



EMC[®] NetWorker[®]
Release 7.6

Installation Guide
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REV A01

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As part of an effort to improve and enhance the performance and capabilities of its product lines, EMC periodically releases revisions of its hardware and software. Therefore, some functions described in this document may not be supported by all versions of the software or hardware currently in use. For the most up-to-date information on product features, refer to your product release notes.

If a product does not function properly or does not function as described in this document, please contact your EMC representative.

Audience This document is part of the NetWorker documentation set, and is intended for use by system administrators during the installation and setup of NetWorker software .

NetWorker product documentation

This section describes the additional documentation and information products that are available with NetWorker.

EMC NetWorker Release 7.6 Installation Guide

Provides instructions for installing or updating the NetWorker software for clients, console and server on all supported platforms.

EMC NetWorker Release 7.6 Cluster Installation Guide

Contains information related to installation of the NetWorker software on cluster server and clients.

EMC NetWorker Release 7.6 Administration Guide

Describes how configure and maintain the NetWorker software.

EMC NetWorker Release 7.6 Release Notes

Contain information on new features and changes, fixed problems, known limitations, environment and system requirements for the latest NetWorker software release.

EMC NetWorker Licensing Process Guide, Second Edition

A brief guide that explains the process flow of NetWorker licensing to users (system administrators, mainly). Not yet officially part of the NetWorker doc set.

NetWorker License Manager 8th Edition Installation and Administration Guide

Provides installation, set up, and configuration information for the NetWorker License Manager product.

NetWorker 7.6 Error Message Guide

Provides information on common NetWorker error messages.

NetWorker 7.6 Performance Optimization Planning Guide

Contains basic performance tuning information for NetWorker.

NetWorker 7.6 Command Reference Guide

Provides reference information for NetWorker commands and options.

NetWorker Management Console Online Help

Describes the day-to-day administration tasks performed in the NetWorker Management Console and the NetWorker Administration window. To view Help, click **Help** in the main menu.

NetWorker User Online Help

The NetWorker User program is the Windows client interface. Describes how to use the NetWorker User program which is the Windows client interface connect to a NetWorker server to back up, recover, archive, and retrieve files over a network.

NetWorker related documentation

For more information about NetWorker software, refer to this documentation:

EMC Information Protection Software Compatibility Guide

A list of supported client, server, and storage node operating systems for the following software products: AlphaStor, ArchiveXtender, DiskXtender for Unix/Linux, DiskXtender for Windows, Backup Advisor, AutoStart, AutoStart SE, RepliStor, NetWorker, and NetWorker Modules and Options.

E-lab Issue Tracker

Issue Tracker offers up-to-date status and information on NetWorker known limitations and fixed bugs that could impact your operations. E-Lab Issue Tracker Query allows you to find issues in the Issue Tracker database by matching issue number, product feature, host operating system, fixed version, or other fields.

NetWorker Procedure Generator

The NetWorker Procedure Generator (NPG) is a stand-alone Windows application used to generate precise user driven steps for high demand tasks carried out by customers, Support and the field. With the NPG, each procedure is tailored and generated based on user-selectable prompts. This generated procedure gathers the most critical parts of NetWorker product guides and combines experts' advice into a single document with a standardized format.

Note: To access the E-lab Issue Tracker or the NetWorker Procedure Generator, go to <http://www.Powerlink.emc.com>. You must have a service agreement to use this site.

Technical Notes and White Papers

Provides an in-depth technical perspective of a product or products as applied to critical business issues or requirements. Technical Notes and White paper types include technology and business considerations, applied technologies, detailed reviews, and best practices planning.

Conventions used in this document

EMC uses the following conventions for special notices.

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



IMPORTANT

An important notice contains information essential to operation of the software.

Typographical conventions

EMC uses the following type style conventions in this document:

Normal	Used in running (nonprocedural) text for: <ul style="list-style-type: none"> Names of interface elements (such as names of windows, dialog boxes, buttons, fields, and menus) Names of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, functions, utilities URLs, pathnames, filenames, directory names, computer names, filenames, links, groups, service keys, file systems, notifications
Bold	Used in running (nonprocedural) text for: <ul style="list-style-type: none"> Names of commands, daemons, options, programs, processes, services, applications, utilities, kernels, notifications, system calls, man pages
	Used in procedures for: <ul style="list-style-type: none"> Names of interface elements (such as names of windows, dialog boxes, buttons, fields, and menus) What user specifically selects, clicks, presses, or types
<i>Italic</i>	Used in all text (including procedures) for: <ul style="list-style-type: none"> Full titles of publications referenced in text Emphasis (for example a new term) Variables
Courier	Used for: <ul style="list-style-type: none"> System output, such as an error message or script URLs, complete paths, filenames, prompts, and syntax when shown outside of running text
Courier bold	Used for: <ul style="list-style-type: none"> Specific user input (such as commands)
<i>Courier italic</i>	Used in procedures for: <ul style="list-style-type: none"> Variables on command line User input variables
< >	Angle brackets enclose parameter or variable values supplied by the user
[]	Square brackets enclose optional values
	Vertical bar indicates alternate selections - the bar means "or"
{ }	Braces indicate content that you must specify (that is, x or y or z)
...	Ellipses indicate nonessential information omitted from the example

Where to get help

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

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

<http://Powerlink.EMC.com>

Technical support — For technical support, go to EMC Customer Service on Powerlink. To open a service request through Powerlink, you must have a valid support agreement. Please contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Please send your opinion of this document to:

ssgdocumentation@emc.com

If you have issues, comments, or questions about specific information or procedures, please include the title and, if available, the part number, the revision (for example, A01), the page numbers, and any other details that will help us locate the subject you are addressing.

This chapter includes these sections:

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- ◆ [Supported devices.....](#) 15
- ◆ [Enabler codes](#) 15

About the NetWorker product

The EMC NetWorker product is a suite of storage management software that provides backup, recovery, and other services to computers with a wide variety of operating systems and data types. NetWorker products for different operating systems are interoperable. This provides the flexibility to design a storage management system that works best with the current computing environment.

The NetWorker software is distributed in these formats:

- ◆ In a media kit that contains the software and electronic documentation for several related NetWorker products.
- ◆ As a downloadable archive file from the EMC website.

The NetWorker product has five major components:

- ◆ NetWorker client
- ◆ NetWorker storage node
- ◆ NetWorker server
- ◆ NetWorker Management Console
- ◆ NetWorker License Manager

NetWorker client

The NetWorker client software communicates with the NetWorker server and provides recover and ad hoc (manual) backup functionality. The NetWorker client software is installed on all computers that are backed up to the NetWorker server.

NetWorker storage node

Data can be backed up directly to devices that are attached to a NetWorker server, or to a NetWorker storage node. A storage node controls storage devices such as tape drivers, autochangers, and silos.

Storage nodes depend on the NetWorker server for these functions:

- ◆ Control over which clients use the storage node's devices for backups
- ◆ License management
- ◆ Management of the client file indexes that track each client's data
- ◆ Management of the media database that tracks the data on each volume

NetWorker storage nodes and the NetWorker server can use different operating systems. To use a NetWorker storage node on a Linux operating system with a NetWorker server that is running another operating system, the storage node's enabler on the server must be of the same edition as the base enabler for the NetWorker server.

NetWorker server

The NetWorker server software provides control and scheduling for NetWorker operations. It enables you to:

- ◆ Enter the enabler licenses for the NetWorker server and all the functions the NetWorker server controls, such as autochanger modules and additional client connections licenses.
- ◆ Define the clients, devices, and media that the NetWorker server controls.
- ◆ Define the schedules for backups and other operations.
- ◆ Monitor the results of backups and other operations.
- ◆ Manage the client file indexes that track each client's data.
- ◆ Manage the media database that tracks the data contained on each volume.

NetWorker deduplication node

Data deduplication is a method of backup that identifies redundant data segments at the source and backs up only unique segments, thereby reducing the time required to perform backups and both the network bandwidth and storage space used for backups. The NetWorker software uses EMC Avamar[®] technology to provide de-duplication.

A NetWorker deduplication node is an EMC Avamar server that stores de-duplicated backup data. The initial backup to a deduplication node should be a full backup. During subsequent backups, the Avamar infrastructure identifies redundant data segments at the source and backs up only unique segments. This reduces the time required to perform backups, as well as both the network bandwidth and storage space used for backups.

Avamar server installation is separate from NetWorker installation, and is performed by EMC Professional Services. The Avamar server must be configured as a NetWorker deduplication node. The Avamar server must be available when:

- ◆ A de-duplication client resource is created.
- ◆ The Avamar server receives backup data from NetWorker deduplication clients.

The Avamar server must have the NetWorker client software installed in order to function as a de-duplication node. The installation of NetWorker client software on the Avamar server must be performed by EMC Professional Services.

NetWorker Management Console

All NetWorker servers and clients are managed from the NetWorker Management Console. The Console replaces the NetWorker Administration program (**nwadmin**) which is no longer available.

To administer NetWorker servers, the Console must be:

- ◆ Installed on an AIX, HP-UX, Linux, Solaris Sparc, or Microsoft Windows host.
- ◆ Accessed through a graphical user interface on the host with a web-enabled browser that has the specified version of Java Runtime configured.

The Console provides reporting, managing, and monitoring capabilities for all NetWorker servers and clients.

Multiple users can access the Console server concurrently from different browser sessions. A computer that hosts the web-enabled browser can also be a NetWorker client, server, or storage node.

You must install the Console software on one computer in the datazone to manage and monitor the NetWorker server.

Only one installation of the Console is required to manage multiple NetWorker servers and to take full advantage of the Console's consolidated reporting feature.

NetWorker License Manager

The NetWorker License Manager provides a central location for managing the licenses of all the NetWorker clients and servers. Instead of managing licenses separately, all NetWorker licenses can be maintained from a single computer. Installation of the NetWorker License Manager software is an option when installing the NetWorker software.

The *NetWorker License Manager Installation and Administration Guide* provides information about the NetWorker License Manager.

Mac OS X client software

Currently, only the NetWorker client software is available for the Mac OS X operating system. Use the Mac OS X client with a supported UNIX, Linux, or Windows version of the NetWorker server.

The Mac OS X client software provides the following features:

- ◆ Full compatibility with the NetWorker server and storage nodes on UNIX, Linux and Windows operating systems, for NetWorker release 7.4 and later.
- ◆ HFS/HFS+ metadata awareness. This compatibility ensures the proper backup and restore of Mac OS X field metadata including resource forks, catalog information, and 10.4 extended file attributes and access control files.

The following limitations apply to the Mac OS X client software:

- ◆ There is no graphical user interface (GUI) for this release, however there is full support of the command line interface (CLI).
- ◆ NetWorker software does *not* support recovery of Mac OS X save sets to non-Mac OS X clients.
- ◆ NetWorker software does *not* support recovery of Mac OS X 10.4 save sets to Mac OS X 10.3 clients.

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 designated storage node.

The term *autochanger* refers to a variety of backup devices:

- ◆ Autoloader
- ◆ Carousel
- ◆ Datawheel
- ◆ Jukebox
- ◆ Library
- ◆ Near-line storage

The *EMC Information Protection Software Compatibility Guide* provides the latest list of supported devices:

http://powerlink.emc.com/km/live1/en_US/Offering_Technical/Technical_Documentation/InformationProtection_SCG.pdf

Enabler codes

Enabler codes (licenses), which activate the functionality of NetWorker software, are generally sold separately. The section “[Evaluating and Licensing the Software](#)” on [page 149](#) provides information.

This chapter includes these sections:

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General requirements

These requirements apply to Microsoft Windows and UNIX operating systems.

Microsoft Windows requirements

These are general NetWorker for Windows software installation requirements:

- ◆ Do *not* include an underscore character (_) in Windows computer names.
- ◆ If the NetWorker software is installed on a File Allocation Table (FAT) partition, do *not* disable long name support.
- ◆ Microsoft Windows Installer 2.0 (msiexec.exe) was included with the NetWorker release 7.6 software. If the target computer has an older version of the Windows Installer, it will be updated and a reboot will be required during the NetWorker software installation or update. Refer to the Microsoft Windows documentation for instructions on how to determine the Windows Installer version and to update the version if required.
- ◆ InstallShield requires that the entire installation program must be put into memory, even if you only intend to install a single NetWorker software component.
- ◆ Ensure that the latest Microsoft Windows update or critical patch has been installed.

UNIX requirements

For NetWorker UNIX software installation:

- ◆ Ensure that the latest patches for the operating system are installed.
- ◆ Ensure that the block-size mode for tape devices that are used with the NetWorker software is set to variable. Otherwise, data recovery might fail. The procedure for setting the device block size varies depending on the operating system. For information about setting the tape device block size in the operating system, refer to the operating system's documentation.

Language support

To view non-English data, ensure that the operating system is installed with the required language support software and that the corresponding language locale is enabled.

Note: NetWorker software does not support locales (defined by the operating system) or code sets that remap characters that have special meaning for file systems. Depending on the file system, these special characters may include the slash (/), the backslash (\), the colon (:), or the period(.). For example, De_DE.646 is an unsupported locale. The NetWorker Administration Guide provides the latest information.

TCP/IP requirements

These are the TCP/IP network communication requirements:

- ◆ All NetWorker server, storage nodes, and client host computers must have TCP/IP installed, configured, and networked.
- ◆ The NetWorker server hostname must be added to the Domain Name System (DNS) database for the network, or to the local hosts file located in:
 - On Microsoft Windows:


```
%SystemRoot%\system32\drivers\etc
```
 - ON UNIX:


```
/etc/hosts
```

Note: If DNS is used, reverse lookup must be correctly configured.

- ◆ All Linux, and UNIX, operating systems require a `::1` entry in the `/etc/hosts` file for the local host in order to run the NetWorker software. The entry must be in the form `::1 localhost aliases`
- ◆ If the NetWorker server host is a Dynamic Host Configuration Protocol (DHCP) client, it must have a reserved address.
- ◆ The TCP/IP hostname must be identical to the computer name. Do *not* include an underscore character (`_`) in the computer name.
- ◆ If DHCP with dynamic addresses is used, DHCP must be synchronized with DNS.
- ◆ The NetWorker server's TCP/IP hostname and computer name must be the same.

Updating for the IPv6 protocol

Internet Protocol version 6 (IPv6) is a new internet protocol that can be used concurrently with IPv4 or in a pure IPv6 environment. IPv6 increases the number of available IP addresses, and adds improvements in areas such as routing and network autoconfiguration.

IPv6 is in the form `[#:#:#:#:#:]:Port`. The square brackets are required to enclose the six decimal integers. The following is an example of an IPv6 address as it would be entered from the command line or the user interface:

```
http://[2001:720:1500:1:a100]:80/index.html
```

Ensure that the following tasks are performed when updating to an IPv6 environment or switching between IPv4 and IPv6.

Add `::1` entry to the hosts file

All Linux, and UNIX operating systems require a `::1` entry in the `/etc/hosts` file for the local host in order to run the NetWorker software. The entry must be in the form:

```
::1 localhost aliases
```



IMPORTANT

Once the system has been configured for an IPv6 environment, the `::1` entry must remain in the `/etc/hosts` file, whether operating in an IPv4 or IPv6 configuration.

NMC server IP address/hostname updates

If the IP address/hostname of the NMC server is modified or protocols such as IPv6 are added or removed, perform the following:

1. Shut down NMC.
2. Navigate to the NMC bin directory and run the operating system-specific command:
 - On Windows:
 - a. Go to C:\Program Files\Legato\Management\GST\bin.
 - b. Run **gstconfig**.
 - On Solaris:
 - a. Ensure the LD_LIBRARY_PATH environment variable contains /opt/LGTONmc/bin:/opt/LGTONmc/sybase/lib export LD_LIBRARY_PATH.
 - b. As root, run **./gstconfig**.
 - On Linux:
 - a. Ensure the LD_LIBRARY_PATH environment variable contains /opt/lgtonmc/bin:/opt/lgtonmc/sybase/lib export LD_LIBRARY_PATH.
 - b. As root, run **./gstconfig**.
 - On AIX:
 - a. Ensure the LIBPATH environment variable contains /opt/lgtonmc/bin:/opt/lgtonmc/sybase/lib export LIBPATH.
 - b. As root, run **./gstconfig**.
 - On HP-UX:
 - a. Ensure the SHLIB_PATH environment variable contains /opt/lgtonmc/bin:/opt/lgtonmc/sybase/lib export SHLIB_PATH.
 - a. As root, run **./gstconfig**.

IPv4/IPv6 interoperability

Since older NetWorker clients and storage nodes are supported with the NetWorker release 7.6 software, there are IPv6 and IPv4 interoperability considerations when the NetWorker server is installed on a machine using IPv6.

[Table 1 on page 21](#) indicates the interoperability conditions of NetWorker release 7.6 servers and clients on platforms with various IP addresses, and the ways in which a NetWorker client can address a NetWorker server

Table 1 Matrix of interoperability of NetWorker 7.6 and pre-7.6 clients

		NetWorker 7.5 and 7.6 Server	NetWorker 7.5, and 7.6 Server
	Platform	IPv4 Host	IPv6 Host
NetWorker 7.5, and 7.6 Client	IPv4 Host	IPv4	IPv4 translated in IPv6
	IPv6 Host	N/A	IPv6
	Dual stack	IPv4	IPv6
NetWorker pre-7.5, and pre-7.6 Client	IPv4 Host	IPv4	IPv4 translated in IPv6
	IPv6 Host	N/A	N/A
	Dual stack	IPv4	IPv4 translated in IPv6

The table indicates the following conditions.

- ◆ NetWorker 7.5, and 7.6 (client/server) residing on an IPv4-only host.
- ◆ NetWorker 7.5, and 7.6 (client/server) residing on an IPv6-only host.
- ◆ NetWorker 7.5, and 7.6 (client/server) requiring dual-stack transports, but not requiring a host to have both IPv4 and IPv6 addresses.

Note: This table assumes on a dual-address machine the DNS lookup returns the IPv6 address first, if it exists, and then the IPv4 address, and that the network topology is correctly configured to allow IPv4 to IPv6 communication by way of translation.

[Table 2 on page 21](#) shows the interoperability considerations of NetWorker servers and clients previous to release 7.6 on platforms with various IP addresses, and the ways in which a NetWorker client can address a NetWorker pre-7.5, and pre-7.6 server.

Table 2 Matrix of interoperability of NetWorker 7.6 and pre-7.6 clients

		NetWorker 7.5 and 7.6 Server	NetWorker 7.5, and 7.6 Server
	Platform	IPv4 Host	IPv6 Host
NetWorker 7.5, and 7.6 Client	IPv4 Host	IPv4	IPv4 translated in IPv6
	IPv6 Host	N/A	IPv6
	Dual stack	IPv4	IPv6
NetWorker pre-7.5, and pre-7.6 Client	IPv4 Host	IPv4	IPv4 translated in IPv6
	IPv6 Host	N/A	N/A
	Dual stack	IPv4	IPv4 translated in IPv6

The table indicates the following conditions:

- ◆ NetWorker pre-7.5, and pre-7.6 (client/server) residing on an IPv4-only host.
- ◆ NetWorker pre-7.5, and pre-7.6 (client/server) residing on a dual-stack transport but that can only be addressed through an IPv4 address.

Note: This table assumes on a dual-address machine, the DNS lookup returns the IPv6 address first, if it exists, then the IPv4 address, and that the network topology is correctly configured to allow IPv4 to IPv6 communication by way of translation.

Optimizing DNS lookups on IPv4-only AIX machines

The default behavior of the AIX name resolver is to attempt lookups of both IPv4 and IPv6 addresses.

AIX first retrieves the address locally, and if this fails, requests the address from the DNS server. For servers that do not have IPv6 configured, this operation only returns a failure message after the request times out. Since the NetWorker software relies on AIX for resolving address information, NetWorker commands can appear to not be responding.

Note: Any program which calls one of several AIX name resolution APIs that includes resolving IPv6 protocol will experience the same delays.

If the server is configured for IPv4 only:

1. Override the default behavior for DNS lookups. The **NSORDER** variable, **/etc/irs.conf** file and **/etc/netsvc.conf** file control name resolution. These entries must be changed, depending on the name resolution ordering in place, so that NetWorker services do not attempt to lookup IPv6 addresses against DNS.
2. Ensure that AIX hosts use local name resolution ordering. The recommended name resolution ordering method is to use the **/etc/netsvc.conf** file. The order of priority in which AIX consults the files is:
 - NSORDER
 - irs.conf
 - netsvc.conf
3. Update each name resolution ordering file, or files, that are in use so that the server attempts to lookup IPv4 addresses only with DNS. The following entries show how to update each file:
 - Change the **NSORDER** variable to the following:


```
export NSORDER=local,bind4
```
 - Change the **hosts** entry in the **/etc/irs.conf** file to the following:


```
hosts local
hosts dns4
```
 - Change the **hosts=local,bind** entry in the **/etc/netsvc.conf** file to the following:


```
hosts=local, bind4
```

IPv6 limitations

The following limitations apply when using IPv6 addresses for NetWorker release 7.6:

JRE version 1.6 must be installed in a pure IPv6 Windows environment

If using NetWorker in a Windows environment with IPv6, only JRE version 1.6 is supported for running NMC. However, JRE version 1.5 is supported for running NMC on a Windows system with dual stack (IPv6 and IPv4) where IPv4 is being used to communicate with the NMC server.

Connecting to web server via IPv6 fails using Internet Explorer 6

Internet Explorer 6 does not handle IPv6 addresses. If you attempt to connect to the GST web server via an IPv6 address using the IE6 web browser, the browser does not connect and returns an error.

Use the Internet Explorer 7 web browser. This problem does not occur on IE7.

Do not perform client backups using temporary IPv6 addresses

Temporary or randomly generated IPv6 TCP/IP addresses are not supported in NetWorker. If the address for a client is not stored in DNS or in a hosts file and has not been added to the client resource, NetWorker will be unable to back up the client.

Client software requirements

For NetWorker clients on the same hardware platform as the NetWorker server, use the same installation files to install the clients and server. The client software can be installed either on a remote network file system-mounted directory or a local drive. If the NetWorker software is installed on a remote file system, the NetWorker metadata (for example, /nsr) must still reside on a local file system.

The *EMC Information Protection Software Compatibility Guide* provides a list of supported operating systems.

On Mac OS X: NetWorker client support

The ClientPak installation requires the following:

- ◆ A supported Mac OS X system:
 - Mac OS X Client and Server versions 10.3.9 and up and 10.4.x for PowerPC
 - Mac OS X Client and Server versions 10.4.4 and up for Intel
- ◆ NetWorker products:
 - NetWorker server software, release 7.4 and later on a supported UNIX, Linux, or Microsoft Windows platform.
 - NetWorker client software for Mac OS X.
 - A license enabler code appropriate for the number of NetWorker client connections.
 - Appropriate storage devices installed and properly configured. The *EMC Information Protection Software Compatibility Guide* provides a list of supported devices.
- ◆ These supported file systems:
 - HFS+ (including journaled)
 - HFS
 - UFS

[Table 3 on page 23](#) and lists the space requirements for installing the ClientPak software.

Table 3 NetWorker ClientPak default locations and space requirements (page 1 of 2)

Software and documentation files	NetWorker default location	Space required
NetWorker client program files	/usr/bin	9 MB
NetWorker client system binaries	/usr/sbin	12 MB

Table 3 NetWorker ClientPak default locations and space requirements (page 2 of 2)

Software and documentation files	NetWorker default location	Space required
NetWorker client executables	/usr/lib/nsr	1 MB
NetWorker man pages	/usr/share/man	1 MB
PDF files	optional	varies

On HP Tru64 UNIX

To install NetWorker software on an HP Tru64 UNIX client system, the following requirements must be met:

- ◆ HP Tru64 UNIX version 5.1B-3 or later must be installed.
- ◆ Motif version 2.1 or later software must be installed.
- ◆ At least 50 MB of disk space in /usr/opt.

The minimum software listed in [Table 4 on page 24](#) is installed.

Note: The installation requirements differ, depending on whether or not the clients have the same operating system as the NetWorker server.

Table 4 HP Tru64 UNIX: required client software

Package identifier	Package name	Description
IOSWWEURLOCxxx	Worldwide European Unicode Locales	Worldwide European Unicode Locales package is located in the Worldwide Language support kit, which is available on the Tru64 Associate Product CD 1
DSKMOTIF21xxx	Motif 2.1.30	Motif libraries
OSFBASExxx	Tru64 UNIX Base System	Base operating system software
OSFCLINETxxx	Basic Networking Services	Network server communications
OSFMANOSxxx (Optional)	Ref Pages (Admin/User Reference pages)	Reference pages for the base operating system; a requirement for viewing the NetWorker man pages

On Linux

[Table 5 on page 24](#) lists the requirements that must be met to install NetWorker software on a Linux client system.

Table 5 Linux: required client software

Package identifier	Package name	Description
openmotif	Open Motif	Open Motif runtime libraries and executables

De-duplication clients cache file size requirements

Clients that are configured to use de-duplication backups require additional disk space for caches. The number of caches varies depending on the number of backup paths included in the Save set attribute of the Client resource. Each backup path in the Save set attribute requires two caches: a file cache and a cache for hash tables.

By default, the file cache can be up to 1/8 of the RAM on the machine, and the hash cache can be up to 1/16 of the RAM. Both have a maximum size of 2 GB. Therefore, the maximum disk space required for caching on a de-duplication client is the sum of the maximum size of the file and hash caches, multiplied by the number of backup paths defined in the client's Save set attribute.

Storage node requirements

To install the NetWorker storage node software, the following requirements must be met:

- ◆ At least one supported storage device must be attached and installed. The device can either be a stand-alone device, autochanger, or silo tape library. The *EMC Information Protection Software Compatibility Guide* provides a list of supported devices.
- ◆ NetWorker software also supports the use of file type and advanced file type devices. The NetWorker Administration Guide provides more details.

The *EMC Information Protection Software Compatibility Guide* provides a list of supported operating systems.

Storage device requirements

Install one or more storage devices prior to installing the NetWorker server software. Ensure that you install the SCSI adapter, cabling, and termination. The NetWorker installation program assumes that the storage devices have been properly installed and configured, and that the operating system recognizes the devices. The *EMC Information Protection Software Compatibility Guide* provides a list of the supported devices.

Note: You must use a nonrewinding device for NetWorker backups. NetWorker software writes a filemark on the volume at the end of each backup. When the next backup occurs, NetWorker software appends data to the volume based on the position of the filemark. If a device automatically rewinds the tape, the filemark position is lost and the next backup overwrites existing data. In that case, you would not be able to recover the previous backup data.

Server software requirements

This section describes the default location and space requirements for NetWorker software.

Default location and space requirements

These pathnames and directories are required for installation:

- ◆ The directory on the server is large enough for the NetWorker resources, client, server indexes, and media database (usually /nsr).
- ◆ The system pathname of at least one storage device for use by the NetWorker server to back up and recover files.

- ◆ If a tape device is being used to back up data, use a valid pathname for that device. The tape device must be nonrewinding.
- ◆ A directory for the PDF documentation files and for Adobe Acrobat Reader (if it is not already installed).

If the default locations and space requirements are accepted during installation, the installation script creates the directories listed in these sections:

- ◆ [“Microsoft Windows location and space requirements” on page 26](#)
- ◆ [“Linux location and space requirements” on page 26](#)
- ◆ [“UNIX location and space requirements” on page 27](#)

Microsoft Windows location and space requirements

[Table 6 on page 26](#) specifies the location and space requirements for the NetWorker software in a Microsoft Windows environment.

Table 6 Microsoft Windows location and space requirements

NetWorker files	Location	Space		
		x86	x64	ia64
Client files	Legato\nsr\bin	22 MB	28 MB	23 MB
Console	Legato\management	263 MB	263 MB	263 MB
Storage node	Legato\nsr\bin	27 MB	34 MB	32 MB
Server	Legato\nsr\bin	33 MB	39 MB	40 MB
Client file index, media database	Legato\nsr\index Legato\nsr\mmm	varies	varies	varies
Daemons	Legato\nsr\bin	1.5 MB	2 MB	3.2 MB
NetWorker License Manager	Legato\nsr\bin	275 MB	275 MB	not supported

Linux location and space requirements

[Table 7 on page 26](#) specifies the location and space requirements for the NetWorker software in a Linux environment

Table 7 Linux location and space requirements

NetWorker files	Linux Itanium Processor		Linux for x86	
	Location	Space	Location	Space
Client files	/usr/bin	35 MB	/usr/bin	23 MB
Console	/usr/bin	not applicable	/usr/bin	252 MB
Storage node	/usr/bin	72 MB	/usr/bin	48 MB
Server	/usr/bin	93 MB	/usr/bin	63 MB
Client file index, media database	/nsr	varies	/nsr	varies
Man pages	/usr/share/man	2 MB	/usr/share/man	2 MB
NetWorker License Manager	/usr/sbin	2 MB	/usr/sbin	2 MB
	/usr/nsr/lic/res	22 MB	/usr/nsr/lic/res	22 MB
	/nsr/lic/res	21 MB	/nsr/lic/res	21 MB

UNIX location and space requirements

Table 8 on page 27 specifies the location and space requirements.

Table 8 UNIX location and space requirements

NetWorker files	AIX	HPUX ^a	IRIX ^b	Solaris	HP Tru64 UNIX
Client					
In	/usr/bin /usr/lib/nsr	/opt/networker/bin	/usr/etc	/usr/bin, /usr/lib/nsr /usr/sbin	usr/opt/networker/bin
Size	82 MB	130 MB	69 MB	110 MB	80 MB
Console					
In	/opt/lgtonmc	/opt/networker/bin	not applicable	/opt/LGTONmc	not applicable
Size	297 MB	316 MB	not applicable	270 MB	not applicable
Storage node					
In	/usr/bin /usr/lib	/opt/networker/bin	not applicable	usr/sbin, /usr/lib/nsr, /usr/kernel/drv	usr/opt/networker/bin
Size	96 MB	109 MB	not applicable	92 MB	175 MB
Server					
In	/usr/bin	/opt/networker/bin	not applicable	usr/lib/nsr /usr/sbin	usr/opt/networker/bin
Size	146 MB	177 MB	not applicable	161 MB	220 MB
Client file index,media database					
In	/nsr	/nsr	/nsr	/nsr	/nsr
Size	varies	varies	varies	varies	varies
Man pages					
In	/usr/share/man	/opt/networker/man	/usr/share/catman/p_man /usr/share/catman/a_man	/usr/bin	usr/opt/networker/man
Size	1 MB	1 MB	1 MB	1 MB	1 MB
NetWorker License Manager					
In	/usr/bin, /nsr/lic	/opt/networker/bin	/usr/etc	/usr/sbin	usr/opt/networker/bin
Size	3.2 MB	5 MB	4 MB	3.7 MB	5 MB

a. HPUX installations also require 25 MB of space, located in /tmp, to temporarily accommodate the **swinstall** program.

b. IRIX installations require an additional 80 MB of space, located in /tmp/nsr_extract, to permit software extraction.

Required server software

This section lists the required server software for Microsoft Windows, Linux, and Tru64 UNIX Version 5.1B-3 or later distributions.

Linux requirements

[Table 9 on page 28](#) lists the Linux distributions supported in NetWorker 7.6 server software along with package requirements for each of the installations.

Note: Ensure that the kernel is supported and that the required package is installed *before* beginning the NetWorker software installation. The Linux distribution software documentation provides information.

Table 9 Required Linux software distributions

Linux distribution	Linux Itanium Processor		Linux for x86	
	Kernel	Additional modules, libraries, and upgrades	Kernel	Additional modules, libraries, and upgrades
SuSE Linux Enterprise Server 8	2.4.18-1	pdksh-5.2.14-19.i386.rpm	2.4.19-4GB	pdksh-5.2.14-532.i386.rpm
SuSE Linux Enterprise Server 9	2.4.18-1	pdksh-5.2.14-19.i386.rpm	2.4.19-4GB	pdksh-5.2.14-532.i386.rpm
SuSE Linux Enterprise Server 10	2.6.9-5.EL and higher	pdksh-5.2.14-801.i586.rpm	2.6.9-5.EL and higher	pdksh-5.2.14-801.i586.rpm
Red Hat Enterprise Server 3	2.4.21-4.EL	dksh-5.2.14-21.i386.rpm	2.4.21-4.EL	pdksh-5.2.14-21.i386.rpm
Red Hat Enterprise Server 4	2.6.9-5.EL and higher	dksh-5.2.14-30.i386.rpm	2.6.9-5.EL and higher	pdksh-5.2.14-30.i386.rpm

Memory and storage requirements

[Table 10 on page 28](#) lists the minimum memory and storage requirements for the NetWorker Server for Linux software. Additionally, because the client file index and media database that a NetWorker server generates can grow large over time, the NetWorker server needs enough free storage space to accommodate these indexes:

Table 10 NetWorker server memory and storage requirements

Requirements	Linux Itanium Processor	Linux for x86
Recommended RAM	256 MB	256 MB
Disk storage for software	512 MB	512 MB
Online indexes	5% of total backup data (allows for up to three times the index size during software update conversion)	5% of total backup data (allows for up to three times the index size during software update conversion)

HP Tru64 UNIX specific requirements

[Table 11 on page 29](#) lists the required server and storage node software for HP Tru64 UNIX Version 5.1B-3 or later.

Table 11 HP Tru64 UNIX required server and storage node software

Package identifier	Package name	Description
IOSWWEURLOCxxx	Worldwide European Unicode Locales	Worldwide European Unicode Locales package is located in Worldwide Language support kit which is available on the Tru64 Associate Product CD 1
DSKMOTIF21xxx	Motif 2.1.30	Motif libraries
OSFBASExxx	Tru64 UNIX Base System	Base operating system software
OSFCLINETxxx	Basic Networking Services	Network server communications
OSFPRINTxxx (server only)	Local Printer Support (Printing Environment)	Support needed to print the bootstrap file and information from NetWorker windows that appears in tabular format
OSFMANOSxxx (Optional)	Ref Pages (Admin/User Reference pages)	Reference pages for the base operating system; a requirement for viewing the NetWorker man pages

Console

This section lists the Console server, client and database software requirements:

- ◆ [“Console server” on page 29](#)
- ◆ [“Console database” on page 32](#)
- ◆ [“Console client” on page 33](#)
- ◆ [“Using international fonts in UNIX non-US locale environments” on page 35](#)

Console server

You must install the Console server software on one computer in your datazone to manage the NetWorker server. Only one installation of the NetWorker Console server is required to manage multiple NetWorker servers.

The general requirements for installing the Console server include the following:

- ◆ An installed and licensed network of NetWorker servers, clients, and storage nodes. The NetWorker License Manager software is optional.
- ◆ A Java Runtime Environment (JRE), which is required in order to:
 - Support the command line reporting feature.
 - Download the Console client and display the user interface.

Note: 64-bit versions of NetWorker require the 32-bit JRE.

- ◆ Set up a User/Group with limited privileges that NMC will use to run the web server. This must be a non-root user. For example, the Solaris, Linux, and AIX operating systems have a default user/group [nobody/nobody] that can be used.

Table 12 Console server and database requirements(page 2 of 2)

System features	Operating system	Requirement
Software	AIX	The NetWorker client release 7.6 or later software must already be installed and running.
	HP-UX	
	Linux	
	Microsoft Windows	The NetWorker client release 7.6 or later software must already be installed and running. Note: NetWorker Remote Exec service must be installed and running. If the service is stopped, the Setup Wizard issues an error message.
	Solaris	The NetWorker client release 7.6 or later software must already be installed and running.
Java Runtime Environment	AIX	JRE starting from version 1.5_06 or later. This is required to run the command line reporting feature. Note: JRE version 1.6 for HP does not include Java WebStart. It is recommended to use the WebStart included with JRE 1.5 with JRE 1.6, or to use JRE version 1.6_01 (which includes WebStart).
	HP-UX	
	Linux	JRE starting from version 1.5.0_11, and later. This is required to run the command line reporting feature.
	Microsoft Windows	Note: JRE version 1.6 or later is required in an IPv6 environment.
	Solaris	
Browsers	AIX	<ul style="list-style-type: none"> • Mozilla 1.7 on the supported AIX platforms.
	HP-UX	<ul style="list-style-type: none"> • Mozilla 1.7 on the supported HP-UX platforms.
	Linux	<ul style="list-style-type: none"> • Netscape Communicator 7.2, on the supported Linux platforms. • Mozilla 1.7 on the supported Linux platforms.
	Microsoft Windows	<ul style="list-style-type: none"> • Microsoft Internet Explorer 6.x on the supported Microsoft Windows platforms. Microsoft Internet Explorer 7.x, and 8 on supported Microsoft Windows Vista, XP, and 2008.
	Solaris	<ul style="list-style-type: none"> • Netscape Communicator 7, on the supported Solaris platforms. • Mozilla 1.7 on the supported Solaris platforms.
Available disk space	AIX	<ul style="list-style-type: none"> • 350 MB + x, where: x is a buffer of disk space for the Console database. • JRE with Web Start: 55 MB
	HP-UX	<ul style="list-style-type: none"> • 350 MB + x, where: x is a buffer of disk space for the Console database. • JRE with Web Start: 55 MB
	Linux server	<ul style="list-style-type: none"> • 60 MB + x, where: x is a buffer of disk space for the Console database.
	Microsoft Windows server	<ul style="list-style-type: none"> • 220 MB + x, where: x is a buffer of disk space for the Console database. • JRE with Web Start: 55 MB
	Solaris server	<ul style="list-style-type: none"> • 350 MB + x, where: x is a buffer of disk space for the Console database.

Console database

This section provides information on estimating the size and space requirements for the Console database:

- ◆ [“Formula for estimating the size of the Console database” on page 32](#)
- ◆ [“Formula for estimating the space required for the Console database information” on page 32](#)

Formula for estimating the size of the Console database

The Console server collects data from the NetWorker servers in the enterprise, and stores the data in its local Console database. By default, the database is installed on the local file system that can provide the most available space. Console integrates and processes this information to produce reports that facilitate trend analysis, capacity planning, and problem detection. The NetWorker Administration Guide provides information about reports.

To store the collected data, allocate sufficient disk space for the Console database. Several factors affect the amount of disk space required:

- ◆ The number of NetWorker servers monitored for the reports
- ◆ The number of savegroups run by each of those servers
- ◆ The frequency with which savegroups are run
- ◆ The length of time report data is saved (data retention policies)

Note: Since the amount of required disk space is directly related to the amount of historical data stored, the requirements can vary greatly, on average between 0.5 GB and several GB. Allow for this when planning hardware requirements.

Formula for estimating the space required for the Console database information

Use these formulas to estimate the space needed for different types of data and to estimate the total space required.

Save set media database

To estimate the space needed for the save set media database, multiply the weekly amount of save sets by the number of:

- ◆ NetWorker servers monitored by the Console
- ◆ Weeks in the Save Set Output policy

The result indicates the length of time that a save set took to run successfully. The results also identify the number of files that were backed up, and how much data was saved during the operation.

Save set output

To estimate the space needed for the save set media database, multiply the weekly amount of output messages by the number of:

- ◆ NetWorker servers monitored by the Console
- ◆ Save Set Output Retention policy

The result indicates how many groups and save sets were attempted and their success or failure.

Savegroup completion data

To estimate the space needed for the save set media database, multiply the weekly amount of savegroups by the number of:

- ◆ NetWorker servers monitored by the Console
- ◆ Weeks in the Completion Data Retention policy

The result can be used to troubleshoot backup problems

Console client

Although the Console client does not need to be installed separately, the JRE which includes Java Web Start must be installed in order to download and run the program properly.

When connecting to the Console server for the first time, there is a prompt to download the JRE and the Console client application.

[Table 13 on page 33](#) lists the system requirements for installing the Console client.

Table 13 Console client system requirements (page 1 of 3)

System features	Operating system	Requirement
Operating system	AIX	<ul style="list-style-type: none"> • AIX5L version 5.2 (32-bit, 64-bit) • AIX5L version 5.3 (32-bit, 64-bit) • AIX6L version 6.1
	HP-UX	<ul style="list-style-type: none"> • HP 11i v2, v3
	Linux	<ul style="list-style-type: none"> • Red Hat Enterprise Server 4 • Red Hat Enterprise Server 5 • Oracle Enterprise Linux 4 • Oracle Enterprise Linux 5 • SuSE Linux Enterprise Server 9 • SuSE Linux Enterprise Server 10 <p>Note: SuSE Linux Enterprise Server version 9.2 is <i>not</i> supported.</p>
	Mac OS-X	<ul style="list-style-type: none"> • Mac OS-X 10.4, 10.4.4 (Intel) • Mac OS-X 10.5.x
	Microsoft Windows	<ul style="list-style-type: none"> • Microsoft Windows 2000, with SP3 • Microsoft Windows 2000, with SP4 (Intel) • Microsoft Windows 2003, 32-bit • Microsoft Windows 2003, with SP1 • Microsoft Windows 2003 R2 • Microsoft Windows 2008 (2008 Server Core is not supported) • Microsoft Windows XP • Microsoft Windows Vista
	Solaris	<ul style="list-style-type: none"> • Solaris 9, 10, 11

Table 13 Console client system requirements (page 2 of 3)

System features	Operating system	Requirement
Java Runtime Environment	AIX	JRE starting from version 1.5_06 or later.
	HP-UX	Note: JRE version 1.6 for HP does not include Java WebStart. It is recommended to use the WebStart included with JRE 1.5, or to use JRE version 1.6_01 (which includes WebStart).
	Linux	JRE 1.5_11 or later.
	Microsoft Windows	Note: JRE version 1.6 or later is required in an IPv6 environment.
	Solaris	
Browsers	AIX	<ul style="list-style-type: none"> • Mozilla 1.7 on the supported AIX platforms.
	HP-UX	<ul style="list-style-type: none"> • Mozilla 1.7 on the supported HP-UX platforms.
	Linux	<ul style="list-style-type: none"> • Netscape Communicator 7.2, on the supported Linux platforms. • Mozilla 1.7 on the supported Linux platforms.
	Microsoft Windows	<ul style="list-style-type: none"> • Microsoft Internet Explorer 6.x on supported Microsoft Windows platforms. • Microsoft Internet Explorer 7.x, and 8 on Microsoft Windows Vista, XP, and 2008.
	Solaris	<ul style="list-style-type: none"> • Netscape Communicator 7, on the supported Solaris platforms. • Mozilla 1.7 on the supported Solaris platforms.
Available disk space	AIX	<ul style="list-style-type: none"> • Console client: 10 MB • JRE with Web Start: 55 MB
	HP-UX	<ul style="list-style-type: none"> • Console client: 10 MB • JRE with Web Start: 55 MB
	Linux	<ul style="list-style-type: none"> • Console client: 10 MB • JRE with Web Start: 55 MB
	Microsoft Windows	<ul style="list-style-type: none"> • Console client: 5 MB • JRE with Web Start: 50 MB
	Solaris	<ul style="list-style-type: none"> • Console client: 10 MB • JRE with Web Start: 55 MB
RAM	AIX	A minimum of 512 MB to run reports.
	HP-UX	
	Linux Server	
	Microsoft Windows Server	
	Solaris Server	

Table 13 Console client system requirements (page 3 of 3)

System features	Operating system	Requirement
Graphics card	AIX	Must support the display of the following: <ul style="list-style-type: none"> • At least 16-bit color (at least 65,000 colors) • Screen resolution of at least 1024 x 768
	HP-UX	
	Linux Server	
	Microsoft Windows Server	
	Solaris Server	

Using international fonts in UNIX non-US locale environments

The Console software can run (in English mode) on localized operating systems. It supports retrieval of double-byte characters from NetWorker data.

If the appropriate non-English font is not available on the Console client, the retrieved data appears as illegible.

To use or view data from a localized, non-English NetWorker server:

1. Ensure that the appropriate language support package for NetWorker software has been installed.
2. Ensure that the appropriate font is available to the Console client.

Note: If the required font is not installed on the system, obtain it from the operating system vendor and install it on the system.

3. From the **Console** menu, select **View>Fonts** and perform one of these tasks:
 - Change the language locale to match that of the localized NetWorker language locale.
 - Choose a language font that is already loaded in the operating system and which matches the location of the localized NetWorker language locale.

Changing the language locale to match that of non-localized NetWorker data

There are two ways to change the language locale to match that of the localized NetWorker language locale. Choose one of the following:

- ◆ Before you log in to the host system:
 1. Select **Options** on the **Login** dialog box.
 2. Select **Options>Language**.
 3. Select a locale from one of three alphabetical lists.
- ◆ After you log in to the host system:
 1. Type the **setenv** command to change the locale.
 2. Depending on the language, select one of these:
 - To match the French NetWorker locale, type:


```
setenv LANG fr
setenv LC_ALL fr
```
 - To match the Japanese NetWorker locale, type:


```
setenv LANG ja
setenv LC_ALL ja
```

- To match the Simplified Chinese NetWorker locale, type:

```
setenv LANG zh
setenv LC_ALL zh
```

Changing the language font to view localized NetWorker data

Instead of changing the language locale, you can change the Console font, so that localized NetWorker data can be viewed from the Console software. The appropriate font must be loaded in the operating system of the Console server and client.

To load a font:

1. To select a language font, select **Console>View>Font**. The **Change Font** dialog appears.
2. Select the appropriate font and font size, if the default size is inappropriate and click **OK**.

Using a non-US locale

When using Console software in a non-US environment, support for the language locale and various language character sets is derived from the host operating system. In order to display non-English characters, the host operating system must have installed a font (or fonts) that supports those characters.

The Console client, rather than the Console server, must have the appropriate language character sets supported in the client operating system. By default, Console software uses a non-UNICODE font that supports US English.

If the font is loaded in the operating system, a language locale that is supported by a localized version of NetWorker software automatically recognizes the font for the associated localized language. If the required font is loaded in the operating system, an appropriate language font can then be selected.

This chapter includes these sections:

- ◆ [Installation roadmap](#)..... 38
- ◆ [Accessing the software](#) 39

Installation roadmap

Use the following roadmap when installing the NetWorker software:

1. Review [“Software Requirements” on page 17](#) and note the default directory location and space requirements.

Mac OS X requirements are provided in the section [“On Mac OS X: NetWorker client support” on page 23](#).

2. If there is an earlier release of NetWorker software installed, update the software:
 - For Microsoft Windows instructions, see [“Updating the NetWorker software on Microsoft Windows” on page 44](#).
 - For UNIX instructions, see [“Updating the NetWorker software on UNIX” on page 49](#).
3. Access the NetWorker software:
 - For Microsoft Windows instructions, see [“Microsoft Windows” on page 39](#).
 - For UNIX instructions, see [“UNIX” on page 40](#).
4. Install the required NetWorker software:
 - For Microsoft Windows installation information, see [“Microsoft Windows Installation” on page 129](#).
 - For UNIX installation instructions, refer to the appropriate chapters:
 - [“AIX Installation” on page 61](#)
 - [“HP-UX Installation” on page 75](#)
 - [“HP Tru64 UNIX Installation” on page 123](#)
 - [“IRIX Installation” on page 87](#)
 - [“Linux Installation” on page 91](#)
 - [“Mac OS X Client Installation” on page 107](#)
 - [“Solaris Installation” on page 109](#)

Note: Install the Console server software on one computer in the datazone to manage the NetWorker server. Only one installation of the Console server is required to manage multiple NetWorker servers.

5. Test the NetWorker software. [“Verifying the Installation” on page 143](#) provides information.
6. Enable and register all NetWorker products. [“Evaluating and Licensing the Software” on page 149](#) provides information.

Accessing the software

The procedure for accessing the installation files differs for Microsoft Windows and UNIX environments. Refer to the appropriate section for instructions.

Microsoft Windows

Access the installation files from one of either a local DVD drive or from the Powerlink® website at <http://Powerlink.EMC.com>.

From a local DVD drive

To access NetWorker installation files on a local CD-ROM:

1. Log in with administrator privileges where the NetWorker software is being installed.
2. Insert the NetWorker software media into the DVD drive.
3. If Autorun is enabled, the NetWorker software installation screen appears automatically. Perform the following:
 - a. Select **Install NetWorker Release 7.6 software**.
 - b. In the **File Download** dialog box select **Run this program from its current location**.
 - c. If a security warning appears, click **Yes** to continue.
4. If Autorun is disabled, change directories to the appropriate location:
 - win_x86 (to install on a 32-bit computer)
 - win_x64 (to install on a 64-bit computer)
 - win_ia64 (to install on a 64-bit computer)

From the website

To access the installation software from the Powerlink® website:

1. Log in with administrator privileges where the NetWorker software is being installed.
2. Create a temporary folder to download and extract the evaluation software.
3. Go to the <http://Powerlink.EMC.com> website, select **Support > Software Downloads and Licensing > Downloads J-O > NetWorker**.
4. Download the evaluation software to the temporary folder and change to that folder.
5. Extract the downloaded file.

UNIX

Access the installation files from one of either a local DVD or the EMC website.

From a local DVD drive

To access the NetWorker software from a local DVD drive:

1. Log in as root on the computer where the NetWorker software is being installed.
2. Mount the media and locate the appropriate installation directory.
3. For UNIX platforms:
 - a. Ensure that the PATH environment variable for the user root on the NetWorker server and the user on each NetWorker client contain the directory where the NetWorker executables reside.
 - b. For IRIX only, add a symbolic link from the source directory to the target directory. For example:

```
ln -s /dvd/irix/networkr.tar /tmp/sgi.tardist
```

[Table 14 on page 40](#) provides a listing of the NetWorker installation directories.

Table 14 NetWorker installation directories

Operating system	NetWorker installation directory
AIX	/usr/bin
HP-UX	/opt/networker/bin
HP Tru64 UNIX	/usr/opt/networker/bin
IRIX	/usr/etc
Linux	/usr/sbin
Mac OS X	/usr/sbin
Solaris	/usr/sbin

4. Install the software by using the instructions in the appropriate chapters:
 - [“AIX Installation” on page 61](#)
 - [“HP-UX Installation” on page 75](#)
 - [“HP Tru64 UNIX Installation” on page 123](#)
 - [“IRIX Installation” on page 87](#)
 - [“Linux Installation” on page 91](#)
 - [“Mac OS X Client Installation” on page 107](#)
 - [“Solaris Installation” on page 109](#)

From the website

To access the installation software from the EMC website:

1. Log in as root on the computer where the NetWorker software is being installed.
2. Create a temporary folder to download and extract the evaluation software.
3. Go to the <http://Powerlink.EMC.com> website, select **Support > Software Downloads and Licensing > Downloads J-O > NetWorker**, and navigate to the appropriate content management download site.

4. Ensure that there is enough disk space to contain both the compressed download NetWorker software file and the fully uncompressed files as listed in [Table 15 on page 41](#).

Table 15 Size of compressed and uncompressed files

Operating system	Compressed file	Uncompressed file
AIX	55 MB	715 MB
HP-UX	45 MB	740 MB
HP Tru64 UNIX	105 MB	275 MB
IRIX	75 MB	75 MB
Linux for IBM PowerPC	20 MB	20 MB
Linux for Intel x86	35 MB	350 MB
Linux for Intel x86-64	350 MB	350 MB
Linux Itanium	105 MB	105 MB
Mac OS X	not applicable	not applicable
Solaris for Intel x86	20 MB	355 MB
Solaris for Intel x86-64	70 MB	195 MB

5. Download the NetWorker evaluation software to a temporary directory.
6. Uncompress the downloaded software. [Table 16 on page 41](#) provides details.

Table 16 Uncompress the downloaded software file

Operating system	Command to uncompress and download the software
AIX	<code>gunzip nw76_aix.tar.gz</code>
HP-UX 11.x	<code>gunzip nw76_hpux11_64.pkg.gz</code>
HP-UX 11i on the Itanium Processor Family (IPF)	<code>gunzip nw76_hpux11_ia64.pkg.gz</code>
HP Tru64 UNIX	<code>gunzip nw76_tru64.tar.gz</code>
IRIX	<code>gunzip nw76_sgi.tar.gz</code>
Linux for IBM PowerPC	<code>gunzip nw76_linux_ppc64.tar.gz</code>
Linux for Intel x86	<code>gunzip nw76_linux_x86.tar.gz</code>
Linux for Intel x86-64	<code>gunzip nw76_linux_x86_64.tar.gz</code>
Linux Itanium	<code>gunzip nw76_linux_ia64</code>
Mac OS X	not applicable
Solaris for Intel x86	<code>gunzip nw76_solaris_x86.tar.gz</code>
Solaris for Intel x86-64	<code>gunzip nw76_solaris_amd64.tar.gz</code>

7. For IRIX only, add a symbolic link from the source directory to the target directory. For example:

```
ln -s targetdir/nw76_irix_tar /tmp/sgi.tardist
```

8. Extract the uncompressed file by using these commands as listed in [Table 17 on page 42](#).

Table 17 Commands to extract the software

Operating system	Command to extract the software
AIX	<code>tar -xvpf nw76_aix.tar</code>
HP-UX 11.x	<code>tar -xvpf nw76_hpux11_64.tar</code>
HP-UX 11i on the Itanium Processor Family (IPF)	<code>tar -xvpf nw76_hpux11_ia64.tar</code>
HP Tru64 UNIX	<code>tar -xvpf nw76_tru64.tar</code>
IRIX	<code>tar -xvpf nw76_sgi.tar</code>
Linux Itanium	<code>tar -xvpf nw76_linux_ia64</code>
Linux for Intel x86	<code>tar -xvpf nw76_linux_x86.tar</code>
Linux for Intel x86-64	<code>tar -xvpf nw76_linux_x86_64.tar</code>
Linux for IBM PowerPC	<code>tar -xvpf nw76_linux_ppc64.tar</code>
Mac OS X	not applicable
Solaris for Intel x86	<code>tar -xvpf nw76_solaris_x86.tar</code>
Solaris for Intel x86-64	<code>tar -xvpf nw76_solaris_amd64.tar</code>

The NetWorker distribution software directories and files are listed on the screen as the extraction proceeds.

9. Ensure that the PATH environment variable for the user root on the NetWorker server and the user on each NetWorker client contain the directory where the NetWorker executables reside. [Table 18 on page 42](#) provides details.

Table 18 NetWorker installation directories

Operating system	NetWorker installation directory
AIX	/usr/bin
HP-UX	/opt/networker/bin
HP Tru64 UNIX	/usr/opt/networker/bin
IRIX	/usr/etc
Linux	/usr/sbin
Mac OS X	/usr/sbin
Solaris	/usr/sbin

10. Install the software by using the instructions in the appropriate chapters:

- [“AIX Installation” on page 61](#)
- [“HP-UX Installation” on page 75](#)
- [“HP Tru64 UNIX Installation” on page 123](#)
- [“IRIX Installation” on page 87](#)
- [“Linux Installation” on page 91](#)
- [“Mac OS X Client Installation” on page 107](#)
- [“Solaris Installation” on page 109](#)

This chapter includes the following sections:

- ◆ Introduction 44
- ◆ Updating the NetWorker software on Microsoft Windows..... 44
- ◆ Updating the NetWorker software on UNIX 49
- ◆ Updating from 7.4/7.5 to 7.6 for VCB backups on UNIX and Windows..... 51
- ◆ Updating NetWorker clients by using the software distribution feature 52

Introduction

When updating to NetWorker release 7.6 from NetWorker release 7.3 or earlier, there is no way to revert to a previous release of the NetWorker software. It is a one-way conversion as the client file indexes are automatically reorganized into new directory structures. However, upgrades from NetWorker release 7.3.x or later can be downgraded back to the same release.

The NetWorker software does not support direct upgrade, which means the previous installed version must be removed before the new version can be installed. When upgrading the NMC version, make a copy of the current database. This database will be required if you downgrade the software.

Update enablers

An update enabler is necessary to move from an existing major NetWorker release to a newer major NetWorker release, for example, from NetWorker 7.4.x to NetWorker 7.6. Update enablers are not required for maintenance releases.

If an update enabler is required, the NetWorker software automatically adds the required update enabler code to its configuration. The update enabler expires after 45 days. Contact Powerlink Licensing within 45 days to get the update enabler permanently authorized. To permanently license the NetWorker software, see [“Permanently licensing the NetWorker software” on page 153](#).

Note: If the required update enabler expires or the auth code is not applied, the NetWorker software will not function at the new release level.

With a first-time purchase of NetWorker software, a one-year update agreement may be included. After a year, an update enabler may be acquired with a new update agreement purchase.

Alert Message

An alert message is generated 45 days before a NetWorker update enabler code is about to expire. This alert remains until the NetWorker license is authorized or deleted. To view the license alert, see [“Update enabler alert” on page 152](#).

Updating the NetWorker software on Microsoft Windows

To upgrade the operating system on a NetWorker server, storage node, or client host (for example, to update from Windows 2000 to Windows XP), first upgrade Windows, then update the NetWorker software.

When you update from a previous release, the NetWorker software is automatically installed in the same location.

The following options are not supported during an upgrade:

- ◆ Changing the installation type (for example, from client to server)
- ◆ Editing the list of NetWorker servers that are allowed to access the computer
- ◆ Installing NetWorker License Manager

However, details of changes that can be made after the update is available in [“Maintaining a NetWorker software installation” on page 49](#).

Note: When updating the NetWorker software, to install ConnectEMC, it is recommended that ConnectEMC is installed on the NetWorker client. Also, it is recommended that the previous version of the NetWorker client is uninstalled, and that the **tmp** directory is deleted. More information is provided in the best practices for installing ConnectEMC, in [Step 9 of “Task 1: Install the NetWorker software” on page 130](#).

Windows update roadmap

[Table 19 on page 45](#) provides a roadmap to follow for updating the NetWorker software on Windows:

Table 19 Update roadmap for NetWorker on Windows

For this type of NetWorker host	Refer to these section
NetWorker server	<p>To update the NetWorker server on Windows:</p> <ul style="list-style-type: none"> • “Updating from a different bit version of NetWorker (32-bit, 64-bit)” on page 48. Complete this section only if you are updating from a different bit version of NetWorker. • “Update the NetWorker software on Windows” on page 45 • “Updating from 7.4/7.5 to 7.6 for VCB backups on UNIX and Windows” on page 51. Complete this section only if you have NetWorker clients that are virtual machines configured for a VCB proxy server. • “Maintaining a NetWorker software installation” on page 49
NetWorker Management Console	<p>To update the NetWorker Management Console on Windows, complete the following sections in order:</p> <ul style="list-style-type: none"> • “Updating from a different bit version of NetWorker (32-bit, 64-bit)” on page 48. Complete this section only if you are updating from a different bit version of NetWorker. • “Update the NetWorker software on Windows” on page 45 • “Java Web Start jnlp file caching issue after updating the NetWorker Management Console” on page 48 • “Maintaining a NetWorker software installation” on page 49
NetWorker client or storage node	<p>To update a NetWorker client or storage node on Windows, complete the following sections in order:</p> <ul style="list-style-type: none"> • “Updating from a different bit version of NetWorker (32-bit, 64-bit)” on page 48. Complete this section only if you are updating from a different bit version of NetWorker. • “Update the NetWorker software on Windows” on page 45 or “Updating NetWorker clients by using the software distribution feature” on page 52. • “Maintaining a NetWorker software installation” on page 49

Update the NetWorker software on Windows

To update the NetWorker software to release 7.6:

1. Before updating, make notes of the current database location and port numbers used before removing the current installation.
2. Verify that the target computer satisfies the requirements. [“Microsoft Windows requirements” on page 18](#) provides details.
3. Log in with administrator privileges to the target computer.
4. Access the installation files. [“Accessing the software” on page 39](#) provides details.

5. Double-click the **setup.exe** file. Skip this step if Autorun started the installation automatically. The Setup program detects the existing installation and displays the **Welcome to NetWorker Update** dialog box.
6. In the **Welcome to NetWorker Update** dialog box, click **Next**. A warning message appears, indicating that the NetWorker Management Console (NMC) is currently installed.
7. Click **OK**, then click **Next** to continue uninstalling NMC.

Note: The latest version of NMC will be installed after NetWorker has been updated.

8. In the **Ready to Update** dialog box, click **Update**.

Note: If the setup wizard requests that Internet Explorer (IE) windows be closed in order to continue the installation, close the IE window, then click **Retry** to continue the installation.

9. In the **NetWorker Server Selection** page, select the NetWorker servers that can perform backups and directed recoveries for this client:
 - To add a NetWorker server that is *not* listed in the **Available Servers** list, type the name of the server in the **Enter a server name** text box and click **Add**.
 - To browse for available NetWorker servers, click **Update List**. You can select a NetWorker server from the **Available Servers** list.
 - To add or remove NetWorker servers from the **Available Servers** list to the **Selected Servers** list, use the arrow buttons.

Note: If the **Selected Servers** list remains empty, any NetWorker server can perform backups and directed recoveries of this computer's data. This might affect the security of your data.

10. Click **Finish** when the update is complete. If NMC is being upgraded as well, the **Welcome to NetWorker Management Console Installation** page displays. Perform [Step 11](#) through [Step 17](#) if upgrading NMC. Otherwise, skip to [Step 18](#).
11. In the **Welcome to NetWorker Management Console Installation** page, click **Next**.
12. In the **Customer Information** page, enter the customer information and click **Next**.
13. In the **Product Setup** page, click **Next**.
14. In the **Configuration Ports** page, customize the ports if necessary, then click **Next**.

Note: Do not change the Database Destination Folder.

15. In the **Customer Database Maintenance** page, select **Keep database** to use the existing database. Otherwise, select **Overwrite the existing NMC database**. Click **Next**.
16. When the NMC installation is complete, click **Finish**. The **NetWorker setup** page appears again.
17. When prompted to run the NetWorker Change Journal Manager, select this option if required, then click **Finish**.

Note: If you are updating the software on a computer running Windows XP Professional, Windows 2000 or 2003, at the end of the setup process there is a prompt to run the Change Journal Manager. The NetWorker Administration Guide provides information about configuring NetWorker software to use the Windows Change Journal.

18. In the **Production Configuration Summary** page, review the configuration to be installed, then click **Next**.
19. In the **Ready to Install the Program** page, click **Install**.
20. When the installation is complete, you have the option to open the NMC client in a browser. Select this option if desired, then click **Finish**.

Note: A NetWorker 7.5.x Console server configured to use LDAP for authentication can cause the NMC to fail to start after the update to NetWorker 7.6. If this occurs, this message is written to the **gstd.raw** file in the Console logs directory:
"acm: External directory library initialization failed".

21. If the NMC fails to start after the update to NetWorker 7.6, reset the Console authentication configuration and reconfigure LDAP by performing the following steps:
 - a. Stop all **gstd** services.
 - b. Go to *NMC install directory/cst*.
 - c. Delete the files **Config.xml**, **csp.clb**, **csp.clb.bak** and **upgrade_csp.tag**, if present.
 - d. Copy **Config.xml.template** to **Config.xml**.
 - e. Start the Console.
The Console starts in native authentication mode.
 - f. Log into the Console as administrator with the password last set for administrator before switching to LDAP mode.
 - g. In **Setup > Configure Login Authentication**, configure LDAP again.
22. Enable and register the NetWorker software. [“Evaluating the NetWorker software” on page 150](#) provides instructions.

[“Updating from 7.4/7.5 to 7.6 for VCB backups on UNIX and Windows” on page 51](#) provides instructions on updating the NetWorker server for VCB backups.

Downgrading the NetWorker Management Console to NetWorker release 7.4.x

If, after upgrading to NMC for NetWorker 7.6, it is required to downgrade to the previous version of NMC, perform the following:

1. Re-install the previous version of NMC for NetWorker release 7.4.x and select the new database when prompted.
2. After installing, run **recoverpsm** to recover the last backed up version of the NMC for NetWorker release 7.4.x database.

Note: In order to retrieve the previous database upon downgrading to NMC for NetWorker release 7.4.x, the NMC database must have been backed up before the upgrade to NMC for NetWorker release 7.6.

Java Web Start jnlp file caching issue after updating the NetWorker Management Console

After the NetWorker Management Console (NMC) is updated or a client locale is changed, the **gconsole.jnlp** file will be different than the original **gconsole.jnlp** file in the Java Web Start cache. NMC will fail to launch.

Workaround

Remove the **NetWorker Management Console Application and Language Pack** from the Java Application Cache Viewer:

1. Open a command line to find and launch the **javaws.exe** application. The following default locations can be used to run **javaws.exe**, based on the JRE version installed:
 - For Java 1.4.x, C:\Program Files\Java\j2re1.4.2_14\javaws\javaws.exe
 - For Java 1.5.x, C:\Program Files\Java\jre1.5.0_09\bin\javaws.exe
 - For Java 1.6.x, C:\Program Files\Java\jre1.6.0_06\bin\javaws.exe -viewer
2. Run the Java Application Cache Viewer.
3. Select **NetWorker Management Console Application and Language Pack**.
4. Click **Remove Selected Application**.

Updating NetWorker Modules from a previous release

After updating to NetWorker release 7.6 from a release 6.x, NetWorker Modules must be reinstalled. Additionally, it is possible that minor changes must be made to the Users attribute of the User Group resource (within the Users group) to ensure successful backups.

Note: If updating to NetWorker release 7.6 from release 7.x, NetWorker Modules do not need to be reinstalled.

The NetWorker Module documentation provides more information.

Updating from a different bit version of NetWorker (32-bit, 64-bit)

The following procedure is required only if updating from a 32-bit installation of NetWorker software to a 64-bit version.

To update the NetWorker software:

1. Use the NetWorker software to back up the client file index and the media database. The NetWorker Administration Guide provides instructions.
2. Ensure that all NetWorker scheduled backups have been stopped before starting the upgrades.
3. Uninstall the NetWorker software. [“Uninstalling the NetWorker software” on page 137](#) provides instructions.
4. Delete the existing client file index and the media database.
5. Install the new version NetWorker software. [“Installing the NetWorker software” on page 130](#) provides instructions.
6. Perform a bootstrap recovery of the saved NetWorker client file index and the media database. The NetWorker Administration Guide provides instructions.

Maintaining a NetWorker software installation

After NetWorker software is installed, you can run the Setup program to perform the following maintenance tasks:

- ◆ Change the setup language type for the NetWorker installation.
- ◆ Change the installation type (for example, from client to server), edit the servers list, add the NetWorker License Manager, add or remove the NetWorker Console software.
- ◆ Replace missing or corrupted program files.
- ◆ Remove the NetWorker software from the computer.

Updating the NetWorker software on UNIX

To upgrade the operating system on a NetWorker server, storage node, or client host, first upgrade the operating system, then update the NetWorker software.

When you update from a previous release, the NetWorker software is automatically installed in the same location.

The following options are not supported during an upgrade:

- ◆ Changing the installation type (for example, from client to server)
- ◆ Editing the list of NetWorker servers that are allowed to access the computer
- ◆ Installing NetWorker License Manager

However, details of changes that can be made after the update is available in [“Maintaining a NetWorker software installation” on page 49](#).

UNIX update roadmap

[Table 19 on page 45](#) provides a roadmap to follow for updating the NetWorker software on UNIX:

Table 20 Update roadmap for NetWorker on UNIX (page 1 of 2)

For this type of NetWorker host	Refer to these section
NetWorker server	To update the NetWorker server on UNIX: <ul style="list-style-type: none"> • “Updating from a different bit version of NetWorker (32-bit, 64-bit)” on page 48. Complete this section only if you are updating from a different bit version of NetWorker. • “Update the NetWorker software on UNIX” on page 50 • “Updating from 7.4/7.5 to 7.6 for VCB backups on UNIX and Windows” on page 51. Complete this section only if you have NetWorker clients that are virtual machines configured for a VCB proxy server. • “Maintaining a NetWorker software installation” on page 49

Table 20 Update roadmap for NetWorker on UNIX (page 2 of 2)

For this type of NetWorker host	Refer to these section
NetWorker Management Console	<p>To update the NetWorker Management Console on UNIX, complete the following sections in order:</p> <ul style="list-style-type: none"> • “Updating from a different bit version of NetWorker (32-bit, 64-bit)” on page 48. Complete this section only if you are updating from a different bit version of NetWorker. • “Update the NetWorker software on UNIX” on page 50 • “Java Web Start jnlp file caching issue after updating the NetWorker Management Console” on page 48 • “Maintaining a NetWorker software installation” on page 49
NetWorker client or storage node	<p>To update a NetWorker client or storage node on Windows, complete the following sections in order:</p> <ul style="list-style-type: none"> • “Updating from a different bit version of NetWorker (32-bit, 64-bit)” on page 48. Complete this section only if you are updating from a different bit version of NetWorker. • “Update the NetWorker software on UNIX” on page 50 or “Updating NetWorker clients by using the software distribution feature” on page 52. • “Maintaining a NetWorker software installation” on page 49

Update the NetWorker software on UNIX

To update the NetWorker software, perform see these tasks:

- ◆ [“Task 1: Prepare to update the NetWorker software to release 7.6:” on page 50](#)
- ◆ [“Task 2: Update the software on the NetWorker client, storage node, and server:” on page 51](#)

Task 1: Prepare to update the NetWorker software to release 7.6:

To update the NetWorker software to release 7.6:

1. Before updating, make notes of the current database location and port numbers used before removing the current installation.
2. Verify that the target computer satisfies the requirements. [“UNIX requirements” on page 18](#) provides details.
3. Make a copy of the current database and store it in a safe location.
4. Back up all client file indexes and generate a bootstrap for the server. If a current bootstrap does not exist, or a backup of all client file indexes, perform scheduled backups on all clients before updating the software. For example, to save the bootstrap information, type this command:

```
savegrp -O group
```

Note: Ensure that all clients are included in the groups to be backed up.

5. Record the latest bootstrap save set ID and its associated volume label. To obtain this information, type this command:

```
mminfo -B
```
6. If the NetWorker software is not currently installed in the default location, record the location of the client file indexes.

Note: A NetWorker storage node release 7.4 or later is not compatible with a NetWorker release 7.3 or earlier server. Update the NetWorker servers to at least version 7.4 before updating a storage node.

Task 2: Update the software on the NetWorker client, storage node, and server:

To update the software on the NetWorker client, storage node, and server:

1. Keep a copy of the current configuration.
2. Ensure that all NetWorker scheduled backups have been stopped before starting the upgrades.
3. Type the following command to shut down the NetWorker software:

```
nsr_shutdown
```

4. Uninstall the current NetWorker and NetWorker Management Console (NMC) software packages.
5. Verify that no NMC processes (**gstd**, **gsttclsh**, **dbsrv9**) are still running.

Note: If performing a re-install of NetWorker release 7.6, these processes will be **gstd**, **dbsrv9**, and **httpd**.

6. Install the new release of the NetWorker software.

Note: Do not start the NetWorker daemons. If client computers have a previous release of the NetWorker Client for Linux installed, update those clients to the latest NetWorker release to fully exercise all the features in the software. When the installation identifies an existing NetWorker client package for Linux, it prompts for permission to update the client. The update process removes the existing NetWorker client and man pages and installs the new version of the NetWorker client software.

7. Apply any required NetWorker software patches.
8. Restart the software by running the NetWorker startup script:

```
/etc/init.d/networker start
```

9. At the command prompt, type the following command:

```
nsrck -L 2
```

10. License the NetWorker software. [“Permanently licensing the NetWorker software” on page 153](#) provides instructions.

[“Updating from 7.4/7.5 to 7.6 for VCB backups on UNIX and Windows” on page 51](#) provides instructions on updating the NetWorker server for VCB backups.

Updating from 7.4/7.5 to 7.6 for VCB backups on UNIX and Windows

After updating from NetWorker Release 7.4.x or 7.5.x to NetWorker Release 7.6, to prevent existing VCB related backups from using the NetWorker Integration module, run the following command on the NetWorker server:

```
nsrvcbserve_tool -p VCB proxy hostname or IP address
```

By default, the **nsrvcbserve_tool** is located `c:\program files\legato\nsr\bin`.

Updating to NetWorker Version 7.6, enables the use of all new VCB features.

Note: The Proxy Host client must be configured with Administrator privileges for the operating system. Specify a user name and password for an account with Administrator rights on the Proxy server in the Remote User and Password fields in the Client resource.

The `nsrvcb_serv_tool` does the following:

- ◆ Identifies the NetWorker clients that are virtual machines configured for the specified VCB Proxy server.
- ◆ Executes the `nsrvcbclnt_tool` on the NetWorker client configured as the VCB Proxy server.
- ◆ Reads the configuration file (`config.js`) and sends the information to the NetWorker server.
- ◆ Updates the Application Information attribute of the NetWorker Client resource acting as the VCB Proxy server with the information from the `config.js` file.
- ◆ Sets the backup command attribute in the NetWorker Client resource of all virtual machines configured for the specified VCB Proxy server to `nsrvcb_save`.
- ◆ Creates the Virtual Center or ESX Hypervisor resource, if not already available in the RAP database of the NetWorker server.

Note: The `nsrvcb_serv_tool` and `nsrvcbclnt_tool`, supported on Windows only are only supported when the NetWorker server and VCB Proxy host are NetWorker Release 7.6 and later.

These sections provide instructions on updating the NetWorker software:

- ◆ [“Updating the NetWorker software on Microsoft Windows” on page 44](#)
- ◆ [“Updating the NetWorker software on UNIX” on page 49](#)

Updating NetWorker clients by using the software distribution feature

Use the software distribution feature to remotely distribute and update the NetWorker software from a centralized NetWorker server to one or more NetWorker clients.

The following NetWorker software packages can be updated on computers that have the NetWorker version 7.3 or later client software already installed:

- ◆ Client
- ◆ Storage node
- ◆ Man pages
- ◆ NMO, NMSQL and NMExch NetWorker Modules

Note: The software distribution feature is not supported on HP Tru64 UNIX, IRIX, Mac OS X, NetWare, Open VMS platforms, and cluster environments.

The software distribution feature can be used to:

- ◆ Manage the software repository.
- ◆ Inventory NetWorker software installed on NetWorker clients.
- ◆ Update NetWorker software packages on existing NetWorker clients.

- ◆ Monitor software distribution inventory and upgrade operations (only available from the Software Administration Wizard).

Software distribution can be performed on the NetWorker client software by using either the Software Administration Wizard or the **nsrpush** command. These sections provide instructions on how to perform these operations.

Software requirements

The following software and administrative privileges are required:

- ◆ NetWorker server release 7.4 or later software is installed on the NetWorker server.
- ◆ NetWorker client package release 7.4 or later software has been installed on the NetWorker client computer involved in the update operation.
- ◆ Administrative privileges on the NetWorker Console server.
- ◆ Administrator privileges on the NetWorker server or Software Administration server.
- ◆ Write permissions for the Administrator and SYSTEM users to the temp folders defined in the SYSTEM user TEMP and TMP environment variables.

Note: Enabling write permissions is only a requirement on a Windows 2008 client. Write permissions must be enabled when performing software updates, add to repository operations, and inventory operations using the Software Administration Wizard or the nsrpush command.

Supported server operating systems

The software distribution feature is supported on the following server operating systems:

- ◆ Windows (x86, x64 and Itanium 64-bit)
- ◆ AIX (32-bit and 64-bit)
- ◆ Linux (x86 and x64)
- ◆ Solaris (64-bit)
- ◆ HP UX (64-bit and Itanium 64-bit)

Note: The software distribution feature is not supported on the Linux Itanium 64-bit, Solaris AMD64, HP Tru64 and SGI IRIX server platforms.

Supported client operating systems

Upgrade operations using the software distribution feature are supported on the following client operating systems:

- ◆ Windows (x86, x64 and Itanium 64-bit)
- ◆ AIX (32-bit and 64-bit)
- ◆ Linux (x86 and x64)
- ◆ Solaris (64-bit)
- ◆ HP-UX (64-bit and Itanium 64-bit)

Note: Upgrading using the software distribution feature is not supported on the Linux Itanium 64-bit, Linux PPC, Solaris AMD64, Solaris x86, HP Tru64, SGI IRIX, Mac OS-X, NetWare, and OpenVMS client platforms. Upgrading of PowerSnap clients and Cluster clients is not supported.

Repository operations using the Software Administration Wizard

To start the Software Administration Wizard:

1. Start the **NetWorker Management Console** software.
2. Launch the **Administration** window and click **Configuration**.
3. From the **Configuration** menu, select **Software Administration Wizard**. The **Software Administration Wizard** launches.
4. Follow the prompts to manage the software repository (add or remove install packages), inventory, update, or monitor NetWorker client update operations.

Manage the software repository

The software repository is a centralized database that contains the NetWorker software packages that can be pushed to NetWorker clients from the NetWorker server. NetWorker software packages can be added to, or removed from the software repository.

When you add products to the repository, the product can be added in one of the following ways:

- ◆ On the same platform as the server (for example, a Windows product to a Windows server, or a UNIX product to a UNIX server)
- ◆ As a cross-platform product (for example, a UNIX product to a Windows server)

Adding the same operating system products to the repository

To add products to the repository that are on the same platform as the server:

1. Prepare the source of the product:
 - If using a software distribution disk, insert the disk. If using UNIX, it may also be necessary to mount the disk.
 - If using a downloaded installation package, unzip the package (gunzip for UNIX). If using UNIX, also untar it.
2. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
3. Select **Add or remove products from my software repository**, then click **Next**.

Note: When products are added to the repository for the first time, you must confirm the default repository location (for example, *<NetWorker Install Dir>/repository*, where *<NetWorker Install Dir>* is the directory location of the installed software), or specify another location for the repository.

Also, when you specify a repository location, ensure that this location has enough available space to hold all of the products that will be in the repository at any time.

4. Navigate through the Wizard to select the platform type and enter the path or directory location on the server of the product source (the source that contains the installation files and the metafile for the product).

Note: The product source could also be a directory containing multiple subdirectories with products and metafiles.

5. Select the products to be added to the repository, then click **Next**.

Adding cross-platform products to the repository

To add cross-platform products to the repository (for example, a UNIX product to a Windows server):

1. Prepare the source of the product:
 - If using a software distribution disk, insert the disk. If using UNIX, it may also be necessary to mount the disk.
 - If using a downloaded installation package:
 - a. Copy the installation package to the NetWorker server (the server where the products will be added to the repository) and to the client where the product will be added from.
 - b. Extract the contents of the package to local directories on both the server and the client (on UNIX, gunzip, then untar to separate subdirectories).
2. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
3. Select **Add or remove products from my software repository**, then click **Next**.

Note: All UNIX or Windows packages can be added to the server's repository from only one UNIX or Windows client with the NetWorker client installed. Different operating system packages need to be added only once to be ready to use for all clients with the corresponding platforms.

4. Navigate through the Wizard to select the platform type and enter the path or directory location on the server of the product source (the source that contains the installation files and the metafiles for the products).

Note: The product source could also be a directory containing multiple subdirectories with products and metafiles.

5. Select the products to be added to the repository and click **Next**. The last page of the Wizard prompts you for the cross-platform client host name and client Media Kit Location (the location of the installation files).
6. If using a CD or DVD as the source, move the software distribution disk to the client machine, and mount the disk if necessary. Once the local machine is scanned for metafiles, the disk must be on the client to add the product to the repository.
7. Specify the client host name and the location of the media kit on the client, then click **Next**.



IMPORTANT

Ensure the cross-platform path entered here is at the same level of the directory structure that you specified for the path of the product source on the server. For example, if the product source containing the metafiles is located at `/tmp/prod/nw76_solaris64` on UNIX, and at `C:\temp\prod\nw76_solaris64` on Windows, enter these paths when prompted.

If the product source is a directory containing multiple products (and their

metafiles) in subdirectories, specify the directory path for the Media Kit Location, not the subdirectory path. For example, if using a product distribution disk mounted to /cdrom0 on UNIX and D:\ on Windows, and the disk contains subdirectories for solaris_64 and win_ia64, type /cdrom0 or D:\ when prompted for the media kit location, then choose one or more products to add, based on the subdirectories found in the media kit location. Then, type the hostname of the client where the product files need to be added, and the pathname (for example, /cdrom0) for the media kit location on the cross-platform client. Do not specify the path name with the subdirectory (for example, D:\solaris_64), or an error will occur.

Inventory clients for currently installed products

Before upgrading NetWorker clients using the Software Distribution feature, it is necessary to inventory the clients to determine their currently installed NetWorker software.

To inventory the clients:

1. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
2. Select **Discover the currently installed software products on my NetWorker clients**, then click **Next**. A list of the clients configured on the NetWorker server appears.
3. Select some or all of the clients (use the **Ctrl** or **Shift** key when selecting multiple clients), then click **Next**.
4. Select **Yes** and click **Next** to monitor the inventory operation, or select **No** to return to the main window of the **Software Administration Wizard**.

Updating client software packages

You can update NetWorker software packages on NetWorker clients for one client, or for many NetWorker clients at the same time.

The Software Administration Wizard provides two ways to perform client updates:

- ◆ By client
- ◆ By product and version

Updating by client

To update the client software packages by client:

1. Ensure that all NetWorker scheduled backups have been stopped before starting any upgrades.
2. Inventory the clients to be updated (refer to the section [“Inventory clients for currently installed products”](#) on page 56).
3. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
4. Select **Upgrade the software on my NetWorker clients** and click **Next**.
5. Select the option **By Client, will upgrade on the clients that you choose** and click **Next**. A list of available clients appears.

6. Select the appropriate clients (use the **Ctrl** or **Shift** key to make multiple selections), then click **Next**. A list of clients and products appears, showing one client/product per line.
7. Select one or more of the client/product combinations to upgrade, and click **Next**. The **Monitor Activity** window appears.

Updating by product and version

To update the client software packages by product and version:

1. Ensure that all NetWorker scheduled backups have been stopped before starting any upgrades.
2. Inventory the clients to be updated (refer to the section [“Inventory clients for currently installed products”](#) on page 56).
3. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
4. Select **Upgrade the software on my NetWorker clients** and click **Next**.
5. Select the option **By Product and Version, will upgrade all clients to a new software version** and click **Next**.
6. Select one or more products to update clients to (use the **Ctrl** or **Shift** key to make multiple selections), then click **Next**. A list of clients and products appears, showing one client/product per line.
7. Select one or more of the client/product combinations to update, then click **Next**. The **Monitor Activity** window appears.

Monitoring the inventory and update activity of the software

You can monitor the progress of the NetWorker client operations and restart those that have failed from the Console server. The **Monitor Activity** window automatically appears after starting update operations from the Software Administration Wizard, and can be shown after initiating an inventory operation. The monitor operation can also be started manually at any time.

To monitor the NetWorker inventory and update activity:

1. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
2. Select the option **Monitor current upgrade and inventory activities**. The **Monitor Activity** window appears.

Repository operations using the nsrpush command

Repository operations can also be performed by using the **nsrpush** command from the command line.

Manage the software repository

To view the products available on provided media kits (for example, on software distribution disks or downloaded installation packages):

- ◆ For UNIX products, run:


```
nsrpush -L -U -m media kit location
```
- ◆ For Windows products, run:


```
nsrpush -L -W -m media kit location
```

Adding same platform products to the repository

To add same platforms products to the repository, run the following commands:

- ◆ On UNIX:

```
nsrpush -a -p Product Name -v version -P platform -U -m media kit location
```

- ◆ On Windows:

```
nsrpush -a -p Product Name -v versions -P platform -W -m media kit location
```

Note: You can only add one product at a time to the repository using this method.

Adding cross-platform products to the repository

To add cross-platform products to the repository:

- ◆ On UNIX, run the following:

```
nsrpush -a -p <Product Name> -v <version> -P <platform> -W -m <media kit location> -c <cross-platform client> -C <cross-platform media kit location>
```

For example, to add a 64-bit Solaris product to a UNIX server with the media kit located in /tmp/prod, and at D:\\temp\\downloads on the cross-platform client named "unixhost", run:

```
nsrpush -a -p NetWorker -v 7.6 -P solaris_64 -U -m /tmp/prod -c "unixhost" -C "D:\\temp\\downloads"
```

- ◆ On Windows, run the following:

```
nsrpush -a -p <Product Name> -v <versions> -P <platform> -U -m <media kit location> -c <cross-platform client> -C <cross-platform media kit location>
```

For example, to add a 64-bit Solaris product to a Windows server with the media kit located at D:\\temp\\downloads on the server, and at /tmp/prod on the cross-platform client named "solaris_host":

```
nsrpush -a -p NetWorker -v 7.6 -P solaris_64 -U -m "D:\\temp\\downloads" -c "solaris_host" -C /tmp/prod
```

More details on the **nsrpush** command are provided on the **nsrpush** man page, or from **nsrpush** usage (running **nsrpush** with no options).

Inventory currently installed products

To inventory clients using the **nsrpush** command:

1. Enter the following command from the command line to view the list of clients to be inventoried:

```
nsrpush -i <client list>
```

where <client list> is a list of clients to be inventoried, separated by spaces.

2. Type the following command from the command line to inventory all configured clients:

```
nsrpush -i -all
```

Updating client software packages

You can update NetWorker software packages on existing NetWorker clients for one client, or for many clients, by using the **nsrpush** command.

To update the client software packages:

1. Ensure that all NetWorker scheduled backups have been stopped before starting any upgrades.
2. Ensure that the clients to be upgraded have been inventoried.
3. Initiate the update by using the **nsrpush** command:

- To update all clients:

```
nsrpush -u -p <Product> -v <version> -all
```

- To update selected clients:

```
nsrpush -u -p <Product> -v <version> <Client list>
```

Note: When using the **nsrpush** command, multiple clients on different platform types can be updated at the same time if the product and version are the same. For example, if you wanted to update two clients to the same version of a product (NetWorker release 7.6), type **nsrpush -u -p NetWorker -v 7.6 clientname1 clientname2**. However, to update clients for different versions, only one product at a time can be updated.

More details on the **nsrpush** command are provided on the **nsrpush** man page, or from **nsrpush** usage (running **nsrpush** with no options).

This chapter includes these sections:

- ◆ [Installing the NetWorker software](#) 62
- ◆ [Uninstalling the software.....](#) 73

Installing the NetWorker software

Complete these tasks to install the NetWorker software:

- ◆ “Task 1: Prepare to install the NetWorker software” on page 62
- ◆ “Task 2: Install the client, storage node, and server software” on page 63
- ◆ “Task 3: Change the NetWorker servers with access to a client” on page 66
- ◆ “Task 4: Start the NetWorker daemons” on page 66
- ◆ “Task 5: Install the Console server” on page 67

Task 1: Prepare to install the NetWorker software

If you plan to install the NetWorker Server, make and retain a copy of the current configuration. The NetWorker installation process modifies several of the configuration files.

1. Run this command for each of the files that get modified:

```
cp <filename> <filename>.old
```

where <filename> is one of these files:

- /etc/inittab
- /etc/rc.nsr
- /etc/rpc
- /etc/syslog.conf

If required, change the default location for NetWorker configuration files. To put these files somewhere other than the default location, which is /nsr, create another nsr directory. For example:

```
mkdir /disk2/nsr
ln -s /disk2/nsr /nsr
```

2. Ensure that you have enough space in the /usr/bin file system for the NetWorker binaries.

If more space is required and you have enough unallocated disk space, the AIX **installp** utility allocates more space to the /usr/bin file system so that the installation completes successfully. [Table 8, “UNIX location and space requirements,” on page 27](#) provides information about the space required for NetWorker binaries.



IMPORTANT

The AIX installp utility does not enable you to change the default installation location of packages. NetWorker binaries are installed to the /usr/bin file system.

Task 2: Install the client, storage node, and server software

This section describes how to install the software for the NetWorker client, storage node, and server.

Note: The NetWorker software is shipped in a 32-bit version. This 32-bit version can be installed on both the 32-bit and the 64-bit version of the AIX operating system. You might need to install the UTF-8 converters available with your operating system.

Client installation

To install the NetWorker software on a client computer:

1. Type this command to begin the NetWorker software installation:
smitty install_latest
2. Type the location of the NetWorker installation software in the **Entry Field**.
3. Select the option, **SOFTWARE** to install.
4. When installing the Java5.sdk package for the first time, two license prompts appear.
 - Type **yes** in response to the following prompt:
Accept new license agreements?
 - Type **no** in response to the following prompt:
Preview new license agreements?
5. Select **Esc+F4=List** to display the list of NetWorker software packages.

The following NetWorker installation packages appear:

- **LGTONw.clnt.rte** (client software package)
 - **LGTONw.node.rte** (storage node software package)
 - **LGTONw.serv.rte** (server software package)
 - **LGTONw.man.rte** (optional man pages)
 - **LGTONw.licm.rte** (optional NetWorker License Manager software package)
 - **LGTONw.fr.rte** (optional French language support package)
 - **LGTONw.ja.rte** (optional Japanese language support package)
 - **LGTONw.ko.rte** (optional Korean language support package)
 - **LGTONw.zh.rte** (optional Simplified Chinese language support package)
6. Select **LGTONw.clnt.rte** to install the NetWorker client software.
 7. If required, install one of the following language support packages:
 - **LGTONw.fr.rte**
 - **LGTONw.ja.rte**
 - **LGTONw.ko.rte**
 - **LGTONw.zh.rte**
 8. If required, select **LGTONw.man.rte** to install the optional NetWorker man pages.
 9. Press **Enter** to begin the installation.

Storage node installation

To install the NetWorker software on a storage node:

1. Type this command to begin the NetWorker software installation:

```
smitty install_latest
```

2. Type the location of the NetWorker installation software in the [Entry Field].
3. Select the option, **SOFTWARE** to install.
4. When installing the Java5.sdk package for the first time, two license prompts appear.

Type **yes** in response to the following prompt:

```
Accept new license agreements?
```

Type **no** in response to the following prompt:

```
Preview new license agreements?
```

5. Select **Esc+F4=List** to display the list of NetWorker software packages.

The following NetWorker installation packages appear:

- **LGTONw.clnt.rte** (client software package)
 - **LGTONw.node.rte** (storage node software package)
 - **LGTONw.serv.rte** (server software package)
 - **LGTONw.man.rte** (optional man pages)
 - **LGTONw.licm.rte** (optional NetWorker License Manager software package)
 - **LGTONw.fr.rte** (optional French language support package)
 - **LGTONw.ja.rte** (optional Japanese language support package)
 - **LGTONw.ko.rte** (optional Korean language support package)
 - **LGTONw.zh.rte** (optional Simplified Chinese language support package)
6. Select these packages to install the NetWorker client software.
 - **LGTONw.clnt.rte**
 - **LGTONw.node.rte**
 7. Select **Install and Update Software**.
 8. If required, install one of the following language support packages:
 - **LGTONw.fr.rte**
 - **LGTONw.ja.rte**
 - **LGTONw.ko.rte**
 - **LGTONw.zh.rte**
 9. If required, select **LGTONw.man.rte** to install the optional NetWorker man pages.
 10. Press **Enter** to begin the installation.

Server installation

To install the NetWorker software on the computer that is designated as the NetWorker server:

1. Type this command to begin the NetWorker software installation:


```
smitty install_latest
```
2. Type the location of the NetWorker installation software in the [Entry Field].
3. Select the option, **SOFTWARE** to install.
4. When installing the Java5.sdk package for the first time, two license prompts appear.

Type **yes** in response to the following prompt:

```
Accept new license agreements?
```

Type **no** in response to the following prompt:

```
Preview new license agreements?
```

5. Select **Esc+F4=List** to display the list of NetWorker software packages.

The following NetWorker installation packages appear:

- **LGTONw.clnt.rte** (client software package)
 - **LGTONw.node.rte** (storage node software package)
 - **LGTONw.serv.rte** (server software package)
 - **LGTONw.man.rte** (optional man pages)
 - **LGTONw.licm.rte** (optional NetWorker License Manager software package)
 - **LGTONw.fr.rte** (optional French language support package)
 - **LGTONw.ja.rte** (optional Japanese language support package)
 - **LGTONw.ko.rte** (optional Korean language support package)
 - **LGTONw.zh.rte** (optional Simplified Chinese language support package)
6. Select these packages to install the NetWorker server software:
 - **LGTONw.clnt.rte**
 - **LGTONw.node.rte**
 - **LGTONw.serv.rte**
 7. If required, install these optional NetWorker software packages:
 - To install the NetWorker License Manager software, select **LGTONw.licm.rte**
 - To install the NetWorker man pages, select **LGTONw.man.rte**
 8. If required, install one of the following for language support:
 - **LGTONw.fr.rte**
 - **LGTONw.ja.rte**
 - **LGTONw.ko.rte**
 - **LGTONw.zh.rte**
 9. Press **Enter** to begin the installation.

Note: You must install the Console server software on one computer in your datazone to manage and monitor the NetWorker server. Only one installation of the Console server is required to manage multiple NetWorker servers and to take full advantage of the Console's consolidated reporting feature.

Task 3: Change the NetWorker servers with access to a client

To limit the servers authorized to access a client, specify a list of trusted NetWorker servers for a client in the `/nsr/res/servers` file. After installing the client, storage node, and server software, you must change the NetWorker servers that are authorized to access a client.

To change which NetWorker servers can access a client:

1. Shut down the NetWorker daemons:

```
nsr_shutdown
```

2. Edit or create the `/nsr/res/servers` file and add the set of NetWorker servers, one per line, that requires access to the client. The first entry in this file becomes the default NetWorker server.

Note: If the `/nsr/res/servers` file is empty or does not exist, any NetWorker server is authorized to:

- Access and back up the client.
- Perform a directed recovery to the client.

3. If necessary, remove the `-s` option from the `nsrexecd` command that is invoked by the boot-time startup file. Running `nsrexecd` with the `-s` option supersedes the `/nsr/res/servers` file:
 - a. Check the NetWorker boot-time startup file to see whether `nsrexecd` is being run with the `-s` option. The boot-time startup file for the AIX platform is `/etc/rc.nsr`.
 - b. If the `-s` option exists in the boot-time startup file, remove all occurrences of the following in the startup file:

```
-s server_name
```

Task 4: Start the NetWorker daemons

The NetWorker daemons must be started after the installation procedure.

1. Start the NetWorker daemons:

```
/etc/rc.nsr
```

2. Type this command at the system prompt:

```
ps -ef | grep nsr
```

[Table 21 on page 66](#) lists the NetWorker daemons.

Table 21 NetWorker daemons

NetWorker packages	NetWorker daemons
NetWorker server	nsrd, nsrexecd, nsrindexd, nsrmmdbd, nsrmmd, nsrjobd, nsrmmgd, nsrlcpd
NetWorker client	nsrexecd
NetWorker storage node	nsrexecd, nsrmmd, nsrlcpd
NetWorker license manager	lgtolmd

Note: The NetWorker `nsrmmd` daemon is present only if one or more devices are enabled. The `nsrmmgd` and `nsrlcpd` daemons are only present on the server if the library is enabled.

Task 5: Install the Console server

You must install the Console server software on one computer in your datazone to manage and monitor the NetWorker server. Only one installation of the Console server is required to manage multiple NetWorker servers and to take full advantage of the Console's consolidated reporting feature.

To manage the NetWorker server, install the Console and the NetWorker client software on one computer in the datazone. The Console server installation relies on the existence of several other components. Ensure that all installation prerequisites are met. The section [“Console” on page 29](#) provides details.

Before installing the Console server software, the following patches are required:

- ◆ On AIX version 5.3 TL6, if using the default user/group “nobody/nobody” or a User ID greater than 65534, install the patch **IZ03262** in order to validate the web server user. The patch can be downloaded from the IBM website at <http://www.ibm.com/support/docview.wss?uid=isg1fixinfo105774>.
- ◆ On AIX version 5.2 for 32-bit, install the patch **IY84915**, available for download from the IBM website at <http://www.ibm.com/support/docview.wss?uid=isg1fixinfo103968>.
- ◆ On AIX version 5.3 for 32-bit, install the patch **IY85958**, available for download from the IBM website at <http://www-01.ibm.com/support/docview.wss?uid=isg1IY85958>.

To install software on the computer that is designated as the Console server:

1. Ensure that JRE version 1.5.0_6 or higher is installed. This enables the command line reporting feature. If the required JRE version is not installed, go to the Java website to download and install the version.
2. If not already installed, install the NetWorker client software. [“Client installation” on page 63](#) provides instructions.
3. To begin the NetWorker software installation, type:


```
smitty install_latest
```
4. Type the following in the **Entry Field**:


```
lgtonmc.rte
```
5. When installing the Java5.sdk package for the first time, two license prompts appear.

Type **yes** in response to the following prompt:

```
Accept new license agreements?
```

Type **no** in response to the following prompt:

```
Preview new license agreements?
```
6. If required, install one of the following language support packages:
 - **LGTONw.fr.rte**
 - **LGTONw.ja.rte**
 - **LGTONw.ko.rte**
 - **LGTONw.zh.rte**
7. Press **Enter** to begin the installation. When the installation is complete, exit the **SMIT** program.

8. Type this command:

```
/opt/lgtonmc/bin/nmc_config.sh
```

The lgtonmc package is installed in the /opt/lgtonmc directory.

9. Specify a User/Group with limited privileges that NMC will use to run the web server. This must be a non-root user. For example, AIX operating systems have a default user/group [nobody/nobody] that can be used.

Note: If the default group [nobody/nobody], a user/group with limited privileges does not exist, follow the Console server requirements described in [“Console” on page 29](#).

10. For the web server port number, use the default port number (**9000**) or use a custom port number. Valid port numbers are between **1024** and **49151**.
11. For the Console server, use the default port number (**9001**) or use a custom port number. Valid port numbers are between **1024** and **49151**.

Note: Do *not* use port numbers that are already in use. Port **2638** is reserved by the Console server as it uses Tabular Data Stream (TDS) protocol to communicate with the database.

12. Specify the directory to use for the lgtonmc database (for example, /export/home/lgto_gstdb).
13. Specify the location of the NetWorker binaries (for example, /usr/sbin).
14. Start the Console daemon:

```
/etc/rc.gst start
```

The NetWorker Management Console daemon starts these processes:

- **gstd**
 - **dbsrv9**
 - **httpd** (2 or more processes)
15. If the Console server and the NetWorker server are installed on separate hosts, you must add the Console administrator to the administrator lists of the monitored NetWorker server. This enables the Console administrator to administer and monitor the target NetWorker server.

On the NetWorker server:

- a. Specify the process owner of the Console daemon process (**gstd**) depending on which host contains the Console server:

– If on a Microsoft Windows host, type:

```
nsraddadmin -u "user=SYSTEM, host=console_host"
```

– If on a AIX, HP-UX, Linux or Solaris only host, type:

```
nsraddadmin -u "user=root, host=console_host"
```

- b. Specify the Console administrator user:

```
nsraddadmin -u "user=administrator, host=console_host"
```

where *console_host* is the Console server hostname.

Note: The **gstd** process must be stopped when applying changes.



IMPORTANT

The NetWorker software must be able to resolve the loopback address, `::1`, to localhost. This entry must exist in the system's respective `/etc/hosts` file for the localhost as follows:

`::1 localhost loopback`

The `::1` entry must remain in the `/etc/hosts` file, whether operating in an IPv4 or IPv6 configuration.

Launching Java Web Start if NMC GUI fails to start

When the NMC installation is complete and the NMC client GUI starts, a message indicates that Java is loading before the NMC console appears. If the NMC console does not open, Java Web Start may have failed to load, due to a corrupted Java Web Start cache or an incompatible version of Java Web Start. To resolve the issue, it is recommend to clean up the `$HOME/.java` cache location.

Perform the following commands to load Java Web Start:

1. Run `setenv` or export HOME if it is not set.

```
cd $HOME
```

2. Move or remove the `$HOME/.java` directory

```
mv .java .java_orig
```

3. Navigate to JRE HOME and launch `javaws`. Reconfigure the Java Web Start preference if necessary. A new `$HOME/.java` will be created.

```
javaws [-viewer]
```

Note: [-viewer] is for JRE version 1.6

4. If [Step 3](#) is successful, restart the web browser to launch the NMC client.

Task 6: Optional, install the HomeBase Agent

NetWorker release 7.6 ships with EMC HomeBase Agent version 6.2.x to enable Bare Metal Recovery (BMR) for server system data. Although HomeBase Agent version 6.1.x is still supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

When the installation completes, the user is notified that the HomeBase Server version 6.2.x is required.



IMPORTANT

The HomeBase Agent version 6.2.x client requires that the HomeBase Server version 6.2.x also be installed in order for BMR to function in the NetWorker 7.6 environment. The *HomeBase Agent Release 6.2 Installation and Configuration Guide* provides complete details on the HomeBase Server version 6.2.x.

The HomeBase Agent collects configuration information about the operating system platform of the host on which it is installed. This information is called a profile.

A profile can be used to:

- ◆ Monitor configuration changes
- ◆ Migrate configuration changes
- ◆ Recover the operating system's configuration from an EMC HomeBase Server

The profile data includes hardware configurations, operating system levels, system tuning, network configuration and connections, security, and storage layouts. This information is captured with a NetWorker save set backup and is sent to a secure HomeBase Server for storage and analysis. The HomeBase Server is also required to perform a BMR server recovery or migration.

Note: On Solaris, an additional screen warns that a particular level of operating system patch must be installed prior to installing the agent. The server may already have these patches installed. The installer does not verify that the patches are installed. Failure to install the identified patches can result in the installation failing or the execution of the agent to fail.

The following documents provide information about the HomeBase Server features:

- ◆ *EMC HomeBase Server Installation and Administration Guide*
- ◆ *EMC HomeBase Server User Guide*

HomeBase Agent space requirements

[Table 22 on page 70](#) specifies the location and space requirements for the HomeBase Agent.

Table 22 HomeBase Agent location and minimum system requirements

NetWorker files	Location	Space		Processor
		x86	x64	
EMC HomeBase Agent binary	/opt/homebase-agent/	512 MB	512 MB	1 GHz
Temporary space required for EMC HomeBase Agent	/tmp	512 MB	512 MB	1 GHz

Installing the HomeBase Agent software

Although HomeBase Agent version 6.1.3.x is supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

On all Solaris platforms, ensure that the NetWorker HomeBase Agent software is only installed in the default installation directory. Do not install the software in a directory other than */opt/homebase-agent*. The NetWorker BMR profiling feature will not work if the HomeBase Agent software is installed in a location other than the default installation directory, */opt/homebase-agent*.

To install the HomeBase Agent software:

1. From the HomeBase Agent Installation directory (*/opt/homebase-agent*), run the following command:


```
setup-homebase.sh
```
2. If necessary, click **Choose** to select a different location.
3. Click **Next** to proceed. A summary of the installation location and disk space requirements is displayed.
4. Click **Install** to proceed. The installation process begins. The **Select Intended Use** window appears. Each option results in a different level of agent functionality.

5. Choose the correct option for this server. If the option selected on this page is not correct, the software must be reinstalled to enable the correct set of functionality.
 - a. Select **Generate HomeBase Profiles** to:
 - Enable the agent to produce profiles that enable a HomeBase Server to report on the assets of that server
 - Generate notifications and alerts based on configuration changes
 - Generate business reports
 - Recover or migrate this server configuration to another machine
 These capabilities are dependant on the license purchased for this agent.
 - b. Select **Restore a Recovery Profile** to enable the HomeBase Agent to recover a full profile and restore a configuration onto a new item of hardware or a new virtual server.
6. Click **Next** to proceed. The **Specify Server URL** window appears.
7. Type the address of the server or proxy server to which the agent will automatically transmit generated profiles. Once a server is defined, the Agent can be configured to execute on a scheduled basis.
8. Click **Next**. The **Evaluation License** page displays. Select the **Request Evaluation License** checkbox to license the Agent for a 30-day period. For a permanent license, do not select this checkbox.
9. Click **Next**. The **Configure Batch** window appears. Type the license batch code received with the software or from the HomeBase administrator. The install program validates the license with the previously specified HomeBase Server.
10. Click **Next**. The **Setup Schedule** window appears. Select the day and time for this agent to generate a profile.
11. Click **Next**. The **Announce Agent** window appears. The install program announces the agent to the HomeBase Server provided.
12. Click **Next**. The **Install Complete** window confirms that the installation has completed successfully. The HomeBase Agent is now installed.
13. Click **Done** to close the installation program.

Note: The HomeBase Agent is not supported in a Cluster environment.

Enabling BMR server support

Connection with a HomeBase Server is enabled during the set up of the NetWorker server. This connection enables the delivery of profile data from the NetWorker client to the HomeBase Server.

To enable BMR support:

1. From the **Administration** window, click **Configuration**.
2. Select the NetWorker server name.
3. From the **File** menu, select **Properties**.
4. In the **Properties** dialog box, click the **Configuration** tab.
5. Type the IP address or hostname for the HomeBase Server in the BMR server field.
6. Click **OK**.

Note: The HomeBase Server SSL protocol must be configured and activated on the HomeBase Server. The *EMC HomeBase Server Installation and Administration Guide* provides information about enabling the SSL protocol.

Licensing the HomeBase Server and Agent

This section provides details for licensing the HomeBase Server, and HomeBase Agent software.

The *EMC HomeBase Server Installation and Administration Guide*, and the *The EMC HomeBase Agent Installation and Configuration Guide* provides complete details on licensing the HomeBase software.

HomeBase Server

The HomeBase 6.2.x server software comes with a 30 day evaluation enabler for the HomeBase Server with 20 HomeBase Agent licences.

Note: Be sure to permanently enable the HomeBase Server and Agent licenses, as they expire after 30 days with no grace period.

During the installation of the HomeBase Server, a license request file is automatically generated in the keys directory. The license request is then forwarded to *licensing@emc.com* with all required purchase order details. Copies of the following are then sent:

- ◆ licence.zip file (the HomeBase Server licence)
- ◆ homebase.bks file (a set of encryption keys used for the recovery and replication of profiles between HomeBase Servers)
- ◆ Agent licence batch files (there can be multiple agent licence batch files) that are associated with the HomeBase Server licence.

The default temporary enablers can be overridden by applying a permanent enabler and Agent licence batch to the HomeBase Server when the HomeBase Server Console is first accessed.

HomeBase Agent

When a HomeBase Agent is installed with the NetWorker software, the Agent license is provided automatically during the first profile run from the NetWorker software as it must be able to contact the HomeBase Server to forward profiles for backups. The **-L** setting in the NetWorker client BMR configuration setting is used to do this.

The *EMC HomeBase Server Installation and Administration Guide* provides details on how to license the HomeBase Agent for a Remote HomeBase Server.

Using the NetWorker client port under a firewall server

If the NetWorker client and HomeBase Agent are on the same system outside of the firewall with the HomeBase Server inside the firewall, then port 18821 is required for communication between the HomeBase Agent and the HomeBase Server.

Uninstalling the software

This section provides instructions for the following:

- ◆ “Uninstalling the NetWorker software” on page 73
- ◆ “Uninstalling the HomeBase Agent” on page 74

Uninstalling the NetWorker software

Use SMIT to uninstall individual NetWorker software packages or all of the NetWorker packages simultaneously.

To uninstall the NetWorker software:

1. Log in as root on the computer where the software is being removed.
2. Type this command to shut down the NetWorker daemons:
nsr_shutdown
3. Type this command to remove the NetWorker software:
smitty remove
4. Select **Esc+F4=List** to display a list of NetWorker software packages.
5. Select the NetWorker software packages to remove.

[Table 23 on page 73](#) provides the list of commands.

Table 23 Select NetWorker files to remove

To remove this NetWorker package	Select these files for removal
Client software	LGTONw.clnr.te
Storage Node software	LGTONw.node.te
Server software	LGTONw.serv.te
Console	LGTONw.nmc.te
Man pages	LGTONw.man.te
NetWorker License Manager	LGTONw.licm.te
French language support	LGTONw.fr.te
Japanese language support	LGTONw.ja.te
Korean language support	LGTONw.ko.te
Simplified Chinese language support	LGTONw.zh.te

6. Press **Enter** to uninstall the NetWorker software.
7. Exit the **SMIT** program.
8. If you no longer plan to update or reinstall the NetWorker software:
 - a. Remove the /nsr directory.

- b. Delete the NMC directory. By default, NMC is installed at /opt/lgtonmc.
 - c. Delete the directory containing the NMC database files **lgto_gst.db**, **lgto_gst.log** and **gstd_db.conf**.
9. If you no longer require the Java Runtime Environment, uninstall the JRE.

Uninstalling the HomeBase Agent

Uninstalling the NetWorker client automatically uninstalls the HomeBase Agent.

Note: Uninstalling the HomeBase Agent manually is possible, but not recommended as BMR functionality is removed from the NetWorker software.

The *EMC HomeBase Agent Installation and Configuration Guide* provides complete details on uninstalling the HomeBase Agent.

This chapter includes these sections:

- ◆ Installing the NetWorker software 76
- ◆ Uninstalling the NetWorker software 84

Installing the NetWorker software

Complete these tasks to install the NetWorker software:

- ◆ “Task 1: Prepare to install the NetWorker software” on page 76
- ◆ “Task 2: Install the client, storage node, and server software” on page 77
- ◆ “Task 3: Continue with the installation” on page 78
- ◆ “Task 4: Install patches for HP-UX RISC, HP-UX ia64, HP-UX 11i v1 and HP-UX 11.23” on page 79
- ◆ “Task 5: Change the NetWorker servers that can access the client” on page 80
- ◆ “Task 6: Start the NetWorker daemons” on page 81
- ◆ “Task 7: Install NetWorker Management Console software” on page 81

Task 1: Prepare to install the NetWorker software

Install the NetWorker software on HP-UX 11.x, or HP-UX 11i platforms on IPF by using the **swinstall** utility. The **swinstall** utility uses the terminal format or the **System Administration Manager (SAM)** utility. The terminal format **swinstall** screens contain the same types of information as the **SAM** utility. The same choices are made with both formats.

Note: There are different versions of the NetWorker software binaries for different versions of HP-UX:

- For HP-UX 11.x, install the binaries that are located in the `hpux11_64` directory.
- For HP-UX 11i on IPF, install the binaries that are located in the `hpux11_ia64` directory.

To install the NetWorker software:

1. Log in as root on the computer that the NetWorker software is to be installed.
2. Ensure that the latest HP-UX patches have been installed.
3. Use the **SAM** utility to set the **nfile** parameter on HP-UX 11.x, 11i v1 and 11iv2, according to the following formula:

```
new_NFILE setting = current_NFILE setting + (y *55)
```

where *y* is the number of concurrent saves.

For example:

Minimum: 14

Maximum: Memory limited

Default: (16*(Nproc+16+MaxUsers)/10)+32+2*(Npty+Nstrpty)

Note: If a file table overflow error is reported, the HP-UX operating system has reached the configured limit for the **nfile** kernel parameter.

Note: Setting the **nfile** parameter is not applicable to HP-UX 11i v3.

For details on the **nfile** parameter, refer to the **nfile** man page.

4. To start the installation, type the following command:

```
swinstall &
```

Note: If you are using the character interface, omit the & symbol.

5. Check the **Source Host Name** attribute to ensure that the correct hostname is selected. The correct hostname is the computer where the NetWorker software is to be installed.
6. Select the installation media:
 - If installing from a CD-ROM, select local CD-ROM.
 - If installing from a downloaded package, select local directory.
7. In the **Source Depot Path** attribute, type the appropriate path and package name.
 - To install the NetWorker software from a CD-ROM, complete this step as follows:
 - If on a HP-UX 11.x system, install the binaries from the hpux11_64 directory. For example:
``absolute path`/Networker.pkg`
 - If on a HP-UX 11i on IPF system, install the binaries from the hpux11_ia64 directory. For example:
``absolute path`/Networker.pkg`

The *absolute path* represents the complete path of the CD-ROM and appropriate subdirectory.
 - To install the NetWorker software from a local directory, complete this step as follows:
 - If on a HP-UX 11.x system, install the binaries from the download directory. For example:
`/var/spool/sw/nw76_hpux11_64.pkg`
 - If on a HP-UX 11i on IPF system, install the binaries from the download directory. For example:
`/var/spool/sw/nw76_hpux11_ia64.pkg`
8. Click **OK**.
9. In the **Software Selection** window, double-click software.

Task 2: Install the client, storage node, and server software

Review these sections:

- ◆ [“Installing all the NetWorker software and all the language packages” on page 77](#)
- ◆ [“Installing only the NetWorker software, not the language packages” on page 78](#)
- ◆ [“Installing only the NetWorker language packages, not the software packages” on page 78](#)

Installing all the NetWorker software and all the language packages

To install all the NetWorker software (client, storage node, and server) including all the language packages (French, Japanese, Korean, Simplified Chinese):

1. In the **Software Selection** window, select **NetWorker 7.6**.
2. From the **Actions** menu, select **Install**.

Installing only the NetWorker software, not the language packages

To install only the NetWorker software (client, storage node, and server):

1. In the **Software Selection** window, select **NetWorker 7.6** and press **Enter**.
2. Mark the appropriate NetWorker software packages in [Table 24 on page 78](#) for installation.
3. From the **Actions** menu, select **Install**.

Table 24 Selecting NetWorker files for installation

To install this NetWorker package	Select these files	Select these optional packages
Client software	NWr-Client	NWr-Man
Storage node software	NWr-Client NWr-Node	NWr-Man
Server software	NWr-Client NWr-Node NWr-Server	NWr-Man NWr-Lic

Installing only the NetWorker language packages, not the software packages

To install only the language support packages:

1. In the **Software Selection** window, mark **NetWorker 7.6** and press **Enter**.
2. Mark the appropriate NetWorker language support package in [Table 25 on page 78](#) for installation. For example, NWr-JA.
3. From the **Actions** menu, select **Install**

Table 25 Installing all the language packages

To install this NetWorker package	Select these optional packages
French language support	NWr-FR
Japanese language support	NWr-JA
Korean language support	NWr-KO
Simplified Chinese language support	NWr-ZH

Task 3: Continue with the installation

To continue with the installation:

1. To run an install analysis, select **Install** from the **Actions** menu.

To verify the status of the install analysis:

 - a. Click **Logfile** to check the log file to verify that **swinstall** did not find errors.
 - b. If there were errors, correct the problems before proceeding with the installation.
2. In the **Install Analysis** window, click **OK** to proceed with the installation.
3. In the **Install** window, click **Logfile** to check the log file for error or warning messages generated during installation.
4. Click **Done**, and then exit **swinstall**.

5. Type this command to start the daemons:

```
/sbin/init.d/networker start
```



IMPORTANT

If the NetWorker services do not start, you may be required to install a patch from HP. Information on which HP platforms are affected and instructions for downloading the required patches are provided in [“Task 4: Install patches for HP-UX RISC, HP-UX ia64, HP-UX 11i v1 and HP-UX 11.23” on page 79](#)

6. Ensure that the PATH environment variable for the user root is updated to contain the directory where the NetWorker binaries reside (/opt/networker/bin).

[Table 8, “UNIX location and space requirements,” on page 27](#) provides information about this directory. This update takes effect the next time you log in.

Note: You might need to install the UTF-8 converters available with the operating system.

After installation, the list of trusted servers that can access the client’s data can be changed by editing the /nsr/res/servers file. [“Task 5: Change the NetWorker servers that can access the client” on page 80](#) provides instructions on changing the list of trusted servers.

Task 4: Install patches for HP-UX RISC, HP-UX ia64, HP-UX 11i v1 and HP-UX 11.23

Note: The following task applies only if performing the NetWorker installation on an HP-UX RISC, HP-UX ia64, HP-UX 11i v1 or HP-UX 11.23 platform.

QPK1123 and PHSS_37492 required to run NetWorker on HP-UX RISC

The NetWorker services cannot be started on an HP-UX RISC system until the following patches are downloaded from the HP website:

- ◆ QPK1123(B.11.23.0712.070a) 1185010 Quality Pack Depot
- ◆ PHSS_37492

Go to <http://itrc.hp.com> and click on **patch database** to obtain these patches. You must provide an appropriate user name and login to download the patches.

PHSS_37500 patch required to run NetWorker on HP-UX 11.23

After installing NetWorker on HP-UX 11.23, the patch **PHSS_37500** must be obtained from the HP website and installed before starting the NetWorker services.

To download the patch:

1. Go to the HP website at <http://itrc.hp.com> and click on **Patch database** to download **PHSS_37500**.
2. At the prompt, provide an appropriate User ID and login password to download the patch
3. Follow the instructions provided to download the patch

You must provide an appropriate user name and login to download the patch.

IPv6NCF11i patch required to run NetWorker services on HP-UX 11i v1

The **IPv6NCF11i** package is included in HP-UX 11.23 and later. If you are running a HP-UX 11i v1, install the IPv6NCF11i package, available from the HP website, using the following steps:

1. Navigate to the HP website and search for the **IPv6NCF11i** packages.
2. Install the first depot, J4256AA_A.02.01.01_HP-UX_B.11.11_32_64.depot
3. Run the following command:

```
swinstall -x autoreboot=true -s
$PWD/J4256AA_A.02.01.01_HP-UX_B.11.11_32_64.depot \*
```

4. Install the second depot, IPv6NCF11i_B.11.11.0705_HP-UX_B.11.11_32+64.depot
5. Run the following command:

```
swinstall -x autoreboot=true -x enforce_dependencies=false -s
$PWD/IPv6NCF11i_B.11.11.0705_HP-UX_B.11.11_32+64.depot
```

Note: If the NetWorker services start on an HP-UX version previous to 11.23 without installing these packages, the **nsrexecd** daemon may not start, resulting in a core dump and returning the error "Unable to find library libip6.sl" on the terminal console.

Task 5: Change the NetWorker servers that can access the client

To limit the servers authorized to access a client, specify a list of trusted NetWorker servers for a client in the `/nsr/res/servers` file. After installing the client, storage node, and server software, use the following procedure to change the NetWorker servers that are authorized to access a client.

To change which NetWorker servers can access a client:

1. Log in as root on the NetWorker computer.
2. Type this command to shut down the NetWorker daemons:


```
nsr_shutdown
```
3. Edit or create the `/nsr/res/servers` file and add the set of NetWorker servers, one per line, that require access to the client. The first entry in this file becomes the default NetWorker server.

Note: If the `/nsr/res/servers` file is empty or does not exist, any NetWorker server is authorized to:

- Access and back up the client.
- Perform a directed recovery to the client.

4. If necessary, remove the **-s** option from the **nsrexecd** command that is invoked by the boot-time startup file. The running of **nsrexecd** with the **-s** option supersedes the `/nsr/res/servers` file:
 - a. Check the NetWorker boot-time startup file to see whether **nsrexecd** is being run with the **-s** option. The boot-time startup file is `/sbin/init.d/networker`.
 - b. If the **-s** option exists in the boot-time startup file, remove all occurrences of the following in the startup file:

```
-s <server_name>
```

Task 6: Start the NetWorker daemons

The NetWorker daemons must be started after the installation procedure.

1. Start the NetWorker daemons:

```
/sbin/init.d/networker start
```

2. Type this command to verify that the NetWorker daemons shown in [Table 26 on page 81](#) are running:

```
ps -ef | grep -E "nsr|lgto"
```

Table 26 NetWorker daemons

NetWorker packages	NetWorker daemons
NetWorker server	nsrd, nsrexecd, nsrindexd, nsrmmdbd, nsrmmmd, nsrjobd, nsrmmgd, nsrlcpd
NetWorker client	nsrexecd
NetWorker storage node	nsrexecd, nsrmmmd, nsrlcpd
NetWorker license manager	lgtolmd

Note: The NetWorker **nsrmmmd** daemon is only present if one or more devices are enabled. The **nsrmmgd** and **nsrlcpd** daemons are only present on the server if the library is enabled.

3. If the daemons are not running, use the NetWorker startup script to start the NetWorker daemons:

```
/sbin/init.d/networker start
```

Task 7: Install NetWorker Management Console software

To manage the NetWorker server, install the Console and NetWorker client software on one computer in the datazone. The Console server installation relies on the existence of several other components. Ensure that all installation prerequisites are met. The section [“Console” on page 29](#) provides details.

Note: Only one installation of the Console server is required to manage multiple NetWorker servers and to take full advantage of the Console’s consolidated reporting feature.

To install software on the computer that is designated as the Console server:

1. Ensure that the following JRE.depot file for JRE version 1.5.0_6 and later or 1.6.0_1 and later software has been installed (this enables the command line reporting feature):

```
jre15_15006_pa.depot
```

If the required Java version is not installed, go to the Java website to download and install the recommended JRE package or to download the latest 1.6.x version.

Note: JRE version 6.0 for HP does not include Java Web Start. It is recommended to use JRE version 6.0.01, which includes Java Web Start, or a JRE 5.0 version WebStart with JRE version 6.0. JRE version 5.0 is also still supported with the NMC client.

2. Install these patches/bundles that are available from HP:
 - PHSS_38154 for HP-UX Ili v1
 - PHSS_38134 for HP-UX 11i v2
 - PHSS_38135 for HP-UX 11i v3
 - GOLDBASE11i for HP-UX 11i vi (GOLDBASE11i is a bundle contained in GOLDQPK11i, available on the HP Support Plus CDs)

These patches are required to run the Console server.

Note: Check the HP website for the latest available patches.

3. Use the **sam** utility to configure the parameters for the maximum number of shared memory segments on the system (**shmmni**) and the maximum number of shared memory segments per process (**shmseg**). The default values may not be enough for the NetWorker Management Console server to run.

- Set **shmmni** to a value of at least **400**.

Note: This value may need to be even higher if there are other processes running on the machine that uses shared memory.

- Set **shmseg** to a value of at least **120**.

4. If not already installed, install the NetWorker client software. [“Task 2: Install the client, storage node, and server software” on page 77](#) provides detailed instructions.

Note: The Console server software is dependent upon the installation of the NetWorker client software.

5. Locate the NMC.pkg file and select it as the source for the installation.
6. Select the **NWr-NMC** file for install.
7. If required, select one of the following language support packages for install:
 - **NWr-FR** (French language support)
 - **NWr-JA** (Japanese language support)
 - **NWr-KO** (Korean language support)
 - **NWr-ZH** (Simplified Chinese language support)
8. From the **Actions** window, select **Install** to run an install analysis:
 - a. Click **Logfile** to check the log file to verify that **swinstall** did not find errors.
 - b. Correct any errors before proceeding with the installation.
9. Click **OK** in the **Install Analysis** window to proceed with the installation, and then click **Yes** in the **Confirmation** dialog box.
10. In the **Install** windows, click **Logfile** to check the log file for error or warning messages generated during installation.
11. Click **Done**, and then exit **swinstall**.
12. Run this script from the command line:

```
/opt/lgtonmc/bin/nmc_config.sh
```

The lgtonmc package is installed in the /opt/lgtonmc directory.

13. Specify a User/Group with limited privileges that NMC will use to run the web server. This must be a non-root user. For example, if enabled the default user/group [nobody/nobody] can be used.

Note: If the default user/group [nobody/nobody] is not created as a user/group with limited privileges, follow the Console server requirements specified in the section [“Console” on page 29](#)

14. For the web server port number, use the default port number (9000) or use a custom port number. Valid port numbers are between 1024 and 49151.
15. For the Console server, use the default port number (9001) or use a custom port number. Valid port numbers are between 1024 and 49151.

Note: Do not use port numbers that are already in use. Port 2638 is reserved by the Console server. The Console server uses the Tabular Data Stream (TDS) protocol to communicate with the database. Port 9002 is the preferred port for EMC Backup Advisor product.

16. Specify the directory to use for the lgtonmc database (for example, /export/home/lgto_gstadb).
17. Specify the location of the NetWorker binaries (for example, /usr/sbin).
18. Run the **NetWorker Management Console** server daemon:

```
/sbin/init.d/gst start
```

The NetWorker Management Console daemon starts these processes:

- **gstd**
- **dbsrv9**
- **httpd** (2 or more processes)

19. If the Console server and the NetWorker server are installed on separate hosts, you must add the Console administrator to the administrator lists of the monitored NetWorker server. This enables the Console administrator to administer and monitor the target NetWorker server.

On the NetWorker server:

- a. Specify the process owner of the Console daemon process (**gstd**) depending on which host contains the Console server:

- If on a Microsoft Windows host, type:

```
nsraddadmin -u "user=SYSTEM, host=console_host"
```

- If on a AIX, HP-UX, Linux or Solaris only host, type:

```
nsraddadmin -u "user=root, host=console_host"
```

- b. Specify the Console administrator user:

```
nsraddadmin -u "user=administrator, host=console_host"
```

where *console_host* is the Console server hostname.

Note: Ensure the **gstd** process has been stopped when applying these changes.



IMPORTANT

The NetWorker software must be able to resolve the loopback address, `::1`, to `localhost`. This entry must exist in the system's respective `/etc/hosts` file as follows:
`::1 localhost loopback`
 The `::1` entry must remain in the `/etc/hosts` file, whether operating in an IPv4 or IPv6 configuration.

Launching Java Web Start if NMC GUI fails to start

When the NMC installation is complete and the NMC client GUI starts, a message indicates that Java is loading before the NMC console appears. If the NMC console does not open, Java Web Start may have failed to load, due to a corrupted Java Web Start cache or an incompatible version of Java Web Start. To resolve the issue, it is recommended to clean up the `$HOME/.java` cache location.

Perform the following commands to load Java Web Start:

1. Run `setenv` or export `HOME` if not set.

```
cd $HOME
```

2. Move or remove the `$HOME/.java` directory

```
mv .java .java_orig
```

3. Navigate to JRE HOME and launch `javaws`. Reconfigure the Java Web Start preference if necessary. A new `$HOME/.java` will be created.

```
javaws [-viewer]
```

Note: `[-viewer]` is for JRE version 1.6

4. If [Step 3](#) is successful, restart the web browser to launch the NMC GUI client.

Uninstalling the NetWorker software

Use the `swremove` utility command to uninstall individual NetWorker packages or all of the NetWorker packages simultaneously.

Note: Like `swinstall`, the `swremove` program can be run in either terminal mode or from the graphical user interface.

To uninstall the NetWorker software:

1. Log in as root on the NetWorker computer.
2. Type this command to shut down the NetWorker daemons:

```
nsr_shutdown
```

3. Type this command at the shell prompt:

```
swremove &
```

Note: If you are using the character interface, do not include the `&` symbol.

4. Select the NetWorker software to be removed in the **Software Selection** window.
5. To run an analysis of the Remove operation, select **Remove** from the **Actions** window.

6. Click **Logfile** to check for any error or warning messages. Fix any problems before continuing with the operation.
7. Click **OK** in the **Remove Analysis** window to proceed with the remove operation.
8. To exit from the **swremove** utility, click **Done** in the **Remove** window, and then select **Exit** from the **File** menu in the **Software Selection** window.
9. To ensure that the NetWorker software has been completely uninstalled after the remove operation, verify that all the files have been uninstalled from these directories:
 - /opt/networker
 - /opt/lgtonmc
10. If you no longer to plan to update or reinstall the NetWorker software:
 - a. Remove the /nsr directory.
 - b. Delete the NMC directory. By default, NMC is installed at /opt/lgtonmc.
 - c. Delete the directory containing the NMC database files **lgto_gst.db**, **lgto_gst.log**, and **gstd_db.conf**.
11. If you no longer require the Java Runtime Environment, uninstall the JRE.

This chapter includes these sections:

- ◆ [Installing the NetWorker software](#) 88
- ◆ [Uninstalling the software.....](#) 89

Installing the NetWorker software

Follow these tasks to install the NetWorker software:\

- ◆ [“Task 1: Install the NetWorker client software” on page 88](#)
- ◆ [“Task 2: Change the NetWorker servers with access to a client” on page 89](#)

Task 1: Install the NetWorker client software

The NetWorker client software and License Manager can be installed by using the Software Manager.

If the /nsr directory must be on another disk, create /nsr as a symbolic link. For example, type this command to install the software on /disk2:

```
ln -s /disk2/nsr /nsr
```

Note: If installing from a downloaded .tar package, **tardist** will delete the original .tar package after installation. A copy should be made prior to installation if you want to keep it. You might need to install the UTF-8 converters available with your operating system.

To install the software by using the Software Manager:

1. Access the **Software Manager** window:

```
tardist /tmp/sgi.tardist
```

The **Software Manager** window opens.

2. Select **Customize** to install this software:

- NetWorker client
- NetWorker License Manager (optional)
- Man pages (optional)

3. Double-click the NetWorker product to display these components:

```
NetWorker Client Software for IRIX
NetWorker License Manager for IRIX
NetWorker Man Pages for IRIX
```

The client and man pages are default options.

4. Select the components to install.
5. Click **Start** and then click **OK** when the installation process is complete.
6. Exit the **Software Manager** window.
7. To limit the servers that are authorized to access this client, see [“Task 2: Change the NetWorker servers with access to a client” on page 89](#).

Note: Ensure that the PATH environment variable for the user root is updated to contain the directory where the NetWorker binaries reside (/usr/etc).

8. To start the daemons, type:

```
/etc/init.d/networker start
```

9. To verify that the **nsrexecd** daemon is running on the NetWorkerclient, type:

```
ps -ef | grep nsr
```

Task 2: Change the NetWorker servers with access to a client

To limit the servers authorized to access a client, specify a list of trusted NetWorker servers for a client in the `/nsr/res/servers` file. After installing the client, storage node, and server software, this procedure can be used to change the NetWorker servers that are authorized to access a client.

To change which NetWorker servers can access a client:

1. Shut down the NetWorker daemons by typing the following command:

```
nsr_shutdown
```

2. Edit or create the `/nsr/res/servers` file and add the set of NetWorker servers, one per line, that require access to the client. The first entry in this file becomes the default NetWorker server.

Note: If the `/nsr/res/servers` file is empty or does not exist, any NetWorker server is authorized to:

- Access and back up the client.
- Perform a directed recovery to the client.

3. If necessary, remove the `-s` option from the `nsrexecd` command that is invoked by the boot-time startup file.

Running `nsrexecd` with the `-s` option supersedes the `/nsr/res/servers` file:

- a. Check the NetWorker boot-time startup file to see whether `nsrexecd` is being run with the `-s` option. This file is located in the `/etc/init.d/networker` directory.
- b. If the `-s` option exists in the boot-time startup file, remove all occurrences of the following in the startup file:

```
-s server_name
```

Uninstalling the software

To uninstall the software by using the Software Manager:

1. In the **NetWorker Administrator** program, type the following command to shut down the daemons:

```
/usr/etc/nsr_shutdown
```

2. To open the **Software Manager** window, type:

```
swmgr
```

3. Select the **Manage Installed Software** option.

The window displays a list of the installed components.

4. Select the components to remove.
5. Click **Start** to begin the uninstall.
6. Click **OK** when the uninstall is complete.
7. If you no longer to plan to update or reinstall the NetWorker software, remove the `/nsr` directory.

This chapter includes these sections:

- ◆ [Installing the NetWorker software](#) 92
- ◆ [Uninstalling the software](#)..... 103

Installing the NetWorker software

Follow these tasks to install the NetWorker software:

- ◆ “Task 1: Review before you install” on page 92
- ◆ “Task 2: Install the NetWorker software” on page 93
- ◆ “Task 3: Change the NetWorker servers with access to a client” on page 99
- ◆ “Task 4: Start the NetWorker daemons” on page 99

More information on installation requirements for the client, server and storage node is provided in [Chapter 2, “Software Requirements”](#).

Task 1: Review before you install

Please note the following troubleshooting requirements before installing the NetWorker software on the following Linux platforms:

- ◆ “Compatibility library must be installed on Red Hat and SuSE Linux platforms” on page 92
- ◆ “Required pdksh package for SuSE 10 x86” on page 92
- ◆ “RPM reports missing libraries on Linux IA64” on page 93

Compatibility library must be installed on Red Hat and SuSE Linux platforms

On Red Hat and SuSE Linux (SLES) platforms, the compatibility library (for example, `/usr/lib/libstdc++.so.5`) must be installed before the NetWorker software is installed and run. The package name containing this library may differ between Red Hat and SuSE platforms.

- ◆ For SLES 9, the package name is `libstdc++-3.3.3`
- ◆ For SLES 10, the package name is `compat-libstdc++-5.0.7`
- ◆ For SLES 11, the package name is `compat-libstdc++-5.0.7`
- ◆ For Red Hat 4 and 5, the package name is `compat-libstdc++-33-3.2.3-47.3`

Also, on Red Hat 5, mandatory access control architecture SELinux needs to be disabled. SELinux is enabled by default.

To disable SELinux on Red Hat 5:

1. Run `system-config-securitylevel`.
2. In the window that appears, select the **SELinux tab**.
3. Select **Disable SELinux**.

Required pdksh package for SuSE 10 x86

On SuSE 10 x86, you may need to install the pdksh package if the required version is not installed. The required package is `pdksh-5.2.14-801.i586.rpm`.

To download the package, visit the SuSE/Novell download pages at: <http://www.novell.com/products/linuxpackages/opensuse/pdksh.html>.

You can alternatively install the packages with the `--nodeps` option.

RPM reports missing libraries on Linux IA64

During the installation of NetWorker packages on Linux IA64, the rpm program incorrectly reports the following missing libraries:

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

To correct these installation errors:

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


```
rpm -i --nodeps lgtocInt-1.ia64.rpm
```
4. Repeat this procedure for each required NetWorker package:
 - **lgtonode**
 - **lgtoserv**
 - **lgtodrvr**

Task 2: Install the NetWorker software

By default, the NetWorker software is installed in the /usr directory; however, the software can be installed in a different directory. If you have insufficient disk space on the /usr partition, choose another location to install the software.

Follow the instructions in one of the following sections to install the software:

- ◆ [“Installing to the default location” on page 93](#)
- ◆ [“Task 3: Change the NetWorker servers with access to a client” on page 99](#)

Note: When installing on the SuSE 10 x86 platform, the following error message will be displayed if the required version of the pdksh package is not installed. The following is displayed:

```
error: Failed dependencies:
/bin/ksh is needed by lgtocInt-7.6-1
To resolve this issue, install pdksh-5.2.14-801.i586.rpm, which can be downloaded from the
SuSE/Novell download Pages, or install the packages with the --nodeps option.
```

Installing to the default location

To install the client, storage node, and server software to the default location, see the following sections:

- ◆ [“Client installation” on page 94](#)
- ◆ [“Storage node installation” on page 94](#)
- ◆ [“Server installation” on page 95](#)
- ◆ [“Console software” on page 96](#)

Note: You might need to install the UTF-8 converters available with the operating system. NetWorker Management Console (Console) server software is supported on the Linux x86 platform. The Console server software is not supported on the Linux Itanium platform.

Client installation

Note: The NetWorker software uses the **rpm** utility for installation. The Linux **rpm** man page provides more information on using **rpm**.

To install the NetWorker software on the computer designated as the NetWorker client:

1. Log in to the NetWorker Linux client.
2. Change to the directory containing the NetWorker software.
3. Type the appropriate command:
 - For Itanium:


```
rpm -ivh lgtocInt-7.6.ia64.rpm
```
 - For Intel x86:


```
rpm -ivh lgtocInt-7.6.x86.rpm
```
4. (Optional) To install the man pages and the appropriate language support packages, type the commands in [Table 27 on page 94](#).

Table 27 Optional Software packages

Software Package	Linux Itanium Processor	Intel x86
man pages	<pre>rpm -ivh lgtoman-7.6.ia64.rpm</pre>	<pre>rpm -ivh lgtoman-7.6.x86.rpm</pre>
French	<pre>rpm -ivh lgtofr-7.6.ia64.rpm</pre>	<pre>rpm -ivh lgtofr-7.6.x86.rpm</pre>
Japanese	<pre>rpm -ivh lgtolja-7.6.ia64.rpm</pre>	<pre>rpm -ivh lgtolja-7.6.x86.rpm</pre>
Korean	<pre>rpm -ivh lgtoko-7.6.ia64.rpm</pre>	<pre>rpm -ivh lgtoko-7.6.x86.rpm</pre>
Simplified Chinese	<pre>rpm -ivh lgtzh-7.6.ia64.rpm</pre>	<pre>rpm -ivh lgtzh-7.6.x86.rpm</pre>

Storage node installation

On the computers designated as storage nodes, install the NetWorker client and storage node software. The storage node package must be installed on the NetWorker server, regardless of whether separate systems are used as designated storage nodes.

Note: The NetWorker software uses the **rpm** utility for installation. For information about using **rpm**, refer to the Linux **rpm** man page.

To install the storage node software:

1. Change to the directory containing the NetWorker software.
2. Type this command to install the client and storage node packages:
 - For Itanium:


```
rpm -ivh lgtocInt-7.6.ia64.rpm lgtnode-7.6.ia64.rpm
```

- For Intel for x86:

```
rpm -ivh lgtocln-7.6.x86.rpm lgtonode-7.6.x86.rpm
```

3. (Optional) To install the man pages and the appropriate language support packages, type the commands in [Table 28 on page 95](#).

Table 28 Optional Software packages

Software Package	Linux Itanium Processor	Intel x86
man pages	rpm -ivh lgtoman-7.6.ia64.rpm	rpm -ivh lgtoman-7.6.x86.rpm
French	rpm -ivh lgtofr-7.6.ia64.rpm	rpm -ivh lgtofr-7.6.x86.rpm
Japanese	rpm -ivh lgtolja-7.6.ia64.rpm	rpm -ivh lgtolja-7.6.x86.rpm
Korean	rpm -ivh lgtoko-7.6.ia64.rpm	rpm -ivh lgtoko-7.6.x86.rpm
Simplified Chinese	rpm -ivh lgtzh-7.6.ia64.rpm	rpm -ivh lgtzh-7.6.x86.rpm

Server installation

On the computer designated as the NetWorker server, install all the NetWorker software packages in the following order: client, storage node, server. The NetWorker License Manager software can be installed at any point in this sequence after the client package is installed.

Note: The NetWorker software uses the **rpm** utility for installation. For information about using **rpm**, refer to the Linux **rpm** man page.

To install the server software:

1. Change to the directory containing the NetWorker software.
2. Type the appropriate commands to install the client, storage node, server, and NetWorker License Manager software:

- For Itanium:

```
rpm -ivh lgtocln-7.6.ia64.rpm lgtonode-7.6.ia64.rpm  
lgtoserv-7.6.ia64.rpm lgtolicm-7.6.ia64.rpm
```

- For Intel for x86:

```
rpm -ivh lgtocln-7.6.x86.rpm lgtonode-7.6.x86.rpm lgtoserv-7.6.x86.rpm  
lgtolicm-7.6.x86.rpm
```

Note: Installing the NetWorker License Manager software is optional. It can be installed any time after the client software.

3. (Optional) To install the man pages and the appropriate language support packages, type the commands in [Table 29 on page 95](#).

Table 29 Optional Software packages (page 1 of 2)

Software Package	Linux Itanium Processor	Intel x86
man pages	rpm -ivh lgtoman-7.6.ia64.rpm	rpm -ivh lgtoman-7.6.x86.rpm
French	rpm -ivh lgtofr-7.6.ia64.rpm	rpm -ivh lgtofr-7.6.x86.rpm
Japanese	rpm -ivh lgtolja-7.6.ia64.rpm	rpm -ivh lgtolja-7.6.x86.rpm

Table 29 Optional Software packages (page 2 of 2)

Software Package	Linux Itanium Processor	Intel x86
Korean	<code>rpm -ivh lgtoko-7.6.ia64.rpm</code>	<code>rpm -ivh lgtoko-7.6.x86.rpm</code>
Simplified Chinese	<code>rpm -ivh lgtozh-7.6.ia64.rpm</code>	<code>rpm -ivh lgtozh-7.6.x86.rpm</code>

The NetWorker software installation modifies these system files during installation. To keep a copy of the current configuration, save the following original files:

- ◆ /etc/rpc
- ◆ /etc/syslog.conf
- ◆ /etc/ld.so.conf

The following files are added during the installation process:

- ◆ /etc/init.d/networker
- ◆ /etc/init.d/rc3.d/S95networker
- ◆ /etc/init.d/rc5.d/S95networker
- ◆ /etc/init.d/rc0.d/K05networker

Console software

To manage the NetWorker server, install the NetWorker Console and client software on one machine in the datazone.

The NetWorker Console installation relies on the existence of several other components. Ensure that all installation prerequisites are met. The section [“Console client” on page 33](#) provides details.

Note: NetWorker Management Console server software is supported on the Linux x86 platform. The NetWorker Management Console server software is not supported on the Linux Itanium platform.

To install NetWorker software on the computer that is designated as the NetWorker Console server:

1. If the required JRE version 1.5.0_11 and later or JRE 1.6 and later is not installed, go to the Java website to download and install the required version.

Note: If running on a 64-bit Linux host, install the 32-bit JRE version.

2. Upon installing the required JRE version:
 - a. Remove the following Mozilla file from /usr/lib/mozilla-1.7.12/plugins:


```
libnullplugin.so
```
 - b. Create a symbolic link within the Mozilla plugins directory to the libjavaplugin_oji.so file. For example:


```
ln -s /usr/local/jre1.5.0_11/plugin/i386/ns7/libjavaplugin_oji.so
```
3. If the NetWorker software has been downloaded from the web:
 - a. Type the following command to verify that execute permissions are applied to the JRE file. For example:


```
chmod +x j2re-1_5_0_11linux-i586.bin
```
 - b. Change to the directory where the JRE is to be installed.

- c. Run this executable:


```
j2re-1_5_0_09-linux-i586.bin
```
- d. Accept the Java licensing agreement.
4. Change to the directory containing the NetWorker software.
5. Type this command to install the NetWorker client software, if not already installed:


```
rpm -ivh lgtocln-7.6.x86.rpm
```
6. Start the NetWorker daemons, if not already started. [“Task 4: Start the NetWorker daemons” on page 99](#) provides information on how to start the NetWorker daemons.
7. To install the NetWorker Console software, type:


```
rpm -ivh lgtonmc-7.6.x86.rpm
```

 By default, the software is installed in /opt.
8. (Optional) To install the man pages and the appropriate language support packages, type the commands listed in [Table 30 on page 97](#).

Table 30 Optional software packages

Software Package	Linux Itanium Processor	Intel x86
man pages	<code>rpm -ivh lgtoman-7.6.ia64.rpm</code>	<code>rpm -ivh lgtoman-7.6.x86.rpm</code>
French	<code>rpm -ivh lgtofr-7.6.ia64.rpm</code>	<code>rpm -ivh lgtofr-7.6.x86.rpm</code>
Japanese	<code>rpm -ivh lgtolja-7.6.ia64.rpm</code>	<code>rpm -ivh lgtolja-7.6.x86.rpm</code>
Korean	<code>rpm -ivh lgtoko-7.6.ia64.rpm</code>	<code>rpm -ivh lgtoko-7.6.x86.rpm</code>
Simplified Chinese	<code>rpm -ivh lgtozh-7.6.ia64.rpm</code>	<code>rpm -ivh lgtozh-7.6.x86.rpm</code>

9. Run this configuration script to install the `lgtonmc` package in the /opt/lgtonmc directory:


```
/opt/lgtonmc/bin/nmc_config
```
10. Specify a User/Group with limited privileges that NMC will use to run the web server. This must be a non-root user. For example, Linux operating systems have a default user/group [nobody/nobody] that can be used.

Note: If you do not see the default group [nobody/nobody] and have not created a user/group with limited privileges, follow the Console server requirements specified in the section [“Console” on page 29](#)
11. For the web server port number, use the default port number (9000) or use a custom port number. Valid port numbers are between 1024 and 49151.
12. For the Console server, use the default port number (9001) or use a custom port number. Valid port numbers are between 1024 and 49151.

Note: Do *not* use port numbers already in use. Port 2638 is reserved by the NetWorker Console software by using the Tabular Data Stream (TDS) protocol to communicate with the database. Port 9002 is the preferred port for EMC Backup Advisor product.
13. Specify the directory to use for the lgtonmc database (for example, /export/home/lgto_gstadb).

14. Specify the location of the NetWorker binaries (for example, /usr/sbin).
15. Start the NetWorker Console daemons if not already started:

```
/etc/init.d/gst start
```

The NetWorker Console daemons include the following:

- **gstd**
 - **dbsrv9**
 - **httpd** (2 or more processes)
16. For Red Hat Enterprise Server 4 only, from the client machine with more than one JRE installed, you may want to reconfigure the usage of the JRE as follows:
 - a. Run the **Java Web Start** application named **javaws**. This application is located in the same directory where the JRE 1.5.0_06 or later software was installed.
 - b. From the **Java Application Runtime Settings** window:
 - Select the JRE 1.5.0_11 version software. This forces the **Java Web Start** application to use JRE version 1.5.0_11 to run applications.
 - Clear the other versions of the JRE software, for example JRE version 1.5.0_06.
 - c. Start the NetWorker Console server. The **Console** launch page appears.
 - d. Specify to run the Console using the Java Web Start version 1.5 software. Type the path to the Java Web Start executable.

Note: There are two libraries, **libXp.so.6** and **libXm.so.3** (open motif lib), that are required on Red Hat Enterprise Linux 4 and 5 to launch the nwrecover program. By default, these libraries are not part of the operating system.

On Red Hat Linux 4, libXp.so.6 is installed with the xorg-x11-deprecated-libs rpm. Install this package, then launch nwrecover.

The missing packages are contained on Red Hat Linux 5, however, the packages are not selected by default. To select these packages, when installing Red Hat 5, go to the Optional Packages in X Software Development Packages and individually select libXp.so.6 and libXm.so.3.

17. If the Console server and the NetWorker server are installed on separate hosts, be sure to add the Console administrator to the administrator lists of the monitored NetWorker server. This enables the Console administrator to administer and monitor the target NetWorker server.

On the NetWorker server:

- a. Specify the process owner of the Console daemon process depending on which host contains the Console server:
 - If on a Microsoft Windows host, type:


```
nsraddadmin -u "user=SYSTEM, host=console_host"
```
 - If on a AIX, HP-UX, Linux or Solaris only host, type:


```
nsraddadmin -u "user=root, host=console_host"
```
- b. Specify the Console administrator user:


```
nsraddadmin -u "user=administrator, host=console_host"
```

where *console_host* is the Console server hostname.

Launching Java Web Start if NMC GUI fails to start

When the NMC installation is complete and the NMC client GUI starts, a message indicates that Java is loading before the NMC console appears.

If the NMC console does not open, Java Web Start may have failed to load, due to a corrupted Java Web Start cache or an incompatible version of Java Web Start. To resolve the issue, it is recommended to clean up the \$HOME/.java cache location.

Perform the following commands to load Java Web Start:

1. Run `setenv` or export HOME if not set.

```
cd $HOME
```

2. Move or remove the \$HOME/.java directory:

```
mv .java .java_orig
```

3. Navigate to JRE HOME and launch javaws. Reconfigure the Java Web Start preference if necessary. A new \$HOME/.java will be created.

```
javaws [-viewer]
```

Note: [-viewer] is for JRE version 1.6

4. If [Step 3](#) is successful, restart the web browser to launch the NMC GUI client.

Task 3: Change the NetWorker servers with access to a client

To limit the servers that are authorized to access a client, a list of trusted NetWorker servers can be specified for a client in the `/nsr/res/servers` file. After installing the client, storage node, and server software, use the following procedure to change the NetWorker servers that are authorized to access a client.

To change the NetWorker servers that can access a client:

1. Edit or create the `/nsr/res/servers` file and add the NetWorker servers, one per line, that require access to the client. The first entry in this file becomes the default NetWorker server.

Note: If the `/nsr/res/servers` file is empty or does not exist, any NetWorker server is authorized to:

- Access and back up the client.
 - Perform a directed recovery to the client.
-

2. If necessary, delete the `-s` option from the `nsrexecd` command that is invoked by the boot-time startup file. Running `nsrexecd` with the `-s` option supersedes the `/nsr/res/servers` file.

Task 4: Start the NetWorker daemons

Upon startup, the NetWorker software creates the `/nsr` directory on the root partition. To change the default location of the `nsr` directory, do so before starting the NetWorker daemons.

The NetWorker daemons must be started after the installation procedure:

1. Type this command to start the NetWorker daemons:

```
/etc/init.d/networker start
```

2. Type this command to determine if the NetWorker daemons are started:

```
ps -ef | grep nsr
```

Table 31 lists the NetWorker daemons for each of the software components.

Table 31 NetWorker daemons

NetWorker packages	NetWorker daemons
NetWorker server	nsrd, nsrexecd, nsrindexd, nsrmmdbd, nsrmmd, nsrjobd, nsrmmgd, nsrlcpd
NetWorker client	nsrexecd
NetWorker storage node	nsrexecd, nsrmmd, nsrlcpd

Note: The NetWorker daemon **nsrmmd** is only present if one or more devices are enabled. The **nsrmmgd** and **nsrlcpd** daemons are only present on the server if the library is enabled.



IMPORTANT

The NetWorker software must be able to resolve the loopback address, **::1**, to **localhost**. This entry must exist in the system's respective **/etc/hosts** file as follows:
::1 localhost loopback

The **::1** entry must remain in the **/etc/hosts** file, whether operating in an IPv4 or IPv6 configuration.

Task 5: Optional, install the HomeBase Agent

NetWorker release 7.6 ships with EMC HomeBase Agent version 6.2.x to enable Bare Metal Recovery (BMR) for server system data. Although HomeBase Agent version 6.1.x is still supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

When the installation completes, the user is notified that the HomeBase Server version 6.2.x is required.



IMPORTANT

The HomeBase Agent version 6.2.x client requires that the HomeBase Server version 6.2.x also be installed in order for BMR to function in the NetWorker 7.6 environment. The *HomeBase Agent Release 6.2 Installation and Configuration Guide* provides complete details on the HomeBase Server version 6.2.x.

The HomeBase Agent collects configuration information about the operating system platform of the host on which it is installed. This information is called a profile.

A profile can be used to:

- ◆ Monitor configuration changes
- ◆ Migrate configuration changes
- ◆ Recover the operating system's configuration from an EMC HomeBase Server

The profile data includes hardware configurations, operating system levels, system tuning, network configuration and connections, security, and storage layouts. This information is captured with a NetWorker save set backup and is sent to a secure HomeBase Server for storage and analysis. The HomeBase Server is also required to perform a BMR server recovery or migration.

Note: On Solaris, an additional screen warns that a particular level of operating system patch must be installed prior to installing the agent. The server may already have these patches installed. The installer does not verify that the patches are installed. Failure to install the identified patches can result in the installation failing or the execution of the agent to fail.

The following documents provide information about the HomeBase Server features:

- ◆ *EMC HomeBase Server Installation and Administration Guide*
- ◆ *EMC HomeBase Server User Guide*

HomeBase Agent space requirements

[Table 32 on page 101](#) specifies the location and space requirements for the HomeBase Agent.

Table 32 HomeBase Agent location and minimum system requirements

NetWorker files	Location	Space		Processor
		x86	x64	
EMC HomeBase Agent binary	/opt/homebase-agent/	512 MB	512 MB	1 GHz
Temporary space required for EMC HomeBase Agent	/tmp	512 MB	512 MB	1 GHz

Installing the HomeBase Agent software

Although HomeBase Agent version 6.1.3.x is supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

On all Solaris platforms, ensure that the NetWorker HomeBase Agent software is only installed in the default installation directory. Do not install the software in a directory other than */opt/homebase-agent*. The NetWorker BMR profiling feature will not work if the HomeBase Agent software is installed in a location other than the default installation directory, */opt/homebase-agent*.

To install the HomeBase Agent software:

1. From the HomeBase Agent Installation directory (*/opt/homebase-agent*), run the following command:


```
setup-homebase.sh
```
2. If necessary, click **Choose** to select a different location.
3. Click **Next** to proceed. A summary of the installation location and disk space requirements is displayed.
4. Click **Install** to proceed. The installation process begins. The **Select Intended Use** window appears. Each option results in a different level of agent functionality.
5. Choose the correct option for this server. If the option selected on this page is not correct, the software must be reinstalled to enable the correct set of functionality.
 - a. Select **Generate HomeBase Profiles** to:
 - Enable the agent to produce profiles that enable a HomeBase Server to report on the assets of that server
 - Generate notifications and alerts based on configuration changes
 - Generate business reports
 - Recover or migrate this server configuration to another machine
 These capabilities are dependant on the license purchased for this agent.

- b. Select **Restore a Recovery Profile** to enable the HomeBase Agent to recover a full profile and restore a configuration onto a new item of hardware or a new virtual server.
6. Click **Next** to proceed. The **Specify Server URL** window appears.
7. Type the address of the server or proxy server to which the agent will automatically transmit generated profiles. Once a server is defined, the Agent can be configured to execute on a scheduled basis.
8. Click **Next**. The **Evaluation License** page displays. Select the **Request Evaluation License** checkbox to license the Agent for a 30-day period. For a permanent license, do not select this checkbox.
9. Click **Next**. The **Configure Batch** window appears. Type the license batch code received with the software or from the HomeBase administrator. The install program validates the license with the previously specified HomeBase Server.
10. Click **Next**. The **Setup Schedule** window appears. Select the day and time for this agent to generate a profile.
11. Click **Next**. The **Announce Agent** window appears. The install program announces the agent to the HomeBase Server provided.
12. Click **Next**. The **Install Complete** window confirms that the installation has completed successfully. The HomeBase Agent is now installed.
13. Click **Done** to close the installation program.

Note: The HomeBase Agent is not supported in a Cluster environment.

Enabling BMR server support

Connection with a HomeBase Server is enabled during the set up of the NetWorker server. This connection enables the delivery of profile data from the NetWorker client to the HomeBase Server.

To enable BMR support:

1. From the **Administration** window, click **Configuration**.
2. Select the NetWorker server name.
3. From the **File** menu, select **Properties**.
4. In the **Properties** dialog box, click the **Configuration** tab.
5. Type the IP address or hostname for the HomeBase Server in the BMR server field.
6. Click **OK**.

Note: The HomeBase Server SSL protocol must be configured and activated on the HomeBase Server. The *EMC HomeBase Server Installation and Administration Guide* provides information about enabling the SSL protocol.

Licensing the HomeBase Server and Agent

This section provides details for licensing the HomeBase Server, and HomeBase Agent software.

The *EMC HomeBase Server Installation and Administration Guide*, and the *The EMC HomeBase Agent Installation and Configuration Guide* provides complete details on licensing the HomeBase software.

HomeBase Server

The HomeBase 6.2.x server software comes with a 30 day evaluation enabler for the HomeBase Server with 20 HomeBase Agent licences.

Note: Be sure to permanently enable the HomeBase Server and Agent licenses, as they expire after 30 days with no grace period.

During the installation of the HomeBase Server, a license request file is automatically generated in the keys directory. The license request is then forwarded to licensing@emc.com with all required purchase order details. Copies of the following are then sent:

- ◆ licence.zip file (the HomeBase Server licence)
- ◆ homebase.bks file (a set of encryption keys used for the recovery and replication of profiles between HomeBase Servers)
- ◆ Agent licence batch files (there can be multiple agent licence batch files) that are associated with the HomeBase Server licence.

The default temporary enablers can be overridden by applying a permanent enabler and Agent licence batch to the HomeBase Server when the HomeBase Server Console is first accessed.

HomeBase Agent

When a HomeBase Agent is installed with the NetWorker software, the Agent license is provided automatically during the first profile run from the NetWorker software as it must be able to contact the HomeBase Server to forward profiles for backups. The `-L` setting in the NetWorker client BMR configuration setting is used to do this.

The *EMC HomeBase Server Installation and Administration Guide* provides details on how to license the HomeBase Agent for a Remote HomeBase Server.

Using the NetWorker client port under a firewall server

If the NetWorker client and HomeBase Agent are on the same system outside of the firewall with the HomeBase Server inside the firewall, then port 18821 is required for communication between the HomeBase Agent and the HomeBase Server.

Uninstalling the software

This section provides instructions for the following:

- ◆ [“Uninstalling the NetWorker software” on page 103](#)
- ◆ [“Uninstalling the HomeBase Agent” on page 105](#)

Uninstalling the NetWorker software

Use the `rpm -e package_name` command to uninstall individual NetWorker packages or all of the NetWorker packages simultaneously. For information about using `rpm`, refer to the `rpm` man page.

Note: The NetWorker software packages have dependencies on each other and must be uninstalled in the following order: **lgtolcm**, **lgtoserv**, **lgtonode**, **lgtocInt**. The man pages (**lgtoman**) and document files have no dependencies and can be uninstalled any time.

The **lgtonmc** package must be uninstalled before the **lgtocInt** package. The NetWorker Administration Guide provides more information on the NetWorker Console server.

To uninstall the NetWorker software packages:

1. Log in as root to the computer from which the software is being uninstalled.

2. Run a query to see which packages are installed:

```
rpm -qa | grep lgto
```

3. Type these commands to uninstall the software:

- To uninstall all the packages, type:

```
rpm -e lgtolicm lgtoserv lgtonode lgtonmc lgtocInt lgtoman
```

- To uninstall packages individually, type:

```
rpm -e package_name
```

Table 33 NetWorker packages to uninstall

To uninstall these package	Type this package name
Server	lgtoserv-7.6
Storage node	lgtonode-7.6
Console server	lgtonmc-7.6
NetWorker License Manager	lgtolicm-7.6
Client	lgtocInt-7.6
Man pages	lgtoman-7.6
French language support	lgtofr-7.6
Japanese language support	lgtolja-7.6
Korean	lgtoko-7.6
Simplified Chinese language support	lgtozh-7.6

Example 1 Uninstalling the software

4. If you no longer to plan to update or reinstall the NetWorker software:
 - a. Remove the /nsr directory.
 - b. Delete the NMC directory. By default, NMC is installed at /opt/lgtonmc.
 - c. Delete the directory containing the following NMC database files:

- **lgto_gst.db**
- **lgto_gst.log**
- **gstd_db.conf**

5. If you no longer require the Java Runtime Environment, uninstall the JRE.

If NetWorker release 7.4 is installed and an update to NetWorker release 7.6 is required, type this command to uninstall all NetWorker packages:

```
rpm -e lgtolicm-7.4 lgtoserv-7.4 lgtonode-7.4 lgtocInt-7.4 lgtoman-7.4
```

Uninstalling the HomeBase Agent

Uninstalling the NetWorker client automatically uninstalls the HomeBase Agent.

Note: Uninstalling the HomeBase Agent manually is possible, but not recommended as BMR functionality is removed from the NetWorker software.

The *EMC HomeBase Agent Installation and Configuration Guide* provides complete details on uninstalling the HomeBase Agent.

This chapter includes these sections:

- ◆ Introduction 108
- ◆ Installing the Mac OS X client software 108
- ◆ Verifying the installation 108
- ◆ Uninstalling the Mac OS X client software 108

Introduction

The information in this chapter assumes that you have a basic knowledge of:

- ◆ Mac OS X terminal emulator
- ◆ UNIX command line tools using the Mac OS X Terminal application utility

For information on using the Mac OS X Terminal application:

1. Open the Mac Help database by pressing the ? key combination within the Finder application.
2. Search for Terminal.

Installing the Mac OS X client software

To install the software:

1. Double-click the **NetWorker.dmg Disk Image** icon on your desktop to mount the NetWorker software.
2. Double-click the **NetWorker.pkg Disk Image** package on the NetWorker volume to launch the NetWorker software.
3. Follow the instructions to install the NetWorker software.

Verifying the installation

Note: Before you test the Mac OS X client, ensure that the NetWorker server software has been properly installed. Review the NetWorker Installation Guide for the platform of the NetWorker server that will back up the Mac OS X client.

To verify that the NetWorker client software is correctly installed:

1. Use the Mac OS X **Activity Monitor** application to check that the NetWorker client daemon (**nsrexecd**) is active on the host computer. For example:

```
nsrexecd
```

Note: By default, the **nsrexecd** daemon is automatically started after installation.

2. If the **nsrexecd** daemon is *not* listed, type this command:

```
$ sudo /sbin/SystemStarter start NetWorker
```

Uninstalling the Mac OS X client software

To uninstall the NetWorker software, run the appropriate uninstall script. [Table 34 on page 108](#) provides details.

Table 34 NetWorker client uninstall scripts

To remove this NetWorker package	Uninstall script
Client software	\$ sudo /Library/Receipts/NetWorker.pkg/Contents/Resources/NetWorkerUninstall

This chapter includes these sections:

- ◆ [Installing the software](#) 110
- ◆ [Uninstalling the NetWorker software](#) 120

Installing the software

Complete these tasks to install the NetWorker software:

- ◆ “Task 1: Install the NetWorker software” on page 110
- ◆ “Task 2: Change the NetWorker servers with access to a client” on page 115
- ◆ “Task 3: Start the NetWorker daemons” on page 116
- ◆ “Task 4: Optional, install the HomeBase Agent” on page 117

Task 1: Install the NetWorker software

By default, the NetWorker software is installed in the /usr directory.

The NetWorker software can be installed in a default or nondefault location.

Installing to a default location

This section explains how to install the client, storage node, server, and Console server:

Client

To install the NetWorker software on the computer that is designated as the NetWorker client:

1. Type this command:

```
pkgadd -d /cdrom/cdrom1/solaris
```

Note: Do *not* press **Enter** for the default response **All**. Accepting the default installs the server.

2. Type the number of the option to install the client package (**LGTOclnt**). The client package temporarily requires 35 MB of free space on the client computer.
3. (Option) Type the number of the option to install a language support package.
4. Type the number of the option to install a language support package. For example:
 - **LGTOfr** (French)
 - **LGTOja** (Japanese)
 - **LGTOko** (Korean)
 - **LGTOzh** (Simplified Chinese)
5. (Optional) Type the a number of the option to install the man pages (**LGTOman**).

Note: If installing additional NetWorker software packages (storage node, server) to a NetWorker client that has processes running (for example, the nsrexecd process), an RPC error is reported. Before each software package is installed, the NetWorker software requires all NetWorker processes be shutdown. The RPC error is generated because the nsr_shutdown process attempts to stop NetWorker server processes when in fact no NetWorker server is running. This error message can be ignored and the installation process completes successfully.

During the **pkgadd** process, ensure that no NetWorker processes are running. Do *not* start the NetWorker daemons until the final package is installed.

Storage node

To install the NetWorker software on the computer that is designated as the NetWorker storage node and for which you have purchased an enabler code:

1. Type the following command:


```
pkgadd -d /cdrom/cdrom1/solaris
```
2. Type the appropriate options to install the following packages.
Software packages on the storage node must be installed in this order:
 - a. **LGTOclnt** (client software package)
 - b. **LGTONode** (storage node software package)
 - c. **LGTOman** (optional man pages)
3. Type the number of the option to install a language package. For example:
 - **LGTOfr** (French)
 - **LGTOja** (Japanese)
 - **LGTOko** (Korean)
 - **LGTOzh** (Simplified Chinese)

Dedicated Storage Node in a Solaris 10 local zone

In NetWorker version 7.5, and earlier, you cannot install and run a NetWorker Dedicated Storage Node (DSN) in a Solaris 10 local zone to direct the backup data stream directly to a physically attached device that avoids sending backup data across the network.

However, NetWorker version 7.6 does support DSN installed in a Solaris 10 local zone to backup directly to a physically attached device without sending data across the IP network. It manages the sharing of a device between multiple dedicated storage nodes or storage nodes that are installed in multiple local zones of a single physical host, as long as all are contained within a single NetWorker data zone.

Server

To install the NetWorker software on the computer that is designated as the NetWorker server:

1. Keep a copy of the current configuration. The NetWorker software installation script modifies the `/etc/rpc` and `/etc/syslog.conf` files during the installation process.
Type these commands:


```
cp /etc/rpc /etc/rpc.old  
cp /etc/syslog.conf /etc/syslog.conf.old
```
2. Type this command:


```
pkgadd -d /cdrom/cdrom1/solaris
```
3. Type the appropriate options to install the following packages.
Software packages on the server must be installed in the following order:
 - a. **LGTOclnt** (client software package)
 - b. **LGTONode** (storage node software package)
 - c. **LGTOserv** (server software package)

- d. **LGTOman** (optional man pages)
- e. **LGTOlicm** (optional NetWorker License Manager software package)

The NetWorker License Manager Installation and Administration Guide provides information about the NetWorker License Manager software.

4. Type the number of the option to install a language support package. For example:
 - **LGTOfr** (French)
 - **LGTOja** (Japanese)
 - **LGTOko** (Korean)
 - **LGTOzh** (Simplified Chinese)

Console server

To manage the NetWorker server, install the NetWorker Console and NetWorker client software on one machine in the datazone. The Console server installation relies on the existence of several other components. Ensure that all installation prerequisites are met. The section [“Console” on page 29](#) provides details.

Note: If the environment runs only LDAPS, also known as LDAP over SSL, and native NetWorker user authentication is not used, the Console server must not be installed on a Solaris server.

To install NetWorker software on the computer that is designated as the NetWorker Console server:

1. Ensure that JRE version 1.5.0 or later is installed. This enables the command line reporting feature. If the required JRE version is not installed, go to the Java website to download and install the required version.

- a. If the NetWorker software had been downloaded from the web, type the following command to verify that execute permissions are applied to the JRE file.

For example:

```
chmod +x /tmpdir/jre-1_5_0_11-solaris-sparc.sh
```

The **jre-1_5_0_11-solaris-sparc.sh** creates an install directory in the working directory where it is run.

- b. Change to the directory where the JRE is to be installed.
- c. Run the following script:

```
tmpdir/jre-1_5_0_11-solaris-sparc.sh
```

- d. Accept the Java licensing agreement.
2. Start the NetWorker software installation:

```
pkgadd -d /cdrom/cdrom1/solaris
```

Note: Do *not* press **Enter** for the default response **All**. Accepting the default installs the server.

3. Type the appropriate option number to install the client package (**LGTOclnt**), if not already installed.

The client package temporarily requires 35 MB of free space on the client computer.

4. Type the appropriate option number to install the Console server package (**LGTONmc**).
5. (Optional) Type the appropriate option number to install the man pages (**LGTOman**).
 - **LGTOfr** (French)
 - **LGTOja** (Japanese)
 - **LGTOko** (Korean)
 - **LGTOzh** (Simplified Chinese)
6. Specify the directory to install the LGTONmc package (for example, /opt/LGTONmc).
7. Specify a User/Group with limited privileges that NMC will use to run the web server. This must be a non-root user. For example, Solaris operating systems have a default user/group [nobody/nobody] that can be used.

Note: If the default group [nobody/nobody] does not exist, and a user/group is not created with limited privileges, follow the Console server requirements specified in the section [“Console” on page 29](#).

8. For the web server port number, use the default port number (**9000**) or use a custom port number. Valid port numbers are between **1024** and **49151**.
9. For the Console server, use the default port number (**9001**) or use a custom port number. Valid port numbers are between **1024** and **49151**.

Note: Do *not* use port numbers that are already in use. Port **2638** is reserved by the Console server as it uses Tabular Data Stream (TDS) protocol to communicate with the database. Port **9002** is the preferred port for the EMC Backup Advisor product.

10. Specify the directory to use for the LGTONmc database (for example, /export/home/lgto_gstadb).
11. Specify the location of the NetWorker binaries (for example, /usr/sbin).
12. Start the NetWorker Console daemons:

```
/etc/init.d/gst start
```

The NetWorker Console daemons include the following:

- **gstd**
 - **dbsrv9**
 - **httpd** (2 or more processes)
13. If the Console server and the NetWorker server are installed on separate hosts, you must add the Console administrator to the administrator lists of the monitored NetWorker server. This enables the Console administrator to administer and monitor the target NetWorker server.

On the NetWorker server:

- a. Specify the process owner of the Console daemon process depending on which host contains the Console server:

- If on a Microsoft Windows host, type:

```
nsraddadmin -u "user=SYSTEM, host=console_host"
```

- If on a AIX, HP-UX, Linux or Solaris only host, type:


```
nsraddadmin -u "user=root, host=console_host"
```
- b. Specify the Console administrator user:


```
nsraddadmin -u "user=administrator, host=console_host"
```

 where *console_host* is the Console server hostname.

Launching Java Web Start if NMC GUI fails to start

When the NMC installation is complete and the NMC client GUI starts, a message indicates that Java is loading before the NMC console appears. If the NMC console does not open, Java Web Start may have failed to load, due to a corrupted Java Web Start cache or an incompatible version of Java Web Start. To resolve the issue, it is recommend to clean up the \$HOME/.java cache location.

Perform the following commands to load Java Web Start:

1. Run **setenv** or export HOME if not set.


```
cd $HOME
```
2. Move or remove the \$HOME/.java directory


```
mv .java .java_orig
```
3. Navigate to JRE HOME and launch javaws. Reconfigure the Java Web Start preference if necessary. A new \$HOME/.java will be created.


```
javaws [-viewer]
```

Note: [-viewer] is for JRE version 1.6.

4. If Step 3 is successful, restart the web browser to launch the NMC GUI client.

Installing to a nondefault location

By default, the following NetWorker software is installed in the /usr directory. If there is insufficient disk space on the /usr partition, the following NetWorker packages can be relocated to a specified directory on another partition:

- ◆ LGTOclnt (client software package)
- ◆ LGTONode (storage node software package)
- ◆ LGTOserv (server software package)
- ◆ LGTOfr (French)
- ◆ LGTOja (Japanese)
- ◆ LGTOko (Korean)
- ◆ LGTOzh (Simplified Chinese)

By default, the NetWorker Console server software is installed in the /opt directory. If there is insufficient disk space on the /opt partition, the NetWorker Console server package, LGTONmc can be relocated to a specified directory on another partition.

The NetWorker man pages package (LGToman) must always be installed in the default location. [Table 8, "UNIX location and space requirements," on page 27](#) provides a listing of the default locations and size requirements.

Note: Do *not* relocate any of the packages if NetWorker Module software is already installed on the computer.

To install the NetWorker packages to a nondefault location:

1. Create a symbolic link between the default NetWorker location and the nondefault NetWorker location. For example:

```
ln -s /my_path/lib/nsr /usr/lib/nsr
```

2. Copy the /var/sadm/install/admin/default file, as shown:

```
cp /var/sadm/install/admin/default /tmp/default.tmp
```

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

```
basedir=ask
```

4. Create a directory and the bin and sbin subdirectories to install the NetWorker packages, for example:

```
mkdir -p /my_path/sbin  
mkdir -p /my_path/bin
```

5. 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
```

6. Type this command:

```
pkgadd -d /cdrom/cdrom1/solaris
```

When this prompt appears in the script, type the same base directory for all the relocated packages:

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

7. When all the applicable packages are added and the prompt appears, press [q] to exit.

8. Copy the /tmp/default.tmp file to the following location. For example:

```
cp /tmp/default.tmp /var/sadm/install/admin/default
```

If **pkgrm** is used to remove the packages at a later date, specify the base directory.

Task 2: Change the NetWorker servers with access to a client

To limit the servers authorized to access a client, specify a list of trusted NetWorker servers for a client in the **/nsr/res/servers** file. After installing the client, storage node, and server software, use the following procedure to change the NetWorker servers that are authorized to access a client.

To change which NetWorker servers can access a client:

1. Type this command to shut down the NetWorker daemons:

```
nsr_shutdown
```

2. Edit or create the **/nsr/res/servers** file and add the set of NetWorker servers, one per line, that require access to the client. The first entry in this file becomes the default NetWorker server.

Note: If the **/nsr/res/servers** file is empty or does not exist, any NetWorker server is authorized to:

- Access and back up the client.
- Perform a directed recovery to the client.

3. If necessary, remove the `-s` option from the `nsrexecd` command that is invoked by the boot-time startup file. Running `nsrexecd` with the `-s` option supersedes the `/nsr/res/servers` file:
 - a. Check the NetWorker boot-time startup file to see whether `nsrexecd` is being run with the `-s` option. The boot-time startup file for the Solaris environment is `/etc/init.d/networker`.
 - b. If the `-s` option exists in the boot-time startup file, remove all occurrences of the following in the startup file:


```
-s server_name
```

Task 3: Start the NetWorker daemons

The NetWorker daemons must be started after the installation procedure.

1. Start the NetWorker daemons by using this command:


```
/etc/init.d/networker start
```
2. Verify that the NetWorker daemons are running:


```
ps -ef | grep nsr
```
3. If the output does not list `nsrd` and `nsrexecd` as current processes, run the following command to start the NetWorker daemons on the NetWorker server:


```
/etc/init.d/networker start
```

The NetWorker daemon `nsrmmd` is only present if one or more devices are enabled.

Note: The UTF-8 converters available with the operating system might need to be installed.

[Table 35 on page 116](#) lists the NetWorker daemons that should be running.

Table 35 NetWorker daemons

NetWorker installation packages	NetWorker daemons
server	<code>nsrd</code> , <code>nsrexecd</code> , <code>nsrindexd</code> , <code>nsrmmdbd</code> , <code>nsrmmd</code> , <code>nsrjobd</code> , <code>nsrmmgd</code> , <code>nsrlcpd</code>
client	<code>nsrexecd</code>
storage node	<code>nsrexecd</code> , <code>nsrmmd</code> , <code>nsrlcpd</code>
NetWorker License Manager	<code>lgtolmd</code>

Note: The NetWorker `nsrmmd` daemon is only present if one or more devices are enabled. The `nsrmmgd` and `nsrlcpd` daemons are only present on the server if the library is enabled.

Task 4: Optional, install the HomeBase Agent

NetWorker release 7.6 ships with EMC HomeBase Agent version 6.2.x to enable Bare Metal Recovery (BMR) for server system data. Although HomeBase Agent version 6.1.x is still supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

When the installation completes, the user is notified that the HomeBase Server version 6.2.x is required.



IMPORTANT

The HomeBase Agent version 6.2.x client requires that the HomeBase Server version 6.2.x also be installed in order for BMR to function in the NetWorker 7.6 environment. The *HomeBase Agent Release 6.2 Installation and Configuration Guide* provides complete details on the HomeBase Server version 6.2.x.

The HomeBase Agent collects configuration information about the operating system platform of the host on which it is installed. This information is called a profile.

A profile can be used to:

- ◆ Monitor configuration changes
- ◆ Migrate configuration changes
- ◆ Recover the operating system's configuration from an EMC HomeBase Server

The profile data includes hardware configurations, operating system levels, system tuning, network configuration and connections, security, and storage layouts. This information is captured with a NetWorker save set backup and is sent to a secure HomeBase Server for storage and analysis. The HomeBase Server is also required to perform a BMR server recovery or migration.

Note: On Solaris, an additional screen warns that a particular level of operating system patch must be installed prior to installing the agent. The server may already have these patches installed. The installer does not verify that the patches are installed. Failure to install the identified patches can result in the installation failing or the execution of the agent to fail.

The following documents provide information about the HomeBase Server features:

- ◆ *EMC HomeBase Server Installation and Administration Guide*
- ◆ *EMC HomeBase Server User Guide*

HomeBase Agent space requirements

[Table 36 on page 117](#) specifies the location and space requirements for the HomeBase Agent.

Table 36 HomeBase Agent location and minimum system requirements

NetWorker files	Location	Space		Processor
		x86	x64	
EMC HomeBase Agent binary	/opt/homebase-agent/	512 MB	512 MB	1 GHz
Temporary space required for EMC HomeBase Agent	/tmp	512 MB	512 MB	1 GHz

Installing the HomeBase Agent software

Although HomeBase Agent version 6.1.3.x is supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

On all Solaris platforms, ensure that the NetWorker HomeBase Agent software is only installed in the default installation directory. Do not install the software in a directory other than */opt/homebase-agent*. The NetWorker BMR profiling feature will not work if the HomeBase Agent software is installed in a location other than the default installation directory, */opt/homebase-agent*.

To install the HomeBase Agent software:

1. From the HomeBase Agent Installation directory (*/opt/homebase-agent*), run the following command:

```
setup-homebase.sh
```

2. If necessary, click **Choose** to select a different location.
3. Click **Next** to proceed. A summary of the installation location and disk space requirements is displayed.
4. Click **Install** to proceed. The installation process begins. The **Select Intended Use** window appears. Each option results in a different level of agent functionality.
5. Choose the correct option for this server. If the option selected on this page is not correct, the software must be reinstalled to enable the correct set of functionality.
 - a. Select **Generate HomeBase Profiles** to:
 - Enable the agent to produce profiles that enable a HomeBase Server to report on the assets of that server
 - Generate notifications and alerts based on configuration changes
 - Generate business reports
 - Recover or migrate this server configuration to another machineThese capabilities are dependant on the license purchased for this agent.
 - b. Select **Restore a Recovery Profile** to enable the HomeBase Agent to recover a full profile and restore a configuration onto a new item of hardware or a new virtual server.
6. Click **Next** to proceed. The **Specify Server URL** window appears.
7. Type the address of the server or proxy server to which the agent will automatically transmit generated profiles. Once a server is defined, the Agent can be configured to execute on a scheduled basis.
8. Click **Next**. The **Evaluation License** page displays. Select the **Request Evaluation License** checkbox to license the Agent for a 30-day period. For a permanent license, do not select this checkbox.
9. Click **Next**. The **Configure Batch** window appears. Type the license batch code received with the software or from the HomeBase administrator. The install program validates the license with the previously specified HomeBase Server.
10. Click **Next**. The **Setup Schedule** window appears. Select the day and time for this agent to generate a profile.
11. Click **Next**. The **Announce Agent** window appears. The install program announces the agent to the HomeBase Server provided.
12. Click **Next**. The **Install Complete** window confirms that the installation has completed successfully. The HomeBase Agent is now installed.

13. Click **Done** to close the installation program.

Note: The HomeBase Agent is not supported in a Cluster environment.

Enabling BMR server support

Connection with a HomeBase Server is enabled during the set up of the NetWorker server. This connection enables the delivery of profile data from the NetWorker client to the HomeBase Server.

To enable BMR support:

1. From the **Administration** window, click **Configuration**.
2. Select the NetWorker server name.
3. From the **File** menu, select **Properties**.
4. In the **Properties** dialog box, click the **Configuration** tab.
5. Type the IP address or hostname for the HomeBase Server in the BMR server field.
6. Click **OK**.

Note: The HomeBase Server SSL protocol must be configured and activated on the HomeBase Server. The *EMC HomeBase Server Installation and Administration Guide* provides information about enabling the SSL protocol.

Licensing the HomeBase Server and Agent

This section provides details for licensing the HomeBase Server, and HomeBase Agent software.

The *EMC HomeBase Server Installation and Administration Guide*, and the *The EMC HomeBase Agent Installation and Configuration Guide* provides complete details on licensing the HomeBase software.

HomeBase Server

The HomeBase 6.2.x server software comes with a 30 day evaluation enabler for the HomeBase Server with 20 HomeBase Agent licences.

Note: Be sure to permanently enable the HomeBase Server and Agent licenses, as they expire after 30 days with no grace period.

During the installation of the HomeBase Server, a license request file is automatically generated in the keys directory. The license request is then forwarded to *licensing@emc.com* with all required purchase order details. Copies of the following are then sent:

- ◆ licence.zip file (the HomeBase Server licence)
- ◆ homebase.bks file (a set of encryption keys used for the recovery and replication of profiles between HomeBase Servers)
- ◆ Agent licence batch files (there can be multiple agent licence batch files) that are associated with the HomeBase Server licence.

The default temporary enablers can be overridden by applying a permanent enabler and Agent licence batch to the HomeBase Server when the HomeBase Server Console is first accessed.

HomeBase Agent

When a HomeBase Agent is installed with the NetWorker software, the Agent license is provided automatically during the first profile run from the NetWorker software as it must be able to contact the HomeBase Server to forward profiles for backups. The `-L` setting in the NetWorker client BMR configuration setting is used to do this.

The *EMC HomeBase Server Installation and Administration Guide* provides details on how to license the HomeBase Agent for a Remote HomeBase Server.

Using the NetWorker client port under a firewall server

If the NetWorker client and HomeBase Agent are on the same system outside of the firewall with the HomeBase Server inside the firewall, then port 18821 is required for communication between the HomeBase Agent and the HomeBase Server.

Uninstalling the NetWorker software

Use the `pkgrm` command to uninstall individual NetWorker packages or all of the NetWorker packages simultaneously:

This section provides instructions for the following:

- ◆ [“Software dependencies” on page 120](#)
- ◆ [“Uninstalling the NetWorker software” on page 121](#)
- ◆ [“Uninstalling the HomeBase Agent” on page 122](#)

Software dependencies

The NetWorker software packages depend on each other. Uninstall them in this order:

1. **LGTOserv**
2. **LGTONode**
3. **LGTONmc**

If the Console server software is installed (**LGTONmc**), there is a dependency on the NetWorker client software and the Console server software must be uninstalled first.

4. **LGTOlicm**

If the NetWorker License Manager software is installed, there is a dependency on the NetWorker client software and the NetWorker License Manager software must be uninstalled first.

5. **LGTOclnt**
6. **LGTOman**
7. **LGTOfr** (French language support package)
8. **LGTOja** (Japanese language support package)
9. **LGTOko** (Korean language support package)
10. **LGTOzh** (Simplified Chinese language support package)

Note: The man pages and document files have no dependencies and can be uninstalled at any time.

Uninstalling the NetWorker software

To remove the NetWorker software packages:

1. Log in as root on the system where the software is being removed.
2. Type this command to shut down the NetWorker daemons:

```
nsr_shutdown
```

A list of NetWorker daemons that will be shut down appears, along with a prompt that asks whether to continue with the **nsr_shutdown** command.

3. Type this command to shut down the Console server:

```
/etc/init.d/gst stop
```

4. Remove the software:

- To remove all the packages, type this command:

```
pkgrm LGTOserv LGTONode LGTONmc LGTOlicm LGTOclnt LGTOman
```

Note: Do *not* choose the default option **All** to remove the NetWorker software packages. Choosing this option removes all the software packages (*not* just NetWorker software) that were installed on the computer by using the **pkgadd** utility.

- To remove only select the NetWorker packages, see [Table 37 on page 121](#).

Table 37 NetWorker packages to uninstall

To uninstall these NetWorker packages	Type this command and package name
Server	pkgrm LGTOserv
Storage node	pkgrm LGTONode
Console server	pkgrm LGTONmc Note: The LGTONmc package must be uninstalled before the LGTOclnt package.
NetWorker License Manager	pkgrm LGTOlicm
Client software	pkgrm LGTOclnt
Man pages	pkgrm LGTOman Note: This removes the LGTOman package from the server, storage node, or client where the man pages are installed.
French language support	pkgrm LGTOfr
Japanese language support	pkgrm LGTOja
Korean language support	pkgrm LGTOko
Simplified Chinese language support	pkgrm LGTOzh

5. If you no longer to plan to update or reinstall the NetWorkersoftware:
 - a. Remove the **/nsr** directory.
 - b. Delete the NMC directory. By default, NMC is installed at **/opt/LGTONmc**.

- c. Delete the directory containing the following NMC database files:
 - lgto_gst.db
 - lgto_gst.log
 - gstd_db.conf
6. If the Java Runtime Environment is no longer required, uninstall the JRE.

Uninstalling the HomeBase Agent

Uninstalling the NetWorker client automatically uninstalls the HomeBase Agent.

Note: Uninstalling the HomeBase Agent manually is possible, but not recommended as BMR functionality is removed from the NetWorker software.

The *EMC HomeBase Agent Installation and Configuration Guide* provides complete details on uninstalling the HomeBase Agent.

This chapter includes these sections:

- ◆ [Installing the NetWorker software](#) 124
- ◆ [Uninstalling the NetWorker software](#) 126

Installing the NetWorker software

Complete these tasks to install the NetWorker software:

- ◆ “Task 1: Install the client, storage node, and sever software” on page 124
- ◆ “Task 2: Change the NetWorker servers with access to a client” on page 125
- ◆ “Task 3: Start the NetWorker daemons” on page 126

Task 1: Install the client, storage node, and sever software

The following sections describe how to install the software on the client, storage node, and server.

Client installation

To install NetWorker software on the computer that is designated as the client:

1. Change to the directory that contains the NetWorker software:


```
setld -l .
```
2. Select and install the client package.
3. Respond to the prompts as required.

Note: 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 (/usr/opt/networker/bin).

Storage node installation

The storage node contains the device driver files, installed in /usr/opt/networker/bin.

To install NetWorker software on the computer that is designated as the NetWorker storage node and for which you have purchased an enabler code:

1. Change to the directory that contains the NetWorker software:


```
setld -l .
```
2. Select and install these software packages:
 - Client
 - Storage node
3. Respond to the prompts as required.

Server installation

To install NetWorker software on the computer that is designated as the NetWorker server:

1. Keep a copy of the current configuration. The NetWorker software installation script modifies the following files during the installation process:
 - /etc/rpc
 - /etc/syslog.conf
2. Determine if the packages that are required to run the NetWorker software are installed on the computer. For example:

```
setld -i | grep package_identifier
```

If the package is not installed, load the missing package or patch before installing NetWorker software. The following tables provide a list of the package names:

- [Table 4, “HP Tru64 UNIX: required client software,” on page 24](#)
- [Table 11, “HP Tru64 UNIX required server and storage node software,” on page 29](#)

3. Ensure that there is enough free space to install these software packages:

- Client
- Storage node
- Server

4. Change to the directory where the NetWorker software is installed, and type:

```
setld -1 .
```

If the /nsr directory still exists, it will be reused. If not, there will be a prompt to provide a new location for the /nsr directory. The default location is /var/nsr.

5. At the prompt, choose option **5** to install all of the packages on the server. Install all of the NetWorker software on the server simultaneously.

Software packages on the server must be installed in the following order:

- a. Client software
- b. Storage node software
- c. Server software
- d. NetWorker License Manager software
- e. (Optional) man pages or reference pages

Note: The PATH environment variable for the root user on the NetWorker server and the user on each NetWorker client must contain the directory where the NetWorker executables reside (/usr/opt/networker/bin).

Task 2: Change the NetWorker servers with access to a client

To limit the servers authorized to access a client, specify a list of trusted NetWorker servers for a client in the /nsr/res/servers file. After installing the client, storage node, and server software, use the following procedure to change the NetWorker servers that are authorized to access a client.

To change which NetWorker servers can access a client:

1. Type this command to shut down the NetWorker daemons:

```
nsr_shutdown
```

2. Edit or create the /nsr/res/servers file and add the set of NetWorker servers, one per line, that require access to the client. The first entry in this file becomes the default NetWorker server.

Note: If the /nsr/res/servers file is empty or does not exist, any NetWorker server is authorized to:

- Access and back up the client.
- Perform a directed recovery to the client.

3. If necessary, remove the **-s** option from the **nsrexecd** command that is invoked by the boot-time startup file. Running **nsrexecd** with the **-s** option supersedes the **/nsr/res/servers** file:

- a. Check the NetWorker boot-time startup file to see whether **nsrexecd** is being run with the **-s** option.

The boot-time startup file is **/sbin/init.d/NSRstartstopstart**.

- b. If the **-s** option exists in the boot-time startup file, remove all occurrences of the following in the startup file:

```
-s server_name
```

Task 3: Start the NetWorker daemons

The NetWorker daemons must be started after the installation procedure.

1. Start the NetWorker daemons:

```
/sbin/init.d/NSRstartstop start
```

2. Type this command:

```
ps -ef | grep nsr
```

[Table 38 on page 126](#) lists the NetWorker daemons.

Table 38 Daemons

NetWorker packages	NetWorker daemons
NetWorker server	nsrd, nsrexecd, nsrindexd, nsrmmdbd, nsrmmmd, nsrjobd, nsrmmgd, nsrlcpd
NetWorker client	nsrexecd
NetWorker storage node	nsrexecd, nsrmmmd, nsrlcpd

Note: The NetWorker **nsrmmmd** daemon is only present if one or more devices are enabled. The **nsrmmgd** and **nsrlcpd** daemons are only present on the server if the library is enabled.

Uninstalling the NetWorker software

Individual NetWorker packages or all of the NetWorker packages can be removed simultaneously.

To uninstall the NetWorker software packages:

1. Log in as root.
2. Type this command to shut down the NetWorker daemons:

```
nsr_shutdown
```

A list of NetWorker daemons to be shut down appears, along with a prompt that asks whether to continue with the **nsr_shutdown** command.

3. Determine the NetWorker packages installed on the computer:

```
setld -i | grep LGTO
```

4. Type these commands to remove the software:

- To uninstall *all* the packages, type:

```
setld -d LGTOSERVxxx LGTONODExxx LGTOLICMxxx LGTOCLNTxxx
LGTOMANxxx
```

where *xxx* represents the version of NetWorker software installed on the system.

Note: The NetWorker software packages depend on each other. Remove them in the following order:

1. Server
2. Storage node
3. NetWorker License Manager
4. Client

The man pages, language packages, and documentation files have no dependencies. They can be removed any time.

- To remove *only* specific NetWorker packages, see [Table 39 on page 127](#).

Table 39 NetWorker packages to uninstall

To uninstall these NetWorker packages	Type this command and package name
Server	<code>setld -d LGTOSERVXXX</code>
Storage node	<code>setld -d LGTONODEXXX</code>
NetWorker License Manager	<code>setld -d LGTOLICMXXX</code>
Man pages	<code>setld -d LGTOMANXXX</code>
Client	<pre>setld -d LGTOCLNTXXX</pre> <p>Note: Always uninstall these software packages before uninstalling the client software:</p> <ol style="list-style-type: none"> 1. Server 2. Storage node 3. NetWorker License Manager

5. If you no longer to plan to update or reinstall the NetWorker software:
 - a. Remove the /nsr directory.
 - b. Delete the NMC directory. By default, NMC is installed at /opt/lgtonmc.
 - c. Delete the directory containing the NMC database files **lgto_gst.db** and **lgto_gst.log**.
6. If you no longer require the Java Runtime Environment, uninstall the JRE.

This chapter includes these sections:

- ◆ Installing the NetWorker software 130
- ◆ Uninstalling the NetWorker software 137
- ◆ Installing or uninstalling the NetWorker software by using SMS 140

Installing the NetWorker software

Complete these tasks to install the NetWorker software:

- ◆ [“Task 1: Install the NetWorker software” on page 130](#)
- ◆ [“Task 2: Install the Console software” on page 132](#)
- ◆ [“Task 3: Optional, install the HomeBase Agent” on page 135](#)

Task 1: Install the NetWorker software

This section provides instructions for installing the following NetWorker software:

- ◆ Client
- ◆ Storage node
- ◆ Server
- ◆ NetWorker language pack support
- ◆ NetWorker License Manager
- ◆ HomeBase Agent
- ◆ ConnectEMC

Note: Install the Console server software on one computer in your datazone to manage the NetWorker server. Only one installation of the NetWorker Console server is required to manage multiple NetWorker servers. [“Task 2: Install the Console software” on page 132](#) provides details.

Install the NetWorker License Manager with any of the NetWorker software components. The NetWorker client must be installed before the NetWorker Management Console software.

To install NetWorker software:

1. Verify that the target computer satisfies the requirements. The section [“Console” on page 29](#) provides details.
2. Log in with administrator privileges to the target computer for the NetWorker software installation.
3. If Autorun did not automatically start the installation, double-click the **setup.exe** file, then click **Run** when prompted.
4. In the **Choose Setup Language** page, select a language type. The **Welcome to NetWorker Installation** page appears. Click **Next**.

Note: You cannot de-select the English language package.

5. In the **Customer Information** page, fill in the appropriate information and click **Next**.
6. In the **Windows XP Firewall** page, select **Configure the Windows XP client-side firewall**.

Note: If the firewall is not configured for NetWorker, scheduled backups will no longer function.

7. In the **Installation Type and Location** page, make the following selections and click **Next**:
 - Select the Client, Storage Node, or Server and Client option.
 - To install the NetWorker software in a location other than the default location, click **Change** and specify the installation path.
 - To install the NetWorker License Manager software, select the checkbox.
 - To install the NetWorker Management Console software, select the checkbox.
 - To install the Language Packs software, select the checkbox.
 - Verify the location for the installation files is the desired location, then click **Next**.
8. ConnectEMC is a console program that polls previously stored information from the RAP database, such as server errors and system configuration, and it creates an xml file with this data once per month. The file is then sent to EMC Corporate Customer Service.

Observe the following best practices when installing ConnectEMC:

- It is strongly recommended that ConnectEMC *not* be installed on an existing Windows NetWorker server or storage node. Folder permissions might not allow for the creation of the data files required by ConnectEMC installations.
- If upgrading a NetWorker 7.4 Service Pack 3 or earlier client on Windows and installing ConnectEMC, it is strongly recommended that the previous version of NetWorker client be uninstalled and that the Legato/nsr/tmp folder be deleted prior to installing the new NetWorker client and ConnectEMC.
- Only one instance of ConnectEMC should be installed in a NetWorker datazone.
- An instance of ConnectEMC can only be configured to query one NetWorker server.
- The minimum NetWorker server version required to support ConnectEMC is NetWorker 7.6. Previous versions of the NetWorker server are not able to launch nsrconnect.
- Currently, ConnectEMC can only be installed on a 32-bit Windows system. Install ConnectEMC on one of the 32-bit Windows systems in the NetWorker datazone.

Note: The ConnectEMC software is installed by default under C:\Program Files. You cannot specify a non-default path for the ConnectEMC software installation.

9. On a Windows x86 system, the ConnectEMC Installation page is displayed:
 - Select the **Install ConnectEMC** checkbox.
 - Type the Name or IP address of the NetWorker server in the appropriate field, then click **Next**.

Note: Make sure that the specified NetWorker server is running during the ConnectEMC installation. If the NetWorker server is not running, the installation fails.

When ConnectEMC is installed, an icon for ConnectEMC Console is placed on the desktop. Post-installation instructions for configuring ConnectEMC are provided in the *NetWorker 7.6 Administration Guide*.

10. If required, in the **Feature Selection** page, select a language pack.

11. If the server is installed, the License Agreement page appears. Review the license agreement, select **I accept the terms in this license agreement**, and then click **Next**.
12. The installation program is ready to install. In the **Ready to Install the Program** page, review the settings and click **Install**.
13. In the **NetWorker Server Selection** page, select the NetWorker servers that can perform backups and directed recoveries for this client:
 - To add a NetWorker server that is *not* listed in the **Available Servers** list, type the name of the server in the **Enter a server name** text box and click **Add**.
 - To browse for available NetWorker servers, click **Update List**. Select a NetWorker server from the **Available Servers** list.
 - To add or remove NetWorker servers from the **Available Servers** list to the **Selected Servers** list, use the arrow buttons.

Note: If the **Selected Servers** list is left empty, any NetWorker server can perform backups and directed recoveries of this computer's data. This might affect the security of your data. "[Maintaining a NetWorker software installation](#)" on page 49 describes how to change the **Selected Servers** list after installation.

For Windows Server 2003, Windows XP Professional, or Windows 2000, there is a prompt to run the Change Journal Manager. The NetWorker Administration Guide provides information about configuring NetWorker software to use the Windows Change Journal.



IMPORTANT

For a Windows Server 2003 installation, be sure to install the latest Microsoft VSS roll-up fix. To view more information on the roll-up fix and to download the package appropriate to the operating system, go to the Microsoft knowledge base article at <http://support.microsoft.com/kb/940349>.

Task 2: Install the Console software

Install the Console server software on one computer in the datazone to manage the NetWorker server. Only one installation of the Console server is required to manage multiple NetWorker servers.

Perform either of these steps:

- ◆ "[Install the NetWorker console software on the Windows](#)" on page 133
- ◆ "[Install the NetWorker software on the Windows 2008 Server Core](#)" on page 134

Note: If the NetWorker Management Console software installation option was selected in the Installation Type and Location page, the Console software is installed after the NetWorker software. The Console installation relies on the existence of several other components. Ensure that all of the installation prerequisites are met. The section "[Console](#)" on page 29 provides details.

Install the NetWorker console software on the Windows

To install the Console:

1. In the **Welcome to NetWorker Management Console Installation** page, click **Next**.
2. In the **Customer Information** page, fill in the appropriate information and click **Next**.
3. In the **Product Setup** page:
 - a. To install the software in the default directory, click **Next**.
 - b. To install the software in a different directory, click **Change** and navigate to or type a new destination.

Note: The estimated disk space required for the Console components is 270 MB.

If the **Setup** wizard detects that there is insufficient disk space to install the software, another dialog box appears listing the local drives, and highlighting the drive with insufficient disk space. The list also displays disk size, available space, and required space, which allows the selection of an appropriate drive on which to continue the installation.

4. Specify a User/Group with limited privileges that NMC will use to run the web server.

Note: If a default group that can be used, or is not created a user/group with limited privileges does not exist, follow the Console server requirements specified in the section ["Console" on page 29](#)

5. In the **Configuration Options** page, indicate the Database Destination path, the IP port numbers to use for the embedded HTTP server, and the Client Service port:
 - To change the default database path, select **Change**.
 - To use the default port numbers, type **9000** for the HTTP server and **9001** for the Client Service port.
 - To use different port numbers, type the new port numbers (between **1024** and **49151**).

Note: Port **2638** is reserved by the Console software as it uses the TDS protocol to communicate with the database. Port **9002** is the preferred port for EMC Backup Advisor product.

6. Review information in the **Product Configuration Summary** page and click **Next**.
7. In the **Ready to Install the Program** page, click **Install**.
 - a. Select the checkbox (the default is selected) to launch the client in the default browser immediately after exiting the **InstallShield Wizard**.
 - b. Click **Finish** to exit the **InstallShield Wizard**.

When the installation is complete, the **NetWorker Management Console Setup Completed** page appears. The box shows where the **install.log** file and **gstd.log** file can be viewed. It also gives the browser URL to use to start the Console software from any desktop.

8. Upon launching the client, if a supported version of Java cannot be detected on the host, a message appears with instructions on how to install the appropriate version of Java. The JRE is required to run the Console reporting function.

- Follow the instructions to install the JRE version 1.5 or 1.6 software.

Note: If running in a pure IPv6 environment, install JRE version 1.6.

- If the required JRE version is already installed, click the appropriate link to start the NetWorker Management Console.

Note: If running on a 64-bit Windows host, install the 32-bit JRE version.

9. If the Console server and the NetWorker server are installed on separate hosts, add the Console administrator to the administrator lists of the monitored NetWorker server. This enables the Console administrator to administer and monitor the target NetWorker server.

On the NetWorker server:

- a. Specify the process owner of the Console daemon process depending on which host contains the Console server:

– If on a Microsoft Windows host, type:

```
nsraddadmin -u "user=SYSTEM, host=console_host"
```

– If on a AIX, HP-UX, Linux or Solaris only host, type:

```
nsraddadmin -u "user=root, host=console_host"
```

- b. Specify the Console administrator user:

```
nsraddadmin -u "user=administrator, host=console_host"
```

where *console_host* is the Console server hostname.

Install the NetWorker software on the Windows 2008 Server Core



IMPORTANT

In Windows 2008, the `vcredist_x64.exe` and `vcredist_x86.exe` files are required for the NetWorker software. Do *not* uninstall these files.

When installing the NetWorker software on the Windows 2008 Server Core, do not use `autorun.exe` as Windows Explorer is not available. Instead, from the command prompt use `setup.exe` located in the `networkr` directory:

1. Run the following command to begin the NetWorker installation:

```
c:\installdir\networkr>setup.exe
```

where *installdir* is the location of the NetWorker software.

2. Complete the installation as described in [“Installing the NetWorker software” on page 130](#).



IMPORTANT

The Console server is not supported on the Windows 2008 Server Core. Do *not* select the NetWorker Management Console option when installing the NetWorker software.

Task 3: Optional, install the HomeBase Agent

NetWorker release 7.6 is shipped with EMC HomeBase Agent version 6.2.x. to enable Bare Metal Recovery (BMR) for server system data. Although HomeBase Agent version 6.1.x is still supported with NetWorker 7.6, it is recommended that HomeBase Agent 6.2.x is used.

During the NetWorker client installation, the user is prompted whether to install the HomeBase Agent version 6.2.x. When the installation completes, the user is notified that the Homebase Server version 6.2.x is required.



IMPORTANT

The Homebase Agent version 6.2.x client requires that the Homebase Server version 6.2.x also be installed in order for BMR to function in the NetWorker 7.6 environment. The *HomeBase Server Release 6.2 Installation and Configuration Guide* provides complete details on the HomeBase Server version 6.2.x.

HomeBase Agent space requirements

[Table 40 on page 135](#) specifies the minimum system requirements for the HomeBase Agent.

Table 40 HomeBase Agent minimum system requirement

NetWorker files	Space		CPU
	x86	x64	
EMC HomeBase Agent binary	512 MB	512 MB	1 GHz
Temporary space required for EMC HomeBase Agent	512 MB	512 MB	1 GHz

The HomeBase Agent collects configuration information about the operating system of the host on which it is installed. This information is called a profile.

A profile can be used to:

- ◆ Monitor configuration changes
- ◆ Migrate configuration changes
- ◆ Recover the operating system configuration from an EMC HomeBase Server

The profile data includes hardware configurations, operating system levels, system tuning, network configuration and connections, security, and storage layouts. This information is captured with a NetWorker save set backup and is sent to a secure HomeBase Server for storage and analysis. The HomeBase Server is also required to perform a BMR server recovery or migration.

The following documents provide information about the HomeBase Server features:

- ◆ *EMC HomeBase Server Installation and Administration Guide*
- ◆ *EMC HomeBase Server User Guide*

Enabling BMR server support

Connection with a HomeBase Server is enabled during the set up of the NetWorker server. This connection enables the delivery of profile data from the NetWorker client to the HomeBase Server.

To enable BMR support:

1. From the **Administration** window, click **Configuration**.
2. Select the NetWorker server name.
3. From the **File** menu, select **Properties**.
4. In the **Properties** dialog box, click the **Configuration** tab.
5. Enter the IP address or hostname for the HomeBase Server in the BMR server field and then, click **OK**.

Note: The HomeBase Server SSL protocol must be configured and activated on the HomeBase Server. The *EMC HomeBase Server Installation and Administration Guide* provides information about enabling the SSL protocol.

Licensing the HomeBase Server and Agent

This section provides details for licensing the HomeBase Server, and HomeBase Agent software. The *EMC HomeBase Server Installation and Administration Guide*, and the *The EMC HomeBase Agent Installation and Configuration Guide* provides complete details on licensing the HomeBase software.

HomeBase Server

The HomeBase 6.2.x server software comes with a 30 day evaluation enabler for the HomeBase Server with 20 HomeBase Agent licences.

Note: Be sure to permanently enable the HomeBase Server and Agent licenses, as they expire after 30 days with no grace period.

During the installation of the HomeBase Server, a license request file is automatically generated in the keys directory. The license request is then forwarded to *licensing@emc.com* with all required purchase order details. Copies of the following are then sent:

- ◆ licence.zip file (the HomeBase Server licence)
- ◆ homebase.bks file (a set of encryption keys used for the recovery and replication of profiles between HomeBase Servers)
- ◆ Agent licence batch files (there can be multiple agent licence batch files) that are associated with the HomeBase Server licence.

The default temporary enablers can be overridden by applying a permanent enabler and Agent licence batch to the HomeBase Server when the HomeBase Server Console is first accessed.

HomeBase Agent

When a HomeBase Agent is installed with the NetWorker software, the Agent license is provided automatically during the first profile run from the NetWorker software as it must be able to contact the HomeBase Server to forward profiles for backups. The **-L** setting in the NetWorker client BMR configuration setting is used to do this.

The *EMC HomeBase Server Installation and Administration Guide* provides details on how to license the HomeBase Agent for a Remote HomeBase Server.

Using the NetWorker client port under a firewall server

If the NetWorker client and HomeBase Agent are on the same system outside of the firewall with the HomeBase Server inside the firewall, then port 18821 is required for communication between the HomeBase Agent and the HomeBase Server.

Uninstalling the software

This section provides instruction for the following:

- ◆ [“Uninstalling the NetWorker software” on page 137](#)
- ◆ [“Uninstall ConnectEMC” on page 139](#)
- ◆ [“Uninstall the Windows 2008 Server Core software” on page 139](#)
- ◆ [“Uninstalling the HomeBase Agent” on page 140](#)
- ◆ [“Installing or uninstalling the NetWorker software by using SMS” on page 140](#)

Uninstalling the NetWorker software

Note: Uninstall the Console before uninstalling the rest of the NetWorker software. If NetWorker License Manager, and ConnectEMC is installed, it will be removed along with the NetWorker software components. To remove *only* the NetWorker License Manager and leave the other NetWorker components intact, skip this procedure. [“Maintaining a NetWorker software installation” on page 49](#) provides details.

To uninstall the NetWorker software and the language packages from a host computer:

1. Log in with administrator privileges to the target computer.
2. Stop all **NetWorker** programs and ensure that no other program, such as **Windows Explorer**, is accessing directories or files under `NetWorker_install_path`.
3. In the **Windows Control Panel**, select **Add/Remove Programs**.
4. In the **Add/Remove Programs** page, select **NetWorker Management Console Server** and click **Remove**.

All of the NetWorker Management Console Server is removed *except* for the JRE Java Web Start programs on which the Console is dependant. You can remove the Java programs through the **Add/Remove Programs** window separately.

Note: On 64-bit Windows, if you select **NetWorker Management Console** to remove the NMC server, the error message "An error occurred while trying to remove NetWorker Management Console..." appears, but the uninstallation process is unaffected.

5. In the **Add/Remove Programs** page:
 - a. Select **NetWorker**.
 - b. Select one of the following options:
 - **Change** — Launches the Setup program in Maintenance mode and performs a partial uninstallation of the NetWorker software leaving the NetWorker metadata. You can remove all the language packages except English in Maintenance mode.
 - **Remove** — Performs a complete uninstallation of the NetWorker software. If you select **Remove**. Click **Yes** when prompted to perform the uninstallation.

6. In the **Maintenance Type** dialog box, select **Remove**, and then click **Next**.

Note: If the NetWorker software is uninstalled from Maintenance Mode and the Console is also installed, the Console will be uninstalled first, then the NetWorker software will be uninstalled.

7. In the **Ready to Remove** dialog box, ensure that the **Remove NetWorker Metadata** option is selected to remove all metadata (if not reinstalling the software), and then click **Remove**.

By default, the **Remove NetWorker Metadata** checkbox is clear to ensure that all of the NetWorker configuration files (such as client file indexes, media database, logs, and resource files) are retained for a future installation of the NetWorker software. This has the same effect as Partial Uninstallation in NetWorker releases prior to 7.0. If the **Remove NetWorker Metadata** checkbox is not selected, the following client and server files remain in the \Program Files\Legato\nsr directory after uninstall:

- Any logs that have been created
 - Any deduplication data
 - All index entries
 - All **mm** entries
 - All **res** files
 - All files in the **tmp** directory
 - All files in the **debug** directory
8. In the **Ready to Remove** dialog box, click **Remove**.
 9. In the **NetWorker Setup Complete** dialog box, click **Finish**.
 10. Remove the **NetWorker Management Console** shortcut icon from the desktop. Uninstalling the NetWorker software does not remove the **NetWorker Management Console** shortcut icon from the desktop, it must be removed manually.
 11. If the NetWorker software is not being updated or reinstalled:
 - a. Remove the \nsr directory.
 - b. Delete the NMC directory. By default, NMC is installed at c:\program files\legato.
 - c. Delete the directory containing the NMC database files **lgto_gst.db** and **lgto_gst.log**.
 12. If the Java Runtime Environment no longer required, uninstall the JRE.



IMPORTANT

In Windows 2008, the vcredist_x64.exe and vcredist_x86.exe files are required for the NetWorker software. Do *not* uninstall these files.

Uninstall ConnectEMC

Uninstalling ConnectEMC in Maintenance mode is not supported.

To uninstall ConnectEMC:

1. Run the **uninst_connect.cmd** script from the installation media (CD), or the /networkr sub-directory where the NetWorker software package is extracted.
2. Re-install ConnectEMC in Maintenance mode if required.

Complete details for installing ConnectEMC is available in [Step 9](#) of the NetWorker installation procedure.

Note: ConnectEMC is automatically uninstalled with the NetWorker software.

Uninstall the Windows 2008 Server Core software

To uninstall the software, perform one of the following:

- ◆ Run the setup.exe file from the NetWorker installation disk and select to uninstall the software in maintenance mode.
- ◆ Use the Windows Management Instrumentation command-line utility (wmic.exe) to access information about NetWorker and to uninstall it:

```
c:\>wmic product where name="NetWorker" uninstall
Executing(\\ANGUR-W2K8-CORE\ROOT\CIMV2:Win32_Product.IndentifyingNumber="{37AD0879-5B35-4A5C-9739-13302230CD8B}",Name="NetWorker",Version="7.6.0")
->Uninstall()
Method execution successful.
Out Parameters:
instance of __PARAMETERS
{
  ReturnValue = 0;
};
```

Note: For uninstalling NMC, name="NetWorker Management Console Server" must be used.

The Microsoft Knowledgebase article 290216 provides more information on the wmic.exe utility.

- ◆ Use wmic.exe with msiexec to discover the installation product name for NetWorker, and the location of the msi package on the server to uninstall the software:

1. Run the **wmic.exe** utility:

```
c:\>wmic product NetWorker get /value
AssignmentType=1
Caption=NetWorker
Description=NetWorker
HelpLink=http://customernet.emc.com
HelpTelephone=1-877-534-2867
IdentifyingNumber={37AD0879-5B35-4A5C-9739-13302230CD8B}
InstallDate=20091001
InstallDate2=
InstallLocation=C:\Program Files\Legato\nsr\
InstallSource=C:\Build_102\nw76_win_x86\win_x86\networkr\
InstallState=5
Language=0
LocalPackage=C:\Windows\Installer\48b213b.msi
```

```
Name=NetWorker
PackageCache=C:\Windows\Installer\48b213b.msi
PackageCode={76673145-1A42-4354-98F6-E56374F89004}
PackageName=NetWorker.msi
ProductID=none
RegCompany=
RegOwner=Windows User
SKUNumber=
Transforms=@1033.MST
URLInfoAbout=http://software.emc.com
URLUpdateInfo=http://softwareforms.emc.com/resources/downloads/
Vendor=EMC Corporation
Version=7.6.0
WordCount=0
```

2. Use the msiexec utility to uninstall the product with the IdentifyingNumber:

```
c:\>wmic>msiexec /I {37AD0879-5B35-4A5C-9739-13302230CD8B}
```

3. In NetWorker maintenance mode, use **remove** to uninstall the software.

Uninstalling the HomeBase Agent

Uninstalling the NetWorker client automatically uninstalls the HomeBase Agent.

Note: Uninstalling the HomeBase Agent manually is possible, but not recommended as BMR functionality is removed from the NetWorker software.

The *EMC HomeBase Agent Installation and Configuration Guide* provides complete details on uninstalling the HomeBase Agent.

Installing or uninstalling the NetWorker software by using SMS

The Microsoft Systems Management Server (SMS) can be used to perform automated NetWorker software installations, or uninstallations over a network.

Note: For best results, do not configure the SMS server on a NetWorker server. The SMS server can be configured on a NetWorker client.

How to Install or Remove NetWorker Software by Using SMS

Note: For detailed instructions on performing SMS procedures, such as creating an installation package or deploying an installation job, refer to the Microsoft SMS documentation.

To install or remove the NetWorker software by using SMS:

1. Create a shared directory on a local disk on the SMS server.

For example, create a shared directory called networkr.

2. Copy all files from the appropriate directory on the NetWorker CD-ROM to the directory created in [Step 1](#).

For example, copy the files from \win_x86\networkr on the CD-ROM to the networkr directory on the SMS server.

3. Using the SMS Administrator Console, create an installation package from the NetWorker.sms package definition file located in the networkr directory.

Note: The NetWorker.sms file is intended to be used as starting point for a package definition. The Microsoft SMS documentation provides complete instructions on customizing the package definition for a specific environment.

4. Using the SMS Administrator Console, create an installation or uninstallation job for the package you created in [Step 3](#).
5. Deploy the installation or uninstallation job created in [Step 4](#).

This chapter provides information about testing and verifying the NetWorker software installation.

Testing the Installation

To verify that the NetWorker software was installed properly, you must first connect to a NetWorker server, configure a device, and then test the software on the device:

To test the software, perform these tasks:

- ◆ [“Task 1: Start the Console for the first time” on page 144](#)
- ◆ [“Task 2: Add a NetWorker server to the Console server” on page 145](#)
- ◆ [“Task 3: Configure a stand-alone device” on page 146](#)
- ◆ [“Task 4: Test the NetWorker software installation” on page 147](#)

Task 1: Start the Console for the first time

To run the Console, ensure that the Console server has been installed on a Solaris, AIX, HP-UX, Microsoft Windows or Linux host. You can not initiate a browser session from an Irix or HP Tru64 UNIX server. You can however, open a browser session with the Console from a Linux, Solaris, Microsoft Windows, HP-UX, or an AIX host.

These steps assume that the NetWorker software is installed and that all of the software and hardware requirements have been met on the computer that will access the Console. [“NetWorker Management Console” on page 13](#) provides information about the Console.

How to start the Console the first time

To start the Console server software for the first time:

1. Verify that the console processes **gstd**, **dbsrv9** and **httpd** are running on the **NetWorker Management Console** server.

Note: On Windows, **httpd** is registered as the EMC GST Web Service, and there are always two **httpd** processes running when the NMC server is active. On UNIX, there are two or more **httpd** processes running, where the parent **httpd** process runs as root and the child process(es) run as the user name specified during the installation.

2. Start a web browser session.
3. Type the URL of the Console server:

http://server_name:http_service_port

where:

- *server_name* is the name of the computer where the Console server component was installed.
- *http_service_port* is the port for the embedded HTTP server. The HTTP port is specified during installation. The default HTTP port is **9000**. For example:

http://houston:9000

4. From the **Welcome** page, click **Start**.
5. From the **Security Warning** screen, click **Start** to install and run NetWorker **Console**.

6. For Solaris and Linux platforms, type this command to start the Console server:
`/etc/init.d/gst start`
 For AIX, type:
`/etc/rc.gst start`
 For HP-UX, type:
`/sbin/init.d/gst start`
7. If the appropriate JRE version is not already installed on the system, a prompt to install it appears. Follow the onscreen instructions to install JRE.
8. For users upgrading from a previous release, in the NetWorker **Management Console Login** dialog box, type the username and password.

 On Windows only, once the JRE is installed, the **Java Web Start Desktop Integration** dialog box appears.
9. For the Windows platform only, complete the **Java Web Start Desktop Integration** dialog box by selecting one of the following options:
 - To place a shortcut on the desktop, click **yes**.
 - To decline having a shortcut placed on the desktop, click **No**.
 - To have the option to decide later, click **Ask Later**.

Note: If upgrading from a previous release and prompted for a user and password, the default user is administrator and the default password for the administrator is "administrator". For security purposes, this password should be changed during the first login session.

10. Click **OK**. The **Console** window and the **Getting Started** page appears.

How to start the Console after the first time

After the Console has been started the first time, start it later by using one of the following methods:

- ◆ Point the browser to the same URL as in "[Task 1: Start the Console for the first time](#)" on page 144.
- ◆ Double-click **NetWorker Console** in the **Java Web Start Application Manager**.
- ◆ On Microsoft Windows, double-click the desktop icon, if one was set up through the **Java Web Start Application Manager**.

Task 2: Add a NetWorker server to the Console server

To add and select a NetWorker server:

1. Start the **NetWorker Console** software.
2. From the **Console** window, click **Enterprise**.
3. From the left pane, select the **Enterprise** icon.
4. From the **File** menu, select **New>Host**.
5. Type a hostname and alias for the NetWorker server, and the NetWorker server appears in both the right pane and left pane.
6. From the left pane, select the NetWorker server.

7. From the right pane, select the NetWorker application.
8. From the **Enterprise** menu, select **Launch Application**, and the **NetWorker Administration** window launches.

If the server connection fails, refer to the server connectivity information in the NetWorker Administration Guide to troubleshoot the problem.

Task 3: Configure a stand-alone device

Devices must be configured before testing the NetWorker software.

You can configure one of these devices:

- ◆ [“Stand-alone tape device” on page 146](#)
- ◆ [“Stand-alone file or advanced file device” on page 146](#)
- ◆ [“Autochanger or silo” on page 147](#)

The NetWorker Administration Guide provides information about configuring a device.

Stand-alone tape device

To configure a stand-alone tape device:

1. In the server's NetWorker Administration interface, click **Devices**.
2. From the left pane, select **Devices**.
3. From the left pane, select **Storage Nodes**.
4. Right-click the storage node for the device.
5. Select **Scan for devices**. The **Scan for Devices** window appears.
6. From the list, select the storage node to be scanned.
7. Click **Start Scan** after filling in the requested information. The new device appears in the right pane.
8. From the right pane, select the new device.
9. From the **Devices** menu, select **Devices>Device Operations>Label**. The **Label** window appears.
10. Verify the information in the **Label** window and click **OK**.

Stand-alone file or advanced file device

To configure a stand-alone file or advanced files device:

1. In the server's NetWorker Administration interface, click **Devices**.
2. From the left pane, select **Devices**.
3. From the **File** menu, select **New**. The **Create Devices** window appears.
4. For the **Name** attribute, type the device path.
5. For the **Media type** attribute, select **file** or **adv_file**.
6. Click **OK**. The new device appears in the right pane.
7. From the right pane, select the new device.
8. From the **Devices** menu, select **Devices>Device Operations>Label**.
9. Verify the information in the **Label** window and click **OK**.

Autochanger or silo

To configure a new library resource (autochanger or silo) to a storage node:

1. In the server's NetWorker Administration interface, click **Devices**.
2. From the left pane, select **Storage Nodes**.
3. Right-click the storage node for the device.
4. Select **Configure All Libraries**.
5. Click **Start Configuration** after filling in the requested information.
6. Click **Finish** on the **Configuration** window, when the configuration is complete.

Task 4: Test the NetWorker software installation

Test a NetWorker installation by performing an ad hoc (manual) backup of a file or folder. You can also use the NetWorker Client Configuration Wizard to configure a scheduled backup. The NetWorker Administration Guide provides information about the wizard.

The procedure to test the installation differs for Windows and UNIX.

On Microsoft Windows

To test the NetWorker software on a stand-alone tape device:

1. Start the **NetWorker Console** software and then start the **NetWorker User** program.

To start the **NetWorker User** program:

- a. From the **Administration** window, click **Monitoring**.
- b. From the **Monitoring** menu, select **Launch NetWorker User Application**.

2. In the **NetWorker User** program, click **Backup**.

The **NetWorker User** program provides a graphical interface through which to perform adhoc backups. The NetWorker Administration Guide provides information about the **NetWorker User** program.

3. In the left pane of the **Backup** window, click the appropriate directory folder.
4. Select each directory and/or file for the adhoc backup by performing one of the following:
 - Select the directory or file and click **Mark**. To clear an item, click **Unmark**.
 - Right-click the directory or file.

When a directory or file is marked for backup, a check mark appears next to that item.

5. Click **Start** to begin the adhoc backup.

The **Backup Status** dialog box displays the progress of the backup. When the NetWorker server has successfully finished the backup, the following message appears:

Backup completion time: 2-15-07 3:27p

Note: If the backup fails, an error message appears. Use the **Windows Event Viewer** to examine the event logs for additional information. Error messages are also written to the NetWorker log file. If the test backup was not successfully completed, refer to the troubleshooting information in the NetWorker Administration Guide to determine the cause.

On UNIX

To test the NetWorker software on a stand-alone device, perform an adhoc backup from the command-prompt by using the **save** command.

For example, to back up C:\myfile to the server jupiter, type:

```
save -s jupiter /tmp/myfile.txt
```

The UNIX man pages provides more information.

This chapter describes how to evaluate and license the NetWorker software. Topics include:

- ◆ Overview of evaluating and licensing 150
- ◆ Evaluating the NetWorker software 150
- ◆ Permanently licensing the NetWorker software 153
- ◆ NetWorker License Manager 160
- ◆ Troubleshooting 160

Overview of evaluating and licensing

NetWorker software and added features, such as modules, can be downloaded and evaluated for free from Powerlink, the EMC website, or the media kit. The software can be evaluated for 30 days without an enabler code or license. After that, you can obtain evaluation enablers to extend the evaluation period for an additional 45 days. [“Evaluating the NetWorker software” on page 150](#) provides information about evaluating the NetWorker software.

To permanently use the NetWorker software, you must license the software on the Powerlink Licensing site and apply the supplied licensing key on the NetWorker server. The license key includes permanent enabler codes and corresponding authorization (auth) codes. [“Permanently licensing the NetWorker software” on page 153](#) provides information about permanently licensing the NetWorker software.

The information in this chapter assumes that the NetWorker software is installed and all of the software and hardware requirements have been met on the computer that accesses the NetWorker Management Console interface (known as Console). These requirements are described in the NetWorker Installation Guide.

Base Enabler

Each installation of NetWorker server software must be licensed with a base enabler. Only the server’s enabler is called a *base* enabler. This enabler “turns on” the software and allows the use of a particular bundle of features, such as a specified number of clients and devices. All license keys are entered and stored on the NetWorker server, which enforces the licensing.

Base enablers come in different editions that enable varying degrees of functionality. Add-on enablers allow a broader scope of features.



IMPORTANT

You cannot delete the base enabler code that enables the basic NetWorker software. The base enabler can only be upgraded or downgraded.

Evaluating the NetWorker software

You can evaluate NetWorker software in two ways:

- ◆ [“Evaluating a new installation of NetWorker software” on page 150.](#)
- ◆ [“Evaluating features of an existing installation” on page 151.](#)

To permanently use the NetWorker software to back up and recover data, you must license the software. [“Permanently licensing the NetWorker software” on page 153](#) provides information.

Evaluating a new installation of NetWorker software

When you first install the NetWorker software, you can evaluate the software with all the modules and features for 45 days free without entering any enabler codes or licenses.

[“Evaluation enablers” on page 151](#) provides information on extending the evaluation period an additional 30 days.

Evaluating features of an existing installation

If you are evaluating one or more NetWorker modules or features on an edition of NetWorker software that has already been installed and licensed:

1. Contact your EMC Sales Representative to obtain an Entitlement Extension and resulting evaluation enabler code.
2. On the NetWorker server, enter an evaluation enabler code for each module or feature to be evaluated. [“How to apply an evaluation enabler code” on page 151](#) provides information.

Evaluation enablers

Evaluation enablers are free, and must be applied on the NetWorker server. An evaluation enabler extends the evaluation period for an additional 45 days. The evaluation enabler cannot be permanently authorized.

To obtain entitlement extensions and the resulting evaluation enablers; do one of the following:

- ◆ Contact your EMC Sales Representative.
- ◆ Refer to the media kit for EMC Information Protection and Availability Product Families.

How to apply an evaluation enabler code

To apply an evaluation enabler on the NetWorker server:

1. Start the **NetWorker Management Console** software.
2. Open the **Administration** window:
 - a. In the **Console** window, click **Enterprise**.
 - b. In the left pane, select a NetWorker server in the **Enterprise** list.
 - c. In the right pane, select the application.
 - d. From the **Enterprise** menu, click **Launch Application**. The **Administration** window is launched as a separate application.
3. From the **Administration** window, click **Configuration**.
4. In the left pane, select **Registration**.
5. From the **File** menu, select **New**.
6. In the **Enabler Code** attribute, type the enabler code.
7. (Optional) In the **Comment** attribute, type a description of the license.
8. Click **OK**.

Evaluation enabler alert

An alert message is generated 30 days before a NetWorker evaluation enabler code expires. The alert remains until the NetWorker evaluation enabler is authorized or deleted.

To view the license alert one of two ways:

- ◆ From the **NetWorker Administration** window, click **Monitoring** and select the **Alert** tab.
- ◆ From the **Console** window, click **Events**.

Color-coded icons appear with the alert message:

- ◆ A yellow icon indicates that the enabler will expire within 30 days. The message appears daily until 10 days prior to the evaluation enabler code expiration.
- ◆ A red icon indicates that the enabler will expire within 10 days. The message appears daily up to and including the day of the enabler code expiration.

By the end of the evaluation period, you must permanently license the software to continue using modules or features that you have evaluated. [“Apply the license key on the NetWorker server.” on page 154](#) provides information.

Update enablers

An update enabler is necessary to move from an existing major NetWorker release to a newer major NetWorker release, for example, from NetWorker 7.4 to NetWorker 7.5 and NetWorker 7.6. Update enablers are *not* required for NetWorker Service Packs.

With NetWorker 7.6 and later, if an update enabler is required, the NetWorker software automatically adds the required update enabler code to its configuration. The update enabler expires after 45 days. You must contact Powerlink Licensing within 45 days to permanently authorize the update enabler.



IMPORTANT

If the auth code for the update enabler code is not applied within 45 days, the NetWorker server software will be disabled. Entering the auth code enables the software even if the update enabler code has expired. The NetWorker 7.5 update enabler code cannot be deleted, only authorized with the auth code.

With a first-time purchase of NetWorker software, a one-year update agreement may be included. After a year, an update enabler may be acquired with a new update agreement purchase.

Update enabler alert

An alert message is generated 45 days before a NetWorker update enabler code expires. This alert remains until the NetWorker update enabler is authorized.

You can view a license alert in one of three ways:

- ◆ From the **NetWorker Administration** window, click **Monitoring** and select the **Alert** tab.
- ◆ From the **Console** window, click **Events**.
- ◆ Type **nsrwatch** at the command line.

A red icon within the alert message indicates that the update enabler will expire within 45 days. The message appears daily up to and including the day of the update enabler code expiration.

By the end of the evaluation period, you must permanently license the software to continue using modules or features that you have evaluated. [“Apply the license key on the NetWorker server.” on page 154](#) provides information.

Permanently licensing the NetWorker software

This section includes the following topics:

- ◆ “Licensing process flow” on page 153
- ◆ “How to permanently license the NetWorker software” on page 154

Licensing process flow

To permanently use the NetWorker software to back up and recover data, you must license the software. This licensing process is the same for all editions of the NetWorker software, and for the individual modules and features.

Figure 1 on page 153 illustrates the licensing process flow.

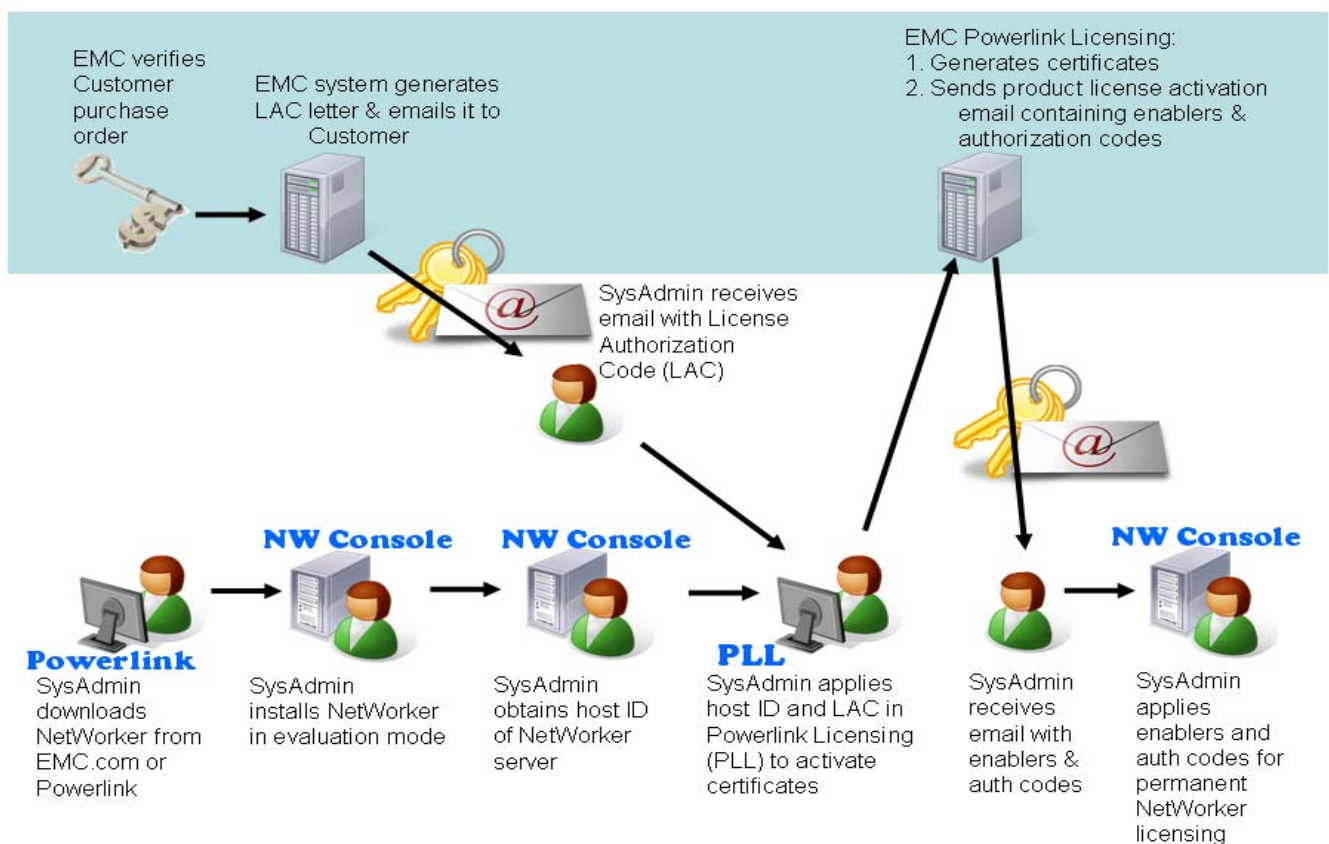


Figure 1 NetWorker license process flow

The NetWorker licensing process consists of the following basic steps:

1. Download and install the software for evaluation.
2. Send a purchase order for the software to EMC, which lists the requested NetWorker product, options, and modules. EMC sends a License Authorization Code (LAC) letter by e-mail in response to the valid purchase order.

Note: If no evaluation period is required, the first and second stages can be done together.

3. At the Powerlink Licensing site, enter the LAC and the host ID of the NetWorker server to activate the software license certificate. Powerlink Licensing confirms the license activation by e-mail, and sends a “product license activation letter” that contains the license key (permanent enabler codes and auth codes).
4. Apply the license key on the NetWorker server.

How to permanently license the NetWorker software

To license the NetWorker software, perform the following tasks:

- ◆ “Task 1: Install the NetWorker software for evaluation” on page 154
- ◆ “Task 2: Send the purchase order” on page 154
- ◆ “Task 3: Review the License Authorization Code (LAC) letter” on page 154
- ◆ “Task 4: Obtain the host ID of the NetWorker server” on page 155
- ◆ “Task 5: Activate the software license certificate” on page 155
- ◆ “Task 6: Download the NetWorker license keys from EMC Powerlink Licensing”
- ◆ “Task 7: Delete all expired evaluation enabler codes” on page 156
- ◆ “Task 8: Apply the license key on the NetWorker server” on page 157

Task 1: Install the NetWorker software for evaluation

Install the NetWorker software according to the instructions in the NetWorker Installation Guide.

Task 2: Send the purchase order

Send to EMC the customer purchase order list of NetWorker product models to be purchased. The purchase can include a variety of products, such as a NetWorker server, client packages, storage node packages, database modules, and deduplication.

Task 3: Review the License Authorization Code (LAC) letter

Upon receipt of a valid purchase order, EMC sends a License Authorization Code (LAC) letter by e-mail to the specified customer. The information in the LAC letter is used to activate the software license certificate. The NetWorker server’s host ID is also required for the activation.

Review the LAC letter, which contains the following:

- ◆ A LAC to be used to activate the license keys for the products. License key consists of permanent enabler codes and auth codes.
- ◆ Instructions for activating the software and obtaining the license keys.
- ◆ Software download instructions, in case the NetWorker software has not yet been downloaded in evaluation mode.
- ◆ A list of the NetWorker products ordered, along with their SKU numbers.
- ◆ Contacts for licensing and support information.



IMPORTANT

Do not confuse a LAC with an auth code. LACs are used in Powerlink Licensing to obtain and activate the license key. A LAC enables you to obtain an auth code, but it is the *combined* application of permanent enabler and auth codes in the NetWorker software that permanently licenses it.

Task 4: Obtain the host ID of the NetWorker server

The following steps should be performed by the customer, preferably a NetWorker system administrator.

To find the host ID of the NetWorker server, follow these steps:

1. On the NetWorker server, start the NetWorker Management Console (Console).
2. Select **NetWorker Administration**.
3. In the **Administration interface**, click **Configuration**.
4. Right-click **Registrations** in the navigation tree.
5. Right-click the NetWorker evaluation license (or any NetWorker license) in the **Registrations** area of the screen. The **Properties** window appears.
6. Make note of the host ID number.

Task 5: Activate the software license certificate

The following step should be performed by the customer, possibly a NetWorker system administrator.

To create and activate the software license certificate:

1. Go to the EMC Powerlink website (registration required) at: <http://Powerlink.EMC.com>. Once there, if you do not have an account, follow the New Member Registration steps.
2. Log in with your username and password.
3. Navigate to **Support > Software Downloads and Licensing > License Management**.
4. Locate and click **NetWorker**. The **Powerlink Licensing** page appears.
5. In the **LAC(s)** field, type the LAC number found in your LAC letter.
6. In the **Machine Name** field, type the name of the machine where you activate your licenses. Machine names must be unique for each parent company.
7. In the **Locking ID** field, type the NetWorker server host ID number that you obtained in [“Task 4: Obtain the host ID of the NetWorker server” on page 155](#).
8. Click **Activate**.

Product license activation letter

EMC e-mails the product license activation letter after the software license certificate has been activated in Powerlink Licensing.

The letter contains the following:

- ◆ A list of the purchased products, their part numbers, quantities, and version levels
- ◆ The certificate ID number
- ◆ The LAC
- ◆ The NetWorker host ID
- ◆ The license key, that consists of permanent enablers and auth codes. Once applied jointly in the NetWorker Console interface, these codes permanently license the NetWorker software.
- ◆ Contacts for licensing and support information

Task 6: Download the NetWorker license keys from EMC Powerlink Licensing

You can install the license key on a local NetWorker server, a remote NetWorker server, or a License Manager system.

To download the license key from EMC Powerlink:

1. Go to the EMC Powerlink website (registration required) at: <http://Powerlink.EMC.com>
2. Select **Support > Software Downloads and Licensing > License Management**, and then select **NetWorker** from **Licensing D-Q** and follow the instructions for your product. The **Powerlink Licensing Home** page appears.

Note: If the LAC number has not yet been entered, activated, and associated with the host ID, follow the instructions in the e-mail received from Powerlink Licensing before proceeding with the next step.

3. On the **Powerlink Licensing Home** page, select **Download Enabler Codes**. The **Search for Downloading Enabler Codes** page appears.
4. In the **%HostID** attribute, type the NetWorker server host ID number that you obtained in [“Task 4: Obtain the host ID of the NetWorker server” on page 155](#).
5. Click **Search**. The **Search for Downloading Enabler Codes** page appears, displaying the list of hosts that match the criteria.
6. Select the host ID that matches the criteria. The **Download** page appears.
7. Click **Download Enablers** and perform the following:
 - a. Click **Download CSV** and save the file. The **CSV** file contains the enabler codes and the information related to them, including part descriptions, part numbers, and auth codes. You can import this file into Excel and search and sort the contents.
 - Format: <host ID>.csv
 - Example: df010b3f.csv
 - b. Click **Download nsradmin** and save the file.
 - Format: <host ID><date>.nsradmin
 - Example: df010b3f_20080814.nsradmin
 - c. Click **Download ReadMe** and save the file. The **ReadMe** file describes the process and how to use **nsradmin** to load the enablers.
 - Format: ReadMe_<host ID>_<date>.txt
 - Example: ReadMe_df010b3f_20080814.txt

These files can be downloaded at any time from Powerlink.

Note: As additional licenses are added to a host profile, these new licenses will be included in future downloads.

Task 7: Delete all expired evaluation enabler codes

All expired evaluation enablers must be deleted before the license key is applied on the NetWorker server to permanently license the software. An evaluation enabler extends the evaluation period for an additional 45 days. The evaluation enabler cannot be permanently authorized.

Note: You can delete an evaluation enabler code at any time, whether or not it has been permanently authorized. The license is *not* removed when the software is uninstalled.

To delete an enabler code:

1. From the **Administration** window, click **Configuration**.
2. Click **Registrations**.
3. Right-click the license to be deleted, then select **Delete**.
4. Click **Yes** to confirm the deletion.



IMPORTANT

You cannot delete the base enabler code that enables the basic NetWorker software. The base enabler can only be upgraded or downgraded.

Task 8: Apply the license key on the NetWorker server



IMPORTANT

Even if you have installed evaluation enablers that have not yet expired, in order to license the NetWorker software permanently you must apply the license key. The license key is provided in the product license activation letter.

The final step in the licensing process is to apply the license key on the NetWorker server. The license key consists of permanent enablers and auth codes.

To import and apply the NetWorker license key from Powerlink Licensing directly to a NetWorker server or a License Manager system:

1. Ensure that you have the following permissions on the NetWorker server. The permissions differ for Windows, Linux, and UNIX:
 - Windows: administrator
 - UNIX and Linux: root
2. Identify the location where the files were downloaded.
3. Run the following **nsradmin** command from the directory where the *source_file* is located. The **nsradmin** command can be run from any NetWorker client, storage node, or server.
 - To install the NetWorker license keys on a local NetWorker server, type:


```
nsradmin -i source_file > output_file
```
 - To install the NetWorker license keys on a remote NetWorker server, type:


```
nsradmin -i source_file -s server_name > output_file
```
 - To install the NetWorker license keys on a License Manager system, type:


```
nsradmin -i source_file -s server_name -p 390115 > output_file
```
4. Open and review the *out_file* for success or failure messages to ensure that the NetWorker licenses have been properly installed.
 - Success entry message in the output file.

If the first attempt to load a license was successful, an entry similar to the following appears in the output file:

```
C:\PROGRA~1\Legato\nsr\bin\std>nsradmin -i infile
created resource id 25.0.0.20.96.108.23.72.137.69.168.135(1)
Current query set
updated resource id 25.0.0.20.96.108.23.72.137.69.168.135(2)
```

- Failed entry message in the output file.

If a license load failed, entries similar to the following might appear.

- This entry in the output file indicates that the license already exists in NetWorker and can be ignored:

```
C:\PROGRA~1\Legato\nsr\bin\std>nsradmin -i infile
create failed: A license enabler already exists with enabler
code xxxxxxx-xxxxxx-xxxxxx
Current query set
updated resource id 25.0.0.20.96.108.23.72.137.69.168.135(3)
```

Note: If the `nsradmin` command has previously been run on a host, failure messages might be generated for NetWorker licenses that already exist.

- This entry in the output file indicates that the NetWorker server processes are not running on the system. To work around this issue, start the NetWorker processes on the NetWorker server:

```
C:\PROGRA~1\Legato\nsr\bin\std>nsradmin -i infile pasb-tomp
39078:nsradmin: RPC error: Program not registered (severity 4,
number 15)
```

Manually enter the license key on a NetWorker server or a License Manager system



IMPORTANT

Automatically importing and installing the NetWorker permanent enablers and authorization codes from Powerlink Licensing is the recommended way to obtain and install NetWorker permanent enablers and authorization codes. Do not perform these steps unless you cannot import and install automatically.

To enter the license keys on a NetWorker server or a License Manager system:

1. Start the **NetWorker Management Console** software.
2. Open the **Administration** window:
 - a. In the **Console** window, click **Enterprise**.
 - b. In the left pane, click a NetWorker server in the **Enterprise** list.
 - c. In the right pane, click the application.
 - d. From the **Enterprise** menu, select **Launch Application**. The **Administration** window is launched as a separate application.
3. In the **Administration** window, click **Configuration**.
4. In the left pane, select **Registrations**.
5. From the **File** menu, select **New**. The **Create Registration** dialog box appears.
6. Leave the **Identity** area blank. The name of the product to be licensed will be extracted from the enabler and displayed in the **Registrations** area.



IMPORTANT

Apply the permanent *base* enabler (for the NetWorker server) and its auth code last, after having applied all other permanent enablers. Once a base enabler is applied, any device that does not yet have its auth code applied might be disabled, and would have to be reenabled manually.

7. In the **Configuration** area of the **Create Registration** window, enter the enabler code for the product to be licensed. The enabler code can be found in the product license activation letter. It is an 18-character or 24-character alphanumeric code.

Note: A 24-character enabler signifies a bulk enabler intended for installation only on a NetWorker License Manager server. When entering the enabler for the NetWorker server, consider entering “Base Enabler” in the **Comment** field of either the **Create Registration** or **Properties** window.

8. Click **OK** to apply the enabler and leave the **Create Registration** window.
9. Select and right-click the product in the **Registrations** area. The **Properties** window appears.

The **Configuration** area of the window now displays the following information:

- Enabler code number
- Product name
- Enable code expiration date

10. In the **Auth code** field, type the corresponding auth code. You can find the auth code in the product license activation letter. It is a unique eight-character alphanumeric code.

The auth code is node-locked, which means that it can only be applied to a specific host and host ID. It can also be used only with the specific enabler code with which it was associated in the product activation letter. Do not confuse the auth code with the License Authorization Code (LAC).

Note: The product is now listed in the **Registrations** area. The enabler expiration date appears in the **Expiration date** column. This date is 45 days after the date on which the enabler was entered.

11. Click **OK**. The new license is added and appears in the right pane. If the authorization process is successful, the expiration date for the license displays:

Authorized - No expiration date.

In the **Registrations** area of the screen, the **Expiration date** column entry for the product has changed and now says “Authorized - No expiration date.” If the authorization is not verified in this way, go to <http://Powerlink.EMC.com> website.

12. To add any additional enabler codes and auth codes, repeat this procedure.

NetWorker License Manager

The NetWorker License Manager software provides centralized license management, which enables you to maintain all of an enterprise's NetWorker licenses from a single computer.

With the NetWorker License Manager, you can move NetWorker software from one computer to another, or change the IP address on an existing NetWorker server without having to reauthorize the software. The NetWorker License Manager can be installed as an option during the NetWorker software installation. The latest NetWorker License Manager Installation and Administration Guide provides more information on how to install and use the NetWorker License Manager.

Troubleshooting

This section includes information on the following topics:

- ◆ [“Diagnosing licensing issues” on page 160](#)
- ◆ [“How to obtain NetWorker licensing information” on page 161](#)
- ◆ [“How to avoid an interruption in the computer or network address” on page 161](#)
- ◆ [“How to provide feedback” on page 161](#)

Diagnosing licensing issues

The following circumstances might cause an interruption in backups:

- ◆ A required enabler code (temporary evaluation enabler, license enabler, or authorization code) is missing. For example, a storage node enabler is missing which results in an insufficient number of licenses on the system.
- ◆ An enabler code has expired.
- ◆ An update enabler is missing.
- ◆ A new client was added, which requires an existing enabler code to be released through the deletion of an old client.
- ◆ Old enabler codes must be deleted before new enabler codes are applied. The server host ID is changed, which invalidates an existing enabler code.
- ◆ An evaluation enabler is still on the system, and must be deleted before a license enabler can be installed.
- ◆ A deduplication backup requires additional enabler codes, which include a Virtual Edition Client Connection enabler and a Deduplication enabler.
- ◆ An enabler code is entered as an authorization code, instead of as a new license enabler.
- ◆ An IP address is changed during an update, which invalidates an existing enabler code.
- ◆ A NetWorker client is migrated to a new server without obtaining a Host Transfer Affidavit.
- ◆ The server was moved to a new operating system, for example, from Solaris to Linux), which invalidates an existing enabler code.
- ◆ An enabler code, already in use by a NetWorker server, is applied to a second NetWorker server.

How to obtain NetWorker licensing information

To obtain license information from a NetWorker server, use the **nsrlic** command.

The following sources provide more information:

- ◆ [nsrlic man page on UNIX](#)
- ◆ [nsrlic man page information in the NetWorker Command Reference Guide](#)
- ◆ [NetWorker Administration Guide](#)

How to avoid an interruption in the computer or network address

To avoid an interruption in backups if you move the NetWorker software from one computer to another, or you change the network address of a computer after the software is installed:

1. Obtain the host ID of the original server and the new server. The host ID appears in the server's **Registration** window. "[Task 4: Obtain the host ID of the NetWorker server](#)" on page 155 provides more information.
2. Contact Powerlink Licensing to obtain and enter the new auth code on the NetWorker server.
3. Perform either of the following:
 - Configure the new NetWorker server with the new auth codes obtained from Powerlink Licensing.
 - Install and configure the NetWorker License Manager software with the new auth codes obtained from Powerlink Licensing.

How to provide feedback

To provide feedback:

- ◆ If error messages appear in the output file or you would like to provide feedback, contact Powerlink Licensing.
- ◆ If you cannot determine the reason for a failure or experience problems with updating the NetWorker license, contact Powerlink Licensing. You can open a Service Request on Powerlink.EMC.com.

This appendix includes these sections:

- ◆ Sample stinit.def file 164
- ◆ The stinit(8) man page..... 165

Sample stinit.def file

For optimal tape device performance, and to ensure that all NetWorker tape operations function properly, EMC recommends that you modify the stinit.def file in the /etc directory, as appropriate for your device.

Note: The package that provides the **stinit** binary is **mt-st**.

Each stinit.def file definition is specific to the manufacturer and model of the tape device being configured for NetWorker operations, and is based on the requirements defined in the **stinit(8)** Linux man page. For further information about **stinit(8)**, **st(4)**, **mt(1)** in the Linux kernel source tree.

Usage

The examples in this appendix are intended only to be used as guidelines and should be installed as /etc/stinit.def after necessary modifications have been made for the tape device model and manufacturer. Once installed, reboot the system to ensure that the settings in this file will be used.

To ensure you have accurate and current stinit.def file information, refer to the tape device manufacturer's requirements for the specific device and model being used. In addition, the *EMC Information Protection Software Compatibility Guide* provide **stinit** file definition information to which you can refer.

Examples of the stinit file

The following definitions are a few examples for devices supported by the NetWorker software, and are based on the instructions in the **stinit(8)** manual page released with Linux 7.0 and later.

Device requirements might be different than the parameters specified in these examples. Users can change these sample definitions to specify the manufacturer and model fields in the /etc/stinit.def file to correspond to the actual tape device being defined, and modify the suboptions as necessary.

Note: The manufacturer, model, and revision strings can be obtained from the file /proc/scsi/scsi by using the **cat /proc/scsi/scsi** command. Replace the XYZ and UVWx strings that are displayed in the following examples with the manufacturer and model of your drive.

Common definitions to all devices in the examples:

```
{buffer-writes read-ahead async-writes }
```

SONY AIT-3

```
manufacturer=SONY model = "SDX-700C" {
can-bsr scsi2logical drive-buffering
timeout=800
long-timeout=14400
model blocksize=0 density=0x00 # as close as possible to st.conf
entry}
```

Noncompressing DAT (DDS-1)

```

manufacturer=XYZ model = "UVW1" {
scsi2logical=1 can-bsr can-partitions auto-lock
mode1 blocksize=0
mode2 blocksize=1024 }

```

Compressing DAT (DDS-1-DC or DDS-(234))

```

manufacturer=XYZ model = "UVW2" {
scsi2logical=1 can-bsr can-partitions auto-lock
mode1 blocksize=0 compression=1
mode2 blocksize=1024 compression=1
mode3 blocksize=0 compression=0
mode4 blocksize = 1024 compression=0 }

```

QIC-150 drive

```

manufacturer=XYZ model="UVW3" {
mode1 # blocksize=512 defined by drive }

```

QIC-320/525 drive

```

manufacturer=XYZ model="UVW4" {
defs-for-writes
mode1 blocksize=0 density=0x11 # QIC-320
mode2 blocksize=1024 density=0x11 # QIC-320
mode3 blocksize=512 density=0x10 # QIC-150 }

```

Exabyte 8505 and other similar 8 mm helical scan drivers

```

manufacturer=XYZ model = "UVW5" {
scsi2logical=1 can-bsr auto-lock
mode1 blocksize=0 density=0x8c # 8500 density, compressing
mode2 blocksize=0 density=0x15 # 8500 density, no compression
mode3 blocksize=0 density=0x90 # 8200 density, compressing
mode4 blocksize=0 density=0x14 # 8200 density, no compression }

```

Reel-to-Reel tape with 6250/1600/800 bpi densities

```

manufacturer=XYZ model = "UVW6" {
can-bsr two-fms
mode1 blocksize=0 density=3 # 6250 bpi
mode2 blocksize=0 density=11 # 1600 bpi
mode3 blocksize=0 density=1 # 800 bpi }

```

The stinit(8) man page

This section provides the **stinit(8)** man page contents. The program and the manual page are copyrighted by Kai Makisara, 1998-2001. They can be distributed according to the GNU Copyleft. EMC expressly disclaims any rights in or responsibility for the contents of this appendix. This man page may be obtained from www.fifi.org/cgi-bin/man2html?stinit+8.

```
stinit [-f conf_file] [-h] [-p] [-r] [-v] [devices...]
```

Description

This man page documents the tape control program **stinit** that can be used to initialize SCSI tape drive modes at system startup, after loading the tape driver as module, or after introducing a new device to the SCSI subsystem at runtime. The initialization is performed by sending **ioctl** commands to the drive.

The commands are defined in a text file that is indexed using the inquiry data the drive returns (manufacturer, device, revision). Values for all of the general and mode-specific SCSI tape parameters up to Linux version 2.4.15 can be initialized.

Options

Table 41 on page 166 lists the options for the **stinit(8)** man page.

Table 41 **stinit(8) Man Page Options**

Option	Description
-f	Specifies the name of the text file containing the definitions for different tape drive types. By default stinit tries to find the definition file <i>stinit.def</i> or <i>/etc/stinit.def</i> (in this order).
-h	Print the usage information.
-p	The definition file is parsed but no tape drive initialization is attempted. This option can be used for testing the integrity of a definition file after changes have been made.
-r	Rewind every device being initialized.
-v	The more -v options (currently up to two), the more verbose output.
--version	Print the program version.

The devices being initiated

If the program is started without arguments, it tries to find all accessible SCSI tape devices and the device files for the different modes of the devices. The tape drives are searched in the scanning order of the kernel, and searching stops at the first nonexisting tape. All of the found devices are initialized if a matching description is found from the parameter file. Note that a mode for a device is not initialized if the corresponding device file is not found, even if a matching description for the mode exists. The nonrewind device is preferred over the auto-rewind device for each mode. If the directory `/dev/tapes` is found, the `devfs` file system is assumed. The configuration file is a simple text file that contains descriptions of tape drives and the corresponding initialization parameters. The parameter definition blocks are delimited by braces `[{}]`. Specification of the drive description is restarted after each parameter definition block.

The drive descriptions and the parameter definitions consist of name = value pairs. The value is either a numeric parameter, a string with no blanks, or a quoted string. If =value is omitted, the value "1" is used. If the number sign `#` is found in an input line, the rest of the line is discarded. This allows use of comments in the definition file.

The following example contains definitions for one type of tape drives:

```
# The XY dat
manufacturer=XY-COMPANY model = "UVW DRIVE" {
scsi2logical=1 # Common definitions for all modes
can-bsr can-partitions auto-lock
# Definition of modes
mode1 blocksize=0 compression=1
mode2 blocksize=1024 compression=1
mode3 blocksize=0 compression=0
mode4 blocksize = 1024 compression=0 }
```

The devices are identified by using the following keywords corresponding to the data the tape device returns in response to the SCSI **inquiry** command. The matches are case-sensitive and performed up to the length defined in the configuration file (permitting use of partial matches).

[Table 42 on page 167](#) lists device identification.

Table 42 Device identification

Keyword	Description
manufacturer=	This keyword specifies the string that must match the vendor identification returned by the device.
model=	This keyword defines the string that must match the product identification returned by the device.
revision=	This keyword matched the string that must match the product revision level returned by the device.

All of the matching initializations are collected in the order they are defined in the file. This means that common parameters can be defined for all devices using zero keywords for a definition block. Another consequence is that, for instance, some parameters can be easily given different values for a specific firmware revision without repeating the parameters common to all revisions.

The tape parameters are defined using the following keywords. More thorough descriptions of the parameters can be found in the **st(4)** man page or in the `drivers/scsi/README.st` file in the Linux kernel source tree. The keywords are matched using only the first characters. The part of the keywords not used in matching is enclosed in brackets. The numeric values may be specified either in decimal notation or hexadecimal notation (using the prefix `0x`).

Return Value

The program exits with value of one if the command line is incorrect, the definition file is not found, or the `-p` option is given and parsing the definition file fails. In all other cases, the return value is zero (that is, failing of initialization is not currently signaled by the return value).

[Table 43 on page 167](#) lists tape parameter information.

Table 43 Tape parameter information (page 1 of 2)

Value	Description
no-w[ait]	The immediate mode is used with commands like <code>rewind</code> if value is non-zero (that is, the driver does not wait for the command to finish).
mode= <i>value</i>	This keyword starts the definition of the tape mode value. The value of this mode must be between 1 and 4.
disab[led]= <i>value</i>	This mode is disabled for this device if value is non-zero. Can be used if some mode defined in a more general definition should be disabled by a more specific definition for some device (for example, for a device with buggy firmware level).
block[size]= <i>value</i>	The default tape block size is set to value bytes. The block-size zero means variable block mode.
dens[ity]= <i>value</i>	The tape density code is set to value.

Table 43 Tape parameter information (page 2 of 2)

Value	Description
buff[ering]=value	The buffered writes by the driver in fixed block mode are enabled if value is non-zero.
async[-writes]=value	Asynchronous writes by the driver are enabled if value is non-zero.
read[-ahead]=value	Read-ahead by the driver in fixed block mode is allowed if value is non-zero.
two[-fms]=value	Two filemarks are written when a file being written to is closed if value is non-zero. By default, one filemark is written.
comp[ression]=value	Compression of the data by the drive is enabled if value is non-zero. Note that the tape driver cannot enable compression for all drives that can compress data. Note also that some drives define compression by using density codes.
auto[-lock]=value	The tape drive door is locked automatically when the device file is opened and if the value is non-zero.
noblk[limits]=value	The tape driver does not use the READ BLOCK LIMITS SCSI command when the device is being opened if value is non-zero. This is for the drives that do not support this SCSI command.
can-p[artitions]=value	The support for tape partitions is enabled if value is non-zero.
scsi2[logical]=value	Logical block addresses are used in the MTSEEK and MTIOCPOS commands if value is non-zero. The default is to use the device-specific addresses.
defs-for-w[rites]=value	The parameters defining the tape format (density, block size) are forced when writing starts at the beginning of a tape if value is non-zero. The default is to change these parameters each time the device is opened at the beginning of a tape (or the mode is changed in the middle of a tape).
timeout	The normal timeout for the device is set to <i>value</i> seconds.
long-time[out]	The long timeout for the device is set to <i>value</i> seconds.

Restrictions

With the exception of the **-p** option, only the superuser can use the **stinit** program. This is because the program uses **ioctl**s that are allowed only for the superuser.