Server Platform Deployment Guide

Utilizing the Intel® Server Board SAI2 and Microsoft* Windows* 2000 Advanced Server

intel®

Revision History

Date	Revision	Notes	Product Code
March 22, 2002	1.0	Beta Version	Q102SAI2DG
April 12, 2002	1.2	Final Draft	Q102SAI2DG
April 16, 2002	2.0	Production Release	Q102SAI2DG

Disclaimers

Table of Contents

Introduction

Document Overview

This document outlines the procedures for deploying the Intel® SAI2 server platform using Microsoft* Windows* 2000 Advanced Server.

The process of properly integrating a new server platform typically requires access to several source documents, each containing pertinent information. The purpose of this document is to extract the essential information needed from the various sources and place it into **one comprehensive document**. See the References section of this document for the complete list of source documents used. In addition we will provide any useful "tips and tricks" that may have been discovered during the development of this platform.

Target Audience

- Intel channel program members who currently integrate Intel Server Products
- Intel channel members new to the server market

Document Objective:

Our intent is to better enable system integrators in meeting the competitive challenges they face in the server market and to keep program members up-to-date on emerging server technologies. By following the steps outlined in this document you will be able to deploy an Intel SAI2 Server Platform running Microsoft Windows 2000 Advanced Server in a timely and effective manner.

SAI2 Server Platform Feature Set

Before we begin integrating the SAI2 server platform you may want to become more familiar with some of the fundamental products. For your reference the following section contains a quick overview of the Intel server products used in developing this platform.

Intel Server Board SAI2 Feature Set

Processor:

- Dual Intel® Pentium® III Processor with 512KB L2 Cache

System Memory:

- Four DIMM sockets for up to 4 GB of PC133 SDRAM
- PC/133 Registered SDRAM 72-bit ECC, 168-pin gold-plated DIMMs
- 64 MB, 128 MB, 256 MB, 512 MB, 1GB DIMM sizes supported

Integrated Onboard:

- **Chipset** - ServerWorks* ServerSet* III LE
- **Intel® Server Ethernet Controller**- Intel® PRO/100+ Server Ethernet Controller (Intel® 82559) Supports 10BASE-T and 100BASE-TX, RJ45 output.
- **Super I/O Controller**- National* PC87417
- **Graphics** -   ATI* Rage* XL VGA PCI video controller with 8 MB of video memory

Input/Output:

- **PCI** - Six total: Two 64-bit/66-MHz, four 32-bit/33-MHz Dual Peer PCI Buses
- **IDE** - Two EIDE channels for a total of four IDE devices backward compatible to provide CD-ROM drive support
- **USB** - Two stacked USB connectors
- **Serial Port** - Two asynchronous, RS-232C, 9-pin and 10-pin
- **Parallel Port** - IEEE 1284, 25-pin bi-directional

- **Floppy Controller** - 1.44 MB, 2.88 MB, 3-mode support
- **Keyboard Mouse** - PS/2*, 8240A-compatible

Hardware Monitoring:

- **Winbond Hardware Doctor** – A basic server hardware monitoring tool that alerts a system administrator if a hardware problem occurs. The utility can monitor voltage, processor temperature, and processor fan speed. The tool is available on the SAI2 System Resource CD and is only intended for use with Microsoft* Windows* 2000 and the SAI2 server board.

LSI Logic* LSI20160 SCSI Adapter:

- **PCI Interface**
  - 32-bit DMA bus master
  - Supports 32-bit 33 MHz word data bursts with variable burst lengths
  - Bursts up to 264 Mbytes/s (@ 33 MHz) with zero wait-state bus master data
  - Supports universal 3.3 V and 5 V PCI bus signaling environment
- **SCSI Interface**
  - Provides one wide Ultra160 SCSI channel
  - Provides two connectors:
  - - 68-pin VHDCI for the external connection
  - - 68-pin high density for the internal connection
  - Supports SE and LVD signaling: 16-bit SE or LVD interfaces
  - Supports LVD/SE termination
  - Supports Fast, Ultra, Ultra2, and Ultra160 data transfer capability
  - - Ultra160 SCSI LVD synchronous transfers at up to 160 Mbytes/s
- **Board Characteristics**
  - PCI board dimensions: approximately 4.721 x 2.536 inches
  - Universal 32-bit PCI card edge connector
  - Standard bracket available

For more information on the Intel SAI2 Server Board visit us at:

http://support.intel.com/support/motherboards/server/SAI2/

Intel Server Chassis SC5100 Feature Set

Form factor:

🔴 Pedestal or 5U Rack Server Chassis

Dimensions:

🔴 **Pedestal** - Height 17.5", Width 8.6" (12.6" with base), Depth 26.9"

🔴 **Rack** - Height 5U (8.6"), Width 16.9", Depth 24.9" (25.6" with Handles)

Hard Drive Bay:

🔴 **Base Configuration** - Supports five-fixed Ultra 160 SCSI[3] or IDE hard drives (1" height)

🔴 **Hot-Swap Redundant Power Configurations** – Based unit supports five Ultra 160 SCSI 1" SCA (hot-swap) hard drives with the option for up ten. Two fixed drive bays also remain available.

🔴 **SCSI Backplane** - LVD with SAF-TE

External Peripheral Bays:

🔴 **Up to three 5.25"** peripherals (1" height) and **one 3.5"** (floppy)

Cooling System:

🔴 **Up to six fans** - Two 92 mm fans instrumented to provide RPM data for fan failure prediction and detection. Two fans in rear of chassis One 80 mm fans (in power supply)

Power Supply Options:

	SC5100 Base Model	SC5100 Hot-Swap, Redundant Power	SC5100 Hot-Swap, Redundant Power, Rack- Optimized
🔴 Chassis			
🔴 DC Power Supply	300W PFC	350W, dual-line cord, 1+1 PFC	350W, dual-line cord, 1+1 PFC
🔴 AC Voltage	100-127 / 200-240 V~; 4.6 / 2.3A	100-127 / 200 - 240 V~; 6 / 3 A	100-127 / 200 - 240 V~; 6 / 3 A

Front Panel:

- **Buttons** - Power on/off button (momentary), system reset button, ACPI sleep switch and tool-activated NMI switch

- **LED's** - Power, hard drive activity, two network activity, system ID (rack only), and general system status

- USB and Serial (rack only) Connectors

Security:

- The Intel Server Chassis SC5100 includes a mechanical lock on the front bezel and a removable padlock loop for the system access cover. The chassis also includes two intrusion switches that can be monitored by Intel® Server Management software.

Product Regulations:

- Extensive international safety and EMC regulatory approvals speeds time to market and lowers development investment. See the Product Specifications for more details.

> **For more information on the Intel Server Chassis SC5100 visit us at:**
>
> http://support.intel.com/support/motherboards/server/chassis/SC5100

Important Integration Information

The following section contains important information for setting up and using your Intel Server Board SAI2. Please review this information before assembling or using your board.

Please check http://support.intel.com/support/motherboards/server/SAI2 for the latest information on the issues listed below.

No Processor Terminator Required

The SAI2 server board has onboard termination and does not require a processor terminator for uni-processor operation. Do not use a terminator on the SAI2 server board.

Cabling Three IDE Drives and One CD-Rom Drive in the SC5100 Chassis

The boxed SAI2 server board comes with two IDE cables. One IDE cable may be use for cabling two IDE drives in the lower portion of the SC5100 chassis when it is

in pedestal configuration. The second IDE cable from the SAI2 boxed board kit may be used for cabling one CDROM and one IDE drive in the upper portion of the SC5100 chassis when it is in pedestal configuration. To install an IDE drive in the upper portion of the chassis, simply exchange a 5.25" filler panel from the upper portion of the chassis with a drive carrier in the lower portion of the chassis.

Legacy USB Support

There is an option available in BIOS setup to enable or disable legacy USB support. With legacy USB support <u>enabled,</u> PS/2 keyboard and mouse support will be disabled in Microsoft Windows 2000 Server. With legacy USB support <u>disabled</u>, USB keyboard support will be disabled during POST and Setup. For a detailed list of PS/2 and USB operation in Windows 2000, refer to the web address above.

CD-Rom and Floppy Disk Drive are NOT Included

CDROM drives and Floppy Disk Drives are not included with the SC5100 chassis and SAI2 Server Board. These devices are required and must be purchased separately.

Only Enable Necessary Option ROMs

Customers should enable Option ROMs on their boot device cards only. Enabling Option ROMs on non-boot device cards can cause the available Option ROM space to run out. Drives attached to cards with their Option ROMs disabled are still available to the OS, but cannot be booted to.

Do Not Plug 64-bit Cards in 32-bit Slots

The Intel Server Board SAI2 does not support the use of 64-bit PCI cards in 32-bit PCI slots.

DIMM Information

DIMM Slot #1 MUST contain a DIMM. Empty memory slots between DIMMs are not allowed.

No Processor Terminator Required On a Single Processor Configuration

The Intel Server Board SAI2 has onboard termination and does not require a processor terminator for uni-processor operation. Do not use a terminator on the SAI2 server board.

Creating Floppy Disks from the SAI2 Resource CD-ROM

Intel has found issues with the resource CD-ROM that is included with the Intel Server Board SAI2.

Please click on the Technical Advisory link or refer to the References section of this document to see the issues and the possible workarounds that can be done.

Intel Server Board SAI2 and Splash Screen Utility Interaction with SCSI Adapters

With the server board BIOS logo enabled (Diagnostic screen disabled), going into the setup utility for the LSI Logic* LSI20160 SCSI adapter (included in the SAI2SCSI product) and trying to enter global parameters by hitting F2 locks the Intel Server Board SAI2. Note: This issue is not unique to the LSI Logic LSI20160 adapter and may also occur with other SCSI adapter setup utilities.

Please click on the Technical Advisory link in the References section of this document to see the issues and the possible workarounds that can be done.

RAID Controllers

These products are also available from Intel to enhance the functionality of your SAI2 server system:

- Intel RAID Controller U3-1
- Intel RAID Controller U3-1L

Select one of the products from the Additional Products section of the Resource CD for more information on that product. Links to the web pages with complete information on these products are also available in the References section of this document

SAI2 Server Platform Components

The Server Board SAI2 is a highly versatile server board that can be easily configured to meet the unique needs of a variety of customers. With integrated dual ATA/100 IDE controllers and local server monitoring, the Server Board SAI2 provides just the right level of features for an emerging e-Business. A second version including an LSI Logic* LSI20160 SCSI Adapter in the box provides the flexibility and processing power of the SAI2 with the performance and reliability of a single channel Ultra160 SCSI card in an easy to order SKU and this is the version used in this solution.
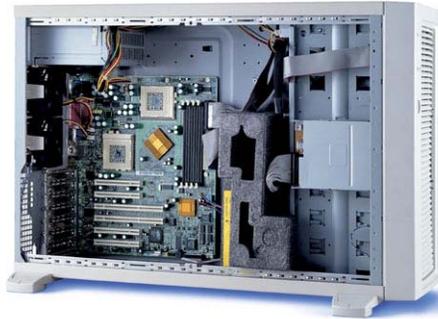
The LSI Logic LSI20160 Ultra 160 SCSI Adapter is a powerful single channel Ultra160 SCSI adapter which has been fully validated and is fully supported with the Intel Server Board SAI2. The LSI20160 is a 32-bit/33-Mhz low profile SCSI card with a standard height bracket that can connect up to 15 SCSI devices via either an internal or external connector.

The Server Board SAI2 is validated with the Intel® Server Chassis SC5100 (base configuration only) and is supported by a number of third-party reference chassis, enabling you to further customize solutions for many customer applications. Add to this an expansive list of third-party peripherals, add-in cards, and memory options, and you have a flexible server board that can support a variety of customer needs.

For more information on the list of third-party peripherals, add-in cards, and memory options, see the [References](#) section of this document.

This guide was developed by integrating a system that functions as a multi-purpose server for small and medium-sized businesses. The specific hardware used in developing this guide is listed below, in Table 1, however it is important to note that this solution is not completely hardware dependent. The platform components and specific configuration you choose will depend on your individual requirements and business needs.

As there are other chassis and components that could be used when implementing this solution, all system hardware should be checked to ensure proper compatibility and functionality and that the latest firmware revisions are installed.

The best way to ensure compatibility is to reference the Tested and Source Lists for the SAI2 Server Board. The References section of this document includes copies of these lists as well as appropriate web links.

You can ensure proper server component functionality by running the Platform Confidence Test Utility from the Intel® SAI2 System Resource CD included with your boxed server board. This utility allows you to implement a version of "BYO Platform Confidence Test" used in the Intel Factory to determine proper configuration and operation of a SAI2 based server system. The SAI2 Platform Confidence Test utility probes the hardware and tests for proper functionality. An example of this test is in the Hardware Integration portion of this document.

Table 1 SAI2 Server Platform Components

Server System		
Intel Server Board SAI2 with SCSI Adapter Included	Product code: SAI2SCSI	For more information refer to: http://www.intel.com/design/servers/sai2/
Server Chassis		
SC5100 Server Chassis – Base Model	Product code: SC5100 KDK	For more information refer to: http://support.intel.com/support/motherboar ds/server/chassis/sc5100
Processor		
Intel® Pentium® III Processor with 512KB L2 Cache	Qty: 2	For more information refer to: http://support.intel.com/support/processors/ pentiumiii
Memory Configuration		
128MB PC133 ECC SDRAM	Qty: 2	For more information refer to: http://support.intel.com/support/motherboar ds/server/sai2
SCSI Controller		
LSI 20160 (included with server board)	Qty: 1	For more information refer to: ftp://download.intel.com/support/motherboar ds/server/sai2/lsi_scsi_pg.pdf
CD-Rom		
CD-Rom	Qty: 1	The SC5100 chassis does not ship with a CD-Rom. You will need to purchase this item and install it according to the instructions in the Hardware Section of this document.

Floppy Disk Drive		
Floppy Disk Drive	Qty: 1	The SC5100 chassis does not ship with a floppy disk drive. You will need to purchase this item and install it according to the instructions in the Hardware Section of this document.
Mass Storage		
Quantum Atlas 10K II Ultra160 SCA	Product Code: TY09L011 Qty: 1	For more information refer to: http://www.quantum.com/default.htm

Hardware Integration

The following installation procedure is for the server components used with this solution and is a compilation of specific sections from the more comprehensive and detailed Product Guides for the SAI2 and SC5100. To access the most current and complete Product Guides and for more information visit Intel Support at:

http://developer.intel.com/design/servers/sai2/index.htm

Before installing the Intel® SAI2 Server Board into the SC5100 chassis you must first prepare the chassis and board by installing the front panel USB port filter, replacing the front panel cable, installing the processors and memory, and then performing the sub-chassis assembly. Refer to the product documentation for complete step-by-step instructions.

Prepare for Assembly:

1. Prepare a clean, static-controlled, uncluttered, flat, level workspace.

2. Collect and organize all necessary tools including anti-static devices, and all necessary hardware including the server board, memory and processor(s)/terminator.

3. Verify that the components chosen for installation are listed as validated for use with the Intel® SAI2 Server Board. This information is available from the Intel Support Web site: http://developer.intel.com/design/servers/sai2/index.htm

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CAUTIONS

*If only one processor is to be used, it must be installed in the Primary Processor Socket (CPU1). NOTE: No processor terminator is required on a single processor system. Do not install a terminator in the SAI2 Server Board.

*If you are adding a second processor to your system, you must verify that the second processor is identical to the first Intel Pentium III processor, same voltage and speed.

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*This server board has "zero-insertion-force" sockets. If processor does not drop easily into socket holes, make sure the lever is in the full-upright position.

Tools Required

1. Before you begin, you will need the tools and equipment shown at the right.

Needle-nosed pliars

Ruler

Phillips* screw driver

Anti-static wrist strap
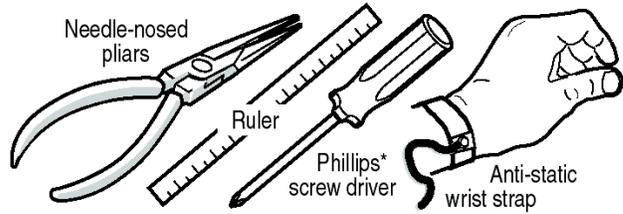
Removing the Chassis Cover and EPAC

1. Remove the cover plate held with two thumbscrews and one of the fasteners.

2. The foam epac consists of two halves. Remove the top half by pulling outward. Do not remove the bottom half containing the fans.

Installing the Front Panel USB Port Filter

1. With the Intel® SC5100, you must remove the bezel and insert the Front Panel USB Port Filter included with your server board. To do this, perform the following steps:

Chassis Door Open

2. To release the bezel, insert fingertip behind plastic tab behind the bezel and pull outward.

3. While holding the plastic tab, push the bezel upward then pull it outward.

4. Install the Front Panel USB Port Filter into the USB socket.

5. Replace the bezel.

Replacing the Front Panel Cable
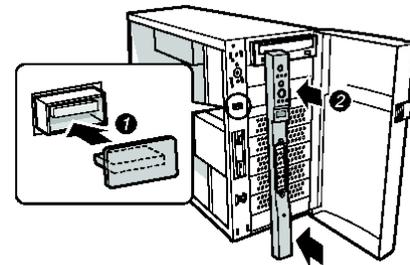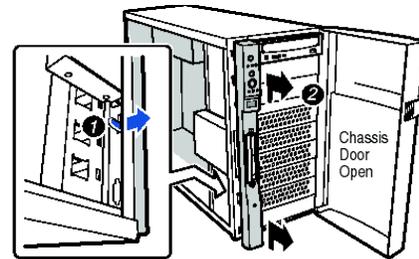
Existing Front Panel Cable

1. With the Intel SC5100 chassis, you must remove the existing 34-pin front panel cable that was included with your chassis and replace it with the 24-pin front panel cable included with
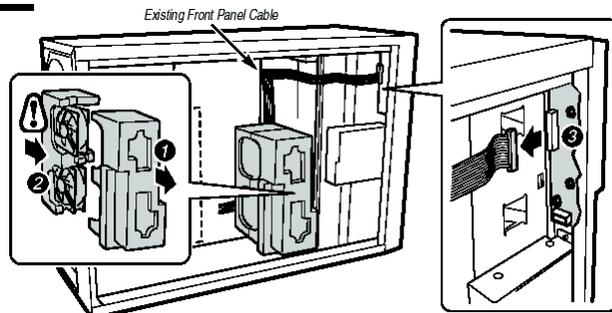
your server board. To do this, perform the following steps:

2. Remove the bottom half of the epac containing the fans by carefully pulling outward to disengage the four foam tabs located on the back side.

CAUTION

Damaging the four foam tabs can result in misalignment of the epac and improper airflow to the Server Board.

4. Unplug the 34-pin front panel cable from the Front Panel and remove it from the chassis.

5. Attach one end of the 24-pin front panel cable included with your server board to the chassis front panel board as shown. Both ends of the cable have identical connectors.

6. Route cable as shown, utilizing square corner folds where necessary.

7. Re-install the half of the epac containing the fans

Install Processors

1. With the server board sitting flat on the workspace, perform the following steps:

2. Observe safety and ESD precautions as prescribed in the product documentation.

3. Open the socket lever on the primary processor socket.

4. Remove the processor from the packaging, aligning the pins of the processor with the socket, insert the processor into the socket

5. Close and latch the socket lever.

6. Install the heatsink and retention clip.
Before inserting the retention clip into the heatsink slot, make sure the plastic pin (**1**) on the retention clip is aligned with the heatsink notch (**2**) that is located on one side of the heatsink.

Align corner mark on the processor to the socket as shown.

Close and latch socket lever.
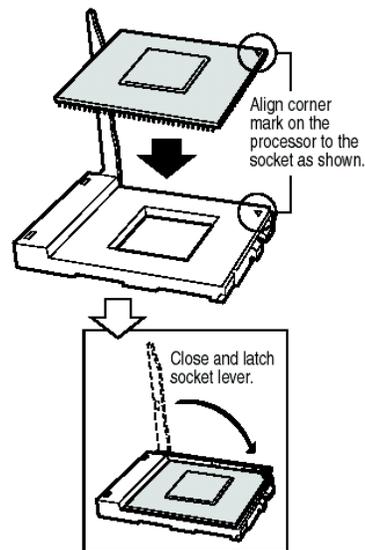
7. Align the notched side of the heat sink (**2**) with the edge of the socket containing the PGA370 designation (**3**) and place onto the processor.

8. Use slow, constant pressure to close the retention lever.

- Before inserting the retention clip into the heatsink slot, make sure the plastic pin located at ❶ is aligned with the heat sink notch at ❷.
- Align the notched side of the heat sink ❷ with the edge of the socket containing the PGA370 designation ❸ and place onto the processor as shown.

9. Following the instructions provided with the processor, install the fan on the processor heat sink by snapping it onto the top of the heat sink.

10. Connect the processor fan cabling to the server board. The CPU fan connectors are located on the server board close to the processor sockets and are labeled.
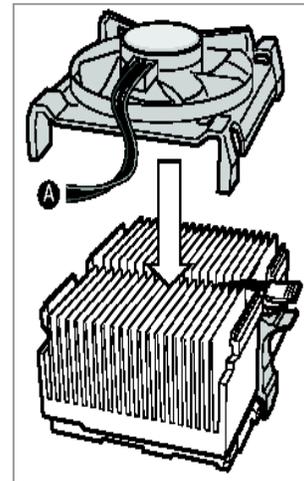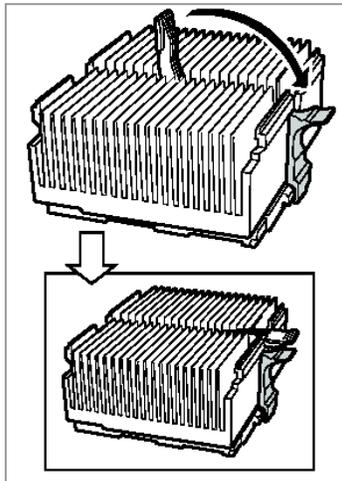
11. If you are installing only one processor you must NOT install a terminator in the secondary processor socket. The Intel Server Board SAI2 has onboard termination and does not require a processor terminator for uni-processor operation. Do not use a terminator on the SAI2 server board.

Install Memory

1. With the server board sitting flat on the workspace, perform the following steps:

2. Observe safety and ESD precautions as prescribed in the product documentation.

3. Remove memory from the packaging.

4. DIMM Slot #1 MUST contain a DIMM. Empty memory slots between DIMMs are not allowed.

5. In DIMM Slot #1, open both DIMM socket levers.

6. Insert DIMM making sure the connector edge of the DIMM aligns correctly with the slot.

7. Check that socket levers are securely latched.
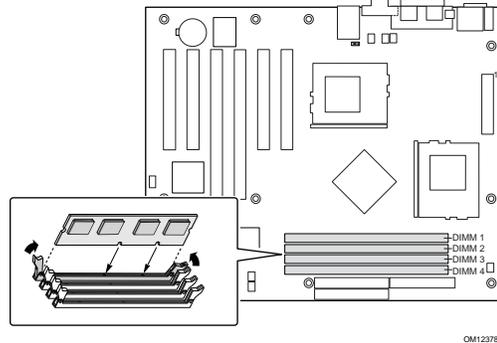
The server board supports only PC133-compliant SDRAM. Install from 64 MB to 4 GB of registered, ECC memory, using up to four DIMMs.

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*

Installing the SCSI Add-in Card

1. Remove the screw that secures the filler panel at PCI Slot 6.

2. **NOTE**: In order to maximize airflow within the chassis, it is recommended that you install the SCSI add-in card in PCI Slot 6 and install SCSI devices in the chassis lower device bays. However, the SCSI add-in card can be installed in any PCI slot in the server board.
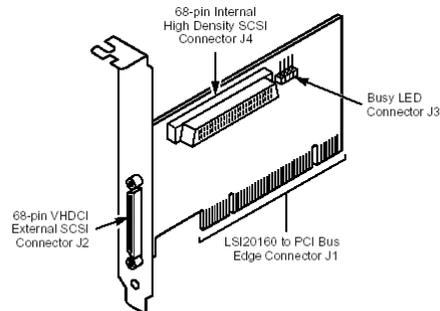
3. Remove the filler panel at PCI Slot 6 by pushing it out from the inside of the chassis.

4. Insert the SCSI card as shown.

5. Replace the screw.

NOTE: SCSI card drivers and User Guides are available on the System Resource CD that comes with your System Board. Also check the **References** section for Technical Advisory information on the SCSI Add-in Card.
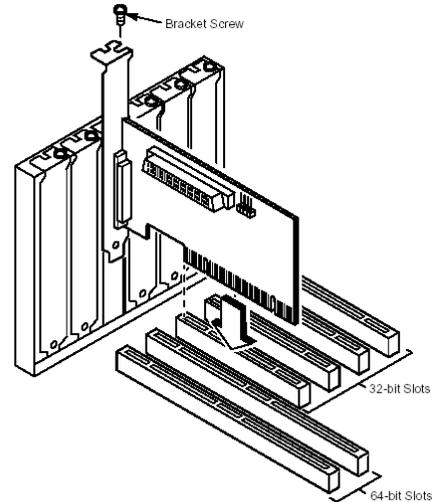
Chassis Subassembly

Fastener Identification Guide
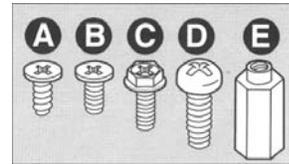
Install CD-Rom Drive - pedestal mount system

1. Remove an EMI shield on the chassis.

2. Attach side rails provided with chassis to CD-ROM, install into device bay and connect cables.

Install CD-Rom Drive – rack mount system

1. Remove screws and slide cage out of chassis.

2. Remove the EMI shield at the position you have selected. Leave remaining EMI shields in place.

3. Install CD-ROM and connect cables (side rails for the CD-ROM are not needed).
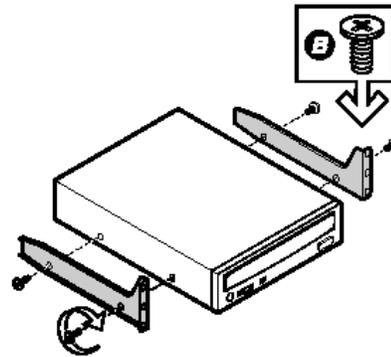
Install Floppy Drive

1. Remove filler panel and EMI Shield

2. Remove two screws and side carrier as shown.
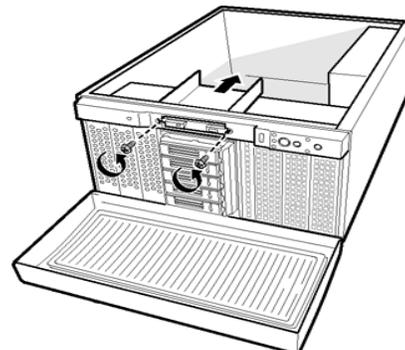
3. Install drive into carrier and connect cables.
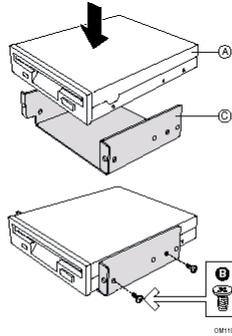
A. Diskette drive
B. Screw (M3 flat head)
C. Carrier

Install Fixed Hard Drive

1. Remove 5.25" drive bay.

2. Install hard drive into drive bay as shown.

3. Replace drive bay with hard drive and connect cables.
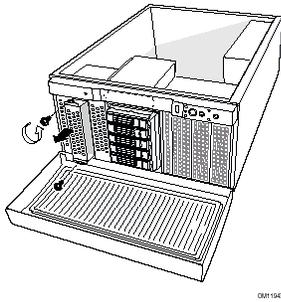
A. Data cable
B. Power cable
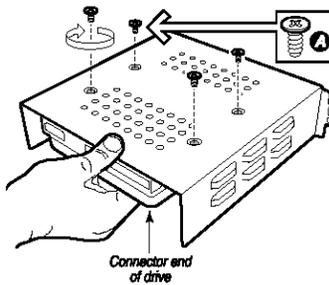
Connector end of drive
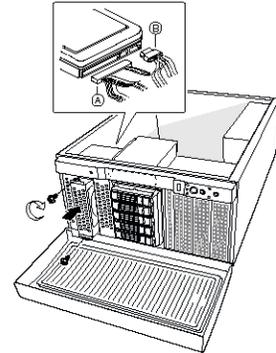
A. Data cable
B. Power cable

Installing the I/O Shield

1. The shield installs from the inside of the chassis:

2. Insert bottom edge.

3. Rotate into chassis opening until shield snaps into place.

Rotate into chassis opening until shield snaps into place.

Shield installs from inside of chassis.

Insert bottom edge as shown.
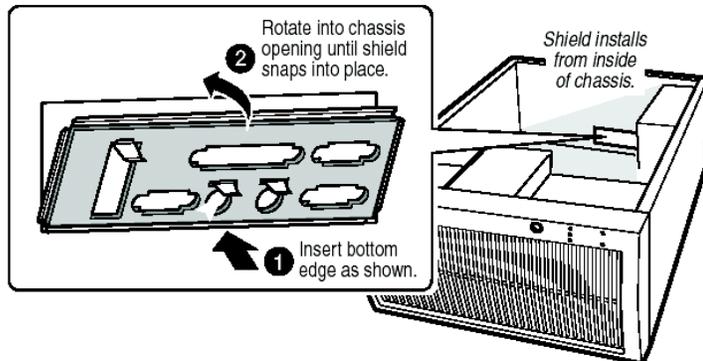
Configuring Chassis Standoffs

1. For the Intel SC5100 chassis:

2. Remove the standoff from position S and move it to position 17.

3. **NOTE**: standoff numbering in other chassis may be different.

4. Install standoffs in positions 7 and 13. Standoffs are included with your chassis.
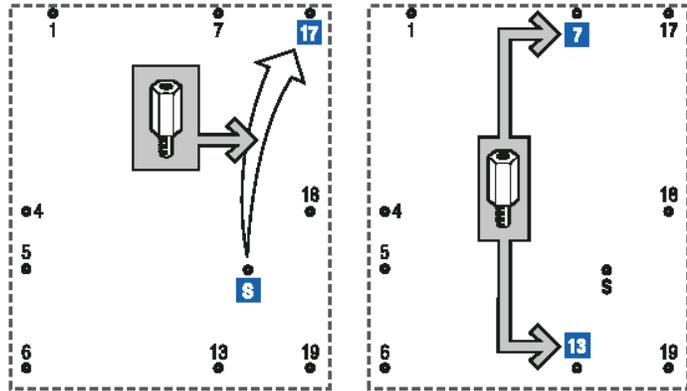
Installing Rubber Bumpers

1. For the Intel SC5100 chassis:

2. Measure and mark the bumper placement locations in your chassis by placing a ruler against the standoffs.

3. Remove the backing from the bumpers and press firmly into position. (Rubber Bumpers are included with your chassis)

Place first bumper here.

3.5"/8.5 cm

Place second bumper here.

4"/10 cm
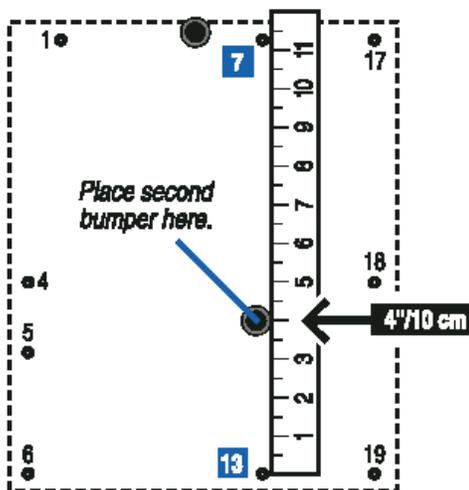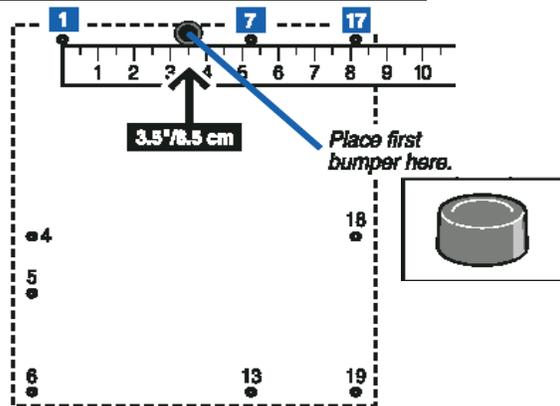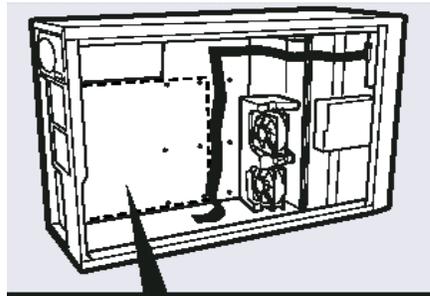
Installing the Server Board

1. For the Intel SC5100 chassis:

2. Engage the grounding tabs. For a correct installation, the three tabs must engage the TOP of the three metal enclosures for proper grounding.

3. While placing the board into the chassis, carefully position the Board's I/O connectors into the openings in the I/O shield on the back of the chassis. Be careful not to bend the metal tabs on the I/O shield.

4. Position the board to align the mounting holes with the standoffs.

5. Using the screws that came with your chassis, mount the board to the chassis.

This illustration shows the relationship between the metal grounding tabs on the I/O shield and the server board I/O ports.

Server Board I/O Ports

Inside-the-chassis View of the I/O Shield

For a correct installation, the three tabs must engage the TOP of the three metal enclosures for proper grounding.

Caution: Be careful not to bend the metal tabs on the I/O shield.
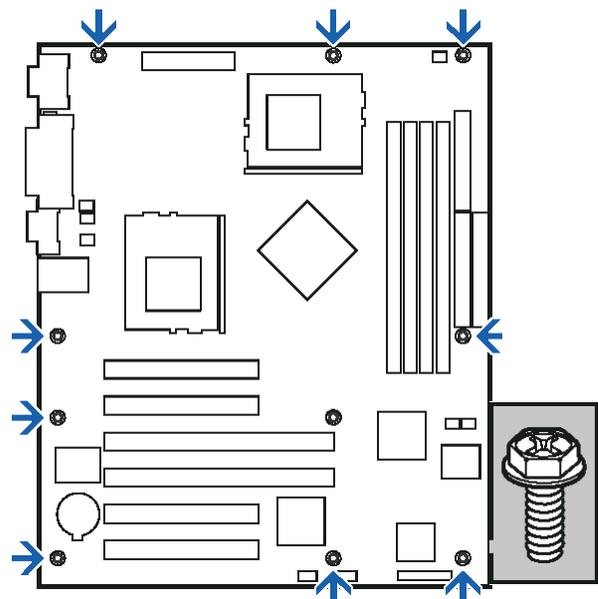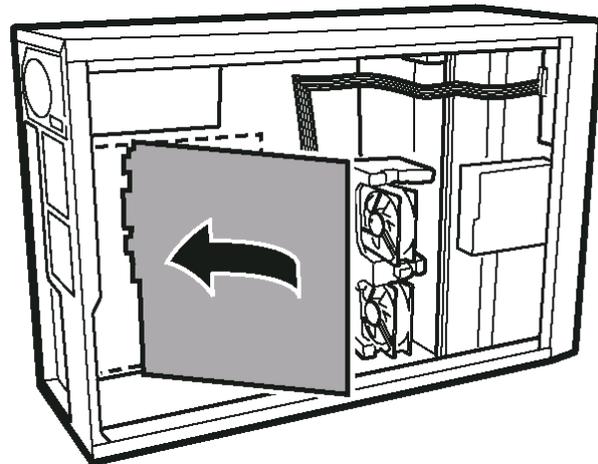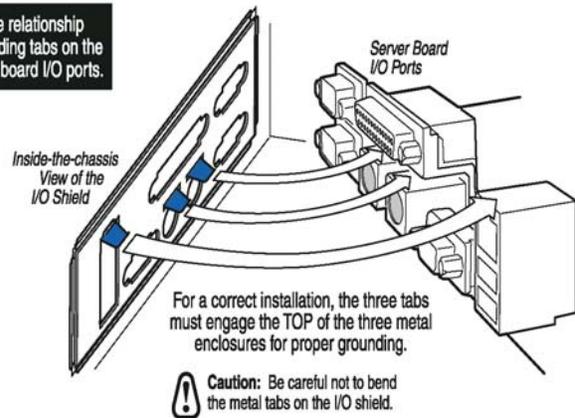
Making Connection to the Server Board
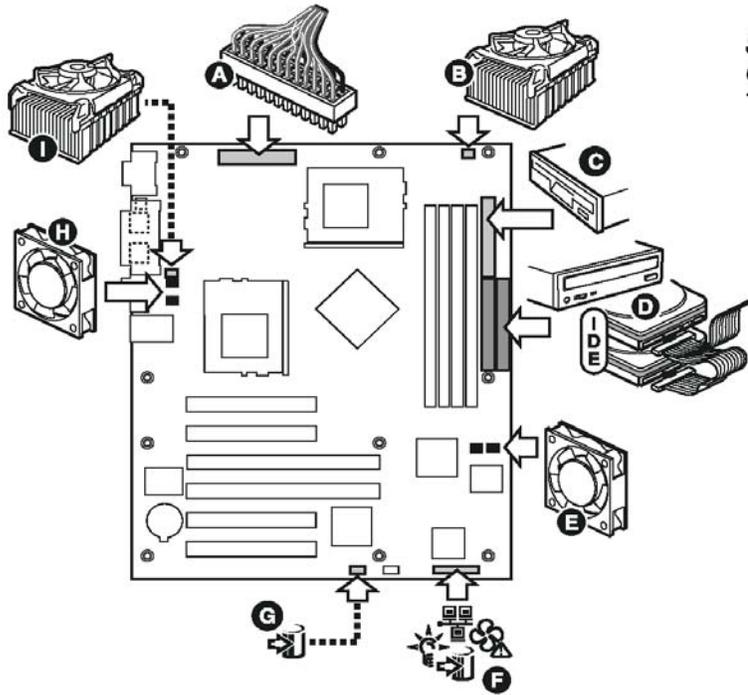
Server Board Connection Quick Reference:

A. Primary Power
B. CPU2 Fan
C. Floppy Drive
D. IDE Primary/Secondary
E. Chassis Fans[2]
F. Front Panel
G. HDD LED
H. Chassis Fans[2]
I. CPU1 Fan

1. Connect the power cable **(A)** to the server board.

2. Connect the CPU fans (**B and I**) to the server board.

3. Connect the front panel cable **(F)** from the front panel to the server board.

4. Connect the chassis fan cables to the server board **(E and H)**.

5. Connect the IDE cable to the server board **(D)**. See "Cable Routing" section below.

6. Connect the floppy cable to the server board **(C)**.

Cable Routing

For the Intel SC5100 chassis IDE or SCSI cables that connect to device in the lower device bays should be routed around the epac.

1. Remove the top

Cabling to Lower Device Bay

Lower Device Bay

Ribbon Cable[s]
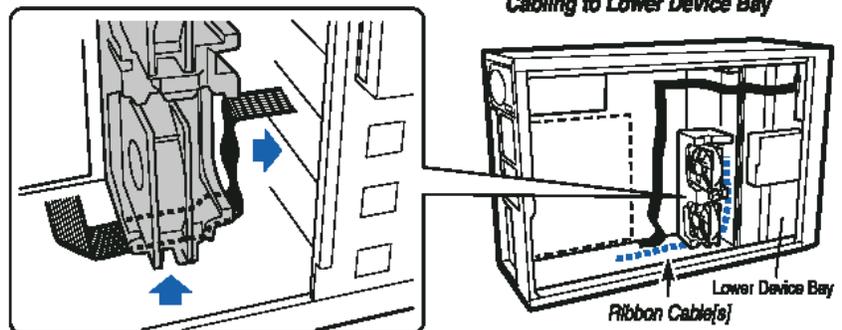
half of the epac.

2. Route cables(s) as shown. The IDE cables should lie as flat as possible so they don' t obstruct the airflow from the fans.

3. Replace the top half of the epac and connect the EPAC fan cables to server board **(J)** [see "Cable Connections" section above].

4. Route the Floppy drive cable as shown in the adjacent diagram.

Floppy Drive Cable

Route the floppy drive cable as shown.
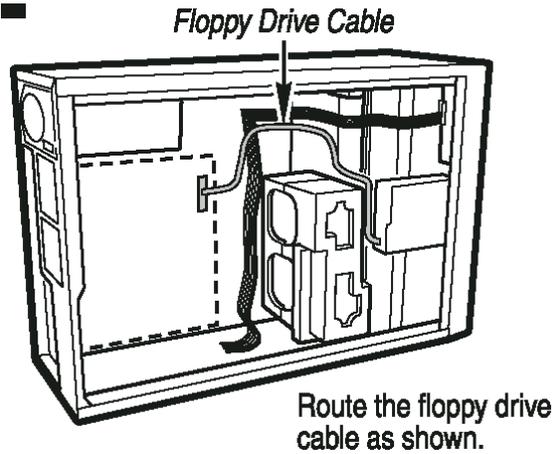
Connecting SCSI Peripherals

All internal SCSI bus connections to the LSI20160 can be made with an unshielded, 68-conductor ribbon cable (included in the SAI2SCSI Boxed Server Board). One side of this cable is marked with a color to indicate the pin-1 side. The connectors on this cable are keyed to ensure proper pin-1 connection. Some internal cables come with an LVD/SE terminator on one end. This end should be furthest from the host adapter.

SCSI Cable for Internal Connections

68-pin
High Density

SCSI Cable for External Connections

68-pin
VHDCI
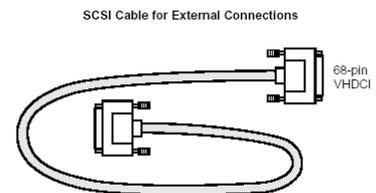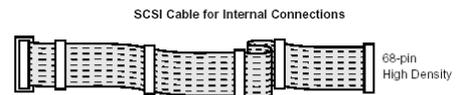
All external SCSI bus connections to the LSI20160 are made with shielded, 68-conductor cables. The connectors on this cable are always keyed to ensure proper pin-1 connection.

Making Internal SCSI Bus Connections

This section provides step-by-step instructions for making internal SCSI bus connections. If you only have external connections, skip to the section "Making External SCSI Bus Connections."

1. Plug a 68-pin connector on the end of the internal SCSI ribbon cable into connector J4.
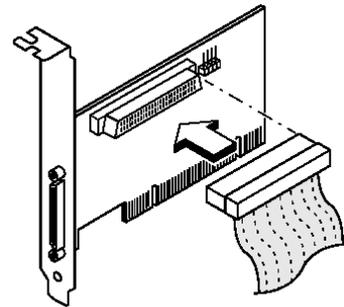
The figure shown illustrates how to make this connection.

2. Plug the 68-pin connector on the other end of the internal SCSI ribbon cable into the SCSI connector on the internal SCSI device.

3. Pin 1 must match on all connections. The lead in the cable adjacent to pin 1 is colored. The figure shown illustrates a connection to an internal SCSI device.
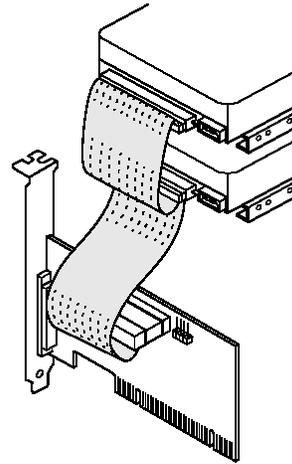
If you have more than one internal SCSI device, you must have a cable with at least as many connectors as devices.

Plug in any additional internal SCSI devices, as required. Refer to the example shown below to the right.

The figure below illustrates the connection of multiple internal SCSI devices chained together. Make sure to match pin 1 on all connections.
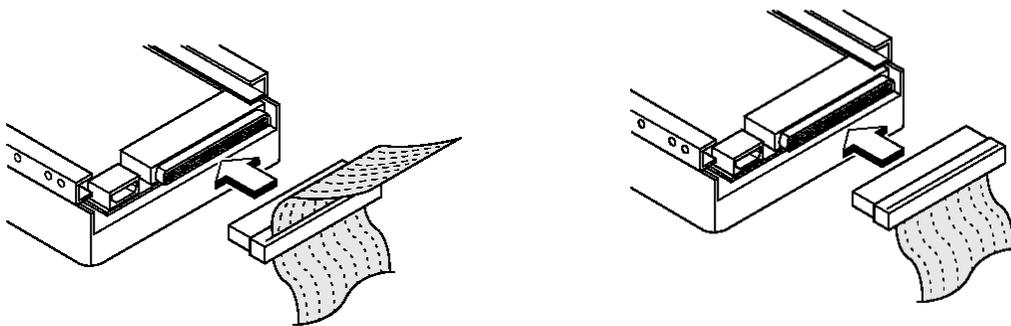
Finishing Up

WARNING

An electrical shock hazard exists if the chassis cover is not replaced before connecting the chassis AC power.

*Install the chassis cover according to the instructions for your chassis.

*See your chassis documentation to complete rack or pedestal installation.

*Connect the keyboard, mouse and monitor cables to the back panel.

*Connect the power cable to the back panel and to an ac outlet.

Platform Confidence Test Utility

Introduction

The Intel® Server Board Platform Confidence Test package provides a method to determine if an Intel based server system is correctly assembled and functioning properly. The package provides tests for the onboard resources that can be run without user intervention. There are three test suites in the package: the Quick Test, Comprehensive Test, and a continuous loop of the Comprehensive Test. The Platform Confidence Test probes for the hardware present at the start of each test and reports the identified components. In this way, the Platform Confidence Test will identify many assembly and cabling errors when installed components are not reported.

Installing the Server Board Platform Confidence Test Package

The Platform Confidence Test program files are available on the Resource CD which accompanied the SAI2 Server Board. Check the Intel Support Web Site for the most up-to-date version of this product. Available updates can be downloaded from the Intel support website at:
http://support.intel.com/support/motherboard/server.

> **WARNING**: *Each board has its own specific Platform Confidence Test package. Do not attempt to run the wrong Platform Confidence Test package on the wrong*
>
> *e*

TECHNICAL ADVISORY - Creating floppy disks from the SAI2 Resource CD-ROM: When booting off of the SAI2 Resource CD-ROM with BIOS revisions prior to BIOS 5 (P05), you cannot make a floppy disk containing the Build Your Own Platform Confidence Test (BYOPCT). The workarounds are listed below.

1) Boot to a Win32 based OS and create the floppies using the GUI interface. (Note: When selecting Create-a-Disk, you may see a run-time error pop-up window. The screen will ask you if you want to debug, click "no".) You will then be prompted to download the file to create a floppy, however the floppy will not be bootable. After you create the BYOPCT diskette, you will need to reboot the system to the Resource CD-ROM to create a RAMDRIVE and then run AUTOEXEC from the BYOPCT floppy created.

2) Boot to an MS DOS floppy with CD support. The floppy can then be created from the CD-ROM by running MENU. To run BYOPCT tests, proceed as above.

3) Follow the instruction below.

Please refer to the **References** section for the link to the complete [Technical Advisory](#).

---

1. Insert the resource CD into a Windows* based system and let the autorun feature launch the graphical user interface (if autorun does not launch the GUI, launch it manually by double clicking on your CD-ROM drive).

2. On the Utilities page, drop down the menu and choose the Platform Confidence Test option.

3. Click on the Create Diskette icon that appears and when prompted, choose to save the file to a temporary folder on your hard drive.

4. Locate the file you just saved and run the ****PCT.exe (where **** refers to the code for a particular board) program obtained from the CD. This will extract the files for the Platform Confidence Test onto the floppy along with a file called MKBOOT.BAT.

8. Reboot the server to the resource CD and insert the floppy with the Platform Confidence Test files into the floppy drive.

9. Exit to DOS by choosing Quit from the menu and then selecting Quit Now. At the DOS prompt, change to the floppy disk and execute the MKBOOT.BAT file. This will make your floppy disk bootable and copy over the appropriate DOS components for creating a RAMDRIVE for the Platform Confidence Test to extract to.

10. Reboot your system to the floppy.

11. You will be asked to agree to a licensing agreement prior to the actual file expansion occurring. The agreement is the file LEGAL.TXT.

12. A RAMDRIVE will be created into which the diagnostic tests are copied.

13. When the copy process is complete, you will be presented with a menu of five options. These menu options are discussed in greater detail below.

Quick Tests

The quick test suite runs a small subset of available tests. It identifies the processor type, speed, and the number present. Additionally, the base and total memory sizes, external L2 cache size, and the attached hard disks are also identified. For the quick test, you should verify that the configuration displayed after the probe includes all the hard disks, memory and processors you have installed in the system. The system will identify drives attached to any SCSI controllers in the system, not just the onboard controller. It will not identify any other SCSI devices (CDROM, Tape, etc.).

Comprehensive Tests

The comprehensive test probes for the same items as the Quick Test, but in greater depth. In addition, it identifies the keyboard and mouse, the COM1 and COM2 ports, the LPT port, memory, the floppy drive, and the onboard video controller with its memory. The tests executed are a superset of the quick tests. The processor floating point unit (FPU) is tested and more extensive tests are run on the memory and cache. Extensive tests are also run on the onboard peripheral controllers, integrated components and the chipset. You should verify that the displayed configuration after the probe includes all the disks, memory and processors you have installed in the system. The system will identify drives attached to any SCSI controllers in the system, not just the onboard controller.

Comprehensive Test with Continuous Looping

This test is identical to the comprehensive test, but it continuously loops through the tests until the user presses **<CTRL+BREAK**>. This mode of operation is intended to allow identification of an intermittent failure in a Field Replaceable Unit for replacement. The normal comprehensive test result summary is displayed, but the status reflects the sum of all tests. Thus, if a test failed one or more times during the run, it will be reported as failing. The number of times the test cycle was repeated is displayed in the result summary screen.

To start the Platform Confidence Test boot the server from the bootable diskette described above. The system should display the following menu (Note: the **** in the title of the screen will be replaced by the name of the actual board being tested and Version X will be replaced by the actual revision of the test package).

**** Platform Confidence Test. Ver. X

(c)Copyright 2001 Intel Corp. All Rights Reserved.

Server Diagnostic Options

Quick Test

Comprehensive Test (DEFAULT)

Comprehensive Test with continuous looping

Display Help Text

EXIT

Highlight your selection using Cursor UP/DOWN and press ENTER

On entry the "Comprehensive Test" option is highlighted, as the default. Selecting any of the first three options results in the test system probing the hardware to determine which tests in the suite are applicable to the current hardware configuration. If the system under test is not supported by the Platform Confidence Test package being used, the message "This motherboard is not supported by these

Platform Confidence Test. Press any key to exit" will appear.   Selecting the "Display Help Text" option results in a display of the help text file for the test options. Selecting the "EXIT" option saves the test results in a RESULT.LOG file and returns you to the DOS prompt. Typing "testmenu" (without the quotes) at the prompt will restart the menu system.

Select the test desired with the cursor and press **<ENTER>.** The hardware configuration test will begin and upon completion, a configuration summary will be displayed.

Upon completion of the test and after the test results are displayed, the program returns to the main menu. When the EXIT option is selected, the most recent test results are saved to the RESULT.LOG file in the current directory, or floppy drive a:, if the program is running from a ramdrive. For ease in viewing, copy the RESULT.LOG file to another diskette and open with a text editor. It is important to save the test results because after each subsequent test run, the RESULT.LOG is overwritten.

> **Refer to the SAI2 Platform Confidence Test Users Guide on the System Resource CD for greater detail.**

Software Installation

Upgrading the BIOS

Preparing for the Upgrade

Before you upgrade the BIOS, prepare for the upgrade by recording the current BIOS settings, obtaining the upgrade utility, and making a copy of the current BIOS.

Recording the Current BIOS Settings

1. Boot the computer and press <F2> when you see the message:

   ```
   Press <F2> Key if you want to run SETUP
   ```

2. Write down the current settings in the BIOS Setup program.

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

Obtaining the Upgrade Utility

You can upgrade to a new version of the BIOS using the new BIOS files and the BIOS upgrade utility, PHLASH.EXE. You can obtain the BIOS upgrade file and the PHLASH.EXE utility through your computer supplier or from the Intel Customer Support website:

http://support.intel.com/support/motherboards/server/SAI2

NOTE: Please review the instructions distributed with the upgrade utility before attempting a BIOS upgrade.

This upgrade utility allows you to:

- Upgrade the BIOS in flash memory.
- Update the language section of the BIOS.

The following steps explain how to upgrade the BIOS.

Creating a Bootable Diskette

1. Use a DOS or Windows 95 system to create the diskette.

2. Insert a diskette in diskette drive A.

3. At the C:\ prompt, for an unformatted diskette, type:

   format a:/s

4. or, for a formatted diskette, type:

   sys a:

5. Press <Enter>.

Creating the BIOS Upgrade Diskette

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

1. Insert the bootable diskette into the diskette drive.

2. Extract the contents of the BIOS.EXE file onto the bootable diskette. To do this, simply type the filename (with or without the extension) at the a:\ prompt, for example "BIOS.EXE".

3. You will be prompted to confirm a folder in which to store the extracted files. The BIOS upgrade image is extracted in the specified folder.

Upgrading the BIOS

1. Place the bootable diskette containing the BIOS update files into the diskette drive of your system. Boot the system with the diskette is in the drive.

2. At this point you have a choice of two options. Press 1 and ENTER to automatically update the system BIOS. This will update the system BIOS and reset the system. Press 2 and ENTER to update the User Binary and reset the system.

3. Wait while the BIOS files are updated. Do **not** power down the system during the BIOS update process! The system will reset automatically when the BIOS update process is completed.

4. Remove the diskette from the diskette drive.

5.   Check to make sure the BIOS version displayed during POST is the new version as the system reboots.

6.   Enter Setup by pressing the F2 key during boot. Once in Setup, press the F9 and ENTER to set the parameters back to default values.

7.   Re-enter the values you wrote down at the beginning of this process. Press F10 and ENTER to exit BIOS Setup and Save Changes.

8.   If you do not set the CMOS values back to defaults using the F9 key, the system may function erratically.

NOTE: You may encounter a CMOS Checksum error or other problem after reboot. Try shutting down the system and booting up again. CMOS checksum errors require that you enter Setup, check your settings, save your settings, and exit Setup.

Finishing Up:

1.   Enter system BIOS by pressing the F2 key after powering server on.

2.   Reset the default BIOS configuration setting by pressing the F9 key.

3.   Reconfigure system BIOS settings as needed. For instance, check to see that the system time and date are correct. You will also need to set the "**Installed O/S**" option under the **Advanced** section to Plug and Play (**PnP O/S**). You should also change the boot order so that CD-ROM is selected first. It is recommended that I/O devices be disabled that are not being used. For example, serial ports, parallel ports, PCI devices and legacy devices. It may also be wise to set a BIOS password depending on your security needs.

4.   Press F10 to save and exit.

Creating a Diskette of the LSI SCSI Driver for Windows 2000

LSI Logic provides the Storage Device Management System (SDMS) 4.0 drivers electronically for your convenience. SDMS is a trademark of LSI Logic Corporation. The drivers are located on the Resource CD that came with your SAI2 server board.

The following steps must be performed on a system with at least a Windows 95 operating system installed.

1. Insert the **Resource CD** that came with your SAI2 server board into a Windows-based computer and follow these steps:

2. The CD should **autorun** to the License agreement. Scroll down and select the appropriate option. (If the CD does not **autorun**, you can manually run **autorun** by selecting **Start** > **Run** > **Browse** and the then browse the CD for the **autorun** application file, select it, click **Open**, and then click **OK**).

3. At the main menu select the **Drivers and Utilities** link.

4. Click on the down arrow and from the drop down list select the **LSI SCSI Driver**.

5. Place a formatted floppy disk in the disk drive and click on the "**Create a Diskette**" icon.

6. At the **File Download** window, select the "Run this program from its current location" radio button and click **OK**.

7. At the **Security Warning** window click **Yes**.

8. A **DOS** window will open prompting you to insert a blank formatted floppy disk in the disk drive. Press **Enter**.

9. After the file is extracted, remove the diskette, label it, and have it available during the **Installing Microsoft Windows 2000 Advanced Server** section.

10. Detailed setup and installation files are contained on the diskette.

Installing Microsoft* Windows 2000* Advanced Server

For your convenience we have included two methods of installing the Windows 2000 Advanced Server operating system. The first method will be the more common manual installation method. The second will be an automated installation method specific to the Windows 2000 operating system.

Manual Installation:

This section covers installation issues related to the Microsoft Windows 2000 operating systems. For more detailed information refer to the Windows 2000 system manual. Check the References section for related web links.

1. Insert boot diskettes or bootable CD-ROM and reboot your system.

2. During install let Windows detect the storage devices in your system.

3. When prompted to press **F6** to install a driver not included with Windows 2000, press **F6**. (Note: this occurs early during the installation process. If you miss this step you will need to reinstall)

4. When device detection is complete, and your disk drive controller has not been detected, press **<S>** to specify additional storage devices.

5. You will be prompted to install a diskette with the driver. Insert the LSI SCSI Driver diskette created in the previous section and press **Enter**.

6. You will be prompted to select the **Symbios Ultra3 PCI SCSI Driver**. Press **Enter** to select this driver.

7. Continue with the Windows installation.

8. Run **Setup** for Microsoft Windows 2000 Advanced Server.

9. When prompted for disk space and file system type, delete any non-NTFS partitions (if they exist) and create an NTFS partition utilizing at least 9GB of space (9GB will be necessary should you decide to add any of the additional products that are available for the SAI2 Server Board such as the Intel RAID Controller U3-1 or U3-1L).

10. Continue with the Windows installation.

11. When you are prompted for a server name, specify an appropriate server name.

12. When you are prompted for adding a password for the user account administrator, add a valid password and click **Next**.

13. In the Windows 2000 **Components** dialog box, accept the default choices and click **Next**.

14. In the **Network Settings** dialog box, accept the default setting and click **Next**.

15. In the Workgroup Or Computer Domain dialog box, click No, this computer is not on the network or is on a network without a domain. Accept the default WORKGROUP and click Next.

16. Complete the installation of Windows 2000 Advanced Server, accepting the default settings.

17. Restart the server.

18. Once the system has finished installing, log on to the server using an account with administrator privileges (the Administrator account).

19. The "**Windows 2000 Configure your Server**" window will appear indicating that you have successfully completed the install. Click the "**I will configure this server later**" radio button and click **Next**. Close the "**Configure your Server**" window.

20. Check the **Device Manager** to make sure that no device warnings are listed.

21. On the server desktop, right-click **My Computer**, select **Properties**, click on the **Hardware** tab and then click on **Device Manager**. Expand all the items and look for yellow question marks. If you find one then you need to correct the issue (usually by installing or updating the driver). You will install the [Network Server Adapter](#) driver in the following section.

22. Under the **Computer** device group in Device Manager, make sure that an **ACPI multiprocessor PC** is listed. This verifies that the Operating System is recognizing both processors.

23. Check **Event Viewer** for any errors (Start > Programs Administrative Tools > Event Viewer). If there are any errors, refer to the [Microsoft Windows 2000](#) support Web site in the References section.

24. You should also check to see if there are any Critical Updates and/or Service Packs posted by Microsoft that need to be installed. The web link for this is: [Microsoft Windows Updates.](#)

25. After doing this check your event log again as outlined above.

Automated Installation:

There are several methods of automating the installation of Windows 2000 operating system. This can be useful in terms of saving time when deploying

servers with identical configurations. A realistic example of this could be building a number of Web servers that will later be clustered together. In this example, each server would need to be identical. In any event, the automated installation method you choose will depend on your individual needs and resources.

Prior to starting an automated installation you will need to build a "master server", one that you will want to duplicate. Follow the Manual Installation method above. For the instructions presented in this section, the hardware components will need to be identical for each duplicate server. There are methods to automate the installation of dissimilar systems but we will not cover this here.

Microsoft includes the tools needed to implement an automated installation for Windows 2000 Advanced Server on the distribution CD-ROM. The files needed are located in the X:\SUPPORT\TOOLS\Deploy.CAB (where x is the CD-ROM drive letter). This section will describe two methods.

Duplicating a master server hard drive:

The first method covered describes the proper procedure for duplicating a master server hard drive. It is referred to as the "Sysprep Process".

The Sysprep process prepares the hard drive so that it will run Plug and Play detection, create new Security Identifiers (SIDs) and run a "Mini-Setup Wizard" the next time the system is started. After running this process you will be ready to duplicated the drive. **Implementing these changes prior to a duplicating the hard drive must be done in order to avoid conflicts with servers residing on the same network.**

1. Install Windows 2000 Advanced Server operating system on a "Master Server" as describe in the manual installation procedure above. While installing the OS make sure that you do not join it to a domain and keep the local admin password blank at this time.

2. After following the complete manual installation procedure, log in as the administrator. At this point you can install any associated applications and/or services. Ensure that your server configuration is exactly as you want it. Remember to remove any residual information.

3. To prepare the server for duplication you will run the Sysprep executable file with the optional Sysprep.inf file.

4. To run Sysprep, the files Sysprep.exe and Setupcl.exe must be located in a Sysprep folder at the root of the master system drive. Create a "sysprep" folder at the root of the c:\ drive and copy over all of the files in Deploy.CAB on your CD-ROM (X:\SUPPORT\TOOLS\Deploy.CAB).

As mentioned above the Sysprep process allows us to create a "Mini Setup Wizard" which is a streamlined version of the normal setup wizard. To bypass interaction with this wizard and further automate the installation process you can specify system parameters with the Sysprep.inf file. The next section includes instructions to create a basic sysprep.inf file.

4. Navigate to the Sysprep folder on the C:\ drive and run the "**setupmgr.exe**" file. The Windows 2000 Setup Manager Wizard welcome screen launches. Click **Next>**.

5. In the *New or Existing Answer File* screen select the "Create an answer file that duplicates this computers configuration" and click Next>.

6. In the *Product to Install* screen select "**Sysprep Install**" and click **Next>**.

7. In the *Platform* screen select "**Windows 2000 Server**" and click **Next>**.

8. In the *License Agreement* screen select "**Yes, fully automate the installation**" and click **Next>**.

9. Unless your build requires specific settings, accept the defaults for the *Customize the Software* and *Licensing Mode* screens, and then enter a name for the destination system such as "Server2".

10. Again, unless your build requires specific settings, accept the defaults for the *Administration Password* and *Display Settings* screens, and then select the "**Typical Settings**" in the *Network Settings* screen and click **Next>**.

11. In the *Workgroup or Domain* screen select "**Workgroup**" and click **Next>**.

12. Select the correct time zone in the *Time Zone* screen and click **Next>**.

13. In the *Additional Settings* screen select "**No, do not edit the additional settings**" and click **Next>**.

14. In the *Sysprep Folder* screen select "**No, do not create a Sysprep folder**" and click **Next>**. You will get the following notice…

15. Click **Yes** to continue.

16. In the *OEM Duplicator String* screen click **Next>**.

17. In the *Answer File Name* screen accept the default c:\sysprep\sysprep.inf and **Next>** and click Finish.

18. Navigate to the c:\sysprep folder and run the sysprep.exe file. You will then get the following notice …

At this point you have created a hard drive image that can be properly duplicated to other server systems. Transfer this image to another hard drive using a third party duplicating software. Boot the server from the new hard drive. As the system boots into Windows, it will quickly run through a setup screen followed by a request for your product key. After entering the key it will automatically install some remaining settings and restart the system. After the system restarts the server installation is complete.

Unattended Installation from CD-ROM:

As you explore the capabilities of the **setupmgr.exe** file you will see that it allows you automate the installation process in many ways. The second method covered here is to automate the installation using the original operating system distribution

CD-ROM. This is done by creating another type of "answer" file called the "**unattend.txt**". The procedure for a basic installation with default settings is outlined below:

5. Navigate to the Sysprep folder on the C:\ drive of the "master server" and run the "**setupmgr.exe**" file. The Windows 2000 Setup Manager Wizard welcome screen launches. Click **Next>**.

6. In the *New or Existing Answer File* screen select the "Create an answer file that duplicates this computers configuration" and click Next>.

7. In the *Product to Install* screen select "**Windows 2000 Unattended Installation**" and click **Next>**.

8. In the *Platform* screen select "**Windows 2000 Server**" and click **Next>**.

9. In the *User Interaction Level* screen select "F**ully automated**" and click **Next>**.

10. In the *License Agreement* screen accept the terms of the license agreement and click **Next>**.

11. Unless your build requires specific settings, accept the defaults for the *Customize the Software* and *Licensing Mode* screens.

12. In the Computer Names screen you have a couple choices to created new computer names. You can manually add individual names or automatically add names based on the organization name. Add your additional server name(s) and click **Next>**.

13. Unless your build requires specific settings, accept the defaults for the *Administration Password* and *Display Settings* screens, and then select the "**Typical Settings**" in the *Network Settings* screen and click **Next>**.

14. In the *Workgroup or Domain* screen select "**Workgroup**" and click **Next>**.

15. Select the correct time zone in the *Time Zone* screen and click **Next>**.

16. In the *Additional Settings* screen select "**No, do not edit the additional settings**" and click **Next>**.

17. In the *Distribution Folder* screen select "**No, this answer file will be used to install from a CD**" and click **Next>**. You will get the following notice…

Windows 2000 Setup Manager Wizard

You have chosen to not create a distribution folder but a distribution folder is needed for the IE Branding file and/or the language files you have chosen. Are you sure you want to continue?

Yes   No

18. Click **Yes** to continue.

19. In the *Answer File Name* screen save the unattended answer file as "winnt.sif" on a floppy disk. The "save to" path should be "a:\winnt.sif". Click **Next>** and then click Finish.

20. In order to more fully automate the installation process there are a couple of modifications to make in the winnt.sif file.

21. Open the winnt.sif file and add "**Repartition=Yes**" to the [Unattended] section.

22. Also add "**ProductID=xxxxx-xxxxx-xxxxx-xxxxx-xxxxx**" to the [User Data] section. Substitute the x's with the appropriate product key. A copy of the complete winnt.sif file can be found in the "References" section below along with supporting Microsoft Knowledge Base articles and documents.

23. Insert the Windows CD-ROM into the CD-ROM drive and the floppy disk created above into the disk drive of the new server.

24. Change the boot order in the CMOS so that the CD-ROM is first in the list. For information about how to do so, refer to the documentation included with your computer, or contact the manufacturer.

25. Restart your computer. When Windows setup is started from the CD-ROM after about 1 minute you will be asked to confirm the creation of the partition. After this the process will become fully automatic.

Installing the Network Server Adapter Driver

While integrating the SAI2 platform, **Device Manager** indicated the need to install drivers for the network server adapter. To do this:

1. Insert the Resource CD that came with your SAI2 server board and follow these steps:

2. The CD should autorun to the License agreement. Scroll down and select the appropriate option. (If the CD does not **autorun**, you can manually run **autorun** by selecting **Start** > **Run** > **Browse** and the then browse the CD for the **autorun** application file, select it, click **Open**, and then click **OK**).

3. At the main menu select the **Drivers and Utilities** link.

4. Click on the down arrow and from the drop down list select the **PRO/100 Driver**.

5. Place a formatted floppy disk in the disk drive and click on the "**Create a Diskette**" icon.

6. At the **File Download** window, select the "Run this program from its current location" radio button and click **OK**.

7. At the **Security Warning** window click **Yes**.

8. A **DOS** window will open prompting you to insert a blank formatted floppy disk in the disk drive. Press **Enter**.

9. After the file is extracted, navigate back to **Device Manager**.

10. Click on Network Adapters -> Intel 8255x-based PCI Ethernet Controller (10/100) -> right Click -> Properties.

11. Go to **Driver** Tab.

12. Choose **Update Driver**.

13. The **Upgrade Device Drive Wizard** starts. Click **Next**.

14. Follow the on-screen instructions.

15. Choose the **Search for suitable driver for my device** option. Click **Next**.

16. Select **Floppy disk drives** option and deselect any other box that is checked. Click **Next**. (Make sure the floppy where you extracted the driver is still in the floppy disk drive).

17. The Search Results will locate the more recent driver and prompt you to upgrade. Click **Next** to install the driver.

18. After the driver has been installed, choose **Finish.**

19. **Close Device Manager** and close **System Properties**.

20. You should also check to see if there are any Critical Updates and/or Service Packs posted by Microsoft that need to be installed. The web link for this is: [Microsoft Windows Updates.](#)

21. After doing this check your event log again as outlined above.

Installing Winbond Hardware Doctor*

Winbond Hardware Doctor* is a basic Server hardware monitoring tool that alerts a system administrator if a hardware problem occurs on their SAI2 server platform. The tool is available on the SAI2 System Resource CD that came with your SAI2 Server Board. To find out more about the features and capabilities of Winbond Hardware Doctor, see the [References](#) section.

1. Insert the Resource CD that came with your SAI2 server board and follow these steps:

2. The CD should autorun to the License agreement. Scroll down and select the appropriate option. (If the CD does not **autorun**, you can manually run **autorun** by selecting **Start** > **Run** > **Browse** and the then browse the CD for the **autorun** application file, select it, click **Open**, and then click **OK**).

3. At the main menu select the **Hardware Monitor** link.

4. Click on the down arrow and from the drop down list select the **Winbond Hardware Doctor**.

5. Click on the "**Run Installer**" icon.

6. At the **File Download** window, select the "Run this program from its current location" radio button and click **OK**.

7. At the **Security Warning** window click **Yes**.

8. At the Winbond Hardware Doctor Installation *Welcome* screen, click Next.

9. At the **Select Destination Directory** screen, select the defaults. Click **Next**.

10. Continue with the installation.

11. At the Installation Completed screen, click Finish.

12. Click **OK** to restart the server.

References

Intel® Server Board SAI2

Home Page

- [Intel Server Board SAI2 Home Page](#)

Product Guide

- [Intel Server Board SAI2 Product Guide - [SAI2_PG.PDF]](#)

Software, Drivers, Utilities

- [Intel Server Board SAI2 Software, Drivers and Utilities](#)

Installation and Use

- [Intel Server Board SAI2 Installation and Use](#)

Product Documentation

- [Intel Server Board SAI2 Product Documentation](#)

Troubleshooting Guide

- [Intel Server Board SAI2 Troubleshooting Guide - [SAI2_TSG.PDF]](#)

LSI SCSI Controller Installation Guide

- [LSI SCSI Controller Product Guide - [LSI_SCSI_PG.PDF]](#)

Compatibility

Memory

- [Intel Server Board SAI2 Memory Test List - [SAI2_MEM.PDF]](#)

Chassis

- [Reference Chassis List](#)

Processors Supported

- [Processors Supported](#)

Hardware and Operating System

- [Tested Hardware and Operating System List for SAI2 and Intel Server Chassis SC5100 - [HARDWARE_OS.PDF]](#)

- [Intel® SAI2 Server Board with LSI* 20160 SCSI Adapter/Intel Server Chassis SC5100 Tested Hardware & Operating System List [TESTEDHW_OS_LIST.PDF]](#)

Server RAID Controllers

- [Intel Server RAID Controller U3-1](#)

- [Intel Server RAID Controller U3-1L](#)

Intel® Server Chassis SC5100

Chassis Sub-Assembly Product Guides

- [Intel Server Chassis SC5100 - Pedestal and Rack Server Chassis Subassembly Product Guide - [SC5100_PG.PDF]](#)

Server Chassis SC5100 Configuration Guide

- [Intel Server Chassis SC5100 - Configuration Guide [SAI2_CONFIG.PDF]](#)

Technical Advisories Links

As of the date this document was published, the following Technical Advisories have been posted…

1. [SAI2 and Splash Screen Utility Interaction with SCSI Adapters - [TA_531.PDF]](#)

2. [Intel Server RAID Resource CD shipped with Intel Server RAID Controller U3-1LA (SRCU31LA) May Fail to Launch Storage Console on Intel Server Board SAI2 and SAI2 - [TA_526.PDF]](#)

3. [Creating Floppy Disks from the SAI2 Resource CD-ROM - [TA_509.PDF]](#)

4. [SAI2 and Winbond Hardware Doctor* Audible Alerts Setting - [TA_518_1.PDF]](#)

Technical Advisories

The following Technical Advisories contain the critical information for the advisories listed. For the complete technical advisory, click on the corresponding link above.

1. Intel Server Board SAI2 and Splash Screen Utility Interaction with SCSI Adapters

Description

With the server board BIOS logo enabled (Diagnostic screen disabled), going into the setup utility for the LSI Logic* LSI20160 SCSI adapter (included in the SAI2SCSI product) and trying to enter global parameters by hitting F2 locks the Intel Server Board SAI2. Note: This issue is not unique to the LSI Logic LSI20160 adapter and may also occur with other SCSI adapter setup utilities.

Root Cause

This is an SAI2 BIOS issue.

Workaround

Disabling the server board BIOS splash screen (Diagnostic screen enabled) resolves this issue.

Corrective Action

Intel is currently evaluating a new BIOS release intended to resolve this issue. Once BIOS validation is complete, the production BIOS will be implemented in the factory and will also be available for download at http://support.intel.com/support/motherboards/server/SAI2/. This Technical Advisory will be updated with the factory implementation and BIOS availability dates when available.

2. Intel RAID Resource CD shipped with SRCU31LA may fail to launch Storage Console on SAI2

Products Affected

Intel RAID Card SRCU31LA (CD Only), with Resource CD part number A28536-002.

Description

Booting from the RAID resource CD that shipped with the product may cause the SAI2 or SDS2 to "hang". This problem has not been exhibited by the SRCU31LA Resource CD with other compatible Intel Server Boards.

Root Cause

The root cause has been traced to a memory conflict that results when booting from the SRCU31A RAID resource CD on a SDS2 or SAI2 server board. This appears most frequently when an IDE hard drive is placed in the boot sequence before the Intel RAID Card.

Corrective Action / Resolution

Intel has corrected the Resource CD error with the release of the SRCU31LA Resource CD part A28536-003. This corrected CD will be implemented at the factory at the earliest opportunity.

Workarounds

Make sure that your Intel RAID controller is the first boot option in the BIOS Boot Options set on the server board. For instructions on how to check this refer to your server board Technical Product Specification, which can be found at:

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

If CD fails to boot after with the Intel RAID controller set as the first boot option use the following steps to run Storage Console from EPSD CD:

1. Boot to the Intel RAID Resource CD.

2. As soon as the Startup screen appears, press F8

3. Choose Y to each option in line *EXCEPT* the following:

     DEVICE=\UTILS\STORCON\SRCX000.EXE

4. At C:\> prompt, type "CD Utils\Storcon"

7. At C:\Utils\Storcon> prompt, type "SRCX000" to load STORCON DOS driver.

8. After driver loads, type "STORCON" to start Storage Console.

3. Creating floppy disks from the SAI2 Resource CD-ROM

Description

Intel has found the following issues with the resource CD-ROM that is included with the SAI2 Server Boxed Board.

1) When booting off of the SAI2 Resource CD-ROM, you cannot make a floppy disk containing the Build Your Own Platform Confidence Test (BYOPCT), the NIC driver or the Winbond Hardware Doctor* utility. Instead, you will receive a disk error.

2) The SAI2 Resource CD-ROM does not allow you to make a bootable BYOPCT floppy disk using the standard mkboot.bat utility.

3) When booting off of the SAI2 Resource CD-ROM, use of the ROMDOS editor utility will result in a system hang upon exiting the editor. Please do not use the ROMDOS editor on the SAI2 Resource CD-ROM. This will be removed in the next release of the resource CD-ROM.

Workaround

The workarounds are listed below.

1) Boot to a Win32 based OS and create the floppies using the GUI interface. (Note: When selecting Create-a-Disk, youmay see a run-time error pop-up window. The screen will ask you if you want to debug, click "no".) You will then be prompted to download the file to create a floppy, however the floppy will not be bootable. You can then install the NIC driver from the floppy. After you create the BYOPCT diskette, you will need to reboot the system to the Resource CD-ROM to create a RAMDRIVE and then run AUTOEXEC from the BYOPCT floppy created.

2) Boot to an MS DOS floppy with CD support. The floppy can then be created from the CD-ROM by running MENU. To run BYOPCT tests, proceed as above.

Corrective Action

Production Release BIOS 5 (P05) will allow you to create a floppy disk when booting from the CD-ROM drive. Please refer to future revisions of this Technical Advisory for additional details on when the P05 BIOS will be available. The system resource CD-ROM team has corrected the issue with making floppies bootable and the next release of the resource CDROM will allow you to make a bootable BYOPCT floppy disk using the standard mkboot.bat utility. The DOS editor will be removed in the next release of the resource CD-ROM. Please refer to future revisions of this Technical Advisory for additional details on implementation dates.

4. Intel® Server Board SAI2 and Winbond Hardware Doctor* Audible Alerts Setting.

Description

The audible alert option provided in the Winbond Hardware Doctor* utility does not work on the server board SAI2.

Root Cause

The root cause is that the server board SAI2 has not enabled the circuitry to allow audible alerting.

Corrective Action

Intel has evaluated a proposed circuitry change to allow audible alerting on the server board SAI2 and has found that the audible alert functionality does not operate in a controlled manner during boot. As a result, Intel has decided not to implement the audible alerting function. An updated version of the Winbond

Hardware Doctor utility that removes the option to enable audible alerting will be available at http://support.intel.com/support/motherboards/server/SAI2/.

Spares and Parts

To order online visit the Server Spares Sales on the web at:

http://program.intel.com/mp/admin/c_dynamic.asp?file=/integrator/na/en/private/param.htm

Supported Processor for the SAI2 Server Board*

This section contains a table of supported processors that Intel tested with the SAI2 server board. For a complete updated listing, please visit the Supported Processor for the SAI2 Server Board on the web at:

http://support.intel.com/support/motherboards/server/sai2/procsupp.htm

Supported Boxed Intel® Pentium® III Processors

Speed (MHz)	Order #	MM#	Boxed Test Specification (S-spec)	Stepping	CPUID	L2 Cache Size	Notes	Earliest BIOS where supported
1.4GHz/133	BX80530C1400512	843849	SL657	tA1	06B1h	512k	1,2,3	P04
1.13 GHz-S	BX80530C1133512	836384	SL5LV	tA1	06B1	512k	1,2,3	P04
1.26 GHz-S	BX80530C1266512	836583	SL5LW	tA1	06B1	512k	1,2,3	P04

1. This processor is in the FC-PGA2 form factor with an Integrated Heat Spreader.
2. This processor is manufactured on the 0.13µm process technology.
3. This processor is intended for server applications only.

Supported Tray Intel® Pentium® III Processors

Speed (MHz)	Order #	MM#	OEM Test Specification (S-spec)	Stepping	CPUID	L2 Cache Size	Notes	Earliest BIOS where supported
1.13 GHz-S	RK80530KZ006512	836716	SL5PU	tA1	06B1	512k	1,2,3	P04
1.26 GHz-S	RK80530KZ012512	836721	SL5QL	tA1	06B1	512k	1,2,3	P04

1.0GHz/133	RK80533PZ001256	836606	SL5QJ	cDO	068Ah	256k	1,2,3	P04
1.4GHz/133	RK80530KZ017512	838253	SL5XL	tA1	06B1h	512k	1,2,3;	P04

1. This processor is in the FC-PGA2 form factor with an Integrated Heat Spreader.
2. This processor is manufactured on the 0.13µm process technology.
3. This processor is intended for server applications only.

Supported Memory Types for the SAI2 Server Board∗

The memory module on the server board SAI2 has 4 DIMM sockets, which can hold up to 4 GB of Registered ECC PC133 memory using six 72 bit DIMM modules. For a complete updated listing, please visit the Supported Memory Types for the SAI2 Server Board on the web at:

http://support.intel.com/support/motherboards/server/sai2/sai2_mem.htm

The following memory features are supported:

- 133 MHz, Registered ECC PC-133 compatible 3.3V registered SDRAM modules (in compliance with the PC-133 Registered DIMM Specification)

- DIMMs with capacity of 64MB, 128MB, 256 MB, 512 MB and 1G. Other DRAM sizes may function correctly but will not be validated.

- Minimum configuration is 64MB using one 64MB DIMM.

Below is a chart that lists the current supported memory types: Note:

PC-133 Registered SDRAM Module Configurations for Cas Latency 2 & 3					
DIMM Capacity	DIMM Organization	SDRAM Density	SDRAM Organization	# SDRAM Devices/rows/Banks	# Address bits rows/Banks/column
64MB	8M x 72	64Mbit	8M x 8	9/1/4	12/2/9
128MB	16M x 72	64Mbit	16M x 4	18/1/4	12/2/10
128MB	16M x 72	64Mbit	8M x 8	18/2/4	12/2/10
128MB	16M x 72	128Mbit	16M x 8	9/1/4	12/2/10
256MB	32M x 72	64Mbit	16M x 4	36/2/4	12/2/10
256MB	32M x 72	128Mbit	32M x 4	18/1/4	12/2/11
256MB	32M x 72	128Mbit	16M x 8	18/2/4	12/2/10
256MB	32M x 72	256Mbit	64M x 4	9/1/4	13/2/11
256MB	32M x 72	256Mbit	32M x 8	9/1/4	13/2/10
512MB	64M x 72	128Mbit	32M x 4	36/2/4	12/2/11
512MB	64M x 72	256Mbit	64M x 4	18/1/4	13/2/11
512MB	64M x 72	256Mbit	32M x 8	18/2/4	13/2/10
1GB	128M x 72	256Mbit	64M x 4	36/2/4	13/2/11

The following table lists DIMM devices known to be compatible with the Intel Server Board SAI2. Intel recommends that Advanced Tested DIMMs be used to establish reliable system operation. DIMM devices not listed can be used; but, in the event of unreliable system operation, the DIMM devices should be replaced with functionally Advanced Tested DIMMs to determine whether the DIMM devices are causing the problem.

Caution: Third party memory vendors may use the same module part number with different DRAM vendors and die revisions. To insure proper system operation, verify that each DRAM vendor and die revision has been separately tested and qualified. Please notify CMTL if there is a discrepancy.

Note: This list is not intended be all-inclusive. It is provided as a convenience to Intel's general customer base, but Intel does not make any representations or warranties whatsoever regarding the quality, reliability, functionality, or compatibility of these memory modules.

This list is subject to change without notice.

SAI2 Server Board

Registered, ECC, 133MHz SDRAM DIMM Modules
64MB Sizes (8Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	CAS Latency	Low Profile	EOL
Micron	MT9LSDT872G-133C3	MT48LC8M8A2-75C	Micron		11/14/01		3		
Samsung	M390S0823FT1-C7A	K4S640832F-TC75	Samsung		11/14/01		3		

SAI2Server Board

Registered, ECC, 133MHz SDRAM DIMM Modules
128MB Sizes (16Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	CAS Latency	Low Profile	EOL
Samsung	M390S1620FT1-C7A	K4S640432F-TC75	Samsung		11/13/01		3		
Infineon	HYS72V16301GR-7.5-C2	HYB39S128800CT-7.5-C2	Infineon		11/14/01		3		
Micron	MT9LSDT1672G-13EE1	MT48LC16M8AA2	Micron		11/15/01		2		
Samsung	M390S1723DT1-C7A	K4S2808320-TC75	Samsung		11/15/01		3		
Micron	MT18LSDT1672G-13EC2	MT48LC16M4A2-7EC	Micron		12/11/01		3		
Infineon	HYS72V16600GR-7.5-C2	HYB39S128800CT-7.5-C2	Infineon		12/12/01		3	Yes	
Micron	MT9LSDT1672G-133E2	MT48LC16M8A2-75E	Micron		12/12/01		3	Yes	
Samsung	M390S1723DTU-C7A	K4S280832D-TC75	Samsung		12/17/01		3	Yes	
+ATP Electronics	AR16V72L8S4GAS	K4S280832D-TC75 rev D	Samsung	SR168L08V rev 1	12/20/01	G108	3		
+Dataram	DTM60168 (M)	MT48LC16M8A2 TG-75 rev E	Micron	40506 rev A	2/6/02	G187	3	Yes	
+Aved Memory Products	AMP377P1723AT2-C75/H	HY57V28820AT-H rev A	Hyundai	105399 rev B	2/26/02	G110	3	Yes	
+Aved Memory Products	AMP377P1723AT2-C7B/MI	MT48LC16M8A2 TG-7E rev A	Micron	105399 rev B	2/17/02	G120	3	Yes	

Modules shaded in blue are low profile

+ This vendor is part of the CMTL Gold or Advance Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Caution: *Some modules on this list may contain "stacked" DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support "stacked" parts before purchase.*

SAI2 Server Board

Registered, ECC, 133MHz SDRAM DIMM Modules
256MB Sizes (32Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	CAS Latency	Low Profile	EOL
Samsung	M390S3320DT1-C7A	K4S2804320-TC75	Samsung		11/15/01		3		
Micron	MT18LSDT3272G-13EE1	MT48LC32M4A2-7EE	Micron		11/19/01		2		
Infineon	HYS72V32300GR-7.5-C2	HYB39S256800CT-7.5-C2	Infineon		11/19/01		3		
Infineon	HYS72V32300GR-7.5-C2	HYB39S256800CT-7.5-C2	Infineon		11/19/01		3		
Micron	MT9LSDT3272G-133B1	MT 48LC32M8A2	Micron		12/07/01		3		
Samsung	M390S3253CT1-C7A	K4S560832C-TC75	Samsung		12/07/01		3		
Infineon	HYS72V32600GR-7.5-C2	HYB39S256800CT-7.5-C2	Infineon		12/17/01		3	Yes	
Micron	MT9LSDT3272G-133B2	MT48LC32M8A2	Micron		12/18/01		3	Yes	
Samsung	M390S3320DTU-C7A	K4S280432D-TC75	Samsung		12/18/01		3	Yes	
Samsung	M390S3253CTU-C7A	K4S560832C-TC75	Samsung		12/30/01		3	Yes	
+Legend	L3272QC3-59AHSC3A	HY57V56820T-H rev A	Hyundai	B5982 rev A	12/18/01	G177	3		
+Viking	INT25633	MT48LC32M4A2-75 rev A	Micron	0000891AG rev A	12/26/01	G152	3		
+Dataram	DTM68014 (68014Z)	MT48LC32M4A2TG-75	Micron	651219-G rev 1	12/26/01	G132	3		
+Dataram	DTM68014 (Y)	HY57V28420AT-H rev A	Hyundai	651219-G rev 1	1/30/02	H207	3		
+SMART Modular Technologies	SM3272SR301-ICA	TC59S6404CFT75 rev C	Toshiba	P51G168NEB SIBP3	1/22/02	G547	3		
+Legend	L3272QC3	HYB39S128800CT-7.5	Infineon	B5982 rev A	2/2/02	G172	3		
+ATP Electronics	AR32V72N4S4GAS	K4S280432C-TC75 rev C	Samsung	SR168N04V rev 2	2/6/02	G094	3	Yes	
+ATP Electronics	AMR32V72J4S4GAS	K4S280432C-TC75 rev C	Samsung	SR168J04V rev 1	2/11/02	G097	3		
+Dataram	DTM60172 (M)	MT48LC32M8A2TG-75 rev B	Micron	40506 rev A	2/11/02	G179	3	Yes	
+Dataram	DTM60199 (M)	MT48LC32M4A2TG-75 rev E	Micron	40551 rev A	2/21/02	H730	3	Yes	

Continued……………………..

SAI2 Server Board

Registered, ECC, 133MHz SDRAM DIMM Modules
256MB Sizes (32Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	CAS Latency	Low Profile	EOL
+ATP Electronics	AR32V72L8S8GAS	K4S560832C-TC/L75	Samsung	SR168L08V1 rev 1	3/6/02	H749	3	Yes	
+Aved Memory Products	AMP377P3323AT2-C75/MV	V54C3128804VAT-7 rev A	Mosel-Vitelic	105352 Rev.B	3/11/02	G116	3		
+Aved Memory Products	AMP377P3323AT2-C7B/MI	MT48LC16M8A2TG-7E rev A	Micron	105352 rev B	3/11/02	G118	2		

Modules shaded in blue are low profile

+ This vendor is part of the CMTL Gold or Advance Certification program. This means this part has/will been tested across all compatible Intel Server Boards.   For further information contact CMTL @ http://cmtlabs.com/

Caution: *Some modules on this list may contain "stacked" DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support "stacked" parts before purchase.*

SAI2 Server Board

Registered, ECC, 133MHz SDRAM DIMM Modules
512 MB Sizes (64Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	CAS Latency	Low Profile	EOL
Samsung	M390S6450CT1-C7A	K4S560432C-TC75	Samsung		11/19/01		3		
Infineon	HYS72V64300GR-7.5-C2	HYB395256400CT-7.5-C2	Infineon		11/19/01		3		
Micron	MT18LSDT6472G-133B1	48LC64M4A2-75	Micron		12/01/01		3		
Infineon	HYS72V64500GR-7.5-C2	HYB39S256400CT-7.5-C2	Infineon		12/23/01		3	Yes	
Samsung	M390S6450CTU-C7A	K4S560432C-TC75	Samsung		12/23/01		3	Yes	
+Dataram	DTM68015 (Y)	HY57V56420T-H	Hyundai	651219-G rev 1	1/15/02	G183	3		
+ATP Electronics	AR64V72N4S8GAS	K4S560432C-TC75 rev C	Samsung	SR168N04V rev 2	1/30/02	G104	3	Yes	
+Dataram	DTM68015 (M)	MT48LC64M4A2TG-75 rev B	Micron	651219-G rev 1	1/24/02	G134	3		
+SMART Modular Technologies	SM6472SR301-ICA	K4S560432C-TC75 rev C	Samsung	P51G168N EBSIBP3	1/22/02	G559	3		
+Legend	L6472WC3-21ASSG3C	K4S560432C-TC75 rev C	Samsung	16-21040 rev A	1/28/02	G142	3	Yes	
+Aved Memory Products	AMP377P6453AT2-C75/MV	V54C3256804VAT-7 rev A	Mosel-Vitelic	105352 rev B	2/4/02	G122	3		
+Legend	L6472QC3-59AHSC3A	HY57V562820T-H rev A	Hyundai	B5982 rev A	2/2/02	G175	3		
+Dataram	DTM60194 (M)	MT48LC64M4A2TG-75 rev B	Micron	40551 rev A	2/12/02	G138	3	Yes	
+Dataram	DTM60194 (H)	HM5225405BTT-75 rev B	Hitachi	40551 rev A	2/13/02	G987	3	Yes	
+Dataram	DTM60194 (E)	HYB39S256400CT-75 rev C	Infineon	40551 rev A	2/7/02	G995	3	Yes	
+Aved Memory Products	AMP377P6450BT3-C75/S	K4S560432B-TC75 rev B	Samsung	105349 rev C	2/17/02	G112	3		
+PNY	7264WHSTM8G24TWR-PH0	HYB39S256800CT-7.5 rev C	Infineon	40000476 rev B	2/18/02	G162	3		
SimpleTech	ST72R4K64-A75A	MT48LC64M4A2-75 rev B	Micron	758	3/7/2002	H785	3		

Modules shaded in blue are low profile

+ This vendor is part of the CMTL Gold or Advance Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Caution: *Some modules on this list may contain "stacked" DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support "stacked" parts before purchase.*

SAI2 Server Board

Registered, ECC, 133MHz SDRAM DIMM Modules
1G Sizes (64Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	CAS Latency	Low Profile	EOL
Infineon	HYS72V128320GR-7.5-C2	HYB39S256400CI-75	Infineon		11/19/01		3		
Samsung	M390S2858CT1-C7A	K4S560432C-TC75	Samsung		11/28/01		3		
Micron	MT36LSDF12872G-133B1	IMBIIDBHBF	Micron		12/01/01		3		
Samsung	M390S2858CTU-C7A	K4S560432C-TC75			12/20/01		3	Yes	
Infineon	HYS72V128520-7.5-C2	HYB39S256400CT-7.5-C2			12/20/01		3	Yes	
+Dataram	DTM60193 (M)	MT48LC64M4A2FB-75 rev B	Micron	40554 rev A	1/9/02	G457	2	Yes	
+Dataram	DTM60192 (E)	HYB39S256400CT-75 rev C	Infineon	40481 rev A	1/17/02	G181	3		
+SMART Modular Technologies	SM12872SR301-ICA	K4S560432C-TC75 rev C	Samsung	P51G168N EBSIBP3 rev A	1/17/02	G571	3		
+Dataram	DTM60192 (M)	MT48LC64M4A2TG-75 rev B	Micron	40481 rev A	1/24/02	H201	3		
+Legend	L1272WC3-21ASSG3C	K4S560432C-TC75 rev C	Samsung	16-21040 rev A	1/28/02	G144	3	Yes	
+ATP Electronics	AR128V72N4SMGAS	K4S560432C-TC75 rev C	Samsung	SR168N04V rev 2	2/6/02	G106	3	Yes	
+Legend	L1272QC3-HRAHSD3A	HY57V56420T-H	Hyundai	0114-1 rev A	2/7/02	G174	3		
+PNY	72A0UHSTM8G24KWR-PH0	HYB39S256400CT-7.5 rev C	Infineon	40000475 rev B	2/25/02	G148	3		

Modules shaded in blue are low profile

+ This vendor is part of the CMTL Gold or Advance Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Caution: Some modules on this list may contain "stacked" DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support "stacked" parts before purchase.

Supported Operating Systems for the SAI2 Server Board*

For a complete updated listing, please visit the Supported Memory Types for the SAI2 Server Board on the web at:

http://support.intel.com/support/motherboards/server/sai2/hardware_os.htm

Operating System
Microsoft* Windows 2000 Advanced Server
Red Hat* Linux 7.1

Tested Hardware for the SAI2 Server Board <u>without</u> the LSI* 20160 SCSI Adapter*

	Microsoft Windows* 2000 Advanced Server	Red Hat* Linux 7.1
PCI RAID		
Adaptec* ASR2100S	1	1
AMI* Elite1600	1	1
ICP-Vortex* GDT6523RS	1	1
Intel® SRCU31L	1	1
Intel® SRCU32	1	1
Mylex* AcceleRAID 352	1	1
Mylex AcceleRAID 170	1	1
Promise* Fast Trak 100 TX2	1	1
PCI SCSI		
Adaptec AHA-2940U2W	1	1
Adaptec ASC-29160N	1	1
Adaptec ASC-39160	1	1
PCI Fiber Channel Host Adapters		
Emulex* LP8000-T1	1	
Emulex LP9000/9002-T1	1	
Qlogic QLA2200/66	1	1
PCI Network Interface Cards		
3COM* 3C905C-TX-M	1	1
3COM 3C980C-TXM	1	1
3COM 3C996-TX	1	1
Dlink DFE-530/TX+	1	1
Intel® PRO/100+ Server Adapter (PILA8470B)	1	1
Intel® PRO/100 S Server Adapter (PILA8470C3)	1	1
Intel® PRO/100 S Dual Port Server Adapter (PILA8472C3)	1	1
Intel® PRO/100+ Dual Port Server Adapter (PILA8472)	1	1
Intel® PRO/1000 F Gigabit Server Adapter (PWLA8490SX)	1	1
Intel® PRO/1000 T Server Adapter (PWLA8490T)	1	1

	Microsoft Windows* 2000 Advanced Server	Red Hat* Linux 7.1
Modems		
3COM 3CP5610A	1	1
3COM 3294	1	1
USB Devices		
Logitech* M-UB48 Mini wheel mouse PS/2 and USB	1	1
Keytronic Pilot Pro keyboard PS/2	1	1
Microsoft* Intellimouse PS/2 and USB mouse	1	1
Microsoft Internet Keyboard Pro PS/2 and USB	1	1
CD-ROM		
Mitsumi* CRMC-FX4824T (ATA33)	1	1
Samsung* SC – 152 (ATA33)	1	1
Samsung SN-124	1	1
Toshiba* SD-R1102 (ATA33)	1	1
DVD		
Toshiba SD-M1612 (ATA33)	1	1
Removable Drives		
FUJITSU DynaMO 1300SF + U (USB)	1	1
IOMEGA CD-RW 4x4x6 (USB)	1	1
IOMEGA ZIP-IDE250 (ATA)	1	1
IOMEGA ZIP-USB (USB)	1	1
Teac CDW54E/KIT/USB (USB)	1	1
Teac FD235HF (FD-235HF)	1	1
Teac FD05PUB (USB)	1	1
Hard Drives		
IBM IC35L040AVER07 Deskstar GXP60	1	1
Maxtor MX 6L080J4 Viper	1	1
Samsung SP4004H ATA100	1	1
Seagate ST340016A Barracuda IV	1	1
Seagate ST380020A U6	1	1

1 Intel® Server Board SAI2, PBA# A66889-101, BIOS Production Release 4 (Build 17), Intel® Server Chassis SC5100

Tested Hardware for the SAI2 Server Board <u>with</u> the LSI* 20160 SCSI Adapter*

	Microsoft Windows* 2000 Advanced Server	Red Hat* Linux 7.1
PCI RAID		
AMI* Elite 1600 MegaRAID 493	X	X
AMI* Enterprise 1600 MegaRAID 471	X	X
ICP-Vortex* GDT6523RS	X	X
Intel® Server RAID Controller SRCU31	X	X
Intel® Server RAID Controller SRCU31L	X	X
Intel® Server RAID Controller SRCU32	X	X
Mylex* AcceleRAID 352 A352-2-32NB	X	X
Mylex AcceleRAID 170 A170-1-32NB	X	X
PCI SCSI		
Adaptec AHA-2940U2W	X	X
Adaptec ASC-29160N	X	X
Adaptec ASC-39160	X	X
LSI Logic* LSI20160	X	X
PCI Network Interface Cards		
3COM 3C905C-TX-M	X	X
3COM 3C980C-TX-M	X	X
Intel® PRO/100+ Server Adapter (PILA8470B)	X	X
Intel® PRO/100 S Server (PILA8470D3)	X	X
Intel® PRO/100+ Dual Port Server Adapter (PILA8472)	X	X
Intel® Pro/100 S Dual Port Server adapter (PILA8472D3G1)	X	X
Intel® PRO/1000 F Gigabit Server Adapter (PWLA8490SX)	X	X
Intel® PRO/1000 T Server Adapter (PWLA8490T)	X	X
CD-ROM		
Plextor* UltraPlex Wide PX-40TSUWi	X	X
Lite-On LTN-526S	X	X
Teac* CD532S	X	X
DVD		
Pioneer* DVD-305S-A	X	X
Tape Drives		
Seagate STD2401LW-S	X	X
Hard Drives		

	Microsoft Windows* 2000 Advanced Server	Red Hat* Linux 7.1
Seagate Cheetah 18LP ST318203LC 18GB		X
Seagate Cheetah 18LP ST39103LC 9GB	X	
Seagate Cheetah 18XL ST39204LC 9GB	X	X
Seagate Barracuda 18XL ST39236LC 9 GB	X	X
Seagate Cheetah 9LP ST34502LC 4.5GB	X	X
Quantum Atlas V XC09J011 9GB	X	X
IBM Deskstar 60GXB 40GB		X
Samsung SpinPoint SV4084H 40GB	X	X
Seagate ST340016A		X

*For the complete and most up-to-date Tested and Source lists visit us at:

http://support.intel.com/support/motherboards/server/sai2/compat.htm

Microsoft* Windows* 2000

Microsoft Windows2000 Server

- http://microsoft.com/windows2000/guide/server/overview/default.asp

Microsoft Windows2000 Advanced Server

- http://microsoft.com/windows2000/advancedserver/default.asp

Microsoft Windows2000 Support Site

- http://microsoft.com/windows2000/support/default.asp

Microsoft Update Site

- http://windowsupdate.microsoft.com/