



Sun StorEdge Enterprise Backup Software 7.3.2

Release Notes

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The Sun™ StorEdge™ Enterprise Backup Software, Release 7.3.x, Release Notes provides information on the latest updates, bug fixes and known limitations in the Sun StorEdge software.

For full install instructions, refer to the *Sun StorEdge Enterprise Backup Software, Release 7.3.2, Installation Guide*.

After you install the Sun StorEdge software, refer to the *Sun StorEdge Administrator's Guide* and the program's online help for detailed instructions on how to configure, administer, and use the Sun StorEdge software.

The information in this guide is intended for system administrators who are responsible for installing software and maintaining the servers and clients on a network. Operators who monitor the daily backups may also find this manual useful.

Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- ◆ *Solaris Handbook for Sun Peripherals*
- ◆ AnswerBook2™ online documentation for the Solaris™ operating environment
- ◆ Other software documentation that you received with your system

Conventions used in this guide

The following conventions for notes, cautions, warnings, and danger notices.

Note: A note presents information that is important, but not hazard-related.

Typographical conventions

EMC uses the following type style conventions in this guide:

bold	• User actions (what the user clicks, presses, or selects) • Interface elements (button names, dialog box names) • Names of keys, commands, programs, scripts, applications, utilities, processes, notifications, system calls, services, applications, and utilities in text
<i>italic</i>	• Book titles • New terms in text • Emphasis in text
Courier	• Prompts • System output • Filenames • Pathnames • URLs • Syntax when shown in command line or other examples
Courier, bold	• User entry • Options in command-line syntax
<i>Courier italic</i>	• Arguments in examples of command-line syntax • Variables in examples of screen or file output • Variables in pathnames
<>	Angle brackets for parameter values (variables) supplied by user.
[]	Square brackets for optional values.
	Vertical bar symbol for alternate selections. The bar means or.
...	Ellipsis for nonessential information omitted from the example.

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Release Notes

These release notes contain supplemental information about the Sun™ StorEdge™ Enterprise Backup Software release. Topics include:

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Product description

Sun StorEdge software release 7.3.x provides significant functional enhancements in a number of areas, including a new graphical interface for server management and configuration that replaces the Sun StorEdge Administrator program (**nwadmin**).

This release of the Sun StorEdge software provides a service update for the 7.3 release. This release also includes enhanced features such as supporting the Sun StorEdge Console server on AIX and HP-UX operating systems, and enabling Sun StorEdge Management Console 3.2 to work with the EMC Backup Advisor product. These new features are described in [“New features and changes” on page 1-2](#).

Before installing the Sun StorEdge software release 7.3.x, please review the Installation Guides, Administration Guide, and other documentation for the release. For more information, refer to [“Documentation” on page 1-63](#).

New features and changes

These new features appear in the Sun StorEdge software.

Release 7.3.2

Sun StorEdge release 7.3.2 includes these new features:

- ◆ [“Update Enabler” on page 1-3](#)
- ◆ [“Sun StorEdge Console server support for AIX and HP-UX” on page 1-3](#)
- ◆ [“Worm tape support” on page 1-3](#)
- ◆ [“Support Java Runtime Environment \(JRE\) 1.5” on page 1-3](#)
- ◆ [“Sun StorEdge Console server 3.2.2 support for EMC Backup Advisor 2.0” on page 1-3](#)
- ◆ [“Improved CDL Integration” on page 1-4](#)
- ◆ [“Snapshot Management support for NAS filers using NDMP Versions 4 or higher” on page 1-5](#)
- ◆ [“Support NDMP Recursive DAR recover a directory” on page 1-5](#)
- ◆ [“Sun ZFS Qualification” on page 1-5](#)
- ◆ [“Support for Sun StorEdge clients running in local zones” on page 1-5](#)

Update Enabler

When updating from prior versions of Sun StorEdge to Sun StorEdge 7.3 or 7.3.1, the required Update Enabler is 150397-d1e144-54605f.

Sun StorEdge Console server support for AIX and HP-UX

The Sun StorEdge Console server is supported on AIX and HP-UX operating systems. For detailed information on software compatibility, see the *Sun StorEdge Software Compatibility Guide*.

Worm tape support

The following enhancements have been made to enhance WORM tape support:

- ◆ Full support for the DLTice and VolSafe WORM technologies.
- ◆ Ability to define WORM pools, using either the Sun StorEdge Console or the command line.
- ◆ WORM volumes are displayed with a new flag which allows you to visually differentiate between a WORM volume and a non-WORM volumes thereby determining what data is on WORM media.

Support Java Runtime Environment (JRE) 1.5

The Sun StorEdge Console 3.2.2 supports JRE 1.5. The Sun StorEdge Console will continue to support JRE 1.4.2.

Note: During the install process, you are prompted to install the 1.4.2 JRE, but if the 1.5 JRE is installed, the install process will work correctly.

Sun StorEdge Console server 3.2.2 support for EMC Backup Advisor 2.0

Sun StorEdge Console server 3.2.2 supports EMC Backup Advisor 2.0. If you do not have EMC Backup Advisor installed in your environment, EMC Backup Advisor is displayed as a launchable product, but you will not be able to start or launch the EMC Backup Advisor.

Improved CDL Integration

The following enhancements have been made to improve CDL integration:

Device Configuration Wizard Support

The device configuration wizard shall work properly with CDL 2.2. The wizard discovers and configures the following emulated libraries within CDL:

- ◆ IBM 3584
- ◆ IBM 3590B11
- ◆ IBM 3590E11
- ◆ Sony CSM-200 Petasite

Extend supported devices in native Storage Node on Linux SUSE 9

A native Sun StorEdge storage node on Linux SUSE 9 supports the following libraries and devices:

Library

- ◆ ADIC Scalar 100, 1000, i500, SL500
- ◆ IBM 3590B11, 3583, 3584
- ◆ STK L180, 97910, 9714, 9730

Devices

- ◆ LTO1, LTO2, LTO3
- ◆ DLT7000, 8000, SDLT220, SDLT320
- ◆ STK T9840B, T9840C, T9940B

Snapshot Management support for NAS filers using NDMP Versions 4 or higher

The following enhancements have been made to enhance Snapshot management support for NAS filers using NDMP versions 4 or higher:

- ◆ Enable the **nsrndmp_save** command to backup a snapshot.
- ◆ Use of a NDMP client connection license instead of a PSP license.
- ◆ Enable the **nsrim** command and **nwadmin** program to relabel, recycle and delete snapshots.

Support NDMP Recursive DAR recover a directory

The Sun StorEdge software supports a recursive DAR restore of a directory.

Sun ZFS Qualification

The Sun StorEdge software supports ZFS/NFSv4 ACLs. The Sun StorEdge software supports a full migration to a ZFS environment.

Support for Sun StorEdge clients running in local zones

This release offers basic Zone support for a client only. You can install and backup a Sun StorEdge client in a machine running in a local Zone.

Neither the server or a storage node can be run in a local zone. A server or storage node can only be run in a global zone.

This release does not support:

- ◆ Save set All.
- ◆ Any of EMC module.

Note: One client license is required for each zone. For example, for 5 zones you will require 5 client licenses.

Release 7.3.1

Sun StorEdge 7.3.1 is a maintenance release and does not contain new features.

Release 7.3

Sun StorEdge release 7.3 includes these new features:

- ◆ [“Sun StorEdge Management Console interface” on page 1-7](#)
- ◆ [“Security enhancements” on page 1-7](#)
- ◆ [“Configuration wizard” on page 1-8](#)

- ◆ “Improved support for Sun StorEdge Console database” on page 1-8
- ◆ “Ability to launch client-side GUI from Sun StorEdge Console” on page 1-9
- ◆ “Ability to enable/disable support for MS-DOS 8.3 filenames” on page 1-9
- ◆ “Ability to easily enable/disable a Sun StorEdge client's scheduled backups” on page 1-9
- ◆ “Cloning enhancements” on page 1-9
- ◆ “Save set recover is available from the nwrecover interface” on page 1-9
- ◆ “Internationalized support for the Sun StorEdge file index entries” on page 1-10
- ◆ “The nsr_shutdown Improvements” on page 1-10
- ◆ “Ability to query save sets by using the Sun StorEdge Administration window” on page 1-10
- ◆ “Client index save set retention policy” on page 1-10
- ◆ “Dynamic NAT and DHCP support improvements” on page 1-10
- ◆ “EMC Dantz Retrospect integration” on page 1-10
- ◆ “Client configuration wizard” on page 1-11
- ◆ “Reporting enhancements” on page 1-11
- ◆ “New user interface for devices and storage media” on page 1-11
- ◆ “Solaris 10 support” on page 1-12
- ◆ “Improved label operations for write-protected volumes” on page 1-15
- ◆ “Direct access restore supports DSA recovery” on page 1-15
- ◆ “EDM tape labels recognized” on page 1-16
- ◆ “Support for automatic cartridge system library software, version 7.0” on page 1-16
- ◆ “VERITAS volume management software VxVM supported on HP-UX MC ServiceGuard” on page 1-16
- ◆ “Linear Tape-Open (LTO-3) tape drive supported” on page 1-16
- ◆ “Advanced file type device enhancements” on page 1-16
- ◆ “SCSI reserve/release support” on page 1-17

- ◆ [“The -N option is no longer supported by the nsrjb command” on page 1-18](#)

Sun StorEdge Management Console interface

Release 7.3.x of the Sun StorEdge software includes a new graphical user interface for enterprise-wide management of Sun StorEdge servers. This interface represents a substantial improvement over previous Sun StorEdge interfaces. It provides an overall view of an entire Sun StorEdge enterprise and allows for the monitoring and administration of all Sun StorEdge servers from a single location.

This new graphical interface implements Java-based technology that allows the interface to be launched from any supported browser with the appropriate Java Runtime Environment (JRE) installed. The JRE version must be 1.4.2 or later, but less than version 1.5. The necessary JRE is included during Sun StorEdge installation.

Sun StorEdge Console server

The Sun StorEdge Management Console server provides information about the Sun StorEdge servers in your enterprise. The server is supported on Windows, Linux, and Solaris platforms only.

Previous graphical interfaces no longer supported

In Sun StorEdge software release 7.3.x, the Sun StorEdge Management Console replaces the Sun StorEdge Administrator program that was used in previous releases for server management and configuration. All client-side backup and recovery interfaces, such as **nwbackup** and **nwrecover** on UNIX and the Sun StorEdge User Program (**winworkr**) on Windows, are still used for client backup and recovery. All previously-existing command line functionality continues to be supported in this release.

Security enhancements

These are the improved security enhancements:

- ◆ [“Improved authentication” on page 1-7](#)
- ◆ [“Encryption” on page 1-8](#)

Improved authentication

Sun StorEdge software release 7.3.x includes a redesigned authentication mechanism to ensure proper identification of systems

and users that connect to the Sun StorEdge server. Enhanced server configuration management restricts access to authentication configuration. The administrator can select which version of authentication to use.

SSL (provided by OpenSSL library) is used to provide the stronger method of authentication. Additional configuration is required to use the stronger authentication. The *Sun StorEdge Administration Guide* provides more information.

Encryption

A new AES directive has been added to the Sun StorEdge software release 7.3.x to provide 256-bit AES from open SSL (Secure Sockets Layer). Data is encrypted at the client before it is sent over the network. The data is then saved to backup media such as tape or disk in the encrypted format.

When data encryption is used, there will be some impact on backup performance because the encryption process will consume client-side resources. The impact will vary based on your specific configurations.

Configuration wizard

Users can run a configuration wizard to:

- ◆ Set the administrator's password.
- ◆ Set the Sun StorEdge License Manager.
- ◆ Specify the Console database backup server.
- ◆ Add Sun StorEdge servers to the Sun StorEdge Console.
- ◆ Configure the Sun StorEdge Console attributes.

Improved support for Sun StorEdge Console database

Hot full and hot incremental backups of the Sun StorEdge Console database are supported. The recovery of full and incremental backups are also supported. Empty disk space equivalent to the size of the Sun StorEdge Console database is no longer required.

Ability to launch client-side GUI from Sun StorEdge Console

Users can launch the Sun StorEdge Client backup and recover programs from the Administration window in the Sun StorEdge Console.

Ability to enable/disable support for MS-DOS 8.3 filenames

To improve performance, support for MS_DOS 8.3 filenames is disabled by default. Users can enable this option at any time.

Ability to easily enable/disable a Sun StorEdge client's scheduled backups

Scheduled backups are enabled by default. An administrator can easily disable or enable a scheduled backup.

Cloning enhancements

Each clone instance of a save set has a retention policy that is independent of the original save set. Users can:

- ◆ Specify a clone retention policy when performing either a save set or volume clone operation.
- ◆ Identify which save sets to clone by specifying a date range.

Note: To specify the retention time when creating a clone save set, use the **nsrclone** command with the **-y** option. Ensure any custom scripts or reporting tools that use this option are updated to reflect this change. The Command Reference Guide or the UNIX man pages provides more information on the **nsrclone** command.

Save set recover is available from the nwrecover interface

The Save Set recover operation on UNIX has been added to the **nwrecover** client interface.

Internationalized support for the Sun StorEdge file index entries

Unicode support has been added so that Sun StorEdge can back up and recover files on UNIX platforms without loss or corruption of data or filenames. If the user locale environment is configured correctly, each filename should be browsable.

The nsr_shutdown Improvements

The architecture for shutting down Sun StorEdge services and processes has been improved.

Ability to query save sets by using the Sun StorEdge Administration window

You can query save sets in the media database by using the Administration window.

Client index save set retention policy

The retention policy assigned to a client index save set is no longer derived from the Sun StorEdge server. The retention time is derived from the save sets referenced in the client index save sets. This should enable volumes to become recyclable in a more timely manner.

Dynamic NAT and DHCP support improvements

Sun StorEdge clients and Sun StorEdge servers can be administered when separated by a NAT firewall or when either the client or server is using the DHCP service.

EMC Dantz Retrospect integration

EMC Dantz® Retrospect® 7.5 servers can be managed within an enterprise environment. You can add, delete, move, and copy Retrospect servers as needed. All of these functions can be performed through the Sun StorEdge Console.

The addition of Retrospect servers provides a centralized means of managing, monitoring and reporting activity throughout the enterprise. The server activities include, but are not limited to, operations related to devices and libraries, and events that require user intervention.

Client configuration wizard

Users can run a wizard to configure a Sun StorEdge client for a scheduled backup.

Reporting enhancements

The Sun StorEdge software collects data on a daily basis from the Sun StorEdge servers in a Sun StorEdge enterprise. The software then integrates and processes this data to produce a number of reports on backup status, backup statistics, managed events, hosts, users, and devices. Users can determine:

- ◆ How the data is gathered.
- ◆ What parameters to include in the reports.
- ◆ The format in which to view the reports.
- ◆ Whether or not to share the reports with other users.

Users can also use preconfigured reports, or create custom reports to serve a specific need.

New user interface for devices and storage media

A new graphical user interface allows the configuration, reconfiguration, and operation of devices, and the management of storage media when using Sun StorEdge software. Frequently used functions of the **nsrjb** and **jbconfig** commands can now be handled in the user interface. Many are now performed through an easy-to-use library configuration wizard.

The **nsrjb** command has also been redesigned to be more efficient and provide more centralized control of library operations.

Solaris 10 support

The backup server, storage node, and client support is available on Solaris 10 x64. Sun StorEdge release 7.3.x provides base support for Solaris 10 only.

Device configuration on Solaris 10

These issues should be taken into consideration when configuring devices on Solaris 10:

- ◆ [“LUS driver are not supported by Solaris 10” on page 1-12](#)
- ◆ [“The sji commands are not supported by Solaris 10” on page 1-12](#)
- ◆ [“Run the cfgadm -lav command after installing Sun StorEdge” on page 1-12](#)
- ◆ [“The sgen driver might take a long time to load” on page 1-12](#)
- ◆ [“The st driver might not be configured properly” on page 1-13](#)

LUS driver are not supported by Solaris 10

The **lus** driver is not supported by Solaris 10. The Sun StorEdge software uses the Solaris native drivers **sgen**, **st** and **fp**.

The sji commands are not supported by Solaris 10

Solaris 10 does not support the **sji** commands.

Run the cfgadm -lav command after installing Sun StorEdge

Run the **cfgadm -lav** command after installing the Sun StorEdge software to ensure that all devices are detected.

The devices should be mapped to the `/dev/rmt` directory.

The sgen driver might take a long time to load

After restarting the Sun StorEdge software, the **sgen** driver might take a long time to load.

During the installation of the Sun StorEdge software, the `/kernel/dev/sgen.conf` file is modified. A system check is performed to determine if a **sgen** driver is operating:

- ◆ If the driver is operating, it will unload and reload after modification of the `sgen.conf` file.
- ◆ If the driver is not operating, it will load.

The **st** driver might not be configured properly

If the **st** driver is not configured properly by the Sun StorEdge software, the `/dev/rmt` directory might not be set up correctly. The Sun StorEdge software will detect the device as a standalone device if it does not have a `/dev/rmt` directory.

For SCSI devices, the **st** driver might be configured with only sequential paths in **cfgadm -lav** output.

If the device is part of a jukebox, it must be configured manually.

```
bash-3.00# inquire

scsidev@1.0.0:FUJITSU MAP3367N SUN36G 0401|Disk,
/dev/rdisk/c1t0d0s2
                                S/N:      00N055TM
scsidev@1.1.0:SEAGATE ST336607LSUN36G 0507|Disk,
/dev/rdisk/c1t1d0s2
                                S/N:
                                3JA6W48S000074269MYK
scsidev@2.4.0:QUANTUM SuperDLT1      2D2D|Tape,
/dev/scsi/sequential/c2t4d0
                                S/N:      CXB47H0793
                                ATNN:QUANTUM SuperDLT1
                                CXB47H0793
                                IENN:00E09E600005A5A8
                                WWNN:500E09E00005A5A8
scsidev@2.4.1:QUANTUM UHDL          000D|Autochanger
(Jukebox), /dev/scsi/changer/c2t4d1
                                S/N:      CX0151AAB00003
                                ATNN:QUANTUM UHDL
                                CX0151AAB00003
                                IENN:00E09EFFFFF06112C
                                WWNN:100000E09E06112C
```

Note: The tape drives are shown as sequential drives when they are part of a jukebox. This indicates that the **st** driver might not be configured properly.

```
bash-3.00# inquire -a 2.4.0 -c

scsidev@2.4.0:QUANTUM SuperDLT1      2D2D|Tape,
/dev/scsi/sequential/c2t4d0
                                S/N:      CXB47H0793
                                ATNN:QUANTUM SuperDLT1
                                CXB47H0793
                                IENN:00E09E600005A5A8
                                WWNN:500E09E00005A5A8
```

Note: The output from the **inquire** command reports that the tape drives are on target 4.

This output indicates the `/kernel/drv/st.conf` was modified to search target 4.

```
name="st" class="scsi" target=1 lun=0;
name="st" class="scsi" target=2 lun=0;
name="st" class="scsi" target=3 lun=0;
name="st" class="scsi" target=4 lun=0;
name="st" class="scsi" target=5 lun=0;
name="st" class="scsi" target=6 lun=0;
name="st" class="scsi" target=7 lun=0;
name="st" class="scsi" target=8 lun=0;
name="st" class="scsi" target=9 lun=0;
name="st" class="scsi" target=10 lun=0;
name="st" class="scsi" target=11 lun=0;
name="st" class="scsi" target=12 lun=0;
name="st" class="scsi" target=13 lun=0;
name="st" class="scsi" target=14 lun=0;
name="st" class="scsi" target=15 lun=0;
```

After modifying `st.conf` file, configure the devices:

1. To ensure the **st** driver is loaded, enter this command:

```
modinfo | grep st
```

2. If the driver is loaded, reload the driver. To reload the driver:
 - a. Obtain the driver ID by using the **modinfo** command.
 - b. Unload the driver:

```
modunload -i driver ID
```

- c. Reload the driver:

```
modload /kernel/drv/st
```

3. Configure the devices by using the **devfsadm** command.
4. Confirm that the following devices are configured:

```
cd /dev/rmt
```

```
ls -l *cbn
```

```
cdi_inq -f /dev/rmt/0cbn (that assumes that 0cbn is listed)
```

Use the **inquire** command to list the devices in the `/dev/rmt` path.

For fibre devices, refer to the appropriate SUN documentation and the HBA manufacturer's manual.

Improved label operations for write-protected volumes

The Sun StorEdge software now retains the volume entry in the media database even if the relabel volume operation fails.

Previously, when the Sun StorEdge software attempted to relabel a volume, it first determined whether the media was write-protected by querying the device. If this check reported the device was writable, the Sun StorEdge software removed the volume entry from the media database and relabeled the volume.

If either the device or operating system is unable to report that the media was write-protected, the media database entry is removed from the physically protected volume and the new label is now written to the tape.

Direct access restore supports DSA recovery

Direct Access Restore (DAR) is now supported with EMC SnapImage® and the Sun StorEdge NDMP interface's Direct Service Agent (DSA) feature. Any data server that supports DAR will be able to use this function when:

- ◆ DIRECT=y is set as an information variable and when using a DSA enabled Sun StorEdge storage node.
- ◆ DSA acts as an agent save between a Sun StorEdge server and any client without Sun StorEdge software. An example of a DSA is an NDMP host that generates proprietary save data and sends that data to a Sun StorEdge storage device to have a save set associated to it. Similarly, a DSA will act as an agent recover.

The *Sun StorEdge Administrator's Guide* provides more information on the NDMP interface DSA feature..

Note: When performing a DAR recovery from a tape device, the tape device needs to support variable length records. Refer to the tape device vendor's manual. If the tape device is not configured for variable length records, then DAR performance will degrade. This is true for any tape server.

EDM tape labels recognized

The Sun StorEdge software now recognizes EDM tape labels. During the tape label verify process, the Sun StorEdge software will recognize an EDM tape label and not overwrite the tape.

Support for automatic cartridge system library software, version 7.0

Support for Automatic Cartridge System Library Software (ACSL) has been improved in a firewall-protected environment. The Sun StorEdge software uses the firewall-secure solution provided by ACSL 7.0 (restricting connections for ACSL communications to a single TCP port for all registered program numbers).

VERITAS volume management software VxVM supported on HP-UX MC ServiceGuard

Sun StorEdge software now supports the VERITAS volume management software VxVM on HP-UX MC ServiceGuard.

Linear Tape-Open (LTO-3) tape drive supported

Sun StorEdge software now supports the Linear Tape-Open (LTO-3) tape drive. This enhancement offers enhanced capacity and data transfer rates.

Advanced file type device enhancements

The following Advanced File Type Device enhancements have been made:

- ◆ AFTD function now supports all concurrent recoveries by command line clients. All save sets are recovered concurrently from AFTD by means of a command line operation.
- ◆ An AFTD can be shared between storage nodes of the same platform in a NAS/SAN environment, subject to certain configuration restrictions.

SCSI reserve/release support

SCSI Reserve/Release is a component of the Dynamic Drive Sharing (DDS) feature. DDS provides Sun StorEdge software with the ability to recognize shared drives, and to skip shared drives that are in use and route the backups or recoveries to other available shared drives.

Note: DDS is currently supported only in a storage area network (SAN) Fibre Channel environment and not in a direct-connect SCSI environment.

SCSI Reserve/Release support for tape devices, including the Persistent Reserve commands, has been added.

Reserve/Release uses SCSI commands to attempt to prevent unintended access to tape drives that are connected by using a shared-access technology, such as Fibre Channel, iSCSI, or SCSI multiplexers. Reserve/Release is a host-based, cooperative mechanism:

- ◆ Access is granted based on the host system that reserved the device.
- ◆ Applications should respect the reservations and not purposely break them. Other applications running on the host that currently holds the reservation cannot be prevented from accessing a reserved device.

The *Sun StorEdge Administration Guide* provides more information about SCSI Reserve/Release.

Use of the Sun StorEdge SCSI reserve/release setting

These are the restrictions for this feature:

- ◆ It is available on CDI platforms only. Consequently, since CDI is not supported within an NDMP environment, Reserve/Release does not support NDMP or IRIX.
- ◆ It is supported only on specific platform sets and configurations.
- ◆ Not all drives support Persistent Reserve/Release. All drives support at least simple reserve release. The code automatically drops as one of the following on drives that do not support persistent:
 - From persistent+APTPL to simple
 - From persistent to simple
- ◆ SCSI resets can clear simple reservations at the device.

- ◆ Even with Reserve/Release, there is no guarantee against data loss.
- ◆ If the operating system has its own Reserve/Release feature, that feature must be disabled in order for the Sun StorEdge Reserve/Release feature to work.
- ◆ Even if all of the enterprise's Sun StorEdge storage nodes have this feature enabled, then it is possible that, on the storage node where a backup operation is run, data loss can be caused by the operating system's utilities or by third-party programs.

Tested configurations

These configurations have been tested, by using Fibre Channel connections, with Sun StorEdge SCSI Reserve/Release. These are the only supported configurations:

- ◆ Configuration 1:
 - Sun Solaris 9
 - STK 9840 tape drives, with firmware at level 1.35.302
- ◆ Configuration 2:
 - IBM AIX 5.3
 - STK 9840 tape drives, with firmware at level 1.34
- ◆ Configuration 3:
 - HP-UX 11.11
 - HP LTO-2 tape drives, with firmware at level K3A1
- ◆ Configuration 4:
 - Red Hat Linux Enterprise 4.0
 - STK 9840 tape drives, with firmware at level 1.35.302
- ◆ Configuration 5:
 - Microsoft Windows 2003, with Service Pack 2
 - STK 9840 tape drives, with firmware at level 1.35.302

The -N option is no longer supported by the **nsrjb** command

The -N option is no longer supported by the **nsrjb** command.

Fixed problems

These sections provide details on fixed bugs for the Sun StorEdge releases:

- ◆ [“Fixed in Sun StorEdge Release 7.3.2” on page 1-19](#)
- ◆ [“Fixed in Sun StorEdge Release 7.3.1” on page 1-22](#)
- ◆ [“Fixed in Sun StorEdge Release 7.3” on page 1-24](#)

Release 7.3.2

[Table 1](#) lists the defects fixed in release 7.3.2.

Table 1 Fixed in Sun StorEdge Release 7.3.2 (Sheet 1 of 4)

Number	Description
LGTpa67992	The inquire and jbconfig commands did not execute correctly if system was completely configured with Fibre Channel devices on AIX.
LGTpa81013	The nsrclone command reported an incorrect status in the media index if it is executed against a save set larger than 500 GB on a Solaris operating system.
LGTpa82182	When saving an automounted directory, the save process failed and the directory was backed up as a hidden directory.
LGTpa82466	The savenpc pstclntsave command core dumped intermittently on a Solaris operating system.
LGTpa83009	The inquire command core dumps on AIX if there were greater than 2,200 Fiber Channel devices attached.
LGTpa83241	When configuring a StorageTek Silo device on SGI IRIX, the jbconfig command reports the following error: Cannot Successfully map soname '/usr/lib/nsr/libstlstk.so' under any of the filenames /usr/lib/nsr/libstlstk.so
LGTpa83569	The ssi (version 2.0) program of Sun StorEdge release 7.2.1 which generates the connection between silo and Sun StorEdge Server did not work correctly with CentricStore hardware.
LGTpa83594	The inquire and jbconfig commands failed to detect a i2000 robot on AIX 5.3.
LGTpa83837	When recovering an NDMP save set, the NSR_DSA_NODE=<storgae-node-hostname2> attribute in the client resource did not work.

Table 1 Fixed in Sun StorEdge Release 7.3.2 (Sheet 2 of 4)

Number	Description
LGTpa83937	The <code>libc.so.1</code> file was restored as a directory if Sun StorEdge release 7.2.1 was installed on Solaris10 X86.
LGTpa84164	After completing a backup, the writing complete notice reflected the correct total amount of data written, but indicated that the backup was completed on previous volume.
LGTpa84652	The <code>mminfo</code> command did not recognize save sets with spaces at the end of the save set ID on AIX.
LGTpa84925	The <code>atime</code> asm did operate successfully for files in a VERITAS file system 4.x.
LGTpa85010	The <code>nsrexecd</code> , <code>nsrmmmd</code> and <code>nsrjobd</code> processes core dumped on Linux 4.0.
LGTpa85055	Device pathnames could not be used on a Tru64 cluster.
LGTpa85174	After upgrading NMC 3.2 from 3.1 on Solaris 2.8, there was a dramatic increase in resource usage.
LGTpa85303	The <code>mminfo</code> command produced inconsistent results when the word written was used in a query on Tru 64.
LGTpa85594	When RAP query was performed to determine which pool a particular volume was assigned to, the query returned a NULL value and the <code>nsrd</code> process core dumped.
LGTpa85603	The Sun StorEdge software marked a volume full prematurely after an interrupted system call was reported.
LGTpa85641	If root file systems were marked for recovery, <code>/var</code> files were automatically recovered as well.
LGTpa85760	If a group was configured to automatically clone, the <code>savegrp</code> process stopped responding reporting a signal 11 after the completion of the save set index.
LGTpa85861	Performing a NDMP backup to a non-NDMP device on storage node caused the backup process to hang.
LGTpa85872	The <code>nsrlcpd</code> daemon stopped responding intermittently on tape library operations on Linux operating systems.
LGTpa86026	Despite having an adequate number of licenses, backups failed with the following error "nsrmm: Sun StorEdge error: Server is not licensed for DiskBackup support. Install DiskBackup enabler."
LGTpa86286	The <code>nsrd</code> process core dumped on HP-UX 11i.
LGTpa86328	In the media database, the index had entries pointing to non-existent volume records.

Table 1 Fixed in Sun StorEdge Release 7.3.2 (Sheet 3 of 4)

Number	Description
LGTpa86995	The mminfo reported a media database had more volumes with the Location field set to a jukebox than the number of volumes available in the jukebox.
LGTpa87076	The Sun StorEdge was unable to recover the latest incremental backup.
LGTpa87138	The Sun StorEdge software could not allocate volumes to new DAS SILO using the nsrjb -a command.
LGTpa87446	The lus_add_fp_devs script unloaded other modules apart from the Sun StorEdge lus driver.
LGTpa87753	The savegrp -O command did not follow the predefined parallelism values.
LGTpa87836	The recover and nwrecover commands were binding to incorrect Sun StorEdge server.
LGTpa88566	If more than 5000 devices are attached to a HP-UX host, the inquire command reported the following error message: "out of device NODEs in uscsi_t_varp - baling out"
LGTpa88755	When the -l option is used without specifying any other options (volume name, volume id, or location), volumes without a set location were not displayed."
LGTpa88788	If a volume requested in a cloning process was recycled, the nsrmmd will loop searching for the requested volume-name.
LGTpa89896	Auto configuration of an ACSLS silo devices failed.
LGTpa82557	When performing a query on EMC License Manager usage, the license names for autochangers, VSS, NMC for UNIX, and DiskBackup were not displayed.
LGTpa82668	Additional information regarding file history processing was displayed in the savegrp completion report for NDMP backups.
LGTpa84067	When initiating the Sun StorEdge software, when the nsrlmc process attempted to connect to local nsrd process, the nsrd process was not available and nsrlmc exits.
LGTpa84968	The Device Description field could not be edited.
LGTpa85124	Could not acquire the reserved number of licenses from LLM if the following two conditions are true: - Allowances are defined for two NWR servers. - The total of the reserved licenses was equal to the total available licenses.
LGTpa85546	If the lgto_gst.db database wa larger than 3 GB in size, the savepsm command failed to backup the database.
LGTpa86516	The mminfo -q command could not handle multiple queries.

Table 1 Fixed in Sun StorEdge Release 7.3.2 (Sheet 4 of 4)

Number	Description
LGTpa87251	When selecting a single or a range of volumes for labeling, the pop up window, Label Library Media, always displays the whole jukebox slot range.
LGTpa87467	If Pool resource has Auto Media Verify set to YES for pools being used with NDMP configured Tape Devices, the tape rewind to verify data after each save set that is written to the tape. The following error was report: nsrd: media warning: rd=nas-stl-01-ndmp:c64t0l2 NDMP reading: The handle is invalid. Eventually the drive was disabled.
LGTpa87985	The mminfo command core dumped if the -X and -t options were specified for certain (random) dates.
LGTpa88422	If an index save set of a client that has been deleted from the RAP database is staged or cloned (nsrstage or nsrclone), the media database stopped responding.
LGTpa88714	When querying for a ssid and pool the mminfo command did not yield a query.

Release 7.3.1

Table 2 lists the defects fixed in release 7.3.1.

Table 2 Fixed in Sun StorEdge Release 7.3.1 (Sheet 1 of 3)

Number	Description
LGTpa81013	Failed nsrclone log messages incorrectly reported status reports in the media index on a Solaris operating system.
LGTpa82182	The save command backed up files as a hidden directory on a Solaris operating system.
LGTpa82466	The savenpc pstclntsave command core dumped intermittently on a Solaris operating system.
LGTpa83594	After installing Sun StorEdge release 7.1.3 or 7.2.1 on an AIX 5.3 server, the Sun StorEdge software was unable to detect an autochanger and could not be configured.
LGTpa83837	When recovering an NDMP save set, the Sun StorEdge software did not use the NSR_DSA_NODE=<storgae-node-hostname2> attribute in the Client resource on a Solaris operating system.
LGTpa83937	The /lib/libc.so.1 file was recovered as a directory in Solaris 10 X86.

Table 2 Fixed in Sun StorEdge Release 7.3.1 (Sheet 2 of 3)

Number	Description
LGTpa84925	The atime asm was not preserved for files in a VERITAS file system versions 4.x.
LGTpa85010	The nsrexecd program core dumped on a Linux 4.0 operating system.
LGTpa85174	After upgrading to Sun StorEdge release 7.3.x and Sun StorEdge Management Console version 3.2 on Solaris 2.8, there was a noticeable increase in resource usage with NMC version 3.2.
LGTpa85594	When performing a RAP query to check which pool a particular volume is assigned to, the query returns a NULL value and the nsrd process stops responding.
LGTpa85603	Sun StorEdge software should utilize the tape to its full capacity after upgrading the Sun StorEdge server from release 7.1.3 to release 7.3.x.
LGTpa85760	After upgrading to release 7.3.x from 7.2.1, when a group was configured to automatically clone, the savegrp process exits before the clone operation initiates.
LGTpa85861	NDMP backups to a non-NDMP device stopped responding.
LGTpa86026	Despite having the proper licenses, after upgrading a Sun StorEdge server to release 7.3.x backups fail with this error: nsrmm: Sun StorEdge error: Server is not licensed for DiskBackup support. Install DiskBackup enabler.
LGTpa86286	The nsrd process stopped responding when performing backups on HP-UX 11i 64-bit Sun StorEdge Module for Oracle 4.1.
LGTpa86328	When automatically moving from a full tape to a new tape during a backup, the server did not properly detect a new tape.
LGTpa86833	When backing up the client file index of more than 50 clients, the backup process stopped responding.
LGTpa86995	The Location field in the volume record in media database was not updated correctly for volumes that did not belong to the jukebox.
LGTpa87138	The Sun StorEdge software could not allocate volumes to a DAS SILO by using the nsrjb -a command.
LGTpa87215	If a drive was not properly defined the nsrmmgd process core dumps and the nsrd process stops responding.
LGTpa87753	The savegrp -O command did not follow the predefined Sun StorEdge parallelism values.
LGTpa82668	The savegrp report for NDMP backups contained verbose and unnecessary information.

Table 2 Fixed in Sun StorEdge Release 7.3.1 (Sheet 3 of 3)

Number	Description
LGTpa83569	The ssi program version 2.0 in Sun StorEdge release 7.2.1 did not work correctly with CentricStore VTL version 3.0.
LGTpa85124	The Sun StorEdge software could not acquire the required number of reserved licenses from the EMC License Manager.
LGTpa85546	If the <code>lgto_gst.db</code> database was larger than 3 GB in size, the savepsm command failed to back up the database.
LGTpa87251	When selecting a single or a range of volumes for labeling, Label Library Media window displays the entire jukebox slot range by default.

Release 7.3

[Table 3](#) lists the defects addressed in release 7.3.

Table 3 Fixed in Sun StorEdge Release 7.3 (Sheet 1 of 2)

Number	Description
LGTpa77392	The nsrmmdbd program core dumped due to media database corruption.
LGTpa78592	The savefs command did not work on a Solaris 3.1 operating system.
LGTpa77726	The mminfo command did not always display the full requested output of multiple options were used.
LGTpa72550	The nsrclone command reported the error message, skipping incomplete save set when the specific save set was in fact complete.
LGTpa72710	The nsrmmdbd process used up to 600 MB in memory.
LGTpa73600	If a device stopped responding, the nsrmmmd process stopped responding on the affected storage nodes.
LGTpa74980	Directives to skip files were not enforced when performing a manual backup used the save -i command.
LGTpa77339	Backup performance with DSA is slow if the -P option was used to direct backup to a specific NIC.
LGTpa73030	No error message was generated if a client that was not part of the default savegroup was specified to be backed up.

Table 3 Fixed in Sun StorEdge Release 7.3 (Sheet 2 of 2)

Number	Description
LGTpa73820	It took a long time for data to be saved when using the nsr.cluster process.
LGTpa64393	The nsrlic utility could not display the Application License in verbose mode.
LGTpa72971	An NDMP backup to a non-NDMP storage node device was not recoverable.

Environment and system requirements

This section describes the features provided with Sun StorEdge base enablers, as well as features that are available with each base enabler.

FSC Script Available for Improved Performance with a FSC CentricStor Library

For improved performance with a FSC CentricStor library, a script is available from FSC that will operate on a CentricStor system. To obtain this script, contact FSC Sun StorEdge Backlevel Support at: nsr.bls@fujitsu-siemens.com.

CentricStor users will obtain a patch for the Sun StorEdge release 7.3.2 related to CentricStor from FSC.

Features provided with base enablers

[Table 4 on page 1-25](#) lists the features that are available as part of Sun StorEdge base enablers.

Table 4 Features provided with base enablers

Feature	Support by edition			
	Power	Network	Workgroup	Business
Number of included client connections	10	10	8	8
Parallel data streams per Sun StorEdge server	64	32	32	32
Parallel data streams per storage node ^a	64	32	N/A	N/A

Table 4 Features provided with base enablers

Feature	Support by edition			
	Power	Network	Workgroup	Business
Number of physical devices per server	32	16	4	4
Increase in datazone's devices, per Storage Node license	32	16	N/A	N/A
Maximum number of nsrmmd processes	512 ^b	256	4	4

a.Storage nodes available for additional cost for the Power and Network Editions only.

b.Available in Sun StorEdge 7.2.x and later. For Sun StorEdge 7.1.x the maximum is 256.

Additional features available with base enablers

[Table 5 on page 1-26](#) list the features that are available for support with Sun StorEdge base enablers.

Table 5 Additional features available with base enablers

Feature	Support by edition			
	Power	Network	Workgroup	Business
Additional client connections	Yes	Yes	No	No
Storage Nodes	Yes	Yes	No	No
Cluster Support	Server and Client	Client	No	Maximum 2 Cluster client connections
ClientPak® Module for heterogeneous environments	Yes	Yes	Yes	Yes
Sun StorEdge NDMP Client Connections	Yes	Yes	No	Maximum 2 NDMP client connections
Dynamic Drive Sharing Option	Yes	Yes	N/A	N/A
Sun StorEdge DiskBackup Option	Yes	Yes	Yes	Yes
Sun StorEdge Archive Module	Yes	Yes	No	No
Autochanger Software Modules	All	All	1-9, 1-16, 1-20, 1-32	Only 1-26 included in base

Table 5 Additional features available with base enablers

Feature	Support by edition			
	Power	Network	Workgroup	Business
Silo Software Modules	Yes	Yes	No	No
Sun StorEdge Application Modules	Yes	Yes	Yes	Yes
Sun StorEdge Windows 2003 Open File Option	Yes	Yes	Yes	Yes
Open File Manager	Yes	Yes	Yes	Yes
Sun StorEdge PowerSnap Modules	Yes	Yes	No	No
Sun StorEdge SnapImage Module	Yes	Yes	No	Yes
VSS Support	Yes	Yes	Yes	Yes
Simple NetWork Management Protocol (SNMP)	Yes	Yes	Yes	Yes

Known problems and limitations

These sections describe known limitations:

- ◆ [“Limitations in feature support” on page 1-28](#)
- ◆ [“Limitations in operating system support” on page 1-48](#)

Limitations in feature support

This section describes limitations in Sun StorEdge features.

Access control list permissions are not automatically propagated to the recovered files (EMC Bug ID: LGTpa88341)

When recovering files to a ZFS directory, the parent directory Access Control List permissions are not automatically propagated to the recovered files.

Workaround

Manually reset permissions after recovery. For more information on setting Access Control List permissions, see the *Sun StorEdge, Release 7.3, Administration Guide*.

Can not launch the Client Configuration Wizard from SuSE 8 x86 (EMC Bug ID: LGTpa87904)

The Client Configuration Wizard can not be launched from SuSE x86.

To configure a Sun StorEdge client, use the Sun StorEdge Management Console. For detailed instructions, see the *Sun StorEdge Administration Guide*.

The scanner command fails with a local device on a highly available Sun StorEdge cluster server (EMC Bug ID: LGTpa85317)

When run from a local device on a highly available Sun StorEdge cluster server, the scanner command fails.

Workaround

Delete the local device.

Recreate the local device by using this command:

```
rd=<server>:<devicename>
```

Can not configure a DAS silo using the Sun StorEdge Management Console (EMC Bug ID: LGTpa89946)

The Sun StorEdge Management Console can not be used to configure a DAS silo. To configure a DAS silo, use the **jbconfig** command.

Can not deposit volumes in a DAS silo (EMC Bug ID: LGTpa89947)

An error message appears when depositing volumes in a DAS silo. For example:

```
nsrjb: Error: Cannot find slot APM004
```

Workaround

To deposit volumes:

1. Type this command:

```
nsrjb -d -T barcode
```

Note: Ignore the error message.

2. Type this command:

```
nsrjb -a -T barcode
```

Using the withdraw command to withdraw a volume on a partitioned library fails (EMC Bug ID: LGTpa87308)

The withdraw command fails when a volume is withdrawn from a partitioned library.

Workaround

When using the **withdraw** command, specify the port number also. For example:

```
nsrjb -w -S 1 -P 2 -vvv
```

NDMP recovery fails if both the NSR_NDMP_DDAR and NSR_NDMP_RECOVER_DIR variables are toggled (EMC Bug ID: LGTpa89233)

If both the NDMP environmental variables NSR_NDMP_DDAR and NSR_NDMP_RECOVER_DIR are toggled, an NDMP recovery fails.

For example, if the NSR_NDMP_DDAR variable is set to Y and the NSR_NDMP_RECOVER_DIR is set to N, the recover operation fails.

To avoid this problem, only use one variable at a time. For example, if one of the variables is set, unset the one of the variables before performing a recovery.

ZFS filesystems are not automatically backed up when performing a savegrp backup of ALL (EMC Bug ID: LGTpa91299)

The **savefs** command fails to automatically backup a ZFS file system when performing a savegrp backup of ALL. The ZFS file systems do not appear in the `/etc/vfstab` or `/etc/mnttab` directories.

Workaround

To workaround this issue do one of the following:

- ◆ Explicitly set the file systems for backup in the client's save set list.
- ◆ Set the ZFS file systems to legacy mount point behavior and add an entry to the `/etc/vfstab` file.

For example:

```
# zfs umount <zpool>
# zfs set mountpoint=legacy <zpool>
```

Add an entry to the `/etc/vfstab`. For example:

```
<zpool>      -      /mypool      zfs      -      yes      -
```

where `/mypool` is the mount point

```
# mount /mypool
```

If a connection is lost during an NDMP backup to a NAS filer the Sun StorEdge software stops responding (EMC Bug ID: LGTpa88065)

If a connection is lost during an NDMP backup to a NAS filer, a connection reset by peer error is written to the *daemon.log*, but the **nsrndmp_save**, **ndmp2fh** and **nsrmmmd** processes stop responding. The tape device also appears in writing mode, but has also stopped responding.

Workaround

Stop the **nsrndmp_save**, **ndmp2fh** and **nsrmmmd** processes by using **kill -9** command, and restart Sun StorEdge daemons to free up the tape device.

The `ls -l` command does not display files recovered from a NetApp Data ONTAP 6.5 file system (EMC Bug ID: LGTpa91406)

After performing a recovery from a NetApp Data ONTAP 6.5 file system mounted on a UNIX client (NFS share), the recovered files are not displayed if when you enter the `ls -l` command.

Workaround

Unmount and remount the file system, the files are visible.

The `mminfo` command displays incorrect output if the greater than (>) or less than (<) characters are used when querying an advanced file type device (EMC Bug ID: LGTpa88232)

The `mminfo` command displays incorrect output if the greater than (>) or less than (<) characters are used in the command line when querying an advanced file type device.

Restrictions associated with the ZFS file system (EMC Bug ID: LGTpa88264)

The following are restrictions associated with the ZFS file system:

Only an Administrator with full access to ZFS directories may recover files. ZFS files can be restored to a UFS file system. When restoring ZFS files to a UFS file system, only the permission information is retained, the access control entries are not retained.

ZFS snapshots and the files in ZFS directories are not backed up or restored when restoring the original files. file systems must be explicitly specified in the client's save set attribute. ZFS file systems will not be recognized if you use the ALL keyword.

The `scanner` command reports a fn 4 0 read error Input/Output error when scanning a tape device (EMC Bug ID: LGTpa88467)

When scanning a tape device, a fn 4 0 read error Input/Output error is reported.

For example:

```
scanner -z -i /dev/nst0
```

```
scanner: fn 4 rn 0 read error Input/output error
scanner: done with LTO Ultrium tape TestBackup.00
```

Subsequently, the media database cannot be re-created.

Workaround

Use the `scanner -B -S <ssid> -im <device-name>` command to rebuild media database and online file indexes.

Cannot launch the Sun StorEdge Console from a Linux PowerPC client (EMC Bug ID: LGTpa87730)

The Sun StorEdge Console client GUI is not supported on a PowerPC Linux client. Client operations must be performed from Sun StorEdge Console server.

The gstd process fails to initiate on Linux SuSE SLES 8 (EMC Bug ID: LGTpa83798)

The **gstd** process fails to initiate on SuSE SLES 8.

Note: This behavior does not appear on SuSE SLES 9.

Workaround

1. Run the **config.sh** script.
2. Edit the **/etc/init.d/gst** file.
3. Locate this script in the file:

Required-Start: networker

4. Above **Required-Start: networker** script, add these two lines to the file:

Default-Start: 3 5

Default-Stop: 0 1 2 6

5. Run the **chkconfig --add gst** command:

This command adds a symbolic link to the **gst** script in the **/etc/init.d/rc3.d** and **/etc/init.d/rc5.d** directories.

Backup might default to an incorrect server if the -s option is not specified with the save command (EMC Bug ID: LGTpa83221)

On a Sun StorEdge client, if the **-s** *servername* option is not specified with the **save** pathname command, the **save** command does not select the first server name in the **/nsr/res/servers** file. The **save** command selects the first server it contacts on the network.

Workaround

Use the **-s** *servername* option with the **save** command to specify a specific Sun StorEdge server.

Device operations using the right click option might be lost (EMC Bug ID: LGTpa83579)

Device operations using the Sun StorEdge Console are limited if a resource was created by a pre-7.3 release Sun StorEdge server that used the **nsradmin** program in non-visual mode. Mount, unmount and label operations cannot be performed by using the right-click option.

To work around this problem, delete and re-create the device.

Note: This limitation only occurs when the Type attribute is in lowercase.

Jukebox might stop responding when a volume is loaded (EMC Bug ID: LGTpa82797)

A jukebox stops responding if a volume is loaded in a silo device and one of the following is true:

- ◆ Sun StorEdge software is started or restarted.
- ◆ **nsrmmgd** process restarts.

Workaround

Use the silo software to eject the volume in the drive.

Cannot delete multiple volumes at the same time (EMC Bug ID: LGTpa82523)

You cannot select multiple volumes and delete them all in a single operation.

Note: When multiple volumes are selected and any operation is requested (other than a clone operation), the requested operation will apply only to the first selected volume.

Media capacity notification not logged in the media database (LGTpa82503, LGTpa82501)

When the maximum number of save sets for a volume is reached, no notification is logged in the media database indicating a volume has reached capacity.

Fatal error incorrectly reported no printer available to print a bootstrap on AIX 5.3 (EMC Bug ID: LGTpa81024)

After a save group operation completed successfully, the Completed Successfully table of the Group Details window incorrectly reported a fatal error. This window indicates there is not a printer available to print the bootstrap.

Misleading error message reported if an invalid NDMP storage node password is entered when labeling a volume (LGTpa83273)

If an invalid NDMP storage node password is entered when labeling a volume, the error message does not indicate that the password is incorrect. Instead, this error message is reported:

```
command operation `LOAD', command ID 231 is not connected
```

Cannot label an advanced file type device on a storage node that uses a virtual LAN (LGTpa81401)

When using a Virtual LAN, lyou cannot label an advanced file-type device on a storage node.

Create a client alias for the machine in the **Alias** attribute of the **Client** resource for the storage node as follows:

1. In the **Administration** Window, select **Configuration**.
2. Select **Clients**.
3. Right-click the the **Client** resource for the storage node and select **Properties**.
4. On the **Globals (1 of 2)** tab, enter the alias in the **Alias** attribute.
5. Create an advanced file-type device on the storage node.

The advanced file-type device will now function correctly.

Labeling volumes concurrently might fail when using the Sun StorEdge Console (LGTpa80901)

When labeling a volume by using the Sun StorEdge Console, concurrent label operations might fail if either of these conditions are true:

- ◆ You are running two or more label operations concurrently.
- ◆ The operation is using the same pool, or two pools with the same label template.

This error message appears:

```
Error: Duplicate volume name `rh64.014'. Select a new
name or remove the original volume."
```

Workaround

Use the **nsrjb** command to perform concurrent label operations. For more information on the **nsrjb** command, refer to the *Command Reference Guide* or the UNIX manpages.

No alternative location provided for the `java14.sdk.tar` file if the `/tmp` directory is full (EMC Bug ID: LGTpa80764)

After installing the Sun StorEdge Console server on an AIX platform, if the `/tmp` directory does not have enough space for the `java14.sdk.tar` JRE file, this error message appears:

```
There is not enough room on the disk to save
/tmp/uontdicn.tar. Remove unnecessary files from the
disk and try again, or try saving in a different
location.
```

The `/var/log/lastlog` file causes a `save` process to appear to hang on RedHat AS4 x86_64 (EMC Bug ID: LGTpa79664)

RedHat AS4 x86_64 creates a 4TB sparse file, `/var/log/lastlog`, during the install process. A `save` process that includes this file appears to hang while it reads the sparse file. The `save` process executes after the delay.

Cannot run commands in the `nsradmin` program without the `nsrexecd` daemon (EMC Bug ID: LGTpa77990)

Sun StorEdge release 7.3.x does not support the running of the `nsradmin` program, or any other Sun StorEdge command on a host, without an active `nsrexecd` daemon.

New authentication fails if you run the `nsradmin` program without the `nsrexecd` daemon. If old authentication is disallowed in a datazone, the `nsrexecd` daemon is required to connect to the server even when running `nsradmin` from a client.

Sun StorEdge Management Console is not supported on all platforms (EMC Bug ID: LGTpa77000) (Resolved in the 7.3.2 release)

The Sun StorEdge Console server must be installed to manage and monitor Sun StorEdge servers. Currently, the server can be installed on Windows, Linux, and Solaris platforms. It is recommended that the server be installed on just one computer in the network to use the Console's consolidated reporting feature.

The `mminfo` command does not display a weekly summary of save set usage during the change to daylight savings time (EMC Bug ID: LGTpa76457)

If you use `mminfo` query to get a weekly save set usage summary during the change to daylight saving time (last Sunday of October and first Sunday of April), there is no information for the day of the change.

Save set status is displayed as invalid if A DSA backup is terminated due to an invalid backup path (EMC Bug ID: LGTpa75719)

If a DSA backup is terminated due to an invalid backup path, the save set status is displayed as invalid ss (for file type devices and tape devices) in the Volumes window. The Volume window should not display information about the save set status.

The scanner command might stop responding if it encounters an aborted save set backed up to an NDMP device (EMC Bug ID: LGTpa74026)

The **scanner** command might stop responding if:

- ◆ The **scanner** process encounters a save set that was backed up to an NDMP device.
- ◆ The save set was aborted after the start note was written.
- ◆ The last complete save set backed up to the device and cannot be scanned.

Automatic cloning might fail when using a single staging policy (EMC Bug ID: LGTpa70320)

Automatic cloning will fail when using a single staging policy if the following apply:

- ◆ Backup is to an advanced file type device.
- ◆ Server Parallelism value is set low (two or less).
- ◆ Recover space and check file system interval is to approximately three and five minutes.
- ◆ High water mark is set at a low value (approximately 10 percent).

This error message will be reported:

```
Error: nsrd: nonexistent cloneid (SSID) for
      saveset (ss_name)
```

The /system/object and /system/contract directories are not skipped during a backup on Solaris 10 (EMC Bug ID: LGTpa73509, Sun Bug ID 6192129)

The /system/object and /system/contract directories should be skipped when running backups on a Solaris 10 operating system.

Create a *.nsr* file with directives to skip the /system/object and /system/contract directories.

If the directories are not skipped, error messages are reported during a backup. For example:

```
enoexec:/system/contract save: readdir overflow error,
      backup of directory cannot continue
```

```

enoexec: /system/contract          level=full,      3 KB
00:04:06      9 files
enoexec:/system/object savegrp: suppressed 204 lines of
output - check daemon.log for details.
enoexec:/system/object save: readdir overflow error,
backup of directory cannot continue

```

Tape gets stuck in a drive when labeling Linux Red Hat (LGTpa68867)

While labeling tape in a DDS configuration by using a Sun StorEdge server that is running Linux Red Hat, the tape becomes stuck in the drive and this error message is displayed:

```
unload failure-retrying 30 seconds
```

To prevent a tape from being stuck in the drive, the `auto_lock` setting should set to "0" (Off) in the `/etc/stinit.def` file for these drive types:

- ◆ Sony AIT-2 and AIT-3
- ◆ IBM LTO Gen1
- ◆ HP LTO Gen1
- ◆ IBM LTO GEN2
- ◆ IBM 3580 drive LTO-1
- ◆ IBM 3592 J1A
- ◆ Quantum DLT 7000

By default the `auto_lock` setting is set to "1" (On).

Device filename does not appear in the inquire command output (EMC Bug ID: LGTpa57899)

The device filename does not appear in the output of the **inquire** command if you are using an IBM LTO Ultrium 2 drive on a Solaris operating system with Sun Fibre Channel host bus adaptors (HBA).

Note: This problem occurs only with this exact combination of hardware. For example, the device filename will appear with:

- ◆ An IBM Ultrium 2 drive on Solaris with a third-party fibre HBA (for example, Qlogic).
- ◆ Sun Fibre HBAs with a LTO Ultrium 2 drive from other manufacturer.

Save Set field is limited to 1,024 characters (EMC Bug ID: LGTpa65153, LGTpa67937)

The Save Set field in the Client resource cannot be more than 1,024 characters.

Volume retention information does not apply to volumes that contain snapsets (EMC Bug ID: LGTpa66565)

The output produced by the **mminfo** command by using the **volretent** flag (the date the last save set on this volume expires) does not apply to volumes that contain snapsets.

Cloning on an EMC DART CFS 5.2 is not supported (EMC Bug ID: LGTpa62490)

Cloning on an EMC DART CFS 5.2 is *not* supported.

The source tape begins reading data after the clone tape is mounted and the clone operation fails. The source drive does not exit the reading data state.

A clone error is reported in the */nsr/cores/nsrndmp_clone* file.

Package installation on Linux IA64 Red Hat results in an error (EMC Bug ID: LGTpa61643)

During installation of Sun StorEdge packages on Linux IA64, the **rpm** program incorrectly reports these missing library errors:

```
rpm -i lgtocln--1.ia64.rpm
error: Failed dependencies:
ld-linux-ia64.so.2 is needed by lgtocln--1
libc.so.6.1 is needed by lgtocln--1
libc.so.6.1(GLIBC_2.2) is needed by lgtocln--1
libncurses.so.5 is needed by lgtocln--1
```

Workaround

To correct the installation errors:

1. Log in as root.
2. Verify that the libraries exist.
3. Run the **rpm** program, for example:

```
rpm -i --nodeps lgtocln--1.ia64.rpm
```
4. Repeat this procedure for each required Sun StorEdge package, **lgtonode**, **lgtoserv**, or **lgtodrvr**.

Error message appears in daemon.log when labeling a volume that contains PowerSnap save sets (EMC Bug ID: LGTpa54632)

When labeling a volume that contains PowerSnap save sets, this error message appears in the *daemon.log* file:

```
nsrmmdbd: error, null
```

Ignore the error messages in the *daemon.log* file. No actual error occurred.

When recovering data from multiple volumes the Sun StorEdge software might stop responding (EMC Bug ID: LGTpa55566, LGTpa57799)

When recovering data from multiple volumes, the recovery client might receive repeated server busy messages if the Sun StorEdge software cannot simultaneously mount all of the volumes.

Workaround

Disable the striped recovery on the server.

Note: To disable striped recovery, create the file */nsr/debug/no_striped_recover* in the */nsr/debug* directory on the server. All recoveries started after the creation of this file will not use the striped recovery.

Error message generated if the snapshot policy is configured to request more snapshots than a Savegroup can generate (EMC Bug ID: LGTpa54165)

If a snapshot policy is configured to request more snapshots than a savegroup can generate for a group in a given time, the savegroup generates this error message when running the group and does not back up that group:

```
timestamp savegrp: RAP error: Invalid snapshot policy
with number_of_requested_snapshots snapshot creation
per day. Sun StorEdge will not be able to create,
number_of_requested_snapshots from timestamp in a
single day.
```

Workaround

To resolve this issue, do one of the following:

- ◆ Modify the savegroup Start Time and Interval attributes of the Group resource to synchronize the resource with the snapshot policy.
- ◆ Modify the snapshot policy to synchronize it with the Group resource.

For more information on modifying the Start Time and Interval attributes and snapshot policies, refer to the *Sun StorEdge Administration Guide*.

SCSI device ID displayed differently than Sun StorEdge NDMP devices (EMC Bug ID: LGTpa53364)

For Sun StorEdge NDMP devices, the bus number in the control port is offset by a value of 1,024 so that they occupy a different range compared to a locally attached SCSI jukebox. This offset helps visually differentiate the type of device (NDMP or non-NDMP). The actual value of the NDMP device bus number can be obtained from the NDMP Bus Number field, found if you select Jukeboxes from the Media menu.

All client file index entries might appear not to have been deleted (EMC Bug ID: LGTpa56231)

The Sun StorEdge software does not delete all client file index entries under these conditions:

- ◆ All save sets are recycled.
- ◆ Volumes are deleted.
- ◆ Device is relabeled.

After running the **nsrck -L6** command, the **nsrinfo client** output command indicates there are still browsable files.

This is an issue only when all the save sets for a client are deleted from the media database. If there is at least one valid save set for that client in the media database, the **nsrck -L6** command deletes the invalid save set records from client file index.

Slow Solaris tape operations when using an IBMtape driver with IBM LTO-2 Tape drives and the Sun StorEdge CDI (EMC Bug ID: LGTpa55128)

Solaris tape operations are slow when using an IBMtape driver with IBM LTO-2 tape drives when CDI is turned on.

Note: This behavior has not been seen with the Solaris **st** driver.

Workaround

Turn CDI off.

Sun StorEdge software attempts to eject a stuck tape (EMC Bug ID: LGTpa51725)

If a hardware problem results in a tape becoming stuck in a drive, the Sun StorEdge software keeps trying to eject the tape instead of continuing the backup on another tape. In this situation, save stream backups from clients intended for the stuck tape/drive might fail.

If the Sun StorEdge software keeps trying to eject a stuck tape:

1. Mark the volume as read-only.
2. Disable the drive.
3. Manually eject the tape.
4. Inventory the slot to which the tape was ejected.
5. Resolve the hardware error that led to the tape becoming stuck in the drive (for example, a faulty tape or a faulty drive).
6. Reenable the drive.
7. Mark the volume appendable again (if appropriate).

Enabling CDI with IBM Ultrium-2 fibre channel drive may slow backups (EMC Bug ID: LGTpa50804)

Enabling the CDI feature on a Solaris 9 operating system with these devices might slow the Sun StorEdge backup process:

- ◆ QLogic 22xx Fibre Channel Adapter Card
- ◆ IBM autochanger with an LTO Ultrium-2 FC drive

If Sun StorEdge performance is compromised within this configuration, disable the CDI feature.

Enabling SCSI reserve/release for DDS drives (EMC Bug ID: LGTpa30565, LGTpa49501)

When the Sun StorEdge software uses Dynamic Drive Sharing (DDS) there is a possibility that the operating system's tape driver might use the SCSI reserve/release feature in a manner that interferes with the proper operations of the Sun StorEdge software. Before using DDS with Sun StorEdge software, disable the operating system's use of the reserve/release feature.

To disable the reserve/release feature for the various operating systems:

Solaris

SCSI reserve/release is configurable as a bit setting in the *st.conf* file for each device type in use. For more information, refer to the Tape

Configuration section of the **st** man page. Use the most up-to-date **st** driver that is available for the version of Solaris.

Edit the *st.conf* file *only* if one of the following conditions apply:

- ◆ DDS is used with the Sun StorEdge software.
- ◆ A tape drive is used that is not supported directly by a Solaris **st** tape driver.

To determine if the tape drive is supported directly by a Solaris **st** tape driver, load a tape in the drive and enter the **mt** command. For example, with the tape device file *0cbn*, type the following:

```
mt -f /dev/rmt/0cbn status
```

If the output of the **mt** command includes the line SCSI tape drive or appears similar to the following, the **st** tape driver is using generic settings for that drive and it is *not* natively supported:

```
mt -f /dev/rmt/4cbn status
Vendor 'IBM      ' Product 'ULT3580-TD2      ' tape drive:
sense key(0x6)= Unit Attention      residual= 0
      retries= 0 file no= 0   block no= 0
```

If this configuration is used with the Sun StorEdge software, the process might appear to work, but there might be problems recovering any saved data.

If the output of the **mt** command appears similar to the following, the **st** tape driver recognizes the drive and is using correct internal settings:

```
mt -f /dev/rmt/0cbn status
HP Ultrium LTO tape drive:
sense key(0x0)= No Additional Sense      residual= 0
      retries= 0 file no= 0   block no= 0
```

The only reason to edit the *st.conf* file is if the drive is being used in a DDS configuration.

AIX

To reset the reserve/release setting on an AIX operating system:

1. Through the **SMIT** interface, select **Tapes** from the **Devices** menu.
2. Change the value for the **RESERVE/RELEASE** support attribute from **No** to **Yes**.

HP-UX

To reset the reserve/release setting on an HP-UX 11 operating system:

1. Change the *st_ats_enable* kernel variable to a value other than zero.
2. (Optional) Restart the computer to ensure the change was implemented.

Note: The reserve/release is a fixed setting in HP-UX 10.

Tru64

SCSI reserve/release is only available on version 5.1B and later.

Increase server parallelism to complete concurrent operations (EMC Bug ID: LGTpa51184, LGTpa51187)

You might need to increase the server parallelism value to complete the concurrent operations with an advanced file type device (AFTD) device when the number of simultaneous save sessions has reached the maximum value for server parallelism.

For example, if the server parallelism is set to 4, and there are four simultaneous saves going to an AFTD, set the server parallelism to 5 to complete a concurrent clone/stage operation from this AFTD while the four saves are in progress.

Note: This requirement might be more apparent with AFTD as it supports concurrent operations, but it is applicable to all other device types with a similar setup.

Perform a save set recovery when using the save command with the -I input_file option (EMC Bug ID: LGTpa51045)

When using the **save** command with the **-I input_file** option and one of the entries is deleted while the backup is running, the remaining entries in the input file are saved successfully. However, connecting directories are not saved and you are unable to perform index-based recoveries. The workaround is to perform a save set recovery.

Error downgrading to business edition (EMC Bug ID: LGTpa50807)

The licensing utility (**nsrcap**) cannot downgrade to the Business Edition from a higher enabler. To downgrade from Power Edition or Network Edition to Business

Workaround

To downgrade from Power Edition or Network Edition to Business Edition:

1. Enter the computer's hostname in the **License Server** attribute, if a license service is not already specified:
 - a. In the **Sun StorEdge Administrator** program on the Sun StorEdge server, select **Server Setup** from the **Server** menu.
 - b. From the **View** menu, select **Details**.
 - c. Enter the hostname in the **License Server** attribute and select **Add**.
2. Delete the base enabler of the edition being downgraded:
 - a. From the **Server** menu, select **Registration**.
 - b. In the **Registration** window, select the Sun StorEdge product whose enabler code you want to delete.
A series of windows appear.
 - c. Click **OK** in the windows and repeat the steps to delete the base enabler.
3. Select Remove the hostname from the Sun StorEdge server's **License Server** attribute:
 - a. From the **Server** menu, select **Server Setup**.
 - b. From the **View** menu, select **Details**.
 - c. Select the hostname in the **License Server** attribute that was entered in Step 1 and click **Delete**
 - d. Click **Apply**.
4. Enter the Business Edition enabler code:
 - a. From the **Server** menu, select **Registration**.
 - b. Click the **Create**.
 - c. Enter the Business Edition enabler code in the **Enabler Code** attribute and click **Apply**.

Increase the value of the save mount timeout attribute when auto media management is enabled and a corrupt tape is encountered (EMC Bug ID: LGTpa50485)

Note: This issue has only been seen on SDLT110/220 drives.

A label operation may take more than 30 minutes before it fails under these conditions:

- ◆ Auto media management is enabled and a backup is initiated.
- ◆ The Sun StorEdge software encounters a corrupted tape during the label operation.

The Sun StorEdge software keeps a record of the location of the corrupted tape only for the current backup operation, so a corrupted tape could be used again for the next backup operation if the operator does not remove it.

Workaround

To increase the value of the Save Mount Timeout attribute to 60 minutes from the default 30 minutes:

1. In the **Sun StorEdge Administrator** program, select **Devices** from the **Media** menu to open the **Devices** window.
2. From the **View** menu, select **Details** to display the hidden attributes.
3. Set the **Save Mount Timeout** attribute to 60 minutes.

Volume remains in the tape drive if the storage node nsrmmd is not responding in a shared drive environment with DDS (EMC Bug ID: LGTpa45470)

In a shared drive environment, volumes remain in the physical drive when these conditions exist:

- ◆ The drives are accessed by multiple storage nodes through DDS.
- ◆ The Sun StorEdge server is unable to communicate with the **nsrmmd** daemon on any storage node.
- ◆ The storage node has loaded or mounted volumes onto shared drives.

Files larger than 2 GB can break the save set consolidation process (EMC Bug ID: LGTpa44863)

The Sun StorEdge software cannot consolidate save sets when either the full or level 1 save set contains a file larger than 2 GB.

System log notifications fail on SuSE 8.0 (EMC Bug ID: LGTpa43135, LGTpa52756)

System log notifications might fail on the SuSE 8.0 and SuSE Linux Enterprise Server operating systems. The logger binary appears in the /bin directory instead of /usr/bin. This causes the log default notification to fail.

Note: The SuSE 7.3 distribution does not have this problem.

Workaround

To resolve this issue, do one of the following:

- ◆ Create a link in the /usr/bin directory to /bin/logger.
The default Tape Mount Request 1 and Tape Mount Request 2 notifications must be updated if a link is not created.
- ◆ Modify the log default notification and change the /usr/bin/logger filepath to /bin/logger.

The nsrjb -L and -I operations fail with an Exabyte Mammoth-2 tape drive with Fibre Channel device (EMC Bug ID: LGTpa37996)

When using the **nsrjb -L** and **-I** commands to perform inventory and tape label operations, the Sun StorEdge software reports this error message with an Exabyte Mammoth-2 tape drive with a Fibre Channel device:

```
timestamp /dev/rmt/2cbn Tape label read for volume ? in
pool ?, is not recognized by Networker: I/O error"
```

Workaround

Update the firmware on the Exabyte Mammoth-2 tape drive with Fibre Channel device to version v07h, and the changer firmware to 3.03.

Element status feature must be manually enabled for jukeboxes that support the feature (EMC Bug ID: LGTpa26003, Sun Bug ID: 4306035)

When a jukebox supports the element status feature, but that feature is not enabled in the Autochanger resource of the Sun StorEdge Administrator program, **nsrjb -I** and **nsrjb -H** commands do *not* work properly.

When using jukeboxes that support the element status feature, make sure that this feature is enabled in the Autochanger resource of the Sun StorEdge Administration program before using a **nsrjb** command.

NDMP save sets in status **recyclable** are not recoverable (EMC Bug ID: LGTpa65644)

NDMP save sets cannot be recovered if they are in the status eligible for recycling. This error message appears:

Failed save set, not recoverable

Workaround

Set the status of the save set to **recoverable**.

Permission problems with **DAR recovery of NetApp servers** (EMC Bug ID: LGTpa45205)

When a DAR recovery of an NDMP backup of a NetApp server is performed, the permissions of the recovered directories and subdirectories do not match the permissions of the original directories and subdirectories.

To avoid this problem, do one of the following:

- ◆ Manually change the directory attributes of the new directory after the recovery.
- ◆ Perform a save set recovery or a non-DAR index recovery instead of a DAR recovery.

Limitation on browse and retention policy dates (LGTpa37508)

Client file index browse and save set retention policies can be set no later than the year 2038. This is caused by an operating system limitation in which support for time is limited to a maximum of 68 years starting from the year 1970.

Note: An expired save set retention date does not immediately result in the save set being overwritten.

Save sets can only be overwritten if this is true:

- ◆ The retention policy has expired and Sun StorEdge uses the storage volume for backup.
- ◆ The storage volume is relabeled.
- ◆ Entries are manually deleted from the storage volume.

Workaround

To enable full browse and retention policies beyond the year 2038, use the Sun StorEdge Archive feature. Archived data is never subject to automatic recycling, so it cannot be accidentally overwritten. For more information about data archiving, refer to the *Sun StorEdge Administrators Guide*.

Cannot change the browse time if there are files for recovery (LGTpa38176)

The following warning message is displayed if you attempt to change the browse time if files are marked for recovery.

```
There are files marked for recovery.
OK to ignore the marked files.
Cancel to stay with the current browse time.
OK / Cancel
```

Unmark files for recovery before attempting to change the browse time.

Limitations in operating system support

This section describes limitations of the various operating systems with Sun StorEdge release 7.3.x.

The udev tool is not supported on Emulex running Linux RedHat AS 4 using default kernel 2.6 (EMC Bug ID: LGTpa87657)

The **udev** tool is not supported on Emulex running Linux RedHat AS 4 using default kernel 2.6.

Sun StorEdge 7.x servers trigger a kernel panic on SGI IRIX 6.5.x (EMC Bug ID: LGTpa61855)

Backups of large file systems (greater than 1 TB) might trigger a kernel panic in the operating system, if both of these conditions are true:

- ◆ The version of IRIX on the server is earlier than 6.5.20.
- ◆ The direct I/O feature is enabled.

The problem occurs less frequently on more recent versions of IRIX, up to and including the current version 6.5.24.

As a temporary solution provided in Sun StorEdge release , the direct I/O feature is disabled. Until an SGI fix is installed, the direct I/O feature should remain disabled. However, if required, the direct I/O feature can be enabled by creating a file called `/nsr/debug/use_direct_io` on the Sun StorEdge client.

SGI plans to release a fix in a future release of IRIX, at which time the Sun StorEdge software can take advantage of the direct I/O feature.

Note: The SGI PV number used to track this problem is 907407, and the SGI PV number used to track the patches for this is 911471.

File system access time on AIX and HP-UX (EMC Bug ID: LGTpa61276)

If you are using HSM or files ystems that support a no-atime (access time) mount option, refer to *Technical Bulletin 386: atime* at <http://softwaresupport.emc.com>.

SunPlex manager default port number is 3000 (EMC Bug ID: LGTpa42901)

If the default port number (3000) conflicts with another running process, change the port number of the SunPlex Manager on each node of the cluster.

For more information on how to change the port number for the SunPlex Manager, refer to the Sun website.

UNIX compress utility must be available to use the nsr_support process on Linux (EMC Bug ID: LGTpa50543, LGTpa58444)

The **nsr_support** process (compress output) might not function on Linux platforms. The **nsr_support** process uses the UNIX compress utility, which is not a standard tool on all Linux platforms. The compress utility must be available on a Linux operating system when using the **nsr_support** process script. A warning message will be displayed if the compress utility is not available.

The compress utility is part of the compress rpm package.

Label tape operation fails on an HP-UX platform if CDI is turned on and IBM tape driver is used (EMC Bug ID: LGTpa58356)

On an HP-UX platform, a label tape operation fails with this error message if CDI is turned on and an IBM tape driver is used:

```
Error: while operating on slot `1': write open error:
      drive status is Drive reports no error - but state is
      unknown
```

Workaround

To avoid a failed label tape operation, do one of the following:

- ◆ Use IBM Atape driver version 3.0.1.8 which does not display this behavior. For more information on compatible hardware, refer to the *Hardware Compatibility Guide* available at <http://softwaresupport.emc.com>.
- ◆ Turn off CDI.

Cannot archive a NetWare client to a non-NetWare server (EMC Bug ID: LGTpa53397)

When a NetWare client attempts to archive to a Sun StorEdge server, the archive fails and this error message appears:

```
Archiving files of client_name to server_name
```

```
SYSTEM error, user needs to be on archive users or NSR
administrator list
```

To ensure the archive succeeds, do one of the following:

- ◆ *root@machine name* in the Administrator list.
- ◆ *root* in the Archive Users attribute in the Client resource.

Managing optical drives with Solaris 9 (EMC Bug ID: LGTpa48374)

With Solaris 9, the Volume Management daemon (**vold**) was changed so that it automatically attempts to manage all removable media devices. Because of this change, the Volume Management daemon may interfere with Sun StorEdge operations related to optical drives.

To workaroud this problem, disable the vold daemon or modify the daemon configuration file.

Disable the vold daemon

To disable the volume management (**vold**) daemon:

1. Log in as **root** on the Sun StorEdge storage node, and remove or rename the */etc/rc2.d/*volmgt* script.
2. Enter the **/etc/init.d/volmgt stop** command.

Modify the daemon configuration file

This workaround describes how to modify the Volume Management daemon configuration file to disable the functions that manage removable media devices.

To modify the daemon configuration file:

1. Log in as **root** on the Sun StorEdge storage node, and open the daemon configuration file, */etc/vold.conf*, in a text editor.
2. Comment out this line in the **Devices to Use** section.

```
use rmcscli drive /dev/rdisk/c*s2 dev_rmcscli.so rmcscli%d
```

After commenting out this line, the **Devices to Use** section of the configuration file looks similar to this:

```
# Devices to use
```

```
# use rmescsi drive /dev/rdisk/c*s2 dev_rmescsi.so
rmescsi%d
```

3. Save the configuration file.
4. Reinitialize the Volume Management daemon with the new configuration file settings. One way to do this is to send a hang-up signal to the daemon, for example:

```
ps -ef | grep vold
kill -HUP vold_pid
```

where *vold_pid* is the process ID of the volume management daemon, *vold*.

Restrictions for Sun StorEdge Solstice Backup clients earlier than release 5.5 running on a Sun StorEdge release 7.0 or later server (EMC Bug ID: LGTpa50711, LGTpa51370)

The Access Control feature changes the method Sun StorEdge clients authenticate to a Sun StorEdge Solstice Backup release server (for example: NetWare 4.x clients and Sun OS 4.x clients).

Any client base earlier than Sun StorEdge Solstice Backup release 5.5 includes these restrictions:

- ◆ A save set recovery to a Windows 2000 server or Solaris 9 or NetWare server is not supported (LGTpa50711).
- ◆ These operations are not supported with the Sun StorEdge Administration window on UNIX and Windows, or with NETWORKR.NLM on NetWare:
 - Creating, deleting, or modifying any resource (for example, Client or Group resources).
Note: These resources can be viewed, but operations cannot be performed on them.
 - Viewing indexes, backup volumes, or group status.
 High-level detail on indexes can be viewed, but low-level (save set) details cannot be viewed. Also, a cross-check or reclaim space operation cannot be performed on indexes.
 - All device operations, including mount, unmount, label, and inventory.

All other configurations are supported, such as Sun StorEdge Module for NetWare 4.x or Sun StorEdge for Sun OS 4.x clients authenticating to a Sun StorEdge 5.x or 6.x server.

Shared SCSI bus Tape drives are not supported on an unpatched version of HP Tru64 5.1B (EMC Bug ID: LGTpa50805)

Shared SCSI bus tape drives are not supported on an unpatched version of the HP Tru64 5.1B operating system. Install Tru64 version 5.1B or later with an Inaugural Patch Kit (IPK) if you want to configure shared SCSI bus tape drives on the system.

Cannot label a tape if CDI is enabled on a tape drive on HP Tru64 5.1 (EMC Bug ID: LGTpa50279)

To use the CDI feature with a storage node or server that is running on HP Tru64 UNIX version 5.1, install the latest patch kit available from Hewlett-Packard. If you choose not to install the patch kit on the Tru64 5.1 operating system, disable the CDI feature on any preconfigured devices.

SGI IRIX XFS 64-bit inodes do not back up (EMC Bug ID: LGTpa40680)

The Sun StorEdge software does not back up files on SGI IRIX XFS files systems that have a 64-bit inode. The IRIX 6.5 64-bit operating system randomly writes 64-bit and 32-bit inodes. If a file is written with a 64-bit inode, the Sun StorEdge software will not back it up. This error message appears when the Sun StorEdge software encounters 64-bit inodes: readdir overflow error, backup of directory cannot continue

The name of the directory not being saved appears immediately after the error message.

Workaround

Update to the IRIX 6.5.15 XFS file system. For file systems up to 8 TB, the IRIX 6.5.15 XFS file system now only allocates inodes in the 32-bit range to avoid an overflow error. For information on updating to the IRIX 6.5.15 XFS file system, refer to the appropriate SGI IRIX 6.5.15 documentation.

The jbconfig Command Reports More Drives Than Are Connected to the Node (EMC Bug ID: LGTpa45055, Sun Bug ID: 4783090, 4758993)

The **jbconfig** command does not allow the user to configure fewer drives than are physically present in the autochanger or library. All drives in the library must be accessible (included in zones accessible by the server) by the Sun StorEdge EBS backup server at the time of installation.

Using the `jbconfig` Command with Sun StorEdge RAID Manager (EMC Bug ID: LGTpa24044, LGTpa27298, Sun Bug ID: 4358034)

When Sun StorEdge disk arrays are used in conjunction with the Sun StorEdge RAID Manager, the **inquire** program might take an unexpectedly long time to complete. The **jbconfig** command uses the **inquire** program to obtain information about autochangers that are attached to the system. There are three possible workarounds:

- ◆ Stop the RAID Manager daemons before running **jbconfig**. One disadvantage of this workaround is that RAID Manager features, such as disk failover protection, are not operational during this period. However, **jbconfig** is usually run only during installation and initial configuration of the Sun StorEdge EBS software, and subsequently when adding autochanger hardware to the system. Often these tasks are performed during scheduled system maintenance periods when shutdown of the RAID Manager software is acceptable. If you want the **jbconfig** program to complete rapidly, then it is best to use **jbconfig** during scheduled system maintenance periods after stopping the RAID Manager daemons.
- ◆ Allow the **jbconfig** command to execute with the RAID Manager daemons still running. If this method is used, **jbconfig** may take a long time to complete, and this may cause unacceptable system performance issues.
- ◆ Perform the following procedure:
 - a. In `/etc/driver_classes`, delete the following line:

`rdnexus scsi`

Note: This prevents the framework from enumeration SCSI target nodes under `rdnexus`.

Internationalization support

These sections describe known limitations:

- ◆ [“Important notes and tips” on page 1-54](#)
- ◆ [“Known limitations” on page 1-56](#)

Important notes and tips

This section provides important notes and tips for using Sun StorEdge software.

Maximum Sun StorEdge supported path

The maximum length of the Sun StorEdge supported path has increased to 12 KB. The number of characters supported in the path is dependent on the language of the characters *and* any specific operating system limitations.

Non-English characters require more bytes than English characters. Ensure that the filepath and directory names remain within the limits imposed by the operating system and the Sun StorEdge software.

Display of an unsupported character in the current locale

If the Sun StorEdge software encounters a character that is *not* supported in the current locale, it replaces the character with a '?'. Previously, a '|' was used in place of an unsupported character.

Backwards and forwards compatibility issues

The internationalization (i18n) support available with Sun StorEdge release 7.3.x is not fully compatible with Sun StorEdge release 7.2.x or earlier. In environments where earlier releases of Sun StorEdge are installed, some functionality might *not* be available. However, data saved on a Sun StorEdge 7.2.x or earlier client can be restored to a Sun StorEdge 7.3.x or later client.

To avoid i18n compatibility errors, upgrade all nodes in the environment to Sun StorEdge 7.3.x or later.

This is a list of limitations found in a Sun StorEdge environment that has both release 7.3.x and 7.2.x or earlier installations:

- ◆ The backup and recovery of Sun StorEdge 7.2.x data to a Sun StorEdge 7.3.x server is supported, however all limitations existing on pre-7.3 clients apply.

- ◆ Filenames with multibyte characters saved by using a Sun StorEdge 7.2.x or earlier client might be displayed incorrectly. This affects filenames from both UNIX and NDMP backups.
- ◆ The user interface in Sun StorEdge releases earlier than 7.3 incorrectly handles filenames with non-ASCII characters saved by Sun StorEdge 7.3.x.
- ◆ The directed recovery of filenames that consist of non-ASCII characters between Sun StorEdge 7.3.x clients and pre-7.3 clients is not supported. The directed recovery of data between pre-7.3 clients requires that all clients are run in the same locale.
- ◆ Data with locale encoding of the filenames that does not match the locale in which the Sun StorEdge binary is run, results in corrupted filenames on localized Sun StorEdge. The filenames cannot be correctly recovered by Sun StorEdge 7.3.x.

Motif resource file

The Motif resource file contains support for displaying characters with multiple encodings (utf8, iso8859-1, iso8859-15, euc-cn, gbk, gb18030, big5, sjis, and euc-kr).

If you encounter a character that is not supported, adjust the fonts used in the Motif resource file. The file is located in:

- ◆ */usr/lib/X11/app-defaults/Networker* (non-Solaris UNIX platforms)
- ◆ */usr/openwin/lib/app-defaults/Networker* (Solaris)

For more information on adjusting the Motif resource file, consult the appropriate operating system documentation.

Scheduled backups of non-ASCII save sets

Scheduled backups of non-ASCII save sets are supported only if the Sun StorEdge server, storage node, and clients are all running in the same locale. There are no limitations on scheduled backups of ASCII save sets.

Limitations on directed recovery that use a non-ASCII relocation directory

Directed recovery that use a non-ASCII relocation directory does not work in all cases. In most cases, the non-ASCII relocation directory specified becomes corrupt when it reaches the target machine and the resulting directory created is different than what is specified.

Use an ASCII relocation directory.

Known limitations

This section describes known limitations when using the Sun StorEdge software.

Fonts may not display correctly in UNIX motif GUIs in non-English locales (LGTpa81511)

If you are having trouble displaying fonts in the UNIX motif GUIs (for example, **nwbackup**), for your current locale, ensure the operating system is configured to display them.

Save set name cannot be greater than 84 non-ASCII characters in length (LGTpa82184, LGTpa82004)

Sun StorEdge release 7.3.x does not support a save set recover if a save set name is longer than 84 non-ASCII characters.

Non-ASCII save sets are not supported for a scheduled backup on Linux and Tru64 (LGTpa79035, LGTpa80811, LGTpa81788)

Due to an operating system limitation, non-ASCII savesets are not supported for scheduled backups on either Linux or Tru64.

Solaris 9 does not support certain non-English code sets

Solaris 9 does not support certain code sets. For a full list of supported code sets, refer to the Sun website.

Sun StorEdge Management Console is not supported on Solaris running UTF-8 or PCK variants (LGTpa78211)

The Sun StorEdge Management Console is not supported on Solaris that is running UTF-8 or PCK variants.

The XAPPLRESDIR environment variable must be set to operate the Sun StorEdge Console on HP-UX (LGTpa79450)

To operate the Sun StorEdge Console on HP-UX that is running a non-English locale, the XAPPLRESDIR environment variable must be set as follows:

```
XAPPLRESDIR=/usr/lib/X11/app-defaults
```

Remote login from a local host to a remote localized host does not display Sun StorEdge data in localized language (EMC Bug ID: LGTpa35493)

If you remotely log in or telnet from a local host to a remote host with a localized version of the Sun StorEdge software, these conditions must be met:

- ◆ The locale setting on the local machine must be set to the appropriate localized language.
- ◆ The XFILESEARCHPATH environment variable on the local host must be set correctly.

If these conditions are not met, the Sun StorEdge Administration window displays English language characters while the data appears in the preferred localized language.

This is not an issue unique to the Sun StorEdge software, it is a motif issue. The XFILESEARCHPATH environment variable is automatically set when you log in to a Solaris computer. During a telnet session or remote login, the search order for the XFILESEARCHPATH environment variable is changed and the localized path is not located.

For a remote login or Telnet session to display the localized software correctly on a remote machine, you must ensure the configuration for the XFILESEARCHPATH environment variable is changed appropriately on the remote host.

Only US-ASCII 7-bit characters supported (EMC Bug ID: LGTpa24483)

Sun StorEdge release supports only US-ASCII 7-bit characters in resource names and attributes in the Sun StorEdge Administrator program and from the command line. Do not use multibyte characters, such as Chinese or Japanese, or Roman-language characters that include non-U.S. markings (for example, accents or umlauts), to complete attributes in resources, such as the Schedule, Group, or Storage Node resource.

All resource names and attributes must use US-ASCII 7-bit characters. You can, however, use multibyte language characters or Roman characters with non-U.S. markings as filenames.

Note: Non-ASCII characters are displayed correctly with the English Sun StorEdge binaries only for European locales (within the ISO 8859 code set). Non-ASCII characters are not displayed correctly with English Sun StorEdge binaries for Asian locales.

Technical notes

This section describes important notes and tips for using the Sun StorEdge software.

Adding and removing media using a the library front panel

Certain media libraries allow for media to be added and removed using the front panel display. This operation circumvents the Sun StorEdge server's normal procedures for adding and removing volumes and may cause the server information to become out of sync with the library. Normally, you should use the Sun StorEdge server procedures for adding and removing media, rather than the library's front panel display. This is more efficient and guarantees that the server and the library will be in sync.

If it is necessary to use the library's front panel display to add and remove volumes do the following:

1. In the **Properties** window for the Library, on the **General** tab, set **Status Enabled to Service**.

Putting the library in service mode will cancel all operations or wait for operations to complete that cannot be canceled, and then put the library into disabled mode.

2. Once the library is in disabled mode, use the library's front panel to add and remove tapes.
3. In the **Properties** window for the Library, on the **General** tab, set **Status Enabled to Enabled**.
4. Inventory the library. For full instructions, refer to the *Sun StorEdge Administrator Guide*.

When the inventory is complete, the server and the library will be in sync.

Operating AlphaStor and Sun StorEdge Console Servers on a single machine

To operate both EMC AlphaStor® and Sun StorEdge Console servers on a single machine:

1. As the root user, shut down the Sun StorEdge Console server.

Note: Set the `LD_LIBRARY_PATH` environment variable to `/opt/LGTONmc/sybase/lib`. This path is the default location on Solaris. If the Sun StorEdge Console was installed in a different location or is not on Solaris, please substitute with the appropriate path.

2. Edit the `gstd.conf` file, which is located in the `/opt/LGTONmc/etc` directory.

Note: This path is the default location on Solaris.

3. In `gstd.conf` file, change the value of `db_svc_port` to **9002**, from its default value of 2638. This assumes that port 9002 is not in use. The changed entry will appear as follows: **`int db_svc_port = 9002.`**
4. Run the `/opt/LGTONmc/bin/gstconfig` command to update the port value in NMC.
5. Restart the Sun StorEdge Console server.

Single save sets support only one code set

A single save set supports data belonging to only one code set. If you have data in multiple code sets, you must create multiple save groups.

The save set can contain filenames that belong to different languages if all characters in those languages belong to the same code set. For example ISO 8859-1 and ISO 8859-15 include most Western European languages, such as French (fr), Spanish (es), and Portuguese (pt), so filenames from these languages can be backed up in a single save set.

Enabling a NetWare 4.22 clients (LGTpa50711, LGTpa82282)

Support for a NetWare client is controlled by the environment variable `NSR_SUPPORT_NETWARE_4X`. By default, the supported is disabled. To enable support for NetWare clients, set the server system environment variable `NSR_SUPPORT_NETWARE_4X` to 1.

When using either the `/bin/sh` or `/bin/ksh` shells, enter:

```
# nsr_shutdown -q
# NSR_SUPPORT_NETWARE_4X=1
# export NSR_SUPPORT_NETWARE_4X
# nsrexecd
```

When NetWare support is enabled and a NetWare client establishes connection with the nsrd process, this message will appear in the *daemon.log*:

```
Support for Netware clients is enabled
```

VMware qualification

Sun StorEdge release 7.3.x has been qualified with VMware. For the most current information on:

- ◆ VMware support with Sun StorEdge software, refer to the Software Compatibility Guide.
- ◆ VMware with Sun StorEdge software, refer to the whitepaper, VMware ESX and GSX server editions.
- ◆ VMware configuration, refer to the VMware documentation.

Symbolic links are not restored during DAR recovery with NetApp

During a DAR recovery, symbolic links for files, directories, and other specific files, such as device files or named pipes, cannot be recovered. To recover these files, use the NetApp **restore** command with the **-x** option. For more information about the NetApp **restore** command, refer to the Network Appliance documentation.

Sun StorEdge connections through a firewall

The NSR_KEEPLIVE_WAIT variable sets the timeout limit that the **nsrexecd** daemon uses to keep messages active once a connection to the Sun StorEdge server has been established through a firewall. The period that **nsrexecd** will send keep-alive messages to **nsrexec** is adjustable by the NSR_KEEPLIVE_WAIT environment variable. Set this environment variable to the desired number of seconds between keep-alive wait messages.

If the NSR_KEEPLIVE_WAIT variable is not set or is set to an invalid value, (0, a negative number, or a nonnumeric string) then no keep-alive message is sent.

Raising the maximum number of open files on Solaris 7 and 8

On Solaris 7 and 8 operating systems that run in 64-bit mode, this error message might appear in the *daemon.log* file if the default 1,024 file descriptor hard limit is reached:

```
nsrd cannot accept any more connections - Too many open
files
```

By default on Solaris 7 and 8 operating systems, the hard file descriptor limit is set to 1,024. To raise the file descriptor hard limit, you must set the *rlim_fd_max* kernel parameter to a higher value in the */etc/system* file and then reboot.

For example, to raise the open file descriptor hard limit to 4,096, include this definition in the */etc/system* file:

```
set rlim_fd_max=4,096
```

Increasing the value of the *rlim_fd_max* kernel parameter impacts all running processes on the system. Consult the Solaris system administrator before attempting this operation.

Sun StorEdge security

Technical Bulletin 372: NetWorker Security describes several circumstances that can compromise Sun StorEdge security, and provides solutions for protecting and configuring the Sun StorEdge environment to safeguard it against these security risks.

Technical Bulletin 372: NetWorker Security is available on the EMC website at <http://softwaresupport.emc.com>.

Pause recommended between file creation and backup with EMC IP4700

If a level 1 to 9 backup is run on an EMC IP4700 filer within five minutes of creating a file, more files than expected may be saved. For example, if a level 1 backup is run, followed by a level 2 backup, and both of these backups complete within five minutes of the file being created, the newly created file might appear on both the level 1 and level 2 backups, even though the files should only be added to the level 1 backup. To avoid this problem, wait at least five minutes after creating a file to run a backup.

Older versions of Intel not supported on Sun StorEdge software on Linux

To take advantage of IA-32 586 and 686 optimizations in the compiler, as well as the new instructions provided on these architectures, the Sun StorEdge release for Linux does not support older versions of Intel, such as 486.

Note: Sun StorEdge release 6.1.x for Linux fully supports older versions of Intel architecture, including 386 and 486.

TruCluster versions 5.1Bv3 and later supported

The Sun StorEdge software supports only TruCluster 5.1Bv3 and later.

Considerations when using an advanced File type device

The AFTD device can be deployed in varying environments with local disks, NFS and CIFS mounted/mapped disks. Operation of this feature is affected by the configuration. Ensure that the AFTD is fully operational in the production environment before you deploy it as part of regularly scheduled operations.

As part of the validation process, include these tests:

- ◆ Backup
- ◆ Recover
- ◆ Staging
- ◆ Cloning
- ◆ Maximum file-size compatibility between the operating system and a disk device
- ◆ Device behavior when the disk is full

Some versions of NFS or CIFS drop data blocks when a file system becomes full. Use versions of NFS, CIFS, and operating systems that fully interoperate and handle a full file system in a robust manner.

On some disk devices, the volume labeling process may take longer than expected. This extended labeling time depends on the type of disk device being used and does not indicate a limitation of the Sun StorEdge software.

The upper limits of save set size depend on the upper limits supported by the operating system or the file size specified by the disk device vendor.

Documentation

This section describes documentation in the 7.3.x Sun StorEdge release:

- ◆ [“Documentation corrections and additions” on page 1-63](#)
- ◆ [“Related documentation” on page 1-66.](#)

Documentation corrections and additions

Sun StorEdge Administration Guide

Remove this paragraph on page 838:

Because the Console server computer must also be a Sun StorEdge client, it must back up to a Sun StorEdge server. The Sun StorEdge server should be behind the same firewall as the Console server. The ports that need to be opened are described under.

Replace the preceding paragraph with the following:

Because the Console server host is also a Sun StorEdge client, it must back up to a Sun StorEdge server. The Sun StorEdge server should be behind the same firewall as the Console server. For information about the ports that need to be open, refer to "Determining the Minimum Number of Service Ports Required" on page 830.

Backup and recovery support with NAT firewalls

Replace this paragraph on page 838 with this sections:

This section describes how to configure backup and recovery operations for Sun StorEdge clients that connect to the Sun StorEdge server through a dynamic Network Address Translation (NAT) firewall.

Support for scheduled backups and directed recoveries

Scheduled backups and directed recoveries are not supported for Sun StorEdge clients that connect to the Sun StorEdge server through a dynamic Network Address Translation (NAT) firewall. However,

scheduled backups and directed recoveries are supported for Sun StorEdge clients that connect through a static NAT firewall.

Perform one of these tasks:

- ◆ To perform scheduled backups or directed recoveries for Sun StorEdge clients that connect through a NAT firewall, disable dynamic NAT firewall support. For more information, refer to the router documentation.
- ◆ If you must retain a dynamic NAT firewall environment, disable scheduled backups for Sun StorEdge hosts that connect through the dynamic NAT firewall:
 1. Open the **Client** resource for editing.
 2. Clear the **Scheduled Backup** attribute.
 3. Click **OK**.

Support for ad hoc backup and recovery

To perform ad hoc backup and recovery operations on Sun StorEdge clients that connect to the Sun StorEdge server through a dynamic NAT firewall, perform these steps:

1. Determine the instance name of the Sun StorEdge client.
 - a. Log in as **root** or as Windows administrator on the Sun StorEdge client.
 - b. Type the following at the command-prompt:


```
nsradmin -p nsrexec -s client_name
```

 The **nsradmin** prompt appears.
 - c. Type the following at the **nsradmin** prompt:


```
print type:NSRLA
```

 The attribute settings for the NSRLA resource appear.
 - d. The **Name** attribute for the NSRLA resource is the instance name of the Sun StorEdge client. Use this instance name in step 2.
2. Add the instance name of the Sun StorEdge client to the Remote Access attribute of the Sun StorEdge server.
 - a. From the **Administration window**, click **Configuration**.
 - b. In the expanded left pane, select **Clients**.

- c. Select the **Client resource** for the Sun StorEdge server, and from the **File** menu, select **Properties**.
 - d. Select the **Globals (2 of 2)** tab, and enter the instance name of the **Sun StorEdge client** in the **Remote Access** attribute. Enter the **instance name** in this format:


```
nwinstname=instance_name
```
 - e. Click **OK**.
3. Repeat steps step 1 and step 2 for each Sun StorEdge client that connects to the Sun StorEdge server through a dynamic NAT firewall.
 4. Ensure that each Sun StorEdge client that connects to the Sun StorEdge server through a firewall, is set up so that its Aliases attribute contains both its long and short name.
 - a. Select the **Sun StorEdge Client** resource, and from the **File** menu, select **Properties**.
 - b. Select the **Globals (1 of 2)** tab.
 - c. Update the **Aliases** attribute, if necessary, to include both the long and short name of the Sun StorEdge client. For example, if the long name of the client is *jupiter.div1.company.com*, enter these values in the Alias attribute:


```
jupiter
jupiter.div1.company.com
```
 - d. Click **OK**.

You can now perform ad hoc backups and recoveries for the Sun StorEdge clients.

Ad hoc backup and recovery does not work with NAT firewalls

To perform ad hoc backup and recoveries on Sun StorEdge clients that connect to the Sun StorEdge server through a dynamic Network Address Translation (NAT) firewall:

Workaround

To perform ad hoc backups and recoveries on clients that connect to the Sun StorEdge server through a dynamic NAT firewall:

1. Create a Sun StorEdge client resource for the host on which the dynamic NAT firewall resides.

2. Create a client resource for each Sun StorEdge client that is behind the NAT firewall. Create each client resource as described in Support for Ad Hoc Backup and Recoveries.

Related documentation

For more information on the EMC NetWorker software, refer to these related documents:

- ◆ *Sun StorEdge, Release 7.3, Multiplatform Version, Administration Guide*
- ◆ *Sun StorEdge, Release 7.3, Installation Guide* (operating system appropriate)
- ◆ *Sun StorEdge Release 7.3, Multiplatform Version, Disaster Recovery Guide*
- ◆ *Sun StorEdge Command Reference Guide*
- ◆ *Sun StorEdge Error Message Guide*
- ◆ *EMC NetWorker License Manager Installation and Administrator's Guide and Release Notes*
- ◆ UNIX man pages
- ◆ *Software Compatibility Guide*

Software media, organization, and files

This section is currently not applicable to the Sun StorEdge product.

Installation

This section provides information pertaining to the installation and updating of Sun StorEdge software.

Cannot revert to a previous release after updating to release 7.3.x

When updating to Sun StorEdge release 7.2 or later format, there is no way to revert to a previous release of the Sun StorEdge software. It is a one-way conversion.

650 MB of available temporary space required to install the Sun StorEdge software

InstallShield requires that the entire installation program must be put into memory, even if you only intend to install a single Sun StorEdge software component. You must have must have 650 MB of available temporary space to install any component of the Sun StorEdge software.

Updating Sun StorEdge servers and storage nodes

Storage nodes and Servers must both be running the same version if Sun StorEdge release 7.3.x is installed on either one. Ensure all Sun StorEdge 7.3 servers and storage nodes are at the same version.

Troubleshooting and getting help

EMC support, product, and licensing information can be obtained as follows.

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink™ web site (registration required) at:

<http://Powerlink.EMC.com>

Technical support — For technical support, go to EMC WebSupport on Powerlink. To open a case on EMC WebSupport, you must be a WebSupport customer. Information about your site configuration and the circumstances under which the problem occurred is required.

For information about software patches, technical documentation, support programs, sales, and licensing, go to:

<http://softwaresupport.EMC.com>