SPSH4 and SRSH4 Server Platform Troubleshooting Guide

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

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Revision History

Orig./Rev.	Description	Date
1.0	Initial release	6/24/2002

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A Note on Terminology

Welcome to the SPSH4 Server Platform and SRSH4 Server Platform. These two products use the same server boardset. SPSH4 pre-integrates the server board into a 7U pedestal or rack chassis while SRSH4 pre-integrates the server board into a 4U rack chassis. For purposes of this document, the term "SSH4" will be used in reference to information that applies to both the SPSH4 and SRSH4 server platforms.

SSH4 Troubleshooting

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 follow these steps:

1) Visit http://support.intel.com/support/motherboards/server/ssh4/, this will contain the latest information of known issues and their respective solutions. If still unable to resolve the issue, go to the next step

2) Send an e-mail to Intel Customer Support using this form
http://support.intel.com/support/motherboards/server/server_form.htm

3) Contact Intel Customer Support on the list of numbers listed here
http://www.intel.com/support/9089.htm

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/motherboards/server/ssh4

NOTE: BIOS and Firmware Updates

One of the first steps to take while trying to troubleshoot your system is to make sure the platform is running the latest BIOS and firmware. Updated versions are posted on http://support.intel.com/support/motherboards/server/ssh4 with detailed release notes and update instructions.

The recommended order for the update sequence is:

1) HSC
2) BMC

3) CMOS clear

4) FRU/SDR [the BMC update clears the SDR files, so the FRU/SDR must be re-applied whenever the BMC is updated]

5) BIOS

Occasionally, a specific installation order is required other than the order specified above. Please refer to the release notes that accompany specific firmware releases for detailed instructions.

Boot Issues

1) My server will not power on.

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 customer support form (at the end of this document) and contact your customer support representative. Please note the answers to the following questions below.

Check for the following possibilities:

- The SSH4 server board requires that at least two power supplies be installed and active in either the SPSH4 (600W) or SRSH4 (430W) system. A momentary switch should be used for the power on/off switch and the sleep/resume switch.
- Have you securely plugged the server AC power cord into the power supply?
- Have you plugged the server into a “powered on” power strip?
- Is the front panel power switch cable properly connected to the front panel header pins on the server board?
- Remove and reseat the memory modules. Try using memory modules from a known working server system.
- 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.
- Verify that supported processors are installed. Some unsupported processors will not allow the system to boot.
- Remove the processors and reseat them.
- What memory is the server using? Is it on the tested memory list? Visit the Intel support site for an updated memory list: http://support.intel.com/support/motherboards/server/ssh4.
- Are there any error conditions displayed on the chassis front panel lights?
- 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 some of the possible beep codes for this board. Please refer to the Product Guide for more information on error messages and error codes.

Table 1: Beep Codes

Beeps	Reason
1	One short beep before boot (this is normal, not an error)
1-2	Search for option ROMs. One long, two short beeps on checksum failure
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	Auto size 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

3) **My hard disk drive (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.

- If you are using a switch box to share a monitor between multiple servers, ensure switching to the proper server.

- Remove all add-in cards and retry booting with just the on-board components. If successful, try adding the add-in cards back into the system one at a time with a reboot in between to try to pinpoint a suspect card.

- Clear CMOS.

- Remove and reseat memory modules. Try using memory from a known working system.
- Remove and reseat processor(s).

- If you are unable to get a video image, please fill out the included customer support form and contact your 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 server.

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

The SSH4 BIOS saves 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 both unplugging the system or flipping a switch on the power strip remove AC power.

- Follow the correct A/C removal sequence: press the front panel button, and then remove the A/C power cord.

- You may also change the BIOS configuration to ignore the last known power state. From the BIOS setup screen, select Server and then disable the AC Link option.

- Allowing your system to fully power up and then power 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 contact your customer support representative

6) A processor I've installed is not recognized

- During POST, a warning may be displayed on the screen similar to "0B50: Processor #1 with error taken off line." If this message appears, go into the BIOS setup and go to Main Menu > Processor Settings > Processor Retest and set the Processor Retest to YES. Press <F10> to save the settings and reboot.

- In addition, after installing or removing a processor, the FRU/SDR utility must be run so the server management sensors are properly initialized.

7) POST pauses with an "unsupported processor" error message.

- POST will pause when an unsupported processor is detected in the system. Press <F1> to continue the boot process or <F2> to enter Setup. When <F1> is pressed, the system will attempt to boot if possible. To prevent this pause from occurring during POST, the system must have processors installed that Intel supports on this platform. For a list of supported processors, please see the compatibility page on http://support.intel.com/support/motherboards/server/ssh4.

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

Check on the following:

- Are you using third party 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. Option ROMs for onboard devices can be disabled in the system BIOS. Disable the option ROMs for any onboard devices that you aren't using.
- 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 your hard drives still do not show, please fill out the included issue report form and contact your customer support representative.

9) POST shows more processors than are physically installed in the system

- The Intel server platform SSH4 utilizes the Intel Xeon™ Processor with Hyper-Threading technology. Hyper-Threading technology enables multi-threaded server software applications to execute threads in parallel with each processor in a server platform. When Hyper-Threading technology is enabled in the system BIOS, POST reports the number of virtual processors in the system rather than the actual number of physical processors. For more information on the performance benefits of Hyper-Threading technology, please visit: http://www.intel.com/technology/hyperthread/

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 is an optimal cooling solution when combined with active heat sinks or other active system fans that direct airflow across the processor area. Be sure to use Intel-approved thermal cooling solutions for optimal processor and system performance.

2) Do I need to install a processor terminator in empty processor sockets?

- Processors must be installed sequentially in CPU slots 1 – 4. For example, if two processors are installed, they must occupy CPU slots 1 & 2. When the Intel server platform SSH4 is configured with one processor, install the processor in CPU slot 1, which is located closest to the memory riser card and the front of the chassis (see label inside the chassis cover for a diagram). This will automatically enable on-die termination. In this configuration, a processor terminator is not required for CPU slots 2, 3, or 4 if these processors will not be installed.

3) What type of battery is used on the Intel® server platform SSH4?

- 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 the system BIOS setup.

5) Microsoft* Windows* 2000 Server and Advanced Server shows three yellow question marks (unknown devices) in the hardware device manager. What are these?

- Two of the unknown devices are the on-board Intel NICs. Updated drivers for these are available on the System Resource CD that shipped with the system. They may also be downloaded from support.intel.com.

- The third unknown device is the hot-swap backplane in the server chassis. An updated driver is available on the System Resource CD and on support.intel.com.

6) Can I use U320 SCSI drives in my Intel server platform SSH4?

- The SPSH4 and SRSH4 server platforms include a SCSI hot-swap backplane (HSBP) that is U320-compatible. The SSH4 server board has U160 onboard, but the HSBP will support U320 SCSI drives if a PCI-X U320 add-in SCSI controller is installed in the system.

Memory Questions

1) What memory configurations are supported on the Intel® server platform SSH4?

- Server platform SSH4 has slots for twelve 184-pin registered DDR-200/266 ECC SDRAM. The SSH4 server platform can support a minimum system memory configuration of 512MB (four sticks of 128MB) and a maximum system memory configuration of 24GB. Server platform SSH4 supports SDRAM sizes of 128MB, 256MB, 512MB, 1GB, and 2GB single or double-sided.

- Memory sticks must be identical and populated in multiples of four (the memory riser card is divided into three banks of four modules). Each bank must be fully populated before installing DIMMs in additional banks. For example, bank 1 must have all four memory slots filled before banks 2 and 3 can be used.

- For a diagram of the memory bank layout, see the label inside the top cover on either the SPSH4 or SRSH4 server chassis.

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. Always use memory from the Intel server platform SSH4 Tested Memory List for maximum reliability: http://support.intel.com/support/motherboards/server/ssh4

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.

Input/Output

1) Does the Intel server platform SSH4 support Ultra ATA/33/66/100 hard drives?

Yes. One of the features of the Intel server platform SSH4 is its ability to support all Ultra ATA transfer rates (i.e., 33MB/sec, 66MB/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 platform SSH4 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.

SPSH4/SRSH4 Server Platform Issue Report

Please Complete All That Apply

Company Name:		Date Submitted:	
Contact:		Email Address:	
Telephone #:		Priority: 1-Hot, 2-Critical, 3-High, 4-Low	

Platform

❑	SPSH4Server Platform (pedestal)
❑	SPSH4 Server Platform (7U rack)
❑	SRSH4 Server Platform (4U rack)

Problem Description

Complete details of the problem setup, problem description, error messages, recreation steps, troubleshooting steps completed, etc.

System Configuration Information

Hardware

Main Board Part Number (PBA#/AA#):	
System BIOS Version:	
BMC firmware version:	
HSC firmware version:	
SCSI Backplane (PBA#):	
Processors Installed (Quantity):	
Processor Speed (frequency):	
Processor ID (CPUID#)	
Memory Modules (total number of DIMMs):	
Size per DIMM (please indicate MB or GB):	
RAM Manufacturer and part number:	
Is this RAM on the tested memory list?	
If less than 12 DIMMs are installed, which slot numbers are being utilized?	

Operating System

Operating System: (name & version)	
Language:	
Service Pack:	

Utilities

Intel Server Management (ISM) version:	
System Setup Utility (SSU) version:	
FRU/SDR versions:	

PCI Adapters

PCI Slot	Manufacturer/Model number:	Driver version:	Is this adapter on the tested hardware list?
1			
2			
3			
4			
5			
6			
7			
8			

Onboard Devices

Device	In Use
Video	❑
10/100 NIC	❑
10/100/1000 NIC	❑
Adaptec AIC-7899W SCSI (channel 1)	❑
Adaptec AIC-7899W SCSI (channel 2)	❑

Peripherals:

Manufacturer/Model number	Quantity	Comments:
Hard Drives		SCSI or ATA?
Tape Drives		Internal or external?
CDROM		Internal or USB?
CDRW		Internal or USB?
DVDROM		Internal or USB?
Keyboard		USB or PS/2?
Mouse		USB or PS/2?
Other:		