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Intel® SAI2 Server Board Troubleshooting Guide

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

Revision 1.0
November 2001

Revision History		
Date	Rev	Modifications
November 2001	1.0	Initial Release

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Copies of documents which have an ordering number and are referenced in this document, or other Intel literature, may be obtained from:

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SAI2 TROUBLESHOOTING..4

SAI2 Troubleshooting

Welcome to the SAI2 server platform. In the unlikely event you do encounter issues, this guide will help you troubleshoot & identify possible problem areas.   If you are unable to resolve a problem using this guide, please call our help desk. This guide will help you collect the data we will need to help you through your issues. Each issue includes suggestions that may help you, and a list of information we will need to assist you should you need to call.   Please visit the Intel Support website for updated versions of this document. http://support.intel.com/support/motherboard/server/SAI2.

Boot Issues

1) My server will not power on.

Check for the following possibilities:

- The SAI2 server board requires 3.3 volts from the power supply as well as specific requirements for power sequencing and limits. A momentary switch should be used for the power on/off switch and the sleep/resume switch. The power supply chosen must meet the ATX 2.01 or later specification. Does your power supply meet these criteria?
- Have you securely plugged the server AC power cord into the power supply?
- Have you plugged the server into a "powered on" power strip?
- Some ATX power supplies have a power switch on the back of the power supply next to the fan, is it switched on?
- Is the power supply set correctly to 110V or 235V depending on your power output?
- Is the front panel power switch cable properly connected to the front panel header pins on the server board (jumper located at the edge of the board and labeled FRONT_PANEL_HDR)?
- Remove all add-in cards and see if the server boots using just the on-board components. If successful, add the cards back in one at a time with a reboot in between to see if you can pinpoint a suspect card.
- Make sure stand-offs are only located below grounded mounting holes in the board. Misplaced stand-offs could short against the bottom of the board causing unreliable operation.
- Remove the processor(s) and reseat.
- Remove and reseat the memory modules. Try using memory modules from a known working server system.

Though it is unlikely that a server will not boot, there are many reasons why it may not boot. If you are unable to resolve this issue, please fill out the included customer support form and call your customer support representative. Please note the answers to the following questions below.

- What memory is the server using? Is it on the tested memory list? Visit the Intel support site for an updated memory list at "http://support.intel.com/support/motherboards/server/SAI2.
- What chassis and power supply is the server using?
- If you are using a chassis with front panel lights, are there any front panel lights on?
- Is the power supply fan spinning?
- Does the system beep? See Issue 2.
- Please note what is displayed on the monitor or any sounds emanating from the server system.
- If the server will still not boot, please fill in the issue report form at the end of this document & contact your Intel customer support representative.

2) Upon booting, my server starts beeping.

Most likely, these beeps are "beep codes." They identify system events in case video fails to display. The following gives a description of possible beep codes for this board.

Table 3. Beep Codes

Beeps	Description
1-2-2-3	BIOS ROM checksum
1-3-1-1	Test DRAM refresh
1-3-1-3	Test 8742 Keyboard Controller
1-3-3-1	Autosize DRAM, system BIOS stops execution here if the BIOS does not detect any usable memory DIMMs
1-3-4-1	Base RAM failure, BIOS stops execution here if entire memory is bad
2-1-2-3	Check ROM copyright notice
2-2-3-1	Test for unexpected interrupts
1-2	Search for option ROMs. One long, two short beeps on checksum failure
1	One short beep before boot

3) My HDD lights went on, I heard the drives spin up, and my floppy drive light turned on, but I'm not seeing video.

Check the following:

- Make sure the monitor is turned on and the video cable is plugged in completely.
- Remove all add-in cards and retry booting with just the on-board components. If successful, try adding the add-in cards one at a time with a reboot in between to try to pinpoint a suspect card.
- Remove and reseat memory modules. Try using memory from a known working system.
- Make sure all stand-offs are under grounded board mounting holes. Misplaced stand-offs could short against the bottom of the board causing unreliable operation.
- Remove and reseat processor(s).
- If you are using a switch box to share a monitor between multiple servers, ensure switching to the proper server.
- If the default CMOS set-up has been altered, check to see that onboard video is enabled.

If you are unable to get a video image, please fill out the included customer support form and call your customer support representative. Please note the answers to the following questions below.

- What memory is the system using? Is it on the tested memory list? Visit the Intel support site for an updated memory list at http://support.intel.com/support/motherboards/server/SAI2. What chassis and power supply is the system using?
- If the chassis has front panel lights, are any front panel lights on?
- Is the power supply fan spinning?
- Does the system beep? See Issue 2.
- Please note any sounds emanating from the server system.
- If you are using a third party video adapter, please have manufacturer and model number ready.
- If the server will still not boot, please fill in the issue report form at the end of this document & contact your Intel customer support representative.

4) I am installing adapters in my powered-down system, and my system boots up when I install a PCI adapter.

Server management features require full time "standby" power. This means that power is still "on" to parts of the system even if you have turned the system "off" via the power switch on the front panel.

Additionally, signals in the PCI connectors tell the system to boot (normally used by server management adapters/NICs). Plugging in the adapter with the AC power cord still connected can cause false signals to be transmitted commanding the system to boot. Before removing the cover to your chassis, you should always

- Turn off the server via the power switch on the front panel.
- Unplug the AC cord from the back.

5) My system boots up automatically when I power on my power strip.

Some server systems save the "last known power state" since the last AC power connection. If you remove AC power before powering down the system via the power switch on the front panel, your system may automatically attempt to come back to the "on" state it was in once you restore AC power.

- Please keep in mind that unplugging the system or flipping a switch on the power strip both remove AC power.
- Follow the correct A/C removal sequence: Press the front panel button, and then remove the A/C power cord.

Allowing your system to fully power up and then powering down the system using the front panel power switch should correct this problem. If it does not, fill out the attached issue report form and call your customer support representative. Please have the following information available:

- What BIOS do you have loaded on the system? (The latest tested BIOS is posted to the Intel Customer Support Website)
- What is the PBA number of the server board? (The PBA number is located on a white label near the edge of the board and is printed in the following format: PBA xxxxxx-xxx)
- What memory is the server using? Is it on the tested memory list? Visit the Intel support site for an updated memory list at "http://support.intel.com/support/motherboards/server/SAI2
- What chassis and power supply is the system using?

6) Some of my hard drives show up during POST and some don't.

Check on the following:

- Are you using third party SCSI adapters? System memory limitations limit the number & size of option ROMs in the system. If you place too many adapters or adapters that take up too much space in memory, they may not install and show the hard drives connected to them.
- Is you're the Option ROM for your SCSI controller enabled? By disabling the SCSI Option ROM, drives are still available to the operating system, they just cannot be booted to and they won't show up during POST.
- Verify that pin 1 on the data cable connects to pin 1 on the device. In most cases, if you orient the data cable so that the colored stripe on the cable is pointing towards the power connector on the device, you will have proper orientation.
- Verify that the device power cable is firmly connected.
- Check your SCSI ID numbers. SCSI devices must have their own unique ID on the SCSI bus. This number must be set with jumpers on the device. ID number should be set starting at 0 and must be set lower than 8 if booting from the drive.

- Check for proper termination on the SCSI bus.

If the hard drives still do not show, please fill out the included issue report form and call your customer support representative. Please pay special attention to the following information:

- What add-in adapters do you have in your system (manufacturer and model number)?
- What types of hard drives are in the system (manufacturer and model number)?
- What kind of terminator do you have at the end of the cable? (Manufacturer and type e.g. Ultra 160)
- What are the SCSI IDs of the devices on your SCSI bus?
- How many SCSI channels are you using?
- What memory is the system using? Is it on the tested memory list? Visit the Intel support site for an updated memory list at "http://support.intel.com/support/motherboards/server/SAI2

Other Questions

General Questions

1) **What is Flip Chip Pin Grid Array (FC-PGA)?**
   FC-PGA is a processor package that was developed to improve the thermal dissipation of the heat generated by faster speed processors. The die has been flipped so that the heat is directed away from the server board. This feature, when combined with active heat sinks is an optimal cooling solution.

2) **How many expansion slots does the boxed Intel Server Board SAI2 contain?**
   The boxed Intel Server Board SAI2 has six dedicated PCI connectors. Two PCI slots are 64-bit/66MHz (Slots 3 and 4) and four PCI slots are 32-bit/33MHz (Slots 1,2, 5 and 6). All PCI slots support bus-mastering devices.

3) **What type of battery is used in Intel Server Board SAI2?**
   A standard coin cell (3 volt, CR2032 or equivalent) is used to supply power to the Real Time Clock (RTC) when power is not available from the power supply.

4) **How do I disable the onboard LAN?**
   Onboard features can be disabled through Server Board SAI2 BIOS setup.

Memory Questions

1) **What memory configurations are supported on the Intel® Server Board SAI2?**
   Server Board SAI2 has slots for four 172-pin Registered ECC Dual Inline Memory Modules (DIMMs) and can support a minimum system memory configuration of 64 MB and a maximum system memory configuration of 4GB of Registered ECC PC-133 SDRAM. Server Board SAI2 supports DIMM sizes of 64 MB and 128 MB using 64-Mbit device technology and 256 MB, 512 MB and 1GB using 128-Mbit device technology.

2) **What kind of problems might occur in an SDRAM-based system that uses non-compliant DIMMs?**
   The most extreme example is memory failure, when the system hangs while booting. This can happen when the system is unable to communicate properly with the memory. In less extreme cases, the memory may generate intermittent errors or fail during stress.

Jumpers and BIOS Setup Options

1) **Why can't I find speed settings in my BIOS configuration mode?**
   The processor speed option previously available in configuration mode is not displayed with newer Intel® processors and will not affect the processor speed. Newer Intel processors boot with the frequency speed preset and are tested during manufacturing.

2) **How should the jumpers be set on Intel Server Board SAI2?**
   A single configuration jumper on Server Board SAI2 is used to clear CMOS, clear password, and access BIOS recovery mode. Refer to the Technical Product Specification for more information on configuration jumper settings.

Input/Output

1) **Does the Intel Server Board SAI2 support Ultra ATA/100/66 hard drives?**
   Yes. One of the features of the Intel Server Board SAI2 is its ability to support all Ultra ATA transfer rates (i.e., 66 MB/sec and 100 MB/sec). To take advantage of the increased bandwidth available on the IDE channels, a hard drive that implements higher spindle speeds and a large onboard buffer size may be required.

2) **What IDE cable should I use to support both Ultra ATA/100 and previous IDE transfer protocols?**
   A 40-pin, 80-conductor cable can be used with Server Board SAI2 and is fully backward compatible with all IDE transfer protocols. It will also support Ultra ATA/100 if used with one or two Ultra ATA/100 drives attached.

3) **Can I mix Ultra ATA devices with other devices on the same IDE channel?**
   Yes. However, for better performance we recommend that the Ultra ATA capable devices be attached to their own IDE channel separate from other non-Ultra ATA capable drives.

**If you must contact customer support, please fill
out the following support form and have it ready.**

Intel Server Issue Report

Please Complete All That Apply

Company Name: _____   **Date Submitted:** _____

Contact: _____   **Email Address:** _____

Telephone #: _____   **Priority:** _____
(1-Hot, 2-Critical, 3-High, 4-Low)

Intel Baseboard Product:

- STL2
- SBT2
- SAI2
- SJP2
- SDS2
- S815EBM1
- SCB2
- SKA4
- SRPL8
- SRPM8
- OPRF100
- Other (specify)_____

Chassis:

- SC7000
- SR4000
- SC5000
- SC5100
- SC5150
- SR1200
- SR2000
- SR2050
- SR2100
- SR2200

_____

- Other (specify chassis manufacturer & part number, power supply manufacturer & part number, type & amount of chassis fans used, fan manufacturers & part numbers)

_____

Problem Description (complete details of the problem setup, problem description, error messages, recreation steps, troubleshooting steps completed, etc.)

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Server System Configuration Information (* indicates required information)

Hardware Information

* Main Board Part Number (PBA#/AA#)   _____   * System BIOS Version   _____

* CPU Board Part Number (PBA#/AA#)   _____   * I/O Board Part Number (PBA#/AA#)

_____

* Front Panel Board PNumber (PBA#/AA#) _____   * Midplane Board Part Number (PBA#/AA#)   _____

* Mezzanine Board PNumber (PBA#/AA#) _____   * I/O Riser Board Part Number (PBA#/AA#)   _____

* System BMC Firmware Version   _____   * SCSI Backplane PBA#/HSC Firmware Version _____

* System FPC Firmware Version   _____   * SMIC Firmware Version   _____

* Power Share/Dist. Board PBA#   _____   * Chipset Stepping   _____

*Processor #1_____/_____/_____/_____/_____   *Processor #2_____/_____/_____/_____/_____
          S-Spec#   Speed   Stepping Cache size CPUID#   S-Spec#   Speed   Stepping Cache size
CPUID#

*Processor #3_____/_____/_____/_____/_____   *Processor #4_____/_____/_____/_____/_____
          S-Spec#   Speed   Stepping Cache size CPUID#   S-Spec#   Speed   Stepping Cache size
CPUID#

*Processor #5_____/_____/_____/_ _____/_____   *Processor #6_____/_____/_____/_____/_____
          S-Spec#   Speed   Stepping Cache size CPUID#   S-Spec#   Speed   Stepping Cache size
CPUID#

*Processor #7_____/_____/_____/_____/_____   *Processor #8_____/_____/_____/_____/_____
          S-Spec#   Speed   Stepping Cache size CPUID#   S-Spec#   Speed   Stepping Cache size
CPUID#

*Memory module configuration   * Module Type (module vendor/vendor part numbers/ Intel part numbers):
(On board or in Card 1)
J1 _____MB (MODULE#1)   _____
J2 _____MB (MODULE#2)   _____
J3 _____MB (MODULE#3)   _____
J4 _____MB (MODULE#4)   _____
J5 _____MB (MODULE#5)   _____
J6 _____MB (MODULE#6)   _____
J7 _____MB (MODULE#7)   _____
J8 _____MB (MODULE#8)   _____
J9 _____MB (MODULE#9)   _____
J10_____MB (MODULE#10)   _____
J11_____MB (MODULE#11)   _____
J12_____MB (MODULE#12)   _____
J13_____MB (MODULE#13)   _____
J14_____MB (MODULE#14)   _____
J15_____MB (MODULE#15)   _____
J16_____MB (MODULE#16)   _____

*Memory module configuration   * Module Type (module vendor/vendor part numbers/ Intel part numbers):
(In Card 2)
J1 _____MB (MODULE#1)   _____
J2 _____MB (MODULE#2)   _____
J3 _____MB (MODULE#3)   _____
J4 _____MB (MODULE#4)   _____
J5 _____MB (MODULE#5)   _____
J6 _____MB (MODULE#6)   _____
J7 _____MB (MODULE#7)   _____
J8 _____MB (MODULE#8)   _____
J9 _____MB (MODULE#9)   _____
J10_____MB (MODULE#10)   _____
J11_____MB (MODULE#11)   _____
J12_____MB (MODULE#12)   _____
J13_____MB (MODULE#13)   _____
J14_____MB (MODULE#14)   _____
J15_____MB (MODULE#15)   _____
J16_____MB (MODULE#16)   _____

O/S Information

*Operating System   _____   *Operating System Language Version

_____

*O/S Version _____   *Service Pack # _____

*MP Spec _____

Utilities Information

*ISC Version _____   *SSU Version _____

*EMP / DPC Console Version _____   *FRU/SDR Loader Version _____

*Diagnostics Version (Testview, PCDiag, etc.) _____   Other _____

AGP/PCI/ISA Configuration

ALLOCATED RESOURCES
PLUG IN DEVICES

Card Type	Slot#	Card Description	Driver Rev.	IRQ #	I/O Base Addr.	FW Rev#
AGP	AGP	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
PCI	Slot#_____	_____	_____	_____	_____	
ISA	ISA 2	_____	_____	_____	_____	
ISA	ISA 1	_____	_____	_____	_____	_____

ONBOARD DEVICE

	IN USE				
*On-Board Video	☐	_____	_____	_____	
*On-Board NIC	☐	_____	_____	_____	
*On-Board SCSI-1	☐	_____	_____	_____	
*On-Board SCSI-2	☐	_____	_____	_____	

RAID ☐ RAID Level: _____(0-5) Caching Method: _____ (RB/WT) # of Drives Used: _____

IDE Drive Type(s): _____ (Make/Model)

SCSI Drive Type(s): _____ (Make/Model)

Other Device Type(s){CD-ROM, Tape Drive, etc.}: _____ (Make/Model)