Legato NetWorker®
Installation Guide

Release 5.5, Solaris™ Version

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Preface

About This Guide

The *Legato NetWorker Installation Guide Release 5.5, Solaris Version*, provides instructions on how to install the Legato NetWorker® for UNIX® software on a SPARC™ computer running the Solaris™ operating system, release 2.5.1 or later.

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

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

Introduction to Legato NetWorker

The NetWorker software employs a client/server model to accomplish storage management tasks. One or more NetWorker servers provide data protection services to clients on the network.

This release of NetWorker includes optional software that you can use to configure storage nodes. Storage nodes manage the media that contain backed-up data, while the NetWorker server manages information required to administer the clients and to track and recover data.

Clients

To add a client to the NetWorker server's list of systems to back up, follow these steps:

1. Install the NetWorker client software appropriate for the client's operating system on the client system.
2. Configure a client resource appropriate for the client's operating system on the NetWorker server. The NetWorker server also requires a client resource to ensure that its client file indexes, media database, and resource files are backed up on a regular basis.

   The NetWorker server provides backup and recovery services only to clients with a configured resource on the server. Refer to the **nsr** man page for a comprehensive description of the access control policies employed by the NetWorker server.

Storage Nodes

With NetWorker, you can designate a system with storage devices attached to act as storage nodes of the NetWorker server. Data from NetWorker clients that are affiliated with one or more storage nodes is sent to media in the storage node device, rather than the server's local storage devices. The NetWorker server maintains the client file indexes, media database, and media management policies, while the storage node takes care of data movement and storage.

To affiliate NetWorker clients to a storage node for backup and recovery requests, use the NetWorker administration program (**nwadmin** or **nsradmin**). Distributing media management tasks to other systems on the network reduces the load placed on the controlling NetWorker server. It also allows you to manage remote storage management tasks across a distributed enterprise network from a central location.

Supported Devices

NetWorker software supports a variety of media types and devices, either stand-alone or in an autochanger or silo tape library. Devices can be attached to a NetWorker server or a designated storage node. To obtain the latest list of supported devices, refer to the *NetWorker Compatibility Guide* on the Legato web site at *www.legato.com*.

What Is Included with This Release?

The NetWorker software is distributed on CD-ROM or as a compressed file for evaluation that you can download electronically (see "Software Installation from a Downloaded File" on page 21). You can install the software from a CD-ROM drive that is locally attached (see "Software Installation from Local CD-ROM" on page 19) or a remote CD-ROM drive elsewhere on the network (see "Software Installation from Remote CD-ROM" on page 20).

To use the NetWorker software indefinitely, you must purchase a *base* enabler code which is then entered on the NetWorker server. After the enabler is entered, you have 45 days to print and send in a registration form to Customer Service. An authorization code is returned for you to enter on the NetWorker server to license the software for permanent use.

The base NetWorker enabler code provides basic product features at one of three levels:

NetWorker Software Version Purchased	Features
WorkGroup Edition™	Backs up and recovers data from the server and up to three client connections of the same platform.
Network Edition	• Backs up and recovers data from the server and up to nine client connections of the same platform. • Adds support for additional client connections and optional modules.
Power Edition™	• Backs up and recovers data from the server and the number of client workstations of the same platform allowed by your license. • Adds support for additional clients and optional modules. • Tuned for environments with VLDB (very large database) or large filesystem applications (in the terabyte range).

Your distribution files contain the NetWorker software for a server, storage nodes, and clients of the same hardware platform. The distribution files also include optional software that you can activate by purchasing the respective enabler codes from Legato. If you want to back up data from clients on other operating systems and hardware platforms, contact Legato or your Authorized Legato Reseller to purchase the appropriate version of Legato NetWorker ClientPak. To use the ClientPak software, install the appropriate client software package on your server, NetWorker clients, and storage nodes. Then enter the enabler code on the NetWorker server and send the registration form to Legato. An authorization code is returned for you to enter on the NetWorker server to use the ClientPak software indefinitely.

The distribution files include the following software:

- NetWorker server administration program and the programs used by NetWorker clients for the manual backup and recovery of files
- Support for additional client connections to clients of the same hardware platform as the NetWorker server
- NetWorker Storage Node module
- NetWorker Autochanger Software module
- NetWorker Silo Management module
- NetWorker High Speed Device Support module (available for Power Edition only)
- NetWorker Archive™ application
- NetWorker HSM™ (Hierarchical Storage Management) application (for SunOS™ and DIGITAL UNIX clients only)
- Legato NetWorker X/Open Data Storage Manager Hierarchical Storage Management (XDSM HSM) application

- NetWorker SNMP (Simple Network Management Protocol) module
- Electronic versions of the NetWorker documentation set in portable document format (PDF) and the NetWorker manual (man) pages
- Adobe Acrobat® Reader used to view the NetWorker documentation set online

Documentation

The documentation CD-ROM includes Adobe Acrobat portable document format (PDF) versions of the following documents:

- *Legato NetWorker Administrator's Guide, UNIX Version*
- *Legato NetWorker Disaster Recovery Guide*
- *Legato NetWorker Performance Tuning Guide*
- *Legato NetWorker Release Supplement*
- *Legato NetWorker Installation Guide*
- *Installation Guide*s for the UNIX, Windows®, Macintosh®, and NetWare® ClientPak software
- A copy of the latest collection of *Technical Bulletins*

Legato also offers an extensive archive of product documentation at its web site (*http://www.legato.com*). Most of the documents are available in PDF, PostScript™, and in some cases, HTML formats.

To access the archive:

1. Select *Document Library* from the home page.
2. Make your selection from the *Legato Product Manuals and Documentation* search choices. You can search the archive by part number, title, publication date, version, or OS/platform.

Use the Acrobat Reader software, which is also provided, to view or print the PDF files.

Where to Find Information

The *ACROREAD/SOLARIS* directory on the documentation CD-ROM contains the Acrobat Reader software that is required to read the electronic documentation set. The UNIX version of NetWorker documentation set is located in the *docs/unix* directory on the documentation CD-ROM.

- To install and use the Acrobat Reader software on Solaris, see "How to Install Adobe Acrobat Reader" on page 9.
- To access the documentation files, see "How to View the NetWorker Documentation" on page 9.

The the following programs include online help to provide assist you in using the software interfaces:

- The administration programs **nwadmin** and **nsradmin.**
- The user programs **nwbackup**, **nwrecover**, **nwarchive**, and **nwretrieve.**

The online man pages contained in the *LGTOman* package provide detailed information about the various programs and resources employed by the NetWorker software.

How to Install Adobe Acrobat Reader

Use Adobe Acrobat Reader to view or print PDF versions of NetWorker documentation. You can copy the files from the documentation CD-ROM to local disk or view them directly from the documentation CD-ROM. The documentation CD-ROM includes Acrobat Reader software for a variety of computers. The Acrobat Reader software is also available for free download at *http://www.adobe.com*.

If you do not already have Acrobat Reader on your Solaris system, follow these steps to install the Acrobat Reader software included with NetWorker:

1. Become root on the system where you want to install the Solaris version of the Acrobat Reader software.
2. Create a temporary directory that has at least 8 MB of space available.
3. Insert the documentation CD-ROM into the drive and change directories to the *acroread/solaris* directory.
4. Extract the Acrobat Reader software from the *ACROREAD.TAR* file contained in the */acroread/solaris* directory on the documentation CD-ROM.
5. Install the files with the following command:

   ```
   # ./INSTALL
   ```

6. The screen clears and displays the license agreement information.
7. Press [Return] repeatedly to clear the screen until you receive the query to ACCEPT or DECLINE the license agreement.
8. Enter your response and press [Return].
9. Determine where you want to install the Acrobat Reader software. The default directory is */opt/AcroRead*. Enter the full pathname of an alternate location or press [Return] to accept the default.
10. Add the directory where you installed Acrobat Reader to the PATH environment variable.

How to View the NetWorker Documentation

To view the NetWorker documentation, follow these steps:

1. Change to the directory that contains the document file you want to view. You can view the files directly from the CD-ROM or copy them from the following locations to your local disk:

File on Documentation CD	Document
/docs/perftune.pdf	*Legato NetWorker Performance Tuning Guide*
/docs/disrecov.pdf	*Legato NetWorker Disaster Recovery Guide*
/docs/bulletin.pdf	*Technical Bulletins*
/docs/unix/uxag.pdf	*Legato NetWorker Administrator's Guide, UNIX Version*
/docs/unix/uxrs.pdf	*Legato NetWorker Release Supplement*
/docs/unix/solig.pdf	*Legato NetWorker Installation Guide Release 5.5, Solaris Version*

2. Start Acrobat Reader with the following command:

acroread *file_name*.pdf &

3. The Acrobat Reader splash screen appears followed by a viewing window opened for the document.

To use the Acrobat Reader software to print documentation from either the CD-ROM or the copied files, select File>Print and specify the range of pages to print.

For a list of Acrobat Reader command line options, enter the **acroread -help** command at the shell prompt.

Conventions

This manual uses the following typographic conventions and symbols to make information easier to access and understand.

- **boldface** – Indicates DOS or UNIX line commands. For example:

  The **nsradmin** command starts the command line version of the administration program.

- *italic* – Used for directory pathnames, files, machine names, and new terms defined in the Glossary or within the chapter, and to emphasize words or ideas. For example:

  Messages displayed are also written to */nsr/logs/daemon.log*.

- `fixed-width` – Used for examples and information displayed on the screen. For example:

  ```
  media waiting: recover waiting for 8mm 5GB tape volume name
  ```

- Pull-down_menu>Command>Command – Depicts a path or an order to follow for making selections in the GUI. For example:

  Volume>Change Mode>Appendable

- **`fixed-width, boldface`** – Used for commands and text you type exactly as shown. For example:

  `nwadmin`

- ***`fixed-width, boldface italic`*** – Used for commands and text you type for which you need to substitute a variable. For example:

  `nwadmin -s server-name`

- 

  Important: Indicates important information and cautionary notes that prevent you from making a mistake.

Year 2000 Compliance

The NetWorker software supports dates in the year 2000 and beyond. For additional information and details about related test cases, see the Year 2000 Compliance (Y2K) section on the Legato web site at *http://www.legato.com*.

Information and Services

Legato offers a variety of services, including electronic, telephone, and fax support that provide company, product, and technical information.

Legato Service or Resource	Technical Bulletins	Binary Patches	Company & Product Information	Training Programs
http://www.legato.com	Yes	Yes	Yes	Yes
ftp.legato.com, Internet address 137.69.200.1 (log in as *anonymous*)	Yes	Yes		
Legato Inside Sales, (650) 812-6000 or *sales@legato.com*			Yes	
Legato Education Services, (650) 812-6096 or *training@legato.com*				Yes
Note: For detailed information about our services, support policies, and software subscriptions, please refer to the booklet *LegatoCare Service, Support and Training Programs* included in the NetWorker package.				

Technical Support

Legato also provides several sources to fulfill your technical support needs.

Technical Support Service	Address
Hotline	(650) 812-6100
E-mail	*support@legato.com*
Tech Dialog (requires password)	*http://www.legato.com/tech_dialog*

Customer Service

Contact Legato Customer Service if you have questions about licensing, registering, or authorizing your Legato products. Customer Service also supplies instructions for transferring licenses to a different server (rehosting) and provides status on product orders.

Customer Service	Address
Telephone number	(650) 812-6000 (option 3)
Fax number	(650) 812-6220
E-mail	*service@legato.com*
E-mail for order status	*orderadmin@legato.com*

Customer Feedback

The Legato NetWorker® for UNIX® team welcomes your comments and suggestions about software features, the installation procedure, and documentation. Please send any suggestions and comments to *feedback@legato.com*. You will receive a notice confirming receipt of your e-mail. Although we cannot respond personally to every request, we consider all your comments and suggestions during product design.

For a chance to win a photo-holder mousepad or other prize, help us improve our documentation by aiming your browser at *http://www.legato.com/documents/surveys/* and answering our brief survey.

NetWorker Software Installation

Software Installation Roadmap

The default installation program installs all the NetWorker software packages, except for the *LGTOhsmn* package, during a single session. You can override the default selection if you want to install only selected software.

Read the sections referenced for each procedure before you install the NetWorker software as follows:

1. If you have an earlier version of the NetWorker software installed, you *must* first remove the existing NetWorker software before you install this release of NetWorker on your NetWorker server and clients and prepare to convert the configuration files. See "Removing the NetWorker Software" on page 44. To update the software and indexes from an earlier release, see "How to Update from Release 5.x" on page 17, or "How to Update from Release 4.2.x" on page 18.
2. Make the distribution files available from one of the following:
   - Local CD-ROM (see "Software Installation from Local CD-ROM" on page 19)
   - Remote CD-ROM (see "Software Installation from Remote CD-ROM" on page 20)
   - Downloaded web file (see "Software Installation from a Downloaded File" on page 21)
3. Install the required NetWorker software (*LGTOclnt*, *LGTOdrvr*, *LGTOnode*, and *LGTOserv*) on the system you want to designate as the NetWorker server. Before you install the NetWorker software on the server, read the following sections in this *Installation Guide*:
   - "Server Software Installation Requirements" on page 15
   - "Example of Server Software Installation" on page 22

   We recommend that you install all the NetWorker software on the server at the same time. If you choose to install only selected software packages on the server, you must install them in the following order:
   a. The client software package (*LGTOclnt*)
   b. The device drivers package (*LGTOdrvr*)
   c. The storage node software package (*LGTOnode*)
   d. The server software package (*LGTOserv*)

4. Install the NetWorker client (*LGTOclnt*) software on machines with the same operating system and hardware platform as the NetWorker server. You can choose to install the software locally on each client or remotely through a mounted network file system (NFS) partition. Before you install the NetWorker software on the clients on your network, read the following sections in this *Installation Guide*:
   - "Client Software Installation Requirements" on page 16
   - "Example of Client Software Installation" on page 26
5. If you purchased an enabler for storage node support, install the NetWorker client (*LGTOclnt),* device driver (*LGTOdrvr*), and storage node (*LGTOnode*) software on the machines that you want to designate as storage nodes.

   To find the latest information about supported devices, obtain the latest *Device Support Supplement*.
6. If you purchased an enabler for the XDSM HSM client application, install the *LGTOhsmn* package on any Solaris NFS clients that might need to issue explicit migration and recall commands specific to the XDSM HSM application. See "Installing the XDSM HSM Software" on page 32.
7. Configure the devices for the NetWorker server and storage nodes. See "How to Configure Autochanger Support" on page 40. For more detailed information, refer to the autochanger and silo chapters in the *Administrator's Guide*.
8. Enable and register all of your NetWorker products. See "How to Enable and Register the Software" on page 41.

The software package that contains the NetWorker server, clients, and storage node software, as well as the NetWorker man pages, is in the *SOLARIS* directory of the Clients and Servers CD-ROM. The software package that contains the NetWorker XDSM HSM client software is in the *SOLARIS/XDHSM* directory of the Clients and Servers CD-ROM.

The Adobe Acrobat Reader for Solaris and PDF versions of the NetWorker documentation set are provided on the Documentation Suite CD-ROM.

Installation of Acrobat Reader, PDF files, and the NetWorker man pages is optional. They can be installed on any of the systems on your network. You can also read them directly from the CD-ROM.

After the NetWorker software is installed on the server, storage nodes, and clients, refer to the *Legato NetWorker Administrator's Guide, UNIX Version*, for information on how to configure the software for scheduled backups. For assistance using the NetWorker GUI, refer to the online help. Refer to the *Legato NetWorker Disaster Recovery Guide* to learn how to use the software to recover data lost in a system disaster. The PDF versions of the *Administrator's Guide* and the *Disaster Recovery Guide* are located on the Documentation Suite CD-ROM.

Server Software Installation Requirements

To install the NetWorker software on a Solaris server, your system must meet the following requirements:

- You need a directory on the server large enough for the NetWorker client and server indexes and media database (usually */usr/nsr*). See Table 1, "Default Locations and Space Required for Software and Documentation Files," on page 16. The installation script checks for space and suggests one or more locations for the indexes and media database.
- You need to provide the system pathname of at least one storage device for use by the NetWorker server to back up and recover files. For example, */dev/rmt/0mbn* is a valid pathname for Solaris release 2.5.1. If you do not provide a pathname at the time you install the NetWorker software, the default pathname shown in the installation script is assigned. If you use an optical autochanger to back up and recover data, use the raw name of the device, for example, */dev/rdsk/c0t1d0s2*.
- If the device uses tape, it must be a nonrewinding device.
- If you elect to install the online NetWorker man pages, see Table 1 for space requirements to set up a directory (for example, */usr/man*).
- If you elect to copy the PDF documentation files, set up a directory with as much space as indicated for PDF files in Table 1. If you do not already have Acrobat Reader installed, you need a directory with enough space to install the Acrobat Reader software included with the NetWorker distribution files.

The NetWorker software installation script modifies the following system files during the installation process:

- */etc/rpc*
- */etc/syslog.conf*

Save a copy of the original versions of these files *before* you install the software.

If you want to install only some of the available NetWorker software, you *must* choose the client, storage node, driver, and server packages *in that order* (choices 1, 4, and 5).

If you want to install all of the available NetWorker software at one time, including the device drivers and man pages, press the [Return] key for the default option (all) when the server installation script asks you to select a package to install.

The installation script chooses the directory locations shown in Table 1 if you press [Return] to accept the default locations.

Table 1. Default Locations and Space Required for Software and Documentation Files

Software/Documentation Files	NetWorker Server Default Location	Space Needed
NetWorker GUI program files	*/usr/bin*	23 MB
NetWorker daemon and utility command files	*/usr/sbin*	22 MB
Online client file and server indexes; media database	*/usr/lib/nsr*	2 MB
Adobe Acrobat Reader	*/opt/AcroRead/bin*	8 MB
NetWorker device drivers	*/etc/LGTOuscsi*	1 MB
NetWorker man pages	*/usr/man*	1 MB
PDF files	*optional*	varies

Previous releases of the NetWorker software required temporary space equal to the software package size for the **pkgadd** process. In the current version, this temporary space is no longer required.

Client Software Installation Requirements

To request backup and recovery services from the NetWorker server, NetWorker clients must be able to access the NetWorker software. There are two ways a client can access the NetWorker software:

- Clients can have an NFS-mounted directory on the remote system where the NetWorker programs are located.
- Clients can have the NetWorker programs installed directly on their local disks.

Important: The PATH environment variable for the user root on the NetWorker server and the user on each NetWorker client *must* contain the directory where the NetWorker executables reside.

If you have clients of the same hardware platform as the NetWorker server, use the same software to install NetWorker on the clients. For clients with different hardware platforms, you need to purchase and install the required client software for that platform separately. Contact Legato or your Authorized Legato Reseller for more information.

When the **pkgadd** command script asks you to select a package to install, enter "1" for the client software. Optionally, you can enter "3" to install the *LGTOman* package at the same time. Do *not* press the [Return] key for the default response "all." If you

purchased support for storage nodes, you can install the *LGTOnode* and *LGTOdrvr* packages at the same time, as long as the *LGTOclnt* package is the first package selected for installation.

To back up a NetWorker client over the network, the **nsrexecd** daemon must be active on the client. If you select the default answer to the queries about whether you want the NetWorker daemons to start once the installation is complete, the **pkgadd** installation program automatically starts **nsrexecd** after a successful installation session. Make sure that the **nsrexecd** command is in each client's start-up file to avoid errors during a scheduled backup of the client.

Storage Node Installation Requirements

A storage node contains the NetWorker client, storage node, and device driver software. Make sure there is enough free space to install these packages.

A storage node must have at least one SCSI storage device attached and installed according to the manufacturer's instructions.

XDSM HSM Installation Requirements

Before you install the XDSM HSM software, you need the following software:

- The NetWorker for UNIX release 5.0 or later server software installed on the server.
- The NetWorker for UNIX release 5.1 or later *client* software installed on a Solaris client.
- A Solaris release 2.5.1 or 2.6 SPARC operating system running on the *client* computer. The XDSM HSM software supports both UNIX filesystems (UFS) and Veritas filesystems (VxFS), version 3.2.1.1 on Solaris 2.5.1 and Solaris 2.6.
- A NetWorker XDSM HSM module enabled for the NetWorker server. Once the XDSM HSM software is enabled on the NetWorker server, all NetWorker clients administered by that server can be configured as migration clients for that server.

Important: When you invoke the **pkgadd** program within the *SOLARIS* directory as shown in the installation instructions that begin on page 19, the software packages for the XDSM HSM product are not included in the list of available packages. This is to prevent an accidental overwrite of any previously installed versions of the symbolic link HSM software. To install the *LGTOhsm* and *LGTOhsmn* packages, change directories to */cdrom/NETWORKER/SOLARIS/XDHSM*, and invoke the **pkgadd** from that location. See "Installing the XDSM HSM Software" on page 32 for complete information on how to install the XDSM HSM software.

How to Update from Release 5.x

For your older NetWorker file indexes and media database to be compatible with the new indexes created with newer releases of NetWorker, they must first be converted.

The indexes are automatically converted the first time you start the NetWorker daemons. Before you install the NetWorker software:

1. Make sure that you have a recent, full backup of the file indexes (*/nsr/index*), server resource files (*/nsr/res*), and media database (*/nsr/mm*).

Important: For automatic index conversion, make sure the amount of free disk space is double the size of your largest index. If you do not have enough free disk space, remove the indexes when you remove the NetWorker software, and recover and convert them according to the instructions in "How to Recover the Server Index and Media Database" on page 18.

2. Remove the earlier version of NetWorker (but not the indexes, resource files, or media database) using the instructions in "Removing the NetWorker Software" on page 44.
3. Install the new release of the NetWorker software.
4. Enable and register your NetWorker software using the instructions in "How to Enable and Register the Software" on page 41. You must use the enabler code that was included in the update kit.

How to Update from Release 4.2.x

For your older NetWorker file indexes and media database to be compatible with the new indexes created with newer releases of NetWorker, they must first be converted.

The indexes are automatically converted the first time you start the NetWorker daemons. Before you install the NetWorker software:

1. Make sure that you have a recent, full backup of the file indexes (*/nsr/index*), server resource files (*/nsr/res*), and media database (*/nsr/mm*).
2. Remove the earlier version of the NetWorker software (but not the indexes, resource files, or media database) using the instructions in "Removing the NetWorker Software" on page 44.

Important: For automatic index conversion, make sure the amount of free disk space is double the size of your largest index. If you do not have enough free disk space, remove the indexes when you remove the 4.2.x release of NetWorker, and recover and convert them according to the instructions in "How to Recover the Server Index and Media Database" on page 18.

3. Install the new release of the NetWorker software.
4. Enable and register your NetWorker software using the instructions in "How to Enable and Register the Software" on page 41. You must use the enabler code that was included in the update kit.

How to Recover the Server Index and Media Database

If you are updating from release 4.2.x and do not have free disk space equal to two times the size of your largest index, first make sure you have a current NetWorker backup of your existing indexes, and then remove the indexes and follow the instructions in this section.

With the new version of the NetWorker software installed, recover the previous version of the server index, media database, and configuration files from the backup media as follows:

1. Find the bootstrap information. The **mmrecov** program asks you for the bootstrap save set identification number (ssid). If you perform regular scheduled backups that include the server, you should have a copy of the bootstrap file (either as hardcopy or an electronic file) with the name of the backup media you need and the bootstrap ssid. If you do not have this information available, you can invoke the **scanner -B** command at the shell prompt to obtain the bootstrap ssid.
2. Retrieve the backup media that contains the most recent backup named *bootstrap* and load it into the server's backup device.
3. Use the **mmrecov** command to extract the contents of the bootstrap backup. The **mmrecov** program prompts you for the bootstrap ssid, the starting file number (if known), and the starting record number (if known).

   If you have more than one backup device available, the **mmrecov** program also prompts you to enter the name of the device you want to use. You can press [Return] to accept any default values that NetWorker provides in each prompt.

   After the **mmrecov** program completes extraction, the following message appears:

   ```
   The on-line index for 'server-name' is now fully recovered.
   ```

You can use NetWorker commands such as **nsrwatch** or **nwadmin** to watch the progress of the server during the recovery of the index and configuration files. Open a new window (shell tool) to monitor the recovery so that the **mmrecov** output is not displayed on top of the **nsrwatch** output.

Unlike the */nsr/index* directory, the */nsr/res* directory containing the configuration files cannot be reliably overwritten while NetWorker is running. Therefore, **mmrecov** recovers the */nsr/res* directory as */nsr/res.R*. Copy the */nsr/res.R* file over the existing */nsr/res* and then delete the */nsr/res.R* file after the recovery process is completed.

For more information about the **mmrecov** command and examples of its output, refer to the *Disaster Recovery Guide* or the **mmrecov** man page.

Software Installation from Local CD-ROM

To install NetWorker on a system with a local CD-ROM drive attached, follow these steps:

1. Become root on the system where you want to install the NetWorker software.
2. Insert the NetWorker CD-ROM into the drive.
3. Enter the **pkgadd -d** command at the system prompt as follows:

   ```
   # pkgadd -d /cdrom/NETWORKER/SOLARIS
   ```

   See "Example of Server Software Installation" on page 22 or "Example of Client Software Installation" on page 26 for an example of the questions asked by the **pkgadd** command script.
4. After the installation is complete, remove the NetWorker CD-ROM from the drive and store it in a safe location.

Software Installation from Remote CD-ROM

To install the NetWorker software on a system from a remote CD-ROM drive, follow these steps:

1. Insert the CD-ROM in the remote system's drive.
2. Mount the CD-ROM on the remote system.
3. Make the mounted CD-ROM on the remote system exportable through NFS.
4. Become root on the system where you want to install the NetWorker software.
5. Create a mount point with

   # **mkdir** ***/tmpmntdir***
6. Mount the filesystem where the CD-ROM is mounted onto the system where you want to install the NetWorker software, with

   # **mount** ***remote-host*:/cdrom/NETWORKER /*** ***tmpmntdir***
7. Enter the **pkgadd -d** command at the system prompt as follows:

   # **pkgadd -d** ***/tmpmntdir*/SOLARIS**

   See "Example of Server Software Installation" on page 22 or "Example of Client Software Installation" on page 26 for an example of the questions asked by the **pkgadd** command script.
8. After the installation process is complete, unmount the CD-ROM with

   # **umount** ***remote-host*:*** ***/tmpmntdir***

Software Installation to a Remote Client

To install the NetWorker software from a local machine to a remote client on the network, follow these steps:

1. Insert the CD-ROM in the local system's drive.
2. Mount the CD-ROM on the local system.
3. Make the mounted CD-ROM on the local system exportable through NFS.
4. Enter the **pkgadd** command on the local system, specifying the **d** and **R** flags:

   **# pkgadd -d /cdrom/NETWORKER/SOLARIS -R **
   /net/*remote-client/destination-path*
5. Establish a remote login session with the remote client:

   # rlogin ***remote-client***
6. Using the remote login session you established, start the NetWorker daemons on the remote client:

   # /etc/init.d/networker start

Software Installation from a Downloaded File

This section describes how to install downloaded NetWorker software.

Important: The evaluation version of NetWorker contains tarred and compressed versions of the NetWorker software distribution files. Be sure that you have adequate disk space to contain both the compressed download file (about 27 MB) and the fully uncompressed files (about 78 MB.)

To install the NetWorker software from a downloaded file:

1. On the machine where you want to install NetWorker, create a temporary directory to extract NetWorker from the downloaded evaluation file.
2. Change directories to the temporary directory.
3. Use the **gunzip** command to uncompress the downloaded evaluation file.
4. Use the **tar -xvpBf** command to extract the resulting tar file.
5. Become root on the system where you want to install the NetWorker software.
6. Enter the **pkgadd -d** command at the system prompt, for example:

   ```
   # pkgadd -d /tmpdir/SOLARIS
   ```

   See "Example of Server Software Installation" on page 22 or "Example of Client Software Installation" on page 26 for an example of the questions asked by the **pkgadd** command script.
7. You can remove the extracted files and then the temporary extraction directory after the installation is complete, or save a copy of the distribution files for future reference.

Installing NetWorker to Another Location

By default, the NetWorker software is installed in the */usr* directory. If you have insufficient disk space on the */usr* partition, you can relocate the *LGTOclnt*, *LGTOnode*, and *LGTOsrvr* packages together to a specified directory within another partition. The *LGTOman* package can also be relocated, although you must revise the MANPATH environment variable to include the path to the relocated man pages. The device drivers package, *LGTOdrvr*, must be installed in the default location.

To install the relocatable NetWorker binaries to a nondefault location, use the following procedure:

1. Edit the */var/sadm/install/admin/default* file and change the value assigned to the *basedir* variable from "default" to "ask", as shown below:

   ```
   basedir=ask
   ```

   Note that to successfully install the *LGTOdrvr* package, you will need to provide the root directory (/) as the response to the query about which package base directory to use for the installation of the device drivers.
2. Create a directory and the subdirectories */bin* and */sbin* where you will install the NetWorker binaries, for example:

```
# mkdir /my-path/sbin
# mkdir /my-path/bin
```

3. Modify the root PATH variable to include the */bin* and */sbin* subdirectories of the directory just created, for example:

   ```
   /my-path/bin:/my-path/sbin
   ```

4. Run the **pkgadd -d** command:

   ```
   # pkgadd -d /cdrom/NETWORKER/SOLARIS
   ```

   The following prompt appears under the processing package instance section of the script:

   ```
   Enter path to package base directory (default: /usr) [?,q]
   /my-path
   Using <my-path> as the package base directory.
   ```

   You must enter the same base path directory for all the relocated packages.

5. At the prompt, enter the base directory for the location of the binary. Make sure that you enter the same base directory for the relocated packages. If you use **pkgrm** to remove the packages at a later date, you will also need to supply the base directory you specified.

Important: Do not relocate any of the packages if the Legato NetWorker BusinesSuite Module software is also installed on the computer.

Example of Server Software Installation

In this example, the following packages are installed from a local CD-ROM device on a computer named "jupiter": the client, storage node, server, and the device driver software (required for NetWorker to use SCSI storage devices), and the NetWorker man pages. This example shows only the prompts you receive as you perform the installation, with responses shown in bold face type.

```
# pkgadd -d /cdrom/NETWORKER/SOLARIS
The following packages are available:
1 LGTOclnt NetWorker for Solaris (Backup/Recover) Client
(sparc) 5.5.Build.13
2 LGTOdrvr NetWorker for Solaris (Backup/Recover) Device
Drivers (sparc) 5.5.Build.13
3 LGTOman NetWorker for Solaris (Backup/Recover) Man (sparc)
5.5.Build.13
4 LGTOnode NetWorker for Solaris (Backup/Recover) Storage
Node (sparc) 5.5.Build.13
5 LGTOserv NetWorker for Solaris (Backup/Recover) Server
(sparc) 5.5.Build.13
Select package(s) you wish to process (or 'all' to process all
packages). (default: all) [?,??,q]: 1 2 4 5
```

```
Processing package instance <LGTOclnt>

NetWorker for Solaris (Backup/Recover) Client (sparc)
5.5.Build.13

Legato Systems, Inc. NetWorker(TM) - Release 5.5.Build.13
Copyright (c) 1990-1998, Legato Systems, Inc.  All rights
reserved.

This product includes software developed by the University of
California, Berkeley and its contributors.

To set up a NetWorker server, you need to supply a directory with
enough free space to maintain all the on-line save file indexing
and media management information.

To set up a NetWorker storage node or client, you need to supply
a directory for the nsrexecd state file.

Below is a list of some of the filesystems, with their free space,
which you might consider:

/space                        :  679643

/opt                          :  253562

/usr                          :  175490

/                             :   86252

Directory to use for client and server information [/space/nsr]?
[Return]

The nsrexecd program restricts access to a select set of
NetWorker servers.  Please enter the names of each computer
running a NetWorker server that will back up this computer, one
name at a time.  If a computer has more than one network
interface, please enter each interface's name (one at a time).

Enter the first NetWorker server's name [no more]: jupiter

Enter the second NetWorker server's name [no more]: [Return]

Start NetWorker daemons at end of install [yes]? n

Using </usr> as the package base directory.

## Processing package information.

## Processing system information.

## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <LGTOclnt>
[y,n,?] y

Installing NetWorker for Solaris (Backup/Recover) Client as
<LGTOclnt>

## Installing part 1 of 1.
```

```
[ verifying class <none> ]
## Executing postinstall script.
        Installing NetWorker home directory in /space/nsr
        nsr-izing system files
        nsr-izing system files
        Creating /etc/init.d/networker
        Creating /etc/rc2.d/S95networker
        Creating /etc/rc0.d/K05networker
        Completing Installation
NetWorker successfully installed on `jupiter'!
Installation of <LGTOclnt> was successful.
Processing package instance <LGTOdrvr>
NetWorker for Solaris (Backup/Recover) Device Drivers (sparc)
5.5.Build.13
Copyright (c) 1990-1998, Legato Systems, Inc. All Rights
Reserved.
Using </> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
This package contains scripts which will be executed with super-
user permission during the process of installing this package.
Do you want to continue with the installation of <LGTOdrvr>
[y,n,?] y
Installing NetWorker for Solaris (Backup/Recover) Device Drivers
as <LGTOdrvr>
## Executing preinstall script.
## Installing part 1 of 1.
[ verifying class <none> ]
## Executing postinstall script.
Installation of <LGTOdrvr> was successful.
Processing package instance <LGTOnode>
NetWorker for Solaris (Backup/Recover) Storage Node (sparc)
5.5.Build.13
Legato Systems, Inc. NetWorker(TM) - Release 5.5.Build.13
Copyright (c) 1990-1998, Legato Systems, Inc.  All rights
```

```
reserved.

This product includes software developed by the University of
California, Berkeley and its contributors.

The nsrexecd program restricts access to a select set of
NetWorker servers.  Please enter the names of each computer
running a NetWorker server that will back up this computer, one
name at a time.  If a computer has more than one network
interface, please enter each interface's name (one at a time).

Enter the first NetWorker server's name [no more]: jupiter

Enter the second NetWorker server's name [no more]: [Return]

Start NetWorker daemons at end of install [yes]? n

Using </usr> as the package base directory.

## Processing package information.

## Processing system information.

## Verifying package dependencies.

## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <LGTOnode>
[y,n,?] y

Installing NetWorker for Solaris (Backup/Recover) Storage Node
as <LGTOnode>

## Installing part 1 of 1.

[ verifying class <none> ]

## Executing postinstall script.

        Completing Installation

NetWorker successfully installed on `jupiter'!

Installation of <LGTOnode> was successful.

Processing package instance <LGTOserv>

NetWorker for Solaris (Backup/Recover) Server (sparc)
5.5.Build.13

Legato Systems, Inc. NetWorker(TM) - Release 5.5.Build.13

Copyright (c) 1990-1998, Legato Systems, Inc.  All rights
reserved.

This product includes software developed by the University of
California, Berkeley and its contributors.

Enter the tape or disk device(s) that are going to be used by the
NetWorker server.  Use the no-rewind, BSD-semantics name for each
tape device (i.e., use /dev/rmt/0mbn instead of /dev/rmt/0mb).
```

```
If you do not choose a device a default device will be created
for you.
Enter device name ([Return] if no more): [Return]
Start NetWorker daemons at end of install [yes]? [Return]
Using </usr> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
This package contains scripts which will be executed with super-
user permission during the process of installing this package.
Do you want to continue with the installation of <LGTOserv>
[y,n,?] y
Installing NetWorker for Solaris (Backup/Recover) Server as
<LGTOserv>
## Installing part 1 of 1.
[ verifying class <none> ]
## Executing postinstall script.
        Modifying /etc/rpc
        Modifying /etc/syslog.conf
        Restarting syslog daemon
        Completing Installation
        Starting NetWorker daemons
NetWorker successfully installed on `jupiter'!
Installation of <LGTOserv> was successful.
```

After the software is installed, you must configure the driver software to provide support for NetWorker to back up data to the SCSI storage devices attached to the system (see "Device Driver Installation" on page 39).

Example of Client Software Installation

In this example, the packages that are installed on the client computer named "mars" are the NetWorker client software and the man pages:

```
# pkgadd -d /cdrom/NETWORKER/SOLARIS
The following packages are available:
1 LGTOclnt NetWorker for Solaris (Backup/Recover) Client
(sparc) 5.5.Build.13
2 LGTOdrvr NetWorker for Solaris (Backup/Recover) Device
Drivers (sparc) 5.5.Build.13
```

3 LGTOman NetWorker for Solaris (Backup/Recover) Man (sparc) 5.5.Build.13

4 LGTOnode NetWorker for Solaris (Backup/Recover) Storage Node (sparc) 5.5.Build.13

5 LGTOserv NetWorker for Solaris (Backup/Recover) Server (sparc) 5.5.Build.13

Select package(s) you wish to process (or 'all' to process all packages). (default: all) [?,??,q]: **1 3**

Processing package instance <LGTOclnt>

NetWorker for Solaris (Backup/Recover) Client (sparc) 5.5.Build.13

Legato Systems, Inc. NetWorker(TM) - Release 5.5.Build.13

Copyright (c) 1990-1998, Legato Systems, Inc. All rights reserved.

This product includes software developed by the University of California, Berkeley and its contributors.

To set up a NetWorker server, you need to supply a directory with enough free space to maintain all the on-line save file indexing and media management information.

To set up a NetWorker storage node or client, you need to supply a directory for the nsrexecd state file.

Below is a list of some of the filesystems, with their free space, which you might consider:

/space : 679643

/opt : 253562

/usr : 175490

/ : 86252

Directory to use for client and server information [/space/nsr]? **[Return]**

The nsrexecd program restricts access to a select set of NetWorker servers. Please enter the names of each computer running a NetWorker server that will back up this computer, one name at a time. If a computer has more than one network interface, please enter each interface's name (one at a time).

Enter the first NetWorker server's name [no more]: **all**

Allowing access to all NetWorker servers.

Start NetWorker daemons at end of install [yes]? **[Return]**

This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of <LGTOclnt> [y,n,?] **[Return]**

Installing NetWorker for Solaris (Backup/Recover) Client as

```
<LGTOclnt>
## Installing part 1 of 1.
## Executing postinstall script.
        Installing NetWorker home directory in /space/nsr
        nsr-izing system files
        nsr-izing system files
        Creating /etc/init.d/networker
        Creating /etc/rc2.d/S95networker
        Creating /etc/rc0.d/K05networker
        Completing Installation
NetWorker successfully installed on `mars'!
Installation of <LGTOclnt> was successful.
Processing package instance <LGTOman>
NetWorker for Solaris (Backup/Recover) Man (sparc)
5.5.Build.13
Legato Systems, Inc.
Using </usr> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
This package contains scripts which will be executed with
super-user permission during the process of installing this
package.
Do you want to continue with the installation of <LGTOman>
[y,n,?] y
Installing NetWorker for Solaris (Backup/Recover) Man as
<LGTOman>
## Installing part 1 of 1.
[ verifying class <none> ]
## Executing postinstall script.
        Creating /usr/lib/nsr/nsr_man
Installation of <LGTOman> was successful.
```

Important: Note that in this example, the response of "*all*" to the query "*Please enter the names of each computer running a* NetWorker *server that will back up this computer, one name at a time*" means that *any* NetWorker server on the network can contact this computer for backups. To restrict access, enter the hostname of each NetWorker server separately, pressing the [Return} key between each entry.

Example of Storage Node Module Installation

In this example, all the software required for a storage node (the *LGTOclnt, LGTOdrvr,* and *LGTOnode* packages) is installed on a computer named "venus" that has an autochanger attached to it.

After the software is installed, use the NetWorker administration program to associate clients to the new storage node.

```
# pkgadd -d /cdrom/NETWORKER/SOLARIS

The following packages are available:

1 LGTOclnt NetWorker for Solaris (Backup/Recover) Client
(sparc) 5.5.Build.13

2 LGTOdrvr NetWorker for Solaris (Backup/Recover) Device
Drivers (sparc) 5.5.Build.13

3 LGTOman NetWorker for Solaris (Backup/Recover) Man (sparc)
5.5.Build.13

4 LGTOnode NetWorker for Solaris (Backup/Recover) Storage
Node (sparc) 5.5.Build.13

5 LGTOserv NetWorker for Solaris (Backup/Recover) Server
(sparc) 5.5.Build.13

Select package(s) you wish to process (or 'all' to process all
packages). (default: all) [?,??,q]: 1 2 4 5

Processing package instance <LGTOclnt>

NetWorker for Solaris (Backup/Recover) Client (sparc)
5.5.Build.13

Legato Systems, Inc. NetWorker(TM) - Release 5.5.Build.13
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reserved.

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California, Berkeley and its contributors.

To set up a NetWorker server, you need to supply a directory with
enough free space to maintain all the on-line save file indexing
and media management information.

To set up a NetWorker storage node or client, you need to supply
a directory for the nsrexecd state file.

Below is a list of some of the filesystems, with their free space,
which you might consider:

/space                        :  679643
```

```
/opt                            :  253562
/usr                            :  175490
/                               :   86252

Directory to use for client and server information [/space/nsr]?
[Return]

The nsrexecd program restricts access to a select set of
NetWorker servers.  Please enter the names of each computer
running a NetWorker server that will back up this computer, one
name at a time.  If a computer has more than one network
interface, please enter each interface's name (one at a time).

Enter the first NetWorker server's name [no more]: jupiter

Enter the second NetWorker server's name [no more]: [Return]

Start NetWorker daemons at end of install [yes]? n

Using </usr> as the package base directory.

## Processing package information.

## Processing system information.

## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <LGTOclnt>
[y,n,?] y

Installing NetWorker for Solaris (Backup/Recover) Client as
<LGTOclnt>

## Installing part 1 of 1.

[ verifying class <none> ]

## Executing postinstall script.

        Installing NetWorker home directory in /space/nsr

        nsr-izing system files

        nsr-izing system files

        Creating /etc/init.d/networker

        Creating /etc/rc2.d/S95networker

        Creating /etc/rc0.d/K05networker

        Completing Installation

NetWorker successfully installed on `venus'!

Installation of <LGTOclnt> was successful.

Processing package instance <LGTOdrvr>

NetWorker for Solaris (Backup/Recover) Device Drivers (sparc)
5.5.Build.13
```

```
Copyright (c) 1990-1998, Legato Systems, Inc. All Rights
Reserved.

Using </> as the package base directory.

## Processing package information.

## Processing system information.

## Verifying package dependencies.

## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <LGTOdrvr>
[y,n,?] y

Installing NetWorker for Solaris (Backup/Recover) Device Drivers
as <LGTOdrvr>

## Executing preinstall script.

## Installing part 1 of 1.

[ verifying class <none> ]

## Executing postinstall script.

Installation of <LGTOdrvr> was successful.

Processing package instance <LGTOnode>

NetWorker for Solaris (Backup/Recover) Storage Node (sparc)
5.5.Build.13

Legato Systems, Inc. NetWorker(TM) - Release 5.5.Build.13

Copyright (c) 1990-1998, Legato Systems, Inc.  All rights
reserved.

This product includes software developed by the University of
California, Berkeley and its contributors.

The nsrexecd program restricts access to a select set of
NetWorker servers.  Please enter the names of each computer
running a NetWorker server that will back up this computer, one
name at a time.  If a computer has more than one network
interface, please enter each interface's name (one at a time).

Enter the first NetWorker server's name [no more]: jupiter

Enter the second NetWorker server's name [no more]: [Return]

Start NetWorker daemons at end of install [yes]? n

Using </usr> as the package base directory.

## Processing package information.

## Processing system information.

## Verifying package dependencies.
```

```
## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <LGTOnode>
[y,n,?] y

Installing NetWorker for Solaris (Backup/Recover) Storage Node
as <LGTOnode>

## Installing part 1 of 1.

[ verifying class <none> ]

## Executing postinstall script.

        Completing Installation

NetWorker successfully installed on `venus'!
```

After the software is installed on the new storage node, you must configure the driver software to provide support for NetWorker to back up data to any SCSI storage devices attached to the system. See "Device Driver Installation" on page 39.

Installing the XDSM HSM Software

Installing the XDSM HSM software is a two-part process. To complete the process successfully, you must:

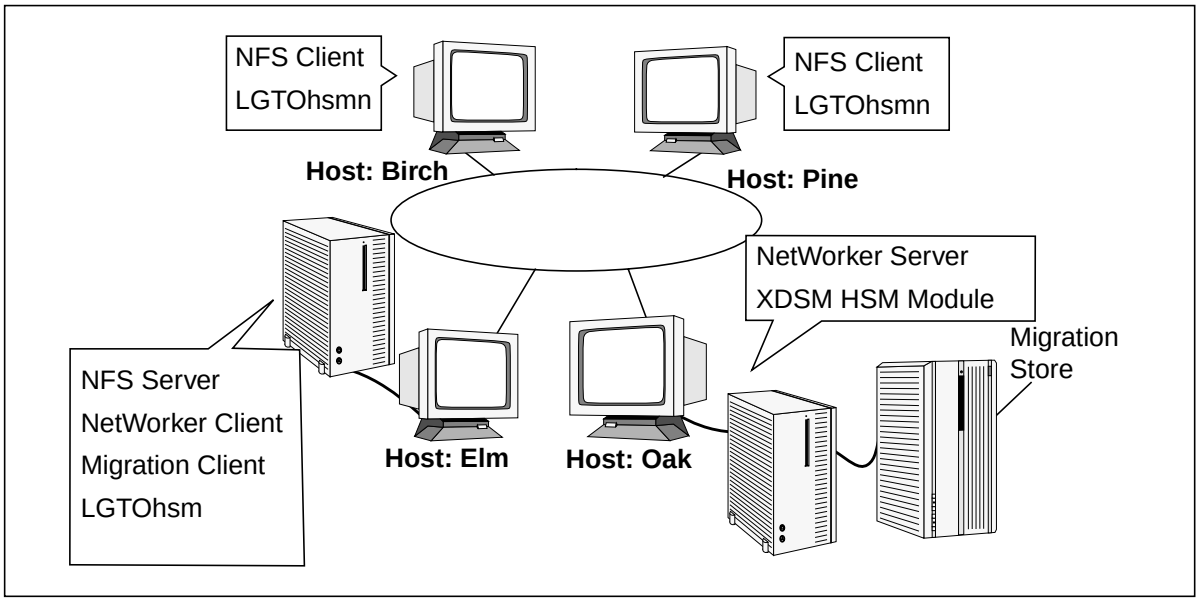
- Install the *LGTOhsm* package on the NetWorker client computer. If you want to migrate and recall files over NFS, this computer must also be the NFS server.
- Install the *LGTOhsmn* package on any Solaris NFS client whose files you want to be able to explicitly migrate and recall remotely.

Once the XDSM HSM software is successfully installed, refer to the section entitled "Initial XDSM HSM Configuration" in the *Administrator's Guide* to configure your XDSM HSM client.

Figure 1 illustrates the location of each software package in a typical networked configuration. In this scenario, host Oak is the NetWorker server and has the XDSM HSM module enabled. Host Elm is an NFS server that also functions as a NetWorker backup client and as a migration client. Additionally, Host Elm has the XDSM HSM packages installed on it. Depending on your environment, the NetWorker server might be the same physical machine as the NFS server.

Hosts Birch and Pine are NFS clients of the NFS server, Elm. Both Birch and Pine have the migration command line utilities (the *LGTOhsmn* package) installed, allowing them to issue remote migration and recall operations on Elm.

Figure 1. Configuration scenario for XDSM HSM software



If you are migrating to the new XDSM HSM from release 5.1 or earlier of the NetWorker HSM software and want to convert existing symbolic links to the new XDSM HSM file stubs, use the **sym2xdm** command. Refer to the *Administrator's Guide* for complete information about **sym2xdm**.

How to Install LGTOhsm on the Migration Client

Use the **pkgadd** command to install the XDSM HSM software package on a NetWorker client computer. You must install the *LGTOhsm* software package as follows on a computer that also has the NetWorker client software installed on it:

1. Ensure that the NetWorker XDSM HSM software is enabled on a NetWorker server.
2. Become root on the client computer.
3. Ensure that no backups are currently in progress.
4. If **nsrexecd** is currently running on the client computer, kill it by sending the SIGTERM signal. Do not use **kill -9**.
5. Insert the CD-ROM into the drive.
6. Issue the following command:

   ```
   # pkgadd -d /cdrom/NETWORKER/SOLARIS/XDSMHSM
   ```

7. Choose the option to install the *LGTOhsm* software package.
8. Enter your response to the two separate warning messages display that require a yes or no answer.
9. Continue with the instructions in the section entitled "Initial XDSM HSM Configuration" in the *Administrator's Guide* to complete the installation process.

Important: This version of HSM is not compatible with the previous version of HSM based on symbolic links. If you have migrated files created with a version of HSM prior to the 5.2 XDSM HSM release, you must use **sym2xdm** to convert the symbolic links to XDSM stubs. The **sym2xdm** utility is provided in the LGTOhsm package and is installed in the */usr/sbin* directory during the **pkgadd** process. Refer to the section entitled "How to Convert Legacy Symbolic Links to New XDSM Stubs" in the *Administrator's Guide* for more information.

How to Install LGTOhsmn on a Solaris NFS Client

File recall is both automatic and transparent to the user over NFS. If, however, you want to issue migration and recall commands explicitly from a Solaris NFS client, as well as generate statistical migration reports, you must install the *LGTOhsmn* package on the NFS client.

Install the *LGTOhsmn* package containing the command line utilities on any Solaris NFS client from which you want to be able to migrate or recall files explicitly on the NFS server.

Important: The NFS server must also be a NetWorker client and have the *LGTOhsm* package installed on it before a Solaris NFS client can perform migration operations on it.

To install the migration command line utilities and their associated man pages on a Solaris NFS client computer, use the **pkgadd** command, following these steps:

1. Become root on the Solaris NFS client.
2. Issue the following command:

   # **pkgadd -d /cdrom/NETWORKER/SOLARIS/XDSMHSM**

3. Choose the option to install the LGTOhsmn software package.
4. Enter your response to the two separate warning messages display that require a yes or no answer.
5. After the installation is completed, if a **whatis** database exists in the */usr/share/man/windex* directory on the NFS client computer, run the **catman** command to update the database with the new man pages.

The command line utilities contained in the LGTOhsmn package can be installed on any number of Solaris NFS clients that mount migrating filesystems from an NFS server that also has the XDSM HSM software installed on it. The command line utilities can also be installed on the NFS server itself and used on local filesystems. Refer to the section entitled "Syntax for XDSM HSM Migration Command Line Utilities" in the *Administrator's Guide* for details on the use and syntax of the command line utilities.

Example of XDSM HSM Installation

In this example, both the LGTOhsm *and* LGTOhsmn packages are installed on the client computer named mars that already has the other NetWorker software packages installed:

mars# **pkgadd -d /cdrom/NETWORKER/SOLARIS/XDSMHSM**

```
The following packages are available:
  1  LGTOhsm      Legato XDSM HSM Client
                  (sparc) 5.5
  2  LGTOhsmn     Legato XDSM HSM Client NFS User Commands
                  (sparc) 5.5
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]: [Return]
Processing package instance <LGTOhsm> from
</cdrom/NETWORKER/SOLARIS/XDSMHSM>
Legato XDSM HSM Client
(sparc) 5.5
Copyright (c) 1990-1998, Legato Systems, Inc.
All rights reserved.
Copyright (c) 1998 Programmed Logic Corporation
All Rights Reserved
WARNING: If this package is installed over an existing
symbolic link version of the HSM client, the command sym2xdm
must be used to convert any symbolic links to the new HSM XDSM
stubs.
Do you wish to continue with the installation of <LGTOhsm>
[no]? y
WARNING: This package is kernel intrusive, and will install
kernel modules.
Do you wish to continue with the installation of <LGTOhsm>
[no]? y
Using </usr> as the package base directory.
## Processing package information.
## Processing system information.
   3 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
The following files are already installed on the system and
are being used by another package:
* /usr/lib/nsr <attribute change only>
```

```
  /usr/sbin <attribute change only>
* - conflict with a file which does not belong to any package.
Do you want to install these conflicting files [y,n,?,q] y
## Checking for setuid/setgid programs.
This package contains scripts which will be executed with
super-user permission during the process of installing this
package.
Do you want to continue with the installation of <LGTOhsm>
[y,n,?] y
Installing Legato XDSM HSM Client as <LGTOhsm>
## Executing preinstall script.
## Installing part 1 of 1.
/usr/lib/libxdm.so
/usr/lib/nsr/hsmip_recover.so.1
/usr/lib/nsr/hsmip_save.so.1
/usr/lib/nsr/liblhsm.so
/usr/lib/nsr/libstack.a
/usr/lib/nsr/libstack.so
/usr/lib/nsr/osv/2_5_1/etc/fs/stackfs/mount
/usr/lib/nsr/osv/2_5_1/kernel/drv/dm_plc
/usr/lib/nsr/osv/2_5_1/kernel/drv/dm_plc.conf
/usr/lib/nsr/osv/2_5_1/kernel/fs/stackfs
/usr/lib/nsr/osv/2_5_1/kernel/misc/xdm
/usr/lib/nsr/osv/2_6/etc/fs/stackfs/mount
/usr/lib/nsr/osv/2_6/kernel/drv/dm_plc
/usr/lib/nsr/osv/2_6/kernel/drv/dm_plc.conf
/usr/lib/nsr/osv/2_6/kernel/fs/stackfs
/usr/lib/nsr/osv/2_6/kernel/misc/xdm
/usr/sbin/dmclear
/usr/sbin/dmib
/usr/sbin/dmls
/usr/sbin/dmrecall
/usr/sbin/fndlink
/usr/sbin/hsmnfsd
/usr/sbin/nsrhsmck
/usr/sbin/nsrib
/usr/sbin/nsriba
/usr/sbin/nsrmig
```

```
/usr/sbin/nsrpmig

/usr/sbin/sym2xdm

[ verifying class <none> ]

## Executing postinstall script.

copying /usr/lib/nsr/osv/2_5_1/kernel/drv/dm_plc to
/kernel/drv/dm_plc

copying /usr/lib/nsr/osv/2_5_1/kernel/drv/dm_plc.conf to
/kernel/drv/dm_plc.conf

copying /usr/lib/nsr/osv/2_5_1/kernel/fs/stackfs to
/kernel/fs/stackfs

copying /usr/lib/nsr/osv/2_5_1/kernel/misc/xdm to
/kernel/misc/xdm

copying /usr/lib/nsr/osv/2_5_1/etc/fs/stackfs/mount to
/etc/fs/stackfs/mount

Attempting to install the dmapi device ...

Installation succeeded.

Installation of <LGTOhsm> was successful.

Processing package instance <LGTOhsmn> from
</cdrom/NETWORKER/SOLARIS/XDSMHSM>

Legato XDSM HSM Client NFS User Commands

(sparc) 5.5

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Using </> as the package base directory.

## Processing package information.

## Processing system information.

   4 package pathnames are already properly installed.

## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

The following files are already installed on the system and
are being used by another package:

  /usr/share/man/man1 <attribute change only>

Do you want to install these conflicting files [y,n,?,q] y

## Checking for setuid/setgid programs.

Installing Legato XDSM HSM Client NFS User Commands as
<LGTOhsmn>

## Installing part 1 of 1.
```

```
/usr/bin/migls
/usr/bin/migrate
/usr/bin/recall
/usr/share/man/man1/migls.1
/usr/share/man/man1/migrate.1
/usr/share/man/man1/recall.1
[ verifying class <none> ]
Installation of <LGTOhsmn> was successful.
```

Files Installed During XDSM HSM Installation

The XDSM HSM installation process uses two software packages to install the XDSM HSM software:

- *LGTOhsm*
- *LGTOhsmn*

The *LGTOhsm* package is installed on the migration client. The *LGTOhsmn* package is installed on one or more Solaris NFS clients to enable the Solaris NFS clients to issue explicit migration and recall commands.

The following files are installed on the migration client computer when you install the *LGTOhsm* package:

- Two kernel modules and a kernel-level pseudo-device driver that together implement an extended version of the industry standard, XDSM:
  - **stackfs**, a stacking mechanism that sits on top of your existing filesystem and allows access to the XDSM HSM software
  - **xdm**, a StackFS module that implements an extended version of XDSM
  - **dm_plc**, a pseudo-device driver that enables communication between the XDSM library and the kernel-level code
- Replacements for the NetWorker HSM binaries with new XDSM versions, installed in the */usr/sbin* directory:
  - **nsrexecd**
  - **nsrhsmck**
  - **nsrib**
  - **nsriba**
  - **nsrmig**
  - **nsrpmig**

  The NetWorker HSM binaries are moved to the */opt/plc/legato/old/usr/sbin* directory.
- Four NetWorker XDSM Hierarchical Storage Management wrappers in the */usr/bin* directory that replace the NetWorker **save**, **recover**, **nwbackup**, and **nwrecover** programs. The original NetWorker programs are renamed *save.real_ltgo*, *recover.real_lgto*, *nwbackup.real_lgto*, and *nwrecover.real_lgto*, and they remain in the */usr/bin* directory.
- An executable that enables NFS clients to explicitly execute migration operations on the migration client in */opt/plc/bin*:

  - **hsmnfsd**
- A shared library file that communicates between the XDSM HSM **save**, **recover**, **nwbackup**, and **nwrecover** programs in the */opt/plc/lib* directory:
  - *hsmip_save.so.1*
  - *hsmip_recover.so.1*

The following files can be installed with the *LGTOhsmn* package on one or more Solaris NFS clients. The command line utilities installed with this package allow Solaris NFS clients to explicitly migrate, recall, and generate statistical reports about a remotely mounted filesystem that contains migrated files. These files are:

- Three command line utilities in the */bin* directory on a Solaris NFS client for remote migration, recall, and reporting operations:
  - **migrate**, the remote migration utility
  - **recall**, the remote recall utility
  - **migls**, the remote reporting utility that shows the migration state of a set of files
- Man pages for the command line utilities in the */usr/share/man/man1* directory.

Device Driver Installation

The term "autochanger" is used in the instructions that follow to refer to a variety of backup devices: autoloader, carousel, library, near-line storage, datawheel, and jukebox.

The NetWorker software supports autochangers connected to a computer you designated as a server or storage node, either by SCSI or serial (RS-232) ports. If your autochanger is connected with SCSI, you *must* install a driver for the SCSI port.

If your autochanger is connected through a serial port, you do not need to install the device driver package. Simply skip the remaining instructions that apply to the device driver installation. However, you need to follow the hardware instructions that were shipped with your autochanger to configure and connect the machine to the NetWorker server or storage node. You must also properly enable and register your NetWorker Autochanger Module product.

To install the device driver software on the machine with the device attached:

1. Become root on the NetWorker server or storage node machine.
2. If you have a previous release of the NetWorker device driver package installed, remove the old device driver package before you install the new driver. (See "Removing the NetWorker Software" on page 44 for instructions.)
3. Install the current release of the device driver software (*LGTOdrvr*) from the NetWorker distribution files.
4. Enable the optional NetWorker software (Autochanger Software Module or Silo Support Module).
5. Fax or mail a copy of your registration window to Customer Service to register the optional NetWorker software and receive the permanent authorization code.

After you install the device driver software, follow these steps to verify that the drivers are properly installed:

1. Enter the following command:

```
# /etc/LGTOuscsi/lusdebug 1
```

You should see the following response:

```
debug level was 0; is now 1
```

2. Enter the following command:

```
# /etc/LGTOuscsi/lusdebug 0
```

You should see the following response:

```
debug level was 1; is now 0
```

3. Enter the following command:

```
# /etc/LGTOuscsi/inquire
```

A list of SCSI devices attached to your server, if any, appears on your screen. If you attached your autochanger or silo before you installed the device driver software, the devices should appear in the list.

For example:

```
scsidev@0.0.0:FUJITSU M2263S-512 01 | Direct Access
scsidev@0.4.0:Quantum DLT4700 | Sequential Access
scsidev@0.4.1:Quantum TZ Media Changer | Changer Device
```

How to Configure Autochanger Support

To use an autochanger for NetWorker storage management, you must first use the **jb_config** program to configure the auto changer and test the device driver software you installed. Follow the instructions in this section to configure and test the device driver software on a NetWorker server or storage node with an attached autochanger. For more detailed information, refer to the autochanger chapter in the *Administrator's Guide*.

To configure the autochanger:

1. Become root on the NetWorker server.
2. Enter the **jb_config** command.
3. The program displays a list of jukeboxes. When prompted, indicate which jukebox to install.
4. Continue to provide the appropriate responses when prompted. For step-by-step examples of how to configure a SCSI or SJI autochanger, refer to the *Administrator's Guide*.
5. When configuration is completed, the program displays the message

```
Jukebox has been added successfully.
```

When you use the **jb_config** program to configure an autochanger, a new resource is created with the name you specified. You can view the new resource in the Jukeboxes resource in the NetWorker administration program. Refer to the online help or the **nsr_jukebox(5)** man page for details on the attributes of the Jukeboxes resource.

To test the autochanger connection:

1. Become root on the NetWorker server or storage node.

2. Insert two volumes, one each into the first and last slots of the autochanger. Make sure that the drives are empty and that any drive doors are open.
3. Enter the **jbexercise** command at the prompt; specify the control port and the device type.

   The control port for SCSI autochanger models is typically expressed in the format */dev/scsidev@n.n.n*. You can obtain the exact control port pathname from the response displayed by the jb_config command script:

   ```
   These are the SCSI Jukeboxes currently attached to your system
   1) scsidev@1.2.0: DLI Libra Series
   2) scsidev@0.2.1: Quantum DLT/Digital DLT
   ```

   For example, the following command runs the **jbexercise** program on the Quantum DLT/Digital DLT autochanger detected by the **jb_config** script

   ```
   # jbexercise -c /dev/scsidev@0.2.1 -m "Quantum DLT/Digital DLT"
   ```

   See the appendix "Command Line Reference" in the *Administrator's Guide* or refer to the **jbexercise(1m)** man page for additional information on the command options available for the **jbexercise** command.

Important: After you install, configure, and test the autochanger, enter the enabler code for the NetWorker Autochanger Module. Be sure to register and authorize the Autochanger Module; otherwise, the software will disable itself 45 days after you enter the enabler. See "How to Enable and Register the Software" on page 41 for instructions.

How to Enable and Register the Software

The Enabler Certificate you purchased provides the enabler code you need to enter to use the software permanently.

To enter the enabler code, follow these steps:

1. Become root on your NetWorker server.
2. Start the GUI version of the NetWorker administration program with

   ```
   # nwadmin &
   ```

3. Open the Server window. Fill in the name, address, phone, and e-mail information requested.
4. Open the Registration window.
5. Click the Create button.
6. Enter the enabler code in the Enabler Code field.
7. Select the Tabular option from the View menu, then select Print from the File menu. Fax or mail the output to Legato Customer Service. Optionally, you can e-mail the form as an attachment to *service@legato.com*.

After you enable the software, you have 45 days to register the software. Legato returns a unique authorization code to you after receipt of your completed registration form. To permanently enable the software, enter the authorization code in the Registration window.

To enable the NetWorker software, the specific process you must follow depends on whether the software you installed is for a new, updated, or evaluation version of the software.

- If you installed the NetWorker server software on your computer the first time for *evaluation* purposes, you have 30 days to use the software before you must purchase and enter an enabler code. You *do not* need to enter any evaluation enabler codes to evaluate any of the optional NetWorker software products within the 30-day period. To use the NetWorker software and options beyond the 30-day trial evaluation, you must purchase an enabler code for the software you want to use.
- If you just purchased your *first* NetWorker product, an Enabler Certificate was sent separate from the product package. You need the enabler code on the certificate to enable and register the NetWorker product you purchased.
- If you purchased an *update* to your existing NetWorker software, use the enabler code provided in the letter you received that announced the updated software.

  Generate a new copy of the information shown in the Registration window and fax or mail the form to Legato Customer Service. A new authorization code will be returned for you to enter in the Registration window, which permanently enables your updated NetWorker software.
- If you have already entered your NetWorker enabler code on the server and want to *evaluate* any of the optional modules included with this software distribution, enter an evaluation enabler code for the product you want to evaluate. A list of enabler codes is provided in the letter you received with your software package. After you enter the evaluation enabler, you can evaluate the product with your existing NetWorker server software for 45 days. The evaluation enabler codes cannot be entered on more than one machine on the network. If you enter the code on more than one machine on the same network, a copy violation error occurs and the NetWorker server software is disabled. If you move the NetWorker software from one machine to another or change the network address of a machine after the software is installed, you receive a message warning that the software will expire in 15 days. If you need to move your software or reconfigure your network, first contact Legato Customer Service to obtain a *Host Transfer Affidavit* to avoid an interruption in your scheduled backups.

Quick Test

The NetWorker software includes both a GUI and a command line interface. Use the GUI for this Quick Tour. To learn more about the command line interface, refer to the **nsradmin(8)** man page.

To start the GUI version of the NetWorker administration program, enter the **nwadmin** command at the shell prompt:

```
# nwadmin -s server-name &
```

If NetWorker does not start successfully:

- The required NetWorker daemons, **nsrd** and **nsrexecd**, might not be present. To determine whether the NetWorker daemons are currently present, run the **ps** command at the shell prompt. If the output does not list **nsrd** and **nsrexecd** as current processes, enter **nsrexecd** and **nsrd** at the shell prompt to start the daemons.
- The DISPLAY environment variable might not be set correctly.
- The PATH environment variable might not contain the correct path to the NetWorker programs. Determine where the NetWorker programs reside and correct the value assigned to the PATH variable.

The speedbar buttons displayed in the main window of the GUI provide quick access to the most frequently performed NetWorker administration tasks.

The program's online help is available through the Help menu. You can view a topic that is specific to the window or scroll to another topic of your choice.

When you installed the *LGTOserv* package on the NetWorker server, the program automatically added the hostname of the server to the list of NetWorker clients and specified the special option "All" for the files to back up to the server. You can use the default setup provided by the installation to test the software and device connections, or modify the options before you perform the test.

To perform a quick test of the NetWorker software:

1. Insert a volume into the device you configured for NetWorker backups.

   Instructions for using a stand-alone device are provided here. To use a device in an autochanger or silo, refer to the configuration instructions provided in the *Legato NetWorker Administrator's Guide, UNIX Version*.

2. Select the Label speedbar button to label the volume. The window displays the preconfigured label templates provided for you to use.
3. Click OK to label the volume with the Default label template.
4. Click the Mount speedbar button to mount the volume in the drive. Highlight the volume you labeled in step 3 and click OK to mount the volume.
5. Select the Customize>Groups. The Default group is already configured and highlighted.

   All you need to do to test the group backup is to select the Enabled radio button and then return to the main window.

6. Click the Group Control speedbar button in the main window. The Group Control window appears with the Default group already highlighted. To start the test backup, simply click the Start button.
7. Click the Details button in the Group Control window to view the progress of your test backup. At the same time, messages appear in the panels of the main window as the backup progresses.
8. After the backup is completed, click the Indexes button in the main window to view the client file index entries made for the server during the test backup.

If the test backup did not run to completion successfully, refer to the troubleshooting information in the *Administrator's Guide* to determine the cause.

Removing the NetWorker Software

Use the **pkgrm** command to remove individual NetWorker packages or all of the NetWorker packages at the same time.

Important: The individual NetWorker software packages depend on each other. You must remove them in the following order: *LGTOsrvr*, *LGTOnode*, *LGTOdrvr*, *LGTOclnt*. The man pages (*LGTOman*) and document files have no dependencies–you can remove them at any time.

How to Remove the Software Packages

Removal of the NetWorker software packages requires three basic steps:

1. Become root on the system you want to remove the software from.
2. Enter the **nsr_shutdown** command at the shell prompt to shut down the NetWorker daemons. A list of NetWorker daemons that will be shut down is displayed, along with a prompt that asks whether you want to continue with the **nsr_shutdown** command as follows:

   ```
   mars# nsr_shutdown
   nsr_shutdown will kill the following processes
    25768 ?        S  0:02 /usr/sbin/nsrexecd
    25770 ?        S  0:01 /usr/sbin/nsrexecd
    25771 ?        S  0:02 /usr/sbin/nsrd
    25783 ?        S  0:00 /usr/sbin/nsrmmdbd
    25784 ?        S  0:00 /usr/sbin/nsrindexd
    25785 ?        S  0:00 /usr/sbin/nsrmmd -n 1
   Do you want to continue? [Yes]? y
   ```

3. After the **nsr_shutdown** command is carried out, issue the **pkgrm** command, optionally with a list of the individual packages you want to remove:

   ```
   # pkgrm LGTO-packagename
   ```

   If you do not specify any packages on the command line, the **pkgrm** script displays a list of all the installed software packages on the system, for example:

   ```
   The following packages are available:
   1 LGTOclnt NetWorker for Solaris (Backup/Recover) Client
   (sparc) 5.5.Build.13
   2 LGTOdrvr NetWorker for Solaris (Backup/Recover) Device
   Drivers (sparc) 5.5.Build.13
   3 LGTOman NetWorker for Solaris (Backup/Recover) Man (sparc)
   5.5.Build.13
   4 LGTOnode NetWorker for Solaris (Backup/Recover) Storage
   Node (sparc) 5.5.Build.13
   5 LGTOserv NetWorker for Solaris (Backup/Recover) Server
   ```

```
(sparc) 5.5.Build.13

... 167 more menu choices to follow;

<RETURN> for more choices, <CTRL-D> to stop display:

Select package(s) you wish to process (or 'all' to process all
packages). (default: all) [?,??,q]:
```

Specify the package number that corresponds to the package name displayed by the script to remove one or more packages. If you want to remove multiple packages, enter each number in descending numeric order, separated by a space before you press [Return]. After you press [Return], a confirmation prompt appears for each package prior to its removal, for example:

The following package is currently installed:

```
LGTOclnt NetWorker for Solaris (Backup/Recover) Client (sparc)
5.5.Build.13

Do you want to remove this package? y

## Removing installed package instance <LGTOclnt>

This package contains scripts which will be executed with super-
user permission during the process of removing this package.

Do you want to continue with the removal of this package
[y,n,?,q] y

## Verifying package dependencies.
```

If you enter the package numbers out of sequence and a package depends on a subsequent package in the list, a warning displays:

```
WARNING:

The <LGTOnode> package depends on the package currently being
removed.

Dependency checking failed.

Do you want to continue with the removal of this package
[y,n,?,q]
```

If you answer "n," the removal of the package is cancelled and the **pkgrm** utility moves on to the next package in your list. If you answer "y," the removal continues. If you answer "q," the **pkgrm** utility exits without removing anything from the dependent package on through the rest of the list you entered.

After each software package that you specified is successfully removed, the script displays the following message:

```
Removal of <LGTO-packagename> was successful.
```

Important: Do not choose the default option "all" to remove the NetWorker software packages. Choosing this option might remove all the software packages that were installed on your computer using the **pkgadd** utility.

- To remove only the server software, enter the **pkgrm LGTOserv** command. This removes the *LGTOserv* package from the system where the server software is installed.
- To remove only the client software, enter the **pkgrm LGTOclnt** command. This removes the *LGTOclnt* package from the system where the client software is installed.
- To remove only the storage node software, enter the **pkgrm LGTOnode** command. This removes the *LGTOnode* package from the system where the storage node software is installed.
- To remove only the device driver software, enter the **pkgrm LGTOdrvr** command. This removes the *LGTOdrvr* package from the server or storage node where the device driver software is installed.
- To remove only the NetWorker man pages, enter the **pkgrm LGTOman** command to remove the *LGTOman* package from the server, storage node, or client where the man pages are installed.

Removing the XDSM HSM Software

Use the **pkgrm** command to remove the XDSM HSM software and command line utilities.

How to Remove the LGTOhsm Package

To remove the XDSM HSM software:

1. Become root on the migration client computer.
2. Ensure that no backups are currently in progress.
3. If **nsrexecd** is currently running on the client computer, kill it by sending SIGTERM signal. Do not use **kill -9**.
4. Unmount the StackFS layer, as in

   # **umount /home**
5. Remove the *LGTOhsm* package with

   # **pkgrm LGTOhsm**
6. Remove the following line if you put it in your */etc/vfstab* file:

   pkgadd -d /cdrom/NETWORKER/SOLARIS/XDSMHSM

How to Remove the LGTOhsmn Package from a Solaris NFS Client

To remove the command line utilities from a Solaris NFS client:

1. Become root on the Solaris NFS client computer.
2. Remove the *LGTOhsmn* package with

   # **pkgrm LGTOhsmn**