Release Notes

Product	StorNext 3.5.2
Date	March 2010

Contents

6-00431-28 Rev A, March 2010

Purpose of This Release

StorNext 3.5.2 is a maintenance release that improves behind-the-scenes performance and corrects issues identified in previous releases.

This document lists issues that were resolved for this release, currently known issues, and known operating limitations.

Visit www.quantum.com/ServiceandSupport for additional information and updates for StorNext.

Enhancements and Improvements

Although 3.5.2 is a maintenance release, a few enhancements and improvements were incorporated into the release.

Added Platform Support

In release 3.5.2, support has been added for the following platforms:

- Windows Server 2008 (R2) for x86 32-bit: File System SAN Client and File System LAN Client
- Windows Server 2008 (R2) for x86 64-bit: MDC Server, File System SAN Client, Distributed LAN Server, and File System LAN Client
- Windows Server 2008 (SP2) for x86 32-bit: File System SAN Client and File System LAN Client
- Windows Server 2008 (SP2) for x86 64-bit: MDC Server, File System SAN Client, Distributed LAN Server, and File System LAN Client
- Windows 7 for x86 32-bit and x86 64-bit: File System SAN Client and File System LAN Client
- Red Hat® Enterprise Linux 5 (Update 4) for x86 64-bit: MDC Server, File System SAN Client, Distributed LAN Server, File System LAN Client and Storage Manager
- SUSE Linux Enterprise Server 10 (SP3) for x86 32-bit: File System SAN Client and File System LAN Client
- SUSE Linux Enterprise Server 10 (SP3) for x86 64-bit: MDC Server, File System SAN Client, Distributed LAN Server, File System LAN Client and Storage Manager
- SUSE Linux Enterprise Server 10 (SP3) for Itanium 64-bit: MDC Server and File System SAN Client
- SUSE Linux Enterprise Server 11 for x86 64-bit: File System SAN Client and File System LAN Client
- SUSE Linux Enterprise Server 11 for Itanium 64-bit: MDC Server and File System SAN Client

- Apple Xsan MacOS X 10.6 with Xsan 2.2 and StorNext MDC for x86 32-bit and x86 64-bit: File System SAN Client
- Apple Xsan MacOS X 10.6 with Xsan 2.2.1 and StorNext MDC for x86 32-bit and x86 64-bit: File System SAN Client

Added Library Support

Beginning with StorNext 3.5.2, StorNext now supports the following additional libraries:

- Quantum Scalar i40 library.
- Sun/StorageTek Sl500 SCSI/FC library

Added Tape Drive Support

Support for the Sun/StorageTek T10000 Rev B tape drive has been added for the Sun/StorageTek SL8500 library.

Changes From Previous Releases

The following changes were instituted in a previous StorNext release and are listed here as a reminder that important settings have been changed.

Configuration File Changes

The following variables have been deprecated (removed) from the configuration file's "`Globals`" section:

- `AttrTokenSize`
- `BufferPoolSize`
- `DirCacheSize`
- `DirFDCacheSize`
- `ForceStripeAlignment`
- `IoHangLimitSecs`
- `JournalIcBufNum`
- `JournalIcBufSize`
- `MaxMBPerClientReserve`
- `Mbufs`
- `MbufSize`
- `ReaddirForcedVersion`
- `StaticInodes`

In addition, the following settings have been removed from the configuration file's "`StripeGroup`" section:

- `StripeClusters`
- `Type`

For detailed explanations regarding why these items were deprecated, see the `cvfs_config(4)` man page.

ONC Portmapper Services Deprecated

ONC Portmapper Service is used by remote network applications to locate the correct port and application on the local computer. This service was used by StorNext version 2.6 and earlier to locate the correct port for FSMPM/Name Services. Since StorNext version 3.5 is not supported in the same network environment as StorNext 2.6, Quantum's ONC Portmapper is no longer installed or enabled.

Although unlikely, there might be other non-Quantum applications which rely on ONC Portmapper Services. In those cases the vendor should provide their own ONC portmapper service. You may need to re-enable their service.

Single LUN Stripe Group I/O Characteristics

The I/O characteristics on a single LUN stripe group have changed in release 3.5. In prior releases all I/Os were broken down into, at most, StripeBreadth-sized I/Os aligned on the stripe group's StripeBreadth value. This was the case even when there was a single LUN in a stripe group. In StorNext 3.5, I/Os are no longer forced into StripeBreadth-sized chunks when there is only one LUN in the stripe group. All I/Os in this case should match the DMA I/O requests, or the I/O requests coming out of the file system's buffer cache. Be aware of the change in behavior when evaluating performance characteristics between differing StorNext releases.

Revised FSBlockSize, Metadata Disk Size, and JournalSize Settings

The FsBlockSize (FSB), metadata disk size, and JournalSize settings all work together. For example, the FsBlockSize must be set correctly in order for the metadata sizing to be correct. JournalSize is also dependent on the FsBlockSize.

For FsBlockSize the optimal settings for both performance and space utilization are in the range of 16K or 64K.

Settings greater than 64K are not recommended because performance will be adversely impacted due to inefficient metadata I/O operations. Values less than 16K are not recommended in most scenarios because startup and failover time may be adversely impacted. Setting FsBlockSize (FSB) to higher values is important for multi-terabyte file systems for optimal startup and failover time.

Note: This is particularly true for slow CPU clock speed metadata servers such as Sparc. However, values greater than 16K can severely consume metadata space in cases where the file-to-directory ratio is low (e.g., less than 100 to 1).

For metadata LUN size, you should have a *minimum* of 25 GB, with more space allocated depending on the number of files per directory and the size of your file system.

The following table shows suggested FsBlockSize (FSB) settings and metadata disk space based on the average number of files per directory and file system size. The amount of disk space listed for metadata is *in addition* to the 25 GB minimum amount. Use this table to determine the setting for your configuration.

Average No. of Files Per Directory	File System SIze: Less Than 10TB	File System Size: 10TB or Larger
Less than 10	FSB: 16KB Metadata: 32 GB per 1M files	FSB: 64KB Metadata: 128 GB per 1M files
10-100	FSB: 16KB Metadata: 8 GB per 1M files	FSB: 64KB Metadata: 32 GB per 1M files
100-1000	FSB: 64KB Metadata: 8 GB per 1M files	FSB: 64KB Metadata: 8 GB per 1M files
1000 +	FSB: 64KB Metadata: 4 GB per 1M files	FSB: 64KB Metadata: 4 GB per 1M files

The best rule of thumb is to use a 16K FsBlockSize unless other requirements such as directory ratio dictate otherwise.

This setting is not adjustable after initial file system creation, so it is very important to give it careful consideration during initial configuration.

Example: FsBlockSize 16K

JournalSize Setting

The optimal settings for JournalSize are in the range between 16M and 64M, depending on the FsBlockSize. Avoid values greater than 64M due to potentially severe impacts on startup and failover times. Values at the higher end of the 16M-64M range may improve performance of metadata operations in some cases, although at the cost of slower startup and failover time.

The following table shows recommended settings. Choose the setting that corresponds to your configuration.

FsBlockSize	JournalSize
16KB	16MB
64KB	64MB

This setting is adjustable using the `cvupdatefs` utility. For more information, see the `cvupdatefs` man page.

Example: `JournalSize 16M`

Configuration Requirements

Before installing StorNext 3.5.2, note the following configuration requirements:

- In cases where gigabit networking hardware is used and maximum StorNext performance is required, a separate, dedicated switched Ethernet LAN is

recommended for the StorNext metadata network. If maximum StorNext performance is not required, shared gigabit networking is acceptable.

- A separate, dedicated switched Ethernet LAN is mandatory for the metadata network if 100 Mbit/s or slower networking hardware is used.
- StorNext does not support file system metadata on the same network as iSCSI, NFS, CIFS, or VLAN data when 100 Mbit/s or slower networking hardware is used.
- The operating system on the metadata controller must always be run in U.S. English.
- For Windows systems (server and client), the operating system must always be run in U.S. English.

Caution: If a Library used by StorNext Storage Manager is connected via a fibre switch, zone the switch to allow only the system(s) running SNSM to have access to the library. This is necessary to ensure that a "rogue" system does not impact the library and cause data loss or corruption. For more information, see StorNext Product Alert 16.

Library Requirements

The following libraries require special configurations to run StorNext.

DAS and Scalar DLC Network-Attached Libraries

Prior to launching the StorNext Configuration Wizard, DAS, and Scalar DLC network-attached libraries must have the DAS client already installed on the appropriate host control computer.

DAS Attached Libraries

For DAS attached libraries, refer to "Installation and Configuration" and "DAS Configuration File Description" in the *DAS Installation and Administration Guide*. The client name is either the default StorNext server host name or the name selected by the administrator.

StorNext can support LTO-3 WORM media in DAS connected libraries, but WORM media cannot be mixed with other LTO media types in one logical library.

To use LTO-3 WORM media in a logical library, before configuring the library in StorNext, set the environmental variable `XDI_DAS_MAP_LTO_TO_LTOW` in the `/usr/adic/MSM/config/envvar.config` file to the name of the library. The library name must match the name given to the library when configuring it with StorNext. If defining multiple libraries with this environmental variable, separate them with a space. After setting the environmental variable, restart StorNext Storage Manager (SNSM).

Note: SDLC software may not correctly recognize LTO-3 WORM media in the library and instead set it to "unknown media type." In this case you must manually change the media type to "LTO3" using the SDLC GUI.

Scalar DLC Attached Libraries

For Scalar 10K and Scalar 1000 DLC attached libraries, refer to "Installation and Configuration" and "Client Component Installation" in the *Scalar Distributed Library Controller Reference Manual* (6-00658-02).

The DAS client should be installed during the installation of the Scalar DLC attached libraries. Use this procedure to install the DAS client.

1. Select **Clients > Create DAS Client**.

   The client name is either the default StorNext server host name or the name selected by the administrator.
2. When the DAS client is configured in Scalar DLC, select **Aliasing**.
3. Select **sony_ait** as the **Media** aliasing.
4. The default value is 8mm.
5. Verify that **Element Type** has **AIT** drive selected.
6. Click **Change** to execute the changes.

ACSLS Attached Libraries

Due to limitations in the STK ACSLS interface, StorNext supports only single ACS configurations (ACS 0 only). StorNext support requires that the ACSLS client be installed on the appropriate host machine.

Disk Requirements

Disk devices must support, at minimum, the mandatory SCSI commands for block devices as defined by the SCSI Primary Commands-3 standard (SPC-3) and the SCSI Block Commands-2 (SBC-2) standard.

To ensure disk reliability, Quantum recommends that disk devices meet the requirements specified by Windows Hardware Quality Labs (WHQL) testing. However, there is no need to replace non-WHQL certified devices that have been used successfully with StorNext.

Disk devices must be configured with 512-byte or 4096-byte sectors, and the underlying operating system must support the device at the given sector size. StorNext customers that have arrays configured with 4096-byte sectors can use only Windows, Linux and IRIX clients. Customers with 512-byte arrays can use clients for any valid StorNext operating system (i.e., Windows, Linux, or UNIX).

In some cases, non-conforming disk devices can be identified by examining the output of `cvlabel -vvvl`. For example:

```
/dev/rdsk/c1d0p0: Cannot get the disk physical info.
```

If you receive this message, contact your disk vendors to determine whether the disk has the proper level of SCSI support.

Disk Naming Requirements

When naming disks, names should be unique across all SANs. If a client connects to more that one SAN, a conflict will arise if the client sees two disks with the same name.

LDAP Support Requirement

LDAP (Lightweight Directory Access Protocol) support requires Windows Active Directory.

Configuring Quantum Libraries for Solaris 10

To ensure that Quantum libraries are recognized and tape drives function properly, follow the configuration procedure below. This procedure works for the PX502 library and other Quantum tape libraries.

Note: You must be using update 4 or newer for Solaris 10 in order for tape drives to function properly.

1. Edit the `/etc/driver_aliases` file by removing or commenting out the following ST driver entries (if they exist):
   - `"scsiclass,01"`
   - `"scsiclass,08"`
2. Open the `/kernel/drv/sgen.conf` file and verify that the following entries are present in the file, adding them if necessary:
   - `inquiry-config-list="ADIC","*";`
   - `inquiry-config-list="QUANTUM","*";`
   - `inquiry-config-list="HP","*";`
   - `device-type-config-list="changer","sequential";`
3. Reboot the Solaris system to unload any drivers that have been loaded.
4. After rebooting, enter the following commands to configure and load new sgen drivers:
   - `update_drv -a -i '"scsiclass,01"' sgen`
   - `update_drv -a -i '"scsiclass,08"' sgen`
5. Enter the command "`cfgadm -alv`". You should see the following entries in the cfgadm list:

```
c2::500e09e00b40a000        connected   configured   unknown
QUANTUM PX500
unavailable  med-changer  n        /devices/pci@8,700000/fibre-
channel@3/fp@0,0:fc::500e09e00b40a000
c2::500e09e00b40a010        connected   configured   unknown
HP Ultrium 3-SCSI
unavailable  tape         n        /devices/pci@8,700000/fibre-
channel@3/fp@0,0:fc::500e09e00b40a010
```

Operating System Requirements

Table 1 shows the operating systems, kernel versions, and hardware platforms that support StorNext File System, StorNext Storage Manager, and the StorNext client software.

This table also indicates the platforms that support the following:

- MDC Servers
- File System SAN Clients
- Distributed LAN Servers
- File System LAN Clients
- Storage Manager

Table 1 StorNext Supported OSes and Platforms

StorNext 3.5.2 Components Supported Operating Systems and Platforms							
Operating System	**Kernel or Release**	**Platform**	**MDC Server**	**File System SAN Client**	**Distributed LAN Server**	**File System LAN Client**	**Storage Manager / SNAPI**
Windows Server 2003	R2 SP2	x86 32-bit	✓*	✓	✓*	✓	
		x86 64-bit	✓	✓	✓	✓	
Windows XP	SP2	x86 32-bit		✓		✓	
		x86 64-bit		✓		✓	
	SP3	x86 32-bit		✓		✓	
		x86 64-bit		✓		✓	
Windows Vista	SP1	x86 32-bit		✓		✓	
		x86 64-bit		✓		✓	
	SP2	x86 32-bit		✓		✓	
		x86 64-bit		✓		✓	
Windows Server 2008	SP1	x86 32-bit		✓		✓	
		x86 64-bit	✓	✓	✓	✓	
	R2	x86 32-bit		✓		✓	
		x86 64-bit	✓	✓	✓	✓	
	SP2	x86 32-bit		✓		✓	
		x86 64-bit	✓	✓	✓	✓	
Windows 7	N / A	x86 32-bit		✓		✓	
		x86 64-bit		✓		✓	

Notes: When adding StorNext Storage Manager to a StorNext File System environment, the metadata controller (MDC) must be moved to a supported platform. If you attempt to install and run a StorNext 3.5.2 server that is not supported, you do so at your own risk. Quantum strongly recommends against installing non-supported servers.

* MDC, DLS, and SM not recommended due to memory management issues.

StorNext 3.5.2 Components Supported Operating Systems and Platforms (Continued)							
Operating System	**Kernel or Release**	**Platform**	**MDC Server**	**File System SAN Client**	**Distributed LAN Server**	**File System LAN Client**	**Storage Manager / SNAPI**
RHEL 4 ‡	2.6.9-67.EL (Update 6) †	x86 32-bit	✓	✓	✓	✓	
	2.6.9-78.EL (Update 7) †	x86 32-bit	✓	✓	✓	✓	
	2.6.9-89 EL (Update 8)	x86 32-bit	✓	✓	✓	✓	
	2.6.9-67.EL (Update 6) †	x86 64-bit	✓	✓	✓	✓	
	2.6.9-78.EL (Update 7) †	x86 64-bit	✓	✓	✓	✓	
	2.6.9-89 EL (Update 8)	x86 64-bit	✓	✓	✓	✓	✓**
RHEL 5 ‡	2.6.18-53.EL (Update 1) †	x86 64-bit	✓	✓	✓	✓	✓
	2.6.18-92.EL (Update 2) †	x86 64-bit	✓	✓	✓	✓	✓
	2.6.18-128 (Update 3) †	x86 64-bit	✓	✓	✓	✓	✓
	2.6.18-164.EL (Update 4)	x86 64-bit	✓	✓	✓	✓	✓

** Storage Manager should not be used with earlier service packs for RHEL4 due to a critical tape rewind problem in the RHEL4 kernel. In order to install StorNext Storage Manager on a Red Hat Enterprise Linux 4 system, you MUST first install 2.6.9-98 EL (Update 8).

† All releases of RHEL4 and RHEL5 except RHEL4 Update 8 and RHEL5 Update 4 have a possible silent data corruption issue as documented in Product Alert #20. Quantum recommends that users migrate to RHEL4 Update 8 or RHEL5 Update 4 as soon as possible. Also, note that the "Xen" virtualization software is not supported for RHEL 4 and RHEL 5.

‡ HBA multipath customers: please verify with your HBA vendor that your current multipath driver is supported for any planned Linux OS version/update/service pack level. If your driver is not supported for your planned Linux OS version/update/service pack, the StorNext client or server may not be functional after your Linux upgrade.

Note: For systems running Red Hat Enterprise Linux version 4 or 5, before installing StorNext you must first install the kernel header files (shipped as the kernel-devel-smp or kernel-devel RPM).

For systems running SUSE Linux Enterprise Server, you must first install the kernel source code (typically shipped as the kernel-source RPM).

Caution: Red Hat 5 ships with secure Linux kernel enabled by default. To ensure proper StorNext operation, you must not install Red Hat 5 with secure Linux enabled. The secure Linux kernel must be off, or the file system could fail to start.

StorNext 3.5.2 Components Supported Operating Systems and Platforms (Continued)							
Operating System	**Kernel or Release**	**Platform**	**MDC Server**	**File System SAN Client**	**Distributed LAN Server**	**File System LAN Client**	**Storage Manager / SNAPI**
SLES 10 †† ‡ ***	2.6.16-46-0.12 (SP1)	x86 32-bit		✓		✓	
	2.6.16.60-0.27 (SP2)	x86 32-bit		✓		✓	
	2.6.16.60-0.54.5 (SP3)	x86 32-bit		✓		✓	
	2.6.16-46-0.12 (SP1)	x86 64-bit	✓	✓	✓	✓	✓
	2.6.16.60-0.27 (SP2)	x86 64-bit	✓	✓	✓	✓	✓
	2.6.16.60-0.54.5 (SP3)	x86 64-bit	✓	✓	✓	✓	✓
	2.6.16-46-0.12 (SP1)	Itanium 64-bit	✓	✓			
	2.6.16.60-0.27 (SP2)	Itanium 64-bit	✓	✓			
	2.6.16.60-0.54.5 (SP3)	Itanium 64-bit	✓	✓			
SLES 11 ‡ ***	2.6.27.19-5	x86 64-bit		✓		✓	
		Itanium 64-bit	✓	✓			

†† SLES 10 SP1 (and earlier) and SP2 kernels earlier than 37 are sensitive to the same silent data corruption issue documented in Product Alert #20. The problem has been fixed in SP2 that includes level 2.6.16.60-0.37_f594963d, in SLES 10 SP3, and in the SLES 11 releases. There is no recommended workaround at this time.

‡ HBA multipath customers: please verify with your HBA vendor that your current multipath driver is supported for any planned Linux OS version/update/service pack level. If your driver is not supported for your planned Linux OS version/update/service pack, the StorNext client or server may not be functional after your Linux upgrade.

***A "roll" of a particular digit is not indicative that a new SLES service pack has been declared by Novell. The kernel revisions listed in this document are typically (but not always), the first kernel revision of the service pack. Later revisions within the service pack are typically, but not always, supported.

StorNext 3.5.2 Components
Supported Operating Systems and Platforms (Continued)

Operating System	Kernel or Release	Platform	MDC Server	File System SAN Client	Distributed LAN Server	File System LAN Client	Storage Manager / SNAPI
Sun Solaris 10	Generic 120011-14	sparc 64-bit	✓	✓			✓
	Generic 127128-11	Opteron x86 64-bit		✓		✓	
		Intel x86 64-bit		✓		✓	
SGI-IRIX	6.5.30	64-bit MIPS		✓			
IBM AIX	5.3	64-bit Power Architecture		✓			
HP-UX	11i v2	Itanium 64-bit		✓			
Apple Xsan (Apple Leopard machines run with 32-bit kernel, 64-bit user)	MacOS X 10.5.5 w/Xsan 2.1.1, StorNext MDC ⌗⌗	x86 32-bit		✓			
	MacOS X 10.6 w/Xsan 2.2, StorNext MDC	x86 32-bit		✓			
		x86 64-bit		✓			
	MacOS X 10.6 w/Xsan 2.2.1, StorNext MDC	x86 32-bit		✓			
		x86 64-bit		✓			

Note: StorNext support will transition from HP-UX 11i v2 to 11i v3, and from IBM AIX 5.3 to 6.1 on a future date.

⌗⌗ Releases earlier than MacOS X 10.5.5 may have limited Windows Access Control Lists (ACL) functionality.

Note: GNU tar is required on Solaris systems. In addition, for systems running Solaris 10, install the Recommended Patch Cluster (dated March 10, 2006 or later) before installing StorNext. To enable support for LUNs greater than 2TB on Solaris 10, the following patches are required:

- 118822-23 (or greater) Kernel Patch
- 118996-03 (or greater) Format Patch
- 119374-07 (or greater) SD and SSD Patch
- 120998-01 (or greater) SD Headers Patch

Supported Libraries and Tape Drives

Libraries and tape drives supported for use with StorNext 3.5.2 are presented in Table 2. Where applicable, minimum firmware levels for libraries are provided.

Table 2 StorNext Supported Libraries and Tape Drives

StorNext 3.5.2 Supported Libraries and Tape Drives					
Vendor Library Family	**Libraries**	**Enforced Minimum / Recently Tested Library Firmware Level**	**Drive Types**	**Enforced Minimum / Recently Tested Drive Firmware Level**	**Notes**
Quantum / ADIC	Scalar i500	Minimum: 140G	IBM LTO-1		Library firmware upgrade may be required for LTO-3 WORM support 420G.GS00400
			IBM LTO-2		
			IBM LTO-3		
			IBM LTO-4		
			BM LTO-3 WORM		
			IBM LTO-4 WORM		
			HP LTO-4		
	Scalar i2000	Minimum: 120A Minimum (IBM LTO-3, IBM LTO-3 WORM): 300A Minimum (IBM LTO-4, IBM LTO-4 WORM) 540A Minimum: 7404 i/o blades and i6.5 require 590A	IBM LTO-1		
			IBM LTO-2		
			IBM LTO-3	See library firmware requirement	
			IBM LTO-4		
			IBM LTO-3 WORM		
			IBM LTO-4 WORM		
			HP LTO-4		
			HP LTO-4 WORM		
			DLT-S4	Minimum: 1F1F	
	Scalar 24	Minimum: 107A.GY0002	IBM LTO-1		Not including WORM
			IBM LTO-2		
			IBM LTO-3		
			IBM LTO-4		
	Scalar i40	Tested: 101G.GS005	HP LTO-4		
	Scalar 50	Minimum: 002A	HP LTO-4		
	Scalar 100	Minimum: 2.05.0003	IBM LTO-1		Not including WORM NOTE: 2.10.0013 is bad firmware
			IBM LTO-2		
			IBM LTO-3		
			AIT-2		
	Scalar 1000	Minimum: 3.00.0017	IBM LTO-2		
			IBM 3590B1A		
			AIT-1		
	Scalar 10K	Minimum: 110A.00001 Minimum (IBM LTO-3, Minimum (IBM LTO-4,	IBM LTO-1		Must use SDLC/SCSI target or SCSI direct attached. DAS/ACI is no longer supported.
			IBM LTO-2		
			IBM LTO-3	See library firmware requirement	
			IBM LTO-4		
			IBM LTO-3 WORM		
			AIT-2		
			AIT-2 WORM		

Note: Before using DLT cleaning with DLT-S4 or SDLT 600 drives, configure the library (Scalar i2000 or PX720) to disable reporting of the media ID. If media ID reporting is not disabled, StorNext will not recognize the cleaning media (SDLT type 1).

StorNext 3.5.2 Supported Libraries and Tape Drives (Continued)					
Vendor Library Family	**Libraries**	**Enforced Minimum / Recently Tested Library Firmware Level**	**Drive Types**	**Enforced Minimum / Recently Tested Drive Firmware Level**	**Notes**
Quantum / ADIC	PX500	Minimum: 001A	HP LTO-3		Not including WORM 30.0
	PX720	Minimum 4.00	HP LTO-2		Not including WORM
			HP LTO-3		
			DLT-S4		
	DXI 7500	Recently Tested: 05.02.084	Supported emulations include: DLT7000, SDLT320, SDLT600, DLT-S4, Quantum/Certance LTO-2, 3, HP LTO-1, 2, 3, 4, IBM LTO-1, 2, 3, 4		
Dell	PV136T	Minimum: 3.11	IBM LTO-2		
			IBM LTO-3		
			IBM LTO-4		
HP	ESL E Series	Minimum: 4.10	HP LTO-3		Including Regular and WORM
			HP LTO-4		
	MSL 6000	Minimum: 0507	HP LTO-2		Including Regular and WORM
			HP LTO-3		
			HP LTO-4		
	MSL G3 Series (2024/4048/8096)	Minimum 2024: 0370 (3.70) Minimum 4048: 0600 (6.00) Minimum 8096: 0850 (8.50)	HP LTO-2		
			HP LTO-3		
			HP LTO-4		
	EML E-Series	Minimum: 1070	HP LTO-3		LTO-4 WORM added to matrix at SN 3.5.1; it was validated earlier but missing from earlier release matrices
			HP LTO-4		
			LTO-4 WORM		
IBM	TS3500	Minimum: 4680	IBM LTO-2		Clarifications added to capture IBM 3592 and TS1120 model naming scheme
			IBM LTO-3		
			IBM LTO-4		
			IBM 3592 (J1A and E05)		
			IBM TS1120 (E05)		
Qualstar	XLS	Minimum: 0880	IBM LTO-3		
			IBM LTO-4		
Sony	Petasite CSM-200	Minimum: 6.30	IBM LTO-4 drive (T1600)		
Spectralogic	T-Series	Recently Tested: 2000	LTO-3	Vendor supported: 93G0	See Bulletin 46. Library firmware is known as BlueScale 11.
			LTO-4	Recently tested: 97F9	

Note: Before using DLT cleaning with DLT-S4 or SDLT 600 drives, configure the library (Scalar i2000 or PX720) to disable reporting of the media ID. If media ID reporting is not disabled, StorNext will not recognize the cleaning media (SDLT type 1).

StorNext 3.5.2 Supported Libraries and Tape Drives (Continued)					
Vendor Library Family	**Libraries**	**Enforced Minimum / Recently Tested Library Firmware Level**	**Drive Types**	**Enforced Minimum / Recently Tested Drive Firmware Level**	**Notes**
Sun / StorageTek SCSI/FC Libraries	L180/ L700/ L1400	Minimum: 3.18.02	T9840C		
			T9840D		
			T10000A		See Note 2
			T10000B	See Note 4	See Notes 2 and 3
			HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		
	SL3000	Minimum: 2.30	T9840C		
			T9840D		
			T10000A		See Note 2
			T10000B	See Note 4	See Notes 2 and 3
			HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		
	SL500	Minimum: 1373	HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		
	9740	Minimum: 2000	Sun/STK 9840		Obsolete
			Sun/STK 9940		
Sun / StorageTek ACSLS (pre-7.3) Libraries See Note 5	9310	Minimum: None	T10000 Rev A		
	9710	Minimum: None			
	9740	Minimum: 2000			
	L5500	Minimum: None			
	L700	Minimum: 2.36	Sun/STK 9840, Sun/STK 9940, Sun/STK 9940B, T10000 Rev A, HP LTO-2, HP LTO-4, IBM LTO-2, IBM LTO-3, IBM LTO-4		See Note 3
	L180	Minimum: 2.00			
	SL8500				
	SL500	Minimum: 10.67			Not including WORM

Note 1: The Sun / StorageTek FC and ACSLS sections have been modified to include drive and library permutations that are "paper certified" based on testing that has been performed and validated by Sun/STK.

Note 2: Tape cleaning problem introduced with 1.38.209, special fix at RA1.38.209. 1.40.x firmware level where fix was rolled forward has not been determined yet.

Note 3: When using T10000 drives, the STK library parameter "Fastload" must be set to "OFF".

Note 4: Minimum: RA1.38.209, but note that 1.38.209 manifests a tape cleaning issue. Recently tested: 1.40.208 (with tape cleaning failure)

Note 5: ACSLS versions prior to ACSLS 7.3 have not been tested with this release.

StorNext 3.5.2 Supported Libraries and Tape Drives (Continued)					
Vendor Library Family	**Libraries**	**Enforced Minimum / Recently Tested Library Firmware Level**	**Drive Types**	**Enforced Minimum / Recently Tested Drive Firmware Level**	**Notes**
Sun / StorageTek ACSLS 7.3 Libraries See Notes 1 and 5	L180/ L700/ L1400	Minimum: 3.18.02	T9840C		
			T9840D		
			T10000A		See Note 2
			T10000B	See Note 4	See Notes 2 and 3
			HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		
	SL3000	Minimum: 0230	T9840C		
			T9840D		
			T10000A		See Note 2
			T10000B	1.44 See Note 4	See Notes 2 and 3
			HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		
	SL500	Minimum: 1373	HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		
	SL8500	Minimum: 4.14 Recently Tested: 4.70	T9840C		
			T9840D		
			T10000A		See Note 2
			T10000B	1.44 See Note 4	See Notes 2 and 3
			HP LTO-3		
			HP LTO-4		
			IBM LTO-3		
			IBM LTO-4		

Note 1: The Sun / StorageTek FC and ACSLS sections have been modified to include drive and library permutations that are "paper certified" based on testing that has been performed and validated by Sun/STK.

Note 2: Tape cleaning problem introduced with 1.38.209, special fix at RA1.38.209. 1.40.x firmware level where fix was rolled forward has not been determined yet.

Note 3: When using T10000 drives, the STK library parameter "Fastload" must be set to "OFF".

Note 4: Minimum: RA1.38.209, but note that 1.38.209 manifests a tape cleaning issue. Recently tested: 1.40.208 (with tape cleaning failure)

Note 5: ACSLS versions prior to ACSLS 7.3 have not been tested with this release.

Minimum Firmware Levels for StorNext Drives

Where applicable, the minimum firmware levels for StorNext-supported drives are shown in Table 3.

Table 3 Minimum Firmware Levels for Drives

StorNext 3.5.2 Minimum Firmware Levels for Drives		
Drive Type	**Minimum Drive Firmware Level**	**Notes**
IBM LTO-1	25D4	a.k.a. ULT3580-TD1 and Ultrium-TD1
IBM LTO-2	3AY4	a.k.a. ULT3580-TD2 and Ultrium-TD2
IBM LTO-3 IBM LTO-3 WORM	4C17	a.k.a. ULT3580-TD3 and Ultrium-TD3
IBM LTO-4	71G0	a.k.a. ULT3580-TD4 and Ultrium-TD4

Note: When using IBM ULTRIUM-TD3 drives with SUSE Linux Enterprise Server 10, you must upgrade the drive firmware to version 64D0 or later.

Supported System Components

System components that are supported for use with StorNext 3.5.2 are presented in Table 4.

Table 4 StorNext Supported System Components

Component	Description
Tested Browsers	Internet Explorer 6.0 or later (up to 8.x) Mozilla Firefox 2.0 or later (up to 3.x) (Minimum browser resolution: 800x600) **NOTE:** Disable pop-up blockers.

Component	Description
LTO-1 Media and LTO-3 or LTO-4 Tape Drive Compatibility	LTO-1 media in a library containing LTO-3 or LTO-4 drives are considered for store requests unless they are logically marked as write protected. When LTO-1 media is mounted in an LTO-3 or LTO-4 drive, StorNext marks the media as write protected. Quantum recommends circumventing LTO-1 media for store requests by following this procedure: **1** From the SNSM home page, choose **Attributes** from the **Media** menu. **2** On the **Change Media Attributes** window, select the **LTO-1** media from the list. **3** Click the **Write Protect** option. **4** Click **Apply** to make the change. **5** Repeat the process for each piece of LTO-1 media. **NOTES:** A similar issue exists for LTO-2 media in a library containing LTO-4 tape drives. LTO-3 drives can read but not write LTO-1 tapes. LTO-4 drives can read but not write LTO-2 tapes, and also cannot read LTO-1 tapes at all.
NFS	Version 3 **NOTE:** An NFS server that exports a StorNext file system with the default export options may not flush data to disk immediately when an NFS client requests it. This could result in loss of data if the NFS server crashes after the client has written data, but before the data has reached the disk. This issue may be addressed in a future StorNext release. As a workaround, add the no_wdelay option to each line in the /etc/exports file that references a StorNext file system. For example, typical export options would be (rw,sync,no_wdelay).
Addressable Power Switch	WTI RPS-10m WTI IPS-800 The RPS-10m (master) is supported. The RPS-10s (slave) is not supported.
LDAP	LDAP (Lightweight Directory Access Protocol) support requires Windows Active Directory.

Hardware Requirements

To successfully install StorNext 3.5.2, the following hardware requirements must be met:

- StorNext File System and Storage Manager Requirements on page 20
- StorNext Client Software Requirements on page 21.

Note: The following requirements are for running StorNext only. Running additional software (including the StorNext client software) requires additional RAM and disk space.

StorNext File System and Storage Manager Requirements

The hardware requirements for StorNext File System and Storage Manager are presented in Table 5.

Table 5 File System and Storage Manager Hardware Requirements

No. of File Systems	RAM	File System Disk Space	Storage Manager Disk Space
1–4*	2 GB	2 GB	For application binaries, log files, and documentation: up to 30GB (depending on system activity) For support directories: 3 GB per million files stored
5–8**	4 GB	4 GB	

*Two or more CPU cores are recommended for best performance.
**Two or more CPU cores are required for best performance.

Note: If a file system uses deduplicated storage disks (DDisks), note the following additional requirements:

- Requires 2 GB RAM per DDisk in addition to the base RAM noted in Table 5.
- Requires an additional 5GB of disk space for application binaries and log files.
- Deduplication is supported only for file systems running on a Linux operating system (x86 32-bit or x86 64-bit).
- An Intel Pentium 4 or later processor (or an equivalent AMD processor) is required. For best performance, Quantum recommends an extra CPU per DDisk.

StorNext Client Software Requirements

To install and run the StorNext client software, the client system must meet the following minimum hardware requirements.

For SAN (FC-attached) clients or for Distributed LAN Clients:

- 1 GB RAM
- 500 MB available hard disk space

For SAN clients acting as a Distributed LAN Server:

- 2 GB RAM
- 500 MB available hard disk space

Note: Distributed LAN servers may require additional RAM depending on the number of file systems, Distributed LAN Clients, and NICs used. See Distributed LAN Server Memory Tuning in the StorNext User's Guide for Distributed LAN Server memory tuning guidelines.

Resolved Issues

The following sections list resolved issues in this release of StorNext:

- StorNext File System Resolved Issues on page 21
- StorNext Storage Manager Resolved Issues on page 24
- StorNext GUI and Installation Resolved Issues on page 26

Note: There is no change to cryptographic functionality in StorNext release 3.5.2.

StorNext File System Resolved Issues

Table 6 lists resolved issues that are specific to StorNext File System.

Table 6 StorNext File System Resolved Issues

Operating System	CR Number	SR Number	Description
Solaris	29647	1072426	Resolved a condition in which Solaris Distributed LAN Clients reconnected every 30 seconds unnecessarily.
HP-UX	28866	1019994	Corrected a situation which caused an HP-UX system to hang when using shared memory.

Operating System	CR Number	SR Number	Description
Linux	27806	n/a	Resolved a condition in which running `cvadmin -e "stop $fsname on localhost"` failed.
	27963	n/a	Corrected a condition in which the StorNext GUI did not redirect properly after HA failover.
	29348	n/a	Resolved a situation where Red Hat kernels always reported I/O size as 4K, resulting in poor performance.
	30411	n/a	The `listxattr` command has been corrected to return correct results.
Windows	27880	999134	Corrected a condition which caused a blue screen error "BAD_POOL_CALLER" on a Windows 2008 LAN server.
	28720	1049200	Corrected a condition in which mounted Xsan file systems become disconnected until the Windows StorNext server was rebooted.
	29182	1049200	Corrected a condition in which mounted Xsan file systems became disconnected until the Windows StorNext server was rebooted.
	29303	1055288	Resolved a condition which caused a panic and the error message `Put_message writing client [6] '10.16.42.176:1171' dead socket - [Win32 error 10053]: An established connection was aborted by the software in your host machine.`
	29384	n/a	Corrected a condition in which a Windows client will returned `STATUS_ACCESS_DENIED (0xC0000022L)` after a StorNext user sent a read request to the StorNext client and the desired access bit did not have the `FILE_READ_DATA` bit set.
	29526	n/a	Corrected a timing problem with reading file attributes on Windows.
	29575	927906	Removed the restriction on fragments in bandwidth expansion.
	29709	1057754, 1064402	Corrected a condition in which StorNext File system allowed files to be deleted over CIFS.
	30742	n/a	Corrected a condition which caused trouble mounting Windows LAN clients on a Linux multipath proxy server.

Operating System	CR Number	SR Number	Description
All	27215	n/a	Added support for cvfsck changes related to Xsan 2.2.
	28235	1005056, 1018552	Resolved a condition in which a client low on memory caused data corruption on a Macintosh when the extent was not deleted.
	28068	n/a	Corrected a condition in which running out of disk space for restore journals lead to `FSM PANIC: /usr/cvfs/bin/fsm ASSERT failed "pthread_mutex_unlock(&restore_flusher_lock) == 0" file restorejournal.c, line 2627`
	28256	n/a	The `Show Inode cvfsdb` command now displays inode times as real dates.
	28258	997926	Corrected a condition in which running cvfsck on a file system showed dot entries that don't have the generation portion of the inode.
	28472	1005712, 1000514, 972122, 922532, 1019354	Resolved a condition in which some status queries failed when a LUN had more than four paths.
	28745	n/a	Running `cvfsck inode_clear` no longer fails when the extender inode number is incorrect.
	28767	1046246/ radar 7185147	Panic no longer results when running `gethostbyname` fails.
	28769	n/a	Corrects a problem in which `snpolicyd` would not bounce or handle events queued to `snpolicyd`.
	28773	1014826	Corrected a condition which caused an `ssi_* daemon` core dump.
	28842	n/a	Resolved a condition in which the acquired non-RTIO token was sometimes incorrect when RVIO was configured.
	28961	1012158	Corrected a condition which caused an FSM panic due to segmentation fault.
	29179	914634, 875158	Resolved a condition in which directories containing scattered inodes lead to slow rebuild performance.
	29576	1040560	Corrected a condition in which reusing a Linux inode caused dentry inconsistency.

Operating System	CR Number	SR Number	Description
All	29579	1055224	Resolved a condition in which a race between `Inode_read` and `dinodeexpand` resulted in an FSM panic when attempting to write an inode in `Inode_write_transactional`.
	29580	1060460	The `cvfsck` command has been improved to be more robust and no longer quit easily.
	29581	n/a	Corrected a condition in which cctl retrieval failed due to authentication causing mount failure.
	29583	n/a	Improved license validation and security handling.
	29718	n/a	Resolved a condition which caused a panic due to referencing a dentry without a reference.
	29877	1040560	Resolved a condition caused by Linux not properly invalidating an entry in its namecache.
	29972	1074350	Error messages for FSM RSVD client errors have been rewritten for greater clarity.
	30120	1087690	Corrected a condition which caused snmetadump failure.
	30456	1044572, 1094382	Resolved a condition which caused a panic when accessing `ClientTable[].partaccess in Alloc_space`.
	30796	n/a	Corrected a condition in which files with several extended attributes received cvfsck errors when metadata was dumped and then reloaded.

StorNext Storage Manager Resolved Issues

Table 7 lists resolved issues that are specific to StorNext Storage Manager.

Table 7 StorNext Storage Manager Resolved Issues

Operating System	CR Number	SR Number	Description
Linux	26393	924006	Resolved a condition in which Health Check reports downed stripe groups as not having affinities, even though they do have them.

Operating System	CR Number	SR Number	Description
Linux	28771	n/a	Corrected a problem in certain scenarios which caused a false name to be written to tape on store.
	28820	n/a	Resolved a condition which prevented Storage manager from starting movers after failover.
	29176	951158, 969348, 1002642, 1052116	Corrected a situation in which moving files from a managed directory to an unmanaged directory caused issues with `fspolicy`.
	29608	n/a	Storage Manager support was added to the Quantum Scalar i40 library.
All	26724	941980	Corrected a condition which prevented all `/usr/adic/database/db` logfiles from being included in the snapshot.
	28087	1010706, 1015580	Searching order has been changed to looking in the local cache first, and then calling the FSM (instead of vice versa), improving performance.
	28766	n/a	Resolved a condition in which a bad file copy was stored on archive media.
	28775	1019090	Using the `fmover` I/O defaults no longer results in poor performance.
	29177	728589	Corrected a condition which caused TSM-`Fs_fmover` and `fsstore` to core while storing a file with special characters.
	29180	n/a	Corrected an issue with the rebuild policy that occurred when the number of relation points exceeds the number of threads available, and the primary rebuild policy picks up the remaining relation points and misses any files that need to be stored, relocated, or truncated.
	29578	1056188	Corrected a condition in which Storage Manager selected the wrong target archive when moving a media from a vault to satisfy a retrieve operation.
	28459	n/a	Corrected a condition related to tape drive cleaning that could affect some 9840D tape drives.
	30852	n/a	Resolved a condition in which snrestore failed due to '`snmetadump -a`' failure because fsmpm was not running.

StorNext GUI and Installation Resolved Issues

Table 8 lists resolved issues that are specific to the StorNext GUI or the installation process.

Table 8 StorNext GUI and Installation Resolved Issues

Operating System	CR Number	SR Number	Description
Linux	26260	1008196	The installation software now edits the chkconfig line correctly.
	29178	n/a	Resolved an issue in which the file system configuration file became corrupted when adding a 5GB LUN.
	26888	766930	Corrected a condition in which an HA upgrade from StorNext 310B10 to 311B12 failed without manual intervention.
All	30263	1082292	Corrected a condition which prevented the StorNext GUI from properly seeing disks for labeling or creating a file system.
	30415	1094630, 1097478	Resolved an issue in which the StorNext GUI did not show the Backup Report for the year 2010.
	28697	912136	Corrections were made to the HA upgrade procedure.
	28743	n/a	Corrected a condition in which running `install.stornext` failed due to a directory creation error.
	29324	n/a	Formerly, `post_upgrade.pl` ignores fsm entries that have names containing characters other than alphabetic, numeric, or '_'. This has been corrected.
	30189	n/a	Corrected a condition in which a system which had been upgraded one time never installed subsequent updates in the `phdist/$SYSTYPE/install/install_cfg` directory on the install media unless the -force was used.

Known Issues

The following sections list known issues in this release of StorNext, as well as associated workarounds, where applicable:

StorNext File System Known Issues

Table 9 lists known issues that are specific to StorNext File System.

Table 9 StorNext File System Known Issues

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Solaris	24563	n/a	Solaris hosts may need to rescan disk devices after StorNext labels have been applied. In particular, when a StorNext label is put on a LUN less than 1TB in size, Solaris hosts will not be able to use that LUN until they have done a device rescan. A device rescan is accomplished with a boot flag: `reboot -- -r`	This issue will be addressed in a future StorNext release. In the meantime, work around this issue by rescanning devices using the boot flag `reboot -- -r` If the labeling operation was performed on a Solaris host, that host does not need to do the rescan. However, some intermediate versions of the Solaris 10 Kernel Jumbo Patch break the necessary functionality to support this; please be sure you have applied the latest Solaris 10 Kernel Jumbo Patch before labeling any StorNext LUNs.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Solaris	24331	755956	Running an anonymous FTP server inside of a StorNext file system could cause a system to crash with the following error: `CVFS ASSERTION FAILED: f_cvp->cv_opencnt == 0`	This issue will be addressed in a future StorNext release. To work around this issue, install Very Secure FTP Daemon (`vsftpd`) and use it instead of the FTP daemon (`in.ftpd`) that is shipped with Solaris.
HP-UX	24309	n/a	If the `cvpaths` file contains an invalid wild-card specification (that is, a wild-card pattern that does not include a leading '/' character), the fsmpm process could panic and the `cvlabel` command might fail with a core dump.	This issue will be addressed in a future StorNext release.

Linux	23661	958244	StorNext File System does not support the Linux `sendfile()` system call.
			This issue causes Apache web servers to deliver blank pages when content resides on StorNext file systems.
			This issue also affects Samba servers running on Linux.
				The workaround is to disable sendfile usage by adding the following entry into the Apache configuration file `httpd.conf`:
				`EnableSendfile off`
				The workaround for Samba servers is to add the following line into the configuration file:
				`sendfile=no`

	25864	n/a	An NFS server that exports a StorNext file system with the default export options may not flush data to disk immediately when an NFS client requests it. This could result in loss of data if the NFS server crashes after the client has written data, but before the data has reached the disk.	This issue may be addressed in a future StorNext release. As a workaround, add the `no_wdelay` option to each line in the `/etc/exports` file that references a StorNext file system. For example, typical export options would be (`rw,sync,no_wdelay`).
	26321	n/a	Due to the way Linux handles errors, the appearance of SCSI “No Sense” messages in system logs can indicate possible data corruption on disk devices. This affects StorNext users on Red Hat 4, Red Hat 5, SuSe 9, and SuSe 10.	This issue is not caused by StorNext, and is described in detail in StorNext Product Alert 20. For additional information, see Red Hat 4 CR 480666, Red Hat 5 CR 468088, and SuSE 10 CR 440381.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Windows	15032	n/a	If you are using Promise RAID controllers on a Windows Server 2008 64-bit system, you must install Promise's PerfectPath software. If you do not install this software, you will be unable to use your Windows Server 2008 system.	Promise is working on a solution to this problem, but in the meantime they have provided the following workaround: 1. Install the PerfectPath software on your Windows Server 2008 64-bit system. 2. Restart your system. The login prompt will *not* appear after you restart. Instead, the **Windows Boot Manager** screen appears showing an error message: "Windows cannot verify the digital signature for this file" (`\Windows\system32\DRIVERS\perfectpathdsm.sys`) 3. From the **Windows Boot Manager** screen, press **Enter** to continue. A second **Windows Boot Manager** screen appears, asking you to choose an operating system or specify an advanced option. 4. On the second **Windows Boot Manager** screen, press **F8** to specify advanced options. The **Advanced Boot Options** screen appears. 5. On the **Advanced Boot Options** screen, use the arrow keys to choose the option **Disable Driver Signature Enforcement**. Choosing this option will cause the system to display the login prompt normally after you reboot. 6. Restart your system.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Windows	25707	n/a	Running the command `df` showed mapped drives but not the mapped folders and directories for cvfs and ntfs file systems.	The workaround is to use the command `mountvol`, which shows the directories and folders in the file system that are mount points.
	26252	n/a	Backup and other applications could fail to function properly when a file system is mounted on a directory using StorNext.	This issue will be addressed in a future StorNext release. In the meantime, do not mount file systems on a directory that uses StorNext.
	29582	n/a	On some Windows platforms (including Windows 7 and Windows Server 2008 R2), a blue screen error could result when the machine was running anti-virus software	This issue will be addressed in a future StorNext release. The workaround is to disable anti-virus software when using StorNext.
	30539	1075052	When performing file system expansion on the MDC, a Windows client may experience a blue screen error and a reboot.	This issue will be addressed in a future StorNext release. To work around this issue, unmount the file system on all StorNext clients, perform the file system expansion, and then remount the file system on the clients.
All	26114	n/a	Running `cvfsck` can crash when a data file is empty.	This issue will be addressed in a future StorNext release.
	27483	983534	The management utility `cvadmin` allows downing the metadata and journal stripe groups while the file system is active. This allows files to be created on a client until the FSM needs to access the metadata, at which point an ENOSPACE error is generated.	This issue will be addressed in a future StorNext release to prevent `cvadmin` from allowing stripe groups that have metadata and journaling associated with them to be downed while the file system is active.
	25836	898484	Failover on stripe groups is not currently supported.	This enhancement request may be considered in a future StorNext release.

StorNext Storage Manager Known Issues

Table 10 lists known issues that are specific to StorNext Storage Manager.

Table 10 StorNext Storage Manager Known Issues

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Linux	26279	945058	Corrected a condition in which an SQL query did not return the desired results.	This issue will be addressed in a future StorNext release.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)

Linux	24649	n/a	StorNext Storage Manager in a High Availability configuration could encounter a problem reserving tape drives following a failover. A “target reset” is used by the newly activated metadata controller to release “scsi reserve” device reservations made by the former metadata controller. The target reset operation might fail due to device driver problems on systems running SUSE Linux Enterprise Server 10 with tape drives attached via an LSI fibre host bus adapter. Any such reserved drives will not be accessible by the new metadata controller.	There are two possible workarounds, which also apply to versions of StorNext prior to 3.1.2.
				1) Following a failover, release any tape drive reservations held by the former metadata controller. This must be done for each tape drive still reserved by the former metadata controller by running /usr/adic/TSM/util/fs_scsi on the metadata controller which owns the reservation:
				`# /usr/adic/TSM/util/fs_scsi`
				`Choice==> 10 (list drives)`
				`Choice==> 1 (select drive, e.g. /dev/sg0)`
				`Choice==> 3 (select Test Ready)`
				`Choice==> 24 (select Release)`
				`Choice==> 0 (select Quit to exit fs_scsi)`
				OR
				2) Add the following setting to the `/usr/adic/TSM/config/fs_sysparm_override` file: **`FS_SCSI_RESERVE=none;.`** (“none” means don't try to reserve tape drives.) StorNext must be restarted for this change to take effect.
				WARNING: This workaround could leave tape drives exposed to unexpected access by other systems, which could lead to data loss.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Linux	25978	n/a	Scheduled tasks for "partial backups" and for "rebuild policy" can fail if they overlap.	This issue will be addressed in a future StorNext release. The default scheduler value for a partial backup is two hours. If you have a large managed file system you might need to adjust schedules to permit longer times if your partial backups require more than two hours to complete. Changing the allotted time will ensure that the partial backup completes before the rebuild policy task starts.
All	12321	n/a	Removing affinities does not unconfigure them from managed file systems.	This issue will be addressed in a future StorNext release.
	25506	n/a	Early Warning End-Of-Medium check conditions cause undesirable side effects.	This issue will be addressed in a future StorNext release. A workaround is to not use tapes beyond the point at which drives begin to report the check conditions. To help you stay within the limit, add the following to `/usr/adic/TSM/config/fs_sysparm_override`: `PERCENT_FULL_TO_MIGRATE=95` Making this change prevents undesirable side effects, but the trade off is that the last 5% of a tape is not used rather than the last 0.1%.
	25743	n/a	Deleting ddisk does not kill the blockpool process when disk proxy is enabled.	This issue will be addressed in a future StorNext release.
	25837	836242	Running `fsmedcopy` fails if the output medium does not have sufficient space to hold the copies from the input. However, the copies successfully transferred to the new media can be identified with the `fsfileinfo` command.	This issue will be addressed in a future StorNext release. As a workaround, a few `fsmedcopy` runs will get all the files from the larger input media to the new (smaller) media.
	26115	n/a	Failover did not execute properly after an upgrade.	This issue will be addressed in a future StorNext release.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
All	30877	1071576	When performing offline disk expansion (that is, adding a disk to an existing stripe group while I/O is stopped on the clients), clients locked up until the machines were rebooted.	This issue will be addressed in a future StorNext release. To avoid this issue, Quantum recommends unmounting the file system before the MDC does the offline disk expansion. After the expansion is complete, refresh disks before mounting the file system again.

StorNext GUI Known Issues

Table 11 lists known issues that are specific to the StorNext GUI process.

Table 11 StorNext GUI Known Issues

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Linux	25685	n/a	The StorNext GUI will label all disks in a stripe group according to the single label type (EFI or VTOC) specified per stripe group. The GUI will overwrite any pre-existing labels if (and *only* if) the label type is changed from VTOC to EFI or vice versa.	This issue will be addressed in a future StorNext release.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)

All	29577	1045100	After following the procedure in the StorNext User's Guide for deleting an affinity through the StorNext GUI, at least one StorNext user has reported being unable to save a new or modified file to the directory that contained the deleted affinity.	This issue will be addressed in a future StorNext release.
				Until this issue is resolved, you can use this alternate procedure to delete affinities from the command line.
				1 Unmount the file system.
				2 Stop the file system.
				3 Change the file system stripe group `Exclusive` parameter to `No`.
				4 Start the file system.
				5 Mount the file system.
				6 Run `cvaffinity -l` to find the top directory with the affinity you want to delete.
				7 Remove the affinity by running the following commands:
				`# find [dir with affinity] -type d -exec cvaffinity -d {} \;`
				`# find [dir with affinity] -type f -exec cvaffinity -d {} \;`
				8 Use the command "`cvaffinity -l [dir_name]`" or "`cvaffinity -l [file_name]`" to verify that the affinity has been deleted.

StorNext Installation Known Issues

Table 12 lists known issues that are specific to the StorNext installation process.

Table 12 StorNext Installation Known Issues

Operating System	CR Number	SR Number	Description	Workaround (if applicable)

Linux (RHEL4 and RHEL5 only)	24692	n/a	When you mount a CD in a Red Hat 4 or 5 system, CDs are mounted by default with a noexec (non-executable) option which prevents you from proceeding with the StorNext installation.	Remount the CD by typing mount **`-o remount, exec ...`**
				Alternatively, mount the CD to a different directory by typing the following:
				`# mkdir /mnt/MOUNT_PATH`
				`# mount /dev/cdrom /mnt/MOUNT_PATH # cd /mnt/MOUNT_PATH`

Windows	25777	n/a	Including the `.auth_secret` file in a non-XSan environment causes the file system to not communicate with the FSMPM.	This issue will be addressed in a future StorNext release. The workaround is to remove or change the name of the `.auth_secret` file, providing the client is connecting to a non-Xsan metadata controller. This workaround will not work if the client is connecting to an XSan and a non-XSan metadata controller.
	27129	n/a	There is an incompatibility between the StorNext 3.1.2, 3.1.3, and 3.5 installers and a third-party application called Altiris Agent. Running Altiris Agent as a service can cause the installation to fail and then automatically reboot the machine.	This issue may be addressed in a future StorNext release. The workaround is to disable the Altiris Agent service before installing StorNext. Alteris Agent is typically located at `C:\Program Files\Altiris\Altiris Agent\AeXNSAgent.exe`.

Operating System	CR Number	SR Number	Description	Workaround (if applicable)
Windows	25866	n/a	StorNext upgrades on Vista machines can fail in the middle of installation. This problem is caused by the way Windows Vista handles software upgrades. A related error is described in Microsoft article 263253.	Microsoft has a utility called the Windows Installer Cleanup Utility that removes files left behind by incomplete installations. Access the Microsoft website and search for article ID 290301. To work around this issue, follow these steps: 1. Click Start, and then click Run. 2. In the Open box, type Regedit and then click OK. 3. On the Edit menu, click Find. 4. In the Find what box, type Snfs_XXX.dat and then click Find Next. 5. If the search result selects a string value called PackageName, continue with these steps. Otherwise, repeat steps 3-4. 6. Double-click the PackageName string value. 7. In the Value data box, change the installation directory path to the new pathname. For example if the old installation directory path contained OCT10, change that to the current path (e.g, NOV12.) 8. On the Registry menu, click Exit.
All	25192	n/a	VMware snapshots may not be used for virtual machines running StorNext. StorNext does not currently process the loss of state synchronization when a snapshot is restored, so incorrect behavior may result.	This issue may be addressed in a future StorNext release.

Operating Guidelines and Limitations

Table 13 lists updated information and guidelines for running StorNext, as well as known limitations in this release.

Table 13 StorNext Operating Guidelines and Limitations

Operating System / Affected Component	Description
Windows	In StorNext releases prior to 3.5, the StorNext Windows client attempted to keep the UNIX uid, gid and mode bits synchronized with similar fields in the Windows security descriptor. However, these Windows and UNIX fields were often not synchronized correctly due to mapping and other problems. One consequence of this problem was that changing the owner in Windows incorrectly changed the UNIX uid and file permissions and propagated these errors into sub-directories. In release 3.5, the StorNext Windows client sets the UNIX uid, gid and mode bits only when Windows creates a file. The StorNext Windows client will no longer change the Unix uid, gid or mode bits when a Windows user changes the Windows security descriptor or Read-Only file attribute. If you change the UNIX mode bits and the file is accessible from Windows, you must change the Windows security descriptor (if Windows Security is configured On) or Read-Only file attribute to ensure the change is reflected on both Windows and UNIX.
	When you are upgrading to StorNext 3.5 from a release prior to version 3.0, you must uninstall StorNext before installing. After uninstalling you must reboot, install StorNext 3.5.

Operating System / Affected Component	Description
Windows	If you are using the StorNext client software with Windows Server 2003, Windows Server 2008, Windows XP, or Windows Vista, turn off the Recycle Bin in the StorNext file systems mapped on the Windows machine. You must disable the Recycle Bin for the drive on which a StorNext file system is mounted. Also, each occurrence of file system remapping (unmounting/mounting) will require disabling the Recycle Bin. For example, if you mount a file system on E: (and disable the Recycle Bin for that drive) and then remap the file system to F:, you must then disable the Recycle Bin on the F: drive. As of release 3.5, StorNext supports mounting file systems to a directory. For Windows Server 2003 and Windows XP you must disable the Recycle Bin for the root drive letter of the directory-mounted file system. (For example: For C:\MOUNT\File_System you would disable the Recycle Bin for the C: drive.) For Windows Server 2008 and Windows Vista you must disable each directory-mounted file system. For Windows Server 2003 or Windows XP: **1** On the Windows client machine, right-click the **Recycle Bin** icon on the desktop and then click **Properties**. **2** Click **Global**. **3** Click **Configure drives independently**. **4** Click the **Local Disk** tab that corresponds to the mapped or directory-mounted file system. **5** Click the checkbox **Do not move files to the Recycle Bin. Remove files immediately when deleted**. **6** Click **Apply**, and then click **OK**. For Windows Server 2008 and Windows Vista: **1** On the Windows client machine, right-click the **Recycle Bin** icon on the desktop and then click **Properties**. **2** Click the **General** tab. **3** Select the mapped drive that corresponds to the StorNext mapped file system. For directory-mounted file systems, select the file system from the list. **4** Choose the option **Do not move files to the Recycle Bin. Remove files immediately when deleted**. **5** Click **Apply**. **6** Repeat steps 3-5 for each remaining directory-mounted file system. **7** When finished, click **OK**.

Operating System / Affected Component	Description
Windows	As of StorNext release 3.5 the Authentication tab has been removed from the Windows Configuration utility. (For several previous StorNext releases a message warned that this tab would be removed in an upcoming release: "WARNING: Active Directory will be the only mapping method supported in a future release. This dialog will be deprecated.")
	When a StorNext file system is mounted to a drive letter or a directory, configure the Windows backup utility to NOT include the StorNext file system.
All	Be aware of the following limitations regarding file systems and stripe groups: The maximum number of disks per file system is 512 The maximum number of disks per data stripe group is 128 The maximum number of stripe groups per file system is 256 The maximum number of tape drives is 256
	For managed file systems only, the maximum recommended directory capacity is 50,000 files per single directory. (This recommendation does not apply to unmanaged file systems.)
	Quantum recommends making two or more backup copies to minimize vulnerability to data loss in the event of hardware failure.
	The StorNext Cluster-Wide Central Control file (nss_cctl.xml) is used to enforce the cluster-wide security control on StorNext nodes (client nodes, fsm nodes, and nodes running cvadmin). This file is placed on an nss coordinator server. Currently the nss coordinator server capable of parsing this xml file must be on the Linux platform.

Documentation

The following documents are currently available for StorNext products:

Document Number	Document Title
6-01658-07	*StorNext User's Guide*
6-00360-16	*StorNext Installation Guide*
6-01376-11	*StorNext File System Tuning Guide*
6-01620-10	*StorNext Upgrade Guide*
6-01688-07	*StorNext CLI Reference Guide*

Document Number	Document Title
6-00361-31	*StorNext File System Quick Reference Guide*
6-00361-32	*StorNext Storage Manager Quick Reference Guide*

Contacting Quantum

More information about this product is available on the Service and Support website at www.quantum.com/support. The Service and Support Website contains a collection of information, including answers to frequently asked questions (FAQs). You can also access software, firmware, and drivers through this site.

For further assistance, or if training is desired, contact Quantum:

Quantum Technical Assistance Center in the USA:	+1 800-284-5101
For additional contact information:	www.quantum.com/support
To open a Service Request:	www.quantum.com/esupport

For the most updated information on Quantum Global Services, please visit: www.quantum.com/support