



SC450NX MP Server System Specification Update

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The SC450NX MP Server may contain design defects or errors known as errata that may cause the product to deviate from published specifications. Current characterized errata are documented in this Specification Update.

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1 REVISION HISTORY

Date of Revision	Description
July 1998	Preliminary Specification Update for the SC450NX MP Server System.
September 1998	Updated with recent information.
October 1998	Release version of Specification Update.
December 1998	Updated with recent information.
January 1999	Updated with recent information, cleaned up document.
February 1999	No new information in this revision.
March 1999	Errata 1-19 have been moved to the SC450NX TPS Appendix 20 Errata 20 Added Document Change #1 was included in the SC450NX TPS.
June 1999	Updated errata 20 Added Pentium® III Xeon™ Processor Supported table
July 1999	Added errata 21-25
Oct 1999	No new information in this revision.
Nov 1999	Made changes to the Identification Information, under General Information to clarify boards and related components covered in this document. Updated errata #20 to Fixed. Added errata #26. Added errata #27.

2 PREFACE

This document is an update to the specifications contained in the SC450NX MP Server System Technical Product Specification (243785-002). 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 Pentium® II Xeon Processor Specification Update (243776) for specification updates concerning the Pentium II Xeon processor. Items contained in the Pentium II Xeon Processor Specification Update that either do not apply to the SC450NX MP Server system 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.

Refer to the Intel 450NX PCIset Specification Update (Order Number 243771-005) for specification updates concerning the Intel 82450NX PCIset. Items contained in these Specification Updates that either do not apply to the SC450NX MP Server system or have been worked around are noted in this document. Otherwise, it should be assumed that any PCIset errata for a given stepping are applicable to the Printed Board Assembly (PBA) revisions(s) associated with that stepping.

3 Nomenclature

Specification Changes are modifications to the current published specifications for the SC450NX MP Server System. 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.

Erratum are design defects or errors. Errata may cause the SC450NX'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.

SC450NX MP Server System Specification Update

Specification Update for
the SC450NX MP Server System

4 GENERAL INFORMATION

4.1 Identification Information

Below are the specific boards, BIOS and components covered by this Specification Update.

Baseboard Fab #	Baseboard PBA #	BIOS Release	BMC Release	FRU Release	Hardware Changes and Processor Support Changes
Fab 4	688264-403	1	15	5	•
Fab 4	688264-406	2	20	6	•
Fab 4	688264-415	3	25	6	• Pentium® II Xeon™ A0/A1, B0, B1 stepping.
Fab 4	688264-420	7	27	9N	• Pentium® III Xeon™ A0, A1, B0 stepping.
Fab 4	688264-423	7	27	9N	• PXB B1 to C0 stepping. • Removed resistors R2F21 & R2F11.
Fab 4	688264-425	10	28	9N	• Pentium® III Xeon™ A1, B0, C0 stepping.

4.2 Summary Table of Changes

The following tables indicate the Errata and the Document Changes that apply to the SC450NX MP Server System. Intel intends to fix some of the errata in a future stepping of the component, and to account for the other outstanding issues through documentation or specification changes as noted. These tables use the following notations:

4.3 Codes Used in Summary Table

- **Doc:** Intel intends to update the appropriate documentation in a future revision.
- **Fix:** This erratum is intended to be fixed in a future stepping 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 modified from the previous version of the document.

NO.	Plans	ERRATA
20	Fixed	Intel® Server Control reports L2 Cache Voltage threshold crossing events on SC450NX.
21	Fix	Red Hat Linux 6.0 booting problems from Symbios* 53c896 SCSI controller
22	Fix	Solaris* 7.0 Zero Channel RAID with Mylex* AcceleRAID, configuration not being saved.
23	NoFix	Can't disable Symbios drivers during Red Hat* Linux 6.0 install to Mylex AcceleRAID 250 in zero channel RAID configuration
24	Fix	82559 NIC iprb: could not reclaim all command buffers on Solaris 7 installation
25	NoFix	Red Hat Linux 6.0 Upgrade from Red Hat Linux 5.2 server crash
26	NoFix	ICMB External Connector Does Not Meet ICMB 1.0 Specification
27	Fix	ICMB Connector Pin-out Table Incorrect In The Intel SC450NX MP Server System Technical Product Specification Version 2.0

5 ERRATA

5.1 Intel® Server Control reports L2 Cache Voltage threshold crossing events on SC450NX.

Problem: Unwarranted L2 Cache Upper Critical threshold crossing events may be reported on server systems after upgrading the Pentium® II Xeon™ processor from 400MHz to 450MHz. These events are seen only on systems running Intel Server Control (ISC) management software. No events will occur or be logged into the System Event Log (SEL) on server systems not running ISC.

The L2 cache voltage requirements have changed between the Pentium® II Xeon™ 400MHz processor and the Pentium® II Xeon™ 450MHz processor. The 400MHz processor L2 cache has a nominal voltage of 2.5v while the 450MHz processor has a nominal voltage of 2.7v. The L2 Cache Upper Critical threshold value monitored by ISC does not change to accommodate the difference in nominal voltages. The default Upper Critical L2 cache threshold for 400MHz processors is ~2.75v. On a system that has been upgraded to a 450MHz processor, ISC correctly show the nominal voltage at ~2.7v but the L2 Cache Upper Critical threshold remains unchanged at ~2.75v. Small fluctuations in voltage may generate threshold-crossing events that do not correctly indicate a system malfunction. Future processors with other voltage requirements may experience similar problems.

Implication: When installing new higher speed processors into the S450NX baseboard customers may get over-voltage warnings.

Workaround: The SDRs for SC450NX are being modified to prevent the Intel Server Control management software from overwriting the correct BMC threshold values. This SDR modification will allow any future changes to L2 cache voltage requirements to be read and updated by the BMC and events reported correctly by ISC. The modification to the SDR will also apply to the Processor Voltage thresholds monitored by ISC.

Customer must download the latest version of the S450NX SDR's from Intel's website (<https://support.intel.com>) and flash into their system using the FRU/SDR load utility (also available on the website). Customers should check the website for "SDR_Readme.txt" to help match the correct SDR file for each processor.

Until the updated SDR files are available it is possible for the user to modify the L2 Cache thresholds by using Intel Server Control. The L2 Cache thresholds do not need to be changed on systems with 400MHz processors installed. On systems with 450MHz processors installed the user may change the Upper Critical threshold to ~2.9v and the Lower Critical threshold to ~2.5v. On systems with 500Mhz processors installed, the nominal L2 cache voltage is ~2.0v. The user may change the Upper Critical threshold to ~2.2v and the Lower Critical threshold to ~1.8v. The user must wait for a minimum of 10 minutes after making these changes before powering off or rebooting the system. This allows the new thresholds to be permanently saved by ISC and used after a power cycle or system reboot. There is no requirement, at this time, to modify the processor voltage threshold.

Status: Fixed in SDR Load Utility version 3.4.3 with SDR 9N

5.2 Red Hat* Linux 6.0 booting problems from Symbios* 53c896 SCSI controller

Problem: On the completion of RedHat Linux 6.0 default SERVER installation, system reboots (expected). On the reboot, system should boot fine, but instead, system hangs with:

VFS: Cannot open root device 00:80

Kernel panic: VFS: Unable to mount root fs on 00:80

Implication: Users will not be able to boot into the operating system

Workaround: On the completion of RedHat Linux 6.0 custom Server installation, system reboots. During the system reboot, at "Lilo boot" option (this prompt stays only for 8 seconds) type,

```
linux -r /dev/sda1 <press enter>
```

System should then boot correctly.

Status: Submitted to Red Hat Software bug tracking system.

5.3 Solaris* 7.0 Zero Channel RAID with Mylex* AcceleRAID, configuration not being saved

Problem: When installing Solaris 7 on an SC450NX server system with a Mylex AcceleRAID 250 running in zero channel RAID configuration, the user needed to go into the Solaris configuration assistant to disable the symhisl driver on every reboot. It appears that saving the configuration prior to leaving the configuration assistant the system still loads the symhisl driver which causes a core dump and page fault errors on reboot. (Original work around to prevent this was to hit escape on the boot screen and remove the Symbios drivers prior to completing the boot process.)

Implication: Every time the machine is rebooted you would have to manually remove the drivers.

Workaround: During installation choose "Manual reboot".

After the installation completes the terminal screen will still be open/active.

At the command prompt <#> type:

```
echo 'exclude: drv/symhisl' >> /a/etc/system
```

and press <enter>, and then at the command prompt <#> type

```
reboot
```

and press <enter>".

Status: Workaround must be used until further notice.

5.4 Can't disable Symbios* drivers during Red Hat* Linux 6.0 install to Mylex* AcceleRAID 250 in zero channel RAID configuration

Problem: When using the Mylex AcceleRAID 250 in zero channel mode in SC450NX in slot B3 (SISL slot), Red Hat Linux 6.0 will not allow the installer to remove Symbios drivers from the driver list. These drivers must be removed in order for the Mylex driver to utilize the onboard SCSI device as a RAID channel. Perhaps

it is possible to install using a boot disk without the Symbios drivers (with only the Mylex drivers) but such a boot disk doesn't appear on the Red Hat distribution.

Implication: Zero channel RAID option doesn't work under Red Hat Linux 6.0.

Workaround: There is currently no workaround for this.

Status: Dependent on Red Hat Linux 6.0 installation program and cannot be fixed until new version is released.

5.5 82559-based Intel® Pro/100+ NIC: iprb: could not reclaim all command buffers on Solaris 7 installation error

Problem: During installation of Solaris 7 on SC450NX the system will start to produce errors similar to this:

WARNING: iprb: could not reclaim all command buffers

WARNING: iprb: device never responded!

WARNING: iprb: statistics generation failed.

It seems that some Intel NIC drivers change the non-volatile RAM on the cards when loaded. A system with Solaris 7 installed will then be unable to send or receive any packets via the NIC.

Implication: A system with Solaris 7 installed will then be unable to send or receive any packets via the NIC.

Workaround: Download the DOS-based Intel NIC diagnostic utility and run it. This will reset the cards non-volatile RAM and allow the card to work under Solaris 7.

Status: Currently being looked into by Intel.

5.6 Red Hat* Linux 6.0 Upgrade from Red Hat Linux 5.2 server crash

Problem: When installing Red Hat 6.0 using the upgrade option it appears that the upgrade was successful. However, after reboot and running startx an error message is displayed "Server Crash" Kernal panic. This error appeared on different Intel platforms when upgrading Red Hat Linux 5.2 to 6.0.

Implication: Upgrading from Red Hat Linux 5.2 to 6.0 doesn't work.

Workaround: Please refer to the install guide on Intel's SC450NX support site.

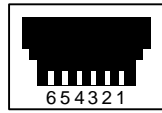
Status: Red Hat Linux 6.0 specific defect.

5.7 ICMB External Connector Does Not Meet ICMB 1.0 Specification

Problem: The SC450NX product does not meet ICMB 1.0 (or ICMB 0.9) pin-out specifications for the external ICMB connector (Note: This is not the six pin edge connector used to plug the ICMB module onto the system motherboard).

ICMB 1.0 specifies two connector types, which can be utilized for the external connector, designated as Type A and Type B. Type A is a six-pin MOLEX SEMCONN or AMP SDL modular type connector. Type B is an 8 pin keyed RJ45 type modular connector. The affected products referenced in this TA all utilize the Type A connector. The ICMB 1.0 pin-out for the Type A connector is described below in Table 1.

Table 1 – Type A Connector Pinout



Female Connector,
Front view looking
into connector

Signal	Pin
GND	1
No Connect (reserved)	2
Tx/Rx (+)	3
Tx/Rx (-)	4
† Connector ID (+)	5
† Connector ID (-)	6

† Optional *Connector ID* signal. These signal lines must be 'no-connect' (left unconnected) if the Connector ID capability is not implemented.

The following description references the pin-out configuration in Table 2 which compares the pin-outs defined in the ICMB 1.0 specification with the pin-out of the affected product. Pins 2,3,4,5,and 6 of the Type one connector on the affected product are out of specification with ICMB 1.0. Pins 3 and 4 are reversed for Tx/Rx(+) and Tx/Rx(-) signals; pins 2, 5, and 6 are tied to ground when they should be floating.

Table 2 – ICMB 1.0 Pinout vs Affected Product Pinout.

ICMB Signal Definition	ICMB 1.0 Pin-out	Affected Product Pin-out
GND	Pin 1	Pin 1
No Connect (reserved)	Pin 2	Pin 2 (GND)
Tx/Rx +	Pin 3	Pin 4
Tx/Rx -	Pin 4	Pin 3
Connector ID (+)	Pin 5	Pin 5 (GND)
Connector ID (-)	Pin 6	Pin 6 (GND)

Indicates pin-out not in compliance with ICMB 1.0.

Implication: ICMB will not work correctly, there will be communication issues.

Workaround: . When connecting systems together via the ICMB connectors using a mix of ICMB compliant and ICMB non-compliant pin-outs it is necessary to convert all of the non-compliant pin-outs to ICMB 1.0 standard. Failure to do this will result in communication problems between the systems. The conversion can be accomplished by constructing a cable with specific fixes implemented in the Type A male connector. Pins 3 and 4 of the connector should be rolled and pins 2, 5, and 6 should be unconnected (floating).

Status: This errata will not be fixed. Implementation of the workaround resolves the issue.

5.8 ICMB Connector Pin-out Table Incorrect In The Intel SC450NX MP Server System Technical Product Specification Version 2.0.

Problem: The ICMB Connector Pin-out table shown in section 2.6 of the Technical Product Specification Version 2.0 (TPS v2.0) was truncated during printing. The table only lists pins one through three of six pins. In addition, the definition for pins one and five were reversed. The full table should be listed as follows:

Pin	Signal	Type	Description
1	SCL	In/out	IPMB Clock
2	+5V	Pwr	+5V Power Supply
3	GROUND	Pwr	Ground
4	+5VSTDBY	Pwr	+5V Standby Power Supply

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5	SDA	In/out	IPMB Data
6	+12V	Pwr	+12V Power Supply

Implication: ICMB Module boards designed to be plugged into the ICMB edge connector on the S450NX baseboard would not follow the correct specifications. Since this connector is rarely used, and Intel supplies an add-on ICMB module board for the S450NX, it is unlikely that any customer issue will arise from this.

Status: The SC450NX TPS will be corrected in a future revision.