



Sun StorageTek™ Enterprise Backup Software 7.5

Installation Guide

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

Audience

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

Related documentation

For more information about Sun StorageTek EBS software, refer to this documentation:

- ◆ *Sun StorageTek Enterprise Backup Software Release 7.5 Administration Guide*
- ◆ *Sun StorageTek Enterprise Backup Software Release 7.5 Release Notes*
- ◆ EMC Information Protection Software Compatibility Guide

Conventions used in this guide

Sun uses the following conventions for notes, cautions, and important notices.

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



CAUTION

A caution contains information essential to avoid data loss or damage to the system or equipment.



IMPORTANT

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

Typographical conventions

Sun uses the following style conventions in this guide:

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, filenames, functions, utilitiesURLs, pathnames, filenames, directory names, computer names, 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 call, 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 textEmphasis (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

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About the Sun StorageTek EBS product

The Sun StorageTek Enterprise Backup Software 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. Sun StorageTek EBS 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 Sun StorageTek EBS software is distributed in a media kit that contains the software and electronic documentation for several related Sun StorageTek EBS products. The Sun StorageTek EBS product has five major components:

- ◆ Sun StorageTek EBS client
- ◆ Sun StorageTek EBS storage node
- ◆ Sun StorageTek EBS server
- ◆ Sun StorageTek EBS Management Console
- ◆ NetWorker License Manager

Sun StorageTek EBS client

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

Sun StorageTek EBS storage node

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

Storage nodes depend on the Sun StorageTek EBS 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

Sun StorageTek EBS storage nodes and the Sun StorageTek EBS server can use different operating systems. To use a Sun StorageTek EBS storage node on a Linux operating system with a Sun StorageTek EBS 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 Sun StorageTek EBS server.

Sun StorageTek EBS server

The Sun StorageTek EBS server software provides control and scheduling for Sun StorageTek EBS operations. It enables you to:

- ◆ Enter the enabler licenses for the Sun StorageTek EBS server and all the functions the Sun StorageTek EBS server controls, such as autochanger modules and additional client connections licenses.
- ◆ Define the clients, devices, and media that the Sun StorageTek EBS 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.

Sun StorageTek EBS de-duplication node

Data de-duplication 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 Sun StorageTek EBS software uses EMC Avamar[®] technology to provide de-duplication.

A Sun StorageTek EBS de-duplication node is an EMC Avamar server that stores de-duplicated backup data. The initial backup to a de-duplication 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 Sun StorageTek EBS installation, and is performed by EMC Professional Services. The Avamar server must be configured as a Sun StorageTek EBS de-duplication node. The Avamar server must be available when:

- ◆ A de-duplication client resource is created.
- ◆ The Avamar server receives backup data from Sun StorageTek EBS de-duplication clients.

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

Sun StorageTek EBS Management Console

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

To administer Sun StorageTek EBS servers, the Console must be:

- ◆ Installed on an AIX, HP-UX, Linux, Solaris, 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 Sun StorageTek EBS 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 Sun StorageTek EBS client, server, or storage node.

You must install the Console software on one computer in your datazone to manage and monitor the Sun StorageTek EBS server. Only one installation of the Console is required to manage multiple Sun StorageTek EBS 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 Sun StorageTek EBS clients and servers. Instead of managing licenses separately, all Sun StorageTek EBS licenses can be maintained from a single computer. Installation of the NetWorker License Manager software is an option when installing the Sun StorageTek EBS software.

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

Supported devices

Sun StorageTek EBS software supports a variety of media types and devices, either stand-alone or in an autchanger or silo tape library. Devices can be attached to a Sun StorageTek EBS server or designated storage node.

The term *autchanger* 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.

Enabler codes

Enabler codes (licenses), which activate the functionality of Sun StorageTek EBS software are sold separately. The section [“Licensing and Enabling the Software” on page 103](#) provides information.

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General requirements

- ◆ Ensure that the block-size mode for tape devices that are used with the 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.

Note: Sun StorageTek EBS 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 Sun StorageTek Enterprise Backup Software Administration Guide provides the latest information.

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.

TCP/IP requirements

These are the TCP/IP network communication requirements:

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

/etc/hosts

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

- ◆ All Linux, UNIX, and AIX platforms require a ::1 entry in the /etc/hosts file for the localhost in order to run the Sun StorageTek EBS software. The entry must be in the form **::1 localhost aliases**

- ◆ If the Sun StorageTek EBS 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 Sun StorageTek EBS 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, UNIX, and AIX platforms require a **::1 entry** in the `/etc/hosts` file for the localhost in order to run the Sun StorageTek EBS 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 platform-specific command:
 - On Windows, go to C:\Program Files\Legato\Management\GST\bin, and run **gstconfig**.
 - On Solaris, as root:
`LD_LIBRARY_PATH=/opt/LGTONmc/bin:/opt/LGTONmc/sybase/lib export LD_LIBRARY_PATH`
`./gstconfig`
 - On Linux, as root:
`LD_LIBRARY_PATH=/opt/lgtonmc/bin:/opt/lgtonmc/sybase/lib`
`export LD_LIBRARY_PATH`
`./gstconfig`
 - On AIX:
`LIBPATH=/opt/lgtonmc/bin:/opt/lgtonmc/sybase/lib`
`export LIBPATH`
`./gstconfig`
 - On HP-UX:
`SHLIB_PATH=/opt/lgtonmc/bin:/opt/lgtonmc/sybase/lib`
`export SHLIB_PATH`
`./gstconfig`

IPv4/IPv6 interoperability

Since older Sun StorageTek EBS clients and storage nodes are supported with the Sun StorageTek EBS release 7.5 software, there are IPv6 and IPv4 interoperability considerations when the Sun StorageTek EBS server is installed on a machine using IPv6.

[Table 1](#) indicates the interoperability conditions of Sun StorageTek EBS release 7.5 servers and clients on platforms with various IP addresses, and the ways in which a Sun StorageTek EBS client can address a Sun StorageTek EBS server.

The table indicates the following conditions.

- ◆ Sun StorageTek EBS 7.5 (client/server) residing on an IPv4-only host.

- ◆ Sun StorageTek EBS 7.5 (client/server) residing on an IPv6-only host.
- ◆ Sun StorageTek EBS 7.5 (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 1 **Matrix of interoperability of Sun StorageTek EBS 7.5 and pre-7.5 clients**

		Sun StorageTek EBS 7.5 Server	Sun StorageTek EBS 7.5 Server
	Platform	IPv4 Host	IPv6 Host
Sun StorageTek EBS 7.5 Client	IPv4 Host	IPv4	IPv4 translated in IPv6
	IPv6 Host	N/A	IPv6
	Dual address	IPv4	IPv6
Sun StorageTek EBS pre-7.5 Client	IPv4 Host	IPv4	IPv4 translated in IPv6
	IPv6 Host	N/A	N/A
	Dual address	IPv4	IPv4 translated in IPv6

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

The table indicates the following conditions.

- ◆ Sun StorageTek EBS pre-7.5 (client/server) residing on an IPv4-only host.

- ◆ Sun StorageTek EBS pre-7.5 (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.

Table 2 **Matrix of interoperability of Sun StorageTek EBS 7.5 and pre-7.5 clients**

		Pre-Sun StorageTek EBS 7.5 Server	Pre-Sun StorageTek EBS 7.5 Server
		IPv4 Host	IPv6 Host
Sun StorageTek EBS 7.5 Client	IPv4 Host	IPv4	N/A
	IPv6 Host	N/A	N/A
	Dual address	IPv4	N/A
Sun StorageTek EBS pre-7.5 Client	IPv4 Host	IPv4	N/A
	IPv6 Host	N/A	N/A
	Dual address	IPv4	N/A

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 has timed out. Since the Sun StorageTek EBS software relies on AIX for resolving address information, Sun StorageTek EBS commands may appear to be hanging.

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

Workaround

If the server is configured for IPv4 only, you need to override the default behavior for DNS lookups. The **NSORDER** variable, **/etc/irs.conf** file and **/etc/netsvc.conf** file control name resolution. These entries need to be changed, depending on the name resolution ordering in place, so that Sun StorageTek EBS services do not attempt to lookup IPv6 addresses against DNS.

Ensure that your 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**

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 Sun StorageTek EBS release 7.5.

Ensure JRE version 1.6 is installed if running in a pure IPv6 environment on Windows

If using Sun StorageTek EBS 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.

As a workaround, 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 Sun StorageTek EBS. 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, Sun StorageTek EBS will be unable to back up the client.

Client software requirements

For Sun StorageTek EBS clients on the same hardware platform as the Sun StorageTek EBS 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 Sun StorageTek EBS software is installed on a remote file system, the Sun StorageTek EBS 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.

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 bath 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 Sun StorageTek EBS 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.
- ◆ Sun StorageTek EBS software also supports the use of file type and advanced file type devices. The Sun StorageTek Enterprise Backup Software 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 Sun StorageTek EBS server software. Ensure that you install the SCSI adapter, cabling, and termination. The Sun StorageTek EBS 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 Sun StorageTek EBS backups. Sun StorageTek EBS software writes a filemark on the volume at the end of each backup. When the next backup occurs, Sun StorageTek EBS 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 Sun StorageTek EBS software.

Default location and space requirements

These pathnames and directories are required for installation:

- ◆ The directory on the server is large enough for the Sun StorageTek EBS resources, client, server indexes, and media database (usually /nsr).
- ◆ The system pathname of at least one storage device for use by the Sun StorageTek EBS 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, see [Table 3 on page 26](#) for details.

Table 3 Solaris location and space requirements

Sun StorageTek EBS files	Location	Space required
Client files	/usr/bin /usr/lib/nsr /usr/sbin	110 MB
Console and Client files	/opt/Igtonmc/bin/nmc_config.sh	270 MB
Storage node	/usr/sbin /usr/lib/nsr /usr/kernel/drv	92 MB
Server	/usr/lib/nsr /usr/sbin	61 MB
Client file index,media database	/nsr	varies
NetWorker License Manager	/usr/sbin	3.7 MB

Console

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

Console server

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

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

- ◆ An installed and licensed network of Sun StorageTek EBS 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 Sun StorageTek EBS 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.

Note: If your environment runs only LDAPS, also known as LDAP over SSL, and you are not using native user authentication, the Console server must not be installed on a Solaris server. However, the Console server can still be installed on a Linux, Windows, AIX or HP-UX server.

System requirements

[Table 4 on page 28](#) lists the system requirements for the Console server and database.

Table 4 Console server and database requirements

System features	Requirement
Processor and RAM	<p>Minimum: 500 MHz with 128 MB of RAM; 512 MB to run reports. As the number of Sun StorageTek EBS servers being monitored increases, increase the computer's capabilities.</p> <ul style="list-style-type: none"> • For 50 servers: Dual 500 MHz with no less than 192 MB • For 100 servers: Dual 800 MHz with no less than 256 MB • For 200 servers: Dual 1.3 GHz with no less than 512 MB
Operating system	Solaris 9, 10
Software	The Sun StorageTek EBS client, release 7.4 or later software must already be installed and running.
Java Runtime Environment	JRE 1.5_11 or 1.6.0. This is required to run the command line reporting feature.
Browsers	<ul style="list-style-type: none"> • Netscape Communicator 8, on the supported Solaris platforms. • Mozilla 1.7 on the supported Solaris platforms.
Available disk space	<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

The Console server collects data from the Sun StorageTek EBS 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 Sun StorageTek Enterprise Backup Software 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 Sun StorageTek EBS 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:

- ◆ Sun StorageTek EBS 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:

- ◆ Sun StorageTek EBS 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:

- ◆ Sun StorageTek EBS 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 5 on page 30](#) lists the system requirements for installing the Console client.

Table 5 Console client system requirements

System features	Requirement
Operating system	<ul style="list-style-type: none"> • Solaris , 9, 10
Java Runtime Environment	<ul style="list-style-type: none"> • JRE version 1.5_11 or 1.6.0
Browsers	<ul style="list-style-type: none"> • Netscape Communicator 8, on the supported Solaris platforms. • Mozilla 1.7 on the supported Solaris platforms.
Available disk space	<ul style="list-style-type: none"> • Console client: 10 MB • JRE with Web Start: 55 MB
RAM	A minimum of 512 MB to run reports.
Graphics card	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

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 Sun StorageTek EBS 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 Sun StorageTek EBS server:

1. Ensure that the appropriate language support package for Sun StorageTek EBS 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 Sun StorageTek EBS language locale.
 - Choose a language font that is already loaded in the operating system and which matches the location of the localized Sun StorageTek EBS language locale.

Changing the language locale to match that of non-localized Sun StorageTek EBS data

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

- ◆ Before you log in to the host system:
 - a. Select **Options** on the **Login** dialog box.
 - b. Select **Options>Language**.
 - c. Select a locale from one of three alphabetical lists.
- ◆ After you log in to the host system:
 - a. Type the **setenv** command to change the locale.

- b. Depending on the language, select one of these:
- To match the French Sun StorageTek EBS locale, type:
`setenv LANG fr`
`setenv LC_ALL fr`
 - To match the Japanese Sun StorageTek EBS locale, type:
`setenv LANG ja`
`setenv LC_ALL ja`
 - To match the Simplified Chinese Sun StorageTek EBS locale, type:
`setenv LANG zh`
`setenv LC_ALL zh`

Changing the language font to view localized Sun StorageTek EBS data

Instead of changing the language locale, you can change the Console font, so that localized Sun StorageTek EBS 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 Sun StorageTek EBS 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.

Updating from a Previous Release

This chapter includes the following sections:

- ◆ Introduction 34
- ◆ Updating the Sun StorageTek EBS software 35
- ◆ Updating Sun StorageTek EBS clients by using the software distribution feature..... 37

Introduction

When updating to Sun StorageTek EBS release 7.5 from Sun StorageTek EBS release 7.3 or earlier, there is no way to revert to a previous release of the Sun StorageTek EBS software. It is a one-way conversion as the client file indexes are automatically reorganized into new directory structures. However, upgrades from Sun StorageTek EBS release 7.3.x can be downgraded back to the same release.

The Sun StorageTek EBS 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

Update enablers are used in updating existing software to a major release. [“Update enablers” on page 113](#) contains more information on this topic.

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

After the 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 **Sun StorageTek EBS 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 **Sun StorageTek EBS Management Console Application and Language Pack**.
4. Click **Remove Selected Application**.

Updating the Sun StorageTek EBS software

This section explains how to complete the update process and convert the indexes:

- ◆ [“Task 1: Prepare to update the software” on page 35](#)
- ◆ [“Task 2: Update the Sun StorageTek EBS software” on page 36](#)

Task 1: Prepare to update the software

To prepare to update the Sun StorageTek EBS software:

1. Determine whether all criteria to complete the index conversion is met.
2. Make notes of the current database location and port numbers used before removing the current installation. Also, make a copy of the current database and store in a safe location.
3. Back up all client file indexes and generate a bootstrap for the server.

If no current bootstrap exists, nor a backup of all client file indexes, perform scheduled backups on all clients before updating to the next Sun StorageTek EBS release.

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.

4. Record the latest bootstrap save set ID and its associated volume label.

To obtain this information, type this command:

```
mminfo -B
```

5. If the Sun StorageTek EBS software is not currently installed in the default location, record the location of the client file indexes.

Task 2: Update the Sun StorageTek EBS software

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

To update the software on the Sun StorageTek EBS client, storage node, and server:

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

nsr_shutdown

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

Note: If performing a re-install of Sun StorageTek EBS release 7.5, these processes will be **gstd**, **dbsrv9**, and **httpd**.

6. Install the new release of the Sun StorageTek EBS software.

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

7. Apply any required Sun StorageTek EBS software patches.

8. Restart the software by running the Sun StorageTek EBS startup script:

```
/etc/init.d/networker start
```
9. At the command prompt, enter the following command:

```
nsrck -L 2
```
10. Enable and register the Sun StorageTek EBS software. [“Licensing and Enabling the Software” on page 103](#) provides instructions.

Downgrading the Sun StorageTek EBS Management Console to 7.3.x or 7.4.x

If, after upgrading to NMC for Sun StorageTek EBS 7.5, it is required to downgrade to the previous version of NMC, perform the following:

1. Re-install the previous version of NMC for Sun StorageTek EBS release 7.4.x or 7.3.x and select the new database when prompted.
2. After installing, run **recoverpsm** to recover the last backed up version of the NMC 7.4.x or 7.3.x database.

Note: In order to retrieve the previous database upon downgrading to NMC for Sun StorageTek EBS release 7.4.x or 7.3.x, the NMC database must have been backed up before the upgrade to NMC for Sun StorageTek EBS release 7.5.

Updating Sun StorageTek EBS clients by using the software distribution feature

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

You can update these Sun StorageTek EBS software packages on computers that have the Sun StorageTek EBS release 7.3 or later client software already installed:

- ◆ Client
- ◆ Storage node
- ◆ Man pages
- ◆ NMO, NMSQL and NMExch NetWorker Application 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 Sun StorageTek EBS software installed on Sun StorageTek EBS clients.
- ◆ Update Sun StorageTek EBS software packages on existing Sun StorageTek EBS clients.
- ◆ Monitor software distribution inventory and upgrade operations (only available from the Software Administration Wizard).

Software distribution can be performed on the Sun StorageTek EBS client software using either the Software Administration Wizard or the **nsrpush** command. The following sections provide instructions on how to perform these operations.

Software requirements

The following software and administrative privileges are required:

- ◆ Sun StorageTek EBS server release 7.4 or later software is installed on the Sun StorageTek EBS server.
- ◆ Sun StorageTek EBS client package release 7.3 or later software has been installed on the Sun StorageTek EBS client computer involved in the update operation.
- ◆ Administrative privileges on the Sun StorageTek EBS Console server.
- ◆ Administrator privileges on the Sun StorageTek EBS server or Software Administration server.
- ◆ Write permissions for the Administrator and SYSTEM users to the temp folders defined in the SYSTEM user's TEMP and TMP environment variables.

Note: Enabling these 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** CLI.

Supported server platforms

The software distribution feature is supported on the following server platforms:

- ◆ 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 platforms

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

- ◆ 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 Sun StorageTek EBS **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.

Follow the prompts to manage the software repository (add or remove install packages), inventory, update, or monitor Sun StorageTek EBS client update operations.

Manage the software repository

The software repository is a centralized database that contains the Sun StorageTek EBS software packages that can be pushed to Sun StorageTek EBS clients from the Sun StorageTek EBS server. Sun StorageTek EBS 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 same platform 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, <Sun StorageTek EBS Install Dir>/repository, where <Sun StorageTek EBS 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 Sun StorageTek EBS 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 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/nw75_solaris64 on UNIX, and at C:\temp\prod\nw75_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 Sun StorageTek EBS clients using the Software Distribution feature, it is necessary to inventory the clients to determine their currently installed Sun StorageTek EBS 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 Sun StorageTek EBS clients**, then click **Next**.

A list of the clients configured on the Sun StorageTek EBS 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 Sun StorageTek EBS software packages on Sun StorageTek EBS clients for one client, or for many Sun StorageTek EBS 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 Sun StorageTek EBS scheduled backups have been stopped before starting any upgrades.
2. Inventory the clients to be updated (refer to the section
3. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
4. Select **Upgrade the software on my Sun StorageTek EBS 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 Sun StorageTek EBS scheduled backups have been stopped before starting any upgrades.
2. Inventory the clients to be updated (refer to the section
3. Launch the **Software Administration Wizard** and click **Next** to navigate to the **Software Repository Operations** page.
4. Select **Upgrade the software on my Sun StorageTek EBS 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 Sun StorageTek EBS 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.

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: 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 7.5 -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 7.5 -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 Sun StorageTek EBS software packages on existing Sun StorageTek EBS clients for one client, or for many clients, by using the **nsrpush** command.

To update the client software packages:

1. Ensure that all Sun StorageTek EBS 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 (Sun StorageTek EBS release 7.5), type **nsrpush -u -p Sun StorageTek EBS -v 7.5 clientname1 clientname2**. However, if you want 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:

- ◆ Installation roadmap 50
- ◆ Accessing the software 50
- ◆ Installing the software 51
- ◆ Uninstalling the Sun StorageTek EBS software 63

Installation roadmap

Use the following roadmap when installing the Sun StorageTek EBS software.

1. Review the requirements section and note the default directory location and space requirements for the software installation file. For information, see [“Software Requirements” on page 17](#).
2. If there is an earlier release of Sun StorageTek EBS software installed, update the software. For information, see [“Updating the Sun StorageTek EBS software” on page 35](#).
3. Access the Sun StorageTek EBS software. For information, see [“Accessing the software” on page 50](#).
4. Install the required Sun StorageTek EBS software. For information, see [“Installing the software” on page 51](#)

Note: You must install the Sun StorageTek EBS Console server software on one computer in your data zone to manage the Sun StorageTek EBS server. Only one installation of the Sun StorageTek EBS Console server is required to manage multiple Sun StorageTek EBS servers.

5. Test the Sun StorageTek EBS software. For information, see [“Verifying the Installation” on page 97](#).
6. Enable and register all Sun StorageTek EBS products. For information, see [“Licensing and Enabling the Software” on page 103](#).

Accessing the software

To access the Sun StorageTek EBS software from a local CD-ROM drive:

1. Log in as root on the computer where the Sun StorageTek EBS software is being installed.
2. Mount the CD-ROM drive.
3. Locate the appropriate directory on the CD-ROM.

4. Ensure that the PATH environment variable for the user root on the Sun StorageTek EBS server and the user on each Sun StorageTek EBS client contain the directory where the Sun StorageTek EBS executables reside.

For example:

/usr/sbin

5. Install the software by using the instructions in [“Installing the software” on page 51](#).

Installing the software

Complete these tasks to install the Sun StorageTek EBS software.

Task 1: Install the Sun StorageTek EBS software

By default, the Sun StorageTek EBS software is installed in the /usr directory. However, the SUNWebsg package is installed in the /opt directory.

The Sun StorageTek EBS 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 Sun StorageTek EBS software on the computer that is designated as the Sun StorageTek EBS client:

1. Type this command:

```
pkgadd -d /cdrom/cdrom0/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 (**SUNWebsc**). 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:
 - **SUNWebfr** (French)
 - **SUNWebja** (Japanese)
 - **SUNWebko** (Korean)
 - **SUNWebzh** (Simplified Chinese)
5. (Optional) Type the a number of the option to install the man pages (**SUNWebsm**).

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

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

Storage node

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

1. Type the following command:


```
pkgadd -d /cdrom/cdrom0/solaris
```
2. Type the appropriate options to install the following packages. Software packages on the storage node must be installed in this order:
 - a. **SUNWebsc** (client software package)
 - b. **SUNWebsn** (storage node software package)
 - c. **SUNWebsm** (optional man pages)

3. Type the number of the option to install a language package. For example:
 - **SUNWebfr** (French)
 - **SUNWebja** (Japanese)
 - **SUNWebko** (Korean)
 - **SUNWebzh** (Simplified Chinese)

Server

To install the Sun StorageTek EBS software on the computer that is designated as the Sun StorageTek EBS server:

1. Keep a copy of the current configuration. The Sun StorageTek EBS 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/cdrom0/solaris
```
3. Type the appropriate options to install the following packages. Software packages on the server must be installed in the following order:
 - a. **SUNWebsc** (client software package)
 - b. **SUNWebsn** (storage node software package)
 - c. **SUNWebss** (server software package)
 - d. **SUNWebsm** (optional man pages)
4. Type the number of the option to install a language support package. For example:
 - **SUNWebfr** (French)
 - **SUNWebja** (Japanese)
 - **SUNWebko** (Korean)
 - **SUNWebzh** (Simplified Chinese)

Console server

To manage the Sun StorageTek EBS server, install the Sun StorageTek EBS Console and Sun StorageTek EBS client software on one machine in the datazone. The default install location for Console server package (SUNWebsg) is /opt.

The Console server installation relies on the existence of several other components. Ensure that all installation prerequisites are met. The section [“Console” on page 27](#) provides details.

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

To install Sun StorageTek EBS software on the computer that is designated as the Sun StorageTek EBS 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. Change to the directory where the JRE is to be installed.
 - b. Run the following script:

```
/cdrom/cdrom0/solaris/jre-1_5_0_11-solaris-sparc.sh
```

- c. Accept the Java licensing agreement.
2. Start the Sun StorageTek EBS software installation:

```
pkgadd -d /cdrom/cdrom0/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 (SUNWebsc), 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 (SUNWebsg).
5. (Optional) Type the appropriate option number to install the man pages (SUNWebsm).

- **SUNWebfr** (French)
 - **SUNWebja** (Japanese)
 - **SUNWebko** (Korean)
 - **SUNWebzh** (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 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 27](#).

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 Sun StorageTek EBS binaries (for example, /usr/sbin).
12. Start the Sun StorageTek EBS Console daemons:

/etc/init.d/gst start

The Sun StorageTek EBS Console daemons include the following:

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

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

On the Sun StorageTek EBS 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 Sun StorageTek EBS software is installed in the /usr directory. If there is insufficient disk space on the /usr partition, the following Sun StorageTek EBS packages can be relocated to a specified directory on another partition:

- ◆ **SUNWebsc** (client software package)
- ◆ **SUNWebsn** (storage node software package)
- ◆ **SUNWebss** (server software package)
- ◆ **SUNWebfr** (French)
- ◆ **SUNWebja** (Japanese)
- ◆ **SUNWebko** (Korean)
- ◆ **SUNWebzh** (Simplified Chinese)

By default, the Sun StorageTek EBS Console server software is installed in the /opt directory. If there is insufficient disk space on the /opt partition, the Sun StorageTek EBS Console server package, SUNWebsg can be relocated to a specified directory on another partition.

The Sun StorageTek EBS man pages package (SUNWebsm) must always be installed in the default location. [Table 3, “Solaris location and space requirements,” on page 26](#) 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 Sun StorageTek EBS packages to a nondefault location:

1. Copy the /var/sadm/install/admin/default file, as shown:

```
cp /var/sadm/install/admin/default /tmp/default.tmp
```

2. 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
```

3. Create a directory and the bin/nsr and sbin/nsr subdirectories to install the Sun StorageTek EBS packages, for example:

```
mkdir -p /my_path/sbin/nsr
```

```
mkdir -p /my_path/bin/nsr
```

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

```
/my_path/bin/nsr:/my_path/sbin/nsr
```

5. Type this command:

```
pkgadd -d /cdrom/cdrom0/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.

6. When all the applicable packages are added and the prompt appears, press [q] to exit.
7. 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 Sun StorageTek EBS servers with access to a client

To limit the servers authorized to access a client, specify a list of trusted Sun StorageTek EBS 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 Sun StorageTek EBS servers that are authorized to access a client.

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

1. Type this command to shut down the Sun StorageTek EBS daemons:

```
nsr_shutdown
```

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

Note: If the `/nsr/res/servers` file is empty or does not exist, any Sun StorageTek EBS 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 Sun StorageTek EBS 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 Sun StorageTek EBS daemons

The Sun StorageTek EBS daemons must be started after the installation procedure.

1. Start the Sun StorageTek EBS daemons by using this command:

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

2. Verify that the Sun StorageTek EBS 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 Sun StorageTek EBS daemons on the Sun StorageTek EBS server:

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

The Sun StorageTek EBS daemon `nsrmmd` is only present if one or more devices are enabled.

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

Table 6 on page 60 lists the Sun StorageTek EBS daemons that should be running.

Table 6 Sun StorageTek EBS daemons

Sun StorageTek EBS installation packages	Sun StorageTek EBS daemons
server	nsrd, nsrexecd, nsrindexd, nsrmmdbd, nsrmmd, nsrjobd, nsrmmgd, nsrlcpd
client	nsrexecd
storage node	nsrexecd, nsrmmd, nsrlcpd

Note: The 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.

Install the HomeBase Agent

Sun StorageTek EBS release 7.5 provides integration with EMC HomeBase Agent version 6.1.3 to enable Bare Metal Recovery (BMR) of server system data.

During the Sun StorageTek EBS client installation, the HomeBase Agent installation binaries are copied to a standard location. You must run the installation script to install the HomeBase Agent software (on Solaris: */opt/homebase-agent*).

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 Sun StorageTek EBS 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: The Sun StorageTek EBS software only provides support for HomeBase Agent version 6.1.3; other versions of HomeBase are not supported. Also, HomeBase Agent version 6.1.3 only supports JRE version 1.5.x. Ensure that the correct JRE version is installed if running the HomeBase Agent.

The following documents provide information about the HomeBase server features:

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

Installing the HomeBase Agent software

As part of the Sun StorageTek EBS client install, the HomeBase Agent binary and setup files are always extracted to the standard location for all supported Sun StorageTek EBS platforms.

To install the EMC HomeBase Agent:

1. Run the HomeBase setup file. The location of the setup file for Solaris is */opt/homebase-agent/setup-homebase*.

On all Solaris platforms, ensure that the Sun StorageTek EBS 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 Sun StorageTek EBS bare metal recovery profiling feature will not work if the HomeBase Agent software is installed in a location other than the default installation directory, */opt/homebase-agent*.

2. Run the *setup-homebase* file. The *setup-homebase* file for Solaris is **setup-homebase.sh**.

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

Once the HomeBase Agent is installed, BMR backup is enabled through the Console. To enable a BMR backup for a client:

1. From the **Administration** window, click **Configuration**.
2. Click **Clients**.
3. Right-click the client to be enabled, then select **Properties**.

The **Properties** dialog box appears.

4. Click the **Globals (2 of 2)** tab.
5. Select the **BMR** checkbox.
6. Enter the following in the BMR options field:

-L `license_batch_code`

Additional options can be specified in this field that define how the profile is generated. See the *EMC HomeBase Agent Installation and Administration Guide* for HomeBase Agent command line options.

Note: If there is a change to the HomeBase server or license batch, the new license must be updated.

7. Click **OK**.

More information on enabling a BMR backup for a client is provided in the *EMC HomeBase Agent Installation and Administration Guide*.

Establishing communication with a HomeBase server

A BMR data recovery requires an EMC HomeBase server, which is installed and licensed separately. The *EMC HomeBase Server Installation and Administration Guide* provides information about installing a HomeBase server.

Connection with a HomeBase server version 6.1.3 is enabled during the setup of the Sun StorageTek EBS server 7.5 software through the Console. This connection enables the delivery of profile data from the Sun StorageTek EBS client to the HomeBase server.

To enable BMR support:

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

Note: Make sure that the HomeBase server SSL protocol is configured to and activated on the HomeBase server. The *EMC HomeBase Server Installation and Administration Guide* provides information about enabling the SSL protocol.

Licensing the HomeBase Agent and HomeBase server

A HomeBase Agent license batch code is required to enable the Sun StorageTek EBS BMR feature. Contact your EMC HomeBase representative for licensing information. The HomeBase server will also need to communicate with this client with a HomeBase Agent license batch. Communication can be established from the client command line using the **hba licensing announce** command. More details are provided in the *EMC HomeBase Agent Installation and Administration Guide*, or enter **hba -h** for command usage.

Using Sun StorageTek EBS client port under a firewall server

If the Sun StorageTek EBS client is under a firewall server, the Sun StorageTek EBS client port (18821) that establishes the connection between the HomeBase server and HomeBase Agent must be open.

To perform any tasks related to the HomeBase Agent from the HomeBase server GUI:

1. Ensure that the necessary ports are open in the firewall server.
2. From the HomeBase server, ensure that the HomeBase Agent is connected under the firewall.

Uninstalling the Sun StorageTek EBS software

Use the **pkgrm** command to uninstall individual Sun StorageTek EBS packages or all of the Sun StorageTek EBS packages simultaneously.

Software dependencies

The Sun StorageTek EBS software packages depend on each other. Uninstall them in this order:

1. **SUNWebss**
2. **SUNWebsn**
3. **SUNWebsg**

If the Console server software is installed (**SUNWebsg**), there is a dependency on the Sun StorageTek EBS client software and the Console server software must be uninstalled first.

4. **SUNWebsc**
5. **SUNWebsm**
6. **SUNWebfr** (French language support package)
7. **SUNWebja** (Japanese language support package)
8. **SUNWebko** (Korean language support package)
9. **SUNWebzh** (Simplified Chinese language support package)

Note: The man pages and document files have no dependencies and can be uninstalled at any time.

Uninstalling the Sun StorageTek EBS software

To remove the Sun StorageTek EBS software packages:

1. Log in as root on the system where the software is being removed.
2. Type this command to shut down the Sun StorageTek EBS daemons:

nsr_shutdown

A list of Sun StorageTek EBS 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 SUNWebss SUNWebsn SUNWebsg SUNWebsc SUNWebsm

Note: Do *not* choose the default option **All** to remove the Sun StorageTek EBS software packages. Choosing this option removes all the software packages (*not* just Sun StorageTek EBS software) that were installed on the computer by using the **pkgadd** utility.

- To remove only select the Sun StorageTek EBS packages, see [Table 7 on page 65](#).

Table 7 Sun StorageTek EBS packages to uninstall

To uninstall these Sun StorageTek EBS packages	Type this command and package name
Server	pkgrm SUNWebss
Storage node	pkgrm SUNWebns
Console server	pkgrm SUNWebsg Note: The SUNWebsg package must be uninstalled before the SUNWebsc package.
Client software	pkgrm SUNWebsc
Man pages	pkgrm SUNWebsm Note: This removes the SUNWebsm package from the server, storage node, or client where the man pages are installed.
French language support	pkgrmSUNWebfr
Japanese language support	pkgrmSUNWebja
Korean language support	pkgrmSUNWebko
Simplified Chinese language support	pkgrm SUNWebzh

5. If you no longer to plan to update or reinstall the Sun StorageTek EBS 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**.
6. If you no longer require the Java Runtime Environment, uninstall the JRE.

Sun Cluster Version 3.0, 3.1, or 3.2 Installation

This chapter includes these sections:

- ◆ Installation requirements 68
- ◆ Updating from a previous release of Sun StorageTek EBS software
70
- ◆ Installing Sun StorageTek EBS software in a cluster 71
- ◆ Installing a virtual Sun StorageTek EBS Console server 87
- ◆ Configuring an external client to a virtual server 95
- ◆ Defining ownership of a raw partition for virtual clients..... 96
- ◆ Uninstalling the Sun StorageTek EBS software 95

Software installation roadmap

These tasks are a roadmap to follow when installing the Sun StorageTek EBS software:

1. Review [“Installation requirements” on page 68](#) and note the default directory location.
2. Install the required Sun StorageTek EBS software by following one of these procedures:
 - [“Installing a Sun StorageTek EBS virtual server” on page 72](#)
 - [“Installing a virtual Sun StorageTek EBS Console server” on page 87](#)
 - [“Installing only the Sun StorageTek EBS client software in a cluster” on page 90](#)
3. Enable and register all of the Sun StorageTek EBS products. [Chapter 7, “Licensing and Enabling the Software,”](#) provides detailed information.

Installation requirements

This section specifies the software and hardware required for installing and setting up the Sun StorageTek EBS server or client software within a Sun Cluster environment:

The EMC Information Protection Software Compatibility Guide provides the most up-to-date information about software and hardware requirements.

Software requirements

The following software must be installed on each node in the cluster:

- ◆ Solaris 9 operating environment and Sun Cluster version 3.0 or 3.1
- ◆ Solaris 10 or 11 operating environment and Sun Cluster version 3.2
- ◆ Volume Manager software (Solstice DiskSuite/Solaris Volume Manager)

Note: Highly available storage nodes are *not* supported.

Hardware requirements

The following hardware requirements must be met:

- ◆ A multihosted disk is used as a mount point for the global file systems. These contain the shared /nsr area.
- ◆ A device with local affinity for the local bootstrap backup that is connected to all the nodes within the cluster.

Configuration options

Refer to the Sun StorageTek Enterprise Backup Software Administration Guide for information about:

- ◆ Tape libraries with a Sun StorageTek EBS virtual server
- ◆ Remote physical storage node with a Sun StorageTek EBS virtual server

System information requirements

[Table 8 on page 69](#) and [Figure 1 on page 70](#) display the system information needed to install highly available Sun StorageTek EBS software within a Sun Cluster environment.

Table 8 System information

Information Required	Example
Sun StorageTek EBS virtual hostname with an IP address in the same subnet as the cluster nodes	clus_vir1 192.168.1.10
Sun StorageTek EBS globally mounted configuration area	/global/nw
Sun StorageTek EBS cluster configuration script	/usr/sbin/nsr/networker.cluster
File containing the host ID of all the cluster members	/nsr/res/hostids

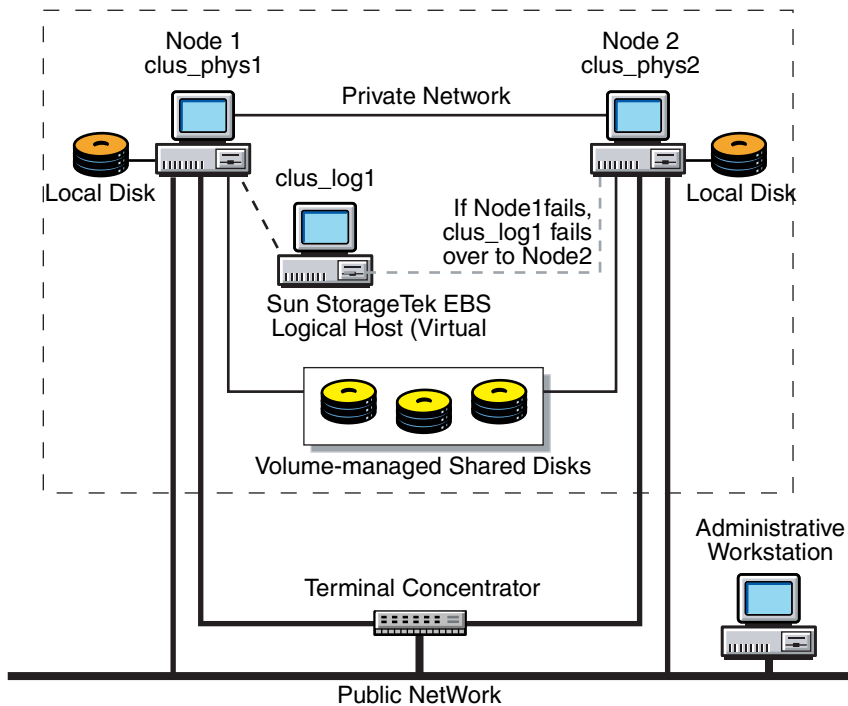


Figure 1 Sample cluster configuration

Updating from a previous release of Sun StorageTek EBS software

To update from Sun StorageTek EBS releases 6.1.x and 7.x to Sun StorageTek EBS release 7.3 in a Sun Cluster 3.0, 3.1, or 3.2 environment:

1. Collect this Sun StorageTek EBS software system information:
 - The location of the Sun StorageTek EBS server global /nsr directory on the shared storage.
 - The location of the Sun StorageTek EBS client local /nsr directories.
2. List and save the cluster resource group configuration:

```
scrgadm -pvv > scrgadm_pvv.out
```

```
scconf -pvv > scconf_pvv.out
```

3. Use Sun StorageTek EBS software to back up the cluster. Ensure that you have a recent backup of the indexes and bootstrap by using the **savegrp -O** command.
4. Remove the Sun StorageTek EBS software cluster configuration files and uninstall the Sun StorageTek EBS software. Do not remove the global and local /nsr directories.

For instructions on uninstalling the Sun StorageTek EBS software, see [“Uninstalling the Sun StorageTek EBS software” on page 95](#).

5. If required, upgrade the Sun Cluster software. For instructions, refer to the Sun Cluster documentation.
6. Install and configure the Sun StorageTek EBS 7.4 software.

Note: Do not relocate the Sun StorageTek EBS software. By default, the Sun StorageTek EBS is installed in the /usr directory.

7. Ensure that:
 - You specify the same local /nsr and global /nsr directories.
 - The Sun StorageTek EBS Client Type resource properties for Owned_paths and Clientname are the same as before the upgrade.
 - The Sun StorageTek EBS Config_dir resource contains the same values as before the upgrade.
 - The Network_resources_used property contains the same value that the Resource_dependencies property had before the upgrade.

Installing Sun StorageTek EBS software in a cluster

See these sections to install the Sun StorageTek EBS software in a Sun Cluster environment:

- ◆ [“Installing a Sun StorageTek EBS virtual server” on page 72](#)
- ◆ [“Installing a virtual Sun StorageTek EBS Console server” on page 87](#)
- ◆ [“Installing only the Sun StorageTek EBS client software in a cluster” on page 90](#)

Note: Do not relocate the Sun StorageTek EBS software. By default, the Sun StorageTek EBS is installed in the `/usr` directory.

Installing a Sun StorageTek EBS virtual server

To install and configure the Sun StorageTek EBS software as a highly available service in a cluster, perform these tasks:

- ◆ [“Task 1: Install the Sun StorageTek EBS software” on page 72](#)
- ◆ [“Task 2: Define the Sun StorageTek EBS server as highly available” on page 73](#)
- ◆ [“Task 3: Create an Instance of the Sun StorageTek EBS server resource group” on page 75](#)
- ◆ [“Task 4: \(Optional\) add a HAStoragePlus resource” on page 78](#)
- ◆ [“Task 5: Grant access to the highly available Sun StorageTek EBS server” on page 78](#)
- ◆ [“Task 6: Configure the Sun StorageTek EBS server” on page 81](#)
- ◆ [“Task 7: Configure clients under the Sun StorageTek EBS server” on page 81](#)
- ◆ [“Task 8: Create instances of the Sun StorageTek EBS Client resource type” on page 82](#)
- ◆ [“Task 9: Register licenses for the highly available Sun StorageTek EBS server” on page 84](#)
- ◆ [“Task 10: Authorize the software” on page 86](#)

Task 1: Install the Sun StorageTek EBS software

The Sun StorageTek EBS software must be installed on all nodes in the cluster that are required to run the Sun StorageTek EBS resource group.

Note: Ensure that the following apply:

- Solaris 9 Operating environment and Sun Cluster 3.0, 3.1, or 3.2 software are already installed on all nodes in the cluster and that those nodes boot in cluster mode.
 - PATH environment variable includes `/usr/sbin` and `/usr/cluster/bin`.
-

To install the Sun StorageTek EBS software on nodes that will be running the Sun StorageTek EBS resource group:

1. Access the Sun StorageTek EBS software from the distribution media. The Sun StorageTek EBS Installation Guide provides installation instructions.
2. Keep a copy of the current configuration. The Sun StorageTek EBS 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
```

3. To install the software, type:


```
pkgadd -d .
```
4. Press **Enter** to install all of the packages on the server. Start the Sun StorageTek EBS daemons only after the last Sun StorageTek EBS package is installed.

Install selected software packages in this order:

- a. **SUNWebsc** (client software package)
 - b. **SUNWebsn** (storage node software package)
 - c. **SUNWebss** (server software package)
 - d. **SUNWebsm** (optional man pages)
5. Start the **Sun StorageTek EBS** daemons:


```
/etc/init.d/networker start
```
 6. Type **q** to exit.

Note: Do not relocate the Sun StorageTek EBS software. By default, the Sun StorageTek EBS is installed in the `/usr` directory.

Task 2: Define the Sun StorageTek EBS server as highly available

To define and configure the Sun StorageTek EBS server as highly available:

1. Log in as root.
2. Ensure that the `/etc/hosts` file on each cluster node contains the name of the logical host. The logical hostname can be published in the Domain Name System (DNS) or Network Information Services (NIS).

3. From each node in the cluster that will run the Sun StorageTek EBS server process:
 - a. Run the cluster configuration script **networker.cluster** located in `/usr/sbin/nsr`.

This script defines the SUNWebss and the SUNWebsc resource types that the Sun StorageTek EBS software requires.

- b. Type the information specified for each system prompt:

Enter directory where local Sun StorageTek EBS database is installed [/nsr]?

- Type the location of the local Sun StorageTek EBS database directory provided during the installation procedure. For example: **/space/nsr**

Do you wish to configure for both Sun StorageTek EBS server and client?

Yes or No [Yes]?

- Type **Yes** to configure the server software. This also installs the client software by default.
- Type **No** to configure only the client software.

Do you wish to add now the site-specific values for:

NSR_SHARED_DISK_DIR and NSR_SERVICE_ID

Yes or No [Yes]?

- Type **Yes** to ensure compatibility with other cluster environments.

Enter the Logical Hostname to be used for Sun StorageTek EBS?

- Type the published logical hostname to be used by the highly available Sun StorageTek EBS server. For example: **clus_vir1**

In what path will this nsr directory be created/located?

- Type the pathname of the globally mounted `/nsr` directory that will contain the configuration information for the highly available Sun StorageTek EBS server.

Note: For more information, see [“System information requirements” on page 69](#).

To undo any changes to the configuration, run the **networker.cluster -r** script and then run the **networker.cluster** script again.

Task 3: Create an Instance of the Sun StorageTek EBS server resource group

A resource group must be created for the highly available Sun StorageTek EBS server. It must contain these resources:

- ◆ Logical hostname
- ◆ Globally mounted file system for the /nsr area
- ◆ LGTO.serv resource
- ◆ LGTO.clnt resource
- ◆ HAStoragePlus (optional)

To create an instance of the Sun StorageTek EBS Server resource group, perform these steps on one node in the cluster:

1. Create a resource group:

```
scrgadm -a -g networker
```

2. Add the logical host resource:

```
scrgadm -a -L -g networker -l clus_vir1
```

3. (Optional), create an instance of the SUNW.HAStoragePlus resource type:

- a. Determine if the HAStoragePlus resource type is registered within the cluster:

```
scrgadm -p | egrep Type
```

- b. If required, register the HAStoragePlus resource type within the cluster:

```
scrgadm -a -t SUNW.HAStoragePlus
```

- c. Create the SUNW.HAStoragePlus resource:

```
scrgadm -a -g networker -j hastorageplus -t  
SUNW.HAStoragePlus \  
-x  
FilesystemMountPoints=/global/clus_vir1/nw,/global/  
clus_vir1/  
space  
-x AffinityOn=True
```

Note: For more information on the SUNW.HAStoragePlus resource and the setup for locally mounted global systems, refer to the Sun Cluster 3.0, 3.1, or 3.2 documentation.

4. Create an instance of the LGTO.clnt resource, type:

```
scrgadm -a -j client -t LGTO.clnt -g networker \
-x clientname=clus_vir1 \
-x
owned_paths=/global/clus_vir1/nw,/global/clus_vir1/sp
ace
```

If the logical host resource name is different than the hostname it specifies, use this command to do the following:

- a. Set the client name to the virtual hostname.
- b. Set the optional network_resource property to the logical host resource name.

For example:

```
scrgadm -a -j client -t LGTO.clnt -g networker \
-x clientname=virtual_hostname -x
network_resource=clus_vir1 \
-x
owned_paths=/global/clus_vir1/nw,/global/clus_vir1/
space
```

5. Create an instance of the LGTO.serv resource type:

```
scrgadm -a -j server -t LGTO.serv -g networker \
-y network_resources_used=clus_vir1 \
-y Resource_dependencies=hastorageplus \
-x config_dir=/global/clus_vir1/nw
```

If the logical host resource name is different than the hostname it specifies, set the optional servername property to the virtual hostname:

```
scrgadm -a -j server -t LGTO.serv -g networker \
-y network_resources_used=clus_vir1 \
-x servername=virtual_hostname \
-x config_dir=/global/clus_vir1/nw
```

Note: If you are using a HAStoragePlus resource, set resource_dependencies property to the HAStoragePlus resource name.

6. Start the Sun StorageTek EBS resource group:

```
scswitch -Z -g networker
```

Example 1 A highly available Sun StorageTek EBS server

In this example, a highly available Sun StorageTek EBS server uses the logical hostname *backup_server*. The highly available Sun StorageTek EBS server uses */global/networker* (globally mounted file system) as its configuration directory.

1. Create a resource group with the name *backups*:

```
scrgadm -a -g backups
```

2. Add the logical hostname resource type to the resource group created in the previous step:

```
scrgadm -a -L -g backups -l backup_server
```

3. Create an instance of the *LGTO.serv* resource type with the name *networker_server*. This resource belongs to the resource group *backups* and has a dependency on the logical host created in the previous step.

Specify the configuration directory on the globally mounted file system */global/networker*:

```
scrgadm -a -j networker_server -t LGTO.serv -g backups  
\  
-y network_resources_used=backup_server \  
-x config_dir=/global/networker
```

4. The Sun StorageTek EBS logical host is also a client of the highly available Sun StorageTek EBS server. Create an instance of the *LGTO.clnt* resource type for the logical host *backup_server* within the resource group *backups*. The name of this resource is *networker_client*:

```
scrgadm -a -j networker_client -t LGTO.clnt -g backups  
\  
-x clientname=backup_server -x  
owned_paths=/global/networker
```

5. Start the highly available service associated with the resource group *backups*.

```
scswitch -Z -g backups
```

Task 4: (Optional) add a HAStoragePlus resource

To add a SUNW.HAStoragePlus resource to an existing Sun StorageTek EBS server resource group:

1. Determine whether the HAStoragePlus resource type is registered within the cluster:
2. If required, register the HAStoragePlus resource type within the cluster:

```
scrgadm -p | egrep Type
```

```
scrgadm -a -t SUNW.HAStoragePlus
```

3. Create the SUNW.HAStoragePlus resource:

```
scrgadm -a -g networker -j hastorageplus -t  
SUNW.HAStoragePlus -x  
FilesystemMountPoints=/global/clus_vir1/nw,/global/cl  
us_vir1/space -x AffinityOn=True
```

4. Enable the HAStoragePlus resource:
5. Set up a dependency for the Sun StorageTek EBS Server resource on the HAStoragePlus resource:

```
scrgadm -c -j server -y  
Resource_Dependencies=hastorageplus
```

6. Verify that the resource dependencies are correctly set:

```
scrgadm -pvv -j server | egrep strong
```

Task 5: Grant access to the highly available Sun StorageTek EBS server

Before a Sun StorageTek EBS server can back up a client, the client must grant the server access. Granting access is controlled by the **servers** file. For the node that is running the Sun StorageTek EBS Server resource group, this file is located in the globally mounted file system. Otherwise, this file is located on a local disk.

Note: If the **/nsr/res/servers** file is empty or does not exist, any Sun StorageTek EBS server is authorized to:

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

To grant access to the highly available Sun StorageTek EBS server:

1. On one node in the cluster:
 - a. Stop the Sun StorageTek EBS daemon by using the cluster management software, as follows:


```
scswitch -F -g NetWorker
```
 - b. Edit or create the servers file in the globally mounted /nsr area. For example, /global/nw/res/servers:
 - Add the set of Sun StorageTek EBS servers, one per line, to be granted access to this client.
 - Add an entry for the Sun StorageTek EBS logical hostname first.
 - Add entries for each physical host that can run the Sun StorageTek EBS resource group.

For example:

```
clus_vir1
clus_phys1
clus_phys2
```

2. On each node in the cluster:
 - a. Shut down the Sun StorageTek EBS processes and verify that all Sun StorageTek EBS daemons have stopped:


```
nsr_shutdown
ps -ef | grep nsr
```
 - b. Check the Sun StorageTek EBS boot-time startup file to see whether **nsrexecd** is being run with the **-s** option.

If the **-s** option exists, remove all occurrences of **-s servername** in the file.
 - c. Edit or create the /nsr.NetWorker.local/res/servers file:
 - Add the set of Sun StorageTek EBS servers, one per line, that require access to this client.
 - Add an entry for the Sun StorageTek EBS logical hostname first.
 - Add entries for each physical host that can run the Sun StorageTek EBS resource group.

For example:

```
clus_vir1
```

```
clus_phys1
```

```
clus_phys2
```

- d. Restart the Sun StorageTek EBS processes:

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

3. On one node in the cluster, start the Sun StorageTek EBS daemon by using the cluster management software, as follows:

```
scswitch -Z -g NetWorker
```

4. If required, grant access to the Sun StorageTek EBS virtual server on clients outside of the cluster:

On each client that is outside of the cluster:

- a. To shut down the Sun StorageTek EBS processes, type:

```
nsr_shutdown
```

- b. To verify that all Sun StorageTek EBS daemons have stopped, type:

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

- c. Edit or create the **/nsr/res/servers** file:

- Add the set of Sun StorageTek EBS servers, one per line, that require access to this client.
- Add an entry for the Sun StorageTek EBS logical hostname first.
- Add entries for each physical host that can run the Sun StorageTek EBS resource group.

For example:

```
clus_vir1
```

```
clus_phys1
```

```
clus_phys2
```

- d. Type this command to restart the Sun StorageTek EBS daemons:

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


Task 6: Configure the Sun StorageTek EBS server

To configure the Sun StorageTek EBS server:

1. Log in as root on the cluster node that is currently running the Sun StorageTek EBS server resource group.
2. Start the **Sun StorageTek EBS Console** software.
3. From the **Administration** window, select **Properties** from the **File** menu.
 - a. For the **Administrator** attribute, add entries for any cluster nodes that are not already listed. For example:


```
root@hostname
```
 - b. Click **OK**.

Task 7: Configure clients under the Sun StorageTek EBS server

When the **networker.cluster** script runs, it creates a symbolic link named **/nsr** that points to a local disk. It also creates a second link named **nsr.NetWorker.local** that points to the local Sun StorageTek EBS directory. For example, if the local Sun StorageTek EBS directory was created in **/var/nsr**, each client member has these links:

- ◆ **/nsr->/nsr.NetWorker.local**
- ◆ **/nsr.NetWorker.local->/var/nsr**

To configure each client under the Sun StorageTek EBS server:

1. (Optional) Define save groups.

Note: In order for their save sets to restart after a virtual client or Sun StorageTek EBS server failover, save groups must have the Autorestart attribute enabled and the Manual Restart option disabled.

2. Make each physical client within the cluster a client of the Sun StorageTek EBS server. For each physical client in the cluster:
 - a. Create a new client.
 - b. Type the name of the physical client for the **Name** attribute.
3. Make each virtual client within the cluster a client of the virtual Sun StorageTek EBS server. For each virtual client in the cluster:
 - a. Create a new Sun StorageTek EBS client.
 - b. For the **Name** attribute, type the name of the virtual client.

- c. In the **Remote Access** attribute, add entries for each physical client within the cluster. For example:

```
root@clus_phys1
```

- d. For the **Group** attribute, select a group.

4. Run a test probe to verify that the **Client** resource and the **Group** resource have been properly configured.

Type this command on the node on which the Sun StorageTek EBS server resides:

```
savegrp -pv -c client_name group_name
```

If the test probe does not display the correct scheduled backups and index, refer to the Sun StorageTek Enterprise Backup Software Administration Guide.

Task 8: Create instances of the Sun StorageTek EBS Client resource type

An instance of the Sun StorageTek EBS Client resource type must be created for each virtual client that accesses data on globally mounted file systems. Virtual clients in Sun Cluster 3.0, 3.1, and 3.2 are either logical hostnames or shared addresses.

Note: All globally mounted file systems (except the /global/.devices/... file systems) must be owned by a resource group and defined in a Sun StorageTek EBS Client resource type. If the file systems are not properly configured, multiple copies will be backed up for each cluster node.

To back up the data for a virtual client:

1. Create an instance of the Sun StorageTek EBS Client resource as part of an existing resource group that contains a logical host or shared addresses. For example:

```
scrgadm -a -j resource_name -g resource_group_name -t
LGTO.cln \
-x clientname=virtual_hostname -x
owned_paths=pathname_1, pathname_2[,...]
```

The *virtual_hostname* variable is a hostname specified by a logical hostname or Shared Address resource. By default, the logical hostname or shared address resource name is the same as the first hostname in the list of hostnames the resource controls.

If the logical hostname or shared address resource was explicitly named, set the optional *network_resource* property to the resource name:

```

scrgadm -a -j resource_name -g resource_group_name
-t LGTO.clnt\
-x clientname=virtual_hostname
-x network_resource=logicalhostname_
or_SharedAddress_resource_name \
-x owned_paths=pathname_1, pathname_2[,...]

```

These examples provide more information:

- [“A highly available Informix database server” on page 83](#)
 - [“A scalable Apache web server” on page 84](#)
2. Run a test probe to verify that the Client and Group resources are properly configured.

Type this command on the node on which the Sun StorageTek EBS server resides:

```
savegrp -pv -c client_name savegroup_name
```

If the test probe does not display the scheduled backups and index, refer to the Sun StorageTek Enterprise Backup Software Administration Guide.

Example 2 A highly available Informix database server

In this example, the Informix database server is configured to use the DNS registered hostname *informix_lhrs*. An existing failover resource group named *informix_rg* contains a:

- ◆ SUNW.informix resource named *informix_res*
- ◆ SUNW.LogicalHostname resource named *informix_lhrs*

This *SUNW.informix* database server can access data on a global file system under */global/informix/config* and */global/informix/db*.

To add a Sun StorageTek EBS virtual client to the existing resource group *informix_rg*, type:

```

scrgadm -a -j informix_clntrs -g informix_rg -t LGTO.clnt \
-x clientname=informix_lhrs \
-x
owned_paths=/global/informix/config,/global/informix/db

```

Example 3 A scalable Apache web server

In this example, an Apache web server is configured to use the DNS registered hostname `apache_sars`. An existing scalable resource group named `apache_rg` contains a:

- ◆ `SUNW.apache` resource named `apache_res`
- ◆ `SUNW.SharedAddress` resource named `apache_sars`

This Apache web server accesses data on a global file system under `/global/web/config` and `/global/web/data`.

To add a Sun StorageTek EBS virtual client to the existing resource group `apache_rg`, type:

```
scrgadm -a -j apache_clntrs -g apache_rg -t LGTO.clnt \
-x clientname=apache_sars \
-x owned_paths=/global/web/config,/global/web/data
```

Task 9: Register licenses for the highly available Sun StorageTek EBS server

To register and license the highly available Sun StorageTek EBS server:

1. Order licenses for the type of Sun StorageTek EBS server and client configuration in use.

Note: If you are Registering an Update from Solstice Backup 6.x to Sun StorEdge EBS 7.3, you will need a new Update for Sun StorEdge EBS 7.3 enabler. Only customers with maintenance contracts will have automatically received Update for Sun StorEdge EBS 7.3 enablers. If you do not have a maintenance contract, order appropriate licenses for the highly available StorEdge Backup server and other desired features.

2. Log in to the system that is currently running the Sun StorageTek EBS resource group.
3. Perform these operations to enter the purchased enabler codes:
 - a. If you have been evaluating the Sun StorageTek EBS highly available software and have now purchased the software:

- To upgrade from the base evaluation enabler to the purchased enabler, type:

```
nsrccap -v -u base_enabler_code
```

- Delete any remaining evaluation enablers:

```
nsradmin -s clus_vir1
```

This eliminates warning messages due to expiring evaluation enablers.

- b. For each enabler code, type:

```
nsrscap -v -c enabler_code
```

4. Ensure that the highly available Sun StorageTek EBS server is defined as a part of the cluster.
5. Run the following command, and capture the output, on each node that is currently running the Sun StorageTek EBS server resource group:

```
hostid
```

The numeric identifier of the current host prints.

6. Log in to the system that is running the Sun StorageTek EBS virtual server and create the **/nsr/res/hostids** file. This file contains the host IDs of all the cluster nodes.

Use this syntax:

```
hostid1:hostid2:hostid3:...
```

For example:

```
12345678:87654321
```

7. Type the following commands to restart the server by taking the highly available Sun StorageTek EBS server offline and then putting it back online:

```
scswitch -F -g NetWorker
```

```
scswitch -Z -g NetWorker
```

8. On one node in the cluster:
 - a. Start the **Sun StorageTek EBS Console**. Use the logical hostname for the highly available Sun StorageTek EBS server.
 - b. From the **Sun StorageTek EBS Administration** window, note the host ID number for the appropriate cluster license.
 - c. Register the Sun StorageTek EBS software.

Note: Do not change the logical hostname for the highly available Sun StorageTek EBS server. If you change it after you update the software, you must permanently license and authorize the highly available Sun StorageTek EBS server.

Task 10: Authorize the software

To enter the permanent authorization code for Sun StorageTek EBS servers and clients:

1. On one node in the cluster, start the Sun StorageTek EBS Console. Use the logical hostname for the highly available Sun StorageTek EBS server.
2. Complete the customer information and contact information fields:
 - a. Start the **Sun StorageTek EBS Console** software.
 - b. From the **Administration** window, click **Configuration**.
 - c. In the left pane, select the **Sun StorageTek EBS** server.
 - d. From the **File** menu, select **Properties**. The **Properties** dialog box appears.
 - e. Select the **Customer Information** tab and complete your contact information.
 - f. Click **Ok**.
3. Review the registration information:
 - a. From the **Administration** window, click **Configuration**.
 - b. In the left pane, click **Registration**.
 - c. In the right pane, right-click the license to be authorized, then select **Properties**. The **Properties** dialog box appears.
 - d. Review the **Auth Code** attribute.

The registration window lists all enabled modules by name, serial number, composite host ID, the expiration date, and the enabler's authorization key

 - If an enabler *is* authorized, no expiration date is shown.
 - If an enabler *is not* authorized, an authorization key is *not* shown.
4. With the registration information and the composite host ID available, contact Sun. You can either:
 - Call 1-800-usa4sun
 - Send e-mail to license@sun.com.

To send e-mail, copy and paste the registration window contents (enabler codes, composite host ID, and expiration dates) along with your name, company name, address, phone number, e-mail address, and date of purchase into an e-mail message. Include a brief note stating that you are requesting authorization keys.

The authorizations keys are returned within two days by the same method you use to request them.

If you *do not* enter an authorization key within 45 days of entering the purchased enabler code, you *cannot* back up data. However, you can recover data.

Installing a virtual Sun StorageTek EBS Console server

To install and configure the Sun StorageTek EBS Console server as a highly available service in a cluster, read and follow the procedures for these tasks:

- ◆ [“Task 1: Install the Sun StorageTek EBS Management software in a cluster” on page 87](#)
- ◆ [“Task 2: Define the Sun StorageTek EBS Management server as highly available” on page 87](#)

Task 1: Install the Sun StorageTek EBS Management software in a cluster

To install the Sun StorageTek EBS software on each node in the cluster:

1. Ensure that the most recent cluster patch for the operating system is installed.
2. Install the Sun StorageTek EBS Console server software (**SUNWebsg**) on each node in the cluster.

The Sun StorageTek EBS Installation Guide provides instructions.

Task 2: Define the Sun StorageTek EBS Management server as highly available

To define and configure Sun StorageTek EBS server as a highly available application:

1. From each node in the cluster:
 - a. Log in as root.

- b. Ensure that the **/etc/hosts** file on each cluster node contains the name of the logical host. The logical hostname can be published in the Domain Name System (DNS) or Network Information Services (NIS).
2. From each node in the cluster that will run the Sun StorageTek EBS server process:
 - a. Run the cluster configuration script **gst_ha.cluster** located in `/opt/SUNWebmsg/bin/nsr`.

This script defines the GST_HA.serv resource type that the Sun StorageTek EBS Console server requires.

Note: When running the **gst_ha.cluster** script, ensure that you use the same values for logical hostname and for the global mounted path for all node in the cluster.

```
./gst_ha.cluster
```

```
NMC Console Server is in the process of being made a
Highly Available application within Sun Cluster
3.1.0,REV=2003.03.24.14.50.
```

```
To complete this task, the following are required.
```

```
A Logical host or virtual IP for the Console Server
A globally mounted dir for the LGTONmc database.
```

```
A GST_HA.serv resource type will be created via
this process and will be needed to configure NMC as
a Highly Available Application within Sun Cluster
3.1.0,REV=2003.03.24.14.50.
```

```
Do you wish to continue? [Yes]?
```

```
Restarting syslog daemon...
```

```
Please enter Logical Hostname to be used by NMC
server? hunt
```

```
Is the Logical Hostname entered correct (y/n)? y
```

```
The lgto_gstdb database should be on a globally
mounted filesystem which can be accessible by the
cluster nodes which will host the Highly Available
NMC server.
```

```
Please enter the globally mounted shared directory
for the lgto_gstdb database (/global/logicalhost)?
/global/hunt/data1
```



```
Is the shared directory path entered for the
lgto_gstadb database correct (y/n)? y

Moving /bigspace/lgto_gstadb local gstadb directory
to globally mounted /global/hunt/data1/lgto_gstadb
Resource type GST_HA.serv is not registered
Defining GST_HA.serv resource type with RGM.

NMC has been successfully cluster-configured.
```

- b. Ensure that the GST_HA.serv resource type was created.

```
scrgadm -pv -t GST_HA.serv

Res Type name: GST_HA.serv

GST_HA.serv) Res Type description: NMC Server for
Sun Cluster

GST_HA.serv) Res Type base directory:
/opt/LGTONmc/bin

GST_HA.serv) Res Type single instance: False

GST_HA.serv) Res Type init nodes: All potential
masters

(GST_HA.serv) Res Type failover: False

(GST_HA.serv) Res Type version: (GST_HA.serv)

Res Type API version: 2

(GST_HA.serv) Res Type installed on nodes: <All>

(GST_HA.serv) Res Type packages: <NULL>
```

Note: To undo any changes to the configuration, run the **gst_ha.cluster -r** script and then run the **gst_ha.cluster** script again.

3. From one node in the cluster:

- a. Create a resource group named "nmc":

```
scrgadm -a -g nmc
```

- b. Create a logical hostname resource: For example:

```
scrgadm -a -L -g nmc -l logical_hostname
```

- c. Create an nmc server resource instance. For example:

```
scrgadm -a -j nmc_server_name -t GST_HA.serv -g nmc  
-y network_resources_used=logical_hostname  
-x database_dir=database_dir
```

4. Perform these steps when the authorization keys arrive:
 - a. On one node in the cluster, start the **Sun StorageTek EBS Administrator** program by using the logical hostname for the highly available Sun StorageTek EBS server:

```
nwadmin -s clus_virtl
```

- b. From the **Server** menu, select **Registration**.

Enter each authorization key into the **Authorization Key** text box for the corresponding enabler, and then click **Apply**.

Installing only the Sun StorageTek EBS client software in a cluster

In this configuration, the Sun StorageTek EBS server is running on a node that is not a member of the cluster.

To install a Sun StorageTek EBS cluster client, perform these tasks:

- ◆ [“Task 1: Install the Sun StorageTek EBS software” on page 72](#)
- ◆ [“Task 2: Configure Sun StorageTek EBS client software as highly available” on page 91](#)
- ◆ [“Task 3: Create instances of the Client resource type” on page 92](#)
- ◆ [“Task 4: Define the list of trusted Sun StorageTek EBS servers” on page 93](#)
- ◆ [“Task 5: Configure clients under the Sun StorageTek EBS server” on page 94](#)

Note: Ensure that the Sun StorageTek EBS client software is installed on each node in the cluster. Do not relocate the Sun StorageTek EBS software. By default, the Sun StorageTek EBS is installed in the /usr directory.

Task 1: Install the Sun StorageTek EBS cluster client software

To install the Sun StorageTek EBS software on the computer that is designated as the Sun StorageTek EBS client:

1. Access the Sun StorageTek EBS software from the distribution media. The Sun StorageTek EBS Installation Guide provides installation instructions.
2. Type the **pkgadd -d .** command.

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

3. Type the appropriate option number to install the client package .
4. (Optional) Type the appropriate option number to install the man pages.
5. Type this command to start the Sun StorageTek EBS daemons:
`/etc/init.d/networker start`
6. When all the applicable packages have been added, and the prompt appears, type **q** to exit.

Task 2: Configure Sun StorageTek EBS client software as highly available

To define and configure a Sun StorageTek EBS client as highly available:

1. Log in as root on each node where the Sun StorageTek EBS software is being installed.
2. Ensure that the `/etc/hosts` file on each cluster node contains the name of the virtual host. The virtual hostname can be published in the DNS or NIS.
3. For each node in the cluster:

- a. Run the cluster configuration script,
`/usr/sbin/nsr/networker.cluster`.

This script defines the *LGTO.cln* resource types that the Sun StorageTek EBS software requires.

- b. In response to the prompts, type the appropriate response::

Enter directory where local Sun StorageTek EBS
database is installed [/nsr]?

- Type the location of the local Sun StorageTek EBS database directory is provided during the installation procedure. For example: **/space/nsr**.

Do you wish to configure for both Sun StorageTek
EBS server and client? Yes or No [Yes]?

- Type **No**. This configures only the client software.

Note: Any changes to the configuration can be undone by running the **networker.cluster -r** option and then running the **networker.cluster** script again.

For information, see [“System information requirements” on page 69.](#)

Task 3: Create instances of the Client resource type

An instance of the Sun StorageTek EBS Client resource type must be created for each virtual client that accesses data on globally mounted file systems. Virtual clients in Sun Cluster 3.0, 3.1, or 3.2 are either logical hostnames or shared addresses.

Note: All globally mounted file systems (except the `/global/.devices/...` file systems) must be owned by a logical host and defined in a Sun StorageTek EBS Client resource type. If the file systems are not properly configured, multiple copies will be backed up for each cluster node.

To back up the data for a virtual client, from any node in the cluster, create an instance of the Sun StorageTek EBS Client resource as part of an existing resource group that contains a logical host or shared address. For example:

```
scrgadm -a -j resource_name -g resource_group_name -t
LGTO.c1nt \
-x clientname=virtual_hostname -x owned_paths=pathname_1,
pathname_2[, ...]
```

Example 4 A highly available Informix database server

In this example, the Informix database server is configured to use the DNS registered hostname *informix_lhrs*.

An existing failover resource group named *informix_rg* contains a:

- ◆ SUNW.informix resource named *informix_res*
- ◆ SUNW.LogicalHostname resource named *informix_lhrs*

This SUNW.informix database server can access data on a global file system under `/global/informix/config` and `/global/informix/db`.

To add a Sun StorageTek EBS virtual client to the existing resource group *informix_rg*, type:

```
scrgadm -a -j informix_clntrs -g informix_rg -t LGTO.clnt \
-x clientname=informix_lhrs \
-x
owned_paths=/global/informix/config,/global/informix/db
```

Example 5 A scalable Apache web server

In this example, an Apache web server is configured to use the DNS registered hostname *apache_sars*. An existing scalable resource group named *apache_rg* contains a:

- ◆ SUNW.apache resource named *apache_res*
- ◆ SUNW.SharedAddress resource named *apache_sars*

This Apache web server accesses data on a global file system under /global/web/config and /global/web/data.

To add a Sun StorageTek EBS virtual client to the existing resource group *apache_rg*, type:

```
scrgadm -a -j apache_clntrs -g apache_rg -t LGTO.clnt \
-x clientname=apache_sars \
-x owned_paths=/global/web/config,/global/web/data
```

Task 4: Define the list of trusted Sun StorageTek EBS servers

Before a Sun StorageTek EBS server can back up a client, the client must grant the server access. Granting access is controlled by the *servers* file. For the node that is currently running the Sun StorageTek EBS Server resource group, this file is located in the globally mounted file system. Otherwise, this file is located on a local disk.

Note: If the */nsr/res/servers* file is empty or does not exist, any Sun StorageTek EBS server is authorized to:

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

To define the list of trusted Sun StorageTek EBS servers, perform these steps on each node in the cluster:

1. Shut down the Sun StorageTek EBS processes and verify that all Sun StorageTek EBS daemons have stopped:

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

2. Edit or create the `/nsr/res/servers` file and add the set of Sun StorageTek EBS servers, one per line, that require access to this client.
3. Check the Sun StorageTek EBS boot-time startup file to see whether `nsrexecd` is being run with the `-s` option. If the `-s` option exists, remove all occurrences of the following in the file:

```
-s servername
```

4. Restart the Sun StorageTek EBS daemons:

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

Task 5: Configure clients under the Sun StorageTek EBS server

To configure the Sun StorageTek EBS server:

1. Make each physical client within the cluster a client of the Sun StorageTek EBS server. For each physical client in the cluster:
 - a. Create a new client.
 - b. For the **Name** attribute, type the name of the physical client.

Note: If a physical client is backed up to a Sun StorageTek EBS server outside the cluster, the name of any virtual service that can run on the physical node must be added to the Remote Access list of the physical Client resource.

2. Make each virtual client within the cluster a client of the Sun StorageTek EBS server.

For each virtual client in the cluster:

- a. Create a new client.
 - b. For the **Name** attribute, type the name of the Sun StorageTek EBS server.
 - c. For the **Remote Access** attribute, add entries for each physical client within the cluster. For example:


```
root@clus_phys1
```
 - d. For the **Group** attribute, select a group.
3. Schedule backups by using the Sun StorageTek EBS application.

Note: The Sun StorageTek EBS server might reside outside of the cluster.

Uninstalling the Sun StorageTek EBS software

To uninstall the Sun StorageTek EBS software from a cluster environment:

1. On one node in the cluster, disable and remove all instances of the **LGTO.serv** and **LGTO.clnt** resource types in the cluster.

For information, refer to the **scswitch(1m)** and **scrgadm(1m)** man pages.

2. On each node in the cluster:
 - a. Log in as root on the computer that the software is being removed.
 - b. Undo all changes to the configuration by running the **networker.cluster -r** option.
 - c. To shut down the Sun StorageTek EBS daemons, type:

```
nsr_shutdown
```

Note: Remove the Sun StorageTek EBS software packages in this order:

```
- SUNWebss
- SUNWebsn
- SUNWebsg
-SUNWebsc
```

The man pages (**SUNWebasm**) and document files have no dependencies and can be removed at any time.

- d. To remove *all* the packages, type:

```
pkgrm SUNWebss SUNWebsn SUNWebsg SUNWebsc  
SUNWebasm
```

Configuring an external client to a virtual server

Use this procedure to configure and back up an external Sun StorageTek EBS client to a highly available Sun StorageTek EBS server. Before a Sun StorageTek EBS server can back up a client, the client must grant the server access. Granting access is controlled by the servers file. If the servers file does not exist, any Sun StorageTek EBS server can back up this client. If the servers file does exist, only the specific servers listed in the file can back up the client.

On each Sun StorageTek EBS client that is outside of the cluster:

1. Shut down the Sun StorageTek EBS processes:

```
nsr_shutdown
```

2. Verify that all Sun StorageTek EBS daemons have stopped:

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

3. Edit or create the **/nsr/res/servers** file:

- a. Add the set of Sun StorageTek EBS servers, one per line, that require access to this client.
- b. Add an entry for the Sun StorageTek EBS logical hostname first. Then add entries for each physical host that can run the Sun StorageTek EBS resource group. For example:
 - clus_vir1
 - clus_phys1
 - clus_phys2

Defining ownership of a raw partition for virtual clients

To back up the raw partitions of a Sun StorageTek EBS virtual client, ensure that the raw device path appears in the owned paths field of the **LGTO.cint** resource.

Example 6 A highly available web server

In this example, a highly available web server uses the shared address **web_server**. The web server services are placed under the control of the **apache_rg** resource group. The services access files that are kept in two separate globally mounted file systems: **/global/web/config** and **/global/web/data**. The web server also accesses the raw partition **/dev/md/hunt/rdisk/d30**.

To create the Sun StorageTek EBS Client resource named *apache_nw*, type:

```
scrgadm -a -j apache_nw -g apache_rg -t LGTO.cint  
-x clientname=web_server \  
-x owned_paths=/global/web/config,/global/web/data,  
/dev/md/hunt/rdisk/d30
```

For information on backing up raw partitions, refer to the **rawasm** command as described in the **uasm(1m)** man page.

Verifying the Installation

This chapter includes these sections:

- ◆ Introduction 98
- ◆ Task 1: Start the Console for the first time..... 98
- ◆ Task 2: Add a Sun StorageTek EBS server to the Sun StorageTek
EBS Console server..... 100
- ◆ Task 3: Configure a stand-alone device 100
- ◆ Task 4: Test the Sun StorageTek EBS software installation..... 102

Introduction

This chapter provides information about testing and verifying the Sun StorageTek EBS software installation. To verify that the Sun StorageTek EBS software was installed properly, you must first connect to a Sun StorageTek EBS server, configure a device, and then test the software on the device.

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 Sun StorageTek EBS software is installed and that all of the software and hardware requirements have been met on the computer that will access the Console. [“Sun StorageTek EBS Management Console” on page 14](#) provides information about the Console.

To start the Console server software for the first time:

1. Verify that the console processes **gstd**, **dbsrv9** and **httpd** are running on the **Sun StorageTek EBS 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 **Sun StorageTek EBS Console**.
6. 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 **Sun StorageTek EBS Management Console Login** dialog box, type the username and password.

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.

9. 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 98](#).
- ◆ Double-click **Sun StorageTek EBS Console** in the **Java Web Start Application Manager**.

Task 2: Add a Sun StorageTek EBS server to the Sun StorageTek EBS Console server

To add and select a Sun StorageTek EBS server:

1. Start the **Sun StorageTek EBS 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 Sun StorageTek EBS server.
The Sun StorageTek EBS server appears in the right pane and left pane.
6. From the left pane, select the Sun StorageTek EBS server.
7. From the right pane, select the Sun StorageTek EBS application.
8. From the **Enterprise** menu, select **Launch Application**.

The **Sun StorageTek EBS Administration** window is launched.

If the server connection fails, refer to the server connectivity information in the Sun StorageTek Enterprise Backup Software Administration Guide to troubleshoot the problem.

Task 3: Configure a stand-alone device

Devices must be configured before testing the Sun StorageTek EBS software.

You can configure one of these devices:

- ◆ [“Stand-alone tape device” on page 101](#)
- ◆ [“Stand-alone file or advanced file device” on page 101](#)
- ◆ [“Autochanger or silo” on page 102](#)

The Sun StorageTek Enterprise Backup Software Administration Guide provides information about configuring a device.

Stand-alone tape device

To configure a stand-alone tape device:

1. In the server's Sun StorageTek EBS 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 Sun StorageTek EBS 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 Sun StorageTek EBS 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 Sun StorageTek EBS software installation

Test a Sun StorageTek EBS installation by performing an ad hoc (manual) backup of a file or folder. You can also use the Sun StorageTek EBS Client Configuration Wizard to configure a scheduled backup. The Sun StorageTek Enterprise Backup Software Administration Guide provides information about the wizard.

To test the Sun StorageTek EBS software on a stand-alone device, you can 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.

Licensing and Enabling the Software

The chapter includes these sections:

- ◆ How Sun StorageTek EBS software is licensed..... 104
- ◆ The evaluation process..... 104
- ◆ The licensing process..... 106
- ◆ Sun StorageTek EBS simplified licensing for virtual environments
114
- ◆ Additional licenses..... 116
- ◆ Using nsrlic to gather license information 117
- ◆ Managing licenses..... 121

How Sun StorageTek EBS software is licensed

Sun StorageTek EBS software and added features, such as modules, are installed in evaluation mode with all of the features enabled for a period of 30 days. The licensing of Sun StorageTek EBS software means entry of enabler and authorization codes on the server for the Sun StorageTek EBS environment. Without these codes, the software or added features will *not* run beyond the evaluation period.

Each installation of Sun StorageTek EBS server software must be licensed with a base enabler. This enabler “turns on” the software and allows you to use a particular bundle of features, such as a specified number of clients and devices. All licensing takes place on the server. The licenses are entered and stored on the server. The server enforces the licensing.

Base enablers come in different editions, which enable varying degrees of functionality. Add-on enablers allow a broader scope of features.

The steps in this chapter assume that the Sun StorageTek EBS software is installed and that all of the software and hardware requirements have been met on the computer that will access the Console.

The evaluation process

You can evaluate Sun StorageTek EBS software two ways:

- ◆ By evaluating a new installation of the software on a Sun StorageTek EBS server.
- ◆ By evaluating Sun StorageTek EBS features on an existing Sun StorageTek EBS installation.

Evaluating a new installation

When you first install the Sun StorageTek EBS software, you can evaluate it with all the modules and features for 30 days free without entering any codes.

By the end of the evaluation period, you must purchase, enter, and authorize a base enabler to continue to use the Sun StorageTek EBS

software to back up data. The base enabler is the license that enables the edition purchased.

To continue to use some of the modules and features that were available with the evaluation software, you might need to purchase add-on enablers, depending on the edition of the base enabler.

Evaluating features on an existing installation

If you are evaluating one or more NetWorker Modules or features on an edition of Sun StorageTek EBS software that has already been installed and enabled, enter a temporary enabler for each module or feature you wish to evaluate. The temporary enabler is valid for 45 days.

> **License Management** An alert message is generated 15 days before a Sun StorageTek EBS license is about to expire. The alert remains until the Sun StorageTek EBS license is authorized or deleted.

To view the license alert:

- ◆ From the **Sun StorageTek EBS Administration** window, click **Monitoring** and select the **Alert** tab.
- ◆ From the **Console** window, click **Events**.

To obtain a temporary enabler code, contact Sun Sales or a Sun Reseller.

By the end of the evaluation period, you must purchase, install, and authorize the corresponding license enablers to continue to use modules or features you have evaluated. [“Automatically import Sun StorageTek EBS license enablers and authorization codes from Powerlink” on page 107](#) provides instructions.

Entering a temporary enabler code

To enter the temporary enabler code:

1. Start the Sun StorageTek EBS **Management Console** software.
2. Open the **Administration** window:
 - a. In the **Console** window, click **Enterprise**.
 - b. In the left pane, select a Sun StorageTek EBS 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**.

The licensing process

To permanently use the Sun StorageTek EBS software, you must purchase and enter a license enabler code, and then authorize it. This licensing process is the same for all editions of the Sun StorageTek EBS software as well as for individual modules and features.

The license enabler code that you purchase is valid for 45 days, as a registration period. During the registration period, you must obtain and enter a corresponding authorization code. More instructions for purchasing, enabling, and authorizing the Sun StorageTek EBS software is provided in the section [“The evaluation process” on page 104](#).



IMPORTANT

Automatically importing and installing the Sun StorageTek EBS license enablers and authorization codes from EMC Powerlink® is the recommended way to obtain and install license enablers and authorization codes. Do not perform the tasks in the section [“Manually enter and authorize the license enabler” on page 110](#) unless you cannot import and install automatically.

Automatically import Sun StorageTek EBS license enablers and authorization codes from Powerlink

Automatically import and install Sun StorageTek EBS license enablers and authorization codes from EMC Powerlink® Licensing directly to a Sun StorageTek EBS server or a License Manager system using the following procedures.

How to download the Sun StorageTek EBS license enabler codes from EMC Powerlink Licensing

You can install the Sun StorageTek EBS licenses to a local Sun StorageTek EBS server, a remote Sun StorageTek EBS server, or to a License Manager system.

To download the license enabler codes 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 # has not yet been entered, activated and associated with the host ID, follow the instructions in the email received from EMC Licensing before proceeding with the next step.

3. On the **Powerlink Licensing Home** page, select **Download Enabler Codes** in the **NetWorker Tools** section. The **Search for Downloading Enabler Codes** page appears.
4. For the **%HostID** attribute, enter a valid HostID.
5. Click **Search**. The **Search for Downloading Enabler Codes** page appears displaying the list of hosts that match the criteria.
6. Click the HostID that matches the criteria. The **Download** page appears.

7. Click **Download Enablers**, then separately click the **Download CSV**, **Download nsradmin**, and **Download ReadMe** buttons to download and save these three files:
 - **ReadMe** file

Describes the process and how to use nsradmin to load the enablers.

 - Format: ReadMe_<HostID>_<Date>.txt
 - Example: ReadMe_df010b3f_20080814.txt
 - **Nsradmin** file

This file loads into **nsradmin**.

 - Format: <HostID><date>.nsradmin
 - Example: df010b3f_20080814.nsradmin
 - **CSV** file

This file contains the enabler codes and the information related to them including part descriptions, part numbers, and authorization (auth) codes. You can import this file into Excel and search and sort the contents.

 - Format: <hostID>.csv
 - Example: df010b3f.csv

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.

How to apply the Sun StorageTek EBS license enabler codes

1. Ensure that you have the following permissions on the Sun StorageTek EBS 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 Sun StorageTek EBS client, storage node, or server.

- To install the Sun StorageTek EBS licenses on the Sun StorageTek EBS server, enter this command:
`nsradmin -i source_file > out_file`
 - To install the Sun StorageTek EBS licenses on a remote Sun StorageTek EBS server, enter this command:
`nsradmin -i source_file -s server_name > out_file`
 - To install the NetWorker licenses on a License Manager system, enter this command:
`nsradmin -i source_file -s server_name -p lgtolmd > out_file`
4. Open and review the *out_file* for success or failure messages to ensure that the Sun StorageTek EBS licenses have properly been 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 Sun StorageTek EBS and can be ignored:

```
C:\PROGRA~1\Legato\nsr\bin\std>nsradmin -i
infile
create failed: A license enabler already exists
with enabler code xxxxxx-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 generate for Sun StorageTek EBS licenses that already exist.

- This entry in the output file indicates that the Sun StorageTek EBS server processes are not running on the system. To work around this issue, start the Sun StorageTek EBS processes on the Sun StorageTek EBS server:

```
C:\PROGRA~1\Legato\nsr\bin\std>nsradmin -i
infile pasb-tomp
39078:nsradmin: RPC error: Program not registered
(severity 4, number 15)
```

How to provide feedback

To provide feedback:

- ◆ If these error messages appear in the output file or you would like to provide feedback, contact EMC licensing.
- ◆ If you cannot determine the reason for a failure or experience problems with updating the Sun StorageTek EBS license, contact EMC Support. You can open a Service Request on powerlink.emc.com.

Manually enter and authorize the license enabler

Sun StorageTek EBS these sections explain how to enter and authorize the license enabler manually:

- ◆ [“Task 1: Enter the license enabler code” on page 110](#)
- ◆ [“Task 2: Obtain an authorization code” on page 111](#)
- ◆ [“Task 3: Enter the authorization code” on page 112](#)

Task 1: Enter the license enabler code

Note: To save time when entering multiple licenses, enter the base enabler last. Otherwise, once a base enabler is entered, devices that do not yet have licenses entered may be disabled. Those devices would have to be reenabled manually after their licenses are installed.

To enter the license enabler code:

1. Start the Sun StorageTek EBS **Management Console** software.
2. Open the **Administration** window:
 - a. In the **Console** window, click **Enterprise**.
 - b. In the left pane, click a Sun StorageTek EBS 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. In the **Enabler Code** attribute, type the enabler code.
- 7. (Optional) In the **Comment** attribute, type a description of the license.
- 8. Click **OK**.

The new license is added and appears in the right pane. Repeat [Step 1](#) to [Step 8](#) to add any additional enabler codes.

After you type a license enabler code, you have 45 days as a registration period to authorize the Sun StorageTek EBS software. An alert message is generated 15 days before a Sun StorageTek EBS license is about to expire. The alert remains until the Sun StorageTek EBS license is authorized or deleted.

To view the license alert:

- ◆ From the **Sun StorageTek EBS Administration** window, click **Monitoring** and select the **Alert** tab.
- ◆ From the **Console** window, click **Events**.

Task 2: Obtain an authorization code



IMPORTANT

> **License Management** If the software or feature is *not* authorized by the end of the 45-day registration period, the Sun StorageTek EBS backup function or feature is disabled. However, data that was backed up during the registration period can still be recovered from local devices.

Register Sun products and obtain authorization codes online by completing a registration form on the Sun website at www.sun.com.

Web registration takes just a few minutes and is available 24 hours a day, 7 days a week.

An authorization code that permanently enables the Sun StorageTek EBS license will be sent by email.

If you have any questions regarding software updates, contact Sun Licensing.

Task 3: Enter the authorization code

To complete the licensing process, you must enter the unique authorization code on the Sun StorageTek EBS server within 45 days of entering the license enabler code.

If the authorization process is successful, the expiration date for the license displays:

Authorized - No expiration date.

If the authorization is not verified in this way, contact the [Sun Support](#).

To avoid an interruption in scheduled backups if you move the Sun StorageTek EBS software from one computer to another, or to change the network address of a computer after the software is installed, perform one of the following:

- ◆ Obtain a new authorization code. You need the host ID of the original server as well as the new server. The host ID appears in the server's Registration window.
- ◆ Install and configure the NetWorker License Manager software. ["Managing licenses" on page 121](#) provides information on use of the NetWorker License Manager, and the latest NetWorker License Manager Installation and Administration Guide.

To enter the authorization code:

1. Start the Sun StorageTek EBS **Management Console** software.
2. Open the **Administration** window:
 - a. In the **Console** window, click **Enterprise**.
 - b. In the left pane, select a Sun StorageTek EBS 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 **Registration**.
5. In the right pane, select a license.
6. From the **File** menu, select **Properties**.
7. In the **Auth Code** attribute, type the authorization code for the product. The authorization code is the code assigned to the specified permanent enabler or update enabler code.
8. Click **OK**.

The license is now permanently enabled.

Update enablers

To update existing Sun StorageTek EBS software to a major release, an update enabler is necessary. With a first-time purchase of Sun StorageTek EBS 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 code for updating from Sun StorageTek EBS releases prior to release 7.5

When updating from any pre-7.5 Sun StorageTek EBS release to release 7.5, the required update enabler is **ea7e6c-a61631-bf0db0**.



IMPORTANT

Be sure to apply the update enabler *before* upgrading to Sun StorageTek EBS release 7.5. Contact EMC licensing within 45 days to get the update enabler permanently authorized.

Sun StorageTek EBS simplified licensing for virtual environments

Sun StorageTek EBS introduces a simplified licensing model for virtualized environments. The *EMC Software Compatibility Guide* provides a detailed list of supported server virtualization environments.

Two new attributes have been added to the General tab of the Client resource to identify the client as a virtual client:

- ◆ **Virtual client.** Set the attribute to **Yes** by selecting the Virtual Client attribute checkbox if the client is a virtual client.
- ◆ **Physical host.** If the client is a virtual client, set the attribute to the hostname of the primary/initial physical machine hosting the virtual client.

Virtual Edition Client Connection license

A new license type, Virtual Edition Client Connection, works with all server virtualization environments supported by the Sun StorageTek EBS software.

The Physical host identified in the virtual client hostname attribute will consume one Virtual Edition Client Connection license, regardless of how many virtual clients are running on that host. If a virtual machine is licensed on one physical host and then migrates to another physical host, the new physical host will require its own Virtual Client Connection license. The hostname does not need to be fully-qualified, and must be less than 64 bytes. All clients sharing the same physical host must use an identical name — do not mix name formats such as short, FQDN or IP address.

To free a Virtual Client Connection license that has been assigned to a physical host, all references to the physical host must be removed, either by:

- ◆ Changing the Virtual client and/or physical hostname attribute in the Client resources for all virtual clients that reference the physical host.
- ◆ Deleting all Client resources for virtual clients that reference the physical host.

Licensing changes for NetWorker Modules in virtual environments

When NetWorker Module software is running natively on one or more virtual machines, one module license per module type will be consumed per physical host, regardless of the number of virtual clients associated with that physical host. The physical host itself will also require a Virtual Edition Client Connection license. Every physical machine that might host virtual clients with modules should be licensed in this way.

One license is required for each application type (SQL, Exchange, SharePoint, Oracle, SAP) used within all of the virtual machines on a single physical server. There are no changes to model codes for NetWorker Modules, so use existing codes and license enablers.

Also, for module licenses that specify the operating system, operating system restrictions will not be enforced for modules running on virtual clients, allowing the physical host to run multiple types of virtual operating systems without regard for operating system restrictions in the module license.

Applying the Virtual Client license to an existing VM after upgrading from a previous release

The VCC license is not automatically applied to an existing VM after upgrading to Sun StorageTek EBS 7.5. As a result, the VM uses one standard client license for the pre-existing virtual client instead of using the virtual client license.

To take advantage of the Virtual Edition Client Connection licensing policies and free up the use of the standard client license, select the Virtual client attribute checkbox for this client's resource, and specify the Physical Host.

Licensing changes for VMware Consolidated Backup

When VMware Consolidated Backup (VCB) is being used, each proxy backup host will consume one standard Client Connection license, regardless of how many virtual clients are configured to back up via the proxy backup host.

Additional licenses

This section describes a few of the additional licenses required to operate some of the Sun StorageTek EBS features.

Client connection licenses

Every computer to be backed up in a Sun StorageTek EBS datazone requires a client connection license, even the Sun StorageTek EBS server. The client connection license may be one of the licenses that is supplied with the base enabler or purchased separately. An NDMP data server requires a special type of client connection license.

Note: ClientPak® enablers are no longer required. Client licensing is now based solely on the client connection enablers.

Storage nodes

Each storage node requires a storage node license, in addition to its client connection license. A dedicated storage node, which allows the storage node to back up only itself, is licensed separately.

NetWorker Application Modules

NetWorker Application Modules are licensed on the basis of one enabler per database type host. For example, to back up the Oracle database on two hosts, two NetWorker Module for Oracle enablers are required, even if the two hosts are backed up by the same server. However, if multiple database instances are running on a Sun StorageTek EBS client host, only one NetWorker Module enabler is required for that one host.

Cluster clients

Cluster clients no longer require a separate license. Each physical node in a cluster consumes one regular Client Connection license.

HomeBase server/Agent

The HomeBase server/Agent have a separate licensing scheme and require separate enablers. More information on HomeBase licensing is provided in the following documentation:

- ◆ EMC HomeBase Server Installation and Configuration Guide
- ◆ EMC HomeBase Agent Installation and Configuration Guide

NDMP licensing

NDMP licensing requires one NDMP Client Connection per NAS array.

Using nsrlic to gather license information

The **nsrlic** command is installed as part of the server installation and is not available on machines that only have the client software installed. There are a number of ways that a customer can obtain license information from a server or servers.

Querying the local server

To query the local server, that is, the server where **nsrlic** is stored, type **nsrlic** at the command line.

Example **/usr/sbin/nsrlic** in UNIX or **networker_install_dir\bin\nsrlic** in Windows

A report is produced with various quantities and servers indicated. The following is an example report output.

Example 7 Report

```
12116:nsrlic: License Summary:
66441:nsrlic: Available: sv=12, virt=1, ndmp=0
64047:nsrlic: Borrowed: sv_borrowed=2
66442:nsrlic: Remaining: sv=7, virt=3, ndmp=0
nsrlic: Connected Clients: (4)
nsrlic: witt bride pasay frankenstein
nsrlic: Connected Virtual Client Physical hosts: (3)
nsrlic: esx-11 esx-38 sol-zone-jupiter
```

```
STANDARD CLIENT LICENSES
Available: 12
Used: 3
Loaned to Virtual: 2
Remaining: 7
Connected Clients
```

```
VIRTUAL CLIENT LICENSES
```

Available: 1
 Borrowed from Server: 2
 Used: 3
 Remaining: 0
 Connected Clients

NDMP CLIENT LICENSES
 Available: 0
 Used: 0
 Remaining: 0
 Connected Clients

SERVER/CLUSTER CLIENT TYPES
 AIX: 0
 Digital UNIX: 0
 HP UX: 0
 HP MPE: 0
 Linux: 0
 NetWare: 0
 Network Appliance: 0
 IBM DYNIX/ptx: 0
 SGI: 0
 Solaris: 2
 SunOS: 0
 UnixWare: 0
 Windows NT Server: 8

WORKSTATION CLIENT TYPES
 DOS: 0
 Macintosh: 0
 OS/2: 0
 OS/2: 0
 Windows 3.1x: 0
 Windows 95: 0
 Windows NT Workstation: 1
 UX/4800: 0
 Others: 0

Defined Clients PRE-5.0 CLIENT TYPES

APPLICATION LICENSES

NetWorker Module for Microsoft SQL Server
 Available: 1
 Used: 1
 Remaining: 0

NetWorker Module for Microsoft Exchange Server
 Available: 4
 Used: 3
 Remaining: 1

```

NetWorker Module for Oracle, Unix Client/1
Available: 2
Used: 0
Remaining: 2

```

Determining the number of available client licenses

To determine the number of available client licenses, look at the "nsrlic: Remaining" line.

Example In the previous listing, where it indicates "sv=12", this means this particular server has 12 licenses available. Also, you can look below to the STANDARD CLIENT LICENSES section and locate: "Remaining: 12." This is another indication of the number of available servers.

Querying a server

To query a specific server, type the **-s <server>** option at the command line.

Example `/usr/sbin/nsrlic -s bacoor`

where *bacoor* is the server name being queried.

Querying a server for all information

To query a specific server for all information, type the **-v <server>** option at the command line.

Example `/usr/sbin/nsrlic -v bacoor`

where *-v* is for a verbose query for bacoor.

Note: This query may be helpful in troubleshooting license issues.

A verbose report is produced with various quantities indicated.

Example 8 Verbose report

```

12116:nsrlic: License Summary:
66441:nsrlic: Available: sv=12, virt=1, ndmp=0
64047:nsrlic: Borrowed: sv_borrowed=2
66442:nsrlic: Remaining: sv=7, virt=3, ndmp=0
nsrlic: Connected Clients: (4)
nsrlic: witt bride pasay frankenstein
nsrlic: Connected Virtual Client Physical hosts: (3)
nsrlic: esx-11 esx-38 sol-zone-jupiter

```

STANDARD CLIENT LICENSES

Available: 12

Used: 3

Loaned to Virtual: 2

Remaining: 7

Connected Clients: witt, bride, pasay, frankenstein

VIRTUAL CLIENT LICENSES

Available: 1

Borrowed from Server: 2

Used: 3

Remaining: 0

Connected Virtual Client Physical: esx-11, esx-38,
sol-zone-jupiter

NDMP CLIENT LICENSES

Available: 0

Used: 0

Remaining: 0

Connected Clients

SERVER/CLUSTER CLIENT TYPES

AIX: 0

Digital UNIX: 0

HP UX: 0

HP MPE: 0

Linux: 0

NetWare: 0

Network Appliance: 0

IBM DYNIX/ptx: 0

SGI: 0

Solaris: 2

SunOS: 0

UnixWare: 0

Windows NT Server: 8

WORKSTATION CLIENT TYPES

DOS: 0

Macintosh: 0


```

OS/2: 0
OS/2: 0
Windows 3.1x: 0
Windows 95: 0
Windows NT Workstation: 1
UX/4800: 0
Others: 0

Defined Clients          PRE-5.0 CLIENT TYPES

APPLICATION LICENSES

NetWorker Module for Microsoft SQL Server
Available: 1
Used: 1
Remaining: 0
Connected Clients: SQLhost_7

NetWorker Module for Microsoft Exchange Server

Available: 4
Used: 3
Remaining: 1
Connected Clients: Exch1, Exch17, Exch18

NetWorker Module for Oracle, Unix Client/1
Available: 2
Used: 0
Remaining: 2
Connected Clients:

```

Managing licenses

The NetWorker License Manager software provides centralized license management, which enables you to maintain all of an enterprise's Sun StorageTek EBS licenses from a single computer. With the NetWorker License Manager, you can move Sun StorageTek EBS software from one computer to another, or change the IP address on an existing Sun StorageTek EBS server without having to reauthorize the software. The NetWorker License Manager can be installed as an option during the Sun StorageTek EBS software installation.

To begin to implement the NetWorker License Manager:

1. Obtain bulk enabler codes.
2. Install the NetWorker License Manager software.

3. Configure the NetWorker License Manager software.
4. Configure the Sun StorageTek EBS servers to access the NetWorker License Manager for their licenses.

The latest NetWorker License Manager Installation and Administration Guide provides more information on how to install and use the NetWorker License Manager.