

Intel® Server Board SCB2 Product Guide

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

Order Number: A55880-003

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1 Description

Server Board Features

The SCB2 is available in either SCSI or ATA hard drive interface versions as described in Table 1. The features listed in Table 2 are common to both server board versions.

Table 1. Server Board Versions

Feature	Description
SCSI	Dual channel Ultra160 LVD SCSI accessible at rear panel I/O and internally
ATA	Dual channel ATA 100 RAID

⇒ NOTE

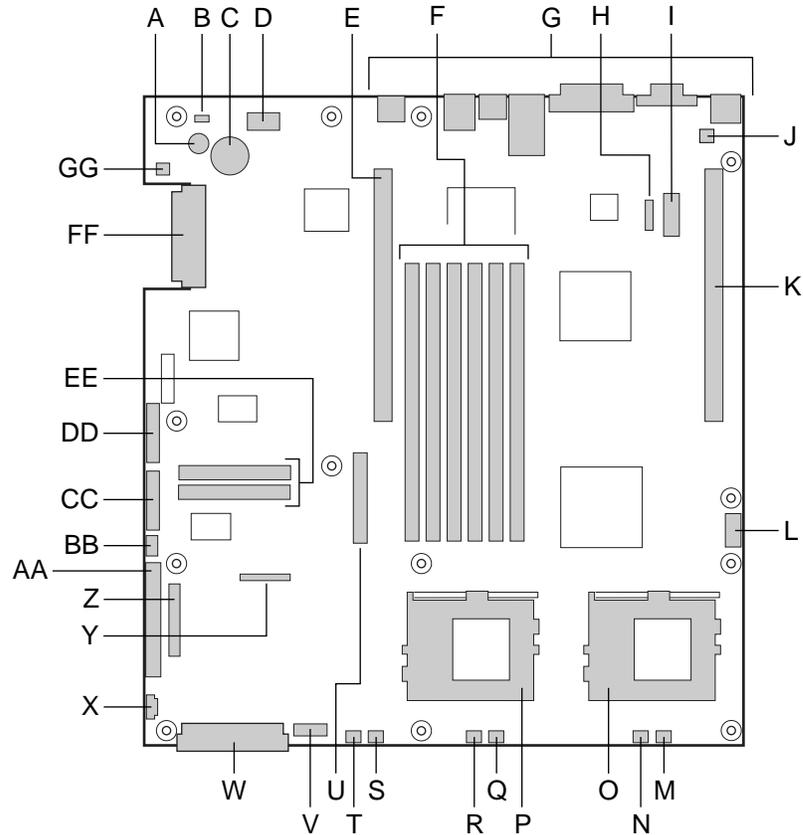
The feature set listed in Table 2 only reflects usage with either the 1U Intel® SR1200 or the 2U Intel® SR2200 server chassis. Third-party or OEM chassis may not provide all of the features listed below.

Table 2. Server Board Features

Feature	Description
Processors	Dual processor slots supporting Intel® Pentium® III processors in a Socket370 Flip Chip Pin Grid Array (FC-PGA) package.
Memory	Six dual inline memory module (DIMM) slots support: <ul style="list-style-type: none">• SDRAM DIMMs: 133 MHz, ECC, registered, PC/133 compliant, 72-bit, 168-pin, gold contact, 3.3V. A 1U chassis requires low-profile (LP) 1.2-inch DIMMs.• Up to 6 GB of memory in a 2U chassis.
Graphics	Integrated onboard ATI RAGE [†] XL PCI 64 bit 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/66-MHz PCI riser slot and one Low Profile (LP) 64-bit/66-MHz PCI riser slot.• 2U configuration—three full-length, full-height 64-bit/66-MHz PCI riser slots and three LP 64-bit/66-MHz PCI riser slots.
Network	Dual on-board 10/100 Network Interface Controllers (NIC)
System I/O (See Table 1)	<ul style="list-style-type: none">• One PS/2[†] keyboard/mouse port (6 pin DIN)• One VGA video port (15 pin)• Two external USB ports, internal header 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

Server Board Connector and Component Locations

The SCB2 comes in both SCSI and ATA versions. Figure 1 is a composite view of both versions.

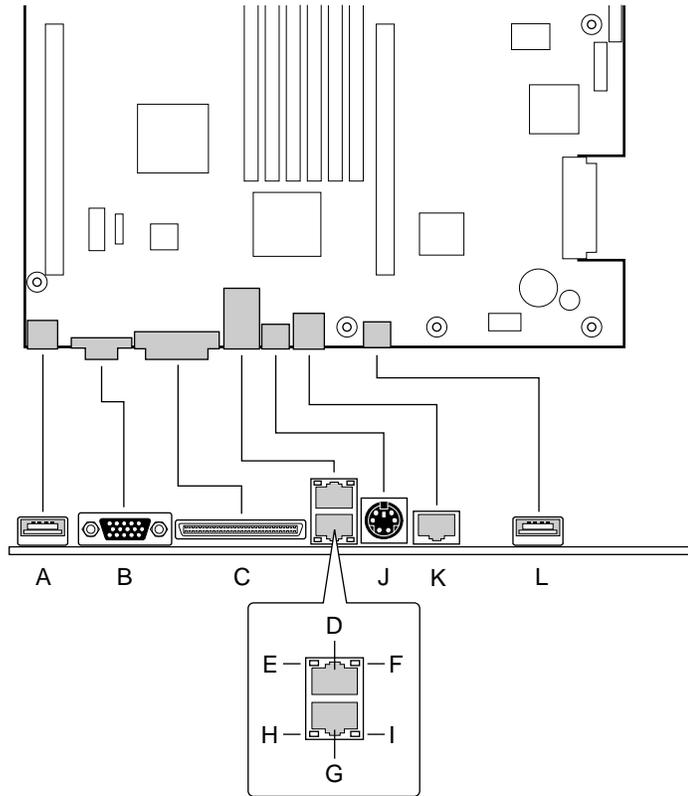


OM11707

- | | |
|---|---|
| A. Speaker | R. CPU 1 fan connector |
| B. ID LED | S. Sys fan 1 connector |
| C. Battery | T. Aux fan connector |
| D. Diagnostic LEDs (POST code) | U. Floppy drive connector |
| E. 66 MHz/64-bit PCI riser slot (full height) | V. Fan module connector |
| F. DIMM slots | W. Main power connector |
| G. I/O ports | X. Auxiliary signal connector |
| H. ICMB connector | Y. Floppy/FP/IDE connector |
| I. COM 1 serial header | Z. Alternate front panel connector |
| J. Chassis intrusion connector | AA. ATA/IDE connector |
| K. 66 MHz/64-bit PCI riser slot (low profile) | BB. IPMB connector |
| L. USB 3 & 4 header | CC. SSI front panel connector |
| M. Sys fan 3 connector | DD. Configuration jumper block |
| N. CPU 2 fan connector | EE. ATA-100 connectors (ATA version only) |
| O. Secondary processor socket | FF. SCSI connector (SCSI version only) |
| P. Primary processor socket | GG. Hard Disk Drive LED header |
| Q. Sys fan 2 connector | |

Figure 1. Server Board Connector and Component Locations

Back Panel Connectors



OM11713

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

Figure 2. Back Panel Connectors

Processor

The SCB2 accommodates one or two Intel Pentium III processors with 512k cache in the FC-PGA2 package. This processor uses the .13 micron technology and offers advanced performance. The processor external interface operates at a maximum of 133 MHz. For a complete list of supported processors see:

<http://support.intel.com/support/motherboards/server/scb2>

Memory

The system board contains six 168-pin DIMM slots each supporting 72-bit ECC (64-bit main memory plus ECC) registered SDRAM DIMMs (PC-133 compatible). Memory is two-way interleaved and partitioned in three banks. You may install a minimum of 128 MB (64MB x 2) and as much as 6 GB.

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.

⇒ NOTE

Use DIMMs that have been tested for compatibility with the server board. Contact your sales representative or dealer for a current list of approved memory modules. Check the Intel Customer Support website for the latest tested memory list:

<http://support.intel.com/support/motherboards/server/scb2>

PCI Riser Slots

The server board has two PCI riser slots, each capable of supporting 64-bit/66-MHz PCI riser cards. PCI features:

- Bus speed up to 66 MHz
- 32 bit memory addressing
- 5 V/3.3 V signaling environment
- Burst transfers of up to 512 Mbps
- 8, 16, 32, or 64-bit data transfers
- Plug and Play ready
- Parity enabled

Video

The SCB2 uses an ATI RAGE XL PCI graphics accelerator with 8 MB of video SDRAM that supports all standard IBM[†] VGA modes. The embedded SVGA video subsystem supports:

- Pixel 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-7899W controller providing dual Ultra160 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.

ATA-100 Controller

The ATA version of the server board provides an embedded dual channel ATA-100 bus through the use of the Promise Technology[†] PDC20267 ATA-100 controller. The controller contains two independent ATA-100 channels that share a single 32-bit, 33-MHz PCI bus master interface as a multifunction device. The controller supports:

- DMA and PIO IDE drives and ATAPI devices
- ATA and ATAPI proposal PIO Mode 0, 1, 2, 3, 4; DMA Mode 0, 1, 2; and Ultra DMA Mode 0, 1, 2, 3, 4, 5
- IDE transfer rates up to 100 MB/sec per channel
- Buffering for PCI/IDE burst transfers
- Master/slave IDE mode
- Host interface complies with PCI Local Bus Specification Revision 2.2

IDE RAID

The ATA-100 controller supports IDE RAID through both ATA-100 channels. In a RAID configuration, multiple IDE hard drives are placed into one or more arrays of disks. Each array is seen as an independent disk, though the array may include one, two, three, or four drives. The IDE RAID can be configured as follows:

- RAID 0: Striping one to four drives
- RAID 1: Mirroring two drives
- RAID 1+: Spare drive (three drives)
- RAID 0+: One to four drives are required

RAID 0 configurations are used for high performance applications, as it doubles the sustained transfer rate of its drives. RAID 1 configurations are primarily used for data protection. It creates an identical drive backup to a secondary drive. Whenever a disk write is performed, the controller sends data simultaneously to a second drive located on a different data channel. With 4 drives attached to dual ATA-100 channels, two striped drive pairs can mirror each other (RAID 0+1) for storage capacity and data redundancy.

Network Controller

⇒ NOTE

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

The server board uses two Intel® 82550PM Fast Ethernet[†] Controllers and supports two 10Base-T/100Base-TX network subsystems.

The 82550 PM controller supports the following features:

- 32-bit PCI, CardBus master interface
- Integrated IEEE 802.3 10Base-T and 100Base-TX compatible PHY[†]
- IEEE 820.3u auto-negotiation support
- Chained memory structure similar to the 82559, 82558, 82557 and 82596
- Full duplex support at both 10 Mbps and 100 Mbps operation
- Low power +3.3 V device
- IP checksum off-loading

On the SCB2, NIC 1 can be used as both a network interface and server management interface.

NIC Connector and Status LEDs

The 82550 controller drives LEDs on the network interface connector that indicate link/activity on the LAN and 10- or 100-Mbps operation. The green LED indicates network connection when on and TX/RX activity when blinking. The yellow LED indicates 100-Mbps operation when lit.

Network Teaming Features

⇒ NOTE

Using both on-board NICs in a team does not allow the use of NIC 1 for server management access. To support both network teaming features and server management features, a third NIC must be added and teamed to NIC 2.

The network controller provides several options for increasing throughput and fault tolerance when running Windows NT[†] 4.0, Windows[†] 2000 , NetWare[†] 4.1x or newer, or Linux[†]:

- Adapter Fault Tolerance (AFT) - provides automatic redundancy for your adapter. If the primary adapter fails, the secondary takes over. AFT works with any hub or switch.
- Adaptive Load Balancing (ALB) - creates a team of 2 - 8 adapters to increase transmission throughput. Also includes AFT. Works with any 10Base-TX or 100Base-TX switch.
- Fast EtherChannel[†] (FEC) or Intel[®] Link Aggregation - creates a team of up to 8 adapters to increase transmission and reception throughput. Also includes AFT. Requires a FEC-enabled switch.

To set up an option, read the instructions in the Windows NT 4.0 or NetWare 4.1x readme files.

General Configuration Notes

1. Windows NT versions prior to 4.0 do not support Adapter Teaming options.
2. Adapter Teaming options require NT 4.0 with Service Pack 4.0 or Service Pack 3.0 and the Windows Hot Fix[†].
3. In Windows NT, teaming options cannot be implemented on adapters that have been configured for VLANs. NetWare can support teaming options and VLANs on the same adapters.

Adapter Fault Tolerance

Adapter Fault Tolerance (AFT) is a simple, effective, and fail-safe approach to increase the reliability of server connections. AFT gives you the ability to set up link recovery to the server adapter in case of a cable, port, or network interface card failure. By assigning two server adapters as a team, AFT enables you to maintain uninterrupted network performance.

AFT is implemented with two server adapters: a primary adapter and a backup, or secondary, adapter. During normal operation, the backup will have transmit disabled. If the link to the primary adapter fails, the link to the backup adapter automatically takes over.

Preferred Primary Adapter

With multiple adapters installed, you can specify one as the Preferred Primary adapter. For example if you have a server with a PRO/1000 server adapter as the primary adapter and a PRO/100+ adapter as the secondary, you could configure the PRO/1000 server adapter to be the preferred primary. In this scenario, if the PRO/1000 server adapter fails, the PRO/100+ will take over. Then when the PRO/1000 server adapter is replaced, it will automatically revert to being the primary adapter in the team.

If a Preferred Primary is not selected, PROSet will attempt to select the best adapter, based on adapter model and speed.

Mixed Adapter Teaming

AFT supports up to eight server adapters per team, in any mix.

Adaptive Load Balancing

Adaptive Load Balancing (ALB) is a simple and efficient way to increase your server's transmit throughput. With ALB you group server adapters in teams to provide an increased transmit rate (up to 8 Gbps) using a maximum of eight adapters. The ALB software continuously analyzes transmit loading on each adapter and balances the rate across the adapters as needed. Adapter teams configured for ALB also provide the benefits of AFT. Receive rates remain at 100 Mbps or 1 Gbps depending on the primary adapter's capability.

To use ALB, you must have 2-8 server adapters installed in your server or workstation and linked to the same network switch.

Cisco† Fast EtherChannel

Fast EtherChannel (FEC) is a performance technology developed by Cisco to increase your server's throughput. Unlike ALB, FEC can be configured to increase both transmission and reception channels between your server and switch. FEC works only with FEC-enabled switches, such as the Catalyst 5000 series. With FEC, as you add adapters to your server, you can group them in teams to provide up to 18 Gbps at full duplex, with a maximum of 8 server adapters. The FEC software continuously analyzes loading on each adapter and balances network traffic across the adapters as needed. Adapter teams configured for FEC also provide the benefits of AFT.

To use FEC, you must have 2, 4, or 8 server adapters installed in your server and linked to the same FEC-enabled Cisco switch.

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 COM port that supports any standard serial device and provides support for serial concentrators, which typically support RJ45 serial connectors. 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 RJ45 serial port. The 8 pins of the RJ45 connector can be configured to match either of two pin-out standards used by serial port concentrators. To accommodate either standard, the J6A2 jumper block located directly behind the rear RJ45 serial port must be jumpered appropriately according to which standard is desired.

➤ **NOTE**

By default, as configured in the factory, the SCB2 baseboard will have the rear RJ45 serial port configured to support a DSR signal.

For serial concentrators that require a DCD signal, the J6A2 jumper block must be configured as follows: The DCD jumper in position 2 and 3 and the DSR jumper in position 2 and 3. Pin 1 on the jumper is denoted by an arrow directly next to the jumper block. See Figure 3 on page 15 for the jumper block pin-out of this configuration.

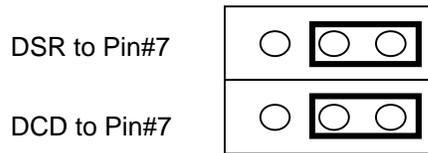


Figure 3. J6A2 Jumper Block for DCD Signal

For serial concentrators that require a DSR signal, the J6A2 jumper block must be configured as follows: The DSR jumper in position 1 and 2 and the DCD jumper in position 1 and 2. Pin 1 on the jumper is denoted by an arrow directly next to the jumper block. See Figure 4.

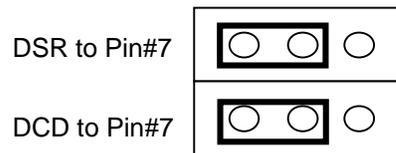


Figure 4. J6A2 Jumper Block for DSR Signal

For those server applications that require a DB9 type of serial connector, an 8-pin RJ45-to-DB9 adapter must be used. The following table defines the pin-out required for the adapter to provide RS232 support.

Table 3. Rear COM2 Port Adapter Pin-out

RJ45	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

⇒ NOTE

The RJ45-to-DB9 adapter should match the configuration of the serial device used. One of two pin-out configurations are used depending on whether the serial device requires a DSR or DCD signal. The final adapter configuration should also match the desired pin-out of the RJ45 connector, as it can also be configured to support either DSR or DCD.

For systems configured with both a front and rear RJ45 serial connectors, the adapters used for the rear port cannot be used with the front port, as the pin-out for both RJ45 ports are different. For example, modem applications typically use DCD. In this case the user would use a DCD-configured adapter and set the jumper block as shown in Figure 3.

ACPI

The SCB2 supports the Advanced Configuration and Power Interface (ACPI) as defined by the ACPI 1.0 and PC97 specifications. 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 SCB2 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.

Security

Intrusion Switch Monitoring

To help prevent unauthorized entry or use of the server, Intel® Server Control 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 ISC 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 4. 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> <p>The server can boot and run the operating system, but mouse and keyboard input is not accepted until the user password is entered.</p> <p>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 boots from CD or diskette and disables the secure mode.</p> <p>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> <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>

continued

Table 4. Software Security Features (continued)

Feature	Description
<p>Set a time out period so that keyboard and mouse input are not accepted</p> <p>Also, screen can be blanked, and writes to diskette can be inhibited</p>	<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>
<p>Control access to using the SSU: set supervisor password</p>	<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 5).</p>
<p>Control access to the system other than SSU: set user password</p>	<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 (see Chapter 5).</p>
<p>Boot without keyboard</p>	<p>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.</p>
<p>Specify the boot sequence</p>	<p>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.</p>

2 Installation Procedures

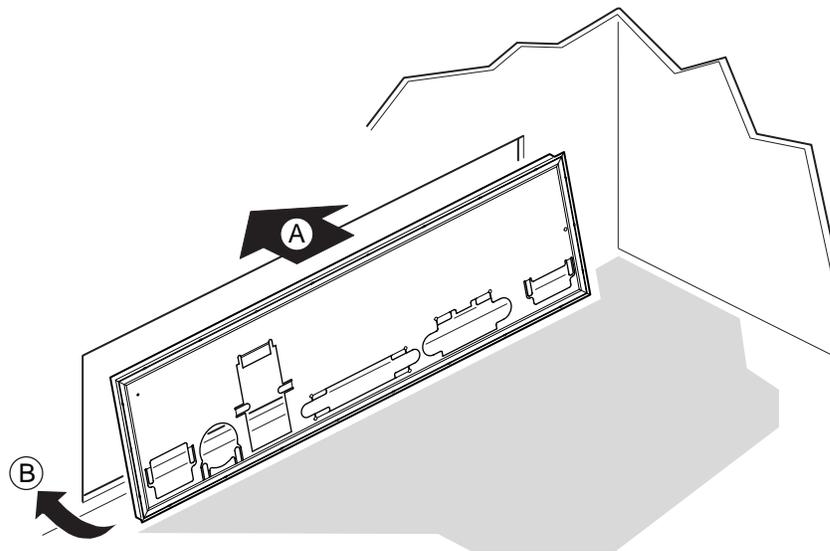
Install the I/O Shield

⇒ **NOTE**

An ATX 2.03-compliant I/O shield is provided with the server board. The shield is required by Electromagnetic Interference (EMI) regulations to minimize EMI. If the shield does not fit the chassis, obtain a properly sized shield from the chassis supplier. The I/O shield does not support the use of the USB 2 connector.

The shield fits the rectangular opening in the back of a chassis. The shield has cutouts that match the I/O ports.

1. Install the shield from inside the chassis. Orient the shield so that the cutouts align with the corresponding I/O connectors on the server board. Make sure the metal fingers are on the inside of the chassis.
2. Position one edge (A) so that the dotted groove is outside the chassis wall, and the lip of the shield rests on the inner chassis wall.
3. Hold the shield in place, and push it into the opening (B) until it is seated. Make sure the I/O shield snaps into place all the way around.

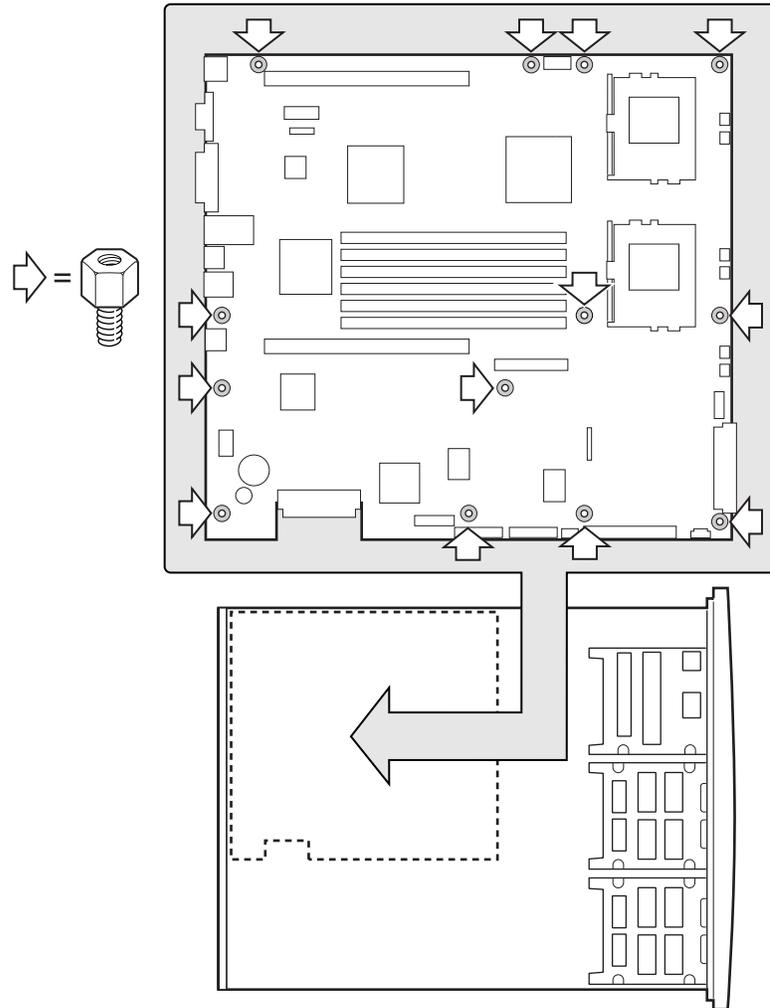


OM12162

Figure 5. Installing the I/O Shield

Rearrange the Standoffs

If your chassis does not have board mount standoffs placed as shown, you must rearrange them so they match the holes in the server board. Failure to properly rearrange the metal standoffs may cause the server board to malfunction and may permanently damage it. Your chassis may be different from the illustration.



OM11716B

Figure 6. Rearrange the Standoffs

Server Board Bumpers

If you are installing your server board in a non-Intel chassis, you must provide and install rubber bumpers at the locations shown below. They must be the same height as the existing board mount standoffs.

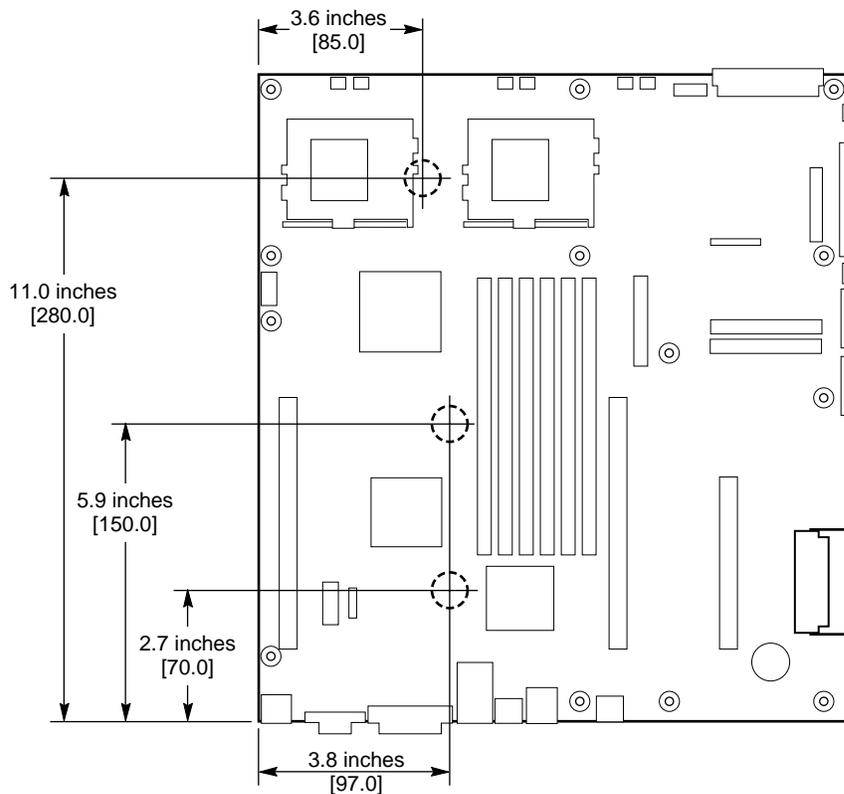
CAUTION

You must install rubber bumpers in all non Intel® chassis that do not already support the board at the locations shown in the illustration.

The rubber bumpers you provide and install must be the same height as the existing board mount standoffs to properly support your new board.

Failure to install bumpers, or installing bumpers that are too tall or too short, may damage your board.

DO NOT INSTALL server board bumpers in the Intel SR1200 and SR2200 server chassis.



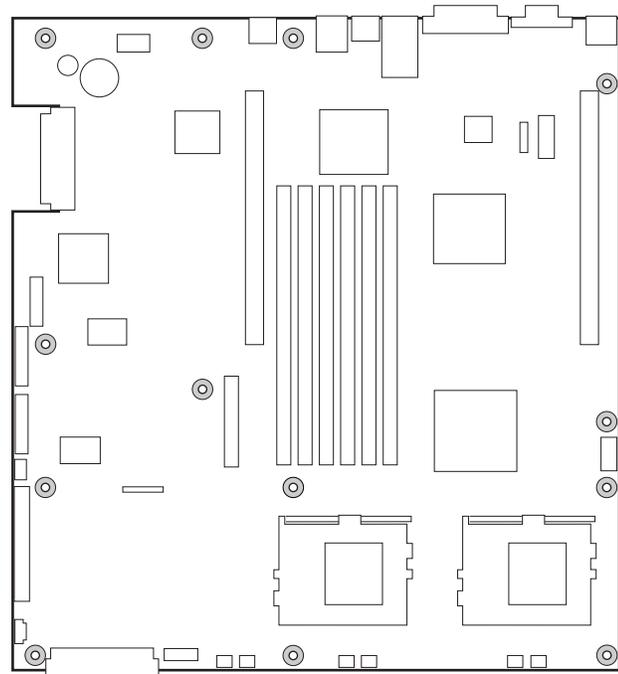
OM12372

Figure 7. Installing Server Board Bumpers

Install the Server Board

To ensure proper grounding and support, it is recommended that you install screws in all the required mounting holes for your chassis. You may need to move cables out of the way to properly install your server board.

1. While placing the board on the chassis standoffs, carefully position the board I/O connectors into the rear chassis I/O openings.
2. Adjust board position to align mounting holes with standoffs.
3. Using the screws that came with your chassis, mount the board to the chassis.

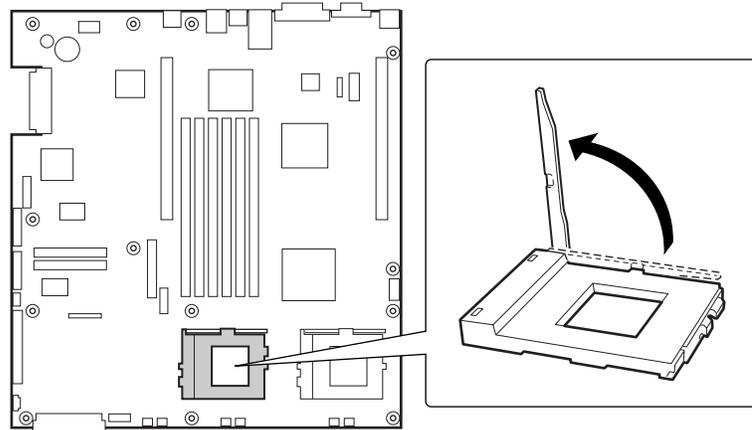


OM11716A

Figure 8. Installing the Server Board

Installing Processors

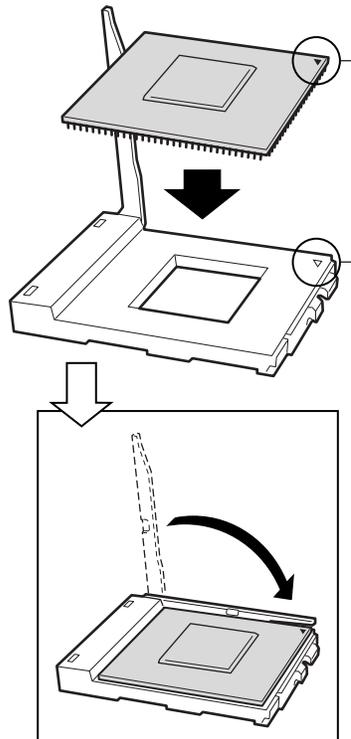
1. Observe the safety and ESD precautions at the beginning of this document.
2. Raise the locking bar on the socket.



OM11711

Figure 9. Raising the Locking Bar

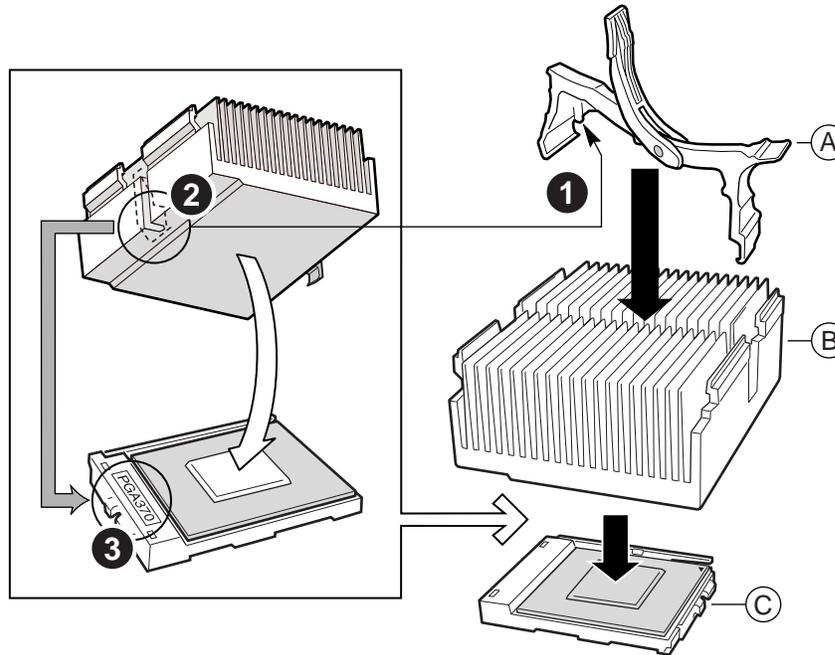
3. Aligning the pins of the processor with the socket, insert the processor into the socket.
4. Lower the locking bar completely.



OM11712

Figure 10. Installing Processors

5. Following the instructions packaged with the applicator, apply thermal grease to the processor.
6. Position the heat sink slot (2) above the socket/processor slot (3).
7. Aligning the raised metal surfaces, place the heat sink on top of the processor.
8. Install the heat sink clip with pin (1) inserted into slot (2).



OM11708A

Figure 11. Installing the Heat Sink

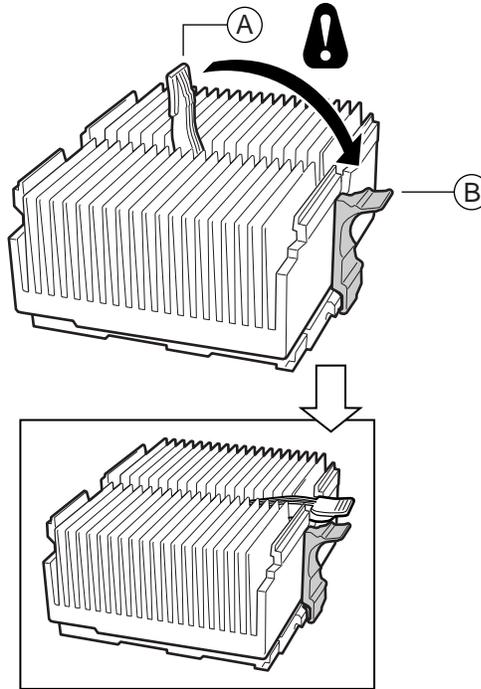
- A. Heat sink retention clip
- B. Heat sink
- C. Socket and processor



CAUTION

Use care when closing the locking lever—do it slowly.

9. Slowly close the locking lever (A) until it contacts tab (B).



OM11709A

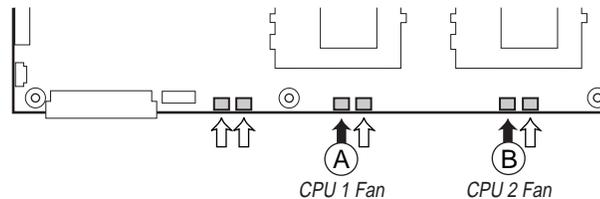
Figure 12. Closing the Locking Lever



NOTE

When using the boxed Intel Pentium III processor, compatible with the SCB2 server board, it will come with a fan for the processor heat sink. This fan cannot be used in a 1U server chassis. If you are integrating a 2U chassis, proceed to the next step.

10. Following the instructions provided with the processor, install the fan on the processor heat sink.
11. Connect the fan to (A) if it is on the primary processor or to (B) if it is on the secondary processor.



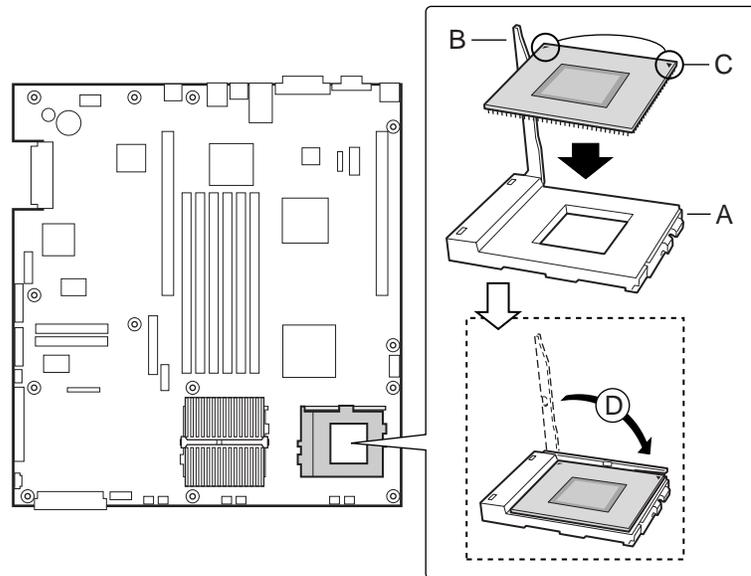
OM12163

Figure 13. Connecting the Heat Sink Fan

Install the Processor Terminator

If you are installing only one processor, you must install a terminator in the secondary processor socket (A). If you are installing two processors, skip this section.

1. Raise the locking bar (B) on the socket.
2. Aligning the two corner marks on the terminator with the handle-side of the socket (C), insert the terminator into the socket.
3. Lower the locking bar completely (D).



OM11710

Figure 14. Installing the Processor Terminator

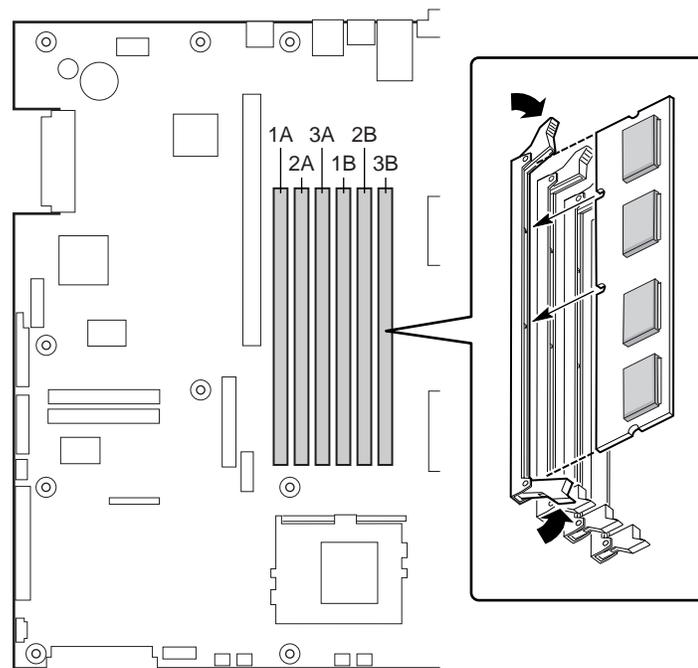
Memory

Only PC133-compliant SDRAM is supported by the server board. Install from 128 MB to 6 GB of registered, ECC memory, using up to six DIMMs. A 1U chassis requires low-profile (LP) 1.2-inch DIMMs.

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

Installed DIMMs must be the same speed and must all be registered. For a list of supported memory, call your service representative or visit the Intel Support website:

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

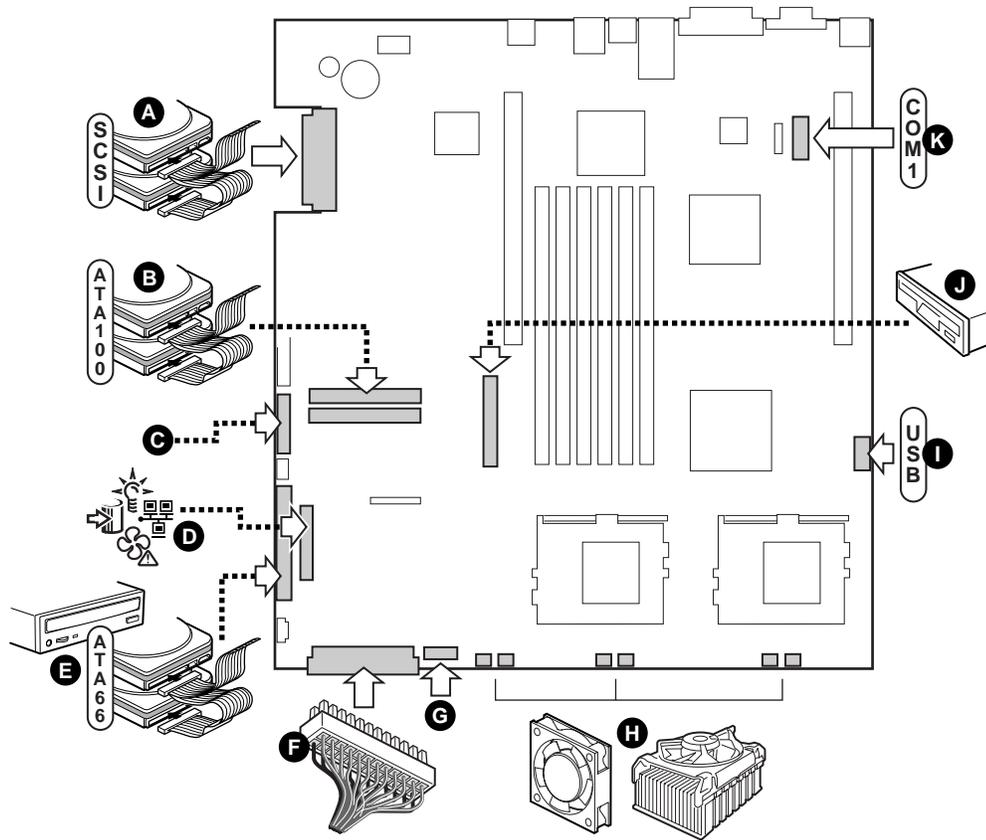


OM11715

Figure 15. Installing Memory

Connect Cables

Before connecting cables, consult the documentation supplied with your chassis.



OM11717

Figure 16. Connecting Cables

- A. SCSI connector (SCSI server board only)
- B. ATA-100 primary/secondary connectors (ATA server board only)
- C. SSI front panel connector (see the server board diagram label for pin out)
- D. Front panel connector (For use in a non Intel chassis only)
- E. IDE connector (For use in a non Intel chassis only)
- F. Main power connector
- G. Fan module connector (7-pin)
- H. Fan connectors (system and processor)
- I. USB header
- J. Floppy connector (For use in a non Intel chassis only)
- K. COM 1 header
- L. Combined Floppy/Front Panel/IDE connector (For use in an Intel chassis only)

3 Upgrading

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, 5V 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

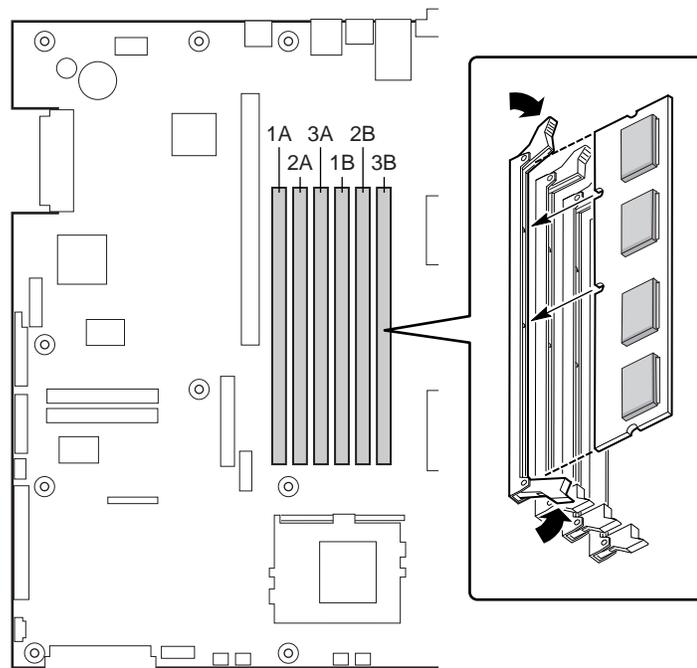
The server board supports from 128 MB up to 6 GB of registered memory in six DIMM slots.

⇒ NOTE

- Only PC133-compliant SDRAM is supported by the server board.
- A 1U chassis requires low-profile (LP) 1.2-inch (30 mm) tall DIMMs.
- DIMMs must be populated in pairs and in the following order:
1a and 1b, then 2a and 2b, then 3a and 3b.
- Installed DIMMs must be the same speed and must all be registered.

For a list of supported memory, call your service representative or visit the Intel Customer Support website:

<http://support.intel.com/support/motherboards/server/scb2>



OM11715

Figure 17. Installing DIMMs

Processors



WARNING

If the server has been running, any installed processor and heat sink on the processor board(s) will be hot. To avoid the possibility of a burn, be careful when removing or installing server board components that are located near processors.



CAUTIONS

Processor must be appropriate: You may damage the server if you install a processor that is inappropriate for your server. Make sure your server can handle a newer, faster processor (thermal and power considerations). For exact information about processor interchangeability, contact your customer service representative or visit the Intel Customer Support website:

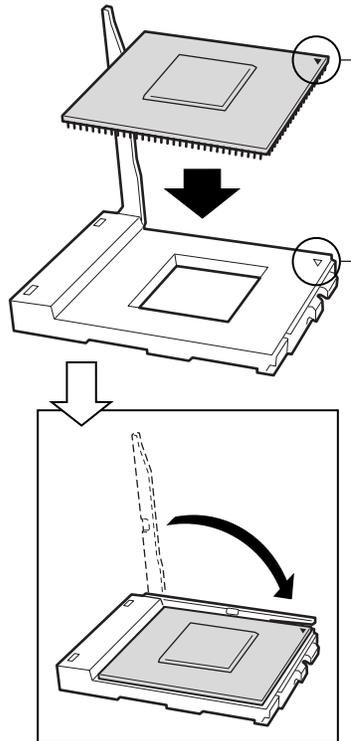
<http://support.intel.com/support/motherboards/server/scb2>

ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.

Adding or Replacing a Processor

If you are adding a second processor to your system, you must first remove the terminator from the secondary processor socket (refer to *Installing and Removing a Terminator* on page 38). The second processor must be compatible with the first processor (within one stepping, same voltage, same speed, see the Intel Customer Support website for specifics).

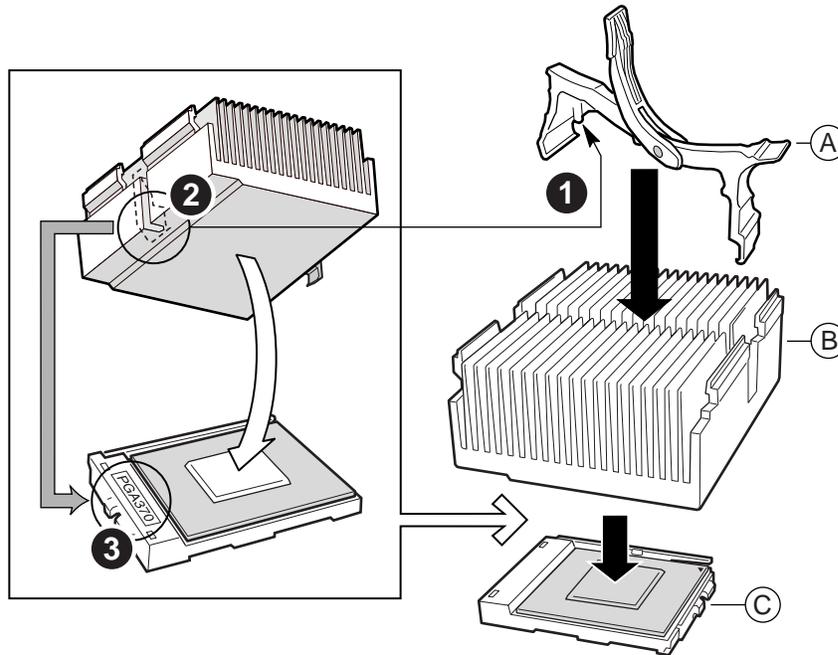
1. Observe the safety and ESD precautions given at the beginning of this chapter.
2. Remove the chassis cover (see your system or chassis documentation for instructions).
3. Raise the locking bar on the socket.
4. Aligning the pins of the processor with the socket, insert the processor into the socket.
5. Lower the locking bar completely.



OM11712

Figure 18. Insert the Processor and Lower the Locking Bar

6. Follow the instructions packaged with your boxed processor for preparing the heat sink and processor for installation.
7. Position the heat sink slot (2) above the socket/processor slot (3).
8. Aligning the raised metal surfaces, place the heat sink on top of the processor.
9. Install the heat sink clip with pin (1) inserted into slot (2).



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- A. Heat sink retention clip
- B. Heat sink
- C. Socket and processor

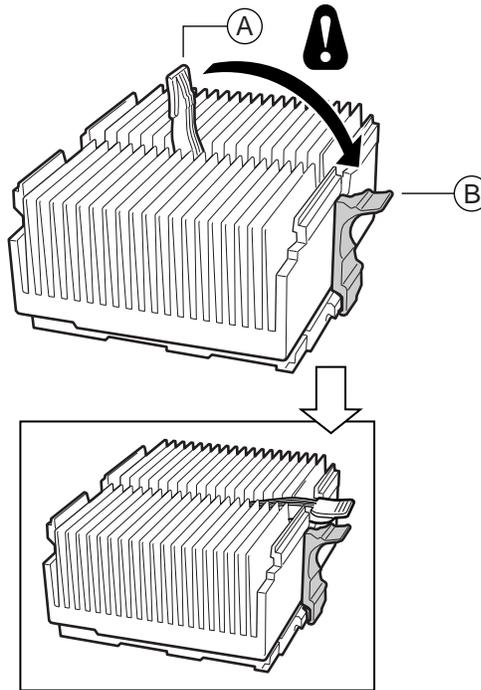
Figure 19. Installing the Heat Sink



CAUTION

Use care when closing the locking lever—do it slowly.

10. Slowly close the locking lever (A) until it contacts tab (B).



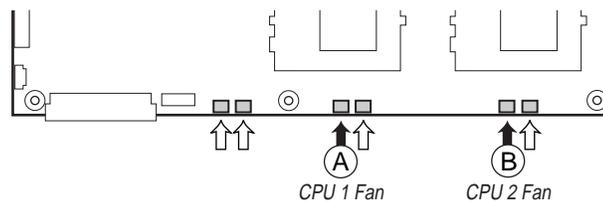
OM11709A

Figure 20. Attach the Heat Sink

⇒ **NOTE**

When using the boxed Intel Pentium III processor, compatible with the SCB2S server board, it will come with a fan for the processor heat sink. This fan cannot be used in a 1U server chassis. If you are integrating a 2U chassis, proceed to the next step.

11. Following the instructions provided with the processor, install the fan on the processor heat sink.
12. Connect the fan to (A) if it is on the primary processor or to (B) if it is on the secondary processor.



OM12163

Figure 21. Connect the Heat Sink Fan

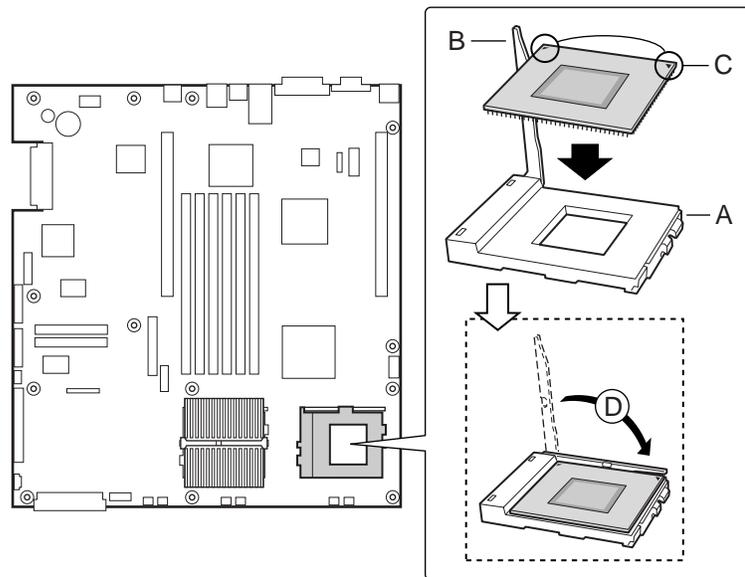
Removing a Processor

1. Observe the safety and ESD precautions at the beginning of this chapter and the additional cautions given here.
2. If a heat sink fan is present, unplug it from the server board and remove it from the heat sink.
3. Disengage the retention clip from the processor socket by slowly opening the locking lever until it is vertical.
4. Remove the processor from the socket.
5. If you removed the processor from the secondary socket and are not replacing it, you must install a terminator in its place.

Installing and Removing a Terminator

If you are installing only one processor, you must install a terminator in the secondary processor socket (A).

1. Observe the safety and ESD precautions at the beginning of this chapter and the additional cautions given here.
2. Raise the locking bar on the socket.
3. To install a terminator, align the two corner marks on the terminator with the handle-side of the socket (C) and then insert the terminator into the socket.
4. To remove a terminator, pull it out of the socket and then replace the it with another terminator or install a processor.
5. Lower the locking bar (B) completely.



OM11710

Figure 22. Installing a Terminator

Replacing the Back up Battery

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



WARNING

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



ADVARSEL!

Lithiumbatteri - Eksplosjonsfare ved fejløgt håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.



ADVARSEL

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



WARNING

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

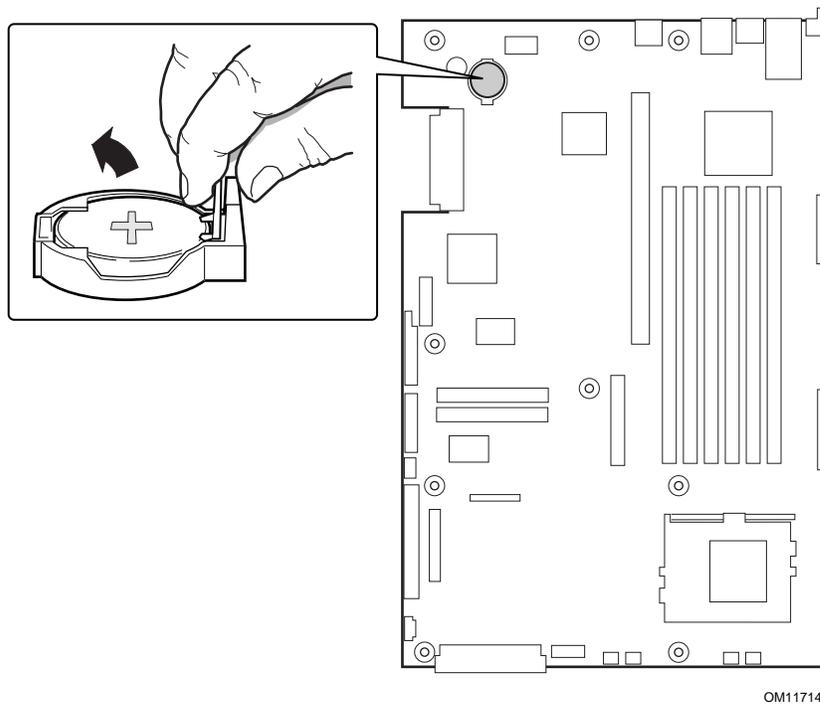


VAROITUS

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

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.



OM11714A

Figure 23. Replacing the Back up Battery

4 Configuration Software and Utilities

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 be run locally or remotely to assist in system management. The service partition uses approximately 30 to 40 MB of hard disk space.

⇒ **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 Guide for the Intel Server Control*. This document is included on the Resource CD-ROM shipped with your SCB2 server board.

Configuration Utilities

System Software Update Sequence

When you update the system software, you should do it in the following order.

1. Update BIOS
2. Update firmware (BMC & HSC)
3. Update FRU/SDR
4. Unplug system for 30 seconds
5. Clear CMOS via front panel

Table 5. Configuration Utilities

Utility	Description and brief procedure	Page
BIOS Setup	Use for system configuration of onboard resources, setting boot device priority, or setting system security options. You can move the CMOS jumper on the system board from the default setting (Protect CMOS memory) to the Clear setting; this will allow most system configurations to boot.	43
Changing Boot Device Priority	Use this option to change the boot device priority temporarily or permanently.	43
Adaptec SCSI <i>Select</i> [†] Utility	Use to configure or view the settings of the SCSI host adapters and onboard SCSI devices in the system.	54
Direct Platform Control (DPC) Console	Use to access and monitor the server remotely.	56
System Setup Utility (SSU) and Client System Setup Utility (CSSU)	Use for viewing and configuring server management options, viewing the system event log (SEL), setting boot device priority, or setting system security options. The SSU can run either from the configuration software CD or from a set of bootable diskettes. You can create the diskettes from the CD. The CSSU is run from the service partition via the DPC console. It provides the same functionality as the SSU, but from a remote console. Information entered via the SSU/CSSU overrides information entered via BIOS Setup.	57
FRU/SDR Load Utility	Use to update the Field Replacement Unit (FRU) and Sensor Data Record (SDR) flash components. NOTE: You must run the FRU/SDR Load utility whenever the BMC is updated or if you change your processors.	75, 79
BIOS Update Utility	Use to update the BIOS or recover from a corrupted BIOS update.	75, 77
Firmware Update Utility	Use to update BMC flash ROM or other firmware.	75, 79

Hot Keys

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

Table 6. 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 model only)
Enter the Promise Technology IDE RAID Utility.	<Ctrl+F> (ATA model 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 execution of the Power-On Self-Test (POST). POST discovers, configures, and tests the processors, memory, keyboard, and most installed peripheral devices. The time needed to test memory depends on the amount of memory installed. POST is stored in flash memory.

1. Turn on your video monitor and system. After a few seconds, POST begins to run and displays a splash screen.
2. While the splash screen is displayed:
 - Press <F2> to enter the BIOS Setup (see “Using BIOS Setup”)OR
 - Press <Esc> to view POST diagnostic messages and change the boot device priority for this boot only (see “Temporarily Changing the Boot Device Priority” on page 53.)
3. After pressing <F2> or <Esc> during POST, you can press <Ctrl+A> to run the *SCSISelect* Utility. For more information, see “Running the Adaptec *SCSISelect* Utility” on page 54.
4. If you do not press <F2> or <Esc> 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
5. At this time, pressing any key causes the system to attempt a reboot. The system searches all removable devices in the order defined by the boot priority.

Using BIOS Setup

This section describes the BIOS Setup options. Use BIOS Setup to change the system configuration defaults. 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. You must run BIOS Setup to specify the correct configuration.

Run BIOS Setup to modify all server board features, such as:

- Defining the diskette drive
- Defining the serial port(s)
- Set time/date (to be stored in RTC)
- Configure hard drive(s)
- Specify boot device sequence
- Enable SCSI BIOS
- Enable Server Management Features
- Setup system passwords

Run the System Setup Utility (SSU) to setup the following:

- Enable Server Management Features
- Read System Event Log (SEL)
- Read Sensor Data Records
- Read System FRU Information
- Specify boot device sequence
- Setup system passwords

Record BIOS Setup Settings

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 have a misconfigured diskette drive, and you cannot use BIOS Setup to correct the problem, you might need to clear CMOS memory. To clear CMOS, either of two methods can be used.

1. 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.
2. Move the “Clear CMOS” jumper found on the configuration jumper block on the baseboard.

BIOS Setup Menus

Table 7. BIOS Setup Menu Navigation

To:	Press:
Get general help	<F1> or <Alt+H>
Move between menus	← →
Go to the previous item	↑
Go to the next Item	↓
Change the value of an item	+ or -
Select an item or display a submenu	<Enter>
Leave a submenu or exit BIOS Setup	<Esc>
Reset to BIOS Setup defaults	<F9>
Save and exit BIOS Setup	<F10>

Table 8. BIOS Setup Menu Display

When you see this:	What it means:
An option is grayed out and not accessible	<p>You cannot change or configure the option in that menu screen for one of the following reasons:</p> <ul style="list-style-type: none"> • The option is auto-configured or auto-detected. • The field is informational only. • The field is password protected and is accessible only by the User or Administrator

The rest of this section lists the features that display onscreen after you press <F2> to enter BIOS Setup. We do not describe all the option choices because (1) a few are not user selectable but displayed for your information, and (2) many of the choices are relatively self-explanatory.

Main Menu

Feature	Choices	Description
System Time	HH:MM:SS	Sets the system time.
System Date	MM/DD/YYYY	Sets the system date.
Floppy Disk A:	Not Installed 1.44/1.25 MB/1.2 MB 3½" 2.88 MB 3½"	Selects the diskette type.
Hard Disk Pre-delay	Disabled Enabled	Causes the BIOS to insert a delay before attempting to detect IDE drives in the system
Primary IDE Master	Press <Enter>	Enters submenu.
Primary IDE Slave	Press <Enter>	Enters submenu.
Processor Settings	Press <Enter>	Enters submenu.
Language	English (US) French Spanish German Italian	Selects which language BIOS displays.

Primary IDE Master and Slave Submenu

Feature	Choices	Description
Type	None Auto	<p>Notifies the system to ignore this drive.</p> <p>Allows the system to attempt auto-detection of the drive type.</p>
Multi-Sector Transfers	Disabled 2, 4, 8, or 16 sectors	<p>Determines the number of sectors per block for multisector transfers.</p> <p>For Type Auto, this field is informational only.</p>
LBA Mode Control	Disabled Enabled	For Type Auto, this field is informational only.
PIO Mode	Standard 1, 2, 3, 3/DMA 1, 4, 4/DMA 2	
Ultra DMA Mode	Mode 2 Mode 4	<p>Displays the method for moving data to/from the drive.</p> <p>This field is informational only.</p>

Processor Settings Submenu

Feature	Choices	Description
Processor Type	N/A	Reports type of processor(s) installed in system.
Processor POST Speed	N/A	Reports the speed of the processor measured at POST.
Processor Retest	Disabled Enabled	Select yes for the BIOS to clear historical processor status and retest all processors on the next boot.
Processor Serial Number	Enabled Disabled	If enabled, the system records the serial number of each processor.
Processor 1 CPU ID	N/A	Reports Stepping for Processor 1.
Processor 1 L2 Cache Size	N/A	Reports L2 Cache Size for Processor 1. This feature does not appear if processor 1 is absent or disabled.
Processor 2 CPU ID	N/A	Reports Stepping for Processor 2.
Processor 2 L2 Cache Size	N/A	Reports L2 Cache Size for Processor 2. This feature does not appear if processor 2 is absent or disabled.

Advanced Menu

Feature	Choices	Description
PCI Configuration	Press <Enter>	Enters submenu.
Peripheral Configuration	Press <Enter>	Enters Submenu
Memory Configuration	Press <Enter>	Enters Submenu
Advanced Chipset Control	Press <Enter>	Enters submenu
Reset Configuration Data	No Yes	Select Yes to clear the system configuration data during next boot. System automatically resets to No in next boot.
Plug & Play O/S	No Yes	Selecting "No" lets the BIOS configure all the devices in the system. Selecting "Yes" allows the OS configure Plug and Play devices.
NumLock	Off On	Enables or disables the "Numlock" function at power up.

PCI Configuration Submenu

Feature	Choices	Description
USB Function	Press <Enter>	Enters Submenu
Onboard NIC 1	Press <Enter>	Enters Submenu
Onboard NIC 2	Press <Enter>	Enters Submenu
Onboard SCSI	Press <Enter>	Enters Submenu (SCSI model only)
Onboard R-IDE	Press <Enter>	Enters Submenu (ATA model only)
Onboard Video	Press <Enter>	Enters Submenu
Riser Card Override	Enabled Disabled	This option will only be displayed if a non-Intel chassis is used. If enabled, all six options for PCI slots will be displayed. If disabled, only two options for PCI slots will be displayed.
PCI Slot 1B ROM	Enabled Disabled	Used to enable or disable an option ROM that may be present on a PCI add-in card installed in the slot. In a 2U chassis, options for additional PCI slots PCI bus B will be displayed.
PCI Slot 1C ROM	Enabled Disabled	Used to enable or disable an option ROM that may be present on a PCI add-in card installed in the slot. In a 2U chassis, options for additional PCI slots PCI bus C will be displayed.

USB Function Submenu

Feature	Choices	Description
USB Function	Enabled Disabled	Enables the embedded USB controller.

Onboard NIC1 and 2 Submenu

Feature	Choices	Description
Onboard NIC	Enabled Disabled	If enabled, the system uses the embedded NIC.
Embedded NIC ROM	Enabled Disabled	Enables the device option ROM.

Onboard SCSI Submenu

Feature	Choices	Description
Onboard SCSI	Enabled Disabled	Enables or disables embedded legacy SCSI controller hardware.
Embedded LVD SCSI ROM	Enabled Disabled	Enables the device expansion ROM.

Onboard R-IDE Submenu

Feature	Choices	Description
Onboard R-IDE	Enabled Disabled	If disabled, the embedded R-IDE device is turned off and the device resources are hidden from the system.
Onboard R-IDE ROM	Enabled Disabled	If enabled, initializes the embedded R-IDE device expansion ROM.

Onboard Video Submenu

Feature	Choices	Description
Onboard Video	Enabled Disabled	Enables the embedded video controller.

Peripheral Configuration Submenu

Feature	Choices	Description
Serial Port 1 Address	Disabled 3F8 2F8 3E8 2E8	Used to configure the serial port address. If console redirection is used, verify that the I/O and IRQ are identical to values configured in the "Server Setup" menu.
Serial Port 1 IRQ	4 3	Used to configure the interrupt for serial port 1.
Serial Port 2 Address	Disabled 3F8 2F8 3E8 2E8	Used to configure the serial port address. If console redirection is used, verify that the I/O and IRQ are identical to values configured in the "Server Setup" menu.
Serial Port 2 IRQ	4 3	Used to configure the interrupt for serial port 2.
Diskette Controller	Enabled Disabled	Used to enable or disable the onboard floppy disk controller.
Legacy USB Support	Disabled Keyboard Only Auto Keyboard & Mouse	Enables support for legacy USB.
Front Panel USB	Disabled Enabled	Used to enable the USB ports accessed through the internal USB header found on the baseboard.

Memory Configuration Submenu

Feature	Choices	Description
Extended Memory Test	1 MB 1 KB Every Location Disabled	Extended memory test options run during POST. Note: the smaller the increment, the longer the test takes during POST.
Bank #1	N/A	Informational screen used to display whether DIMMs are present in bank #1
Bank #2	N/A	Informational screen used to display whether DIMMs are present in bank #2
Bank #3	N/A	Informational screen used to display whether DIMMs are present in bank #3
Memory Retest	Disabled Enabled	If enabled, BIOS will activate and retest all DIMMs on the next system boot. This option will be automatically reset to disabled on the next system boot.

Advanced Chipset Control Submenu

Feature	Option	Description
Wake on Ring	Disabled Enabled	Legacy wake only: Determines the action of the system when the system power is off and the modem is ringing.
Wake on LAN	Disabled Enabled	Legacy wake only: Determines the action of the system when a LAN wake up event occurs.
Wake on PME	Disabled Enabled	Legacy wake only: Determines the action of the system when a PCI Power Management Enable wake up event occurs.
Wake on RTC Alarm	Disabled Enabled	Legacy wake only: Determines the action of the system when a RTC Alarm Wake up event occurs.

Security Menu

Enabling the Supervisor Password field requires a password for entering BIOS Setup. The passwords are not case sensitive.

Feature	Choices	Description
User Password is	Installed Not Installed	Informational Only.
Administrator Password is	Installed Not Installed	Informational Only.
Set Administrative Password	Press <Enter>	When the <Enter> key is pressed, a password prompt appears. Press ESC key to abort. Once set, this can be disabled by setting it to a null string or by clearing password jumper on server board.
Set User Password	Press <Enter>	When the <Enter> key is pressed, a password prompt appears. Press ESC key to abort. Once set, this can be disabled by setting it to a null string or by clearing password jumper on server board.
User Access Level	Limited No Access View Only Full	Sets the User access level for various BIOS setup functions.
Password on Boot	Disabled Enabled	If your password is set and enabled, the system prompts you for a password before it boots.
Secure Mode Timer	1 minute 2 minutes 5 minutes 10 minutes 20 minutes 60 minutes 120 minutes	Period of PS/2 keyboard and/or mouse inactivity specified for secure mode to activate. A password is required for secure mode to function. This option only appears on the screen after a "user" password has been entered.
Secure Mode Hot Key (CTRL-ALT-)	Z L	Key assigned to invoke secure mode features cannot be enabled unless at least one password is set. This option only appears on the screen after a "user" password has been entered.
Secure Mode Boot	Disabled Enabled	System boots in secure mode. The user must enter a password to unlock the system. This option only appears on the screen after a "user" password has been entered.

continued

Security Menu (continued)

Feature	Choices	Description
Video Blanking	Disabled Enabled	Blank video when secure mode is activated. A pass word is required to unlock the system. This option only appears on the screen after a “user” password has been entered.
Power Switch Inhibit	Disabled Enabled	When enabled, the power switch is inoperable. This option only appears on the screen after a “user” password has been entered.

Server Menu

Feature	Choices	Description
System Management	Press <Enter>	Enters Submenu.
Console Redirection	Press <Enter>	Enters Submenu.
Event Log Configuration	Press <Enter>	Enters Submenu
Service Boot	Enable Disable	If enabled, server boots directly to System Management.
Assert NMI on PERR	Disabled Enabled	If enabled, PCI bus parity error (PERR) routes to NMI.
Assert NMI on SERR	Disabled Enabled	If enabled, PCI bus system error (SERR) routes to NMI.
FRB-2 Policy	Disable BSP Do not Disable BSP Retry 3 Times	Controls the policy of the FRB-2 timeout. This option determines when the Boot Strap Processor (BSP) should be disabled if an FRB-2 error occurs.
BMC IRQ	Disabled IRQ 5 IRQ 11	Sets the BMC IRQ.
After Power Failure	Stays Off Last State Power On	Determines the mode of operation if a power loss occurs.
Temperature Sensor	Disabled Enabled	If enabled, the system will not boot if the ambient system temperature is outside the range specified in the Sensor Data Record (SDR).
POST Error Pause	Disabled Enabled	If enabled, the system will wait for user intervention on critical POST errors.
Platform Event Filtering	Disabled Enabled	Enable/Disable triggers for system sensor events inside the Baseboard Management Controller (BMC).

System Management Submenu

Feature	Choices	Description
Board Part Number	N/A	Information field only
Board Serial Number	N/A	Information field only
System Part Number	N/A	Information field only
System Serial Number	N/A	Information field only
Chassis Part Number	N/A	Information field only
Chassis Serial Number	N/A	Information field only
BIOS Revision	N/A	Information field only
BMC Revision	N/A	Information field only
Primary HSBP Revision	N/A	Information field only

Console Redirection Submenu

Feature	Choices	Description
Serial Console Redirection	Disabled Enabled	If enabled, BIOS uses the specified serial port to redirect the console to a remote ANSI terminal. Enabling this option will disable the Quiet Boot option.
Serial Port	COM1 3F8 IRQ4 COM2 2F8 IRQ3	Serial port and IRQ designated for server management features. Make sure these values are identical to those of Serial Port A and B in the Peripheral Configuration Setup menu.
Baud Rate	9600 19.2k 38.4k 115.2k	Console Redirection, when enabled, uses the baud rate specified. When the Direct Platform Control (DPC) shares the COM port as console redirection, set the baud rate to 19.2k to match DPC baud rate, unless the autobaud feature is used.
Flow Control	No flow control CTS/RTS XON/XOFF CTS/RTS + CD	None, disallows flow control. CTS/RTS is hardware based flow control. XON/XOFF is software flow control. CTS/RTS +CD is hardware based plus carrier-detect flow control. When DPC is sharing the COM port as Console Redirection, set the flow control to XON/XOFF or XON/XOFF+CD depending whether a modem is used.

Event Log Configuration Submenu

Feature	Choices	Description
Clear All Event Logs	No Yes	Setting this option to YES will clear the DMI event log after a system reboot.
Event Logging	Enabled Disabled	When enabled, all systems events are logged.
Critical Event Logging	Enabled Disabled	If enabled, BIOS will detect and log events for system critical errors. Critical errors are fatal to system operation. These errors include PERR, SERR, ECC, Memory errors and NMI.

Boot Menu

Feature	Choices	Description
Quiet Boot	Disabled Enabled	Disabled, displays normal POST messages. Enabled, displays OEM Logo instead of POST messages. Enabling this option disables serial redirection.
Boot Device Priority	Press <Enter>	Enters submenu.
Hard Drive	Press <Enter>	Enters submenu.
Removable Devices	Press <Enter>	Enters submenu.
ATAPI CDROM Drives	Press <Enter>	Enters submenu.

Boot Device Priority Submenu

Use the up- or down-arrow keys to select a device. Press the <+> or <-> keys to move the device higher or lower in the boot priority list.

Boot Priority	Device	Description
1 st Boot Device	Removable Devices	Attempts to boot from a removable media device.
2 nd Boot Device	Hard Drive	Attempts to boot from a hard drive device.
3 rd Boot Device	ATAPI CD-ROM Drive	Attempts to boot from an ATAPI CD-ROM drive.
4 th Boot Device	Intel Boot Agent version 4	Attempts to boot from a network when a network device controlled by a PXE compliant ROM is present in the system.

Hard Disk Submenu

For options on this menu, use the up or down arrow keys to select a device. Press the <+> or <-> keys to move the device higher or lower in the boot priority list.

Option	Description
1. Drive #1 (or actual drive string)	Other bootable cards cover all the boot devices not reported to the system BIOS through BIOS Boot Specification mechanisms. It may or may not be bootable, and may not correspond to any device.
2. Other bootable cards (additional entries for each drive that has a PnP header)	

Removable Devices Submenu

For options on this menu, use the up or down arrow keys to select a device.

Feature	Option	Description
Lists Bootable Removable devices in the system.	Select one of the detected devices	This list includes legacy 1.44-MB floppy drives and 120-MB floppy drives.

ATAPI CDROM Drives Submenu

For options on this menu, use the up or down arrow keys to select a device.

Feature	Option	Description
Lists Bootable Removable devices in the system.	Select one of the detected devices	This includes any ATAPI CDROM Drive installed

Exit Menu

You can make the following selections on the Exit Menu. Select an option using the up or down arrow keys. Press <Enter> to run the option. Pressing <Esc> does not exit this menu. You must select one of the items from the menu or menu bar to exit.

Choices	Description
Exit Saving Changes	Exits and saves changes to CMOS.
Exit Discarding Changes	Exits without saving changes to CMOS. BIOS Setup utility is exited and POST continues.
Load BIOS Setup Defaults	Loads factory default values for all BIOS Setup data.
Load Custom Defaults	Loads custom defaults saved from previous Custom Save.
Save Custom Defaults	Saves new BIOS settings and stores them as custom default values.
Discard Changes	Discards any changes made to BIOS settings and restores previous settings.

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 "CD-ROM Drive."

⇒ NOTE

One of the selections on the popup Boot menu is "Enter Setup." Selecting this option brings you into the BIOS Setup. For more information about the BIOS Setup, see "Using BIOS Setup" on Page 43.

4. Press <Enter>.
5. The boot process continues. When finished, a system prompt displays.

Permanently Changing the Boot Device Priority

You can change the boot device permanently. These changes are saved from boot to boot.

1. Enter Setup.
2. From the Setup screen, select Boot Menu.
3. Select Boot Device Priority, and press <Enter>.
4. In the Boot Device Priority screen, use the up- or down-arrow keys to select the drive you want to boot from, then press the <+> key to move it to the top of the list.
5. Set the second and third boot devices in the same manner as step 4.
6. Press the <F10> key to save your changes and exit Setup.
7. When the Exit prompt appears, press <Enter> again.
8. The boot process continues. When finished, an operating system prompt displays.

Running the Adaptec SCSISelect 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-7899 SCSI host adapter and displays the message `Adaptec AIC-7899 SCSI BIOS V x.xxx` where `x.xxx` is the version number of the SCSI*Select* utility. Pressing <Ctrl+A> at this time allows you to configure the Adaptec AIC-7899 SCSI host adapter.

When to Run the Adaptec SCSISelect Utility

Use the SCSI*Select* 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 SCSISelect Utility

1. When this message appears on the video monitor:
`<<<Press <Ctrl><A> for SCSISelect(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:

SCSISelect 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-7899 SCSI Adapter

The Adaptec AIC-7899 SCSI adapter has two busses. Select the bus from the following menu:

Main Menu

Menu Item	Options
You have an AIC-7899 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:

Menu for each SCSI Channel

Host Adapter	Option	Comment
AIC-7899 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:

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.

Running the Promise FastBuild Utility

This utility is only found on the SCB2 ATA model only.

The Promise ATA-100 host adapter is configured using the FastBuild[†] configuration utility that allows you to configure/view the settings of the host adapter and set RAID configurations.

When to Run the Promise FastBuild Utility

Use the FastBuild utility to:

- Define a RAID array
- Delete a RAID array
- Restore a RAID array

Running the Promise FastBuild Utility

1. When this message appears on the video monitor:
`<<<Press <Ctrl><F> to enter FastBuild (TM) Utility>>>`
2. Press <Ctrl+F> to run the utility.

Direct Platform Control (DPC) Console

Direct Platform Control (DPC) Console is part of Intel Server Control. Direct Platform Control is a server management application that supports remote system management via LAN, or an RS-232 serial connection to the server COM2 port over a modem or a direct serial cable. The Direct Platform Control Console provides the ability for remote management of Intel servers via modem or LAN with a capability to run DOS-based programs.

DPC console runs on a client workstation. 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 COM2 port.

DPC Console is independent of the server operating system.

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 three 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.
- 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.
- Re-direct 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 Re-direct 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, 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 through a modem. 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 document named "ENUDPCUG.pdf." This document is in the Manuals\SrvMgmt directory on the server software kit accompanying the SCB2 server board.

Using the System Setup Utility

The System Setup Utility (SSU) is located on the SCB2 System Resource CD-ROM shipped with the server board. The SSU provides a graphical user interface (GUI) over an extensible framework for server configuration. For the SCB2 systems, the SSU framework supports the following functions and capabilities:

- Allows configuration of Server Management options
- Allows you to specify boot device order and system security options
- Permits viewing and clearing of the system's critical event log
- Allows troubleshooting of the server when the OS is not operational
- Allows you to view the system's Sensor Data Records and Field Replaceable Unit information

What You Need to Do

You can run the SSU directly from the SCB2 Server Software Kit CD-ROM by booting the server system to the CD and selecting “Utilities” or from a set of DOS diskettes.

If you choose to run the SSU from a set of DOS diskettes, you must create the SSU diskettes from the SCB2 Resource CD-ROM by booting to the CD-ROM and selecting “Create Diskettes.” Alternatively, if you have a Windows based workstation, you can insert the CD into that system and create diskettes from the “Utilities” menu of the graphical user interface.

If your diskette drive is disabled, or improperly configured, you must use BIOS Setup to enable it so that you can use the SSU. If necessary, you can disable the drive after you exit the SSU. Information entered using the SSU overrides any entered using BIOS Setup.

Running the SSU

Running the `ssu.bat` file provided on the SSU media starts the SSU. If the server boots directly from the SSU media, the `ssu.bat` file automatically runs. If it boots from a different media, you can start the SSU manually or by another application. When the SSU starts in the local execution mode (the default mode), the SSU accepts input from the keyboard and/or mouse. The SSU presents a VGA based Graphical User Interface (GUI) on the primary monitor.

The SSU runs from writable, non-writable, removable, and non-removable media. If you run the SSU from non-writable media, you cannot save user preference settings (such as screen colors).

The SSU supports the ROM-DOS® V6.22 operating system. It may run on other ROM-DOS-compatible operating systems but they are not supported. The SSU will not operate from a “DOS box” running under an operating system such as Windows.

Starting the SSU

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. For full functionality, the SSU requires the availability of the `AF.INI`, `AF.HLP`, plus any `.ADN` files and their associated `.HLP` and `.INI` files.

1. Turn on your video monitor and your system.
2. There are two ways to start the SSU:
 - a. After creating set of three SSU diskettes from the CD: Insert the first SSU diskette in drive A, and press the reset button or `<Ctrl+Alt+Del>` to reboot your server from the diskette.
 - b. Directly from the SCB2 Server Software Kit CD-ROM: Insert the CD into your CD-ROM drive and press the reset button or `<Ctrl-Alt-Del>` to reboot. When prompted to do so, press `<F2>` to enter BIOS Setup. From the Boot Menu, select the Boot Device Priority option and then select CD-ROM as your primary boot device. Save those settings and exit BIOS Setup. The server will boot from the CD-ROM and display a menu of options. Follow the instructions in the menu to start the SSU.
3. When the SSU title appears on the screen, press `<Enter>` to continue.
4. The mouse driver loads if it is available; press `<Enter>` to continue.

5. This message appears:
Please wait while the Application Framework loads....
6. When the main window of the SSU appears, you can customize your interface before continuing. (See Figure 24.)

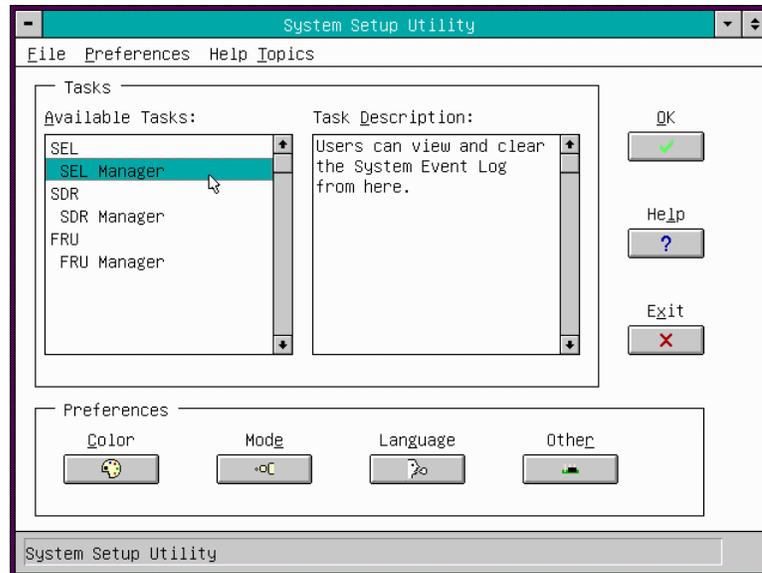


Figure 24. System Setup Utility Main Window

Customizing the SSU

The SSU lets you customize your interface according to your preferences. 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 - this button lets you change the default colors associated with different items on the screen with predefined color combinations. The color changes are instantaneous.
- Mode - this button lets you set the desired expertise level.
 - novice
 - intermediate
 - expert

The expertise level determines which tasks are visible in the Available Tasks section and what actions each task performs. For a new mode setting to take effect, you must exit the SSU and restart it.

- Language - this button lets you change the strings in the SSU to strings of the appropriate language. For a new language setting to take effect, you must exit the SSU and restart it.
- Other - this button lets you change other miscellaneous options in the SSU. The changes take effect immediately.

To change the interface default values:

- Use the mouse to click on the proper button in the Preferences section of the SSU Main window.
OR
- Use the tab and arrow keys to highlight the desired button, and press the spacebar or <Enter>.
OR
- Access the menu bar with the mouse or hot keys (Alt + underlined letter).

⇒ NOTE

If you run the SSU from non-writable media (like a CD-ROM), these preferences will be lost when you exit the SSU.

Launching a Task

It is possible to have many tasks open at the same time, although some tasks may 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.

To launch a task:

- In the SSU Main window, double click on the task name under Available Tasks to display the main window for the selected task.
OR
- Highlight the task name, and click on OK.
OR
- Use the tab and arrow keys to highlight the desired button, and press the spacebar or <Enter>.

MultiBoot Options Add-in

The Multiboot Add-in (MBA) provides an interface for selecting Initial Program Load (IPL) devices. Using the MBA, the user can identify all IPL devices in the system and prioritize their boot order. On power-up, the BIOS will sequentially attempt to boot from each device.

Under this window, you can change the boot priority of a device.

1. Select a device.
2. Press the + button to move it up in the list. Press the - button to move it down.

Password Add-in

The Password Add-in (PWA) provides security and password support options. Within the PWA, the user can either set or modify the current system passwords or update any of the various security options available.

To Set your Password

1. Click on your password button.
2. Enter the password in the first field.
3. Confirm the password by entering it again in the second field.

To Change or Clear your Password

1. Click on your password button.
2. Enter the old password in the first field.
3. Enter the new password in the second field (or leave blank to clear).
4. Confirm the password by entering it again in the second field (or leave blank to clear).

Admin Password Button

The 'Admin Password' button allows the user to set or change the administrative password used by both the SSU and the system BIOS. Note that this option is not available if both an administrative and a user password are set on the on the system and only the user password has been provided upon starting the SSU. All changes to the admin password take place immediately.

To Change or Clear the Administrator Password

1. Click on the Administrator password button.
2. Enter the old password in the first field.
3. Enter the new password in the second field (or leave blank to clear).
4. Confirm the password by entering it again in the second field (or leave blank to clear).

User Password Button

The 'User Password' button allows the user to set or change the user password used by both the SSU and the system BIOS. All changes to the user password take place immediately.

To Change or Clear the User Password

1. Click on the User password button.
2. Enter the old password in the first field.
3. Enter the new password in the second field (or leave blank to clear).
4. Confirm the password by entering it again in the second field (or leave blank to clear).

Options Button

The 'Options' button allows the user to set or change any of the various security options available on the system platform. The window created by the 'Options' button includes 'Save', 'Close', and 'Help' buttons.

Under this window, you can set the other security options:

- Hot Key—Set a key sequence that, when pressed, will drop the server into secure mode.
- Lockout Timer—Set an interval that, if no activity takes place, it will drop the server into secure mode.
- Secure Boot Mode—Force the server to boot directly into secure mode.
- Video Blanking—Turn off the video when the server is in secure mode.
- Floppy Write—Control access to the diskette drive while the server is in secure mode.
- Reset/Power Switch Locking—Control the power and reset buttons while the server is in secure mode.

Close Button

The 'Close' button exits the PWA and returns the user to the SSU.

Help Button

The 'Help' button invokes the SSU help subsystem.

SEL Manager Add-in

The System Event Log (SEL) Manager Add-In provides services to allow users to view the system event log stored on the server management storage device of a server. The SEL Manager provides support for the user to perform the following:

- Examine all system event log entries, stored in the non-volatile storage area of the server.
- Examine system event log entries from a previously stored file.
- Save the system event log entries to a file.
- Clear the system event log entries from the non-volatile storage area.

The SEL Manager has the following menus:

File

The File menu has the following options:

- **Open:** View data from a previously saved SEL file.
- **Save As:** Save the currently loaded SEL data to a file.
- **Exit:** Quits the SEL Viewer.

SEL

The SEL menu has the following options:

- **Properties:** Displays information about the SEL. These fields are display only.
- **Clear SEL:** Clears the SEL data from the BMC.
- **All Events:** Displays the current SEL data from the BMC.
- **Reload:** Allows the user to re-load the SEL entries from the server.

Help

The Help menu has the following option:

- **Help Topics:** Displays the SEL Manager version information.

FRU Manager Add-in

The FRU Manager is an add-in module, which allows users to view the FRU inventory areas on the server machine. The FRU Manager will have the functionality to display the FRU inventory areas in an interpreted, easy-to-understand textual form. The add-in allows users to do the following operations:

1. Examine any of the individual FRU inventory areas.
2. Examine FRU inventory areas from a previously stored file.
3. Save the FRU inventory areas to a file in either text.

The FRU Manager has the following menus:

File

The File menu has the following options:

- **Load:** View data from a previously saved FRU file.
- **Save:** Saves the currently loaded FRU data to a file.
- **Save As:** Saves the currently loaded FRU data to a file.
- **Exit:** Quits the FRU Viewer.

View

The View menu has the following options:

- **FRU Info:** Displays information about the FRU. These fields are display only.
- **All FRU Areas:** Displays the current FRU data from the BMC.
- **By Device Type:** Brings up a popup menu that allows you to view only the data from a certain device type.

Settings

The Settings menu has the following options:

- **Display HEX/Verbose:** Toggles between the Hex/interpreted mode of displaying the FRU records.
- **Output Text/Binary:** Determines whether FRU data will be saved to the file (as under File - Save) in binary format or verbose format.

Help

The Help menu has the following option:

- **About:** Displays the FRU Viewer version information.

SDR Manager Add-in

The Sensor Data Record (SDR) Manager Add-in component allows users to view sensor data records stored in the server management storage device of a server.

The add-in allows users to perform the following operations:

1. Examine all SDR's through the BMC.
2. Examine SDR's from a previously stored file.
3. Save all SDR's to a file.

File

The File menu has the following options:

- **Open:** View data from a previously saved SDR file.
- **Save As:** Saves the currently loaded SDR data to a file.
- **Exit:** Quits the SDR Viewer.

SDR

The View menu has the following options:

- **Properties:** Displays information about the SDR. These fields are display only.
- **Reload:** Allows the user to re-load the SDR data from the server.

Help

The Help menu has the following option:

- **Help Topics:** Displays the SDR Manager version information.

System Update Add-In

Clicking on the System Update Add-in task allows you to update nonvolatile storage on the server.

The add-in allows you to do the following operations:

- Determine the current revision of firmware on the server controllers.
- Determine the current revision of BIOS on the server.
- Update firmware revisions for controllers from external hex files.
- Verify firmware code currently loaded versus an external hex file.
- Update the BIOS from .bio or .uif files.

The System Update Add-in has the following menus:

File

The File menu has the following options:

- **Load:** Select the file to use in the update.
- **Exit:** Quits the System Update Add-in.

Area

The Area menu has the following options:

- **Update:** Use the loaded file to update the system. If a file was not selected, the system will prompt you for one.
- **Verify:** Compares the contents of the nonvolatile storage with the selected file. If a file was not selected, the system will prompt you for one. You cannot verify the BIOS.

Help

The Help menu has the following options:

- **Help Topics:** Displays help information about the System Update Add-in.
- **About SU:** Displays System Update Add-in version information.

Recovery Agent

If the BMC firmware remote update fails, the server will reboot into the service partition and the recovery agent will attempt to finish the update. The recovery agent is an executable file (recover.exe) that exists on the service partition.

Configuration Save/Restore Add-In

Clicking on the Configuration Save/Restore Add-in (CSR) allows you to save configuration information from various sources to a file. The CSR saves information from the following sources:

- CMOS
- ESCD
- PCI records in non-volatile storage
- Non-volatile emergency management port (EMP), platform event paging (PEP), and Platform event filtering (PEF) settings

Buttons

- **Save To File:** Displays a file dialog so you can choose a filename and location. The CSR then tries to save any non-volatile configuration information it can to that file. Data is saved from all sources. There is no way to choose only certain pieces of configuration data to save. The CSR also saves the platform type, BIOS version and firmware version information in the file.
- **Restore From File:** Displays a file dialog so you can choose a file containing configuration data to restore. The CSR then reads the platform identification string from the file and compares it to a string retrieved from the BIOS on the server. If the two do not match, an error message is displayed and the restore operation aborts. If they do match, the add-in restores the configuration data to the server. It prompts you to reboot the server for the new settings to take effect.

⇒ NOTE

BIOS passwords are stored in the file. Restoring a configuration can make passwords change on a server.

- **Close:** Closes the CSR main window.
- **Help:** Displays help information.

Platform Event Manager Add-in

The Platform Event Manager (PEM) provides an interface for configuring Platform Event Paging (PEP), the Emergency Management Port (EMP), BMC LAN Configuration (LAN) and Platform Event Filtering (PEF).

Platform Event Manager Window

The PEM presents a main window to the user and supports several features (see Figure 25). These features appear in additional detail in the following sections. Note that each option included on the main window supports an accelerator key. An underlined letter in the text listing the option in VGA mode indicates accelerator keys. In text mode, accelerator key letters appear highlighted rather than underlined.

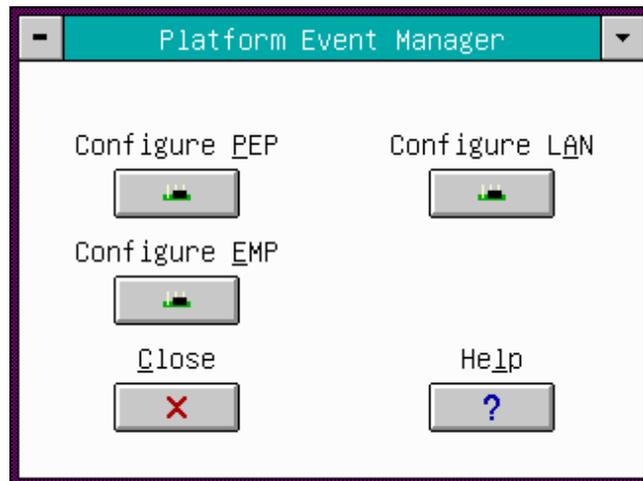


Figure 25. Platform Event Manager Main Window

Buttons

- **Configure PEP:** Opens a new dialog that allows you to configure the Platform Event Paging features.
- **Configure LAN:** Opens a new dialog that allows you to configure the BMC LAN-Configuration features.
- **Configure EMP:** Opens a new dialog that allows you to configure the Emergency Management Port features.
- **Close:** Exits the Platform Event Manager and returns you to the AF.
- **Help:** Displays help information.

Platform Event Paging Dialog

This dialog allows you to configure the Platform Event Paging features. (See Figure 26.)

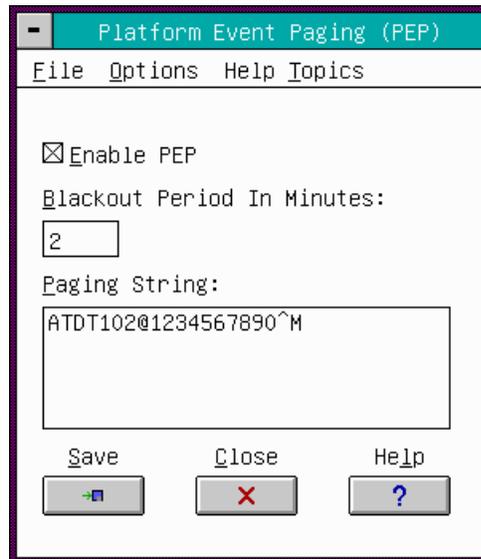


Figure 26. Platform Event Paging Dialog

File

The File menu has the following options:

- **Save:** Allows you to save the configuration immediately.
- **Close:** Allows you to close the Platform Event Paging dialog without saving changes. If changes have been made, you will be prompted to save changes before closing.

Options

The Options menu has the following options:

- **Enable PEP:** Allows you to enable or disable the PEP feature entirely. A check will appear next to the menu item when PEP is enabled.
- **Send Alert:** Allows you to immediately send a test page with the configuration currently shown on the screen.
- **Configure Event Actions:** Launches the Platform Event Paging Actions Dialog (see Figure 28 on page 71) to allow you to configure event actions.

Help Topics

The Help Topics menu has the following options:

- **Help Topics:** Displays help information.

Enable PEP Checkbox

Enable or disable the PEP feature entirely.

Blackout Period in Minutes

Enter the time, in minutes, between successive pages. The valid range is [0 – 255] where 0 disables the blackout period.

Paging String

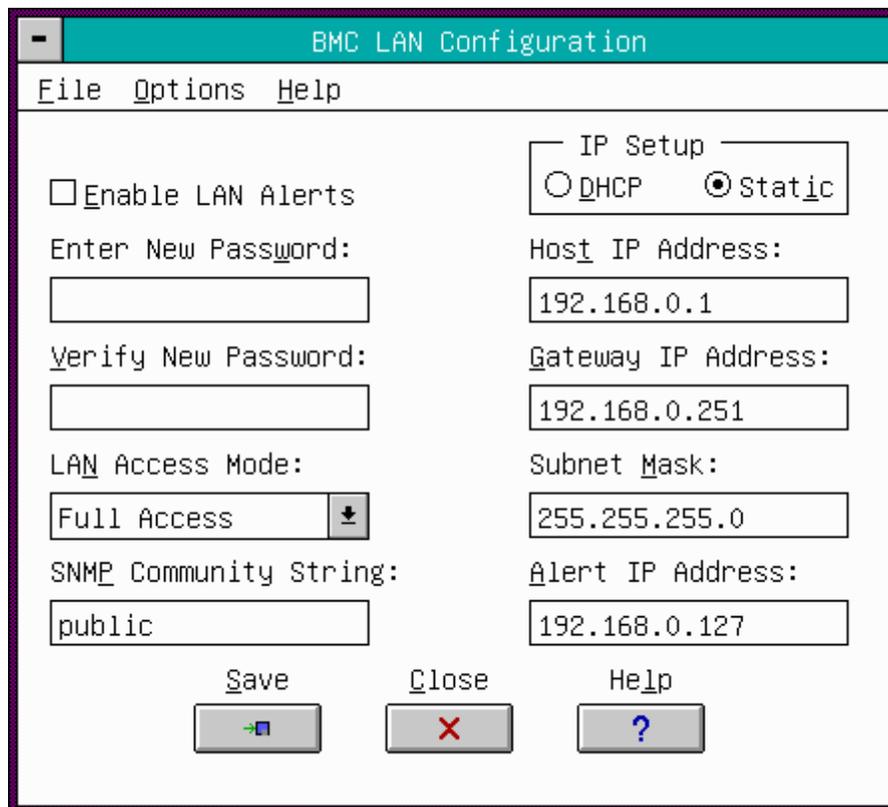
Enter the paging string that contains both the paging service number and the characters that are sent once the connection has been made. The length of the paging string is determined at run-time from firmware. You will be notified if the string is truncated. The screen will show the string that was saved after a save operation is done.

Buttons

- **Save:** Allows you to save the configuration immediately.
- **Close:** Allows you to close the Platform Event Paging dialog without saving changes. If changes have been made, you will be prompted to save changes before closing.
- **Help:** Displays help information.

BMC LAN-Configuration Dialog

This dialog allows you to configure the BMC LAN-Configuration features. (See Figure 27.)



The screenshot shows a dialog box titled "BMC LAN Configuration". It has a menu bar with "File", "Options", and "Help". The main area contains the following fields and controls:

- Enable LAN Alerts
- Enter New Password: [text box]
- Verify New Password: [text box]
- LAN Access Mode: [Full Access] (dropdown menu)
- SNMP Community String: [public] (text box)
- IP Setup: DHCP Static
- Host IP Address: [192.168.0.1] (text box)
- Gateway IP Address: [192.168.0.251] (text box)
- Subnet Mask: [255.255.255.0] (text box)
- Alert IP Address: [192.168.0.127] (text box)

At the bottom, there are three buttons: "Save" (with a floppy disk icon), "Close" (with a red X icon), and "Help" (with a question mark icon).

Figure 27. BMC LAN-Configuration Dialog

File

The File menu has the following options:

- **Save:** Allows you to save the configuration immediately.
- **Close:** Allows you to close the BMC LAN-Configuration dialog without saving changes. If changes have been made, you will be prompted to save changes before closing.

Options Menu

The Options menu has the following options:

- **Enable LAN Alerts:** Allows you to enable or disable the BMC LAN-Alerting features entirely. A check will appear next to the menu item when it is enabled.
- **Clear LAN Password:** Allows you to clear the currently saved LAN password. This takes effect immediately. This option is only available if the LAN password is set.
- **Configure Event Actions:** Launches the BMC LAN-Alerting Actions Dialog to allow you to configure event actions.

Help Topics Menu

The Help Topics menu has the following options:

- **Help Topics:** Displays help information.

Enable LAN Alerts Checkbox

Enables or disables BMC LAN-Alerting.

Enter New Password

Allows you to enter a LAN password. The valid range of characters includes ASCII values 32-126. The password must be from 1-16 characters long.

Verify New Password

Enter the same password as above.

LAN Access Mode

Allows you to set the remote access mode desired. In Enabled mode, a remote system can initiate a LAN session regardless of system state or health. In Disabled mode, remote LAN sessions cannot be initiated. In Restricted mode, control operations cannot be performed such as power down, front panel NMI, and reset.

SNMP Community String

Can be configured for the community field in the Header section of the SNMP trap sent for a LAN alert. The default string is 'public'. The string must be from 5-16 characters long.

IP Configuration

- **DHCP:** Enables the dynamic host configuration protocol to allow the server to automatically assign the host IP address, router IP address and subnet mask. The host IP address, router IP address and subnet mask will not be saved if this radio button is checked.
- **Static:** Allows you to set the server host IP address, router IP address and subnet mask. The host IP address, router IP address and subnet mask will be saved if this radio button is checked. The values saved will take effect immediately.

Host IP Address

Enter the Logical or Internet Address of the host. The Host IP Address will only be saved when DHCP is disabled. The IP is entered as a dotted IP, (e.g., 192.168.0.2).

Gateway IP Address

Enter the Logical or Internet Address of the router. The Gateway IP Address will only be saved when DHCP is disabled. The IP is entered as a dotted IP, (e.g., 192.168.0.2).

Subnet Mask

Enter the logical or Internet address of the host's subnet. The server uses this to decide if the alert destination is in the local subnet or in another subnet relative to the server. The Subnet Mask will only be saved when DHCP is disabled. The IP is entered as a dotted IP, e.g., 192.168.0.2

Alert IP Address

Enter the logical or Internet address of the Alert-Destination. In case of single node destination, this is the unicast or specific IP address. This is the IP Subnet address if the alert needs to be broadcast within a particular subnet. The Alert IP Address is always saved. The IP is entered as a dotted IP, e.g., 192.168.0.2

Buttons

- **Save:** Allows you to save the configuration immediately.
- **Close:** Allows you to close the BMC LAN-Alert dialog without saving changes. If changes have been made, you will be prompted to save changes before closing.
- **Help:** Displays help information.

Platform Event Action Dialogs

These similar dialogs allow you to configure the Platform Event Action features for PEP and BLA (See Figure 28). If an event is in the enabled listbox, it will generate the appropriate action when it occurs. If an event is in the disabled listbox, it will not generate an action when it occurs. Enable global action for events to generate actions. This global flag is in the PEP or BLA dialogs as 'Enable PEP' or 'Enable BLA' checkboxes.

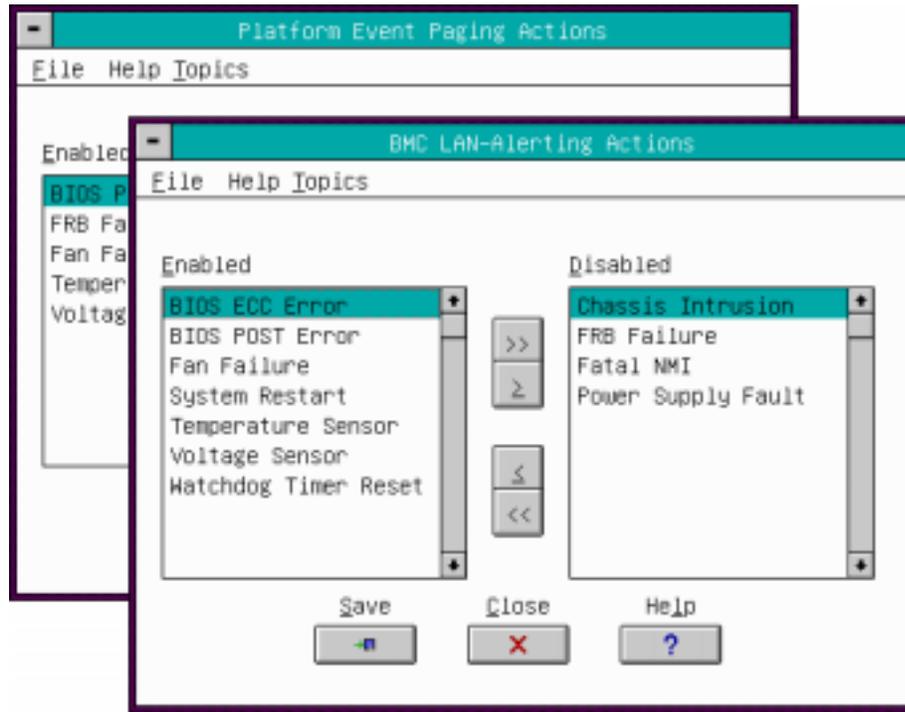


Figure 28. Platform Event Action Dialogs

File Menu

The File menu has the following options:

- **Save:** Allows you to save the configuration immediately.
- **Close:** Allows you to close the Platform Event Action dialog without saving changes. If you have made changes, you will be prompted to save changes before closing.

Help Topics Menu

The Help Topics menu has the following options:

- **Help Topics:** Displays help information.

Enabled Listbox

Contains the active events.

Disabled Listbox

Contains the events that are not active.

Buttons

- >>: Moves all the events from the enabled listbox to the disabled listbox.
- >: Moves the selected event from the enabled listbox to the disabled listbox.
- <: Moves the selected event from the disabled listbox to enabled the listbox.
- <<: Moves all the events from the disabled listbox to the enabled listbox.
- **Save**: Allows you to save the configuration immediately.
- **Close**: Allows you to close the Platform Event Action dialog without saving changes. If you have made changes, you will be prompted to save changes before closing.
- **Help**: Displays help information.

Emergency Management Port Dialog

This dialog allows you to configure the Emergency Management Port features. (See Figure 29.)

The screenshot shows the 'Emergency Management Port (EMP)' dialog box. It features a menu bar with 'File', 'Options', 'Help', and 'Topics'. The main area contains several configuration fields:

- Enter New Password:** An empty text input field.
- Verify New Password:** An empty text input field.
- ESC Sequence:** A text input field containing '+++'. Below it is a label 'Hangup String:' with a text input field containing 'ATH'.
- Modem Init String:** A text input field containing 'ATE1Q0V1X4&D0S0=0'.
- System Phone Number:** A text input field containing '503 555 0101'.
- Access Mode:** A dropdown menu with 'Always Active' selected.
- Restricted Mode:** A dropdown menu with 'Disable' selected.
- Connection Mode:** A dropdown menu with 'Modem Connect' selected.

At the bottom of the dialog are three buttons: 'Save' (with a floppy disk icon), 'Close' (with a red 'X' icon), and 'Help' (with a question mark icon).

Figure 29. Emergency Management Port Dialog

File

The File menu has the following options:

- **Save**: Allows you to save the configuration immediately.
- **Close**: Allows you to close the Emergency Management Port dialog without saving changes. If you have made changes, you will be prompted to save changes before closing.

Options

The Options menu has the following options:

- **Clear EMP Password**: Allows you to clear the currently saved EMP password. This takes effect immediately. This option is only available if the EMP password is set.

Help Topics

The Help Topics menu has the following options:

- **Help Topics:** Displays help information.

Enter New Password

Enter an EMP password. The valid range of characters includes ASCII values 32-126. The password must be from 1-16 characters long.

Verify New Password

Enter the same password as above.

ESC Sequence

The ESC Sequence string is sent to the modem before sending a command string to the modem. The length of the paging string is determined at run-time from firmware. You will be notified if the string is truncated. The string that has been saved is the one that will be shown in the edit box.

Hangup String

The Hangup Line string is sent to the modem whenever the EMP wants to terminate the session. The EMP automatically sends an <ENTER> character after this string. The length of the paging string is determined at run-time from firmware. You will be notified if the string is truncated. The string that has been saved is the one that will be shown in the edit box.

Modem Init String

The Modem Init String string is transmitted every time the EMP initializes. The length of the paging string is determined at run-time from firmware. You will be notified if the string is truncated. The string that has been saved is the one that will be shown in the edit box.

System Phone Number

Enter the system telephone number. This can be retrieved and reported via in-band management connections.

Access Mode

In Pre-boot Only the EMP is automatically activated when the system is powered-down or hard reset. In Always Active the EMP is active when the system is powered-down or hard reset. In Disabled the EMP powers-up deactivated and is not automatically activated by BIOS, power-down or hard resets.

Restricted Mode Access

When restricted mode is enabled control operations that could disable or alter a running system via the EMP are disabled.

Connection Mode

Direct connect mode is for applications that connect the port directly to another computer system, while Modem Mode is for applications where the port is connected to an external modem.

Buttons

- **Save:** Allows you to save the configuration immediately.
- **Close:** Allows you to close the Emergency Management Port dialog without saving changes. If you have made changes, you will be prompted to save changes before closing.
- **Help:** Displays help information.

Exiting the SSU

Exiting the SSU causes all windows to close.

1. Exit the SSU by opening the menu bar item **F**ile in the SSU Main window.
2. Click on Exit or Highlight Exit, and press <Enter>.

Platform Event Paging

With Platform Event Paging (PEP), your server can automatically dial up a paging service and page you when a server management related event occurs. Platform events include temperature out-of-range, voltage out-of-range, chassis intrusion, and fan failure.

If PEP is enabled and the BMC receives or detects a new event, it automatically sends a page. It can send a page if the processors are down or if the system software is unavailable.

PEP needs an external modem connected to the server's EMP (Emergency Management Port) serial connection. This is typically the COM2 serial connector.

Using Platform Event Paging

1. From the SSU main window, launch the Platform Event Manager Add-in (PEM). For more information, see page 66.
2. In the PEM dialog box, click the Configure PEP button.
3. In the PEP dialog box, check the Enable PEP to box.
4. Enter your page string in the Paging String field. This consists of the following:
 - The attention command for your modem (generally ATDT).
 - The number of your paging service, several commas (each comma is a 1-second pause).
 - The number/message you wish to appear on your pager.
 - The hang up command for your modem (generally ATH).

You will need to experiment with the timing to ensure you are paged properly. Select Send Alert from the Options menu to generate a test page.

5. Set the time between pages with the Blackout Period In Minutes field. If you want to be paged every five minutes, set it to 5. The range is from 0 to 10 minutes.
6. If you wish to filter events so that only certain events will originate a page, select Configure Event Actions from the Options menu. This will bring up the Platform Event Action dialog.
7. Save all the changes made by clicking on the Save button. Saving writes your current configuration to nonvolatile storage where it will be available to the system after every reboot.

Software Updates

Your system comes with preinstalled system BIOS and BMC firmware. When necessary, updates will be available for download from the Intel support website at:

<http://support.intel.com/support/motherboards/server/SCB2>

The updates are available in two forms:

- A software update package (SUP) containing all three updates
- Individual files, one for each update, that are manually executed

With either form, bootable diskettes must be created.

Creating a Bootable Diskette

Each update diskette created must be made bootable with ROM-DOS Ver. 6.22 or MS-DOS Ver. 6.22.

⇒ NOTE

It is recommended that the target system be booted with the Resource CD that accompanied the product. However, the process for making the diskettes is the same for all the compatible versions of DOS. ROM-DOS Ver. 6.22 is included on the Resource CD.

1. Insert and boot to the Resource CD.
2. Exit from the menu to a DOS prompt.
3. Insert a diskette into the floppy drive.
4. At the DOS prompt, for an unformatted diskette, type:

```
format a: /s
```

or, for a formatted diskette, type:

```
sys a:
```

4. Press <Enter>.

Software Update Package

A Software Update Package (SUP) contains all the necessary files to perform BIOS, BMC, FRU/SDR, or other software updates.

Preparation

Before proceeding, review the release notes.

1. Download the software update.
2. Print, review, and follow the instruction.rtf file (it supercedes any other instructions)

3. Label three blank floppy disks as follows:
 - Disk 1 - SCB2 BIOS update diskette
 - Disk 2 – SCB2 BMC update diskette
 - Disk 3 – SCB2 FRU/SDR update diskette
4. Make the diskettes DOS bootable.
5. Record the current BIOS settings.
 - a. Boot the computer and press <F2> when you see the splash screen.
 - b. Write down the current settings in the BIOS Setup program.

⇒ **NOTE**

Be sure to record the current custom BIOS settings. They will be cleared and reset to their default values during the BIOS update portion of the operation. You will need these settings to configure your computer at the end of the update procedure. To record the current custom settings, boot the computer and press <F2> when you see the splash screen. Write down the current custom settings in the BIOS Setup program

Extraction

Double click the executable file you downloaded. Read the License Agreement, select "I Agree" to accept the terms and conditions or select "Cancel" to cancel the installation.

During the extraction process, you will be prompted to insert each of the three labeled diskettes. Follow the prompts until the process is completed. When completed, you will have three diskettes that can be used to update the BIOS, the BMC firmware, and the FRU/SDR records.

Updating

⇒ **NOTE**

Do not turn off the system during the update process.

Apply the updates in order by booting from each floppy diskette beginning with Disk 1.

1. Disk 1 - SCB2 BIOS update—Choose option 1 to update the system BIOS. The system will automatically reboot following completion.
2. Disk 2 – SCB2 BMC update—Automatic, no questions are asked. The system will notify you that it is going to reboot.
3. Disk 3 – SCB2 FRU/SDR update—Prompts you to choose the chassis type. You can choose to update the chassis information; you will be prompted for the Serial Number, Part Number, and Asset Tag.

Following the update process, the system will automatically reboot. Upon completion, it may be necessary to enter BIOS setup and reconfigure the setting values.

Individual Updates

BIOS Upgrade Description

Preparing for the Upgrade

Before upgrading the BIOS, prepare for the upgrade by recording the current custom BIOS settings, and obtaining the upgrade utility.

Obtaining a BIOS Update

You can download the most current version of the BIOS from the Intel support website at:

<http://support.intel.com/support/motherboards/server/scb2>

⇒ NOTE

Print and review the release notes and instructions distributed with the upgrade utility before attempting a BIOS upgrade.

This upgrade utility allows you to upgrade the BIOS in flash memory. The following steps explain how to upgrade the BIOS.

Creating the BIOS Upgrade Diskette

The BIOS upgrade file is a compressed self-extracting archive that contains the files you need to upgrade the BIOS.

1. Copy the BIOS upgrade file to a temporary directory on the hard disk.
2. From the C:\ prompt, change to the temporary directory.
3. To extract the file, type the name of the BIOS upgrade file, for example:
10006BI1.EXE
4. Press <Enter>. The extracted file contains the following files:
LICENSE.TXT
INSTALL.TXT
BIOS.EXE
5. Read the LICENSE.TXT file, this contains the software license agreement, and the INSTALL.TXT file. It contains the instructions for the BIOS upgrade.
6. Insert the bootable diskette into drive A.
7. To extract the BIOS.EXE file to the diskette, change to the temporary directory that holds the BIOS.EXE file and type:
BIOS A:
8. Press <Enter>.
9. The diskette now holds the BIOS upgrade and recovery files.

Upgrading the BIOS

1. Insert the diskette holding the BIOS upgrade and recovery files into drive A and boot the computer.
2. Press <1> and <Enter>.
3. When the utility finishes updating the BIOS, remove the diskette from the drive A, reboot the system, clear CMOS
4. Press F2 to enter Setup and reconfigure any custom settings.
5. If you need to change the BIOS settings, press <F2> while the splash screen displays to enter the Setup program.

Recovering the BIOS

It is unlikely that anything will interrupt the BIOS upgrade; however, an interruption could damage the BIOS. The following steps explain how to recover the BIOS if an upgrade fails. The following procedure uses recovery mode for the Setup program.

⇒ NOTE

Because of the small amount of code available in the non-erasable boot block area, there is no video support. You will not see anything on the screen during the procedure. Monitor the procedure by listening to the speaker and looking at the floppy drive LED.

1. Turn off all connected peripherals, turn off system power, and disconnect the AC power cord.
2. Remove the access cover and expose the server board. For instructions, see the product guide accompanying your system.
3. Locate the server board jumpers. (See Figure 30 on page 91.)
4. Move the Recovery Boot (RCVRY BOOT) jumper from its normal position to the BIOS recovery position (see Figure 30 and Table 10 on page 91).
5. Reinstall the access cover and connect the power cord.
6. Insert the diskette holding the BIOS upgrade and recovery files into drive A.
7. Turn on system power and listen to the speaker:
 - Two beeps indicate successful BIOS recovery—Go to the next step.
 - A series of continuous beeps indicates failed BIOS recovery—Return to Step 1 and repeat the recovery process.
8. Turn off system power and disconnect all AC power cords.
9. Remove the access cover.
10. Move the Recovery Boot jumper back to its normal position.
11. Reinstall the access cover.
12. Connect all AC power cords and turn on system power.

Changing the BIOS Language

You can use the BIOS upgrade utility to change the language BIOS displays. Use a bootable diskette containing the Intel flash utility and language files. See "**Using BIOS Setup**" on page 43.

Firmware Update Utility Description

The Firmware Update Utility is a DOS-based program used to update the BMCs firmware code. You need to run the utility only if new firmware code is necessary.

Running the Firmware Update Utility

Review the release notes before proceeding.

1. Create a DOS-bootable diskette. The version of DOS must be 6.0 or higher.
2. Place the firmware update utility (FWUPDATE.EXE) and the *.hex file on the diskette. Make a note of the *.hex file name, because you will need it later.
3. Insert the diskette into the drive and boot to it.
4. At the DOS prompt, run the executable file (FWUPDATE.EXE).
5. The utility displays a menu screen. Select “Upload Flash.”
6. The utility asks for a file name. Enter the name of the *.hex file.
7. The program will load the file and then ask if it should upload boot code. Press “N” to continue unless otherwise directed by the release notes or an Intel support professional.
8. The program next asks if it should upload operational code. Press “Y” to continue. The process of uploading operational code takes a few minutes.
9. Once the operational code updates and verifies, press any key to continue. Then press <ESC> to exit the program.
10. Shut the system down and remove any diskettes in the system.
11. Disconnect the AC power cord from the system and wait 60 seconds.
12. Reconnect the AC power cord and power up the system.

FRU/SDR Load Utility Description

The Field Replacement Unit (FRU) and Sensor Data Record (SDR) load utility is a DOS-based program used to update the server management subsystem’s product level FRU and SDR nonvolatile storage components (EEPROMs). The utility:

- Discovers the product configuration based on instructions in a master configuration file
- Displays the FRU information
- Updates the EEPROM associated with the Baseboard Management Controller (BMC) that holds the SDR and FRU area
- Generically handles FRU devices that might not be associated with the BMC

What You Need to Do

Either run the utility directly from the Resource CD or from diskettes created from the CD.

If you run the FRU/SDR Load Utility from a diskette, copy the utility from the CD. Follow the instructions in the included README.TXT file.

If the diskette drive is disabled, or improperly configured, use BIOS Setup to enable it. If necessary, disable the drive after you are done with the FRU/SDR utility.

How You Use the FRU/SDR Load Utility

The utility:

- Is compatible with ROM-DOS Ver. 6.22, MS-DOS Ver. 6.22 (and later versions), Windows 95 DOS, and Windows 98 DOS
- Accepts CFG, SDR, and FRU load files (the executable file for the utility is FRU/SDR.exe)
- Requires the following supporting files:
 - One or more .fru files describing the system's field replaceable units
 - A .cfg file describing the system configuration
 - An .sdr file describing the sensors in the system

Command Line Format

If you are not performing an automated update using a Software Update Package (SUP), the basic command line format is:

```
FRU/SDR [-?] [-h] [-d {fru, sdr}] [-cfg filename.cfg] [-fru filename.fru]
```

Table 9. Command Line Format

Command	Description
-? or -h	Displays usage information.
-d {fru, sdr}	Displays requested area only.
-cfg filename.cfg	Uses custom CFG file.
-p	Pause between blocks of data.

Parsing the Command Line

The FRU/SDR load utility allows only one command line function at a time. A command line function can consist of two parameters. Example: -cfg filename.cfg. Invalid parameters cause an error message and exit the program. You can use either a slash (/) or a minus sign (-) to specify command line options. Use the -p and flags with any of the other options.

Displaying a Given Area

When the utility is run with the -d FRU or -d SDR command line flag, information about each area is read from memory and printed on the screen. Each area represents one sensor for each instrumented device in the server. If the given display function fails because of an inability to parse the data present or a hardware failure, the utility displays an error message and exits.

Using Specified CFG File

Run the utility with the command line parameter of -cfg filename.cfg. The filename can be any DOS-accepted, eight-character filename string. The utility loads the specified CFG file and uses the entries in that file to probe the hardware and to select the proper SDRs to load into nonvolatile storage.

Displaying Utility Title and Version

The utility displays its title:

FRU & SDR Load Utility, Version Y.Y, Revision X.XX where Y.Y is the version number and X.XX is the revision number for the utility.

Configuration File

The configuration file is in ASCII text. The utility executes commands formed by the strings present in the configuration file. These commands cause the utility to run tasks needed to load the proper SDRs into the nonvolatile storage of the BMC and possibly generic FRU devices. Some of the commands may be interactive and require you to make a choice.

Prompting for Product Level FRU Information

With a configuration file, the utility might prompt you for FRU information.

Filtering Records from the SDR File

The MASTER.SDR file has all the possible SDRs for the system. You might need to filter these records based on the current product configuration. The configuration file directs the filtering of the SDRs.

Updating the SDR Nonvolatile Storage Area

After the utility validates the header area of the supplied SDR file, it updates the SDR repository area. Before programming, the utility clears the SDR repository area. The utility filters all tagged SDRs depending on the product configuration set in the configuration file. Untagged SDRs come automatically programmed. The utility also copies all written SDRs to the SDR.TMP file; it contains an image of what was loaded. The TMP file is also useful for debugging the server.

Updating FRU Nonvolatile Storage Area

After the configuration is determined, the utility updates the FRU nonvolatile storage area. First, it verifies the common header area and checksum from the specified FRU file. The internal use area reads out of the specified .FRU file then programmed into the nonvolatile storage. The chassis area reads out of the specified .FRU file. Finally, it reads the product area out of the specified FRU file, then the area programs into the FRU nonvolatile storage. All areas write to the FRU.TMP file.

5 Solving Problems

This chapter helps you identify and solve problems that might occur while you are using the system. For additional assistance and the problem report form, refer to the *SCB2 Trouble Shooting Guide* on the Support website.

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 or processor termination board fully seated in their slots 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's documentation that comes with them. If applicable, ensure that there are no conflicts—for example, two add-in boards sharing the same interrupt.
- Are all 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? Check the tested memory, and chassis lists, as well as the supported hardware and operating system list on the Intel Customer Support website.

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's 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. Turn on the system. If the power LED does not light, see “Power Light Does Not Light” on page 86.
6. If errors are encountered, power off the system and remove all add-in cards.

Monitoring POST

See “Power-On Self-Test (POST)” on page 43.

Verifying Proper Operation of Key System Lights

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

- Does the diskette drive activity light turn on briefly? If not, see “Diskette Drive Activity Light Does Not Light” on page 88.
- If a second diskette drive is installed, does its activity light turn on briefly? If not, see “Diskette Drive Activity Light Does Not Light” on page 88.

Confirming Loading of the Operating System

Once the system boots up, the operating system prompt appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear, see “Initial System Startup” on page 83.

Specific Problems and Corrective Actions

This section provides possible solutions for these specific problems:

- Power light does not light.
- There is no beep or an incorrect beep pattern.
- 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?

Cannot Connect to a Server

- Make sure you are using the drivers that are shipped on the system Configuration Software 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.

Problems with Network

The server hangs when the drivers are loaded:

- Change the PCI BIOS interrupt settings. Try the “PCI Installation Tips” below.

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 Activity LED doesn't light:

Make sure the network hub has power.

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; OS/2[†] does not.
- 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.

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 5.
- If other software runs correctly on the system, contact your vendor about the failing software.

If the problem persists, contact the software vendor's 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.)

6 Technical Reference

Server Board Jumpers

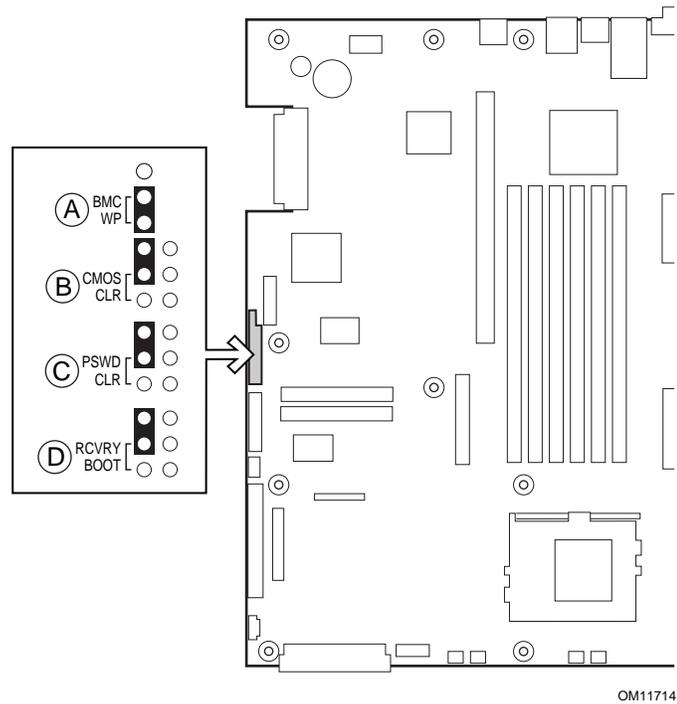


Figure 30. Jumper Locations

Table 10. Configuration Jumper

Jumper Name	Pins	What it does at system reset
BMC WP	A	BMC boot block is write protected (normal operation). If these pins are not jumpered, BMC boot block is erasable and programmable at next reset.
CMOS CLR	B	If these pins are jumpered, the CMOS settings are cleared. These pins should not be jumpered for normal operation.
PSWD CLR	C	If these pins are jumpered, the CMOS password is cleared. These pins should not be jumpered for normal operation.
RCVRY BOOT	D	If these pins are jumpered, the system will attempt BIOS recovery. 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 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 11. 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.
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

continued

Table 11. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
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.
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

continued

Table 11. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
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.
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.

continued

Table 11. Post Codes (continued)

Post Code	Diagnostic LED Decoder				Description
	G=Green, R=Red, A=Amber				
	MSB			LSB	
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.
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.

7 Regulatory and Integration Information

Product Regulatory Compliance

Product Safety Compliance

The SCB2 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)
- EMKO-TSE (74-SEC) 207/94 (Nordics)
- GOST R 50377-92 (Russia)

Product EMC Compliance

The SCB2 has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed in a compatible Intel® host system. For information on compatible host system(s), contact your local Intel representative.

- 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)
- GOST R 29216-91 Radiated & Conducted Emissions (Russia)
- GOST R 50628-95 Immunity (Russia)
- VCCI (Class A) – Radiated & Conducted Emissions (Japan)
- AS/NZS 3548 (Class A) – Radiated & Conducted Emissions (Australia / New Zealand)
- RRL (Class A) Radiated & Conducted Emissions (Korea)
- BSMI (Class A) Radiated & Conducted Emissions (Taiwan)

Product Regulatory Compliance Markings

This product is provided with the following Product Certification Markings.

- cURus Recognition Mark
- CE Mark
- Russian GOST Mark
- Australian C-Tick Mark
- Taiwan BSMI Certification Number 3902I904 and BSMI EMC Warning

Electromagnetic Compatibility Notices

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.

Australian Communications Authority (ACA) (C-Tick Declaration of Conformity)

This product has been tested to AS/NZS 3548, and complies with ACA emission requirements. The product has been marked with the C-Tick Mark to illustrate its compliance.

Ministry of Economic Development (New Zealand) Declaration of Conformity

This product has been tested to AS/NZS 3548, and complies with New Zealand's Ministry of Economic Development emission requirements.

BSMI (Taiwan)

The BSMI Certification number 3902I904 is silk screened on the component side of the server board; and the following BSMI EMC warning is located on solder side of the server board.

檢磁 3902I904

警告使用者：

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

8 Equipment Log and Power Consumption Worksheets

Equipment Log

Use the blank equipment log provided here to record information about your system. You will need some of this information when you run the SSU.

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
System			
Server Board			
Primary Processor Speed and Cache			
Secondary Processor Speed and Cache			
Video Display			
Keyboard			
Mouse			
Diskette Drive A			
Diskette Drive B			
Tape Drive			
CD-ROM Drive			
Hard Disk Drive 1			
Hard Disk Drive 2			
Hard Disk Drive 3			
Hard Disk Drive 4			
Hard Disk Drive 5			

continued

Current Usage

⇒ NOTE

Both processors pull power from +12V. This may limit the number of drives and/or add-in cards you may install.

The average power usage should not exceed 15 watts per PCI slot.

The cooling efficiency varies per slot; therefore, ensure that adequate cooling is available in the target slot—especially in an expansion slot dissipating more than 10 Watts.

Calculating Power Consumption

The total combined wattage for the system configuration must be less than the output of your power supply. Use the two worksheets in this section to calculate the power used by your server boards. For current and voltage requirements of add-in boards and peripherals, see your vendor documents.

Worksheet, Calculating DC Power Usage

1. List the current for each board and device in the appropriate voltage level column.
2. Add the currents in each column. Then go to the next worksheet.

Table 12. Power Usage Worksheet 1

Device	Current (maximum) at voltage level:				
	+3.3 V	+5 V	5 V Standby	+12 V	-12 V
Server board	3.0 A	3.0 A	.7 A	0.0 A	0.0 A
Primary Processor					
Secondary Processor					
Memory (six DIMMs)					
Full-Height PCI riser slot <i>(see note 1)</i>					
PCI slot 1					
PCI slot 2					
PCI slot 3					
Low-Profile PCI riser slot <i>(see note 1)</i>					
PCI slot 1					
PCI slot 2					
PCI slot 3					
Server Board Current SUBTOTALS					
System Components <i>(see note 2)</i>					
Total Current					

Note 1: Number of PCI cards depends on system and riser card configuration.

Note 2: List additional system devices and associated currents.

Worksheet, Total Combined Power Used by the System

1. From the previous worksheet, enter the total current for each column.
2. Multiply the voltage by the total current to get the total wattage for each voltage level.
3. Add the total wattage for each voltage level to arrive at a total combined power usage on the power supply.

Table 13. Power Usage Worksheet 2

Voltage level and total current (V X A = W)	Total Watts for each voltage level
(+3.3 V) X (_____ A)	_____ W
(+5 V) X (_____ A)	_____ W
(-5 V) X (_____ A)	_____ W
(+12 V) X (_____ A)	_____ W
(-12 V) X (_____ A)	_____ W
Total Combined Wattage	_____ W

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