AC450NX Server System

Specification Update
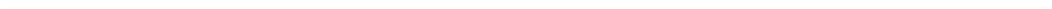
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The AC450NX Server System may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Such errata are not covered by Intel's warranty. Current characterized errata are available on request.

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

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Revision History

Date of Revision	Version	Description
February 1999	-001	This document is the first Specification Update for the *Intel*® *AC450NX Server System Technical Product Specification*.
March 1999	-002	Update Table 1, Revised Table 4, Added Errata 6 and 7.
April 1999	-003	Update Table 1 information.
May 1999	-004	Added Errata 8 and 9.
October 1999	-005	Updated Table 1 and Specification Changes/Clarifications
March 2000	-006	Updated Table 1
April 2000	-007	Updated Table 1
June 2000	-008	Updated Table 1
July 2000	-009	Updated Table 1

Preface

This document is an update to the specifications contained in the Intel® *AC450NX Server System Technical Product Specification.* It is intended for hardware system manufacturers and software developers of applications, operating systems, or tools. It contains Specification Changes, Specification Clarifications, and Documentation Changes.

This document does not cover errata related to the Ak450NX MP Server Board Set. Refer to the *Ak450NX Server Board Set Specification Update* and the errata document for specification updates concerning the Ak450NX MP Server Board Set.

Nomenclature

Specification Changes are modifications to the current published specification. These changes will be incorporated into the next release of the specification.

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

Documentation Changes include typos, errors, or omissions from the current published specification. These changes will be incorporated into the next release of the specification.

Errata are design defects or errors. Characterized errata may cause the behavior of the AC450NX Server System to deviate from published specifications. Hardware and software designed to be used with any given printed board assembly (PBA) and firmware revision level must assume that all errata documented for that PBA and firmware revision level are present.

General Information

For a complete revision history of system and board set level components, refer to the most recent Monthly Change Summary document for the AC450NX product. Basic AC450NX Server System identification information is shown in the Table 1.

Table 1 - Basic AC450NX MP Server System Identification Information

Table 1 - Basic AC450NX Server System Identification InformationSystem Component (Module) Description	Base PBA/TA Number	PBA/TA Revision Number	Fab Rev	Released Firmware Revision	Suggested Firmware Revision	Notes (See below)
Model 0	TA 719927	001	N/A	BIOS PR1, BMC02, SMIC83, SDR04, FPC11, HSC03	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		002	N/A	BIOS PR1, BMC02, SMIC83, SDR04, FPC11, HSC03	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		003	N/A	BIOS PR4, BMC08, SMIC86, SDR08, FPC11, HSC03	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		004	N/A	BIOS PR4, BMC08, SMIC86, SDR08, FPC12, HSC04	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		005	N/A	BIOS PR4, BMC08, SMIC86, SDR08, FPC12, HSC04	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		006	N/A	BIOS PR4, BMC08, SMIC86, SDR08, FPC12, HSC04	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		007	N/A	BIOS PR10, BMC10, SMIC86, SDR10, FPC12, HSC04	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		008	N/A	BIOS PR10, BMC10, SMIC86, SDR10, FPC12, HSC04	BIOS PR12, BMC10, SMIC86, SDR10, FPC17, HSC04	
		009	N/A	BIOS PR12, BMC10, SMIC86, SDR12, FPC12, HSC04	BIOS PR12, BMC10, SMIC86, SDR12, FPC17, HSC04	
		010	N/A	BIOS PR12, BMC10, SMIC86, SDR12, FPC15, HSC04	BIOS PR12, BMC10, SMIC86, SDR12, FPC17, HSC04	
		011	N/A	BIOS PR12, BMC10, SMIC86, SDR12, FPC15, HSC04	BIOS PR12, BMC10, SMIC86, SDR12, FPC17, HSC04	

		012	N/A	BIOS PR12, BMC10, SMIC86, SDR12, FPC15, HSC04	BIOS PR12, BMC10, SMIC86, SDR12, FPC17, HSC04	
		013	N/A	BIOS PR12, BMC10, SMIC86, SDR12, FPC15, HSC04	BIOS PR12, BMC10, SMIC86, SDR12, FPC18, HSC04	
		014	N/A	BIOS PR13, BMC10, SMIC86, SDR12, FPC15, HSC04	BIOS PR13, BMC10, SMIC86, SDR12, FPC18, HSC05	
Front Panel Board	PBA 703106	201	2.1	FPC11	FPC13	
		202	2.1	FPC12	FPC13	
		203	2.1	FPC15	FPC15	
		301	3.0	FPC18	FPC18	
LVDS Backplane	PBA 714046	201	2.0	HSC03	HSC04	
		202	2.0	HSC03	HSC04	
		203	2.0	HSC04	HSC04	
		301	3.0	HSC05	HSC05	
		310	3.1	HSC05	HSC05	
Power Supply	721435	002	N/A			

Summary Table of Changes

The following tables indicate the Specification Changes, Specification Clarifications, or Documentation Changes that apply to the AC450NX Server System. Intel intends to fix some of the errata in the future, and to account for the other outstanding issues through documentation or specification changes as noted. This table uses the following notations:

CODES USED IN SUMMARY TABLES

Doc:	Document change or update that will be implemented.
Fix:	Intel intends to fix this erratum in a future revision of the hardware or software associated with the AC450NX MP Server System. (Fix in future release)
Fixed:	This erratum has been fixed.
NoFix:	There are no plans to fix this erratum. (Will not fix)
Shaded:	This erratum is either new or modified from the previous version of the document.

Table 2 - Errata Table

NO.	PLANS	ERRATA
1	Fixed	Memory card installation will interfere with the LCD panel
2	Fixed	Power supply not meeting AC drop-out
3	Fixed	Need to improve the PCI Hot-plug (PHP) Retention Mechanism
4	Fixed	-12V undershoot exceeds voltage limits during power supply hot swap
5	Fixed	Powering down the system while in ACPI standby mode
6	No Fix	Front panel ignores Wake on LAN (WOL) power on request if issued too soon after a power off
7	Fix	L2 cache voltage threshold problems in SDR file on platform
8	No Fix	DPT PM3334UW RAID controller causes system lock-up during OS boot
9	Fixed	FPC hangs doing consecutive LCD writes.

Table 5 indicates the hardware or software revisions in which each erratum was fixed when applicable.

CODES USED IN FOLLOWING TABLE

Doc:	Document change or update that will be implemented.
Fix:	Intel intends to fix this erratum in a future revision of the hardware or software associated with the AC450NX Server System.
Fixed:	This erratum has been 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.

Table 3 - Fixed in

NO.	PLANS	Chassis Frame	Front Bezel	Front Panel Board	LVDS Backplane	Power Supply	Others
1	Fixed	CAD 2.5					
2	Fixed					S2.6 Power Supply	
3	Fixed	Enhanced PCI Hot-plug					
4	Fixed					S3.0 Power Supply	
5	Fixed			FPC 12			
6	No Fix						
7	Fixed						SDR 10
8	No Fix						
9	Fixed						FPC10

AC450NX Server System Errata

1. Memory card installation will interfere with the LCD panel.

DESCRIPTION: It is very difficult to place the right side memory board when the LCD panel is already in place. The Memory retainer will not clear the LCD bracket.

WORKAROUND: None identified.

STATUS: Fixed in CAD2.5 chassis.

2. Power supply not meeting AC drop-out.

DESCRIPTION: During an AC drop-out of 20msec at heavy loading conditions the +3.3V and +5V outputs from the power supply glitch low to about 2.7V and 4.1V respectively then recover to within specification. The requirement for the power supply is to meet regulation limit through a 20msec AC drop out event. This occurs on the 676912-002 power supply.

WORKAROUND: None identified.

STATUS: Fixed – S2.6 Power Supply, part number 676912-004.

3. Need to improve the PCI Hot-plug (PHP) Retention Mechanism

DESCRIPTION: The PHP retention mechanism is cumbersome and needs to be improved to allow easier insertion and removal of hot-plug PCI cards.

WORKAROUND: None identified.

STATUS: Fixed - Enhanced PCI hot-plug solution will be implemented.

4. -12V undershoot exceeds voltage limits during power supply hot swap.

DESCRIPTION: The -12V exceeds the +/-10% voltage limits while hot plugging a pre S2.6 version power supply to a Beta system.

WORKAROUND: None identified.

STATUS: Fixed – S3.0 Power Supply, part number 676912-007.

5. Powering down the system while in ACPI standby mode.

DESCRIPTION: Using Windows NT 5.0, with ACPI mode enabled, when the system has been put into 'standby' mode, holding the power button down more than 4 seconds will not shut the power off. The Reset button will reset the system, however the system should power off even in ACPI mode if user holds Power/Sleep button down for more than 5 seconds.

WORKAROUND: None identified.

STATUS: Fixed in FPC 12.

6. Front panel ignores Wake on LAN (WOL) power on request if issued too soon after a power off.

DESCRIPTION: It was found that if a request is made to power on the system too soon after a power down request is issued then the front panel will ignore the requested power on. The front panel controller is designed to ignore a WOL for about two seconds to take care of other power on issues. This timer is necessary for the system to be able to boot. Due to the design of the front panel controller firmware, the impact of this behavior is that if a WOL request is made during this two-second windows and is ignored, all further WOL requests will also be disregarded.

WORKAROUND: None identified.

STATUS: No Fix.

7. L2 cache voltage threshold problems in SDR file on platform

DESCRIPTION: The L2 cache voltage requirements have changed between the 400MHz Pentium® II Xeon™ processor and the 450MHz Pentium® II Xeon™ 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 shows the nominal voltage at ~2.7V but the L2 Cache Upper Critical threshold remains unchanged at ~2.75V. Small fluctuation in voltage may generate threshold-crossing events that do not correctly indicate a system malfunction. Future processor with other voltage requirements may experience similar problems.

WORKAROUND: None identified.

STATUS: Fixed in SDR10. The SDR was modified to prevent the ISC management software from overwriting the correct BMC threshold values. This SDR modification allows any future changes to L2 cache voltage requirements to be read and updated by the BMC and events reported correctly by the ISC. This modification to the SDR also applies to the processor voltage thresholds monitored by ISC. This change to the SDR allows the correct L2 cache and processor voltage thresholds to be dynamically updated but will prevent the ISC user from modifying the threshold values for these two sensors.

8. DPT PM3334UW RAID controller causes system lock-up during OS boot

DESCRIPTION: During OS installation, after the first re-boot the system will not boot to the RAID pack or the FDD and locks up. The option ROM does not comply with the guidelines/conventions for using extended BIOS data area, and low memory.

WORKAROUND: If the BIOS setup option to disable PCI option ROM scan is chosen the system will boot fine.

STATUS: Will not Fix – This adapter card has been removed from the AC450NX Priority Adapter List.

9. FPC hangs doing consecutive LCD writes.

DESCRIPTION: The FPC hangs if the LCD is written to continuously. Executing a program that continuously writes to the LCD (without reading the SMS buffer) will eventually hang the FPC. It was determined that this is a timing issue because if a delay is added between commands, the problem does not occur.

WORKAROUND: None identified.

STATUS: Fixed in FPC10.

Specification Changes

The specification changes listed in this section apply to the *AC450NX System Technical Product Specification*. All specification changes will be incorporated into a future release of the *AC450NX MP System Technical Product Specification*.

CODES USED IN FOLLOWING TABLE

Doc:	Document change or update that will be implemented.
Fix:	Intel intends to fix this erratum in a future revision of the hardware or software associated with the AC450NX Server System.
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NoFix:	There are no plans to fix this erratum.
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Table 4 - Specification Changes

NO.	PLANS	SPECIFICATION CHANGES
1	Doc	Power Supply LED does not indicate a power supply failure during an over-temp shutdown
2	Doc	Correction in Table 2-1 System Features - Front

1. Power Supply LED does not indicate a power supply failure during an over-temp shutdown.

DESCRIPTION: When the power supply shuts down due to the power supply overheating, the power supply fail LED does not turn on and the fail signal does not indicate a power supply failure.

WORKAROUND: None identified

STATUS: Information was included in the Power Supply LED indicator section of revision 1.1 of the *Technical Product Specification* to explain that if the primary (input) to the power supply fails, the 5V STBY that powers the LEDs will not be supplied. Therefore, in this case, the power supply will have failed, yet no LEDs will be lit.

2. Correction in Table 2-1 System Features - Front

DESCRIPTION: Item G in the table states that the Drive fault LED will flash indicating a drive rebuild is in progress. This is incorrect. Only the drive fault LED located on the hot-swap drive bay will flash when a drive rebuild is in progress.

WORKAROUND: Reference the drive bay drive fault LED when looking for a drive rebuild indicator.

STATUS: No Fix.

Specification Clarifications

The specification clarifications listed in this section apply to *the AC450NX Server System Technical Product Specification*. All specification clarifications will be incorporated into a future release of the *AD450NX Server System Technical Product Specification*.

CODES USED IN FOLLOWING TABLE

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Table 5 - Specification Clarifications

NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	Clarification in AC450NX BIOS EPS Version 1.0 of IPMB Services

1. Clarification in AC450NX BIOS EPS Version 1.0 of IPMB Services

DESCRIPTION: The AC450NX BIOS EPS Ver 1.0 description of IPMB Services specifies the DI register holds the NetFn/LUN, as well as the offset address of the data buffer. This is not practical as the NetFn/LUN should be in the DL register instead. Implementing the system in accordance with the EPS can cause INT15h DA20h - 9Ah I2C Write to FPC or HSC to fail on non-App commands.

WORKAROUND: None identified.

STATUS: Fixed in BIOS Production Release 9.