Sun StorEdge™ Enterprise Backup Software 7.2

Release Notes

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Release Supplement

Sun StorEdge EBS software release 7.2 contains improvements and enhancements. This chapter discusses the following topics:

In this document, the term "jukebox" refers to a variety of backup devices:

- Autochanger
- Autoloader
- Carousel
- Datawheel
- Jukebox
- Near-line storage

New or Enhanced Features

Sun StorEdge EBS release 7. 2 includes the following new or enhanced features:

Direct File Access with Advanced File Type Devices

An advanced file type device (AFTD) offers direct access to recover save set data. The Sun StorEdge EBS `recover` command can use the direct path to the save set file, automatically bypassing the `nsrmmd` media-management process on the storage node, and reading information directly from the AFTD.

Note – Direct file access recovery is available only through use of the recover command from the command-line interface.

This direct file access capability can increase availability (connectivity) and reduce the latency (wait time) involved in using the `recover` program to restore data from Sun StorEdge EBS storage media. Since filesystems support concurrent access, direct file access also enables true concurrent access to AFTDs. This means that save sets can be recovered simultaneously.

Recovery through direct file access is only possible when the files in the filesystem are accessible as follows:

- Appropriate file permissions are set.
- Consistent naming conventions are used across the network. The filepath of the AFTD must be appropriate for the client and must be the same for every client that directly accesses the files.
- The remote filesystem where the AFTD resides is properly mounted or mapped on a system where the `recover` program will run.

If a Sun StorEdge EBS client cannot directly read and access a save set file that is stored on an AFTD, then the `recover` program automatically uses standard access through the `nsrmmd` process to recover the data, rather than direct file access.

Note – Clone recovery cannot make use of direct file access, because recovery of a clone requires an `mmd`-based device.

Data Service Agent

When a backup is performed from an NDMP host to a Sun StorEdge EBS tape device, disk, optical and other media type attached to a NetWorker storage node, the NetWorker storage node uses a NetWorker feature, data service agent (DSA). DSA acts as an agent save between a Sun StorEdge EBS server and any non-Sun StorEdge EBS client. An example of a DSA is an NDMP host that generates proprietary save data and sends that data to a Sun StorEdge EBS storage device to have a save set associated to it. Similarly, DSA will act as an agent recover.

Note – Using DSA for backups and recoveries with a non-NDMP NetWorker storage node with the LEGATO NetWorker SnapImage Module Release 1.6 and 2.0 is not supported.

Firewall Support Enhancements

The number of required service-side ports on the Sun StorEdge EBS server has been reduced. Extra service-side ports are no longer required during automated backups. Both of these factors help in estimating the number of required service ports.

Installation and Update Notes

This section provides notes pertaining to installing and updating the Sun StorEdge EBS software and related products.

ClientPak Installation Documentation

The *LEGATO NetWorker ClientPak® Installation Guide* is no longer published.

Installation information for the LEGATO NetWorker ClientPak is now found in the *Sun StorEdge Enterprise Backup Software Installation Guide* or the platform-specific LEGATO Installation Guide.

Updating Sun StorEdge EBS Servers and Storage Nodes

A Sun StorEdge EBS storage node release 7.2 is not compatible with a Sun StorEdge EBS server earlier than release 6.0. Update the Sun StorEdge EBS servers before updating a storage node. For more information, refer to the *Sun StorEdge EBS Installation Guide.*

Note – A Sun StorEdge EBS server release 7.2 supports release 6.x storage node.

Important Notes and Tips

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

Supported Operating Systems

For a complete list of the hardware and software that Sun StorEdge EBS software currently supports, refer to the *LEGATO Software Compatibility Guide* on the web site at *www.legato.com*.

VMware Qualification with Sun StorEdge EBS Release 7.2

Sun StorEdge EBS release 7.2 has been qualified with VMware. For the most current information on:

- VMware support with Sun StorEdge EBS, refer to the *LEGATO Software Compatibility Guide* on the website at: *www.legato.com.*
- VMware with Sun StorEdge EBS, refer to the whitepaper, VMware ESX and GSX server editions at: *http://www.legato.com/resources/whitepapers.cfm.*
- VMware configuration, refer to the VMware documentation at: *http://www.vmware.com/.*

Hierarchal Storage Management End of Life Notice

The Hierarchal Storage Management (HSM) Functionality is no longer supported in Sun StorEdge EBS release 7.1 and later. The LEGATO DiskXtender software has replaced the HSM functionality.

Note – LEGATO DiskXtender is a LEGATO product only.

For more information on operating system support with the DiskXtender software, refer to the LEGATO DiskXtender documentation and the *LEGATO Software Compatibility Guide* on the web site at *www.legato.com*.

Client Attributes Not Displayed When Running in Evaluation Mode

Certain client attributes such as the client operating system type and the Sun StorEdge EBS version installed, are not populated in the Client Setup information window of the Sun StorEdge EBS Administrator program if the Sun StorEdge EBS Server is running in Evaluation mode. However, when the Sun StorEdge EBS server has a Workgroup, Network or the Power edition enabler installed, these client attributes are refreshed appropriately in the window after the client is backed up.

User Group Creation Requires NetWorker Management Console

In order to create user-defined access control groups, NetWorker Management Console must be installed and enabled. If NetWorker Management Console is not installed, only the default groups are supported.

For more information on the NetWorker Management Console product, refer to NetWorker Management Console documentation.

Note – NetWorker Management Console is a LEGATO product only.

The ssretent Option to the mminfo Command Replaces the ssexp Option

The `ssexp` option (an `mminfo` command attribute in release 6.x) has been replaced with the `ssretent` option in release 7.x.

The `ssretent` option displays the retention time (expiration time) of a save set. This is a time limit that a save set will remain in the media database. For more information on the `mminfo` command, refer to the `mminfo` manpage.

Editing Autochanger Configurations with the jbedit Program

Running the `jbedit` program on a Sun StorEdge EBS release 7.2 storage node with a 6.1 server is not supported.

Using the Sun StorEdge EBS Administrator Program with Non-English Operating Systems

Save set recovery operations with a large number of save sets fail when using an English version of Sun StorEdge EBS with a non-English operating system. To avoid this, set the locale to C.

Sun StorEdge EBS Connections Through a Firewall

The NSR_KEEPALIVE_WAIT variable sets the timeout limit that the `nsrexecd` daemon uses to keep messages active once a connection to the Sun StorEdge EBS server has been established through a firewall. The period that `nsrexecd` will send keep alive messages to `nsrexec` is adjustable by the NSR_KEEPALIVE_WAIT environment variable. Set this environment variable to the desired number of seconds between keep alive wait messages. If the NSR_KEEPALIVE_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 running in 64-bit mode, the following error message may be displayed 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 reboot.

For example, to raise the open file descriptor hard limit to 4,096, include the following 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 EBS User Program Is Not 508-Compliant on the Microsoft Windows Client

The Sun StorEdge EBS User program on the Microsoft Windows Client is not 508-compliant.

Fujitsu SCSI Host Bus Adaptor Supported

Sun StorEdge EBS release supports the Fujitsu SCSI host bus adaptor. For support information, contact Fujitsu technical support.

SmartMedia Not Supported

SmartMedia is not supported by Sun StorEdge EBS release 7.2.

Solaris 9 Features Not Supported

The following Solaris 9 features are not supported:

- Minimal installation
- Extended file attributes
- Multi-terabyte UFS file system support

XKeysymDB File Necessary to Run Motif-Based Graphical Interfaces

To run the motif-based graphical user interfaces (`nwrecover`, `nwadmin`, `nwbackup`, `nwretrieve`), the `XKeysymDB` file must be installed. This file translates virtual key symbols, and without it motif-based graphical user interfaces are unable to translate these symbols, reducing interface functionality.

Specific Software and Hardware Configurations Experience Kernel Panic with CDI Enabled

A kernel panic might occur when the Tru64 computer is acting as a remote storage node to another server or as a server with a local storage node.

Caution – If you are running HP Tru64 5.0A, update to a more current version of HP Tru64. If you are unable to update the operating system, disable the common device interface (CDI) feature for any tape devices that you have configured.

HP Tru64 5.1 or Later

On Sun StorEdge EBS release software with HP Tru64 5.1, apply Patch Kit 3 or later from the following link:

```
http://ftp1.support.compaq.com/public/unix/
```

On Sun StorEdge EBS release with HP Tru64 5.1A or later, there will *not* be a kernel panic with the CDI feature enabled.

Sun StorEdge EBS Release with CDI Enabled on HP Tru64 Version 5.1

The following configuration of Sun StorEdge EBS release with CDI enabled experienced a kernel panic in testing:

- HP Tru64 version 5.1
- Quantum jukebox with one SDLT320 drive
- Direct SCSI connect
- Sun StorEdge EBS release
- CDI on (enabled)

If you experience a kernel panic with this configuration, complete the following steps:

1. Disable CDI.

2. Download Patch Kit 3 or the latest HP patch kit from the following web site:

   `http://ftp1.support.compaq.com/public/unix/`

3. Verify the patch kit has been successfully installed.

4. Enable the CDI feature.

     Note: CDI is not supported on NDMP.

▼ To Avoid a Kernel Panic

To avoid a kernel panic, perform the following:

1. Determine which operating system and version you are using.

2. Determine which patch level (if any) you have installed.

3. Temporarily disable the CDI feature on the Sun StorEdge EBS software.

4. Download Patch Kit 3 or the latest HP patch kit from the following web site.

   `http://ftp1.support.compaq.com/public/unix/`

5. Verify the patch kit has been successfully installed.

6. Enable the CDI feature.

7. Complete a small-scale save and recovery to determine if a kernel panic occurs.

Note – If you experience a kernel panic, contact Sun Technical Support.

Sun StorEdge EBS Security

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

Technical Bulletin 372: NetWorker Security is available on the LEGATO web site at *www.legato.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.

Best Practice in Using the nsr_shutdown Command

For information on best practices when using the `nsr_shutdown` command, refer to *Technical Bulletin 370: Best Practice in Using the nsr_shutdown Command* on the LEGATO web site at *www.legato.com*.

Older Versions of Intel Not Supported on Sun StorEdge EBS 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, Sun StorEdge EBS release for Linux does not support older versions of Intel, such as 486.

Note – The 6.1.x release for Linux fully supports older versions of Intel architecture, including 386 and 486.

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 the following tests:

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

Caution – Some versions of NFS or CIFS drop data blocks when a filesystem becomes full. Use versions of NFS, CIFS and operating systems that fully interoperate and handle a full filesystem 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 EBS 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.

Known Limitations

The following sections describe known limitations:

-
-
-

Limitations in Feature Support

This section describes limitations in Sun StorEdge EBS features.

4mm DAT72 Tape Device Displayed As 4mm DAT7 (LEGATO Bug ID: LGTpa69367, Sun Bug ID: 5109491)

The Sun StorEdge EBS Administrator program displays a 4mm DAT72 tape device as 4mm DAT7. The Sun StorEdge EBS software *does* recognize the tape device, but the display window is too small to fully display the device name.

Parallelism Value Cannot Exceed the Server Parallelism Value If Multiple Savegroups are Run at the Same Time (LEGATO Bug ID: LGTpa69918)

The Sun StorEdge EBS Server will stop responding if:

- Multiple savegroups are run at the same time.
- Total Saveroup Parallelism value exceeds the server parallelism value.

Example: Potential Problem Scenario

- Server parallelism is set at 64
- Savegroup parallelism is set at 32 (for 32 savegroups)
- All 32 savegroups are initiated.

1,024 `nsrexec` and 1,024 `save` processes compete for 64 resources causing the Sun StorEdge EBS server processes to slow and ultimately stop responding.

RPC Error Reported During Shutdown of NetWorker Processes (LEGATO Bug ID: LGTpa69728, Sun Bug ID: 6180701)

The following RPC error may be encountered if installing additional Sun StorEdge EBS software packages (storage node, server) to a Sun StorEdge EBS client that has processes running (for example, the nsrexecd process).

```
The following NetWorker programs are currently running and must be
shutdown before continuing:

 16323 ?       S  0:00 /usr/sbin/nsr/nsrexecd

 16324 ?        S  0:00 /usr/sbin/nsr/nsrexecd

Shutdown currently running NetWorker programs [yes]?

nsradmin: RPC error: Program not registered

nsradmin: There does not appear to be a NetWorker server running
on machine name.
```

Before each software package is installed, all Sun StorEdge EBS processes should be shutdown. The RPC error is generated because the nsr_shutdown process attempts to stop Sun StorEdge EBS server processes when in fact no Sun StorEdge EBS server is running. This error message can be ignored and the installation process completes successfully.

Workaround

During the pkgadd process, ensure no Sun StorEdge EBS processes are currently running and do not start the Sun StorEdge EBS daemons until the final package is being installed if you are installing multiple Sun StorEdge EBS packages.

On AAM in an HP-UX Environment, the Sun StorEdge EBS Server Might Not Start (LEGATO Bug ID: LGTpa68903, LGTpa68904)

In an AAM HP-UX cluster environment, the Sun StorEdge EBS server might not start if a volume group is created in exclusive mode. This is because, AAM will not attach a volume group that is used as a shared data source.

Workaround

The procedure to resolve this issue differs and is dependent upon if the nw_ux.lc.aam5.imp file has or has not been imported to AMM.

If the `nw_ux.lc.aam5.imp` file has already been imported:

1. Add the following to the HP LVM datasource section in the `lc.aam5.imp` file:

   ```
   settings.userEnvVars = {

   {

   name = FT_ATTACHFLAG

   value = e

   }
   ```

2. Import the `nw_ux.lc.aam5.imp` file to the AAM program.

   If the `nw_ux.lc.aam5.imp` file not been imported:

   Use the AAM console to add the FT_ATTACHFLAG environment variable with a value "e" by editing the Advanced tab of the LVM datasource for the Sun StorEdge EBS resource group.

Tape Gets Stuck in a Drive When Labeling Using Linux Red Hat Sun StorEdge EBS Server (LEGATO Bug ID: LGTpa68867)

When labeling tape in a DDS configuration using a Linux Red Hat Sun StorEdge EBS server, the tape gets stuck in the drive and the following error message is displayed:

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

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

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

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

nsrndmp_save -I Option Not Supported (LEGATO Bug ID: LGTpa69204)

The -I option of the nsrndpm_save command, used by savegrp to spawn nsrndpm_save on the NetWorker index host, is not supported by the Sun StorEdge EBS 7.2 release. The index host is designated to perform NDMP backup initiation and index processing.

Device File Name Does Not Appear in the inquire Command Output (LEGATO Bug ID: LGTpa57899)

The device file name 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 Fiber Channel host bus adaptors (HBA).

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

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

Backing up a NDMP File System with More Than 10 million Files on AIX Might Cause A Core Dump (LEGATO Bug ID: LGTpa68950, LGTpa69000)

When backing up a file system with more than 10 million entries on an AIX operating system, the `nsrndmp_2fh` process will dump core. The default file size limit of 1 GB on an AIX operating system causes this issue.

Workaround

Edit the `/etc/security/limits` file or use the `ulimit` command to increase the file size limit. See the `limits` and `ulimit` man pages for more details on how to increase the file size limit.

Savegrp Parallelism Clarification for UNIX Online Help (LEGATO Bug ID: LGTpa68337)

The UNIX online Help for the Savegrp Parallelism attribute in the Groups Window of the Sun StorEdge EBS Administrators program needs to be clarified:

It currently states:

Savegrp Parallelism - If the value is not zero (0), it overrides any other parallelism considerations that `savegrp` uses to avoid over-utilizing the system's resources. For example, `savegrp` parallelism overrides server parallelism, save set parallelism, and so on. In other words, it restricts the number of save streams going simultaneously to the Sun StorEdge EBS server for the corresponding group.

The second sentence has been clarified. The section should now read:

Savegrp Parallelism - If the value is not zero (0), it overrides any other parallelism considerations that `savegrp` uses to avoid over-utilizing the system's resources. In other words, the number of save streams going simultaneously to the Sun StorEdge EBS server for the group is restricted to this value, even when additional resources are available.

When rsh is Used to start a backup, the savefs Command Must be in the Execution Path of the Client Computer (LEGATO Bug ID: LGTpa67542)

When using the remote shell (rsh), instead of `nsrexecd`, to start a client backup, ensure that the default path ($PATH) environment variable on the client computer includes the directory where the `savefs` command is installed on the client computer. If the `savefs` command is not located, the backup will not complete successfully even though a savegroup status of successful will appear in the savegroup completion report.

Percentage of Backup Volume Used is Not Updated for Advanced File Type and File Type Devices (LEGATO Bug ID: LGTpa67114)

Information displayed for the percentage of a volume that has been used for backups applies to tape volumes only. This information is not accurate for backup volumes on advanced file type devices or on file type devices. Volume information is provided in volume reports and in the Volumes window, which is displayed by clicking the Volumes toolbar button on the Sun StorEdge EBS Administration program.

Meaningless Error Messages Appear in the nwrecover Window (LEGATO Bug ID: LGTpa66710)

When using the `nwrecover` command to access an earlier version of a file using the Versions option in the Sun StorEdge EBS Administrator program, the following error messages appears in the `nwrecover` window:

```
nwrecover: Duplicate entry for /smallspace/firstfilename @ <date>

nwrecover: Duplicate entry for /smallspace/secondfilename @ <date> [...]
```

There are no duplicate files and the output displayed is unrelated to the files being recovered. Ignore the error messages.

Save Set Field Is Limited to 1,024 Characters (LEGATO Bug ID: LGTpa65153)

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 (LEGATO Bug ID: LGTpa66565)

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

Scanner Does Not Support Scanning Tapes Out of Sequence (LEGATO Bug ID: LGTpa63830)

When using the `scanner -i` command, tapes must be presented in the order in which they were written when rebuilding the client file index.

When tapes are scanned out of order, it results in error messages, and the client file index is damaged.

To avoid errors in the client file index:

1. Create media database entries for the tapes by using the `scanner -m` command.

2. Enter the `mminfo` command to determine the correct sequence of tapes.

3. Enter the `scanner -i` command to rebuild the client file index.

Auto Media Management Does Not Function Correctly with Stand-Alone Tape Drives (LEGATO Bug ID: LGTpa63584)

When a stand-alone device with Auto Media Management (AMM) enabled is used with the Sun StorEdge EBS Administrator program user interface, the following error message is displayed:

```
Monitoring device, moving back 2 file(s)
```

Keep the following in mind when stand-alone devices with AMM enabled are used:

- If the tape is unmounted, and then the device is put into the monitor state for 15 minutes, no operations can be performed in the Sun StorEdge EBS Administrator program user interface.
- If the device is in the monitor state:
  - The tape can be manually ejected on the stand-alone device and a new tape can be mounted.
  - The time out value is 15 minutes.

After the 15 minute timeout period has passed, the Sun StorEdge EBS server automatically mounts the volume.

For more information on mounting tapes with AMM, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

EMC CFS 5.2 Clone Fails (LEGATO 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, 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.

Polling Interval is Too Short in Attribute Windows When Using the Sun StorEdge EBS Administrator Program (LEGATO Bug ID: LGTpa62385)

The position of a window might reset to the mid-level of the window if you do *not anchor it by* selecting an item in the scroll list.

LEGATO License Manager Allowance Limitation (LEGATO Bug ID: LGTpa62224)

If the LEGATO License Manager is used to allocate licenses to specific servers, wait a minimum of two minutes for License Manager and `nsrd` to synchronize from the time of allowance resource creation through to the server license assignment.

Failure to allow two minutes for the synchronization to occur might result in incorrect assignment of a license to the server.

Package Installation on Linux IA64 Red Hat Results in Error (LEGATO Bug ID: LGTpa61643)

During installation of Sun StorEdge EBS packages on Linux IA64, the `rpm` program incorrectly reports the following missing library errors:

rpm -i lgtoclnt--1.ia64.rpm

error: Failed dependencies:

ld-linux-ia64.so.2 is needed by lgtoclnt--1

```
libc.so.6.1 is needed by lgtoclnt--1
```

libc.so.6.1(GLIBC_2.2) is needed by lgtoclnt--1

libncurses.so.5 is needed by lgtoclnt--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 lgtoclnt--1.ia64.rpm
```

4. Repeat this procedure for each required Sun StorEdge EBS package, *lgtonode*, *lgtoserv,* or *lgtodrvr.*

Ignore Error Message When Labeling A Volume with a 9840C Tape Drive (LEGATO Bug ID: LGTpa58115)

Sun StorEdge EBS displays the following error message when labeling a volume with a 9840C tape drive:

```
TapeAlert "Diagnostics required"
```

Ignore the error message, the labeling process completes and there are no negative effects.

When CDI is enabled in the Device resource on the server, the TapeAlert messages which provide tape drive status are logged. There are three types of TapeAlert messages: Informative, Warning or Critical. All three types are logged, but some messages such as the one illustrated above, are simply informative and can be ignored.

If you have questions about the TapeAlert messages logged, please check the tape drive users manual for device specific instructions on running extended diagnostic tests.

The nsrjb -lf Command Fails If Cleaning Tape Is Not in the Media Database (LEGATO Bug ID: LGTpa58954, Sun Bug ID: 4990021)

When cleaning a tape drive with the command nsrjb -lf *device* -S *slot_with_cleaning_tape*, the following error is displayed:

```
nsrjb: Jukebox error: date Volume Cleaning Tape (50 uses left)
CLNH20L1 not found in media database
```

Workaround

Add the -n (no mount) option to the nsrjb command.

For example, nsrjb -lnf *device* -S *slot_with_cleaning_tape*.

Error Message Appears in daemon.log When Labeling a Volume That Contains PowerSnap Save Sets (LEGATO Bug ID: LGTpa54632)

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

```
nsrmmdbd: error, null
```

Ignore the error messages in the daemon.log file as no actual error occurred.

The Reclaim Space Button Runs nsrck -L 1 (LEGATO Bug ID: LGTpa58204, LGTpa30076)

The Reclaim Space button found under the Index menu in the Sun StorEdge EBS Administrator program runs a nsrck -L 1 command. This simply validates the online file index header, thereby merging a journal of changes with the existing header. Manually freeing up space is no longer needed by release since space is automatically freed up daily if savegroups are run each day. By default, the nsrim process runs once per day at the end of a savegroup.

Note – On a Sun StorEdge EBS server running a release earlier than 6.0, the Reclaim Space button decreased the size of the client file index by compressing the space in the index left by removed entries, thus freeing up disk space.

Failure To See Devices After Upgrading from HP-UX 32-Bit to 64-Bit (LEGATO Bug ID: LGTpa58548)

When upgrading from HP-UX 32-bit to 64-bit, the `/tmp/lgto_scsi_devlist` file, created by the `inquire` and `jbconfig` commands is not readable by the 64-bit platform. The `inquire` command does not detect devices.

The `jbconfig` command, with auto-detect enabled, displays an error message indicating no SCSI devices were found.

Auto Media Management Not Supported With a Stand-Alone Device Shared By Two or More Storage Nodes (LEGATO Bug ID: LGTpa57007)

If a stand-alone device is shared by two or more storage nodes, auto media management should *not* be enabled for both storage nodes. Enabling auto media management for more than one storage node with the same stand-alone drive ties up the device indefinitely. No data is sent to the device and no pending message is sent.

When Recovering Data From Multiple Volumes the Sun StorEdge EBS Software Might Loop (LEGATO Bug ID: LGTpa55566, LGTpa57799)

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

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.

Dynamic Drive Sharing Is Supported By a 6.0.x Storage Node (LEGATO Bug ID: LGTpa54729)

Dynamic drive sharing (DDS) is supported on a storage node running Sun StorEdge EBS release 6.0.x as long as the Sun StorEdge EBS server is running release 6.1 or later and the library is controlled by a storage node running release 6.1 or later.

A savegrp Process Might Continue to Run on savegroup Marked as Finished (LEGATO Bug ID: LGTpa54634)

A `savegrp` process might continue to run on a save group that is marked as finished in the Sun StorEdge EBS Administrator program.

To avoid this problem download the Solaris 2.8: Patch-ID# 109147-24 from the Sun web site.

Error Message Generated If the Snapshot Policy Is Configured to Request More Snapshots Than a savegroup Can Generate (LEGATO 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 will generate the following error message when running the group and will not back up that group:

```
timestamp savegrp: RAP error: Invalid snapshot policy with
number_of_requested_snapshots snapshot creation per day. Sun StorEdge EBS
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 EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide.*

Specify the Full Path of the save Command in the Script File (LEGATO Bug ID: LGTpa56395)

Always specify the full path of the `save` command in the script file when entering the script filename in the Backup Command text box in the Client dialog box. All commands within the script file must be successfully executed; otherwise, the Sun StorEdge EBS server cannot complete the remaining instructions.

SCSI Device ID Displayed Differently Than Sun StorEdge EBS NDMP Devices (LEGATO Bug ID: LGTpa53364)

For Sun StorEdge EBS 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 (LEGATO Bug ID: LGTpa56231)

The Sun StorEdge EBS software does not delete all client file index entries after all save sets are recycled, the volumes are deleted, and the 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 EBS CDI (LEGATO 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.

Setting the Polltime to Either Zero or a Noninteger Causes the Output Screen Display to Refresh Unnecessarily (LEGATO Bug ID: LGTpa55982)

On an HP-UX 11 operating system, setting the polltime -p option to either zero or a noninteger with the `nsrwatch` command causes unnecessary refreshing of the output screen display. For example, the following command causes the problem:

```
nsrwatch -p 0 -s local_ server
```

To avoid the problem with the screen display, do not enter the `nsrwatch` command with the `-p 0` or `-p 1` option.

Sun StorEdge EBS Software Attempts to Eject a Stuck Tape (LEGATO Bug ID: LGTpa51725)

If a hardware problem results in a tape becoming stuck in a drive, the Sun StorEdge EBS software will keep 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 EBS software keeps trying to eject a stuck tape, perform the following procedure to correct the problem:

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. Re-enable the drive.

7. Mark the volume appendable again (if appropriate).

Limitation on Browse and Retention Policy Dates (LEGATO Bug ID: 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 times is limited to a maximum of 68 years starting from the year 1970.

Note – An expired save set retention date does not automatically result in the save set being overwritten. Save sets can only be overwritten after the retention policy has expired *and* the user selects to either relabel the volume or manually delete the save set from the volume.

Workaround

To enable full browse and retention policies beyond the year 2038, use the NetWorker Archive feature. For more information about data archiving, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

Backing Up a Sun Solaris Client to an SGI IRIX Server May Be Slow (LEGATO Bug ID: LGTpa52106)

When backing up a Sun Solaris client to an SGI IRIX server with an attached tape drive, the backup may be slow.

On the Sun client, set the /dev/tcp tcp_wscale_always variable to 1 by using the following command:

```
ndd -set /dev/tcp tcp_wscale_always 1
```

Enabling CDI with IBM Ultrium-2 Fibre Channel Drive May Slow Backups (LEGATO Bug ID: LGTpa50804)

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

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

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

Changes to the Savegroup Completion Report (LEGATO Bug ID: LGTpa51237)

The savegroup completion report has been changed, so that the first line of the report includes the number of clients whose hostnames were not resolved. The new format for the savegroup completion report is:

```
NetWorker savegroup: (alert) group completed, total 5 client(s),
2 Hostname(s) Unresolved, 1 Failed, 2 Succeeded. (jupiter Failed)

hostname resolution failed for 2 client(s)
                    mars
                    saturn
```

You must change any scripts that parse the savegroup completion report because of the new format.

Directives Are Ignored When Backups Are Initiated from nwbackup (LEGATO Bug ID: LGTpa49939)

Directives are ignored when backups are initiated from the nwbackup program. To ensure that directives are executed, set up a scheduled backup in the Sun StorEdge EBS Administrator program.

Enabling SCSI Reserve/Release for DDS Drives (LEGATO Bug ID: LGTpa30565, LGTpa49501)

When the Sun StorEdge EBS 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 EBS software. It is recommend that the operating system's use of the reserve/release feature be disabled before using DDS with Sun StorEdge EBS software. The following are the instructions 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.

> **Caution –** Edit the st.conf file *only* if you are using DDS with Sun StorEdge EBS software or if you are using a tape drive 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, enter 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 EBS 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. You may have to 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.

Device Autodetection Attributes Not Supported on Solaris (LEGATO Bug ID: LGTpa58849)

On a Solaris server and for a Solaris client, do *not* use the following attributes that appear in the Device Configuration field in the Server Setup menu to perform device autodetection as they are not supported in release :

■ Enable New Device

■ Device Host List

■ Search New Device

■ Search All Luns

Increase Server Parallelism to Complete Concurrent Operations (LEGATO 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.

Devices Not Recognized in SAN Topology (LEGATO Bug ID: LGTpa51388)

Ensure that all devices in a SAN environment are set and connected correctly. This is crucial for recognition by the inquire command and for any operation on the devices to be recognized and operate as expected. For detailed information on setting devices, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

Perform a Save Set Recovery When Using the save Command with the -I input_file Option (LEGATO 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, the save of connecting directories fails and you are unable to perform index-based recoveries. The workaround is to perform a save set recovery.

Error Downgrading to Business Edition (LEGATO 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 Edition, use the following workaround:

1. Enter the computer's hostname in the License Server attribute, if a license service is not already specified:

    a. In the Sun StorEdge EBS Administrator program on the Sun StorEdge EBS 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 click 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 EBS product whose enabler code you want to delete.

       A series of windows appears to confirm the deletion and to repeat Step a and Step b for verification.

    c. Click OK in the windows and repeat the steps to delete the base enabler.

3. Remove the hostname from the Sun StorEdge EBS 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; then click Apply.

4. Enter the Business Edition enabler code:

   a. From the Server menu, select Registration.

   b. Click the Create button.

   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 (LEGATO Bug ID: LGTpa50485)

Note – The following issue has only been seen on SDLT110/220 drives.

When auto media management is enabled and a backup operation is initiated, if the Sun StorEdge EBS software encounters a corrupted tape during the label operation, it can take longer than 30 minutes (the default timeout value) before the label operation fails. The Sun StorEdge EBS 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 EBS 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.

Date Last Cleaned Not Propagating Among Shared Devices (LEGATO Bug ID: LGTpa49801)

In a DDS environment, the Sun StorEdge EBS software does not update all the Device resources with the same hardware ID when a one of the drives is cleaned.

Workaround

Turn the Auto Clean feature off in a DDS environment:

1. In the Sun StorEdge EBS Administrator program, select Jukeboxes from the Media menu.

2. In the Jukeboxes dialog box, select the appropriate autochanger.

3. Select No for the Auto Clean attribute to turn autocleaning off, and click Apply.

Volume Remains in the Tape Drive If the Storage Node nsrmmd Is Not Responding in a Shared Drive Environment with DDS (LEGATO Bug ID: LGTpa45470)

In a DDS environment, where physical drives are accessed by multiple Sun StorEdge EBS storage nodes, if the Sun StorEdge EBS server is unable to communicate with the nsrmmd daemon on any storage node, and if that node has loaded or mounted volumes onto the shared drives, then these volumes remain in the physical drives.

If the drives are within a jukebox, issuing a hardware reset from the node controlling the jukebox (nsrjb -H) clears the physical drives through another device path. The nsrjb -H command resets the jukebox hardware, so the tape ejects if a drive is loaded.

Files Larger Than 2 GB Can Break the Save Set Consolidation Process (LEGATO Bug ID: LGTpa44863)

The Sun StorEdge EBS 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 (LEGATO 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`.

  Note: 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`.

SunPlex Manager Default Port Number Is 3000 (LEGATO 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 web site.

The nsrjb -L and -I Operations Fail with an Exabyte Mammoth-2 Tape Drive with Fibre Channel Device (LEGATO Bug ID: LGTpa37996)

When using the `nsrjb -L` and `-I` commands to perform inventory and tape label operations, the Sun StorEdge EBS software reports the following 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 (LEGATO 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 EBS 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 EBS Administrator program before using a `nsrjb` command.

The jbexercise Command With the -D and -d Options No Longer Valid (LEGATO Bug ID: LGTpa30555, Sun Bug ID: 4462022)

The `-D` and `-d` options no longer work with the `jbexercise` command.

Workaround

Enter the `jbexercise` command with the `-m other` option rather than specifying the jukebox model.

The Sun StorEdge EBS Administrator Program Does Not Reconnect to the Server After a Failover (LEGATO Bug ID: LGTpa27089)

After a failover, the Sun StorEdge EBS Administrator program does not reconnect to the virtual server, even if the virtual server is running on another node with the same host name.

Note – If the Sun StorEdge EBS Administrator program is running on a node external to the cluster when the `nsrd` process restarts, the Sun StorEdge EBS Administrator program reconnects.

Workaround

To reconnect to the server after a failover, perform *one* of the following workarounds:

- Run the Sun StorEdge EBS Administrator program on a node external to the cluster. When the Sun StorEdge EBS Administrator program starts on a node where the nsrd process is local, it binds to the local host (the physical host) and the virtual server name is aliased to the physical host.

- If the Sun StorEdge EBS Administrator program must run on one of the cluster nodes, reconnect the server by explicitly connecting to the physical hostname where the nsrd process is running.

Limitations in Operating System Support

This section describes operating system related limitations in Sun StorEdge EBS release.

Sun StorEdge EBS 7.x Servers Trigger a Kernel Panic on SGI IRIX 6.5.x (LEGATO Bug ID: LGTpa61855)

Backups of large filesystems (greater than 1 TB) might trigger a kernel panic in the operating system, if the following conditions are both 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 EBS release, the direct I/O feature is disabled. Until an SGI fix is installed, it is recommended that the direct I/O feature 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 EBS client.

SGI plans to release a fix in a future release of IRIX, at which time the Sun StorEdge EBS 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.

Filesystem Access Time on AIX and HP-UX (LEGATO Bug ID: LGTpa61276)

If you are using HSM or filesystems that support a no-atime (access time) mount option, refer to the ID: legato53348 knowledge object at the Sun eKnowledgeBase and *Technical Bulletin 386: atime* on the website at *www.legato.com*.

UNIX Compress Utility Must Be Available to Use the nsr_support Process on Linux (LEGATO 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 (LEGATO Bug ID: LGTpa58356)

On an HP-UX platform, a label tape operation fails with the following 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 *LEGATO Hardware Compatibility Guide* available on the web site at *www.legato.com*.
- Turn off CDI.

Problems with SCSI Tape Devices on Linux (LEGATO Bug ID: LGTpa55996)

Linux kernels after the 2.4.10 version have a bug in the SCSI tape (st) module. This bug might cause problems when using a tape drive with Sun StorEdge EBS software on these systems. The symptoms are that a tape drive becomes unusable and eventually is disconnected from the system. Please contact the Linux distributor for an updated maintenance kernel.

For more information on this issue and a patch for the 2.4.20 version of the Linux kernel, refer to the following link:
http://www.kolumbus.fi/kai.makisara/st-eot.html.

Cannot Archive a NetWare Client To a Non-Netware Server (LEGATO Bug ID: LGTpa53397)

When a NetWare client attempts to archive to a UNIX Sun StorEdge EBS server, the archive fails and the following error message is displayed:

```
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, add *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 (LEGATO 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 EBS operations related to optical drives.

There are two workarounds for this problem:

- Disable the Volume Management daemon. Refer to"To Disable the Daemon" on page 53.
- Modify the daemon configuration file (*vold.conf*) to disable the settings that manage removable media devices. Refer to "To Modify the Daemon Configuration File" on page 53.

▼ To Disable the Daemon

To disable the volume management daemon, `vold`:

1. Log in as root on the Sun StorEdge EBS storage node, and remove or rename the `/etc/rc2.d/*volmgt` script.

2. Enter the `/etc/init.d/volmgt stop` command.

▼ To 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 EBS storage node, and open the daemon configuration file, `/etc/vold.conf`, in a text editor.

2. Comment out the following line in the Devices to use section.

```
use rmscsi drive /dev/rdsk/c*s2 dev_rmscsi.so rmscsi%d
```

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

   ```
   # Devices to use
   # use rmscsi drive /dev/rdsk/c*s2 dev_rmscsi.so rmscsi%d
   ```

3. Save the configuration file.

4. Re-initialize 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 5.5 Running on Sun StorEdge EBS Servers (LEGATO Bug ID: LGTpa50711, LGTpa51370)

Sun StorEdge Solstice Backup release contains a new Access Control feature that changes the underlying authentication method for Sun StorEdge EBS clients authenticating to a Sun StorEdge Solstice Backup release server (such as Sun StorEdge Solstice Backup for NetWare 4.x clients and Sun StorEdge Solstice Backup for Sun OS 4.x clients).

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

■ A save set recovery to a Windows 2000 server or Solaris 9 or netWare server is not supported (LGTpa50711).

■ The following operations are not supported with the Sun StorEdge EBS Administrator program on UNIX and Windows, or with `NETWORKR.NLM` on NetWare (LGTpa51370):

– 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 EBS for NetWare 4.x or Sun StorEdge EBS for Sun OS 4.x clients authenticating to a Sun StorEdge EBS 5.x or 6.x server.

Shared SCSI Bus Tape Drives Are Not Supported on an Unpatched Version of HP Tru64 5.1B (LEGATO Bug ID: LGTpa50805)

Shared SCSI bus tape drives are not supported on an unpatched version of the HP Tru64 5.1B operating system. It is recommended you install Tru64 version 5.1B and 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 (LEGATO Bug ID: LGTpa50279)

To use the CDI feature with a storage node or server 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, you should disable the CDI feature on any devices you have configured.

SGI IRIX XFS 64-Bit Inodes Do Not Back Up (LEGATO Bug ID: LGTpa40680)

The Sun StorEdge EBS software does not back up files on SGI IRIX XFS filesystems that have a 64-bit inode. The IRIX 6.5 64-bit operating system randomly writes 64-bit and 32-bit inodes, and if a file is written with a 64-bit inode, the Sun StorEdge EBS software will not back it up. The following error message appears when the Sun StorEdge EBS 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 filesystem. For filesystems up to 8 TB, the IRIX 6.5.15 XFS filesystem now only allocates inodes in the 32-bit range to avoid an overflow error.

Note – For information on updating to the IRIX 6.5.15 XFS filesystem, refer to the appropriate SGI IRIX 6.5.15 documentation.

The jbconfig Command Reports More Drives Than Are Connected to the Node (LEGATO 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 (LEGATO 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`

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

  b. In `rdriver.conf`, change

     class="scsi"

     to

     parent="rdnexus"

     This causes driver nodes to be created under rdnexus, but not under physical HBA drivers.

     This change only lasts until the next `boot -r` or `hot_add`.

UFS Files Having Inode 4 or 5 Recovered to an Advanced Filesystem on HP Tru64 UNIX (LEGATO Bug ID: LGTpa25810)

Do not attempt to recover a UFS file that has an inode of either 4 or 5 to an Advanced Filesystem (AdvFS) on HP Tru64 UNIX. Such an attempt fails, because AdvFS user quota files are already assigned inode 4 and group quota files are already assigned inode 5. These AdvFS quota files cannot be overwritten. (Sun StorEdge EBS software uses a special algorithm to save and recover AdvFS quota files.)

To recover a UFS file having either inode 4 or 5 to an AdvFS:

1. Recover the file to a UFS.

2. Enter the **cp** command to copy the file to the desired location in the AdvFS.

Media Database Queries from a Client Earlier Than Release 6.0

The Sun StorEdge EBS software uses save set names and client names that are unique across Sun StorEdge EBS servers. If you are using a Sun StorEdge EBS client and Sun StorEdge EBS server running release, the mminfo program output displays these unique client names as:

    index:*clientname*

Sun StorEdge EBS clients from releases earlier than Sun StorEdge Solstice Backup 6.0 are unable are unable to display the cross-server name information in an easy-to-read format. If you run the mminfo program from a 5.x or earlier client, specifying a Sun StorEdge EBS server that is running release, a client name output appears as a long string of characters. For example,

```
index:dbe4e3d0-00000004-3957b0d5-3957b0d4-00010000-8945081f
```

While this string of characters properly identifies the client name to the Sun StorEdge EBS server, it is not easy to read.

Workaround

Update the Sun StorEdge EBS client to release.

Limitations in Internationalization Support

The following limitations related to internationalization pertain to the Sun StorEdge Enterprise Backup Software, when an English-based EBS runs on a localized operating system.

Directed Recovery of Non-ASCII Characters Might Fail (LEGATO Bug ID: LGTpa33732)

Performing a directed recovery of files from a client whose filenames include any non-ASCII characters might fail. The files are browsable in the Sun StorEdge EBS Administrator program, but when the recovery is initiated, an error message is produced stating the files are not in the client file index.

Workaround

Perform the directed recovery from a client running in C locale.

Remote Login from a Local Host to a Remote Localized Host Does Not Display Sun StorEdge EBS Data in Localized Language (LEGATO 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 EBS software, you must meet the following conditions:

- 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 EBS Administrator program displays English language characters while the data appears in the desired localized language.

This is not an issue unique to the Sun StorEdge EBS 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.

For example, the XFILESEARCHPATH environment variable on a remote computer (with localized software) should be set in the following manner:

/usr/lib/X11/%T/%N%C%S:/usr/lib/X11/%T/%N%S:/usr/openwin/lib/locale/%L/%T/%N%S:/usr/openwin/lib/%T/%N%S

Only US-ASCII 7-Bit Characters Supported (LEGATO Bug ID: LGTpa24483)

Sun StorEdge EBS release supports only US-ASCII 7-bit characters in resource names and attributes in the Sun StorEdge EBS 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.

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

Length Limits to Filepaths and Directory Names (LEGATO Bug ID:LGTpa25330, LGTpa25365)

Sun StorEdge Solstice Backup 6.0 and Sun StorEdge Enterprise Backup 7.0 and later software supports a full filepath length limit of 1,024 bytes (standard for most operating systems). Consequently, if you are working in a language that uses multibyte characters (for example, Chinese or Japanese), ensure that the filepath and directory names remain within the limits imposed by the operating system and the Sun StorEdge EBS software.

- Use the same filesystem type (for example, both UXFS, or both NTFS).
- If the administering client is neither the source nor target client, it need not have the same platform and filesystem type as other clients.
- The administering client is a client of the Sun StorEdge EBS server.

⚠️ **Caution –** Sun StorEdge EBS software does not support directed recovery of data across platforms and filesystem types. In addition, it does not support directed recovery of SYSTEM or VSS SYSTEM save sets.

You cannot use a Sun StorEdge EBS release earlier than 6.0 to recover data that was backed up using Sun StorEdge EBS release 6.0 or later, due to the difference in save stream format.

Use the Sun StorEdge EBS software to administer directed recoveries. Directed recoveries are performed from the Sun StorEdge EBS Administrator program, or by using the `recover` command.

Note – Use the Sun StorEdge EBS `recover` command to administer directed recoveries. The `nwrecover` program does not support directed recovery tasks.

Documentation Corrections and Additions

This section contains corrections or additions to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

Chapter 12: Renamed Directories and Incremental Backups

On page 648, the following information should be added:

Renamed Directories and Incremental Backups

Because of the way Sun StorEdge EBS determines if a file has changed between backups, renaming a directory may cause unexpected behavior during an incremental backup. This occurs when the save set is listed as a directory name (rather than as a predefined save set, such as All). If the name of a subdirectory underneath the listed directory is changed after a full backup but no files were changed, the newly renamed directory will not be included in subsequent incremental backups.

To avoid this problem, copy directories and then rename the copy, rather than renaming the original directory. This causes Sun StorEdge EBS to recognize a new directory. Then the directory can be manually backed up or a level full backup can be run, either of which will correctly back up the new directory.

If you are attempting to recover files that reside in the renamed directory, you will not see the renamed directory when browsing the backups. To recover the files, change the browse time to a time immediately before the directory was renamed and recover files under the old directory. You will need to relocate the recovery to the renamed directory, or copy it after the recovery is complete.

Related Documentation

For more information on the Sun StorEdge Enterprise Backup Software software, refer to the following related documentation:

- *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*
- *Sun StorEdge EBS, Release 7.2, Installation Guide*
- *LEGATO Command Reference Guide*
- *UNIX man pages*
- *LEGATO Software Compatibility Guide*

NDMP Release Supplement

Network Data Management Protocol (NDMP) is a standards-based, storage management client/server protocol for enterprise-wide backup of heterogeneous, network-attached storage.

NDMP enables the Sun StorEdge EBS software to provide connections to Sun StorEdge EBS clients that have NDMP data services, allowing them to back up client data and provide NDMP tape services to operate media devices, such as jukeboxes and tape devices significantly reducing network traffic. NDMP also allows the Sun StorEdge EBS software to maintain the client file index and media database, as well as control backup operations on a UNIX computer with an NDMP service installed.

This chapter discusses the following topics:

- "NDMP Support" on page 63
- "New and Enhanced NDMP Features" on page 65
- "Important Notes and Tips" on page 66
- "Known Limitations" on page 68

NDMP Support

This section describes operating systems that support the Sun StorEdge EBS NDMP disk and tape services.

Operating Systems

This release supports the following server platforms for NDMP:

- Solaris 7, 8, 9

- HP-UX 11, 11.11, 11i (64-bit 1.5, 1.6), 11.30 (64-bit)
- Red Hat Linux 7.23, Advanced Server 2.1
- SuSE Linux 8.0, Enterprise Server 8
- AIX 4.3.3, 5.1, 5.2, 5L
- HP Tru64 5.0A, 5.1, 5.1A, 5.1B

For more details on supported operating systems, refer to the *LEGATO Compatibility Guides* available on the website at *www.legato.com*.

NDMP Disk and Tape Services

lists the supported NDMP features for each disk and tape service. For information about which versions of the disk and tape services are supported, refer to the *LEGATO Software Compatibility Guide* on the web site at *www.legato.com*.

TABLE 2-1   Supported NDMP Features with Disk and Tape Services

Server Type	NDMP Feature Summary					Limitations
	Local	3-Party	Remote	DAR	DDS	
NetApp	Yes	Yes	Yes	Yes	Yes	File-level restore using the nwrecover program or recover command is limited to 1 million files for both direct access restore (DAR) and non-DAR restores with Data ONTAP 6.4. For all versions of Data ONTAP earlier than 6.4, the limit is 1,024 files per DAR restore operation and 10,240 for non-DAR restores.
EMC Celerra	Yes	Yes	Yes	Yes	Yes	File-level restore using the nwrecover program or the recover command is limited to 10,000 files per restore operation.
EMC IP4700	Yes	Yes	Yes	No	Yes	File-level restore using the nwrecover program or the recover command is limited to approximately 4 million files per restore operation.
Auspex NS2000, NS3000	Yes	Yes	Yes	Yes	No	File-level restore using the nwrecover program or the recover command is limited to 10,000 files per restore operation.
Procom	Yes	Yes	Yes	No	No	None
Mirapoint	Yes	Yes	Yes	No	No	None

New and Enhanced NDMP Features

The following NDMP features are new in Sun StorEdge EBS release 7.2:

- "NDMP Index Processing Improvements" on page 65
- "Sun StorEdge EBS Storage Node Support for NDMP Clients" on page 65

NDMP Index Processing Improvements

Faster index processing for all NDMP clients, reducing index creation time and memory requirement to process indexes. With release 7.2, during an NDMP backup:

- The Sun StorEdge EBS server begins processing the file history metadata immediately upon the start of a backup.
- The file history metadata processing scales linearly with the increase in the number of entries (files) in the filesystem (save sets). In release , it scaled exponentially.
- The **nsrndmp_2fh** and **nsrdmpix** binaries interact with the raw database, instead of virtual memory, to process the file history metadata. Memory requirements for this process are now minimal.

Sun StorEdge EBS Storage Node Support for NDMP Clients

Sun StorEdge EBS storage node functionality is extended to include NDMP save streams. Sun StorEdge EBS storage node software can be used for both NDMP and nonNDMP backups in a unified fashion.

NDMP Backups to Traditional Sun StorEdge EBS Devices

With this extension, Sun StorEdge EBS supports backup of an NDMP client to a traditional Sun StorEdge EBS device (non-NDMP device), for such devices as:

- Tape
- Optical
- Disk

New Features with Sun StorEdge EBS Storage Node Support for NDMP

Sun StorEdge EBS storage node support for NDMP backups include these features of the Sun StorEdge EBS storage node:

- Multiplexing
- Staging
- Coexistence of NDMP save sets with traditional Sun StorEdge EBS save sets
- Firewall support
- Availability on wide variety of platforms
- Auto media verification
- Backup to disk
- True Sun StorEdge EBS client support
- Cloning

Important Notes and Tips

This section describes important notes and helpful tips related to NDMP.

The NSR_NDMP_RECOVER_DIR Environment Variable with EMC Celerra

To successfully restore intermediate directory permissions when performing a file level recovery using EMC Celerra:

1. In the Sun StorEdge EBS start up script, set the NSR_NDMP_RECOVER_DIR environment variable as follows:

   NSR_NDMP_RECOVER_DIR = 'y'

2. In the Sun StorEdge EBS Administrator program, select Recover, select the files to be recovered, and click OK.

   The intermediate directory permissions are successfully restored.

Using the NSR_NDMP_RESTORE_LIMIT Environment Variable

The NSR_NDMP_RESTORE_LIMIT environment variable is used to limit memory consumption during recoveries involving a large number of index entries (millions). This is specifically useful if there is not enough swap space or memory for the number of index entries selected for the recovery. If the variable is not set, the recovery might fail with the following error message:

```
out of memory
```

To avoid a failure:

1. In the Sun StorEdge EBS startup script, set the NSR_NDMP_RESTORE_LIMIT environment variable to an appropriate value.

   Note: The value of the NSR_NDMP_RESTORE_LIMIT environment variable determines the maximum number of entries that the **recover** program can allocate memory to. For example, if the total number of entries is 3 million, then the NSR_NDMP_RESTORE_LIMIT can be set to 50,000 or 1,000,000 but less than 3,000,000.

2. In the Sun StorEdge EBS Administrator program, select recover, select the files to be recovered, and click OK.

The recovery is divided into multiple recoveries, where each has the NSR_NDMP_RESTORE_LIMIT entries successfully recovered in that session.

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.

Do Not Use server_devconfig -c Option When Discovering New Devices with EMC

Each time a new device is added to a configuration involving EMC filers, you must discover the new device through the `server_devconfig` command. However, if you use the `-c` option with the `server_devconfig` command, the device names are repeated several times in the corresponding file. To avoid this problem, use the `-p` option instead or discover the new devices through the interface.

Existing Directory Required for Auspex Directed Recovery

If you attempt a directed recovery on an Auspex filer and the directory to which you are relocating the recovery does not already exist, the recovery fails. To complete a successful directed recovery, Auspex requires that you specify an existing directory as the destination directory.

Known Limitations

This section describes known limitations, configuration tips, and workarounds in NDMP support.

NDMP Save Sets in Status Recyclable are not Recoverable (LEGATO Bug ID: LGTpa65644)

NDMP save sets cannot be recovered if they are in the status "eligible for recycling". The following error message is displayed:

```
Failed save set, not recoverable
```

Workaround

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

Only New or Changed Files Appear for NDMP Backups (LEGATO Bug ID: LGTpa59590)

Note – This issue relates to all NDMP data servers except NetApp Filers.

When the `nwrecover` command is run after a level 1 through 9 backup, the Sun StorEdge EBS Administrator program shows only the files saved during that backup, rather than all the files from the last full backup. To view all the files from the most recent full backup, change the browse time to a time before the level 1 through 9 backup was performed.

Message Displayed When CDI Enabled on NDMP or Disk File Type Device (LEGATO Bug ID: LGTpa51410)

If you enable the CDI feature while using an NDMP tape device or disk file type device, a message similar to the following appears in the Sun StorEdge EBS message log:

```
nsrd: media notice: The CDI attribute for device "/dev/rmt/3cbn"
has been changed to "Not used".
```

To avoid this message, do not enable the CDI attribute for these device types.

NDMP savegrp Process Abort Takes a Long Time with an EMC Celerra Filer (LEGATO Bug ID: LGTpa45126)

When a Sun StorEdge EBS NDMP `savegrp` process is aborted, the abort can take as long as 30 minutes to complete. This problem only occurs in a configuration where the tape library is attached to an EMC Celerra filer with DART OS T4.1.8 or T4.2.*x*. This issue is resolved in T5.0.*x*.

Invalid Backup Path Recovery Takes a Long Time with an
EMC Celerra Filer (LEGATO Bug ID: LGTpa45195)

When an incorrect backup path is specified for an NDMP Sun StorEdge EBS recovery, an error message might not be returned for up to 30 minutes. This problem only occurs in a configuration where the tape library is attached to an EMC Celerra filer with Dart OS T4.1.8 or T4.2.*x*. This issue is resolved in T5.0.*x*. To avoid this problem, verify that the correct backup path is specified for the recovery.

Renamed EMC Celerra Directory Not Processed in Level Backup (LEGATO Bug ID: LGTpa44856)

If a directory is renamed between a full backup and a level backup, EMC Celerra fails to process the renamed directory. Neither the original directory name nor the new directory name appears in the `nwrecover` program or the `recover` command output. To recover the renamed directory, perform a save set recovery.

Permission Problems with DAR Recovery of NetApp Servers (LEGATO 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, perform 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.

Unable to See All Recovered Files in nwrecover Program (LEGATO Bug ID: LGTpa31410)

When consecutive file recoveries are performed, sometimes only the recovery of the first file appears when you change to that directory. For example, if you recover a single file using `nwrecover` and then recover a second file from the same directory, both files are successfully recovered, but only the first recovered file is listed in that directory.

This issue only occurs from the host. When the filesystem is mounted to another system, all recovered files are visible.

The recovered files can be viewed by:

- Remounting NFS.
- Touching a file or directory in the recovery path, forcing a refresh.

Symbolic Links Are Not Restored during DAR Recovery with NetApp

When performing 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.

Eight-Character NDMP Password Limitation Not Enforced (LEGATO Bug ID: LGTpa35523)

When specifying an NDMP password, the password cannot exceed eight characters for a NetApp machine. However, when you specify a password for a NetApp machine through the Sun StorEdge EBS Administrator program, the Password attribute accepts more than eight characters and does not display an error message. If you specify a password that is nine characters or more, you will not be able to back up data. To avoid this problem, always specify a password that is eight characters or less.

Error Message after Successful Three-Party DAR Recovery (LEGATO Bug ID: LGTpa36155, LGTpa48565, LGTpa41852)

After a three-party DAR index recovery of all files has completed, the following error message may appear:

```
Tape server halted: mover aborted by client
```

This message can be ignored. The data has been successfully restored. The message is caused by the data server moving to a Halted state while the data mover is still in the Active state. The recover program waits a specified time before sending a mover_abort command to the mover, resulting in the error message. This is a limitation of the NDMP protocol.

Permission Problems with Index Recoveries of NDMP Filers (LEGATO Bug ID: LGTpa29103)

When using the nwrecover program or the recover command to perform an index-based recovery of one or more files to a directory that does not exist in the target NDMP filer, the filer creates a new directory. This new directory will receive default attributes, which might not match the attributes of the originally backed-up directory.

To avoid this problem, perform one of the following:

- Manually change the directory attributes of the new directory after the recovery.
- Perform a save set recovery instead of an index-based recovery.

Disabling Locally Attached Drives Can Cause Restore Failure (LEGATO Bug ID: LGTpa31403)

If you have library sharing between two data movers and you use the Sun StorEdge EBS Administrator program to disable one or more drives that are locally attached to one of those data movers, performing a restore forces the Sun StorEdge EBS software to choose the drive that is attached to the other data mover, thus causing a three-party restore. This forced three-party restore then fails. To successfully restore the data, reenable the locally attached drives.

No Client File Index for Multiple Mount Points on the Same Host with Celestra (LEGATO Bug ID: LGTpa24557)

The Sun StorEdge EBS software does not distinguish between mount points and normal directories when sending a file history while using Celestra. For example, if you back up a filesystem mounted on `/mnt2/mnt3` and browse the client file indexes for the filesystem, the software displays all the indexes correctly. If you then unmount `/mnt2/mnt3` and later back up only `/mnt2`, the `nwrecover` program and the `recover` command do not show the directories under `/mnt2/mnt3`. In order to see the indexes from `/mnt2/mnt3`, you must browse the client file indexes of the previously backed-up partition.

To avoid this issue, back up `/mnt2` first and then back up `/mnt2/mnt3`. When the backups are completed in this order, the software displays all the indexes correctly.

File Recovery Limitation (LEGATO Bug ID: LGTpa24935)

When performing a recovery while also using Data ONTAP 6.0, you must specify a forward slash (/) at the end of the mount point. Otherwise, the recovery fails. When you specify a forward slash, the recovery is successful.

Preinitialized STK Tapes In NDMP-Enabled Tape Devices Not Used (LEGATO Bug ID: LGTpa28778)

STK offers two types of tapes: preinitialized and uninitialized. The `nwrecover` program does not use tapes that have been preinitialized in an NDMP-enabled tape device.

To ensure that all tapes in an NDMP tape device are used:

- Do not use tapes that were preinitialized in an NDMP-enabled tape device.
- Label preinitialized tapes in a non-NDMP tape device using Sun StorEdge EBS software and then use only those tapes in the NDMP-enabled tape devices.

EMC Celerra Level 5 Recovery Recovers More Than Original Backup (LEGATO Bug ID: LGTpa29467)

During a level 5 recovery on EMC Celerra, the Sun StorEdge EBS server also recovers an empty subdirectory from the last full backup, even though the contents and name of the subdirectory did not change. To avoid this problem, perform a file-by-file recovery when recovering a level 5 backup.

Specify Mount Point Attribute When Performing an NDMP Directed Recovery (LEGATO Bug ID: LGTpa29497)

When you perform a directed recovery on an NDMP server, the recovery fails if a value has been specified in the Relocate attribute of the Options dialog box. To avoid this problem and perform a directed recovery, specify the new location in the Mount Point attribute of the Save Set Recover Status dialog box and leave the Relocate attribute blank.

NDMP Recovery of Large Number of Files Causes NetApp Filer Panic (LEGATO Bug ID: LGTpa32106)

If you perform a file-by-file recovery using the `recover` command or the `nwrecover` program, specifying a recovery of more than 10,240 files may cause the NetApp filer to panic or result in an error message. To avoid this problem, perform a save set recovery or recover fewer than 10,240 files at one time.

Network Appliance has documented this problem in NetApp Bug 52946 and has patches available for both Data ONTAP 6.1 and 6.1.1. These Data ONTAP patches are available by contacting Network Appliance support at the Network Appliance web site.

CHAPTER **3**

Fixed Bugs List

TABLE 3-1 on page 75 lists all the bugs that have been fixed and implemented in Sun StorEdge EBS release 7.2 on UNIX and Linux.

TABLE 3-1   Fixed in Sun StorEdge EBS Release 7.2

Number	Fixed Bug
LGTpa56663, Sun Bug ID: 5104570	The `inquire` command did not display the `/dev/rmt/x` path for the following drives: • STK-L180 fibre library. • STK-IBM_LTO2 fibre drive • STK-STK-9840B fibre drive
LGTpa59953, Sun Bug ID: 4928769	The Cluster Backup to Local Jukebox allows the Sun StorEdge EBS server daemon `nsrd` to first consider the requesting save client's current host as a storage node thereby allowing for backups to be directed to a locally attached jukebox.
LGTpa62146	Valid SNMP module enablers did not work with the Sun® License Manager. The `nsrtrap -c networker -v localhost` command produced the following error message: `nsr snmp is not enabled`
LGTpa62227, Sin Bug ID: 4944239	The Sun StorEdge EBS Aministrators Guide is not listed in the "Before You Read This Book" section of the Sun StorEdge EBS Installation Guide.
LGTpa62633	If a clone operation was aborted due to media verification failure, the `mminfo` command displayed aborted save sets as "a" from a release 6.1.*x* server. This display was inconsistent with a release 7.1 client where the same aborted clone save set was displayed as "i".
LGTpa62652, Sun Bug ID: 4963699	The `LGTOdrvr/SUNWebsd` driver failed to install. The installation relied on the Solaris Package Manager, which was discontinued as of Solaris 10.

TABLE 3-1   Fixed in Sun StorEdge EBS Release 7.2

Number	Fixed Bug
LGTpa63010	If a file was replaced while a backup was running, no diagnostic was performed and the file was entered into the client file index as a directory.
LGTpa63408	When reporting the fragsize (calculated size of the selected section of a save set) by using the mminfo command, the output displayed the sum of the size of each save set sequentially, rather than listing only the size of the selected section.
LGTpa63753	The mminfo command reported incorrect results when savetime and pool were used as a query options.
LGTpa64393	The nsrlic utility did not fully display application license information in verbose detail. For example, a list of the licenses that were allocated to a client was not displayed.
LGTpa64447	When deactivating a nsrmmd process from a device that was in a "ready for writing: idle" state, remote procedure call (RPC) errors were reported. The deactivation failed and the nsrmmd process remained in an idle state.
LGTpa64470	When a nsrmm command was successful, the **stderr** code reported the status of the operation as "1" (operation failed) whether or not the command was successful. The **stderr** code now reports "0" if a command is successful, and "1" if the command fails.
LGTpa64863	When backing up a remote client by using an advance file type device, the backup speed was dramatically reduced.
LGTpa64864	If two or more nsrjbs processes were initiated simultaneously, the processes stopped responding.
LGTpa65017	When using an advanced file type device to access filesystems greater than 2 TB in size, the Sun StorEdge EBS software slowed considerably.
LGTpa65018, Sun Bug ID: 4965510	When defining Client resources, if the logical hostname was different than the actual hostname, the Client resource did not register.
LGTpa65269	Use of the nsrclone command to clone NDMP save sets caused the Sun StorEdge EBS software to stop responding.
LGTpa65285	Auto media management did not function properly if a stand-alone device required a second tape during a backup operation.
LGTpa65518	When performing a recovery, the recover command selected the server based on the alphabetical list of servers in the nsrexecd program, instead of the selecting the first server listed in servers file.
LGTpa66016	The mminfo -q command did not allow queries with multiple group constraints.

TABLE 3-1 Fixed in Sun StorEdge EBS Release 7.2

Number	Fixed Bug
LGTpa66178	If a tape device was configured as both NDMP and non-NDMP that uses dynamic drive sharing, the Sun StorEdge EBS software was unable to unmount a non-NDMP device and reload the device as NDMP.
LGTpa66305	During a cloning operation, if a valid *cloneid* was not present for a specific save set ID in the media database, the Sun StorEdge EBS software stopped responding.

Sun StorEdge EBS ClientPak Support

This appendix describes the Sun LEGATO NetWorker ClientPak for Mac OS X release . It contains the following sections:

Supported Platforms and Systems

The following operating systems, hardware, and systems are supported by this release of the LEGATO NetWorker ClientPak for Mac OS X.

Mac OS X Client Support

Mac clients can be backed up and recovered by using any supported Sun StorEdge EBS server on UNIX, Linux, or Windows operating systems. Noncore Sun StorEdge EBS functionality, such as cluster or NDMP, is *not* currently supported.

Mac Legacy Files Supported

LEGATO NetWorker ClientPak supports backup and recovery of HFS and HFS+ resource fork and Finder metadata. This compatibility ensures the proper backup and recovery of legacy files used with Mac OS X.

User Interface

The Sun StorEdge EBS client for Mac OS X software supports the standard Sun StorEdge EBS command line user interface.

Sun StorEdge EBS Support

The Sun StorEdge EBS client for Mac OS X software is compatible with the following Sun StorEdge EBS releases:

- Sun StorEdge EBS server releases 6.1.2, 6.1.3, 6.1.4, 7.0, and 7.*1.x and 7.2* on UNIX, Linux, and Microsoft Windows
- Sun StorEdge EBS mainframe server releases 6.1.3 and 7.0

Supported Hardware

The Sun StorEdge EBS client for Mac OS X software supports the following Apple systems hardware platforms:

- Power Mac G4, Power Mac G4 Cube, and Power Mac G3
- Xserve (including two-way)
- PowerBook and PowerBook G4
- iMac and eMac

Supported Versions of OS X

The Sun StorEdge EBS client for Mac OS X software supports the following versions of Mac OS X:

- Mac OS X version 10.2.x (Jaguar)
- Mac OS X Server version 10.2.x (Jaguar)
- Mac OS X version 10.3.x (Panther)

■ Mac OS X 10.3.x Server version (Panther)

Supported Filesystems

The Sun StorEdge EBS client for Mac OS X software supports backup and recovery of the following filesystems:

■ HFS and HFS+ including journaling

■ UFS filesystems

Known Limitations

The following are known limitations for this release of the LEGATO NetWorker ClientPak:

■ Recovery of Mac OS X save sets to non-Mac OS X clients is not supported.

■ The Mac OS X client software does not support non-Unicode code sets.

Backing Up a Sun StorEdge EBS Client on Mac OS X

The following sections provide information on configuring and performing backups of data on the Sun StorEdge EBS client on Mac OS X.

Performing Backups of Data on Mac OS X Clients

Both scheduled and manual Sun StorEdge EBS backups require the Sun StorEdge EBS Client resource to be defined on the Sun StorEdge EBS server.

Scheduled Backups

Scheduled backups of Sun StorEdge EBS clients are performed by the Sun StorEdge EBS server.

Manual Backups

Manual backups of files or directories on the Sun StorEdge EBS client can be performed by the Sun StorEdge EBS client on Mac OS X, enter the following command:

```
save file_or_directory_to_back_up
```

By default, the save command contacts the first Sun StorEdge EBS server defined in the /nsr/res/servers file. To specify an alternative Sun StorEdge EBS server, use the save command with the **-s** *Sun StorEdge EBS_server* option.

MAC OS X Required Directives

To ensure a consistent state after recovery, certain files and directories should *not* be backed up on Mac OS X systems. lists files and directories that should *not* be backed up on Mac OS X.

TABLE A-1   Mac OS X Files or Directories that Should Not be Backed Up

Files or Directories	Description
Desktop DB Desktop DF	Mac OS 9 desktop database files
.DS_Store	Finder settings
TheVolumeSettingsFolder/	Desktop state details
VM Storage	Mac OS 9 virtual memory
private/var/db/netinfo	NetInfo database

To ensure that these files and directories are not backed up, define them on the Sun StorEdge EBS server in a directives resource; see the following two examples. For more information on directives, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

Example: Standard Mac OS X Directives

```
<< "/" >>

skip: Desktop\ DB

skip: Desktop\ DF

+skip: .DS_Store

skip: cores

skip: VM_Storage

skip: TheVolumeSettingsFolder

<< "/private/var/db/netinfo" >>

skip: .

<< "/nsr/logs" >>

logasm: .

<< "/private/var" >>

logasm: .

<< "/private/var/vm" >>

swapasm: .
```

Example: Mac OS X Directives with Compression

```
<< "/" >>

skip: Desktop\ DB

skip: Desktop\ DF

+skip: .DS_Store

skip: cores

skip: VM_Storage

skip: TheVolumeSettingsFolder

+compressasm: .

<< "/private/var/db/netinfo" >>

skip: .

<< "/nsr/logs" >>

logasm: .

<< "/private/var" >>

logasm: .

<< "/private/var/vm" >>

swapasm: .
```

Backing Up the NetInfo Database for Disaster Recovery

The following sections describe issues that are specific to the backup and recovery of the Mac OS X NetInfo database. The NetInfo database contains system configuration information that is essential for disaster recovery.

Backing Up the NetInfo Database Before a Save

Using the directives described in *"MAC OS X Required Directives" on page 82*, the local NetInfo database will not be backed up by a Sun StorEdge EBS save.

To ensure consistency of disaster recovery, the NetInfo database should be saved in the /var/backups/networker.nidump file before each Sun StorEdge EBS backup. This can be done manually with the following command:

```
sudo nidump -r / -t localhost/local > /var/backups/networker.nidump
```

To automatically generate a backup file of the NetInfo database before each Sun StorEdge EBS save, use Sun StorEdge EBS's savepnpc command, configured as follows:

1. Enter savepnpc as the Backup command when configuring the Mac OS X client as a Sun StorEdge EBS Client resource in the nwadmin or nsradmin program.

2. Create a custom savepnpc script in the /nsr/res directory with the name <group_name>.res, where *<group_name>* is the Group resource selected for that client.

Example: savepnpc Script

A Mac OS X client that belongs to the Default group will have a /nsr/res/Default.res script with the following content:

```
type: savepnpc;

precmd: "/usr/bin/nidump -r / -t localhost/local
        > /var/backups/networker.nidump"
```

In this script, the savepnpc command backs up the NetInfo database to the /var/backups/networker.nidump file before each scheduled save.

For additional information on the savepnpc script, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

Changing the Sun StorEdge EBS Servers with Access to a Client

To limit the servers authorized to access a client, you can specify a list of trusted Sun StorEdge EBS servers for the client.

▼ To Change Client Access

To change which Sun StorEdge EBS servers can access a client:

1. Open the Mac OS X Terminal application.

2. Enter the following command to shut down the Sun StorEdge EBS daemons:

```
sudo SystemStarter stop NetWorker
```

3. Edit or create the */nsr/res/servers* file and add the set of Sun StorEdge EBS servers, one per line, that you want to grant access to the client. The first entry in this file becomes the default Sun StorEdge EBS server.

4. Start the Sun StorEdge EBS daemons by entering the following command:

```
sudo SystemStarter start NetWorker
```

5. Verify that the Sun StorEdge EBS Client daemon, nsrexecd, is running by entering the following command at the system prompt:

```
ps -ax | grep nsrexecd
```

Recovering Individual Files and Directories

The following sections provide information on recovering individual files and directories from the Mac OS X client:

-
-

Task 1: Browse Backed Up Mac OS X Data

To browse backed-up Mac OS X data:

1. From the Mac OS X Terminal application utility, open a shell prompt on the Sun StorEdge EBS server with the following command:

```
recover
```

   By default, the `recover` command contacts the first Sun StorEdge EBS server defined in the `/nsr/res/servers` file. To specify an alternative Sun StorEdge EBS server, use the `recover` command with the **-s** *Networker_server* option.

2. At the recover prompt, browse backed-up Mac OS X data by using traditional UNIX filesystem navigation commands.

Task 2: Recover Individual Files or Directories

To recover individual files or directories from the client's recover prompt:

1. At the recover prompt, add all the directories and files that you want to recover, using the `add` command, for example:

```
recover> add directory_name
```

2. (Optional) To automatically overwrite existing files, enter the `force` option at the recover prompt.

3. Start the recovery by entering the following command at the recover prompt:

```
recover> recover
```

> ⚠ **Caution –** Do not recover any Mac OS X operating system boot files that should not be overwritten during a recovery. For example do not recover the Mac OS X operating system kernel, /mach_kernel.

For additional information on browsing and recovering individual files and directories, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*.

Recovering a Sun StorEdge EBS Client on Mac OS X from Disaster

The following sections provide information on recovering a Sun StorEdge EBS client on Mac OS X from a disaster such as a hard drive crash or corruption:

- "Prerequisites" on page 88
- "To Recover a Sun StorEdge EBS Client" on page 89

Prerequisites

Before recovering the Sun StorEdge EBS client, ensure that the Mac OS X operating system is installed on the computer and that the Sun StorEdge EBS server is functional and available on the network.

If you need to recover the Sun StorEdge EBS server, refer to the *LEGATO NetWorker Disaster Recovery Guide*.

Additionally, ensure that you have the following:

- The version and patch level of the Sun StorEdge EBS client.
- The name of the computer on which the Sun StorEdge EBS server is running.

▼ To Recover a Sun StorEdge EBS Client

This section describes how to recover a Sun StorEdge EBS client computer back to the original computer or to a different computer.

To recover a Sun StorEdge EBS client, complete the following tasks in sequence:

- "Task 1: Install Sun StorEdge EBS Client" on page 89
- "Task 2: Recover the Application and User Data" on page 89
- "Task 3: Replace the NetInfo Database after a Disaster Recovery" on page 90
- "Task 4: Perform a Test Backup and Recovery" on page 91

Task 1: Install Sun StorEdge EBS Client

To install the Sun StorEdge EBS client software:

1. Install the same version of the Sun StorEdge EBS client.

   Note: If you want to update the client software, first recover the client to its original state, and then perform the update.

2. Install any Sun StorEdge EBS backup utility patches that were installed before the disaster.

3. (Optional) Use the recover program to perform a test recovery to ensure that the recovery process is functioning properly.

Task 2: Recover the Application and User Data

To recover the application and user data:

1. If you need to determine which volumes contain the application and user data backups for the computer, use the mminfo -avot command on the Sun StorEdge EBS server, for example:

```
mminfo -avot -c client_name
```

where *client_name* is the hostname of the computer whose application and user data are being recovered.

2. Open a recover prompt on the Sun StorEdge EBS server with the following command:

```
recover
```

3. At the recover prompt, browse backed-up Mac OS X data by using traditional UNIX filesystem navigation commands.

4. Add all the directories and files that you want to recover, using the add command, for example:

```
recover> add directory_name
```

5. (Optional) To automatically overwrite existing files, enter the force option at the recover prompt.

```
recover> force
```

6. Start the recovery by entering the following command at the recover prompt:

```
recover> recover
```

Caution – Do not recover any Mac OS X operating system boot files that should not be overwritten during a recovery. For example, do not recover the Mac OS X operating system kernel, /mach_kernel.

7. Reboot the computer when the recovery is complete. The computer should now be recovered as it was before the disaster.

For additional information on recovering from disaster, refer to the *LEGATO NetWorker Disaster Recovery Guide*.

Task 3: Replace the NetInfo Database after a Disaster Recovery

To recover the pre-disaster system configuration of the client, the current Mac OS X NetInfo database must be replaced with the recovered networker.nidump file.

To do this, follow the steps outlined in the Apple Care Document *107210: How to Replace the NetInfo Database*, which can be found at `http://docs.info.apple.com/article.html?artnum=107210`. This document describes how to use the `networker.nidump` file instead of the `local.nidump` file.

Task 4: Perform a Test Backup and Recovery

To test the Sun StorEdge EBS client backup and recovery process:

1. Perform a test manual backup by using the Sun StorEdge EBS backup commands.

2. Perform a test recovery by using the Sun StorEdge EBS recover commands.

For additional information on testing backup and recovery configurations, refer to the *Sun StorEdge EBS, Release 7.2, UNIX and Linux Version, Administrator's Guide*

Features Supported in Base Enablers

This appendix describes the features provided with Sun StorEdge EBS base enablers, as well as features that are available with each base enabler for additional cost.

Features Provided With Base Enablers

list the features that are available as part of Sun StorEdge EBS base enablers for no additional cost.

TABLE B-1   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 NetWorker Server	64	32	32	32
Parallel data streams per Storage Node[*]	64	32	N/A	N/A
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
Max number of nsrmmds	512[†]	256	4	4

*   Storage Nodes available for additional cost for the Power and Network Editions only.

†   Available in NW 7.2 and above. For NW 7.1.x the max is 256.

Additional Features Available with Base Enablers

TABLE B-2 on page 94 list the features that are available for support with Sun StorEdge EBS base enablers for additional cost.

TABLE B-2   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
ClientPaks for heterogeneous environments	Yes	Yes	Yes	Yes
NetWorker NDMP Client Connections	Yes	Yes	No	Maximum 2 NDMP client connections
Dynamic Drive Sharing Option	Yes	Yes	N/A	N/A
NetWorker DiskBackup Option	Yes	Yes	Yes	Yes
NetWorker 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
Silo Software Modules	Yes	Yes	No	No
NetWorker Application Modules	Yes	Yes	Yes	Yes
NetWorker Windows 2003 Open File Option	Yes	Yes	Yes	Yes
Open File Manager	Yes	Yes	Yes	Yes
NetWorker PowerSnap Modules	Yes	Yes	No	No
NetWorker SnapImage Module	Yes	Yes	No	Yes
VSS Support	Yes	Yes	Yes	Yes
SNMP	Yes	Yes	Yes	Yes