Intel® Server Platforms SSH4, SPSH4, SRSH4

Specification Update

Intel Order Number C202190-002

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Enterprise Platforms and Services Marketing

Revision History

Date	Modifications
January, 2004	Added a note on the Intel® Xeon™ MP 3 GHz 4MB processors
February, 2004	Early Intel® Xeon™ MP 3 GHz 4 M cache processors may display mismatched processors
March, 2004	Issue update- Intel® Xeon™ Ptocessor MP 3 GHz 4mb cache SRA
April, 2004	Revised for publication
May ,2004	Updated issue 19

Disclaimers

The Intel® Server Platforms Intel® Server Platforms SSH4, SPSH4, SRSH4 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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Preface

This document is an update to the specifications contained in the *SSH4 Board Set Technical Product Specification* (Order Number C20142-001); the *SPSH4 Server System Technical Product Specification* (Order Number 10736); and the *SRSH4 Server System Technical Product Specification* (Order Number 10579). This document is intended for hardware system manufacturers and software developers of applications, operating systems, or tools and contains specification changes, specification clarifications, errata, and document changes.

Refer to the *Intel® Xeon™ Processor MP Specification Update* (Order Number 290741-xxx) for specification updates concerning the Intel® Xeon™ Processor MP.

Nomenclature

- **Specification Changes** are modifications to the current published specifications for the SSH4 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 SSH4 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 specific boards, BIOS and components covered by this update.

1. BSHBASE – Base Board

MM#	Baseboard TA #	Baseboard PBA#	BIOS Revision	BMC Firmware Revision	Change Description (PCN #)
840567	A75318-001	A06891-603	P03-69	0.22	Product launch
850912	A75318-002	A06891-704	P06-77	0.24	PCN-102788-03
855412	A75318-003	A60891-705	P08-83	0.24	PCN-103304-01
858298	A75318-006	A60891-706	P12-93	0.27	PCN-103746-03

2. BSHMEM – Memory Board

MM#	Mem Board TA #	Mem Board PBA#	Change Description (PCN #)
840569	A79349-001	A60893-401	Product launch
852400	A79349-002	A60893-402	PCN-102977

3. BSHCPU – CPU Board

MM#	Mem Board TA #	Mem Board PBA#	Change Description (PCN #)
840568	A75319-001	A60895-502	Product launch
850969	A75319-002	A60895-602	PCN –102908-00
850969	A75319-002	A60895-603	

4. SSHCBPBE Server System (SPSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
842443	A82076-001	A06891-603	P03-69	008	0.22	Product Launch
850966	A82076-002	A06891-704	P06 -77	010	0.24	PCN-102789-03
853345	A82076-002	A06891-704	P06 -77	010	0.24	PCN- 103200-00
855255	A82076-007	A06891-705	P08-83	010	0.24	PCN-103309-02

5. SSHCBPBENA Server System (SPSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
852088	A82076-002	A06891-704	P06-77	010	0.24	PCN-103200-00
855404	A82076-007	A06891-705	P08-83	010	0.24	PCN-103309-02

6. SSHCBPBK Server System (SPSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
848779	A95623-001	A06891-603	P03-69	008	0.22	Product Launch
850967	A95623-002	A06891-704	P06 -77	010	0.24	PCN-102789-03
853344	A95623-002	A06891-704	P06 -77	010	0.24	PCN-103200-00
855256	A95623-007	A06891-705	P08-83	010	0.24	PCN-103309-02

7. SSHCBPBPBKNA Server System (SPSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
852092	A95623-002	A06891-704	P06-77	010	0.24	PCN-103200-00
855409	A95623-007	A06891-705	P08-83	010	0.24	PCN-103309-02

8. SSHCBRBK Server System (SPSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
842444	A82075-001	A06891-603	P03-69	008	0.22	Product Launch

850965	A82075-002	A06891-704	P06 -77	010	0.24	PCN-102789-03
853340	A82075-002	A06891-704	P06 -77	010	0.24	PCN-103200-00
855230	A82075-007	A06891-705	P08-83	010	0.24	PCN-10309-02

9. SSHCBPBRBKNA Server System (SPSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
852093	A82075-002	A06891-704	P06-77	010	0.24	PCN-103200-00
855230	A82075-007	A06891-705	P08-83	010	0.24	PCN-10309-02

10. SSHDVRBK Server System (SRSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
842445	A82445-001	A06891-603	P03-69	008	0.22	Product Launch
850968	A82445-002	A06891-704	P06 -77	010	0.24	PCN-102789-03
853339	A82445-002	A06891-704	P06 -77	010	0.24	PCN-103200-00
855229	A82078-007	A06891-705	P08-83	010	0.24	PCN-10309-02

11. SSHDVRBKNA Server System (SRSH4)

MM#	Server TA #	Server Board PBA#	BIOS Revision	Hot Swap Controller Version	BMC Firmware Revision	Change Description (PCN #)
852138	A82445-002	A06891-704	P06 -77	010	0.24	PCN-103200-00
855408	A82078-007	A06891-705	P08-83	010	0.24	PCN-10309-02

12. Intel® Xeon™ Processor MP Identification

S-Spec Number	Core Stepping	CPUID	Speed Core/FSB Mhz	L3 Cache Size Kbytes	Notes
SL5G8	Co	0F11h	1.60	1MB	1,
SL5S4	C0	0F11h	1.60	1MB	1, 3
SL5FZ	C0	0F11h	1.40	512KB	1
SL5RV	C0	0F11h	1.40	512KB	1, 3
SL5G2	C0	0F11h	1.50	512KB	1
SL5RW	C0	0F11h	1.50	512KB	1, 3
SL6GZ	A0	0F22h	1.50	1-MB	1,4
SL6H2	A0	0F22h	1.90	1-MB	1,4
SL66Z	A0	0F22h	2.00	2-MB	1,4
SL6KB	A0	0F22h	1.50	1-MB	1,3,4
SL6KC	A0	0F22h	1.90	1-MB	1,3,4
SL6KD	A0	0F22h	2.00	2-MB	1,3,4
SL6YJ	B1	0F25h	2.00	1-MB	1,2,4
SL6Z6	B1	0F25h	2.00	1-MB	1,2,3,4
SL6Z2	B1	0F25h	2..50	1-MB	1,2,4
SL6Z7	B1	0F25h	2..50	1-MB	1,2,3,4
SL6YL	B1	0F25h	2..80	2-MB	1,2,4
SL6Z8	B1	0F25h	2..80	2-MB	1,2,3,4
SL79V	C0	0F26h	3	4-MB	1,2,4,5
SL79Z	C0	0F26h	2.7	2-MB	1,2,4
SL7A5	C0	0F26h	2.2	2-MB	1,2,4

Notes:

1. These parts require inputs from A20M#, IGNNE#, LINT[1]/NMI and LINT[0]/INTR pins during reset to set the correct core to bus frequency ratio.
2. **The Intel™ XEON™ Processor MP listed here is installed onto a micro pin grid array (mPGA) interposer. The overall processor package is called INT-mPGA.**
3. This part is an **Intel™** boxed processor
4. This part is the Intel® Xeon™ Processor MP with up to 2-MB L3 cache on 0.13 micron process.
5. This Part has a VID of 1.5

13. Hard to Find Beep / POST Codes

Table 1: Beep Codes

Beeps / POST Codes	Reason
1	One short beep before boot (this is normal, not an error)

Beeps / POST Codes	Reason
1-2	Search for option ROMs. One long, two short beeps on checksum failure
1-2-2-3	BIOS ROM checksum
1-3-1-1	Test DRAM refresh
1-3-1-3	Test 8742 Keyboard Controller
1-3-3-1	Auto size DRAM, system BIOS stops execution here if the BIOS does not detect any usable memory DIMMs
1-3-4-1	Base RAM failure; BIOS stops execution here if entire memory is bad
1-5-1-1	FRB Failure (processor failure)
1-5-2-1	CPU: Empty slot
1-5-2-2	CPU: No processors
1-5-2-3	CPU: Configuration error (e.g. VID mismatch)
1-5-4-2	Power fault: DC power unexpectedly lost (power control failures)
1-5-4-3	Chipset control failure
1-5-4-4	Power control fault
2-1-2-3	Check ROM copyright notice
2-2-3-1	Test for unexpected interrupts
0200	Failure fixed disk
0210	Stuck Key
0211	Keyboard Error
0212	Keyboard controller failed.
0213	Keyboard Locked – Unlock Key switch
0220	Monitor type does not match CMOS –Run Setup
0230	System Ram failed at offset
0231	Shadow Ram failed at offset
0232	Extended Ram failed at offset
0250	System battery is dead –Replace and run SETUP
0251	System CMOS checksum bad – Default configuration used
0252	Password checksum bad – password cleared
0260	System timer error
0270	Real time clock error
0271	Check date and time settings
0280	Previous boot incomplete – Default configuration used.

Beeps / POST Codes	Reason
02B0	Diskette Drive A error
02B1	Diskette Drive B error
02B3	Incorrect Drive A type – Run SETUP
02B3	Incorrect Drive B type – Run SETUP
02D0	System cache error – Cache Disabled
02D1	System Memory exceeds the CPU' s caching limits
02F5	DMA test Failed
500	Expansion Rom not initialized – PCI slot 01
501	Expansion Rom not initialized – PCI slot 02
502	Expansion Rom not initialized – PCI slot 03
503	Expansion Rom not initialized – PCI slot 04
504	Expansion Rom not initialized – PCI slot 05
505	Expansion Rom not initialized – PCI slot 06
506	Expansion Rom not initialized – PCI slot 07
507	Expansion Rom not initialized – PCI slot 08

Summary Tables of Changes

The following tables indicate the errata and the document changes that apply to the Intel® Server Platforms SSH4, SPSH4, SRSH4. 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.

No Fix: There are no plans to fix this erratum.

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

Table 2. Errata Summary

No.	Plans	Description of Errata
1.	Fixed	Mylex* E2000-4-64BD causes Microsoft* Windows 2000 Advanced Server to blue screen during install.
2.	No Fix	LSI20160 or SYM22903 cannot be used as the boot device for NetWare* 6.
3.	Fixed	Adaptec* 3410/3210/2110 fails Microsoft* Windows 2000 installation.
4.	Fixed	Hot plugging SCSI Drives on backplanes cause SCSI address changes.
5.	Fixed	Several adapters return “Expansion Rom Not Initialized – PCI mass Storage Controller”.
6.	Fixed	The Intel® SRCU32 RAID adapter times out when the logo screen is enabled
7.	Fixed	Server Board SSH4 Will not boot with 12 DIMMS installed.
8.	Fixed	Some IDE CD_ROM Drives may cause Red Hat* Linux 7.3 to hang when DMA is enabled.
9.	Fixed	Interaction between Caldera* Open UNIX 8 and Intel® 82554 based NICs may produce anomolies
10.	Fixed	Resource CD is old and does not contain Adaptec* 7902 U320 SCSI drivers for the supported operating systems
11.	Fix	LSI* U160, U320 SCSI Adapters Encounter a Problem Creating a Raid Partition When The OEM Logo Screen is Enabled
12.	Fixed	Server Platform SPSH4 / SRSH4 Cannot Pass WHQL* wih Microsoft* Windows* 2003 Server
13.	No Fix	Adaptec* U320 Adapter displays “Warning Disk Driver error when booting Unixware* 7.1.3
14.	No Fix	No Unixware* Hot Plug Driver for Unixware* 7.1.3
15.	No Fix	Hyper-Threading impacts system performance in UnixWare* 7.13
16.	No Fix	Microsoft* Windows* 2003 Server resets when multiple drivers are loaded simulteneously.
17.	Fixed	Memory Sparing /Mirroring BIOS and BMC do not operate properly.
18.	No Fix	Intel® Xeon™ MP Processor 3 GHz 4M Cache cannot be mixed with CPU’s of a slower speed.

19.	Fixed	Early Intel® Xeon™ MP processors 3.0 GHz 4M cache may display processor mis-match message during post

Table 3. Documentation Changes

No.	Plans	Description of Documentation Change
1.	Sept, 2003	Update System and board TPS documents.

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. Mylex* E2000 causes Microsoft* Windows* 2000 Advanced Server to blue screen during install.

Problem: During the windows install process after pressing F6 to install the mylex driver the system blue screens with a hard stop the message read as following message

***STOP: 0X00000050 (0xF2064000, 0X00000000, 0XF1D429AC, 0X000000000) PAGE_FAULT_IN_NONPAGEED_AREA

*** ADDRESS F1D429AC base at F1D40000, DateStamp 39aa1c54, adpu160.sys

If this is the first time you have seen this error....." The system will not function with the adapter option rom enabled.

Workaround: None

Status: Fixed in BIOS P03 (Build 69)

2. LSI* 120160 or SYM 22903 cannot be used a boot drive with NetWare*.

Problem: After installing NetWare* to drives attached to an installed LSI20160 SCSI card, NetWare* hangs when booting from the first drive (ID 0). The behavior is exhibited whether or not the onboard Adaptec* 7899 is enabled.

Workaround: None

Status: Will Not Fix - This adapter was removed from the tested hardware list because LSI* had determined that the adapter was incompatible with the backplane in both the Server Platforms SPSH4 and the SRSH4.

3. Adaptec* 3410/3210/2110 Fails Microsoft* Windows* 2000 installation.

Problem: When performing a Microsoft* Windows* 2000 installation from CDROM with an Adaptec* 3410s, 3210s, or 2110s card in the Server Platform SPSH4/SRSH4, if there is at least one drive in Hot Swap Backplane (HSBP) (and no IDE drives in the system), the RAID card sees the drives and configures array fine. At the first Microsoft* Windows* Windows 2000 installation blue screen: press F6, select S to load additional SCSI adapter driver and this error message appears:

An unexpected error (0) occurred at line 962 in F:\nt\private\ntos\boot\setup\oemdisk.c
Press any key to continue"

User never gets prompted to load the driver disk and installation fails at that point.

NOTE: if no drives are installed in the HSBP, installation proceeds correctly past this point.

Workaround: Enable EBDA relocation in the RAID adapter setup utility

Status: Fixed in BIOS P06

4. Hot plugging SCSI drives on backplanes cause SCSI address changes.

Problem: Removing Hard drives from the the back plane causes SCSI ID changes. Both Channel A and Channel B have the same SCSI address x6h on the same type of drive. This issue was reported on a silver system

Workaround : None.

Status: Fixed in production systems.

5. Several adapters return "Expansion rom not initialized – PCI mass storage controller".

Problem: Several adapters on the Tested Hardware List cannot find enough space to expand their respective option rom's. This has been rootcaused to the size of the option rom space on the SSH4 platform.

Workaround: The workaround is to disable any option rom not needed during the boot process. Please see Technical Advisory TA-0588.

Status: Fixed in BIOS P06 (Build 77)

6. The Intel® RAID Controller SRCU32 adapter times out when the logo screen is enabled.

Problem: When the logo screen is enabled the RAID controller SRCU32 finishes it's execution code before the logo screen finishes its execution. The user is not given the option to enter the controller setp utility, therefore it is not possible to configure a RAID and the message "No Operating System " is displayed.

Workaround: The workaround it to press ESC during post, or disable the logo screen in BIOS.

Status: The issue is fixed with the Intel® SRCU32 RAID firmware version 1.5.8.

7. Server Platform SPSH4/SRSH4 will not boot when 12 DIMMS are installed.

Problem: When 12 DIMMS are installed in the the system the system will hang at post code 2A . Rebooting will cause the system to hang in POST with DIMM group # 1 disabled. The SEL logs a multi-bit error against DIMM group 1 #1.

Workaround: Using 4 or 8 DIMMS will allow the system to operate as expected. Using DIMMs that are a different make/model also helps in some instances.

Status: Fixed on memory board -402.

8. Some IDE CD-ROM drives will cause Red Hat* Linux 7.3 to Hang when DMA is enabled

Problem: Using the CD-ROM with DMA enabled using the command /dev/hda will cause Red Hat* Linux 7.3 to hang. The behavior has been observed with different brands of CD-ROM drives, and is not confined to one particular brand of drive. there is a known Red Hat* Linux 7.3 DMA related issue with the CSB5 Chipset on the server platforms SPSH4 and SRSH4.

Workaround: The workaround is to turn off DMA

Status: The issue is fixed with Red Hat* Linux 8.0 or later versions.

9. Interaction between Caldera* Open UNIX 8 and the Intel® 82554 based NICs may produce anomalies

Problem: Under high stress operations an SSH4 based server configured with the Intel®82554 Gigabit NICS and Caldera* Open UNIX 8 may exhibit anomalous behavior which could include lost transactions. This condition has only been observed in an Intel® lab enviornment. To date no customer has reported this issue. These anomalies have only been observed on client PC's and have not been observed on the server. Intel® has not been able to reproduce this condition under any other operating system.

Workaround: Although the test conditions required to replicate this condition have only been observed under lab conditions, until Intel® can determine root cause Intel® recommends that customers refrain from using Intel® Gigabit NICs with Caldera Open UNIX 8 on SSH4 based servers. Please see the tested hardware and OS list (THOL) for a list of the currently supported products.

Status: Fixed with Caldera* Open Unix 8 IDE driver version 8.0.1.

10. Intel Server Platform SPSH4/SRSH4 resource CD is outdated and does not contain Adaptec* 7902 U320 SCSI operating system drivers.

Problem: The Server Platform SPSH4 / SRSH4 resource CD bundled with the server platform SPSH4 / SRSH4 refresh systems had SCSI drivers for the Adaptec* 7899 U160 controller even though the SCSI controller on the server platform SPSH4/SRSH4 refresh systems have the Adaptec* 7902 U320 SCSI drivers for the currently supported operating systems

Workaround: The latest Adaptec* 7902 U320 SCSI drivers for all operating systems are currently posted on the Intel support site, http://support.intel.com

Status: The issue has been corrected and a resource cd with A61710-005 contains the Adaptec* 7902 U320 SCSI drivers for all current operating systems

11. LSI* U160, U320 SCSI Adapters Encounter a problem creating a RAID Partition When The OEM Logo Screen is Enabled

Problem: Some LSI* U160 and U320 adapters may fail to build a RAID partition when the OEM logo screen is enabled the issue is that the video refresh (INT 16) code in the server platform SRSH4 / SPSH4 BIOS cannot detect when an LSI* adapter is present.

Workaround: Press <ESC> key during post to escape from the OEM logo menu LSI* adapters will the function normally, alternatively, enable the diagnostic screen in BIOS setup also provides a good work around

Status : Fixed in BIOS P10

12. Intel Server Platform SPSH4/SRSH4 Can Not Pass WHQL* with Microsoft* Windows 2003 Server

Problem: Intel Server Platform SPSH4/SRSH4 cannot pass WHQL* testing with Microsoft* Windows* 2003, certain extensions are needed in the system BIOS to accommodate online registration.

Workaround: NONE

Status Fixed – The submission ID s are A06891-603

13. Adaptec* U320 Adapter displays “Warning Disk Driver error when booting UnixWare* 7.1.3

Problem: Adaptec* U320 adapter displays a disk driver warning in UnixWare* 7.1.3 the specific error is “Warning Disk Driver : HA O 1 LU 0 –I/O error 0x4dd13002” The specific offending hard disk is a Seagate* ST336736LC 36GB hard drive.

Workaround: To allow this combination of adapter/ hardrive to work with UnixWare* 7.1.3 the user need to change the following line from “Adup320_num_quecmds = 64 ;” to “adpu320_num_quescmds = 32 ; “ This change need to be made in the space.c file located in “/etc/conf/pack.d/adpu320” directory . Once changed, the kernel will need to be rebuilt using the Idbuild –b command located in the /etc/conf/bin subdirectory.

Status Will be fixed in the next product rev.

14. No UnixWare* Hot Plug Driver for UnixWare* 7.1.3

Problem: There is no Hot Plug Driver for UnixWare*.7.1.3

Workaround: None

Status : No Fix UnixWare* has stated that is will not support Hot Plug in 7.1.3

15. Hyper-Threading impacts system performance in UnixWare* 7.13

Problem: Hyper-Threading affects the system performance UnixWare* Performs when Hyper-Threading is enabled, the adverse affect is because of the increased demand placed on system resources, additional OS tuning is needed.

Workaround: Using swat and disabling oplocks and setting the files size from 8k to 23k allows Hyper-Threading to function Normally.

Status : This will be fixed in the next rev of the product.

16. Microsoft * Windows* 2003 Server resets when multiple drivers are loaded simultaneously.

Problem: Loading more than 3 drivers simulteneously during an initial installation of Microsoft* Windows* Server 2003 will cause the system to reset.

Workaround: Microsoft* Windows* Server 2003 does not have live update to the registry during an initial installation and becomes confused as to the priorit to load the drivers,

Status : This will be fixed in the next rev of the product.

17. Memory Sparing /Mirroring BIOS and BMC do not operate properly.

Problem: BIOS P10 does not exhibit status messages to allow the user to know whether the Memory sparing ofr Memory mirroring feature is enabled and the amount of memory set aside for the particular feature being used. BMC 26 turns on the system fault light and writes a SCSI performance Lag message in the SEL

Workaround: Using ISM 5.5.6 Platform instrumentation control will allow the user to see the DIMMs configured for the feature enabled in BIOS

Status : Fixed- Posted BIOS P12, and BMC 27, and FRUSDR 5.6.9 and is available for download.

18. Intel® Xeon™ MP Processor 3.0 GHz 4 Mb cache cannot be mixed with 2.0 or 2.8 GHz processors, the system will lock up.

Problem: The voltage on the 2.2GHz, 2.7GHz and 3.0 HHz is 1.5 volts. The 2.0GHz and 2.8 GHz processors are 1.475 volts. Mixing processors of different voltages will cause the system to lock up. This is not a bug, this is a safety feature that protects the system and the processors from being destroyed.

Workaround: Use processors of the same voltage whren mixing processors.

Status : No Fix – This is a built in safety feature.

19. Intel® Xeon™ MP Processor 3.0 GHz 4 Mb cache samples may display a "processor mismatch message" during post when multiple processors are loaded on the CPU board.

Problem: The early samples of the Intel® Xeon™ MP processors may display an error message during post alerting the user to a “processor mismatch” this error would occur when multiple 3.0 GHz 4M cache processors are loaded on the

cpu board. The early versions are the R1 version samples. The newer production versions do not have this anomoly.

Workaround: To use the R1 samples and clear the “processor mismatch error” Go into BIOS setup by pressing F2 during post, retest the processors. Press F10 save and exit. After the system reboots, dur a warm reset <CTRL- ALT – Delete> when the system reboots again the “processor mismatch error should be cleared.

Status : The “processor mismatch error is fixed in the production processors b using BMC 28 the update root cause was that bit 5 in BMC 27 was not clearing the “ processor last state” in BMC properly BMC 28 fixes this issue

Documentation Changes

NONE