secure mode.
 - Power Switch Inhibit: Enable prevents the power and reset buttons from functioning when the server is in secure mode. Disable allows the power and reset buttons to function normally when the server is in secure mode.
3. Click Save to save the settings and return to the Security window.

Viewing the System Event Log

To view the System Event Log (SEL):

1. From the SSU Main window, choose SEL Manager.

When you start the SEL Manager, it automatically loads the current list of events from non-volatile memory.

2. Use the <F4> and <F5> keys to scroll the window contents to the left and right to view all of the columns.
3. Use the File and SEL menu items to work with the SEL information:
 - Open: Views data from a previously saved SEL file.
 - Save As: Saves the currently loaded SEL data to a file.
 - Properties: Displays information about the SEL.
 - Clear SEL: Clears the SEL data from the nonvolatile storage area.
 - Reload: Refreshes the display by reading the current SEL entries from the server.
 - Sort By: Sorts the displayed events by event number, time stamp, sensor type and number, event description, or event generator ID.

Viewing FRU Information

To view the Field Replaceable Unit (FRU) information:

1. From the SSU Main window, choose FRU Manager.

When you start the FRU Manager, it automatically loads the current list of events from non-volatile memory.

The FRU Manager window has a navigation pane on the left that displays, in a tree format, the inventory of components in the server. The tree has three categories: Chassis, Board, and Product. Clicking on a category expands or collapses a list of components for that category. Clicking on an individual component displays the FRU information for that component in the presentation pane in the upper right. The description pane in the lower right displays a description of the currently selected FRU area.

2. Use the <F4> and <F5> keys to scroll the window contents to the left and right to view all of the columns.
3. Use the File and FRU menu items to work with the FRU information:
 - Open: Views data from a previously saved FRU file.
 - Save As: Saves the currently loaded FRU data to a file.
 - Properties: Displays the number of FRU devices in the system and the number being displayed. Only FRU devices with valid FRU areas are displayed.
 - Reload: Refreshes the display by reading the current FRU entries from the server.

Viewing Sensor Data Records

To view the Sensor Data Records (SDR):

1. From the SSU Main window, choose SDR Manager.

When you start the SDR Manager, it automatically loads the SDR entries from non-volatile memory.

The SDR Manager window has a navigation pane on the left that displays, in a tree format, the sensor data records. The tree has categories for each type of record. Clicking on a category expands or collapses a list of SDRs for that category. Clicking on an individual SDR displays the information for that SDR in the presentation pane in the upper right. The description pane in the lower right displays a description of the currently selected SDR type.

2. Use the <F4> and <F5> keys to scroll the window contents to the left and right to view all of the columns.
3. Use the File and SDR menu items to work with the SDR information:
 - Open: Views data from a previously saved SDR file.
 - Save As: Saves the currently loaded SDR data to a file.
 - Properties: Displays information about the SDR, including IPMI version, number of SDR entries, time stamps for changes to the SDR information, and free space remaining.
 - Reload: Refreshes the display by reading the SDR data from the server.

Managing the Server Remotely

You can set up the server so that you can connect to it from a remote client system to perform management tasks and so that the server can contact you if a system error occurs. You can make the connection over a LAN or by using a modem or direct serial cable to the Emergency Management Port (EMP). You can set up the server to notify you when various events occur. Alerts can be delivered either as telephone pages or over the LAN.

Instructions for setting up the server for remote LAN and serial/modem access and for setting up the server to proactively alert or page you are given below.

How to Set Up Remote LAN Access

To set up the server so you can access it from a remote workstation, you can use either the Server Configuration Wizard or the System Setup Utility.

To use the Server Configuration Wizard to configure remote LAN access:

1. Use the Resource CD to boot the server to the Server Configuration Wizard.
2. Select Server Configuration Wizard and Continue.
3. Select Run Wizard and Continue.
4. Select the box that says configure this server for remote Server Management over a LAN connection .
5. Review the system date and time for accuracy and Continue.
6. In the IP Setup screen, choose either:
 - DHCP: the IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - Static: assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
7. If you chose Static IP Setup in the previous step, fill in the IP addressing boxes:
 - Host IP Address: the IP address of this server.
 - Gateway IP Address: the IP address of the router for this server.
 - Subnet Mask: the IP address for the server subnet. The server uses this to decide if the alert destination is on the same subnet.
 - Backup Gateway IP Address: (optional). The IP address of the alternate router for this server.
8. Click Continue. Click the LAN Password button (optional) to require that a password be entered before a user can perform server management functions on this server from a workstation on the LAN.
9. Select the LAN Access Mode to set the points at which LAN connectivity can be activated:
 - Always Available: a remote system can initiate a LAN connection, regardless of the server's state or health.
 - Restricted: power control functions, such as power down, front panel NMI, and system reset cannot be performed remotely.
 - Disabled: remote LAN connections cannot be initiated.

10. Select the SOL Access Mode to set the user access level that is required for connecting to the server using Serial over LAN.
 - Always Available: an individual can access the server through Serial over LAN if that user knows the server User password.
 - Restricted: an individual can access the server through Serial over LAN if that user knows the server Administrator password.
 - Disabled: Serial over LAN cannot be used.
11. Select the baud rate and then Continue.

To use the System Setup Utility to configure remote LAN access:

1. From the SSU Main window, choose Platform Event Manager (PEM).
2. In the PEM window, click Configure LAN and fill in the boxes described in the following steps (boxes that are not listed here are not required for remote access).
3. To require a password for remote access, enter the password in the Enter New Password box and in the Verify New Password box. Passwords can be from 1 to 16 characters long, using any ASCII character in the range [32-126]. To clear the passwords, leave both boxes blank. (You can also clear the password by choose the menu Options > Clear LAN Password.)
4. From the LAN Access Mode list, select the remote access mode:
 - Always Available: a remote system can initiate a LAN connection regardless of the state or health of the server.
 - Restricted: a remote system can initiate a LAN connection, but cannot perform control operations such as power down, reset, or front panel NMI.
 - Disabled: remote systems are not allowed to initiate LAN connections.
5. In the IP Setup box, choose either:
 - DHCP: the IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - Static: assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
6. If you chose Static IP Setup in the previous step, fill in the IP addressing boxes:
 - Host IP Address: the IP address of this server.
 - Gateway IP Address: the IP address of the router for this server.
 - Subnet Mask: the IP address for the server subnet. The server uses this to decide if the alert destination is on the same subnet.
7. Click Save to save the changes.
8. Click Close to return to the PEM window.

How to Set Up Remote Modem or Serial Access

To set up the server so you can access it through a modem or a serial connection, you can use either the Server Configuration Wizard or the System Setup Utility.

To use the Server Configuration Wizard to configure remote modem or serial access:

1. Use the Resource CD to boot the server to the Server Configuration Wizard.
2. Select Server Configuration Wizard and Continue.
3. Select Run Wizard and Continue.
4. Select the box that says configure this server for remote Server Management over a Serial/Modem connection.
5. Review the system date and time for accuracy and Continue.
6. Enter the appropriate Serial/Modem parameters and Continue.
7. Click Continue. Click the Serial/Modem Password button (optional) to require that a password be entered before a user can perform server management functions on this server from a serial or Modem connection.
8. Select the Access Mode to set the points at which Serial/Modem connectivity can be activated:
 - Preboot Only: The EMP is available only when the server is powered down or is running POST during startup. Once the operating system is loaded, a connection cannot be made.
 - Always Active: The EMP is available at any time.
 - Disabled: A connection cannot be made to the server using Serial/Modem access.
9. Select the Restricted Mode to set the restrict power control operations:
 - Enable: Enable restrictions. A user cannot use Serial / Modem access to affect the power state of the system, such as powering the server on or off.
 - Disable: Disables restrictions. A user can choose to power the server on or off through a Serial/Modem connection.
10. Select the Connection Mode:
 - Direct Connect: Use direct connect when a system is connected directly to the server through the Serial port, without using an external modem.
 - Modem Mode: Use Modem Mode when the Serial port is connected to an external modem.
11. System Phone Number: Enter the telephone number that is used to connect to this server.
12. Click Continue.

To use the System Setup Utility to configure remote modem or serial access:

1. From the SSU Main window, choose Platform Event Manager (PEM).
2. In the PEM window, click Configure EMP and fill in the boxes described in the following steps (boxes that are not listed here are not required for remote access).
3. To require a password for remote access, enter the password in the Enter New Password box and in the Verify New Password box. Passwords can be from 1 to 16 characters long, using any ASCII character in the range [32-126]. To clear the passwords, leave both boxes blank. (You can also clear the password by choose the menu Options > Clear LAN Password.)
4. In the Modem Ring Time box, enter the number of 500 ms intervals that the BMC should wait before taking control of the serial 2 port and answering an incoming call. A value greater than zero gives the BIOS time to answer before the BMC takes control. A value of zero causes the BMC to answer immediately. The maximum value, 63, tells the BMC to ignore the call. Modem Ring Time applies only to Preboot access mode and is ignored for other access modes.

5. In the System Phone Number box, enter the number for the phone line connected to the modem on the EMP.
6. From the Access Mode list, choose the remote access mode:
 - Always Active: The EMP is available at any time.
 - Preboot: The EMP is available only when the server is powered down or is running POST during startup. Once the operating system is loaded, a connection cannot be made.
 - Disabled: Remote systems are not allowed to initiate connections.
7. From the Restricted Mode list, choose either:
 - Enabled: A remote system can initiate a connection, but cannot perform control operations such as power down, reset, or front panel NMI.
 - Disabled: The remote system has full control of the server.
8. From the Connection Mode list, choose either:
 - Direct Connect: The Serial B port on the server is connected by a serial cable to the remote system.
 - Modem Connect: The Serial B port on the server is connected to a modem.
9. Click Save to save the changes.
10. Click Close to return to the PEM window.

How to Set Up Paging Alerts

To set up the server so it pages you in the event of an alert, you can use either the Server Configuration Wizard or the System Setup Utility.

To use the Server Configuration Wizard to configure the server to send alerts as telephone pages:

1. Use the Resource CD to boot the server to the Server Configuration Wizard.
2. Select Server Configuration Wizard and Continue.
3. Select Run Wizard and Continue.
4. Select the box that says onfigure this server for Serial/Modem Alerting. The box that says onfigure this server for remote Server Management over a Serial/Modem connection will be automatically selected as a dependency.
5. Review the system date and time for accuracy and Continue.
6. Enter the appropriate Serial/Modem parameters and Continue.
7. Click the Serial/Modem Password button (optional) to require that a password be entered before a user can perform server management functions on this server from a serial or Modem connection.
8. Select the Access Mode to set the points at which Serial/Modem connectivity can be activated:
 - Preboot Only: A serial or Modem connection can be made when the server is powered down or hard reset. Once the operating system is loaded, a connection cannot be made.
 - Always Active: A connection to the server can be established at any time.
 - Disabled: A connection cannot be made to the server using Serial/Modem access.
9. Select the Restricted Mode to set the restrict power control operations
 - Enable: Enable restrictions. A user cannot use Serial/Modem access to affect the power state of the system, such as powering the server on or off.
 - Disable: Disables restrictions. A user can choose to power the server on or off through a Serial/Modem connection.

10. Select the Connection Mode.
 - Direct Connect: Use direct connect when a system is connected directly to the server through the Serial port, without using an external modem.
 - Modem Mode: Use modem mode when the Serial port is connected to an external modem.
11. System Phone Number: Enter the telephone number that is used to connect to this server.
12. Click Continue.
13. Select the Enable Serial/Modem Paging option.
14. Enter the telephone number the system should send the page if an event happens.
15. Enter the paging string the server should send after a phone connection is made.
16. Enter the Blackout Period: The time in minutes that should be allowed between pages. The valid range is [0 - 255] where 0 disables the blackout period. Setting a blackout period can save you from being flooded with repeat pages. After you receive a PEP page, no additional pages are sent by PEP for the duration of the blackout period.
17. Click the Alert Paging Filters button. Click the boxes enable/disable filters. Click OK when you are done, and then click Continue.

To use the System Setup Utility to set up the server to send alerts as telephone pages:

1. Install an external modem on the Emergency Management Port (Serial B).
2. From the SSU Main window, choose Platform Event Manager (PEM).
3. In the PEM window, click Configure EMP.
4. In the corresponding boxes, enter the following command strings for the modem attached to the EMP port (boxes that are not listed here are not required for paging alerts):
 - ESC Sequence: The escape sequence. This string is sent to the modem before sending command strings. The maximum length for the string is five characters; longer strings are truncated.
 - Hangup String: Hang up or drop the connection. The EMP automatically sends an <ENTER> character following this string. The maximum length for the string is eight characters; longer strings are truncated.
 - Modem Dial Command: The command to dial a phone number. This string is sent to the modem before sending the paging string.
 - Modem Init String initialization string for the modem. This string is sent every time the EMP initializes. The maximum length for the string is determined at run-time from firmware. You will be notified if the string is truncated. Following a save, the actual string saved is displayed in the edit box.
5. Click Save to save the changes.
6. Click Close to return to the PEM window.
7. In the PEM window, click Configure PEP.
8. Select the Enable PEP check box.
9. In the Blackout Period box, enter the minimum time, in minutes, between successive pages. The valid range is [0 - 255] where 0 disables the blackout period. Setting a blackout period can save you from being flooded with repeat pages. After you receive a PEP page, no additional pages are sent by PEP for the duration of the blackout period.
10. In the Paging String box, enter the phone number to dial for the page and the message you want sent with the page. The maximum length for the paging string is determined at run-time from firmware. You will be notified if the string is truncated. Following a save, the actual string saved is displayed in the edit box.

11. From the Options menu, choose Configure Event Actions.
12. In the Platform Event Paging Actions window, move the events that you want to generate an alert to the Enabled column and move all other events to the disabled column using the following buttons:
 - >>: Moves all events from the enabled list to the disabled list.
 - >: Moves the selected event from the enabled list to the disabled list.
 - <: Moves the selected event from the disabled list to enabled the list.
 - <<: Moves all events from the disabled list to the enabled list.
13. Click Save to save the changes.
14. Click Close to return to the PEP Configuration window.
15. To send a test page to verify that you have correctly configured PEP, from the Options menu, choose Send Alert.
16. Click Save to save the configuration.
17. Click Close to return to the Platform Event Manager window.

How to Set Up LAN Alerts

To set up the server to send alerts over the LAN you can use either the SSU or the SCW. For more information about LAN alerts, see the documentation for Intel® Server Management software.

To use the Server Configuration Wizard to configure the server to send alerts over the LAN:

1. Use the Resource CD to boot the server to the Server Configuration Wizard.
2. Select Server Configuration Wizard and Continue.
3. Select Run Wizard and Continue.
4. Select the configure this server for LAN Alerting box. The box that says configure this server for remote Server Management over a LAN connection will be automatically selected as a dependency.
5. Review the system date and time for accuracy and Continue.
6. In the IP Setup screen, choose either:
 - DHCP: The IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - Static: Assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
7. If you chose Static IP Setup in the previous step, fill in the IP addressing boxes:
 - Host IP Address: The IP address of this server.
 - Gateway IP Address: The IP address of the router for this server.
 - Subnet Mask: The IP address for the server subnet. The server uses this to decide if the alert destination is on the same subnet.
 - Backup Gateway IP Address: (optional). The IP address of the alternate router for this server.
8. Click Continue. Click the LAN Password button (optional) to require that a password be entered before a user can perform server management functions on this server from a workstation on the LAN.

9. Select the LAN Access Mode to set the points at which LAN connectivity can be activated:
 - Always Available: A remote system can initiate a LAN connection, regardless of the server's state or health.
 - Restricted: Power control functions, such as power down, front panel NMI, and system reset cannot be performed remotely.
 - Disabled: Remote LAN connections cannot be initiated.
10. Select the SOL Access Mode to set the user access level that is required for connecting to the server using Serial over LAN.
 - Always Available: An individual can access the server through Serial over LAN if that user knows the server User password.
 - Restricted: An individual can access the server through Serial over LAN if that user knows the server Administrator password.
 - Disabled: Serial over LAN cannot be used.
11. Select the baud rate and then Continue.
12. Select the Enable LAN Alerting option.
13. Enter the IP address for the system that should receive notifications if an event happens.
14. Enter the SNMP Community String. The default is public.
15. Check the box to resolve the Gateway MAC address (optional).
16. Click the LAN Alert Filters button. Click the boxes enable/disable filters. Click OK when you are done, and then click Continue.

To use the System Setup Utility to configure the server to send alerts over the LAN:

1. From the SSU Main window, choose Platform Event Manager (PEM).
2. In the PEM window, click Configure LAN and fill in the boxes described in the following steps (boxes that are not listed here are not required for LAN alerts).
3. Select the Enable LAN Alerts check box.
4. (Optional) In the SNMP Community String box, enter a string for the community field in the Header section of the SNMP trap sent for an alert. The string must be from 5 to 16 characters. The default string is public.
5. In the IP Setup box, choose either:
 - DHCP: The IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - Static: Assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
6. If you chose Static IP Setup in the previous step, fill in the IP addressing boxes:
 - Host IP Address: The IP address of this server.
 - Gateway IP Address: The IP address of the router for this server.
 - Subnet Mask: The IP address for the server subnet. The server uses this to decide if the alert destination is on the same subnet.
7. In the Alert IP Address box, fill in the IP address of the system you want to receive alerts from this server. If you want the alert to be broadcast to an entire subnet, enter the IP address for the subnet.
8. From the Options menu, choose Configure Event Actions.

9. In the BMC LAN Alerting Actions window, move the events that you want to generate an alert to the Enabled column and move all other events to the disabled column using the following buttons:
 - >>: Moves all events from the enabled list to the disabled list.
 - >: Moves the selected event from the enabled list to the disabled list.
 - <: Moves the selected event from the disabled list to enabled the list.
 - <<: Moves all events from the disabled list to the enabled list.
10. Click Save to save the changes.
11. Click Close to return to the BMC LAN Configuration window.
12. Click Save to save the changes.
13. Click Close to return to the PEM window.

Installing a Service Partition (Optional)

When you are setting up your server system, you can install a service partition onto your hard drive. The service partition includes utilities, and other software that can be run locally or remotely to assist in server management. The service partition uses approximately 40 MB of hard disk space.

The service partition can be installed either with the Server Configuration Wizard or with the Intel® Server Management CD.

NOTE

It is highly recommended that you install the service partition before installing an operating system. For more information, see the Service Partition section in the Installation and User Guide for Intel Server Management. This document is included on the ISM CD shipped with your server board.

To install the service partition use the Server Configuration Wizard:

1. Use the Resource CD to boot the server to the Server Configuration Wizard.
2. Select the Server Configuration Wizard option and Continue.
3. Select the Run Wizard option and Continue.
4. Select the option for Install/Update a Service Partition and Continue.
5. Review the system date and time for accuracy and Continue.
6. If a service partition does not exist, you will see a screen listing the drives that the Server Configuration Wizard has identified. The fields are as follows:
 - Drive#: The order in which the drives were reported by the BIOS. Drive 1 is always the CD-ROM Drive and cannot have a service partition installed on it.
 - Size: the size of the drive in megabytes.
 - Formatted?: whether or not the drive has already been formatted for data storage.
 - Unused Space: the amount of space on the drive that has not been used.
 - SP Capable: whether or not a service partition can be created on the drive. The drive must be a minimum of 32 MB. Drives over 8 gigabytes must be empty, and the service partition can only be created on one of the first 8 drives reported. If you do not see a screen listing the available drives, it means a service partition has already been created. When you click Continue, the existing service partition will be updated.
7. Click Continue. The service partition will be created or updated.



NOTE

After the service partition is installed, you can boot to it by pressing F4 during POST. The service partition operating system is ROM-DOS. Once you have booted to the service partition, you will be at a DOS prompt. From the prompt, you can access utilities and perform server management functions by running batch files and executables. Example utilities include the System Setup Utility and FRU/SDR Load Utilities.

Saving and Restoring the System Configuration

Using the System Setup Utility, you can save the following configuration information to a file:

- Platform type, BIOS revision, and firmware revision
- CMOS settings
- Extended system configuration data (ESCD)
- Settings for the emergency management port (EMP), platform event paging (PEP), and BMC LAN alerts

Data is saved from all sources. You cannot choose only certain pieces of configuration data to save. You can also restore the information from a saved configuration file.



NOTE

BIOS passwords are stored in the file. Restoring a configuration can change passwords on a server. EMP and LAN passwords are not stored in the file.

Using the Server Configuration Wizard, you can save the following configuration information to a file:

- Serial/Modem data
- Paging data
- LAN configuration data
- LAN Alert data
- Service Partition configuration
- System asset tag



NOTE

LAN passwords are not stored in the file. LAN passwords cannot be saved or restored.

Saving a Configuration

To save the system configuration from the System Setup Utility:

1. From the SSU Main window, choose Config Save/Restore. (Configuration Save/Restore is available only in Expert mode.)
2. Click Save To File and specify a filename and location.

To save the system configuration from the Server Configuration Wizard:

1. Follow the configuration prompts until you see save Server Configuration.
2. Select the save Server Configuration checkbox and click Continue.
3. Specify a filename and location as prompted.

Loading a Saved Configuration

To load a previously saved system configuration from a file using the System Setup Utility:

1. From the SSU Main window, choose Config Save/Restore. (Configuration Save/Restore is available only in Expert mode.)
2. Click Restore from File and specify a filename and location.

NOTE

You can load only a configuration that had been previously saved with the SSU.

To restore the system configuration from a file using the Server Configuration Utility:

1. Boot from the Resource CD into the Server Configuration Wizard.
2. Select the Server Configuration Wizard > Load from Diskette. Click continue.

NOTE

You can load only a configuration that had been previously saved with the Server Configuration Wizard.

The utility reads the platform type, BIOS revision, and firmware revision from the file and compares that information with the same information retrieved from the server. If the two do not match, an error message is displayed and the load operation aborts. If they do match, the utility saves the configuration data to the server. You will need to reboot your server for the changes to take effect.

Using the Intel® Server Management

NOTE

Prior to installation, uninstall any previous version of Intel® Server Management.

Intel® Server Management and the hard drive Service Partition provide real-time monitoring and alerting for your MAXDATA server hardware, emergency remote management, and remote server setup. Intel® Server Management is implemented by installing it within client-server architecture.

The Service Partition provides you with the ability to remotely access a local partition on the server and to identify and diagnose server health issues. Remote access is provided through either a modem or network connection.

To get started with Intel® Server Management, install the Service Partition first. After the service partition is installed, install operating system, and then Intel® Server Management. The information here describes installation on a system running a Microsoft® Windows® operating system.

Installing Intel® Server Management

You can install Intel® Server Management on a local server or on a remote workstation that is used to manage a LAN/WAN.

1. Insert the Intel® Server Management CD into the system CD-ROM.
2. Click Install Server Management.
3. Select the applicable system option.
4. Review the Intel Software License Agreement and click Accept.
5. If installing to a local server, click Install Now. If this is a multiple system installation, click Add to compile a list of systems and then click Install Now.
6. Select Reboot Now or Reboot Later.
7. Remove the Intel® Server Management CD.

5 Solving Problems

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

Resetting the System

To do this:	Press:
Soft boot reset, which clears system memory and reloads 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

Initial System Startup

Problems that occur at initial system startup are usually caused by incorrect installation or configuration. Hardware failure is a less frequent cause.

Checklist

- ☐ Are all cables correctly connected and secured?
- ☐ Are the processors fully seated in their sockets on the server board?
- ☐ 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 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 DIMMs installed correctly?
- ☐ 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 BIOS 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 front panel to turn the server on (power on light should be lit)?
- ☐ Is the system power cord properly connected to the system and plugged into a NEMA 5-15R outlet for 100-120 V (or a NEMA 6-15R outlet for 200-240 V)?
- ☐ Is AC power available at the wall outlet?
- ☐ Are all integrated components from the tested components lists?

Running New Application Software

Problems that occur when you run new application software are usually related to the software. Faulty equipment is much less likely, especially if other software runs correctly.

Checklist

- ☐ Does the system meet the minimum hardware requirements for the software? See the software documentation.
- ☐ Is the software an authorized copy? If not, get one; unauthorized copies often do not work.
- ☐ If you are running the software from a diskette, is it a good copy?
- ☐ If you are running the software from a CD-ROM disk, is the disk scratched or dirty?
- ☐ If you are running the software from a hard disk drive, is the software correctly installed? Were all necessary procedures followed and files installed?
- ☐ Are the correct device drivers installed?
- ☐ Is the software correctly configured for the system?
- ☐ Are you using the software correctly?

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

After the System Has Been Running Correctly

Problems that occur after the system hardware and software have been running correctly often indicate equipment failure. Many situations that are easy to correct, however, can also cause such problems.

Checklist

- ☐ If you are running the software from a diskette, try a new copy of the software.
- ☐ If you are running the software from a CD-ROM disk, try a different disk to see if the problem occurs on all disks.
- ☐ If you are running the software from a hard disk drive, try running it from a diskette. If the software runs correctly, there may be a problem with the copy on the hard disk drive. Reinstall the software on the hard disk, and try running it again. 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.

More Problem Solving Procedures

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

Preparing the System for Diagnostic Testing



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 all of them from the system, except the keyboard and 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. Otherwise, place a diskette containing the operating system files in drive A.
5. If errors are encountered, power off the system and remove all add-in cards.

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 a second diskette drive is installed, does its activity light turn on briefly?

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.

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.
- CD-ROM drive activity light does not light.
- There are problems with application software.
- The bootable CD-ROM is not detected.

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

Power Light Does Not Light

Check the following:

- ☐ Is the system operating normally? If so, the power LED is probably defective or the cable from the front panel to the server board is loose.
- ☐ Are there other problems with the system? If so, check the items listed under system Cooling Fans Do Not Rotate Properly.

If all items are correct and problems persist, contact your service representative or authorized dealer for help.

No Characters Appear on Screen

Check the following:

- ☐ Is the keyboard functioning? Check to see that the Num Lock light is functioning.
- ☐ Is the video monitor plugged in and turned on?
- ☐ Are the brightness and contrast controls on the video monitor properly adjusted?
- ☐ Are the video monitor switch settings correct?
- ☐ Is the video monitor signal cable properly installed?
- ☐ Is the onboard video controller enabled?

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

1. Verify that the video controller board is fully seated in the server board connector.
2. Reboot the system for changes to take effect.
3. 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.
4. 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 signal and power cables properly installed?

If the problem persists, the video monitor may be faulty or it may be the incorrect type. Contact your service representative or authorized dealer for help.

System Cooling Fans Do Not Rotate Properly

If the system cooling fans are not operating properly, system components could be damaged.

Check the following:

- ☐ Is AC power available at the wall outlet?
- ☐ Is the system power cord properly connected to the system and the wall outlet?
- ☐ Did you press the power button?
- ☐ Is the power on light lit?

- ☐ Have any of the fan motors stopped (use the server management subsystem to check the fan status)?
- ☐ Are the fan power connectors properly connected to the server board?
- ☐ Is the cable from the front panel board connected 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 power connector plugs forced into power connector sockets the wrong way?

If the switches and connections are correct and AC power is available at the wall outlet, contact your service representative or authorized dealer for help.

Diskette Drive Activity Light Does Not Light

Check the following:

- ☐ Are the diskette drive 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 Setup Utility 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.

If the problem persists, there may be a problem with the diskette drive, server board, or drive signal cable. Contact your service representative or authorized dealer for help.

CD-ROM Drive Activity Light Does Not Light

Check the following:

- ☐ Are the power and signal cables to the CD-ROM drive properly installed?
- ☐ Are all relevant switches and jumpers on the drive set correctly?
- ☐ Is the drive properly configured?
- ☐ Is the onboard IDE controller enabled?

Problems with Application Software

If you have problems with application software, do the following:

- ☐ Verify that the software is properly configured for the system. See the software installation and operation documentation for instructions on setting up and using the software.
- ☐ Try a different copy of the software to see if the problem is with the copy you are using.
- ☐ Make sure all cables are installed correctly.
- ☐ Verify that the server board jumpers are set correctly. See Chapter 6.
- ☐ If other software runs correctly on the system, contact your vendor about the failing software.
- ☐ If the problem persists, contact the software vendor customer service representative for help.

Bootable CD-ROM Is Not Detected

Check the following:

- ☐ Is the BIOS set to allow the CD-ROM to be the first bootable device?
- ☐ Check cable connections.
- ☐ Verify CD is bootable in another known good CD-ROM drive. (Especially if the CD is a copy.)

Problems with Network

The server hangs when the drivers are loaded:

- ☐ Change the PCI BIOS interrupt settings.

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 PCI BIOS is current.
- ☐ Make sure the other adapter supports shared interrupts. Also, 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.

Cannot Connect to a Server

- ☐ Make sure you are using the drivers that are shipped on the System Resource CD for the onboard network controller.
- ☐ Make sure the driver is loaded and the protocols are bound.
- ☐ Make sure the network cable is securely attached to the connector at the system back panel. If the cable is attached but the problem persists, try a different cable.
- ☐ Make sure the hub port is configured for the same duplex mode as the network controller.
- ☐ Check with your LAN administrator about the correct networking software that needs to be installed.
- ☐ If you are directly connecting two servers (no hub), you will need a crossover cable (see your hub documentation for more information on crossover cables).
- ☐ Check the network controller LEDs that are visible through an opening at the system back panel.

6 Technical Reference

Server Board Jumpers

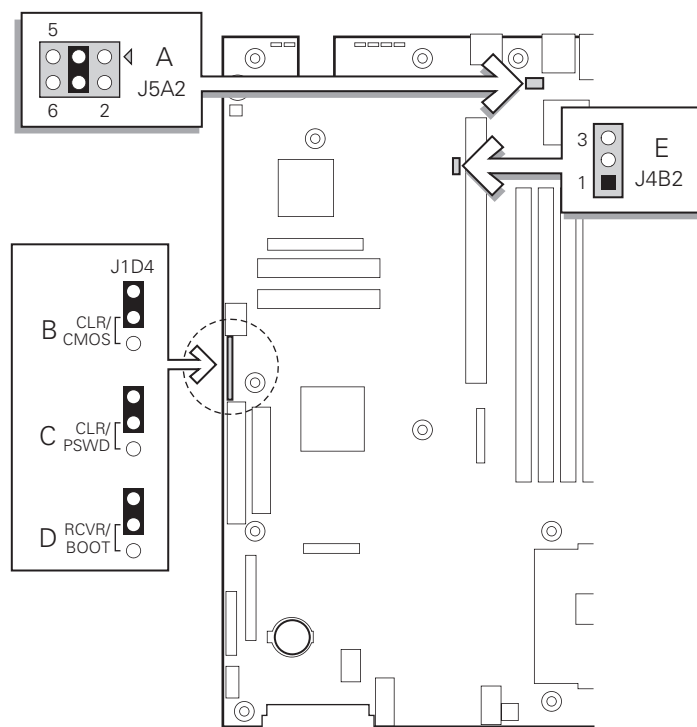


Figure 6. Jumper Locations

Table 11. Configuration Jumper

	Jumper Name	What it does at system reset
A	RJ-45 Serial Port Config	Configures either a DSR or a DCD signal to the connector.
B	CMOS CLR	If these pins are jumpered, the CMOS settings are cleared. These pins should not be jumpered for normal operation.
C	PSWD CLR	If these pins are jumpered, the password is cleared. These pins should not be jumpered for normal operation.
D	RCVRY BOOT	If these pins are jumpered, the system will attempt BIOS recovery. These pins should not be jumpered for normal operation.
E	BMC Boot Block Write Enable	If these pins are jumpered, BMC boot block is erasable and programmable at next reset. These pins should not be jumpered for normal operation.

Diagnostic LEDs

To help diagnose POST failures, a set of four bi-color diagnostic LEDs is located on the back edge of the baseboard. Each of the four LEDs can have one of four states: Off, Green, Red, or Amber.

The LED diagnostics feature consists of a hardware decoder and four dual color LEDs. During POST, the LEDs will display all normal Port80 codes representing the progress of the BIOS POST. Each postcode will be represented by a combination of colors from the 4 LEDs. The LEDs are in pairs of green and red. The post codes are broken into two nibbles, an upper and a lower nibble. Each bit in the upper nibble is represented by a red LED and each bit in the lower nibble is represented by a green LED. If both bits are set in the upper and lower nibble then both red and green LEDs are lit, resulting in an amber color. Likewise, if both bits are clear then the red and green LEDs are off.

During the POST process, each light sequence represents a specific Port-80 POST code. If a system should hang during POST, the Diagnostic LEDs will present the last test executed before the hang. When reading the lights, the LEDs should be observed from the back of the system. The most significant bit (MSB) is the first LED on the left, and the least significant bit (LSB) is the last LED on the right.



NOTE

When comparing a diagnostic LED color string from the baseboard to those listed in the diagnostic LED decoder in the following tables, the LEDs on the baseboard should be referenced when viewed by looking into the system from the back. Reading the LEDs from left to right, the Hi bit is located on the left.

Table 12. Post Codes

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
07h	Off	G	G	G	Uncompress various BIOS Modules.
08h	G	Off	Off	Off	Verify password Checksum.
08h	G	Off	Off	Off	Verify CMOS Checksum.
07h	Off	G	G	G	Read Microcode updates from BIOS ROM.
07h	Off	G	G	G	Initializing the processors. Set up processor registers. Select least featured processor as the BSP.
0Bh	G	Off	G	G	Hook before the keyboard BAT command is issued.
0Ch	G	G	Off	Off	Keyboard Controller Test: The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller.
0Eh	G	G	G	Off	Init after Keyboard Test: The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.

continued

Table 12. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
0Fh	G	G	G	G	Write Command Byte 8042: The initialization after the keyboard controller BAT command test is done. The keyboard command byte will be written next.
10h	Off	Off	Off	R	Keyboard Init: The keyboard controller command byte is written. Next, issuing the pin 23 and 24 blocking and unblocking commands.
10h	Off	Off	Off	R	Disable and initialize 8259.
11h	Off	Off	Off	A	Detect Configuration Mode, such as CMOS clear.
13h	Off	Off	G	A	Chipset Initialization before CMOS initialization.
19h	G	Off	Off	A	Init System Timer: The 8254 timer test is over. Starting the memory refresh test next.
1Ah	G	Off	G	R	Check Refresh Toggle: The memory refresh line is toggling. Checking the 15 second on/off time next.
23h	Off	Off	A	G	Setup Interrupt Vectors: Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24h	Off	G	R	Off	Before Vector: Configuration is required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin.
25h	Off	G	R	G	Init interrupt Vectors: Interrupt vector initialization is done.
F2h	R	R	A	R	Initialize SMM handler. Initialize USB emulation.
F5h	R	A	R	A	Validate NVRAM areas. Restore from backup if corrupted.
12h	Off	Off	G	R	Load defaults in CMOS RAM if bad checksum or CMOS clear jumper is detected.
12h	Off	Off	G	R	Initializing APP CMOS RAM for appliance servers only.
12h	Off	Off	G	R	Check point After CMOS Initialized.
27h	Off	G	A	G	Validate date and time in RTC.
F4h	R	A	R	R	Load Micro Code To All CPUs.
F6h	R	A	A	R	Scan SMBIOS GPNV areas.
15h	Off	G	Off	A	8254 Timer Test on Channel 2.
15h	Off	G	Off	A	Enable 8042.
15h	Off	G	Off	A	Keyboard Reset.
26h	Off	G	A	Off	Initialize LCD, if supported.
28h	G	Off	R	Off	Set Video Mode: Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
29h	G	Off	R	G	Debugger Hook.
2Ah	G	Off	A	Off	Init PCI devices and motherboard devices. Pass control to video BIOS. Start serial console redirection.

continued

Table 12. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
2Bh	G	Off	A	G	Platform hook.
2Dh	G	G	R	G	Initialize AMI display manager Module. Initialize support code for headless system if no video controller is detected.
2Dh	G	G	R	G	Scan flash for logos and Initialize logo data areas.
30h	Off	Off	R	R	Detect PS/2 Mouse.
30h	Off	Off	R	R	Hook after c000 ROM control.
2Eh	R	R	A	Off	Set up video parameters in BIOS data area.
37h	Off	G	A	A	Activate ADM: The display mode is set. Displaying the power-on message next.
37h	Off	G	A	A	Initialize language module. Display splash logo.
37h	Off	G	A	A	Display Sign on message, BIOS ID and processor information.
38h	G	Off	R	R	Detect USB Mouse: Initializing the bus input, and general devices next, if present.
34h	Off	G	R	R	Reset IDE Controllers.
39h	G	Off	R	A	Displaying bus initialization error messages.
3Ah	G	Off	A	R	Display Setup Message: The new cursor position has been read and saved. Displaying the Hit Setup message next.
40h	Off	R	Off	Off	Ensure Timer Keyboard Interrupts are on.
4Bh	G	R	G	G	Memory Test: The amount of memory above 8 MB has been found and verified. Checking for a soft reset and clearing the memory below 8 MB for the soft reset next. If this is a power-on situation, going to checkpoint 4Eh next.
57h	Off	A	G	A	Chipset hook after memory size.
53h	Off	R	A	A	Display processor cache size.
54h	Off	A	Off	R	Disable parity and NMI reporting.
60h	Off	R	R	Off	Test 8237 DMA Controller: The DMA page register test passed. Performing the DMA Controller 1 base register test next.
65h	Off	A	R	G	Init 8237 DMA Controller: The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
7Fh	G	A	A	A	Extended NMI enable: Extended NMI source enabling is in progress.
80h	R	Off	Off	Off	Enable Mouse and Keyboard: The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81h	R	Off	Off	G	Keyboard Interface Test: A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.

continued

Table 12. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
82h	R	Off	G	Off	Check Stuck Key Enable Keyboard: The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83h	R	Off	G	G	Disable parity NMI: The command byte was written and global data initialization has completed. Checking for a locked key next.
84h	R	G	Off	Off	Verify RAM Size: Checking for a memory size mismatch with CMOS RAM data next.
84h	R	G	Off	Off	Check ATA Cable Type presence of ATAPI devices.
84h	R	G	Off	Off	Display Keyboard Message.
16h	Off	G	G	R	Display IDE mass storage devices.
17h	Off	G	G	A	Display USB mass storage devices.
85h	R	G	Off	G	Report the first set of POST Errors To Error Manager.
86h	R	G	G	Off	Boot Password Check: The password was checked. Performing any required programming before Setup next.
8Dh	A	G	Off	G	OEM Patch 9.
8Dh	A	G	Off	G	Set Printer RS-232 Timeout.
8Dh	A	G	Off	G	Init FDD Devices: Resetting the hard disk controller next.
95h	R	G	Off	A	Lock out PS/2 keyboard/mouse if unattended start is enabled.
92h	R	Off	G	R	Option ROM Scan.
98h	A	Off	Off	R	Init Boot Devices: The adapter ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.
9Bh	A	Off	G	A	Float Processor Initialize: Performing any required initialization before the coprocessor test next.
9Eh	A	G	G	R	Enable Interrupts 0,1,2: Checking the extended keyboard, keyboard ID, and NUM Lock key next. Issuing the keyboard ID command next.
A2h	R	Off	A	Off	Report second set of POST errors To Error messenger.
86h	R	G	G	Off	Prepare And Run Setup: Error manager displays and logs POST errors. Waits for user input for certain errors. Execute setup.
8Bh	A	Off	G	G	Set Base Expansion Memory Size.
8Ch	A	G	Off	Off	Adjust Setup: Programming the Setup options next.
A5h	R	G	R	G	Set Display Mode.
A7h	R	G	A	G	OEM Patch 12.
A7h	R	G	A	G	Build SMBIOS table and MP tables.
A7h	R	G	A	G	Program hotkey and timeout settings in keyboard controller.
A7h	R	G	A	G	Processor initialization before boot.
A7h	R	G	A	G	Copy required language strings to shadow RAM.

continued

Table 12. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
Aah	A	Off	A	Off	Clear video screen.
000h	Off	Off	Off	Off	One Beep to indicate end of POST. No beep if silent boot is enabled.
000h	Off	Off	Off	Off	POST completed. Passing control to INT 19h boot loader next.

POST Error Codes and Messages

The following table defines POST error codes and their associated messages. The BIOS prompts the user to press a key in case of serious errors. Some error messages are preceded by the word "Error" to highlight the fact that the system might be malfunctioning. All POST errors and warnings are logged in the System Event Log, unless the System Event Log is full.

Table 13. Standard POST Error Messages and Codes

Error Code	Error Message	Pause on Boot
100	Timer Channel 2 Error	Yes
101	Master Interrupt Controller	Yes
102	Slave Interrupt Controller	Yes
103	CMOS Battery Failure	Yes
104	CMOS Options not Set	Yes
105	CMOS Checksum Failure	Yes
106	CMOS Display Error	Yes
107	Insert Key Pressed	Yes
108	Keyboard Locked Message	Yes
109	Keyboard Stuck Key	Yes
10A	Keyboard Interface Error	Yes
10B	System Memory Size Error	Yes
10E	External Cache Failure	Yes
110	Floppy Controller Error	Yes
111	Floppy A: Error	Yes
112	Floppy B: Error	Yes
113	Hard disk 0 Error	Yes
114	Hard disk 1 Error	Yes
115	Hard disk 2 Error	Yes
116	Hard disk 3 Error	Yes
117	CD-ROM disk 0 Error	Yes
118	CD-ROM disk 1 Error	Yes

continued

Table 13. Standard POST Error Messages and Codes (continued)

Error Code	Error Message	Pause on Boot
119	CD-ROM disk 2 Error	Yes
11A	CD-ROM disk 3 error	Yes
11B	Date/Time not set	Yes
11E	Cache memory bad	Yes
120	CMOS clear	Yes
121	Password clear	Yes
140	PCI Error	Yes
141	PCI Memory Allocation Error	Yes
142	PCI IO Allocation Error	Yes
143	PCI IRQ Allocation Error	Yes
144	Shadow of PCI ROM Failed	Yes
145	PCI ROM not found	Yes
146	Insufficient Memory to Shadow PCI ROM	Yes

Table 14. Extended POST Error Messages and Codes

Error Code	Error Message	Pause on Boot
8100	Processor 1 failed BIST	No
8101	Processor 2 failed BIST	No
8110	Processor 1 Internal error (IERR)	No
8111	Processor 2 Internal error (IERR)	No
8120	Processor 1 Thermal Trip error	No
8121	Processor 2 Thermal Trip error	No
8130	Processor 1 disabled	No
8131	Processor 2 disabled	No
8140	Processor 1 failed FRB-3 timer	No
8141	Processor 2 failed FRB-3 timer	No
8150	Processor 1 failed initialization on last boot	No
8151	Processor 2 failed initialization on last boot	No
8160	Processor 01: unable to apply BIOS update	Yes
8161	Processor 02: unable to apply BIOS update	Yes
8170	Processor P1 : L2 cache Failed	Yes
8171	Processor P2 : L2 cache Failed	Yes
8180	BIOS does not support current stepping for Processor P1	Yes
8181	BIOS does not support current stepping for Processor P2	Yes
8190	Watchdog Timer failed on last boot	No
8191	4:1 Core to bus ratio: Processor Cache disabled	Yes
8192	L2 Cache size mismatch	Yes
8193	CPUID, Processor Stepping are different	Yes
8194	CPUID, Processor Family are different	Yes
8195	Front Side Bus Speed mismatch. System Halted	Yes, Halt
8196	Processor Model are different	Yes
8197	CPU Speed mismatch	Yes
8300	Baseboard Management Controller failed to function	Yes
8301	Front Panel Controller failed to Function	Yes
8305	Hotswap Controller failed to Function	Yes
8420	Intelligent System Monitoring - Chassis Opened	Yes
84F1	Intelligent System Monitoring - Forced Shutdown	Yes
84F2	Server Management Interface Failed	Yes
84F3	BMC in Update Mode	Yes
84F4	Sensor Data Record Empty	Yes
84FF	System Event Log Full	Yes

BIOS Recovery Beep Codes

In the case of a Bootblock update, where video is not available for text messages to be displayed, speaker beeps are necessary to inform the user of any errors. The following table describes the type of error beep codes that may occur during the Bootblock update.

Table 15. BIOS Recovery Beep Codes

Beeps	Error message	POST Progress Code	Description
1	Recovery started		Start recovery process.
2	Recovery boot error	Flashing series of POST codes: E9h EEh EBh ECh EFh	Unable to boot to floppy, ATAPI, or ATAPI CD-ROM. Recovery process will retry.
Series of long low-pitched single beeps	Recovery failed	EEh	Unable to process valid BIOS recovery images. BIOS already passed control to operating system and flash utility.
2 long high-pitched beeps	Recovery complete	EFh	BIOS recovery succeeded, ready for power-down, reboot.

Bootblock Error Beep Codes

Table 16. Bootblock Error Beep Codes

Beeps	Error message	Description
1	Refresh timer failure	The memory refresh circuitry on the motherboard is faulty.
2	Parity error	Parity can not be reset.
3	Base memory failure	Base memory test failure. **See „3-Beep-Boot Block Failure Error Code“ table for additional error details.
4	System timer	System timer is not operational.
5	Processor failure	Processor failure detected.
6	Keyboard controller Gate A20 failure	The keyboard controller may be bad. The BIOS cannot switch to protected mode.
7	Processor exception interrupt error	The CPU generated an exception interrupt.
8	Display memory read/write error	The system video adapter is either missing or its memory is faulty. This is not a fatal error.
9	ROM checksum error	System BIOS ROM checksum error.
10	Shutdown register error	Shutdown CMOS register read/write error detected.
11	Invalid BIOS	General BIOS ROM error.

7 Regulatory and Integration Information

Product Regulatory Compliances

Product Safety Compliance

This server board complies with the following safety requirements:

- UL 1950 - CSA 950 (US/Canada)
- EN 60 950 (European Union)
- IEC60 950 (International)
- CE - Low Voltage Directive (73/23/EEC) (European Union)



Product EMC Compliance

This server board has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed in a compatible MAXDATA host system.

- FCC (Class A Verification) - Radiated & Conducted Emissions (USA)
- ICES-003 (Class A) - Radiated & Conducted Emissions (Canada)
- CISPR 22 (Class A) - Radiated & Conducted Emissions (International)
- EN55022 (Class A) - Radiated & Conducted Emissions (European Union)
- EN55024 (Immunity) (European Union)
- CE - EMC Directive (89/336/EEC) (European Union)

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

UL Recognition Mark	
CE Mark	

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.

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.

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.