Intel® Server Board SE7501HG2

Specification Update

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Enterprise Platforms and Services Marketing

intel®

Revision History

Date	Modifications
3/19/03	Initial release.
6/24/03	Updated
7/02/03	Added Workaround for Errata #9 and Modified Text in the Implication Section
7/17/03	Updated
8/19/03	Updated
9/01/03	Updated
9/24/03	Updated to include new errata (Power Cycling Issue with BIOS P09-0047)
10/16/03	Updated
11/21/03	Updated
12/17/03	Updated
12/23/03	Updated
1/21/2004	Updated
2/18/2004	Updated
2/27/2004	Updated
3/17/2004	Updated
4/21/2004	Updated
5/20/2004	Updated
7/30/2004	Updated
8/20/2004	Updated

Disclaimers

The Intel® Server Board SE7501HG2 may contain design defects or errors known as errata that may cause the product to deviate from the published specifications. Current characterized errata are documented in this Specification Update.

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Contents

Preface

This document is an update to the specifications contained in the *SE7501HG2 Technical Product Specification* (Order Number C37940-001). It is intended for hardware system manufacturers and software developers of applications, operating systems, or tools. It will contain specification changes, specification clarifications, errata, and document changes.

Refer to the *Intel® Xeon™ Processor Specification Update* (Order Number 249678-018) for specification updates concerning the Intel® Xeon™ processor. Items contained in the *Intel® Xeon™ Processor Specification Update* that either do not apply to the Intel® Server Board SE7501HG2 or have been worked around are noted in this document. Otherwise, it should be assumed that any processor errata for a given stepping are applicable to the Printed Board Assembly (PBA) revisions(s) associated with that stepping.

Nomenclature

- **Specification Changes** are modifications to the current published specifications for the SE7501HG2 server boards. These changes will be incorporated in the next release of the specifications.

- **Specification Clarifications** describe a specification in greater detail or further highlight a specification's impact to a complex design situation. These clarifications will be incorporated in the next release of the specifications.

- **Documentation Changes** include typos, errors, or omissions from the current published specifications. These changes will be incorporated in the next release of the specifications.

- **Errata** are design defects or errors. Errata may cause the SE7501HG2 server board's behavior to deviate from published specifications. Hardware and software designed to be used with any given processor stepping must assume that all errata documented for that processor stepping are present on all devices.

Product Scope

Below are the Intel ® Server Board SE7501HG2 baseboards, processor steppings, BIOS, and Firmware components covered by this update.

Baseboard FAB #	Baseboard PBA #	Processor Stepping	BIOS	Baseboard Management Controller (BMC) Firmware	FRU/SDR	SC5200 HSC Firmware Revision
FAB 3	A95718-303	B0, C1	Production Version P01, Build 20	BMC v. 10	5.3.7 or 5.5.A	v. 0.10
FAB 3	A95718-303	B0, C1	Production Version P04, Build 27	BMC v. 12	5.5.B	v. 0.10
FAB 3	A95718-303 (or 304)	B0, C1	Production Version P05, Build 33	BMC v. 13	5.5.C	v. 0.10
FAB 3	A95718-303 (or 304)	B0, C1	Production Version P06, Build 35	BMC v. 13	5.5.D	v. 0.10
FAB 3	A95718-303 (or 304, 305)	B0, C1, D1	Production Version P07, Build 43	BMC v. 14	5.5.E	v. 0.10
FAB 3	A95718-303 (or 304, 305)	B0, C1, D1	Production Version P07, Build 43	BMC v. 15	5.5.F	v. 0.10
FAB 3	A95718-303 (or 304, 305)	B0, C1, D1, M0	Production Version P09, Build 47	BMC v. 15	5.5.F	v. 0.10
FAB 3	A95718-303 (or 304, 305)	B0, C1, D1, M0	Production Version P10, Build 48	BMC v. 16	5.5.G	v. 0.10
FAB 3	A95718-303 (or 304, 305, 306, 307)	B0, C1, D1, M0	Production Version P10, Build 48	BMC v. 17	5.5.I	v. 0.10

Summary Tables of Changes

The following tables indicate the errata and the document changes that apply to the Intel® Server Board SE7501HG2. Intel intends to fix some of the errata in a future stepping of components, and to account for the other outstanding issues through documentation or specification changes as noted. The tables use the following notations:

Doc: Intel intends to update the appropriate documentation in a future revision.

Fix: Intel intends to fix this erratum in a future release of the component.

Fixed: This erratum has been previously fixed.

NoFix: There are no plans to fix this erratum.

Shaded: This erratum is either new or has been modified from the previous specification update.

Table 1. Errata Summary

No.	Plans	Description of Errata
1.	Fixed	BIOS is not writing POST information to the Virtual LCD, i.e., BMC
2.	Fixed	A System Fully Populated with "Bridged" Adapters Hangs During Post
3.	Fixed	Improper Fan Boost Behavior When More Than Two Fans are Removed and Then Reattached
4.	Fixed	Fan 2 LED Does Not Illuminate When a Fan Failure is Simulated
5.	Fixed	Installing Red Hat* Linux 8.0 to an Intel RAID controller in a server board SE7501HG2 and using Power Cycle Commands (reboot, halt, power off) results in a "Segmentation Fault" message.
6.	No Fix	System Status LED Stays "Solid" Amber when a Fan Fault Occurs
7.	No Fix	No setup option in the server board SE7501HG2 BIOS to "turn-on" or "enable" PnP OS
8.	Fixed	Status LED "Blinks Green" after BMC 12 and FRU/SDR 5.5.x (x=A, B) Update in a Hudson SC5200 HSRP Chassis
9.	Fixed	Cooling Unit Global Table (CUGT) Error Observed Via Intel® Server Management (using BMC 15 and FRU/SDR 5.5.F) with all five fans operating normally in a server chassis SC5200 HSRP Chassis
10.	Fixed	WHQL* HCT 11.2 ACPI Verifier Test Fails
11.	Fixed	BYO PCT v1.00 Hangs at MSDRAM64.ADDRESS_LINES with Speaker On
12.	Fixed	UDMA Mode 4 Capable Sony* SDX-420C/SDX-520C ATAPI Tape Drives work only in PIO Mode
13.	Fixed	CMOS Clear Operation is Intermittent
14.	Fixed	SDR_Tag Field in SHG2BMCG.SDR File Refers to SC5150E instead of SC5250E
15.	Fixed	Error! 8193: Processor Stepping are Different
16.	Fixed	Cooling Unit Global Table (CUGT) Error Observed Via Intel Server Management (using BMC 16 and FRU/SDR 5.5.G) in all supported non-redundant chassis configurations
17.	Fixed	CPU IERR and FRB Failures Using BIOS P10-0048 and earlier
18.	Fixed	ISM 5.5.5 DPC Reset Command Shuts Down (i.e., Power's-Off) a SE7501HG2 Server
19.	Fixed	PCI Slot #2 is displayed in BIOS setup utility when the board is installed on the SR1350-E chassis
20.	Fixed	There is no AC-Link Option available in BIOS setup utility

21.	Fixed	Processor duct (TA#A82692-xxx) coming with SC5200 Hot Swap Redundant Power Chassis (TA#A83471-001/A83472-002) interferes with SE7501HG2 board components
22	Fixed	Non-Critical Warnings on the 5V line while running stress tests
23	Fixed	Windows Server 2003 shows blue screen when backing up data with some SCSI tape drive connected to Intel SRCZCR RAID controller installed on SE7501HG2 system
24	Fixed	Booting from SuSE Linux 8.2 CD fails when HostRAID is enabled on SE7501HG2 onboard AIC-7902 SCSI controller
25	Fixed	Boot from USB devices is not disabled when Legacy USB is configured as Keyboard only or Keyboard and Mouse in BIOS Setup Utility
26	Fixed	BIOS programs Cache Line Size register for PCI bridge and PCI devices to 0x10 instead of 0x08

Table 2. Documentation Changes

No.	Plans	Description of Documentation Change
1.	Fix	Undocumented BMC Beep Codes
2.	Fix	Validated Processor Information
3.	Fix	Memory Module Identification Schema
4.	Fix	Memory Guidelines
5.	Fix	Fan Accessory Kit for 3GHz+ Processors
6.	Fix	Use of 5 Pin Fan Headers
7.	Fix	PCI-X Bus Speed Control
8.	Fix	Updated Processor Support Information
9.	Fix	Updated Chassis Support Information (i.e., SR1350-E)
10.	Fix	AIC7902 HostRAID® Support with Microsoft* Windows 2003 Server (Enterprise)
11.	No Fix	Intel Server Chassis SC5250E (Pilot Point) Support Information
12.	No Fix	UPS Support in BIOS
13.	No Fix	PCI Resource Allocation
14.	No Fix	USB Flash Boot Support

Following are in-depth descriptions of each erratum / documentation change indicated in the tables above. The errata and documentation change numbers below correspond to the numbers in the tables.

Errata

1.   BIOS is not writing POST information to the Virtual LCD, i.e., BMC

Problem: Post information (post codes, version information etc.) is not been written to the virtual LCD, i.e., BMC

Implication: Current OEM Server Management schemes use this information

Workaround: None

Status: This issue was fixed in SE7501HG2 BIOS Production Release 06.

2.   A System Fully Populated with "Bridged" Adapters Hangs During Post

Problem: Using six bridge HBA's (eg. QLOGIC 2204 Fibre Channel) result in a system hang

Implication: Option ROM and I/O Space Limitations.

Workaround: None.

Status: This issue was fixed in BIOS Production Release P06.

3.   Improper Fan Boost Behavior When More Than Two Fans are Removed and Then Reattached

Problem: When more than two (eg. three fans) are removed and fans reattached one by one after a brief wait the fans do not continue to operate in "boost" mode until the last fan is reconnected.

Implication: Improper Fan Behavior

Workaround: None.

Status: This issue was fixed in BMC 13 release.

4.   Fan 2 LED Does Not Illuminate When a Fan Failure is Simulated

Problem: Fan 2 LED does not illuminate when a fan failure is simulated by increasing the critical limit for the fan speed via Intel Server Management (ISM). All other fans behave correctly.

Implication: RAS

Workaround: None

Status: This issue was fixed in BMC 13 Release.

5.   Installing Red Hat* Linux 8.0 to an Intel RAID controller results in a "Segmentation Fault" when using Power Cycle Commands

Problem: Red Hat* Linux 8.0 does not provide native support for RAID controllers. As a result of this when Red Hat* Linux 8.0 is installed to an Intel RAID controller in

a SE7501HG2 baseboard and a "reboot" command issued a "segmentation fault" error message is received. Other power cycle commands (halt, poweroff) behave similarly.

Implication: Customers are advised that this issue is not SE7501HG2 baseboard related.

Workaround: Patch Available from Red Hat @URL:https://rhn.redhat.com/errata/RHBA-2003-069.html

Status: No Fix Required.

6.   System Status LED Stays "Solid" Amber when a Fan Fault Occurs

 Problem: Status LED should "blink" amber.

Implication: A problem with the BMC/Firmware code.

Workaround: None.

Status: Issue could not be reproduced at Intel. No Fix was required.

7.   No setup option in SE7501HG2 BIOS to "turn-on" or "enable" PnP OS

Problem: AMI* based BIOS's configure system resources (eg. IRQ, memory etc.) before boot.

Implication: Customers using unsupported OS's (eg. FreeBSD 4.2) may run into resource allocation problems (eg. no available IRQs).

Workaround: None.

Status: No Fix.

8.   Status LED "Blinks Green" after BMC 12 and FRU/SDR 5.5.x (x=A, B) update in an Intel® SC5200 HSRP Chassis

Problem: Power Supply redundancy implementation in Firmware requires the user to populate the power supplies using modules 1, 2, and then 3 (if applicable) in the "exact order" and apply AC Power using both Sockets 1, 2 (AC1, AC2).

Implication: Requirement ignores the fact that Power Supplies in Slots 1, 2 effectively provide 350W instead of the expected 650W. This could result in a "system shutdown" when adequate power is not available. Also, the "default" SC5200 (Hudson III) HSRP shipping configuration is not taken into consideration, i.e., Power Supplies in Slots 2, 3 and AC Power via Socket AC2 (only).

BMC and FRU/SDR changes are needed to support all power supply module "permutations and combinations" [ie., (2, 3); (1, 3); (1, 2); (1,2,3)] while being consistent with the Hudson Chassis AC Socket requirements.

Workaround: None.

Status: Fixed in BMC 13 Release and FRU/SDR Pkg, 5.5.C.

9.   Cooling Unit Global Table (CUGT) Error Observed Via Intel Server Management (ISM) (using BMC 15 and FRU/SDR 5.5.F) with all five fans operating normally in a server chassis SC5200 HSRP Chassis

Problem: CUGT in ISM indicates a critical condition (using BMC 15 and FRU/SDR 5.5.F) although all five fans are operating normally in a SC5200 HSRP chassis. The description states "Sufficient Resources from Insufficient".

Implication: By definition fan redundancy = N+M where N= minimum number of fans that are essential to meet system cooling requirements, and M = number of fans that can fail without any adverse effects on the system. By design the fan redundancy for the SC5200 HSRP system should be 4+1 (ie., redundant with 5 fans). However the current (5.5.F) SDR's incorrectly define the fan redundancy of the HSRP chassis as a 5+0 scheme (i.e., no redundancy).

Workaround: Perform the FRU/SDR 5.5.F update using the "Other" Option for the Chassis (instead of SC5200) and manually configure the SDR for the actual number of fans in the chassis.

Status: Fix included in BMC 16 and FRU/SDR 5.5.G.

10.   WHQL* HCT 11.2 ACPI Verifier Test Fails

Problem: The following two failures are observed while running the above WHQL test:

    a.   "More than 1 device share GPE 43, but no matching _LXX method"

    b.   e820 memory range conflicts

Implication: Affects Microsoft* Windows 2003 Server launch related activities

Workaround: First issue is a known test issue documented as erratum 901

Status: Microsoft Corporation has acknowledged this to be a test related issue and not an Intel machine failure. An errata for the GPE bit problem that will cover any duplicate GPE bit errors on GPE bits 32 and higher is expected to be released from Microsoft WHQL. Erratum ID is still pending.

11. Build Your Own (BYO) PCT v.1.00 Hangs at MSDRAM64.ADDRESS_LINES with Speaker On

Problem: The BYO PCT v.1.00 for Intel Server Board SE7501HG2, available via the Resource CD (P/N: C14975-005), hangs at MSDRAM64.ADDRESS_LINES with the speaker on (constant blare).

Implication: This test is extensively used by many of our Channel customers and gives the false impression of a potential HW issue.

Workaround: None.

Status: An incorrect parameter, DisableUSBLegacy, setting in the CPU and Keyboard modules of the test package was causing this hang. This issue has been fixed in BYO PCT Package v.1.01. The updated package, SHGNV101.EXE, is currently available via both IBL/FDBL and Intel support web site.

12. UDMA Mode 4 Capable Sony* SDX-420C/SDX-520C ATAPI Tape Drives work only in PIO Mode

Problem: BIOS sets the UDMA Mode 4 capable Sony* SDX-420C/SDX-520C tape drives for PIO Mode only.

Implication: These high-speed devices are forced to operate in a "crippled" mode

Workaround: None.

Status: Fix included in BIOS P10.

13. CMOS Clear Operation is Intermittent

Problem: CMOS Clear Detection Table has incorrect boundary condition settings on its timing parameters.

Implication: CMOS Clear operation may not occur.

Workaround: None.

Status: CMOS Clear Detection Table has been changed from EQ 4000ms to GE 4000ms. Fixed in BMC 16.

14. SDR_Tag Field in SHG2BMCG.SDR File Refers to SC5150E instead of SC5250E

Problem: The SDR File incorrectly refers to SC5150E instead of SC5250E

Implication: Customer Confusion

Workaround: None.

Status: Fixed in FRU/SDR v.5.5.G.

15.   Error! 8193: Processor Stepping are Different

Problem: The error message, "Error! 8193: Processor Stepping are Different", is observed during POST when an M0 stepping processor without L3 cache is used with a D1 stepping processor in a mixed stepping configuration.

Implication: According to current EPSD policies the mixing of an M0 stepping processor without L3 cache is allowed with a D1 stepping processor.

Workaround: None.

Status: Fix included in BIOS P10.

16.   Cooling Unit Global Table (CUGT) Error Observed Via ISM (using BMC 16 and FRU/SDR 5.5.G) in all supported non-redundant chassis configurations

Problem: CUGT in ISM indicates a fault condition ("Red-X") using BMC 16 & FRU/SDR 5.5.G (four system fans operating normally) in all supported non-redundant chassis configurations (SC5200 BASE, SC5200 BRP, SR1350-E).

Implication: By design fan redundancy for the SC5200 BASE, SC5200 BRP, and the SR1350-E (aka Kahana) based systems should be 4+0 (ie., no redundancy). Although the FRU/SDR 5.5.G removes the "Fan Redundancy Event Assertion" for the non-redundant chassis configurations it incorrectly loads the "Redundancy Sensor" forcing ISM to report a fault condition with a "Red-X" in all supported non-redundant chassis configurations.

Workaround: Perform the 5.5.G FRU/SDR update using the "Other" Option for the Chassis (instead of SC5200 or SR1350-E) and manually configure the SDR for the actual number of fans in the chassis.

Status: Fix included in BMC 17 and FRU/SDR 5.5.I

17.   CPU IERR and FRB Failures Using BIOS P10-0048 and earlier

Problem: Symptom A: CPU IERR occurs during POST and causes system to hang. Only a "hard" reset gets the machine back. IERR is logged in the SEL.
                Symptom B: Unknown event(s) force system to hang and BMC resets the system as FRB Timer Expires. No entries in the SEL.

Implication: Unacceptable system behavior (eg. system hangs, auto-reboots etc.).

Workaround: None

Status: Fix included in BIOS P11-0049 (available via FDBL/IBL/Support**).**
                 Intel ® strongly recommends all customers currently using BIOS P10
                 Build 0048 and earlier <u>**immediately**</u> **upgrade to BIOS P11 Build 0049 or**
                 later (Latest BIOS is always recommended – It's now P12 Build 0050 for
                 SE7501HG2).

18.   ISM 5.5.5 DPC Reset Command Shuts Down SE7501HG2 Server

Problem: The DPC "Reset" button in ISM 5.5.5 "shuts down" an SE7501HG2 Server
                 instead of resetting it, i.e., it acts like the "power off" button. LAN access mode
                 is NOT set to restricted.

Implication: A System Management issue when using ISM 5.5.5

Workaround: None

Status: Fix included in ISM 5.5.7.

19.   PCI Slot #2 is displayed in BIOS setup utility when the board is installed on the SR1350-E chassis

Problem   When the SE7501HG2 is installed in the SR1350-E chassis, only PCI Slot #1 is
                 available on the one-slot 1U PCI riser card that ships with SR1350-E chassis,
                 but PCI Slot #2 is displayed in BIOS Setup Utility.

Implication   Display of non-existant PCI slot #2 in the BIOS Setup Utility when the
                 SE7501HG2 is installed in SR1350-E chassis might confuse user.

Workaround   None.

Status   Fixed on SE7501HG2 BIOS P12 build 0050 and FRU/SDR 5.6.J.

20.   There is no AC-Link Option available in BIOS setup utility

Problem   There is no AC-Link Option available in SE7501HG2 BIOS setup utility.

Implication   Power status after AC-Link lost (i.e. Last State, Always Power On, Stay Off)
                 cannot be configured in BIOS setup utility.

Workaround   Use IPMITool.exe IPMI DOS utility to set Power Restore Policy.

Status   Fixed on SE7501HG2 BIOS P12 build 0050.

21. Processor duct (A82692-xxx) coming with SC5200 Hot Swap Redundant Power Chassis (TA#A83471-001/A83472-002) interferes with SE7501HG2 board components

Problem   When SE7501HG2 board is installed into SC5200 Hot Swap Redundant Power chassis (TA#A83471-001/A83472-002), processor duct (A82692-xxx) coming with SC5200 HSRP Chassis interferes with SE7501HG2 board components.

Implication   Processor duct (A82692-xxx) cannot be installed normally with SE7501HG2 board installed into SC5200 HSRP chassis.

Workaround   None.

Status   Fixed on modified processor duct (A99055-xxx) that ships with updated SC5200 HSRP Chassis (TA#A83471-002 or above/A83472-003 or above).

22. Non-Critical Warnings on the 5V line while running stress tests

Problem   Fully loading the PCI slots with 5V PCI cards and running stress tests may result in non-critical warnings on the 5V line.

Implication   Reasonable activity will cause non critical warnings which might confuse user.

Workaround   None.

Staus   Fix included in SE7501HG2 FRU/SDR 5.6.J.

23. Windows Server 2003 shows blue screen when backing up data with some SCSI tape drive connected to Intel SRCZCR RAID controller installed on SE7501HG2 system

Problem   When Intel SRCZCR Zero Channel RAID controller is installed in SE7501HG2 system, hard drives are connected to one SCSI channel and some tape drive is connected to the other SCSI channel, Windows Server 2003 will show blue screen when backing up data with the tape drive.

Implication   Some tape drive cannot work normally with above configuration.

Workaround   None.

Status   Fixed on update for Windows Server 2003 KB823728.

24. Booting from SuSE Linux 8.2 CD fails when HostRAID is enabled on SE7501HG2 onboard AIC-7902 SCSI controller

Problem   When HostRAID is enabled on SE7501HG2 onboard AIC-7902 SCSI controller, system will hang at Welcome Screen after booting from SuSE Linux 8.2 installation CD. Issue root caused to the option ROM (ver 4.10.03S2) on the AIC-7902 not providing required support. AIC-7902 option ROM Ver 4.30S2 addresses this issue.

Implication   SE7501HG2 system cannot boot from SuSE Linux 8.2 CD when HostRAID is enabled.

Workaround   None.

Status   Fixed on SE7501HG2 BIOS P13 build 0051.

25. Boot from USB devices is not disabled when Legacy USB is configured as Keyboard only or Keyboard and Mouse in BIOS Setup Utility

Problem   Boot from USB devices is not disabled on SE7501HG2 when Legacy USB is configured as Keyboard only or Keyboard and Mouse in BIOS setup utility.

Implication   SE7501HG2 system can still boot from USB devices when Legacy USB is configured as Keyboard only or Keyboard and Mouse in BIOS setup utility.

Workaround   None.

Status   Fixed on SE7501HG2 BIOS P13 build 0051.

26. BIOS programs Cache Line Size register for PCI bridge and PCI devices to 0x10 instead of 0x08

Problem   BIOS programs Cache Line Size register for PCI bridge and PCI devices to 0x10 instead of 0x08.

Implication   Some add-in PCI adapters like Fibre Channel adapters might experience low I/O performance.

Workaround   None.

Status   Fixed on SE7501HG2 BIOS P15 build 0053.

Documentation Changes

1. Undocumented BMC Beep Codes

Baseboard Management Controller (BMC) beep code information needs to be added to the SE7501HG2 Server Board Technical Product Specification Rev. 1.0. Complete BMC beep codes are as follows:

Table 3. BMC Beep Code

Code	Reason for Beep
1	Front panel CMOS clear initiated
1-5-1-1	FRB failure (processor failure)
1-5-2-1	No processors installed or processor socket 1 is empty.
1-5-2-3	Processor configuration error (e.g., mismatched VIDs, Processor slot 1 is empty)
1-5-2-4	Front-side bus select configuration error (e.g., mismatched BSELs)
1-5-4-2	Power fault: DC power unexpectedly lost (e.g. power good from the power supply was deasserted)
1-5-4-3	Chipset control failure
1-5-4-4	Power control failure (e.g., power good from the power supply did not respond to power request)

2. Validated Processor Information

The Intel® Server Board SE7501HG2 is designed to support the 400MHz and 533MHz Intel® Xeon™ Processors with 512KB L2 Cache.

Table 4. below is an updated validated processor list for the SE7501HG2 baseboard.

Table 4. Validated Processors for the SE7501HG2

Speed (GHz)	FSB (MHz)	Product Code	MM#	Stepping	Cache Size
BELOW	ARE	BOXED PROCESSORS	------------	----------	------------
1.8	400	BX80532KC1800D	843620	B0	512K L2
1.8	400	BX80532KC1800D	849357	C1	512K L2
2.0	400	BX80532KC2000D	843637	B0	512K L2
2.0	400	BX80532KC2000D	849353	C1	512K L2
2.2	400	BX80532KC2200D	843623	B0	512K L2
2.2	400	BX80532KC2200D	849356	C1	512K L2
2.4	400	BX80532KC2400D	845163	B0	512K L2
2.4	400	BX80532KC2400D	849355	C1	512K L2
2.4	400	BX80532KC2400D	851738	C1	512K L2
2.6	400	BX80532KC2600D	849354	C1	512K L2
2.6	400	BX80532KC2600D	850609	C1	512K L2

2.8	400	BX80532KC2800D	850009	C1	512K L2
2.8	400	BX80532KC2800D	850614	C1	512K L2
2.0	533	BX80532KE2000D	851268	C1	512K L2
2.0	533	BX80532KE2000D	851279	C1	512K L2
2.4	533	BX80532KE2400D	851269	C1	512K L2
2.4	533	BX80532KE2400D	851280	C1	512K L2
2.66	533	BX80532KE2667D	851712	C1	512K L2
2.66	533	BX80532KE2667D	851647	C1	512K L2
2.80	533	BX80532KE2800D	851285	C1	512K L2
2.80	533	BX80532KE2800D	851275	C1	512K L2
3.0	400	BX80532KC3000D	852549	C1	512K L2
3.06	533	BX80532KE3060D	851912	C1	512K L2
BELOW	ARE	TRAY PROCESSORS	FOR	OEM'S	ONLY
2.0	400	80532KC041512	852289	D1	512K L2
2.0	400	80532KC041512	847687	C1	512K L2
2.4	400	80532KC056512	843940	B0	512K L2
2.4	400	80532KC056512	852297	D1	512K L2
2.4	400	80532KC056512	847695	C1	512K L2
2.6	400	80532KC064512	852298	D1	512K L2
2.6	400	80532KC064512	847694	C1	512K L2
2.4	533	80532KE056512	852305	D1	512K L2
2.4	533	80532KE056512	848396	C1	512K L2
2.66	533	80532KE067512	852306	D1	512K L2
2.66	533	80532KE067512	848401	C1	512K L2
3.0	400	80532KC080512	852303	D1	512K L2
3.06	533	80532KE083512	852308	D1	512K L2
3.06	533	80532KE083512	848399	C1	512K L2
2.0	533	80532KE041512	853779	M0	512K L2/1M L3
2.4	533	80532KE056512	853880	M0	512K L2/1M L3
2.6	533	80532KE067512	853881	M0	512K L2/1M L3
2.8	533	80532KE072512	853882	M0	512K L2/1M L3
3.06	533	80532KE0831M	853883	M0	512K L2/1M L3
3.20	533	80532KE0881M	853884	M0	512K L2/1M L3

3. Memory Module Identification Schema

The following module identification schema (where x4, x8 are the devices, and SB, DB are Single-Banked, Double-Banked) may be used to distinguish between the different DIMM types:

x8SB = x8 Single-Banked modules have 5 DRAMs on the front and 4 DRAMs on the back with empty spots in between the DRAMs.

x8DB = x8 Double-Banked modules have 9 DRAMs on each side for a total of 18 (no empty slots)

x4SB = x4 Single-Banked modules have 9 DRAMs on each side for a total of 18, and look similar to x8 Double-Banked

x4DB = x4 Double-Banked modules have 18 (stacked) DRAMs on each side for a total of 36

4. Mixed Memory Guidelines for the SE7501HG2

Although Intel does not test, recommend, or support any mixing of memory types within the same server systems, it assumes customers may choose to utilize mixed memory configurations. Please be aware that certain mixed memory configurations will violate the Intel® E7501 chipset specification for DDR write ring-back when installed in the SE7501HG2 server board.

When using mixed memory Intel recommends the following guidelines be strictly observed:

User upgrade to the latest BIOS, i.e., use BIOS P05 (or higher) with ODT and Write Ring Back support.

Mixed memory configurations with both Double-Banked (DB) and Single-Banked (SB) DIMMs installed require that the SB DIMMs must be installed in the lowest numbered memory slots (memory slots furthest from the MCH).

Mixed memory configurations with SB DIMMs installed in the highest numbered memory slots (memory slots closest to the MCH) and DB DIMMs installed in the lowest numbered memory slots are detected by the SE7501HG2 BIOS, and a POST error message will be displayed instructing the user to reorder their DIMM pairs.

The following mixed memory configurations will cause the P05 or later BIOS to display a POST error message when installed:

Table 6. SE7501HG2 "Prohibited" Memory Configurations

DIMM BANK 1A & 1B	DIMM BANK 2A & 2B	DIMM BANK 3A & 3B	BIOS POST Error Message
DB	SB	Empty	Invalid: violates write ring back spec
DB	DB	SB	Invalid: violates write ring back spec

DB	SB	SB	Invalid: violates write ring back spec
DB	SB	DB	Invalid: violates write ring back spec
SB	DB	SB	Invalid: violates write ring back spec
Empty	Empty/SB/DB	Empty/SB/DB	Invalid: DIMMs must be populated starting with pair 1A/1B, then 2A/2B, then 3A/3B
SB/DB	Empty	SB/DB	Invalid: DIMMs must be populated starting with pair 1A/1B, then 2A/2B, then 3A/3B

5. Fan Accessory Kit for 3GHz+ Processors

Boxed Intel Xeon® Processors at and above 3GHz use larger fans, i.e., 38mm, than the 25mm fans used in 2.8GHz and below solutions. These fans being much bigger require more current draw, i.e., 1.5A versus the 340mA required for the 25mm fan. Older SE7501HG2 baseboards (eg., PBA A95718-303) cannot support this "extra" current requirement. An easy workaround is to draw this required extra current directly from the power supply. A fan cable adapter with tachometer sense (Part #:FW04B58-DN, Supplier Foxconn, Katie.Wang@foxconn.com) solution has been proposed that accomplishes this in a rather simple fashion.

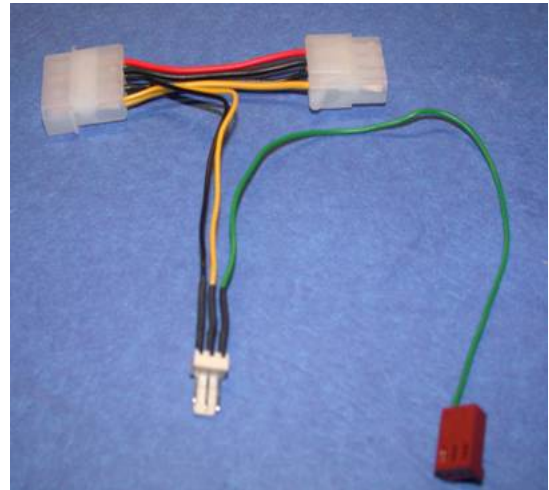Figure 1. 38mm Fan w/1.5A requirement
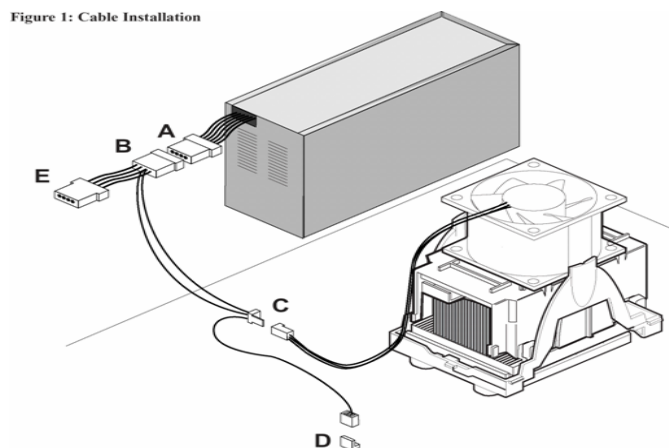

Figure 2. Fan Cable Adapter

Figure 3. Fan Cable Adapter Installation

6. Use of 5 Pin Fan Headers

The SC5200 (Hudson III) Hot Swap Chassis KHD3HSRP650 (pedestal) with TA# A83471-002 or above and the KHD3HSRP650R (rack) with TA# A83472-003 or above support the 5 pin header fan connections used on the SE7501HG2 (Harlingen) server board. The fan cable used in these hot swap chassis has both a 5 pin connector and a 3 pin connector.

(Note: TA# A83471-00X/TA# A83472-00X mentioned above is the Intel's Top Assembly number for the SC5200 chassis and it is printed on the packing label found on the shipping carton (box) and also found on a small label placed on the back (rear) of the SC5200 chassis near the I/O panel.)

SE7501HG2 applications must use the 5 pin header for connecting the fans to the server board. Other server boards will use the more common 3 pin header.

SC5200 (Hudson III) BASE and the SC5200 Base Redundant Power (BRP) Chassis KHD3BASE450 and KHD3RP450 chassis respectively provide only fan cables with the 3 pin header. These chassis also support the SE7501HG2 (Harlingen) server board and the fan cables must be installed on the SE7501HG2 3 pin fan header connection.

The SE7501HG2 (Harlingen) server board is not supported in the older SC5100 (Hudson II) Chassis and was never qualified in this chassis.

7. PCI-X Bus Speed Control

The Intel Server Board SE7501HG2 supports one (1) PCI-X 64 bit/133MHz slot (PCI Bus Segment C) and two (2) PCI-X 64 bit/100MHz slots (PCI Bus Segment B) via the P64H2 PCI Controller Hub. Due to known PCI bus loading issues it is clear that the dual Gbit LAN when

enabled drags the bus speed down to 100MHz operation. However, the Intel Server Board SE7501HG2 BIOS does provide an option to disable the onboard Gbit LAN via its setup menu screen, i.e., "Advanced -> PCI Configuration -> Onboard NIC" menu.

a. **When Onboard NIC is set to Disabled**

PCI-X Bus Mode/Frequency

# Slots Populated	Channel A**	Channel B**
0	100MHz	133MHz
1	100MHz	133MHz
2	100MHz	N/A

b. **When Onboard NIC is set to Enabled**

PCI-X Bus Mode/Frequency

# Slots Populated	Channel A**	Channel B**
0	100MHz	100MHz
1	100MHz	100MHz
2	100MHz	N/A

8. Updated Processor Support Information

The Intel Server Board SE7501HG2 now supports the following released boxed Intel ® Xeon Processors;

a. 512KB L2 Cache/2M L3 Cache M0 stepping (use BIOS P12 or later)

b. 512KB L2 Cache/1M L3 Cache M0 stepping (use BIOS P10 or later)

c. 512KB L2 Cache D1 stepping (requires BIOS P07 or later)

Speed (GHz)	FSB (MHz)	Product Code	MM#	CPUID/ Stepping	S Spec	Cache Size (L2/L3)
3.20	533	BX80532KE3200FU	857916	0F25h/M0	SL7BW	512KB/2MB
3.20	533	BX80532KE3200E	854413	0F25h/M0	SL73Q	512KB/1MB
3.06	533	BX80532KE3066E	854411	0F25h/M0	SL73P	512KB/1MB
2.8	533	BX80532KE2800D	854409	0F25h/M0	SL73N	512KB/1MB
2.8	533	BX80532KE2800EU	858915	0F25h/M0	SL7DG	512KB/1MB
2.67	533	BX80532KE2667D	854407	0F25h/M0	SL73M	512KB/1MB
2.4	533	BX80532KE2400D	854405	0F25h/M0	SL73L	512KB/1MB
3.06	533	BX80532KE3066D	853093	0F29h/D1	SL6YR	512KB L2
2.8	533	BX80532KE2800D	853090	0F29h/D1	SL6YQ	512KB L2
2.67	533	BX80532KE2667D	853087	0F29h/D1	SL6YP	512KB L2
2.4	533	BX80532KE2400D	853072	0F29h/D1	SL6YN	512KB L2
2.4	533	BX80532KE2400EU	858919	0F25h/M0	SL7DF	512KB/1MB
2.0	533	BX80532KE2000D	853068	0F29h/D1	SL6YM	512KB L2

9. Updated Chassis Support Information (i.e., SR1350-E)

The Intel Server Board SE7501HG2 now supports the newly released 1U Rack-Mount Intel Server Chassis SR1350-E.

BIOS P07(or higher), BMC 15(or higher) & FRU/SDR 5.5.F(or higher) are required for the Intel® Server Chassis SR1350-E support.

10. AIC7902 HostRAID® Support with Microsoft* Windows 2003 Server (Enterprise)

A Microsoft ® WHQL certified driver (v. 1.02.056) for Windows 2003 Server (Enterprise) is now available for HostRAID support with the Adaptec AIC 7902 Dual Channel U320 SCSI Controller. This driver bundled with the Alert Utility is available for download from both IBL/FDBL and the Intel ® support web page.

At present HostRAID is supported only under Windows 2000 Advanced Server (Alert Utility and HostRAID driver v.1.00.26b), Red Hat Linux 8.0 (driver v.1.0.11.1434), and Red Hat Advanced Server 2.1 (driver v.1.0.11.1434). These drivers are also available via IBL/FDBL and the Intel® support web site.

11. Intel ® Server Chassis SC5250-E (Pilot-Point) Support Information

The Intel ® Server Board SE7501HG2 is NOT supported in an Intel ® Server Chassis SC5250-E (aka Pilot-Point) due to non-optimal (i.e., degraded) system thermals (Please refer to the following Product Matrix for Server Board Compatibility Information: http://support.intel.com/support/motherboards/server/chassis/sc5250-E/prod_matrix.htm)

However, for customers that still choose to use this chassis, please select Option 2: "SC5250-E" (FRU/SDR 5.5.D or higher) and specify fans 2, 5 (two fans monitored by the Sahalee BMC) as the system fans when carrying out the FRU/SDR update. An alternative workaround is to choose the "Other" option and manually configure the system fans (use fan headers 2, 5).

12. UPS Support in BIOS

When Power Management Software (eg. PowerChute of APC) shuts down an Intel ® Server Board SE7501HG2 after an A/C failure it is possible to observe that power does not return to the server when A/C is restored. This option is currently available in the latest Intel® BIOS(P12). At the same time, since all current Intel ® servers comply with IPMI 1.5 Specifications these power-on strategies may now be alternatively implemented by simply "programming" the BMC. In particular, IPMI 1.5 Section 22.7 lists the various power-on strategies currently supported by the Sahalee BMC. The three basic choices are 1. Always Power-On; 2. Last State (Default); 3. Stay Off. These states may be set using the Intel IPMI command tool (DOS based) or writing a custom device driver. The reader is referred to the following web pages for additional information:

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

and

http://developer.intel.com/design/servers/ipmi/tools.htm

Download the IPMI Command Test Tool (IPMITOOL.EXE) from the above web sites. Issue the following command at the DOS prompt: IPMITOOL 20 0 6 2 <CR> where 20 = BMC, 0 = NetFn/LUN (IPMI Spec Terminology), 6 = Set Power recovery Response, 2 = Always On (Section 22.7 of the IPMI 1.5 Spec). You should obtain the following response from the tool: 20 04 06 00 C7. The 00 byte following 20 04 06 indicates "successful completion". The fifth response byte is DATA and may be ignored.

13. PCI Resource Allocation

PCI Resources are allocated by the SE7501HG2 BIOS based on an ascending PCI Bus # scheme, i.e.,

Slots 4, 5, 6 (PCI 32bit/33MHz, 5V): Bus #1

Slots 2, 3 (PCI-X 64bit/100MHz, 3.3V): Bus #3

Slot 1 (PCI-X 64bit/133MHz, 3.3V): Bus #4

Note:

   a. BIOS scans for PCI devices starting from Bus #0, Device #0, Function #0 and works it way up.

   b. PCI resource request size must be a power of 2 (HW limitation of the address decoders).

   c. BIOS restricts the maximum memory size to 512MB per BAR (Minimum = 64KB)

   d. Size of the PCI memory resource window is limited to 1GB for systems with non hot-plug PCI support (eg. SE7501HG2) and 1.5GB on systems with hot plug PCI support (eg. SSH4)

14. USB Flash Boot Support

AMI BIOS does not provide support for booting via a USB Flash Device. Since SE7501HG2 uses an AMI BIOS core this feature is not supported.