Intel® Server Board SE7501CW2

Troubleshooting Guide

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

Intel order number C34759-001

Revision 1.0

February 21, 2003

Revision History

Date	Revision Number	Modifications
2/6/2003	0.5	Initial release.
2/21/2003	1.0	Published document

Disclaimers

Information in this document is provided in connection with Intel® products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Intel's terms and conditions of sale for such products, Intel assumes no liability whatsoever, and Intel disclaims any express or implied warranty, relating to sale and/or use of Intel products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property rights. Intel products are not intended for use in medical, life saving, or life sustaining applications.

Intel may make changes to specifications and product descriptions at any time, without notice.

Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined". Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

The Intel® SE7501CW2 server board may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Contact your local Intel sales office or your distributor to obtain the latest specifications before placing your product order.

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

Intel Corporation
P.O. Box 5937
Denver, CO 80217-9808

or call in North America 1-800-548-4725, Europe 44-0-1793-431-155, France 44-0-1793-421-777, Germany 44-0-1793-421-333, other countries 708-296-9333

Intel, Pentium, and Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

*Other brands and names may be claimed as the property of others.

Table of Contents

1. Introduction

This guide is provided to help the user of the Intel® Server Board SE7501CW2 trouble shoot and identify possible problem areas encountered in configuring or maintaining their server system. This guide is to be used in conjunction with other information that is available on public Intel websites.

2. Server Board Tools and References

As part of Intel's commitment to provide outstanding technical support, several documents, drivers, and diagnostic tools are included with your purchase of the server board SE7501CW2. These references and tools, along with information updates published to Intel's public support site, help to minimize downtime if an issue occurs. Below is a summary of references and tools provided and where they are located.

Tested Hardware and OS List

The Tested Hardware and OS list is located on the web at: http://support.intel.com/support/motherboards/server/se7501CW2/compat.htm. This list contains a comprehensive list of operating systems and hardware components tested by Intel with the Intel Server Board SE7501CW2. This list does not contain information about memory, processors, or non-Intel chassis. It does contain the following:

- PCI cards (Example: RAID controllers, network interface cards, SCSI controllers)
- USB devices
- CD, DVD, floppy drives
- Removable devices
- Hard drives
- Keyboard / video / mouse switch boxes

This list is updated periodically.

Supported Processors

Intel tests and publishes all processors that can be installed on the server board SE7501CW2. This list is located on the web at: http://support.intel.com/support/motherboards/server/se7501CW2/supp_proc.htm. This list is updated when processor speeds are increased, a new generation of processors becomes available, or the stepping of the processor changes. If a processor is not on this list, it is not supported on the server board SE7501CW2.

Supported Memory

Intel tests and publishes all memory that has been tested on the SE7501CW2. This list is located on the web at:
http://support.intel.com/support/motherboards/server/se7501CW2/tested_mem.htm

This list is updated periodically.

Product Documentation

The Intel Server Board SE7501CW2 features are described in several documents. The two key documents are as follows:

- The *Intel® Server Board SE7501CW2 Product Guide* is shipped with the product on the Resource CD. It is also posted on the web at http://support.intel.com/support/motherboards/server/se7501CW2/manual.htm Translated versions of this document may also be available on the web. The Product Guide is a reference document that describes the key feature of the server board and its components and instructions on how to integrate the server board into a chassis.
- The *Intel® Server Board SE7501CW2 Technical Product Specification* is posted on the web at http://support.intel.com/support/motherboards/server/se7501CW2/spec.htm. This document contains detailed technical information about the features of the server board SE7501CW2. Updates to this document are posted on a regular basis.

Spares, Parts and Configuration Guide

The *Spares, Parts, and Configuration Guide* assists customers in ordering the necessary components to configure the server board SE7501CW2 with the Intel® Server Chassis SC5200 Base, the SC5200 Bas Redundant Power and the Intel Server Chassis SC5250-E knock-down kit products. The document includes part numbers, order codes, and spares available for integration.

The document is available at
http://support.intel.com/support/motherboards/server/se7501CW2/sp_config.htm

Platform Confidence Test

The SE7501CW2 Resource CD contains the Platform Confidence Test utility. This test utility runs diagnostics on your configuration and provides valuable information and troubleshooting information. The Resource CD contains a document describing the details of the test utility and how to use them.

LED Information

The Intel® Server Board SE7501CW2 includes LEDs that can aid in troubleshooting your system. A table of these LEDs with a description of their use is listed below.

LED Name	Function	Location	Color	Status
ID	Aid in server identification from the back panel	Front Panel and board rear left corner	Blue	On=ID
System fault	Visible fault warning	Front panel and board rear left corner	Green or Amber	On = No Fault Green Blink = degraded Amber = critical error or non-recoverable Amber blink = non-critical
IDE activity	Front panel	Front panel and board left side	Green	Blinking = Activity
Memory fault 1–6	Identify failing memory module	DIMM end front of board	Amber	On = Fault
POST code 1–4 (LSB, bit1, bit2, MSB)	Display boot 80 POST code	Left rear of board	Each LED can be Off, Green, Amber, Red	Refer to Product Guide for POST code matrix
Fan Pack Fault	Warn on fan failure	Front center board	Amber	On = Fault
CPU 1 & 2 Fan Fault	Identify fan failure	Front center board	Amber	On = Fault
CPU 1 & 2 Fault	Identify processor failure	1” behind processor socket	Amber	On = Fault
5v Standby	Identify 5v standby power on state	Front left board	Amber	On = 5v standby power on
Power LED	Identify the power state of the system	Front Panel	Green	Off = Power is off (off or S5) On = Power on or S0) Slow Blink = Low power state (S1 – S3)

Beep Codes

2.1.1 BIOS POST Beep Codes

The following table lists POST error beep codes. Prior to system video initialization, the BIOS uses these beep codes to inform users of error conditions.

The beep code occurs only when a critical error or BIOS fails to boot to the operating system. Please note that not all error conditions are supported by BIOS beep codes.

The following list contains some of the beep codes used in SE7501CW2 platform:

- Memory error: A unique beep-code is derived from the port 80h code as follows:
  - The 8-bit error code is broken down to four 2-bit groups.
  - Each group is made one-based (through 4)
  - Short beeps are generated for the number of times in each group.

    Example:

    ```
    Port 80h = 0E1h is divided into
    11 10 00 01 or beep code 4-3-1-2
    ```

- Two short beeps indicate a CMOS checksum bad been found and load default.
- Five short beeps indicate the Clear CMOS software is on.
- One short beep indicates the BIOS will boot to the operating system.

Table 1. POST Error Beep Codes

Beeps	Reason
4-3-1-2	No memory DIMM(s)
4-3-1-3	Memory type mismatch
4-3-1-4	No DIMM pair(s) in system
4-3-3-1	Memory error row address bits
4-3-3-2	Memory error internal banks
4-3-3-3	Memory error timing
4-3-3-4	Memory error register CAS 3
4-3-4-1	Memory error register non reg mix
4-3-4-2	Memory error CAS latency
4-3-4-3	Memory error size not supported
4-3-2-1	Unrecognized or bad memory

2.1.2 BIOS Recovery Beep Codes

Table 2. BIOS Recovery Beep Codes

Beeps	Reason
1	One long beep – video is active.
1-2	One long beep and two short beeps – The system is requesting the the user to insert the BIOS recovery diskette.

An error or warning condition at boot can result in a series of beeps being issued known as "beep codes. These beeps have a code that identifies system or PCI card events. For example, some Intel® RAID cards have beep codes. Before checking for a system beep code error make sure the PCI card is not causing the beeping.

In the case of a Bootblock update, where video is not available for text messages to be displayed, speaker beeps are necessary to inform the user of errors. For beep codes associated with a Bootblock update refer to the *Intel® Server Board SE7501CW2 Technical Product Specification* located at
http://support.intel.com/support/motherboards/server/SE7501CW2/spec.htm

3. Questions and Answers

Processor Questions and Answers

Does it matter which processor slot is populated first?

Yes. The socket for Processor 1 must be populated first. The Processor 1 socket is closer to the center of the board and is labeled “CPU1”. The Processor 2 socket is the closest to the outside edge of the board and is labeled “CPU2”. If a single processor is used and is installed in the Processor 2 socket instead of the Processor 1 socket, this product will not boot.

The system bus is automatically terminated, which means if a single processor is used, the empty Processor 2 socket does not require a terminator.

Will the system always boot from Processor 1, even if two processors are installed?

Not necessarily. When two processors are installed, the Intel® Server Board SE7501CW2 will boot from either processor using a technique called Fault Resilient Booting (FRB). If the primary processor fails to respond in a designated amount of time during POST, the secondary processor is used to complete the boot-up sequence.

If a processor error occurs in a single processor configuration, the board will halt during the boot process and display a message for the user indicating that it is forcing itself to boot from a potentially bad processor. The system will attempt to continue the boot process after the user acknowledges the message.

For more information on FRB, refer to the *Intel® Server Board SE7501CW2 Technical Product Specification* located on the Intel Support Website.

How do I disable hyper-threading?

Hyper-threading can be disabled in BIOS setup, under the “Advanced” menu. Disabling hyper-threading will cause performance degradation on some applications.

Memory Questions and Answers

What are the memory / DIMM requirements?

The SE7501CW2 supports registered DDR266 SDRAM memory when using Intel® Xeon™ processor(s) with 533 FSB. If Intel Xeon processor(s) with a 400 FSB are used then the SE7501CW2 will support either registered DDR266 or registered DDR200 SDRAM.

Memory Bank 1 is the pair of DIMMs located closest to the end of board. Refer to the board drawing on the *Intel® Server Board SE7501CW2 Quick Start User’s Guide*.

The server board SE7501CW2 can be operated with a single DIMM installed in socket DIMM1A. If more than a single DIMM is installed in this socket, DIMMs must be installed in pairs and must

be populated by bank, starting with Bank 1 (DIMM1A and DIMM1B contiguous sockets). Bank 1 must be fully populated with two DIMMs before Bank 2 can be used.

DIMMs must be identical within the banks. Intel does not test, recommend, or support mixing of memory types within the same server system. Functionality issues may occur if mixed memory types are installed in the same server system. Intel recommends that memory modules of identical size, type, banking and stacking technology, and vendor are installed in each server system. Intel will not provide support for issues encountered when mixed memory configurations are in use.

On Board Component Questions and Answers

Which NIC connector is NIC 1 and which is NIC 2?

The server board SE7501CW2 board provides two RJ45 connectors for the on-board Network Interface Controllers. When looking at the back of the board, the RJ45 port on the left is (NIC1), the RJ45 port on the right is (NIC2). NIC1 is a 10/100 Mb NIC and NIC2 is a gigabit NIC.

Some of my devices are not recognized under the Windows* 2000 Device Manager. What might be wrong?

After installing Microsoft* Windows* 2000 Advanced Server, the Device Manager might display unrecognized devices. This is because the operating system does not include all of the drivers for the Intel® E7501 chipset, on-board NICs, and the SCSI Hot Swap Backplane. Install the Intel Chipset Utility (INF files), NIC drivers, and HSBP drivers that are available at http://support.intel.com/ to allow the operating system to properly recognize these devices.

4. Troubleshooting Checklists

General tips

For any issue, ensure you are using the latest firmware and files:

- Update the firmware files to the latest version. The files to download and install depend on the type of chassis being used, but should include BIOS and HSC. Clear the CMOS upon completion of any updates. The update files can be downloaded from the SE7501CW2 support web site.
- Download and apply the latest drives used in your installation. These drivers may include video, network adapter, SCSI, and chipset.

My system appears to power on, but there is no video. What might be wrong?

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 you have it switched to the proper server. See if your results vary by removing the switchbox.
- Video on the Intel Server Board SE7501CW2 can be disabled through BIOS setup or by an add-in video card. If you are using an add-in video card, make sure your monitor is plugged into the add-in card
- This product allows for use of two processors. If only one processor is used, it must be located in the “CPU1” socket. Processor termination is automatic so a terminator is not required in the empty socket. The system will not boot if only one processor is used and it is installed in the “CPU2” socket.
- Remove and reseat memory modules and processors. See if your results vary if you use memory and processors from a known working system.
- Remove all add-in cards and try booting the server without only the on-board components installed. If the system boots successfully, add the cards in one at a time, rebooting each time you add a card, to narrow down the problem to a specific card.
- If you are using a non-Intel chassis, ensure that stand-offs are only located below the grounded mounting holes. Stand-offs in other locations may contact the back of the board and short out some features, causing it to operate improperly or unreliably. Refer to the *Intel Server Board SE7501CW2 Product Guide* and / or your reference chassis documentation for correct standoff placements.

If you are unable to obtain a video image, fill out the customer support issue report form included at the end of this document and then call your customer support representative.

Boot issues

1) My server will not power on

Check for the following possibilities:

- The SE7501CW2 server board requires an ATX +12V power supply. 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?
- 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.
- Remove the processor(s) and reseat it (them).
- Check to make sure chassis stand-offs are only located below mounting holes. Misplaced stand-offs can contact pins on the back of the board and cause a short that could cause the system to not power on. Please consult the *Intel Server Board SE7500CW2 Product Guide* that shipped on the SE7501CW2 Resource CD with your board for details on correct standoff placement.

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 issue report form (at the end of this document) 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: http://support.intel.com/support/motherboards/server/SE7501CW2.
- What processors is the server using? Is (are) it (they) on the tested list? Visit the Intel support site for information on the supported processors.

  http://support.intel.com/support/motherboards/server/se7501cw2
- 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?
- Note any information 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 and contact your Intel customer support representative.

2) 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.

3) Some of my hard drives show up during POST and some do not

Check the following:

- Are you using third-party SCSI adapters? System memory limitations limit the number and 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. Note you only need to load the option ROM for a SCSI card if you intend to boot to any of the devices attached to that card. As long as the hard drives are seen by your operating system, you can still access them and use them for storage.
- 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 using an IDE drive, verify that the drive setting is set correctly (Master or Slave)

If your 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, or Ultra 320)
  Note: only the last device on the SCSI channel requires termination. All LVD devices require “active” vs. “passive” terminators.
- What are the SCSI IDs of the devices on your SCSI bus?
- How many SCSI channels are you using?

Intel® Server Issue Report Form

Date Submitted: _____

Company Name: _____

Contact Name: _____

Email Address: _____

Intel Server Product: SE7501CW2

Priority (Critical, Hot, High, Low): _____

Brief Problem Description. Provide a brief description below. See the last page for space to include a detailed problem description.

Hardware Information

Baseboard Revision - PBA# _____

Baseboard Serial Number# _____

CPU 1 Speed/Stepping/Spec _____

CPU 2 Speed/Stepping/Spec _____

System BIOS Version _____

HSC Firmware Version _____

Chassis

- ❒ SC5200 Base
- ❒ SC5200 BRP
- ❒ SC5250-E
- ❒ SC1350-E
- ❒ Other (Vendor / Model):

_____

DIMM Configuration

DIMM1A size in MB _____

Vendor / PN _____

DIMM1B size in MB _____

Vendor / PN _____

DIMM2A size in MB _____

Vendor / PN _____

DIMM2B size in MB _____

Vendor / PN _____

Operating System Information

Operating System _____

Version _____

Service Pack # _____

Peripheral Information

Check each box below that is used in the failing configuration, and provide the requested information

PCI Card	Card Description	Driver Revision	IRQ #	I/O Base Address	FW Rev#
P64 Segment C (PCI-X 64/133)					
❒ PCI Slot 1					
❒ PCI Slot 2					
P64 Segment B (PCI-X 64/100)					
❒ PCI Slot 3					
❒ PCI Slot 4					
P32 Segment A (PCI 32/33)					
❒ PCI Slot 5					
❒ PCI Slot 6					

❒ On-Board Video
❒ On-Board NIC1 (10/100 Mb)
❒ On-Board NIC2 (1.0 Gb)

Hard Drive Information:

❒ IDE # of drives installed: _____

Make/Model/Firmware Revision _____

❒ SCSI # of drives installed: _____

Make/Model/Firmware Revision _____

Complete Problem Description

In the space below, provide a **complete** description of the steps used to reproduce the problem or a complete description of where the problem can be found. Please also include any details on troubleshooting already done.