AD450NX Server System

Specification Update

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Contents

List of Tables

Revision History

Date of Revision	Version	Description
August 1998	-000	This document is the first Specification Update for the *Intel®AD450NX Server System Technical Product Specification*.
September 1998	-001	Updated Table 1 information.
February 1999	-002	Updated Table 1 and errata information.
March 1999	-003	Updated Table 1 information.
April 1999	-004	Updated Table 1 information.
May 1999	-005	Added Errata 17
October 1999	-006	Updated Table 1 information
March 2000	-007	Updated Table 1 information
April 2000	-008	Updated Table 1 information
June 2000	-009	Updated Table 1 information
July 2000	-010	Added Errata 18

Preface

This document is an update to the specifications contained in the Intel® *AD450NX 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 A450NX MP Server Board Set. Refer to the *450NX Server Board Set Specification Update* and the errata document for specification updates concerning the 450NX 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 AD450NX 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 Conversion Summary document for the A450NX and AD450NX product. Basic AD450NX Server System identification information is shown in the Table1.

Table 1 - Basic AD450NX Server System Identification Information

System 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 703610	001	N/A	BIOS PR4; SDR 38; HSC53; FPC17; BMC21; SMIC83	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	1
		002	N/A	BIOS PR4; SDR 38; HSC53; FPC17; BMC21; SMIC83	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		003	N/A	BIOS PR4; SDR 40; HSC54; FPC17; BMC21; SMIC83	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		004	N/A	BIOS PR5; SDR 40; HSC1.62; FPC17; BMC22; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		005	N/A	BIOS PR5; SDR 40; HSC1.62; FPC17; BMC22; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		006	N/A	BIOS PR7; SDR 40; HSC1.62; FPC17; BMC23; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		007	N/A	BIOS PR7; SDR 40; HSC1.62; FPC20; BMC23; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		008	N/A	BIOS PR9; SDR 40; HSC1.63; FPC21;	BIOS PR13; SDR 40; HSC1.63; FPC24;	2

System Component (Module) Description	Base PBA/TA Number	PBA/TA Revision Number	Fab Rev	Released Firmware Revision	Suggested Firmware Revision	Notes (See below)
				BMC25; SMIC86	BMC26; SMIC86	
		009	N/A	BIOS PR13; SDR 40; HSC1.63; FPC21; BMC26; SMIC86	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		010	N/A	BIOS PR13; SDR 40; HSC1.63; FPC21; BMC26; SMIC86	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		011	N/A	BIOS PR13; SDR 42; HSC1.63; FPC21; BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC21; BMC26; SMIC86	
		012	N/A	BIOS PR13; SDR 42; HSC1.63; FPC21; BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC21; BMC26; SMIC86	
		013	N/A	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	
Model 1	TA 703607	001	N/A	BIOS PR4; SDR 38; HSC53; FPC17; BMC21; SMIC83	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	1, 3
		002	N/A	BIOS PR4; SDR 38; HSC53; FPC17; BMC21; SMIC83	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	1, 3
		003	N/A	BIOS PR4; SDR 38; HSC53; FPC17; BMC21; SMIC83	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		004	N/A	BIOS PR4; SDR 40; HSC54; FPC17; BMC21;	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26;	2

System Component (Module) Description	Base PBA/TA Number	PBA/TA Revision Number	Fab Rev	Released Firmware Revision	Suggested Firmware Revision	Notes (See below)
				SMIC83	SMIC86	
		005	N/A	BIOS PR5; SDR 40; HSC1.62; FPC17; BMC22; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		006	N/A	BIOS PR5; SDR 40; HSC1.62; FPC17; BMC22; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		007	N/A	BIOS PR7; SDR 40; HSC1.62; FPC17; BMC23; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		008	N/A	BIOS PR7; SDR 40; HSC1.62; FPC20 BMC23; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		009	N/A	BIOS PR9; SDR 40; HSC1.63; FPC21 BMC25; SMIC86	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		010	N/A	BIOS PR9; SDR 40; HSC1.63; FPC21 BMC25; SMIC86	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
Integrated SKU	737920	001	N/A	BIOS PR7; SDR 40; HSC1.62; FPC20 BMC23; SMIC85	BIOS PR13; SDR 40; HSC1.63; FPC24; BMC26; SMIC86	2
		002	N/A	BIOS PR9; SDR42 ; HSC1.63; FPC21; BMC25; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	2
		003	N/A	BIOS PR9; SDR 42; HSC1.63; FPC24, BMC26; SMIC56	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	2

System Component (Module) Description	Base PBA/TA Number	PBA/TA Revision Number	Fab Rev	Released Firmware Revision	Suggested Firmware Revision	Notes (See below)
	737920	004	N/A	BIOS PR13; SDR 42; HSC1.63; FPC24, BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	2
		005	N/A	BIOS PR13; SDR 42; HSC1.63; FPC21, BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	2
		006	N/A	BIOS PR13; SDR 42; HSC1.63; FPC21, BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	2
		007	N/A	BIOS PR13; SDR 42; HSC1.63; FPC24, BMC26; SMIC86	BIOS PR13; SDR 42; HSC1.63; FPC24; BMC26; SMIC86	
Front Panel Board	PBA 664927	205	3.1	FPC 17	FPC17	
		301	4.1	FPC 20	FPC20	
		411	5.1	FPC 24	FPC 24	
Wide/Ultra SCSI Backplane	PBA 668445	204	3.1	HSC 53	HSC 53	
		205	3.1	HSC 54	HSC 54	
		206	3.1	HSC 1.62	HSC 1.62	
		207	3.1	HSC 1.63	HSC 1.63	
		301	3.1	HSC 1.63	HSC 1.63	
		302	3.1	HSC 1.63	HSC 1.63	
Power Distribution Backplane	PBA 664893	203	3.2			
		204	3.2			
Power Supply	PBA 667383	005	N/A	**420W**		
	PBA 687908	001	N/A	**500W**		

Notes:

1. B0 stepping of the PXB. Recommend not using IDE connectors and placing label over the IDE connectors.
2. B1 stepping of the PXB (as available). Using IDE connectors is fine.
3. IDE CD-ROM must be removed from the system (-001 and -002 are functionally equivalent).

Summary Table of Changes

The following tables indicate the Specification Changes, Specification Clarifications, or Documentation Changes that apply to the AD450NX 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 AD450NX 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

NO.	PLANS	ERRATA
1	Fixed	Individual power supply failures are not indicated through front panel LED
2	Fix	EMI fingers of hard drive carrier may scratch the warranty label on some 1.6" drives
3	NoFix	Adaptec 2940* & 3940* SCSI card BIOS cannot be flash updated when card is installed on bus 0
4	Fixed	SDR 38: Incorrect sensor confirmation ID on Chassis Open Record
5	Fixed	HDD intrusion switches not properly actuated by HDD bay bezel doors
6	Fixed	420-W power supply does not pass full AC cycle dropout test
7	No Fix	HSC Get Sensor Event Message Enable command is accepted whether or not the offset is specified.
8	No Fix	HSC Get Sensor Event Message Enable returns an invalid value.
9	No Fix	FPC Get Sensor Event Message Enable for discrete sensor length check is incorrect.
10	Fixed	NMI signal not going low enough when switch depressed
11	NoFix	The SCSI disk carrier may short the disk case of Fujitsu M29xx* drives to ground
12	NoFix	The peripheral door on the bezel does not provide power/reset button security
13	Fixed	Memory board bracket difficult to fit over boards
14	Fixed	Top cover install issue due to combination of gasket and lock loop
15	NoFix	AIC cover does not float sufficiently to allow prealignment of Berg FutureBus* connector.
16	No Fix	SCSI SCA drives must be allowed to spin-down prior to removal from system
17	No Fix	Jumper/Description mismatch on system top cover label
18	No Fix	Mixing 500W and 420W Power Supplies may cause failure events logged in the SEL

Table 3 indicates the hardware or software revisions in which each erratum was fixed when applicable

Table 3 - Fixed in

NO.	PLANS	FIXED IN					
		Chassis Frame	Front Bezel	Front Panel Board	Ultra/Wide SCSI Backplane	Power Distribution Backplane	Others
1	Fixed						FW FPC20
2	Fix						
3	NoFix						
4	Fixed						FW SDR41
5	Fixed		679248-003				
6	Fixed						687908-001
7	No Fix						
8	No Fix						
9	No Fix						
10	Fixed			664927-301			
11	NoFix						
12	NoFix						
13	Fixed	665324-013					
14	Fixed	665324-012					
15	NoFix						
16	No Fix						
17	No Fix						
18	No Fix						

AD450NX Server System Errata

1. Individual power supply failures are not indicated through front panel LED

DESCRIPTION: The front panel micro-controller fails to report individual power supply failures through the front panel Power Fault LED. The functionality was not programmed into the FPC in this manner, but rather to indicate a total system power failure (all supplies).

IMPLICATIONS: The front panel microcontroller incorrectly monitors *total* system power rather than monitoring individual power supplies. Individual power supply failures are correctly logged to the System Event Log (SEL).

WORKAROUND: The LED on the rear of the power supply continues to work properly and will indicate a failure.

STATUS: Fixed in Front Panel Code v.20 (FPC20)

2. EMI fingers of hard drive carrier may scratch the warranty label on some 1.6" hard drives

DESCRIPTION: The hard drive carrier fingers may scratch through the warranty seal on some 1.6" hard drives. This has been observed in particular on Fujitsu's 18 GB drive Model # MA3182SC*.

IMPLICATIONS: The hard drive manufactures warranty may be void if the seal is broken.

WORKAROUND: Add appropriate durable tape to the HD seal to protect the hard drive from this problem.

STATUS: Fix in future release

3. Adaptec 2940* & 3940* SCSI card BIOS cannot be flash updated when card is installed on Bus 0

DESCRIPTION: The BIOS for the Adaptec 2940* and 3940* SCSI controller cards cannot be updated (flashed) when the card is installed in PCI bus 0 slots.

IMPLICATIONS: This is not a recommended configuration. SCSI controller cards should be installed in PCI bus 1 slots for optimal performance.

WORKAROUND: If the card must be installed in a PCI bus 0 slot, then move the card temporarily to a PCI bus 1 slot to flash update the cards BIOS.

STATUS: Will not fix

4. SDR 38: Incorrect sensor confirmation ID on Chassis Open Record

DESCRIPTION: The Sensor Data Record (SDR) file has a field reference name that indicates the Chassis Open record belongs to the hot-swap controller (HSC). The correct owner is the front panel controller.

IMPLICATIONS: This record is not used by the firmware or server management software and is not expected to cause any functional problems.

WORKAROUND: None identified

STATUS: Fixed in Sensory Data Record v.41 (SDR41)

5. HDD intrusion switches not properly actuated by HDD bay bezel doors

DESCRIPTION: On early production units, the lower bezel hard drive doors (HDD) do not actuate the intrusion switches properly. The bezel doors fail to meet the narrow tolerance requirements of the two hard drive bay intrusion switches.

1. The switch, located on the chassis, is not positioned close enough to the hard drive bay door for it to be activated.
2. The bezel door has too much play in the hinges and other places and causes the plunger located on door to be positioned incorrectly.

IMPLICATIONS: This means that electrically the doors can appear open to server management applications that read these switches even though the doors are physically closed.

WORKAROUND: The bezel door actuator tab is being lengthened so that it guarantees proper function of the switch.

STATUS: Fixed

6. 420 W Power supply does not pass full AC cycle dropout test.

DESCRIPTION: The 420 W power supply does not meet specification for a 20 msec (corresponding to 1 cycle at 50 Hz) AC line drop out at the maximum 420 W load on the power supply. When subjected to a 20 msec AC drop out, the PGOOD signal glitches low and the power supply may turn off.

IMPLICATIONS: The power supply will pass a 17 msec AC line dropout test at max load. When the same test was conducted at system level under a full system configuration, it was observed to pass the full 20 msec AC cycles test.

WORKAROUND: None identified.

STATUS: Fixed in 500 W power supply (PBA 687908-001)

7. HSC Get Sensor Event Message Enable command is accepted whether or not the offset is specified.

DESCRIPTION: When exercising this command for a hot-swap controller (HSC) discrete sensor, the command is accepted whether or not the offset is specified. A discrete sensor needs to have an offset byte to be a valid command. If this command does not have a discrete sensor offset byte; the command should be rejected as not having enough data bytes in its request data field.

IMPLICATIONS: This particular discrete sensor for the HSC is not capable of generating an event message.

WORKAROUND: None identified

STATUS: Will Not Fix

8. HSC Get Sensor Event Message Enable returns an invalid value.

DESCRIPTION: When the Intelligent Platform Management Bus (IPMB) command Get Sensor Event Message Enable is sent with a sensor number that does not generate an event message, the response may be incorrect. For example, when 0x00 is written to a discrete sensor, it comes back as a 0x3f. The response will not contain an error

IMPLICATIONS: This would happen if the "offset" value were missing in the sent command. This does not match the Platform Sensor and Event Interface Specification description for this command.

WORKAROUND: None identified

STATUS: Will Not Fix

9. FPC Get Sensor Event Message Enable for discrete sensor length check is incorrect.

DESCRIPTION: Get sensor event status for discrete sensor (5 or 6) rejects second data bytes required for discrete sensors.

Msg 69 #22 10 CE 52 B4 29 05 0F BD

Msg 70 #52 14 9A 22 B4 29 C7 3A

IMPLICATIONS: The sensor library supports only whole sensor enable status for discrete sensor. This leaves the discrete sensor to be treated as any other type of sensor. Although it does not meet the requirement of the sensor specification for the second data byte, it does provide the enable status for the discrete sensor. OEMs who are writing their own server management software may be effected by this issue.

WORKAROUND: Do not send the mask byte that the specification calls for. The FPC will then return an enable status.

STATUS: Will Not Fix

10. NMI signal not going low enough when switch depressed

DESCRIPTION: The NMI (nonmaskable interrupt) signal switch contacts on some front panel boards has been observed to become corroded. Consequently, when the switch is pressed the signal level does not go low enough to assert the intended NMI.

IMPLICATIONS: There is some chance that a NMI will not be generated even though the switch is depressed.

WORKAROUND: The switch is a self-cleaning type and will be cleaned after several actuations. Press the switch multiple times until the NMI is generated.

STATUS: Fixed in Front Panel Board PBA # 664927-301

11. The SCSI disk carrier may short the disk case of Fujitsu M29xx* drives to ground

DESCRIPTION: The SCSI hard drive carriers electromagnetic interference (EMI) spring fingers can create electrical connections between the drive cases of Fujitsu M29xx* full height drives and the chassis.

These specific hard drive designs require electrical isolation of the drive from the chassis or other ground paths. These drives are usually clearly labeled with this requirement on the drive.

IMPLICATIONS: This is a unique problem with the model M29xx Fujitsu drive. The manufacturer has indicated that this is an isolated requirement only for the M29xx family of drives.

WORKAROUND: Full height, 1.6" drives with this requirement need to have an electrical isolator (e.g., durable mylar tape) placed between the EMI/ESD grounding fingers and the drive's top cover. Failure to isolate this type of drive from the ground path will result in unpredictable operation of the drive, including severely impacted performance and data corruption.

STATUS: Will not fix

12. The peripheral door on the bezel does not provide power/reset button security

DESCRIPTION: The lock on the peripheral door locks the lower corner of the door. The top corner can be pulled open and the door bent so that the power and reset buttons can be pushed even though the door is locked.

IMPLICATIONS: The peripheral door on the bezel provides limited power/reset button security.

WORKAROUND: None identified.

STATUS: Will not fix

13. Memory board bracket difficult to fit over boards

DESCRIPTION: Memory board bracket is difficult to fit over boards due to the narrow slots on the foam damper. The bracket has shock dampening foam, which makes it difficult to install the cover. The slots in the foam to accommodate the boards are difficult to align and fit over both boards simultaneously.

IMPLICATIONS: This can cause two potential manufacturing issues:

       1) Time taken to seat and inspect and 2) potential to compress the foam within the bracket.

WORKAROUND: None identified

STATUS: Fix in –013 rev of the Drake Chassis

14. Top cover install issue due to combination of gasket and lock loop

DESCRIPTION: The top cover is designed to be installed straight down, then pushed forward. The hooks at the front allow the cover to be pulled far enough back to clear the lock loop on the rear of the system.

IMPLICATIONS: Top cover installation is difficult due to combination of gasket and lock loop.

WORKAROUND: The user must push firmly down at the middle line (front to back) on each side of the top cover. This will fully seat the cover in the vertical axis. Failure to fully seat vertically can result in the front hooks hanging up.

STATUS: Fixed

15. AIC cover does not float sufficiently to allow prealignment of Berg FutureBus* connector

DESCRIPTION: The A450NX InterConnect (AIC) Backplane housing does slide within the chassis mount points to allow prealigning to Berg FutureBus* connectors. These connectors are used to connect the AIC backplane to the CPU and I/O baseboards.

IMPLICATIONS: This may result in increased AIC gear mechanism torque to engage the connectors.

WORKAROUND: Manually slides the AIC backplane into a prealigned position so the connector guideposts appear such that they will engage.

STATUS: Will not fix

16. SCSI SCA drives must be allowed to spin-down prior to removal from system

DESCRIPTION: Some Single Connector Attach (SCA) hard drives can be damaged while being hot-swapped (removed under power-on conditions) from the AD450NX chassis. This damage should be expected only when the drive spindle is spun up (rotating) during the hot-swap process. The mechanism by which these drives might be damaged is not specific to the AD450NX server system. It is common to all chassis that implement hot-swappable hard drive bays that do not restrict the user from removing the drive while the spindle is still spun up (rotating). Please refer to Intel® *Technical Advisory TA-0101-01* for more details.

IMPLICATIONS: The platters inside the hard disk may be damaged.

WORKAROUND: For the reasons described above, allowing the hard drive spindle to spin down is the best way to reduce any chance of mechanical shock-related damage during the hot-swap of an SCA hard drive.

STATUS: Will not fix.

17. Jumper/Description mismatch on system top cover label

DESCRIPTION: The Jumper at location J3H1A pin 1-3-5 is labeled "In system program Disabled" on the system cover configuration label. This jumper is an input to the SMIC device, however the SMIC does not use this signal in its equations.

IMPLICATIONS: The position of the jumper does not impact the SMIC functionality.

WORKAROUND: Will not fix.

18. Mixing 500W and 420W Power Supplies may cause failure events logged in the SEL

DESCRIPTION: When 500W and 420W power supplies are mixed in a 420W power supply domain and FPC error check & HSC error check are enabled in the BIOS setup, a failure events may get logged in the SEL with the following message: Failure detected system event FPC LUN # 0 Power Supply # 7.

IMPLICATIONS: The failure error message does not impact the functionality of the system.

WORKAROUND: Recommendation is to ensure FPC error check & HSC error check are NOT enabled in the BIOS setup when mixed 500W and 420W power supplies are used in the system.

STATUS: Will not fix.

Specification Changes

The specification changes listed in this section apply to *the A450NX System Technical Product Specification*. All specification changes will be incorporated into a future release of the *A450NX MP System Technical Product Specification*.

CODES USED IN FOLLOWING TABLE

Doc:	Document change or update that will be implemented.
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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 4 - Specification Changes

NO.	PLANS	SPECIFICATION CHANGES
1	Doc	none

There are currently no specification changes to the AD450NX Server System.

Specification Clarifications

The specification clarifications listed in this section apply to *the AD450NX 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

Doc: Document change or update that will be implemented.

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Table 5 - Specification Clarifications

NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	none

There are currently no specification clarifications for the AD450NX Server System.