intel®

Intel® Server RAID Controller U3-1 (SRCU31)

Specification Update

June 2001

intel.

int͜el

Contents

Revision History

Date	Version	Description
06/20/00	011	No changes.
4/18/01	010	Added Errata #25. Added Spec Clarification #4.
03/21/00	009	No changes.
02/21/01	008	Added Errata #24.
01/17/01	007	Added Errata #22. and #23. Added Spec Clarification #3.
12/13/00	006	No changes.
11/15/00	005	Added Errata #20. and #21. Changed Errata #6. from Eval to Fixed. Added Global Build Version 4.23 information. See the Summary Table of Changes and the Software Version Identification Matrix.
10/18/00	004	Added Errata #18. and #19. Removed Spec Clarification #2 from September update. Added Documentation change #4. Added Global Build Version 4.22 information. See Software Version Identification Matrix.
9/13/00	003	Added Errata #13., #14., #15., #16. and #17. Modified Errata #9. Changed Status to 'Fixed' for Errata #7., #8. and #10. Added Specification Change #1. Added Specification Clarification #2. Added Documentation Change #3. Added Global Build Version 4.19a information. See Software Version Identification Matrix.
8/16/00	002	Added Linux Erratta #1. and #2. Added RAID Software Suite for Linux information (see Software Version Identification Matrix and RAID Software Suite for Linux).
7/12/00	001	This is the new specification update document.

intel.

Preface

This document is an update to the specifications contained in the Affected Documents/Related Documents table below. This document is a compilation of device and documentation errata, specification clarifications and changes. It is intended for hardware system manufacturers and software developers of applications, operating systems, or tools.

Information types defined in Nomenclature are consolidated into the specification update and are no longer published in other documents.

This document may also contain information that was not previously published.

Affected Documents/Related Documents

Title	Order
Intel® Server RAID Controller U3-1 (SRCU31) User's Manual	273290
Intel® Server RAID Controller U3-1 (SRCU31) Technical Product Specification	273351

Nomenclature

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

Specification Changes are modifications to the current published specifications. These changes will be incorporated in any new release of the specification.

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 any new release of the specification.

Documentation Changes include typos, errors, or omissions from the current published specifications. These will be incorporated in any new release of the specification.

Note: Errata remain in the specification update throughout the product's lifecycle, or until a particular stepping is no longer commercially available. Under these circumstances, errata removed from the specification update are archived and available upon request. Specification changes, specification clarifications and documentation changes are removed from the specification update when the appropriate changes are made to the appropriate product specification or user documentation (datasheets, manuals, etc.).

Summary Table of Changes

The following table indicates the errata, specification changes, specification clarifications, or documentation changes which apply to RAID controller's product. Intel may fix some of the errata in a future stepping of the component, and account for the other outstanding issues through documentation or specification changes as noted. This table uses the following notations:

Codes Used in Summary Table

Stepping

X: Errata exists in the stepping indicated. Specification Change or Clarification that applies to this stepping.

(No mark)

or (Blank box):   This erratum is fixed in listed stepping or specification change does not apply to listed stepping.

Page

(Page):   Page location of item in this document.

Status

Doc: Document change or update will be implemented.

Fix: This erratum is intended to be fixed in a future step of the component.

Fixed: This erratum has been previously fixed.

NoFix: There are no plans to fix this erratum.

Eval: Plans to fix this erratum are under evaluation.

Row

| Change bar to left of table row indicates this erratum is either new or modified from the previous version of the document.

intel®

Errata (Sheet 1 of 2)

No.	Global Build Version			Ref	Page	Status	Errata
	4.14	4.19	4.23				
1.	x	x	x		19	NoFix	Microsoft Internet Explorer* 5.0 Dr. Watson error when running Storage Console
2.	x	x	x		19	Eval	Attempting to address a non-existent RAID adapter with Storage Console may cause a blue screen
3.	x	x	x		19	Eval	Slow performance when write-back caching enabled on the Windows NT system drive
4.	x	x	x		19	Eval	Flash Update Utility fails with RAID adapter installed in a RAIDport III* PCI slot
5.	x	x	x		20	NoFix	Unable to connect via a browser to the RAID subsystem running on a remote NT Server that has been upgraded to Service Pack 6 (SP6) or higher.
6.	x	x			20	Fixed	NT initiates a 'CHKDSK' upon each reboot of a computer where NT is installed to a RAID volume that has been formatted with the FAT file system.
7.	x				20	Fixed	Computer may 'Blue Screen' during the NT installation and setup to a RAID 5 volume if the RAID 5 volume is initializing in the background.
8.	x				21	Fixed	RAID Monitor will only report events for the first adapter installed in the system.
9.	x	x			21	Eval	RAID 5 volumes may Re-initialize or Fail after rebooting while using DOS or NetWare
10.	x				21	Fixed	System blue screens when two (2) instances of the SRCU31 adapter are in the computer system.
11.	x	x	x		22	Eval	Second RAID volume created under UnixWare is not detected by the OS if UnixWare is installed on a RAID volume.
12.	x	x	x		22	Eval	I/O subsystem pauses for approximately thirty (30) seconds under heavy I/O using Sequential Caching.
13.	x	x	x		22	Eval	The RAID Controller does not accept System or User-initiated Standby or Hibernate Power Management commands.
14.	x	x	x		23	Eval	UnixWare 'Panics' when booting with 'Failed' volumes.
15.	x	x	x		23	Eval	Advanced RAID Configuration Utility menus may be unreadable.

Errata (Sheet 2 of 2)

No.	Global Build Version			Ref	Page	Status	Errata
	4.14	4.19	4.23				
16.	x	x	x		23	Eval	Unable to create large number of RAID volumes on two adapters Using the Advanced RAID Configuration Utility (ARCU).
17.	x	x	x		23	Eval	The RAID Monitor application does not always send a pop-up message after a disk or volume status has changed.
18.	x	x	x		24	Eval	New updated OSM drivers' version number unchanged.
19.	x	x	x		24	Eval	Online Array Roaming Requires a Shutdown of both Computers
20.	x	x	x		24	Eval	Incorrect Silk Sreen Label on Jumper J7D1 (IOP Mode Select)
21.	x	x	x		25	Eval	RAID Software Suite Fails to Uninstall
22.	x	x	x	905	25	Eval	Deleting DEGRADED RAID Volume Instructs User to Call Customer Support
23.	x	x	x	906	25	Eval	"ftdisk" Message Reported in Event Log
24.	x	x	x	945	26	Eval	RAID 5 Volume reinitializes upon reboot when marked as Dynamic Disk in Disk Management
25.	x	x	x	1160	26	Eval	RAID subsystem events on NetWare* 5.1 not detected by HP OpenView*

Errata for Linux

No.	Global Build Version			Page	Status	Errata
	1.0					
1.	x			28	Fix	IRVIEW reports incorrect volume and disk sizes.
2.	x			28	Fix	Running FDISK on a RAID volume from the console generates I2O error messages.

Specification Changes

No.	Global Build Version			Page	Status	Specification Changes
	4.19					
1.	x			29	N/A	Support for Microsoft Windows 2000 operating system

Specification Clarifications

No.	Global Build Version			Page	Status	Specification Clarifications
	4.14	4.19				
1.	x			30	N/A	Performance impact of adding memory to the RAID adapter
2.	x	x		30	N/A	Clarification between the Linux kernel shipped with Redhat 6.2 and the kernel supported by the RAID adapter
3.	x	x		30	N/A	RAID configuration reappears after Destructive Bus Scan when drives are moved to another server
4.	x	x		30	N/A	Failure Reclaiming Pass-Through for Raid causes conflicting reboot message

Documentation Changes

No.	Document Revision		Page	Status	Documentation Changes
	1.0	2.0			
1.	x		31	N/A	Section 5.1.3.5 Array Roaming
2.	x		31	N/A	Table 5-3 and Table 5-5: RAID 1 and RAID 10 Volume Characteristics
3.		x	31	N/A	Windows 2000 support
4.		x	31	N/A	Replacing/Upgrading (Swapping) a RAID Adapter that has Windows 2000 Installed to a Bootable RAID Volume

Identification Information

Software Version Identification Matrix

This matrix identifies the various software module version numbers for a given global build version. It is possible that a new release may not affect all software modules. It is also possible that a new module can be released individually without a release revision.

Global Build Contents (Sheet 1 of 2)

Module Name	File/Package Name	Global Build Version			
		4.14	4.19a	4.22	4.23
		Module Version			
Adapter Firmware	RAID.BIN	4.14	4.19	4.19	4.19
RAID Configuration Utility	N/A	4.14	4.17	4.17	4.17
Flash Update Utility	FUU.EXE	3.07	3.07	3.07	3.07
Flash Recovery Utility	FRU.EXE	4.04	4.04	4.04	4.04
DMI	DISK.MIF	3/17/00	3/17/00	3/17/00	3/17/00
	RAID.MIF	1/06/00	1/06/00	1/06/00	1/06/00
	RAIDCI.EXE	5/10/00	5/10/00	5/10/00	5/10/00
SNMP	RAID.MIB	10/19/99	10/19/99	10/19/99	10/19/99
	RAIDXA.DLL	5/10/00	5/10/00	5/10/00	5/10/00
HP OpenView* Integration	SETUP.EXE	5,52,164,0	5,52,164,0	5,52,164,0	5,52,164,0
Windows NT*: RAID Software Suite	SETUP.EXE	5,52,164,0	5,52,164,0	5,52,164,0	5,52,164,0
	IOP.EXE	1,0,0,1Exec	1,0,0,1Exec	1,0,0,1Exec	1,0,0,1Exec
	I2OAPP.DLL	0,4,0,13	0,4,0,13	0,4,0,13	0,4,0,13
Windows NT: RAID Monitor Service	RAIDSERV.EXE	5/10/00	5/10/00	5/10/00	5/10/00
Windows NT: RAID Monitor Application	RAIDMON.EXE	4.11	4.11	4.11	4.11
Windows NT: OSM	IOPBUS.SYS I2OEXEC.SYS I2ODISK.SYS I2OMP.SYS I2OFILT.SYS I2OSCSI.SYS	1.50-69d 1.50-69d 1.50-69d 4.01 4/20/99 3.08	1.50-69d 1.50-69d 1.50-69d 4.01 4/20/99 3.08	15,323 bytes 15,005 bytes 32,877 bytes 4.01 2,829 bytes 8,800 bytes	15,320 bytes 15,005 bytes 32,877 bytes 4.01 2,829 bytes 8,800 bytes
Netware*: RAID Monitor	RAIDMON.NLM	4.11	4.11	4.11	4.11
Netware: OSM	BKSTROSM.HAM I2OPCI.NLM IOPX.NLM SCSIOSM.HAM	1.18a 1.09 1.27 1.05	1.18a 1.09 1.27 1.05	1.18a 1.09 1.27 1.05	1.18a 1.09 1.27 1.05
Netware: DMI CI	RAIDCI.NLM	4.11	4.11	4.11	4.11
Netware: SNMP	RAIDXA.NLM	4.06	4.06	4.06	4.06

Global Build Contents (Sheet 2 of 2)

Module Name	File/Package Name	Global Build Version			
		4.14	**4.19a**	**4.22**	**4.23**
		Module Version			
Windows 2000: OSM	IOP.EXE i2oDisk.SYS i2oEXEC.SYS IOPBUS.SYS i2omp.SYS i2obus.inf i2odisk.inf		1,0,0,1 1.50-68i 1.50-68a 1.50-69a	1,0,0,1 37,750 bytes 14,390 bytes 22,276 bytes 4,061 bytes 6,100 bytes	1,0,0,1 37,750 bytes 14,390 bytes 22,276 bytes 4,061 bytes 6,100 bytes
Unixware*: RAID Monitor	RAIDMON	1.0			
Unixware: OSM	i2oOSM	ptf7066c	ptf7066c	ptf7066c	ptf7066c
Unixware: DMI CI	RAIDCI	1.0			

RAID Software Suite for Linux

Module Name	File/Package Name	Global Build Version		
		1.0		
		Module Version		
Installation Script	install.sh	none		
OSM's	i2o_block i2o_pci i2o_core i2o_config	2.2.16 (part of kernel)		
RAID Configuration Services	iird	none		
RAID Configuration Services Administration	iradmin	none		
IRVIEW (RAID Monitor	irview	0.7		
User's Manual (documentation)	iir.pdf index.fm	1.0		

Module Identification Methods

Release Version Identification

A "Release" is provided on a CD-ROM from Intel Corporation. The release version is listed on the CD-ROM label in the following format:

X.YY.ZZZ

Where:

X = Major Version

Y = Minor Version

Z = OEM/IHV identification code

The release version is not identifiable in software.

Adapter Firmware Version Identifier

There are two methods for identifying the firmware version installed on the RAID adapter. While the system is booting, the RAID controller firmware initializes and displays the information shown in Figure 2 to the screen. The firmware version is displayed next to the words "RAID Controller Firmware".

An alternative method for identifying the adapter firmware version requires that the system be booted into the host operating system running the Storage Console application. With Storage Console running, select "Options" in the left frame and then "Support Info" in the right frame. The firmware version is listed in the table next to the words "Build Version". See Figure 2.

![intel logo]

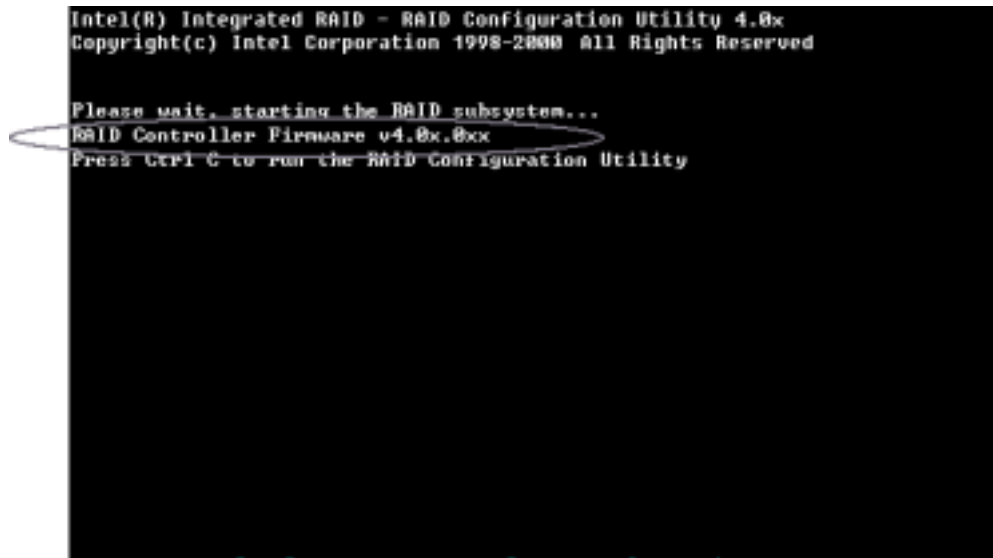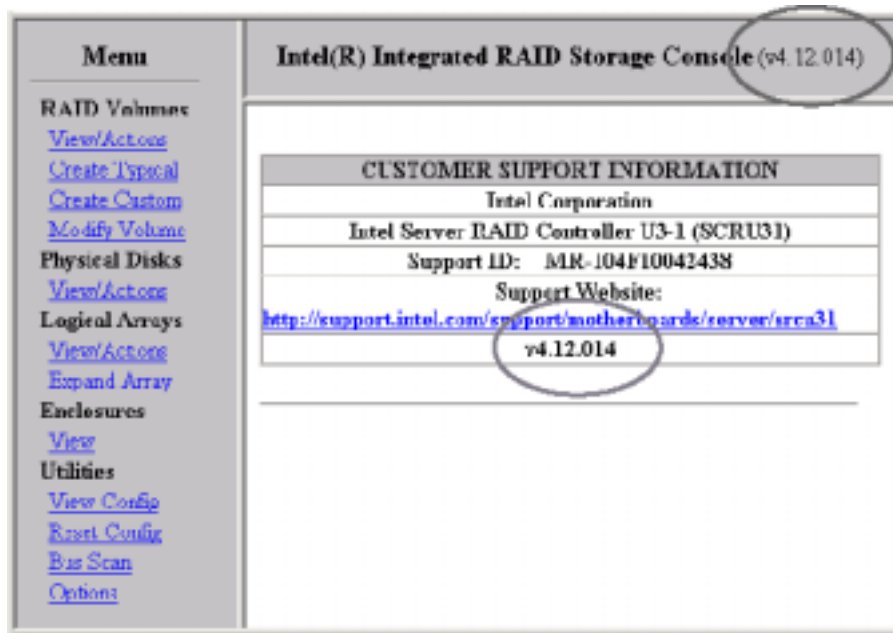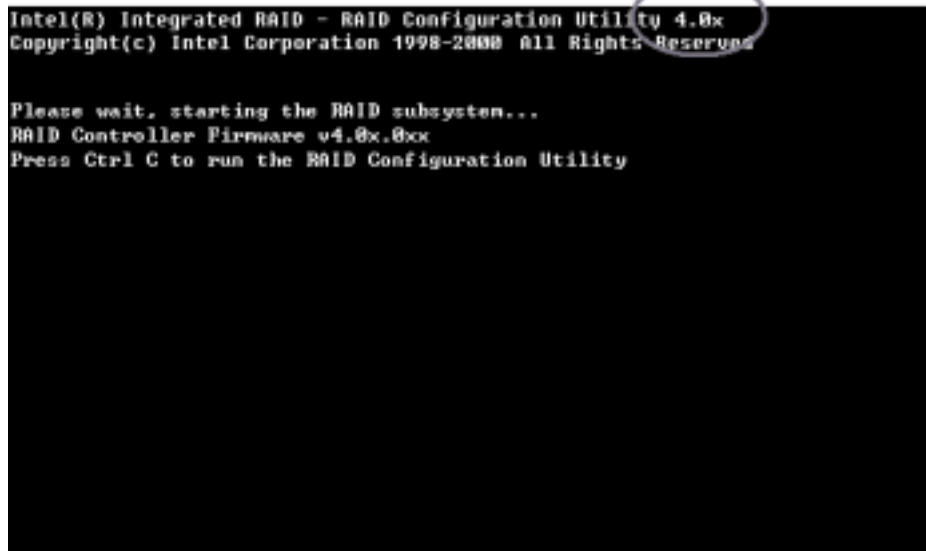**Figure 1. Firmware Version Displayed in the RCU**

Figure 2. Firmware Version Displayed in Storage Console

RAID Configuration Utility (RCU)

During the system boot process, the RAID Controller firmware initializes the RAID Configuration Utility. The end of the first line on the screen shown in Figure 3 displays the RCU version number.

```
Intel(R) Integrated RAID - RAID Configuration Utility 4.0x
Copyright(c) Intel Corporation 1998-2000 All Rights Reserved


Please wait, starting the RAID subsystem...
RAID Controller Firmware v4.0x.0xx
Press Ctrl C to run the RAID Configuration Utility
```

Novell Netware* Modules

Novell Netware components of the RAID Controller software are distributed in "modules". The *module* command is used to determine the version number of installed modules. Refer to your Novell Netware documentation for more detail.

SCO Unixware* Packages

SCO Unixware components of the RAID Controller software are distributed in "packages". Though there are various methods, typically the pkginfo command is used to determine the version number of installed modules.

You may also use the scoadmin utility to determine package version numbers by doing the following:

1. Start the SCO Admin utility by running scoadmin.

2. Browse to the Software_Management branch and double-click on Application Installer.

3. Select the appropriate package and select Info. The version number will be displayed.

Refer to your SCO Unixware documentation or man pages for more detail.

RAID Software Suite for Linux

The 1.0 release of the RAID Software Suite for Linux did not include version number information for several of the components. As new components are released, version numbers for those components will be documented in this Specification Update:

OSM's – The OSM's are taken from the 2.2.16 kernel.
IRVIEW – Display the version number by running (code font) /usr/local/bin/irview –V
User's Manual – The User's Manual version number is printed on the front page of the documentation.

Compatibility

The following products have demonstrated the inability to co-exist in the same system as the RAID Controller.

Product	Note
Adaptec ARO-1130U2* RAID Controller	To workaround in NT, open the device's applet in Control Panel and disable the AAATIMEIO entry.
DPT Decade* PMT1554U2 RAID Controller	
AMI MegaRAID* 438 and 466 RAID Controller	Does not work in I_2O Mode. The products will co-exist if the AMI controllers are run in Mass Storage mode. Refer to the AMI product documentation for more information.
SMC 9432 LAN* Adapter	
Western Digital 18.3 GB SCSI Hard Drive (model #WDE18310-0042A1)	

Errata

1.   **Microsoft Internet Explorer* 5.0 Dr. Watson error when running Storage Console**

OS: Windows NT Server 4.0

Problem: Microsoft Internet Explorer 5.0 may occasionally close with a Dr. Watson error while running Storage Console.

Implication: The action being taken when the Dr. Watson error occurred may need to be re-submitted.

Workaround: You may attempt to restart the browser and re-submit the action, utilize a different version of a supported web browser, or use the "Advanced RAID Configuration Utility" feature from diskette or the bootable RAID software CD-ROM.

Status: NoFix. See the "Summary Table of Changes".

2.   **Attempting to address a non-existent RAID adapter with Storage Console may cause a blue screen**

OS: Windows NT 4.0

Problem: If the adapter card being specified is not present in the system, Windows NT may experience an IRQL_NOT_LESS_OR_EQUAL blue screen. The process for accessing a second RAID adapter installed in a server with Storage Console is to enter the following URL: http://*hostname*/scripts/iop.exe/n/0x00008/0

   When n = 0 it refers to the first adapter card in the system. n=1 refers to the second adapter card.

Implication: A blue screen will require the server to be rebooted.

Workaround: The user should not attempt to access non-existent RAID adapters.

Status: Eval. See the "Summary Table of Changes".

3.   **Slow performance when write-back caching enabled on the Windows NT system drive**

OS: Windows NT 4.0

Problem: Due to the nature in which the RAID adapter caching algorithms and NT's disk caching interact, enabling write-back disk caching on an NT system volume may slow system performance.

Implication: Poor system performance when write-back caching is enabled on the NT system volume.

Workaround: Do not enable write-back caching on a Windows NT system drive. Write-back caching may be used on data volumes.

Status: Eval. See the "Summary Table of Changes".

4.   **Flash Update Utility fails with RAID adapter installed in a RAIDport III* PCI slot**

OS: Windows NT Server 4.0, NetWare 4.2 and 5.0, UnixWare 7.1

Problem: When the RAID adapter is installed in a RAID*port* III* PCI slot and a CD-ROM is connected to the SCSI controller embedded on the motherboard, the Flash Update Utility may fail to update the RAID adapter firmware.

A RAID*port* III PCI slot is a PCI slot that is designed to support the Adaptec ARO-1130* RAID card. The following Intel motherboards contain a RAID*port* III PCI slot:

L440GX+ (PCI slot 4)
C440GX+ (PCI slot 4)

Implication: The RAID adapter firmware cannot be updated unless the workaround is performed.

Workaround: Move the RAID adapter to another PCI slot prior to using the Flash Update Utility.

Status: Eval. See the Table "Summary Table of Changes".

5. Unable to connect via a browser to the RAID subsystem running on a remote NT Server that has been upgraded to Service Pack 6 (SP6) or higher.

OS: Windows NT Server 4.0

Problem: Windows NT Challenge Response authentication via MS IIS does not work with SP6 when using a trusted domain account. There is an issue with MS IIS whereby trusted domain accounts cannot be validated using "Windows NT Challenge Response".

Implication: You may not be able to remotely manage the RAID subsystem from a system located in a trusted domain.

Workaround: Use either of the methods below to work-around this problem

- Create a user account with password in the domain of which the RAID server is a member, or create a local account on the server itself. Add that account to the RAID server's local Administrators group. Create an identically named account and password in the local trusted domain where you will be remotely administering the server from, thus using NT's 'Pass-through Authentication' to remotely connect.

- Enable "Basic (Clear Text)" Authentication in Microsoft Internet Information Server (IIS) on the target RAID server. This configuration will prompt the user for a password before connecting remotely and allow access.

Note: Transactions with "Basic (Clear Text)" Authentication enabled are not protected with encryption. You should use some other encryption method (e.g. Secure Sockets Layer "SSL") to secure the password during transactions.

Status: NoFix. See the "Summary Table of Changes".

6. NT initiates a 'CHKDSK' upon each reboot of a computer where NT is installed to a RAID volume that has been formatted with the FAT file system.

OS: Windows NT Server 4.0

Problem: If you install NT to a RAID volume that has been formatted with the FAT file system, every time following a dirty shutdown, NT will run 'CHKDSK' each subsequent time that the server is restarted.

Implication: Each time that the server is restarted, the user will see NT run a 'CHKDSK' on the file system.

Workaround: Convert the OS partition to NTFS.

Status: Fixed. See the "Summary Table of Changes".

7. Computer may 'Blue Screen' during the NT installation and setup to a RAID 5 volume if the RAID 5 volume is initializing in the background.

OS: Microsoft Windows NT Server 4.0

Problem: During the installation of Windows NT Server, the computer may experience a 'Blue Screen Crash Dump'. This occurs during the installation of NT to a RAID 5 volume that is large enough that it continues to initalize throughout the Windows NT setup process. The computer may 'Blue Screen' until the RAID 5 initialization completes.

Implication: You may not be able to complete the installation until the RAID 5 volume completes its initialization.

Workaround: Wait for the RAID 5 volume to complete initialization before starting the NT installation process.

Status: Fixed. See the "Summary Table of Changes".

8. RAID Monitor will only report events for the first adapter installed in the system.

OS: NetWare 4.2, NetWare 5.0

Problem: If there are two RAID adapters in the system, the first adapter enumerated during system startup may be the only one registered for events. Events (disk failures, volume degradations, etc…) may not be displayed for arrays and disks connected to the second controller.

Implication: A system administrator relying on the RAID Monitor application will not be notified of significant RAID events for arrays and disks attached to the second controller.

Workaround: None

Status: Fixed. See the "Summary Table of Changes".

9. RAID 5 volumes may Re-initialize or Fail after rebooting while using DOS or NetWare

OS: MS-DOS, ROM-DOS, NetWare 4.2, Netware 5.0

Problem: During a normal shutdown, timing synchronization issues between the operating system and RAID adapter may result in the RAID subsystem being unable to confirm the completion of the final RAID 5 parity write operation.

Implication: A RAID 5 OS volume may re-initialize at startup if it was in a 'Normal' state or if it was in a 'Degraded' state it may come up as 'Failed'.

Workaround: If the volume is in a 'Normal' state, wait at least 5 seconds after the last disk write before powering off or rebooting the machine. This will ensure adequate time for the OS to send its delayed write requests and will allow the RAID adapter to shutdown in a clean state.

If the bootable volume is in a 'Degraded' state, prior to rebooting the system, replace the 'Failed' hard disk while the system is still online and 'Rebuild' the 'Degraded' volume to a 'Normal' state. After the volume has been rebuilt to a 'Normal' state, you may follow normal shutdown procedures.

Status: Eval. See the "Summary Table of Changes".

10. System blue screens when two (2) instances of the SRCU31 adapter are in the computer system.

OS: Windows NT Server 4.0

Problem: If an NT Server system is running with two (2) SRCU31 adapters and RAID volumes are defined on both adapters, during heavy I/O activity to the RAID volumes, the system may experience a blue screen system crash.

Implication: The server could experience a blue screen system crash.

Workaround: None. It is not recommended that you install two (2) SRCU31 adapters in a computer running NT 4.0 Server.

Status: Fixed. See the "Summary Table of Changes".

11. Second RAID volume created under UnixWare is not detected by the OS if UnixWare is installed on a RAID volume.

OS: SCO UnixWare 7.1.0

Problem: If the UnixWare OS is installed to a RAID volume, the second RAID volume created will not be detected by the OS. Additionally an error message similar to the following will appear at boot time: *UX:sdimkdev: ERROR c0b0t0d0sXX. This device cannot be added to the system because the SCSI address of this device is used as GHOST Address for c0b0t2d0sXX.*

Implication: The second volume created will not be accessible to the OS. All volumes created after the second volume will not be affected.

Workaround: None. However, you can create a 1 MB placeholder volume as the second volume. This will limit the amount of wasted disk capacity to 1 MB. UnixWare will detect the initial volume created and all volumes created after the second volume is created.

Status: Eval. See the "Summary Table of Changes".

12. I/O subsystem pauses for approximately thirty (30) seconds under heavy I/O using Sequential Caching.

OS: Windows NT Server 4.0

Problem: Under any of the following conditions, the I/O subsystem may appear to hang or suspend all I/O processing:

- If the system administrator turns off Full Write Cache during I/O activity
- With Sequential Write Cache enabled
- When migrating a RAID volume's RAID level from RAID 0 to RAID 1 during I/O activity.

Implication: The I/O subsystem may appear to hang for approximately thiry (30) seconds before continuing. There is the possibility of disconnection of network clients that are accessing the computer system.

Workaround: None. The following actions are recommended to prevent the occurrence of this issue:

- Do not change Write Cache Policy during heavy I/O activity.
- Do not enable Sequential Write Cacheing.
- Do not migrate a RAID volume from RAID 0 to RAID 1 during heavy I/O activity.

Status: Eval. See the "Summary Table of Changes".

13. The RAID Controller does not accept System or User-initiated Standby or Hibernate Power Management commands.

OS: Microsoft Windows 2000

Problem: Power management commands, Hibernate or Standby, when initiated either by the system or manually by the user, are not supported by the RAID Controller. Attempts to put the Server into a Power Management state will result in a pop-up error message informing the user that the RAID Controller does not support these commands.

Implication: Unable to put the operating system into any power management mode.

Workaround: None

Status: Eval. See the "Summary Table of Changes".

14. UnixWare 'Panics' when booting with 'Failed' volumes.

OS: UnixWare 7.1

Problem: If any RAID volumes configured on the RAID adapter are in a 'Failed' state, the UnixWare OS may 'Panic' dump upon trying to reboot the OS.

Implication: You will not be able to reboot the operating system with 'Failed' volumes on the RAID adapter.

Workaround: If the operating system is up and running, either mark the 'Failed' volume(s) as 'Normal' and attempt to recover them, or delete the volume(s) if attempts to recover are unsuccessful.

If you have already rebooted the system, boot to the RAID CD-ROM, enter the Advanced RAID Configuration Utility, mark the 'Failed' volume as Normal and attempt to recover it. Then try rebooting to the operating system.

Note: The 'Recover' feature of the RAID adapter does not guarantee successful recovery of data. However, it marks the 'Failed' volume as 'Normal'. This allows the OS access to the volume in order to attempt data recovery from the volume.

Status: Eval. See the "Summary Table of Changes".

15. Advanced RAID Configuration Utility menus may be unreadable.

OS: DOS, ROMDOS, Linux

Problem: Some menu items may be unreadable due to formatting of the text-based browser.

Implication: The choices in the far right column may be unreadable except for the first few characters. User may be unable to accurately determine the correct selection.

Workaround: Boot to the OS and use the GUI Storage Console.

Status: Eval. See the "Summary Table of Changes".

16. Unable to create large number of RAID volumes on two adapters Using the Advanced RAID Configuration Utility (ARCU).

OS: DOS

Problem: When two RAID adapters are installed in the system, and you are attempting to create a combined large number of RAID volumes using the ARCU, the utility may be unable to create more than 16 volumes without locking up.

Implication: If you have a configuration that requires more than 15 RAID volumes distributed over both installed RAID adapters, you will be unable to use the ARCU to create all the volumes.

Workaround: Boot to the OS and use the RAID Storage Console to complete the configuration.

Status: Eval. See the "Summary Table of Changes".

17. The RAID Monitor application does not always send a pop-up message after a disk or volume status has changed.

OS: Microsoft Windows 2000

Problem: The RAID monitor application does not always send a pop-up message indicating a change in a volume or disk status because the polling interval is set to 60 seconds and is not configurable by the end user.

Implication: Any object that changes states and then changes back to its previous state (e.g. a RAID volume that goes from Normal to Degraded back to Normal) in less than 60 seconds, will not be reported by the

monitor application. There will be no event notification in this scenario. Typical state change events, such as drives failing, are not affected.

Workaround: None.

Status: Eval. See the "Summary Table of Changes".

18. New updated OSM drivers' version number unchanged.

OS: Microsoft Windows 2000, Windows NT 4.0

Problem: The version number of the Operating System Service Module (OSM) driver files were not revised when the drivers were revised. The version number can be viewed by using Windows Explorer and locating the files in the <Systemroot>/system32/drivers directory, right click on the file to bring up the properties window, and go to the 'version' tab.

Implication: The installation of the drivers during an upgrade may result in the following message regarding the files version:

"The drivers on your system are the same or newer than the ones in this setup program...".

Workaround: Ignore the message and replace the files with the latest drivers received from the RAID vendor by clicking 'YES' to upgrade. To determine if you are installing the correct versions of the driver, go to the properties windows by right clicking on the file and check the file size (bytes). Compare the file size on your system with the file size listed in the Software Version Identification Matrix located in this document.

Status: Eval. See the "Summary Table of Changes".

19. Online Array Roaming Requires a Shutdown of both Computers

OS: All

Problem: 'Array Roaming' (transferring RAID arrays between computers whose RAID subsystems are being controlled by compatible RAID adapters) may fail if both computers are not powered-off before attempting to perform this action.

Implication: 'Array Roaming' can not be performed while the computers involved are online.

Workaround: Prior to performing this action, if you have to either rearrange disks on or remove disks from the computer that will be receiving the new RAID array, do so and run a bus scan before powering-off the computer. Then power-off both computers, transfer the RAID array, and power the computer back up with the new RAID array inserted.

Note: This feature is limited to disks that are members of a RAID array **only**. Do not attempt to transfer other disks such as: Hot Spares, Pass-through, and disks Marked Offline.

Status: Eval. See the "Summary Table of Changes".

20. Incorrect Silk Sreen Label on Jumper J7D1 (IOP Mode Select)

OS: N/A

Problem: The silk screen label on the adapter incorrectly identifies the jumper settings. It is currently labeled:

1-2 Flash Update
2-3 Normal

It should be labeled:

1-2 Flash Recovery
2-3 Flash Update/Normal

Implication: Users may confuse the two jumper settings and how they are used to set the two program modes for the flash memory.

Workaround: Use the following instructions to program the flash memory:

- Place the jumper on pins 1 and 2 when you need to recover (***Flash Recovery***) from a possible corrupted flash memory (when you boot to the RAID CD-ROM, use ***option 4*** of the ROMDOS menu).

- Leave the jumper in its ***'Normal' run*** position on pins 2 and 3 and for normal updates (***Flash Update***) of the flash memory (***option 2*** of the ROMDOS menu)***.***

Status: Eval. See the "Summary Table of Changes".

21. RAID Software Suite Fails to Uninstall

OS: Windows 2000

Problem: The *Add/Remove* applets in Window's Control Panel fails to completely remove the RAID software suite. The *Uninstall* program terminates unexpectedly if the *SNMP Management* component was installed during the RAID software suite installation. The following error message is displayed:

Component Transfer error

Component: SNMP Management
File Group: _____
File: c: \winnt\system32\raidxa.dll
error: access is denied

Implication: User will be unable to completely uninstall the RAID software suite from the system.

Workaround: Prior to beginning the uninstall process, stop the SNMP service. To do this, launch the *Services* applets from *Start/Programs/Administrative Tools*. Find the SNMP service and double click on it. Go down to the *Service status* section and click the [Stop] button to stop the service.

Now go to *Add/Remove* and uninstall the RAID software suite.

Status: Eval. See the "Summary Table of Changes".

22. Deleting DEGRADED RAID Volume Instructs User to Call Customer Support

OS: none (Adapter Expansion ROM)

Problem: While attempting to delete a degraded RAID volume in RAID Configuration Utility (RCU) the following message is displayed: "INTERNAL ERROR 4023 - Please report this error to customer support"

Implication: Erroneous message is displayed during volume deletion.

Workaround: None. Ignore the error message in this case and press any key to continue.

Status: Eval. See the "Summary Table of Changes".

23. "ftdisk" Message Reported in Event Log

OS: Microsoft Windows 2000

Problem: If a RAID volume attached to the RAID adapter is used as the boot device, a message stating that ftdisk was unable to load is entered into the event log each time the system is restarted.

Implication: The system will be unable to create a dump file on the bootable RAID volume in the event of a "Blue Screen".

Workaround: None

Status: Eval. See the "Summary Table of Changes".

24.   RAID 5 Volume reinitializes upon reboot when marked as Dynamic Disk in Disk Management

OS: Microsoft Windows 2000

Problem: Windows 2000 Dynamic Disks are not notified by the operating system of an impending shutdown.

Implication: Because Dynamic disks are not notified of an impending shutdown, a reboot may appear to the IO subsystem as being an unexpected power loss. For a normal RAID5 volume the result would be the RAID5 volume re-initializing at every reboot. For a degraded RAID5 volume a reboot could result in the RAID5 volume going FAILED without any disk drives being FAILED.

Workaround: To rebuild a RAID 5 volume that has been marked FAILED, use the following steps to mark the volume as NORMAL prior to rebooting (this assumes that the disk drives have not actually failed):

1. Enter ARCU (option 3 in the ROMDOS Startup menu of the bootable RAID CD-ROM).

2. Press *Enter* to start the RAID Storage Console (press *Enter* a second time if Storage Console does not start within 5 seconds). Press *Enter* to complete loading of Storage Console.

3. Highlight RAID Volumes-View/Actions using the arrow keys - press *Enter*.

4. Arrow down to Action column, press *Enter*.

5. Arrow down to Mark Normal, press *Enter*.

6. Arrow down to Submit Action, press *Enter*.

7. Arrow down to YES, press *Enter*.

8. Arrow down to Submit, press *Enter* (Repeat to confirm).

9. Return to main menu, Highlight RAID Volumes-View/Actions using the arrow keys - press *Enter*.

10. Arrow down to Action column, press *Enter*.

11. Arrow down to Initialize Parity, press *Enter*.

12. Arrow down to Submit, press *Enter*.

13. Wait until volume completes initialization, press *Q* to quit, press *Y* to confirm quit.

14. Remove the CD-ROM and reboot.

Status: Eval. See the "Summary Table of Changes".

25.   RAID subsystem events on NetWare* 5.1 not detected by HP OpenView*

OS: Netware 5.1 (Support Pack 2a)

Problem: After upgrading the NetWare 5.1 server OS with Support Pack 2a, events logged by the RAID subsystem are not detected by HPOV management software over the network.

Implication: Network administrators using the HPOV management software will not be able to monitor the RAID subsystem events generated on the NetWare 5.1 server.

Workaround: After installing Support Pack 2a and configuring SNMP, 'Down' the server and do a command line 'Reset Server' to reset the server's OS and reinitialize the (LAN) hardware.

Status: Eval. See the "Summary Table of Changes".

Errata for Linux

1. **IRVIEW reports incorrect volume and disk sizes.**

OS: Red Hat Linux* 6.2; Linux 2.2.16 kernel

Problem: IRVIEW reports incorrect volume and disk size information.

Implication: IRVIEW reports incorrect volume and disk sizes.

Workaround: Use Storage Console for getting the correct volume and disk sizes.

Status: Fix. See the "Summary Table of Changes".

2. **Running FDISK on a RAID volume from the console generates I2O error messages.**

OS: Red Hat Linux 6.2; Linux 2.2.16 kernel

Problem: When running FDISK on a RAID volume while using Linux in console (not X-Windows) mode, the following informational error messages will appear:
"i2o_core: post_wait reply: UTIL_PARAMS_GET, <6>ERROR_PARTIAL_TRANSFER / <6> UNKNOWN_ERROR"
This message can be ignored.

Implication: None. This error message can be ignored.

Workaround: Use FDISK from an X-Windows session.

Status: Fix. See the "Summary Table of Changes".

Specification Changes

1. Support for Microsoft Windows 2000 operating system

Windows 2000 operating system support has been added to the RAID adapter's supported operating systems.

Specification Clarifications

1.   Performance impact of adding memory to the RAID adapter

The RAID adapter is tuned for 32MB of ECC SDRAM memory installed on the adapter's DIMM connector. The adapter can operate with up to 128MB of ECC SDRAM installed on the adapter. Installation of more than 32MB should only provide a negligible performance improvement.

2.   Clarification between the Linux kernel shipped with Redhat 6.2 and the kernel supported by the RAID adapter

The Linux kernel that ships with the Ret Hat 6.2 release is the 2.2.14 kernel. The kernel must be updated to kernel version 2.2.16 in order for the Intel Server RAID controller to function properly. Scripts are provided on the Server RAID Controller Linux CD to automatically update the kernel included with Red Hat to the 2.2.16 kernel. It should be noted that after using these scripts to install the Intel Server RAID controller into a system using Red Hat, the version of the kernel resident on the system will be changed.

3.   RAID configuration reappears after Destructive Bus Scan when drives are moved to another server

Contrary to the name, a destructive bus scan does NOT destroy configuration information on the disk. It just ignores it. So it is possible to take a disk that was destructively scanned and put it into another system with an add disk, and have the old configuration come up. This will only occur if the data on the disk has not been overwritten by new data (if the disk was not used after the destructive bus scan).

4.   Failure Reclaiming Pass-Through for Raid causes conflicting reboot message

Reclaiming a disk drive that has been previously marked as Pass-through is the Disk action that is taken when the system administrator no longer wants to present that disk drive to the host OS as a single SCSI disk drive. Completing this action should make the disk drive available to the RAID subsystem to be used in RAID arrays and volumes or as a global hot spare.

Upon completion of the Claim for RAID action, the disk USAGE is displayed as Claim on Reboot which indicates that a reboot of the OS is required to fully complete the process. However, on the Linux OS, a reboot is not required. As soon as the first bus scan is completed (automatically for SAF-TE or manually for non-intelligent enclosures) following the action, the disk USAGE should indicate *Available* and the disk drive should be available to the RAID subsystem.

Note: For intelligent SA-TE enclosures, *Claim on Reboot* may never been indicated. The USAGE could go directly from *Pass-Through* to *Available*.

Documentation Changes

1.   Section 5.1.3.5 Array Roaming

The sentence in section 5.1.3.5, "The array being moved must be connected to the destination server while it is offline." should read "Array Roaming may be done while the target and destination servers are online by using the 'Add Disks' Bus Scan method described in section 4.3.9.3."

2.   Table 5-3 and Table 5-5: RAID 1 and RAID 10 Volume Characteristics

The 'Strip Size' row in these tables mention support for 64Kb strip size. The actual strip sizes supported for RAID 1 and RAID 10 volumes are: 4Kb, 8Kb, 16Kb, 32Kb, 64Kb, and 128 Kb.

3.   Windows 2000 support

User Manual has been modified to include support for the Windows 2000 operating system.

4.   Replacing/Upgrading (Swapping) a RAID Adapter that has Windows 2000 Installed to a Bootable RAID Volume

This is an addition to Section 2.5.2 of the User's Manual.

Swapping a SCSI host adapter for another SCSI host adapter is similar to the procedure for adding a host adapter. The important distinction is that you add the new SCSI adapter into the system first, before removing the old adapter.

Note: If you do not install the new host adapter first, it may result in a Windows 2000 boot failure.

To swap adapters, follow these steps.

1. Power down your computer.

2. Insert the new (compatible) RAID adapter into an available PCI slot, leaving the existing RAID adapter intact.

3. Power up your computer. Windows 2000 should load up as normal and detect the new RAID adapter. Install the Windows 2000 driver if prompted to. If a driver install Wizard starts, follow the same driver installation procedures as in the User's Manual.

4. Reboot if prompted to.

5. Once the new RAID adapter is functioning properly, power down your computer.

6. Remove the old RAID adapter (leave the new RAID adapter in the slot that it was initially installed) and move all desired devices to the new adapter.

7. Ensure all attached devices are recognized.