



Sun StorEdge™ Enterprise Backup Software 7.3

Installation Guide

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054 U.S.A.
650-960-1300

Part No. 819-4973-10
December 28, 2005

Copyright © 1990 - 2005 EMC Corporation. All rights reserved.

Sun Microsystems, Inc. has intellectual property rights relating to technology that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at <http://www.sun.com/patents> and one or more additional patents or pending patent applications in the U.S. and in other countries.

This document and the product to which it pertains are distributed under licenses restricting their use, copying, distribution, and decompilation. No part of the product or of this document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any.

Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and in other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, AnswerBook2, docs.sun.com, and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and in other countries.

All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and in other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc. EMC Legato NetWorker[®] is a trademark of EMC Legato Systems, Inc.

The OPEN LOOK and Sun[™] Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

U.S. Government Rights—Commercial use. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright © 1990 - 2005 EMC Corporation. Tous droits réservés.

Sun Microsystems, Inc. a les droits de propriété intellectuelle relatants à la technologie qui est décrit dans ce document. En particulier, et sans la limitation, ces droits de propriété intellectuelle peuvent inclure un ou plus des brevets américains énumérés à <http://www.sun.com/patents> et un ou les brevets plus supplémentaires ou les applications de brevet en attente dans les Etats-Unis et dans les autres pays.

Ce produit ou document est protégé par un copyright et distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a.

Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X/Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, AnswerBook2, docs.sun.com, et Solaris sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays.

Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc. Legato NetWorker[®] est un marque de fabrique de Legato Systems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun[™] a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciées de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

LA DOCUMENTATION EST FOURNIE "EN L'ÉTAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFAÇON.



Contents

Preface.....	8
Before You Read This Book	8
Using UNIX Commands	8
Typographic Conventions	9
Related Documentation	10
Accessing Sun Documentation Online	10
Ordering Sun Documentation	10
Sun Welcomes Your Comments	10
Chapter 1: Introduction.....	11
About the Sun StorEdge EBS Product	11
Sun StorEdge EBS Client	11
Sun StorEdge EBS Server	12
Sun StorEdge EBS Storage Node	12
Sun StorEdge EBS Console Server	12
The Sun StorEdge EBS Installation Path	13
Supported Devices	13
Enabler Codes	13
Chapter 2: Updating from a Previous Sun StorEdge EBS Release	14
Introduction	14
Updating from a Previous Release	14
Task 1: Prepare to Update the Sun StorEdge EBS Software on the Server.....	15
Task 2: Update the Sun StorEdge EBS Software	15
New Resource Database Replaces nsr.res, nsrjb.res, and nsrla.res Files.....	16
Task 3: Enable and Register the Software.....	16
Chapter 3: Installing the Sun StorEdge EBS Software	17
Software Installation Roadmap.....	17
Software Installation Requirements	18
General Requirements	18
TCP/IP Requirements	18
Client Software Requirements	19

Storage Node Requirements.....	19
Storage Device Requirements	19
Server Software Requirements	19
System Requirements	19
Installation Guidelines	20
Console Server Software Requirements.....	21
System Requirements for the Console Server and Database.....	21
System Requirements for the Sun StorEdge EBS Console Client	22
Estimating the Size of the Console Database	23
Estimate Space Needed for Save Set Data	23
Estimate Space Needed for Savegroup Completion Data.....	24
Estimate Space Needed for Save Set Output	24
Displaying International Fonts in Non-US Locale Environments	24
How to Change the Language Locale to Match that of Localized Sun StorEdge EBS Data	24
How to Change the Language Font to View Localized Sun StorEdge EBS Data	25
How to Use a Non-US Locale	25
Installing the Sun StorEdge EBS Software.....	25
Task 1: Access the Sun StorEdge EBS Software	26
Task 2: Install the Sun StorEdge EBS Software	26
Installing to a Default Location	26
Client	26
Storage Node	27
Server.....	27
Console Server	27
Installing to a Nondefault Location	29
Task 3: Change the Sun StorEdge EBS Servers with Access to a Client.....	30
Task 4: Start the Sun StorEdge EBS Daemons.....	31
Verifying the Installation	32
Task 1: Start the Console for the First Time	32
How to Start the Console after the First Time.....	33
Task 2: Add a Sun StorEdge EBS Server to the Sun StorEdge EBS Console Server	33
Task 3: Configure a Device.....	34
Stand-Alone Tape Device.....	34
Stand-Alone File or Advanced File Device	34
Autochanger or Silo	35
Task 4: Test the Sun StorEdge EBS Software Installation	35

Uninstalling the Sun StorEdge EBS Software	36
Software Dependencies	36
Uninstalling the Software	36
Chapter 4: Installing Sun StorEdge EBS Software in a Sun Cluster	
Version 3.0 or 3.1 Environment.....	38
Installation Requirements	38
Software Requirements.....	39
Hardware Requirements	39
Configuration Options	39
System Information Requirements for a Highly Available Sun StorEdge EBS Server.....	39
Updating from a Previous Release of Sun StorEdge EBS Software	41
Installing Sun StorEdge EBS Software in a Cluster	41
Installing a Sun StorEdge EBS Virtual Server.....	42
Task 1: Install the Sun StorEdge EBS Software.....	42
Task 2: Define the Sun StorEdge EBS Server as Highly Available	43
Task 3: Create an Instance of the Sun StorEdge EBS Server Resource Group.....	44
Example: A Highly Available Sun StorEdge EBS Server	46
Task 4: (Optional) Add a HAStoragePlus Resource to an Existing Sun StorEdge EBS Server Resource Group.....	46
Task 5: Grant Access to the Highly Available Sun StorEdge EBS Server.....	47
Task 6: Configure the Sun StorEdge EBS Server	49
Task 7: Configure Clients under the Sun StorEdge EBS Server	49
Task 8: Create Instances of the Sun StorEdge EBS Client Resource Type.....	50
Example: A Highly Available Informix Database Server	51
Example: A Scalable Apache Web Server	51
Task 9: Register Licenses for the Highly Available Sun StorEdge EBS Server	51
Task 10: Authorize the Software	53
Installing a Virtual Sun StorEdge EBS Console Server	54
Task 1: Install the Sun StorEdge EBS Management Software in a Cluster.....	54
Task 2: Define the Sun StorEdge EBS Management Server as a Highly Available Application	54
Installing Only the Sun StorEdge EBS Client Software in a Cluster	56
Task 1: Install the Sun StorEdge EBS Cluster Client Software	56
Task 2: Configure Sun StorEdge EBS Client Software as Highly Available	57
Task 3: Create Instances of the Client Resource Type	58
Example: A Highly Available Informix Database Server	58
Example: A Scalable Apache Web Server	58

Task 4: Define the List of Trusted Sun StorEdge EBS Servers.....	59
Task 5: Configure Clients Under the Sun StorEdge EBS Server	59
Configuring an External Client to a Virtual Server	60
Defining Ownership of a Raw Partition for Virtual Clients	61
Example: A Highly Available Web Server.....	61
Tracking Scheduled Saves	61
Uninstalling the Sun StorEdge EBS Software	62
Sun StorEdge EBS Cluster Script	63
Chapter 5: Evaluating and Licensing Sun StorEdge EBS Software	64
How Sun StorEdge EBS Software Is Licensed	64
The Evaluation Process.....	65
Evaluating a New Installation	65
Evaluating Features on an Existing Installation	65
How to Enter a Temporary Enabler Code.....	65
The Licensing Process	66
Task 1: Enter the License Enabler Code	66
How to Enter a License Enabler Code	67
Task 2: Obtain an Authorization Code	67
Using the Sun Website	67
By Email	68
Task 3: Enter the Authorization Code	68
How to Enter an Authorization Code	69
Multiplatform Licensing	69
Example: Multiplatform Licensing Schemes	70
Update Enablers	70
Required Update Enablers	70
Additional Licenses	71
Client Connection Licenses	71
Storage Nodes.....	71
NetWorker Application Modules	71
Cluster Clients	71
NDMP Licensing.....	71

List of Tables

Table 1. Default Locations and Space Requirements.....20

Table 2. Console Server System Requirements 21

Table 3. Console Client System Requirements 22

Table 4. Data Stored.....23

Table 5. Sun StorEdge EBS Daemons 31

Table 6. Required Information: Highly Available Sun StorEdge EBS Server.....40

Table 7. Update Enablers 70

Preface

The *Sun[™] StorEdge[™] Enterprise Backup Software, Release 7.3, Installation Guide* provides instructions on how to install Sun StorEdge Enterprise Backup Software Release 7.3 software.

After you install the Sun StorEdge Enterprise Backup Software Release 7.3 software, refer to the *Sun StorEdge Enterprise Backup Software, Release 7.3, Administration Guide* and the program's online help for detailed instructions on how to configure, administer, and use the Sun StorEdge Enterprise Backup Software Release 7.3 software.

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

Before You Read This Book

In order to fully use the information in this document, you must have thorough knowledge of the topics discussed in these books:

- *Sun StorEdge Enterprise Backup Software, Release 7.3, Administration Guide*
- *Sun StorEdge Enterprise Backup Software, Release 7.3, Release Notes*

Using UNIX Commands

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

See one or more of the following for this information:

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

Typographic Conventions

Convention	Indicates	Example
boldface	Names of line commands, daemons, options, programs, or scripts	The nsradmin command starts the command line version of the NetWorker Administrator program.
<i>italic in text</i>	Pathnames, filenames, computer names, new terms defined in the Glossary or within the chapter, or emphasized words	The specifications are created, one for each swap file, in <i>c:\pagefile.sys</i> .
<i>italic in command line</i>	A variable that must be provided in the command line	save -s <i>server_name</i>
fixed-width	Examples and information displayed on the screen	media waiting: recover waiting for 8mm 5GB tape volume name
fixed-width, boldface	Commands and options that must be entered exactly as shown	nsr_shutdown -a
Menu_Name> Command	A path or an order to follow for making selections in the user interface	Volume>Change Mode>Appendable
Important:	Information that must be read and followed to ensure successful backup and recovery of data	 Important: Use the no_verify option with extreme caution.
Backslash (\)	Paths for both Windows and UNIX unless specified otherwise	<StorEdge_install_path>\logs

Related Documentation

Application	Title	Part Number
Administration	<i>Sun StorEdge Enterprise Backup Software Release 7.3 Administrator's Guide</i>	819-4972-10
Release Notes	<i>Sun StorEdge Enterprise Backup Software Release 7.3 Release Notes</i>	819-4974-10

Accessing Sun Documentation Online

The docs.sun.com™ web site enables you to access a select group of Sun technical documentation on the Web. You can browse the docs.sun.com archive or search for a specific book title or subject at:

<http://docs.sun.com>

Ordering Sun Documentation

Sun StorEdge EBS documentation is orderable from Sun Microsystems, Inc. price book. Contact your Sun representative for details.

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to Sun at:

docfeedback@sun.com

Please include the part number (819-4973-10) of your document in the subject line of your email.

Chapter 1: Introduction

This chapter provides background information on Sun StorEdge EBS software and supported devices. It includes the following sections:

- ["About the Sun StorEdge EBS Product" on page 11](#)
- ["Supported Devices" on page 13](#)
- ["Enabler Codes" on page 13](#)

About the Sun StorEdge EBS Product

The Sun StorEdge EBS 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 StorEdge EBS products for different operating systems are interoperable, which provides the flexibility to design a storage management solution that best suits a particular computing environment.

The Sun StorEdge EBS software is distributed in a media kit of CD-ROMs that contain the software and electronic documentation for several related Sun products.

The Sun StorEdge EBS product has five major components:

- Client
- Storage node
- Server
- Sun StorEdge EBS Console Server

Sun StorEdge EBS Client

The Sun StorEdge EBS client software provides recover and on-demand backup functionality. The Sun StorEdge EBS client software is installed on all computers that are required to be backed up to the Sun StorEdge EBS server.

Sun StorEdge EBS clients do not have to run on the same operating system as the Sun StorEdge EBS server. However, to back up clients running other operating systems, the Sun StorEdge EBS server must have an enabler for that type of client. For example, in order for a Sun StorEdge EBS server running on a Solaris system to back up Sun StorEdge EBS clients running on another operating system, a separate enabler must be purchased and entered for the client operating system.

Sun StorEdge EBS Server

The Sun StorEdge EBS server software provides control and scheduling for Sun StorEdge EBS operations.

On the Sun StorEdge EBS server, you can:

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

Data can be backed up directly to devices attached to either a Sun StorEdge EBS server or to a Sun StorEdge EBS storage node. A storage node controls storage devices such as tape drives, autochangers, and silos.

Storage nodes depend on the Sun StorEdge EBS server for the following 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 contained on each volume

Sun StorEdge EBS storage nodes and the Sun StorEdge EBS server can use different operating systems. To use a Sun StorEdge EBS storage node on an Solaris operating system with a Sun StorEdge EBS server on another operating system, the storage node's enabler on the server must be of the same edition as the base enabler for the Sun StorEdge EBS server.

Sun StorEdge EBS Console Server

All Sun StorEdge EBS servers and clients are managed from the Sun StorEdge EBS Console server. The Console server also provides reporting and monitoring capabilities for all Sun StorEdge EBS servers and clients. The Console server must be installed on a Solaris, Windows, or Linux host in order to administer Sun StorEdge EBS servers.

The Console server is accessed through a graphical interface that can be run from any computer that has a web enabled browser. 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 StorEdge EBS client, server, or storage node.

The Sun StorEdge EBS Installation Path

This guide refers to the Sun StorEdge EBS installation path with the variable *Sun StorEdge EBS_install_path*. The default installation location for Sun StorEdge EBS releases is */usr*. For example, the following Sun StorEdge EBS packages are installed in */usr*:

- SUNWebsc
- SUNWebsm
- SUNWebsn
- SUNWebss

However, the SUNWebsg package is installed by default in */opt*.

If you are upgrading from a previous release of Sun StorEdge EBS, the installation path has not changed. For example, an installation of Sun StorEdge EBS release 6.x updated to release 7.3 maintains the default installation path */usr*.

In Sun StorEdge EBS documentation, references to locations under the installation root use *Sun StorEdge EBS_install_path* in the path statement. For example, the *daemon.log* file is located in the */usr* directory.

Supported Devices

Sun StorEdge EBS software supports a variety of media types and devices, either stand-alone or in an autochanger or silo tape library. Devices can be attached to a Sun StorEdge EBS server or a designated storage node. To obtain the latest list of supported devices, refer to the Legato Compatibility Guides.

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

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

Use a nonrewinding device for Sun StorEdge EBS backups. The pathnames for these devices must follow the Berkeley Software Distribution (BSD) semantic rules, for example, */dev/rmt/0mbn*. The “b” in the pathname satisfies the BSD semantics requirement. If a file device is used, enter it as a directory path (the same as for other device types) rather than as just a filename.

Enabler Codes

Enabler codes (licenses), which activate the functionality of Sun StorEdge EBS software, are sold separately. For more information, see ["Chapter 5: Evaluating and Licensing Sun StorEdge EBS Software" on page 64](#).

Chapter 2: Updating from a Previous Sun StorEdge EBS Release

This chapter explains how to update from a previous release of Sun StorEdge EBS software. It includes the following sections:

- ["Introduction" on page 14](#)
- ["Updating from a Previous Release" on page 14](#)

Introduction

When updating to release 7.3 from Solstice Backup release 6.x or earlier, the client file indexes are automatically reorganized into new directory structures.



Important: When updating to Sun StorEdge EBS release 7.3 or later format, there is no way to revert to a previous release of the Sun StorEdge EBS software. It is a one-way conversion.

Updating from a Previous Release

The following sections explain how to complete the update process and convert the indexes:

- ["Task 1: Prepare to Update the Sun StorEdge EBS Software on the Server" on page 15](#)
- ["Task 2: Update the Sun StorEdge EBS Software" on page 15](#)
- ["Task 3: Enable and Register the Software" on page 16](#)

Note: Converting the Sun StorEdge EBS indexes from Solstice Backup 5.x to Sun StorEdge EBS 7.3 requires enough free disk space to match the largest client file index being converted. This space is used during the conversion process and will be released when completed. Following conversion, the media database should be approximately twice its original size. The client file indexes will be 20% to 40% smaller. These storage requirement changes are permanent.

Task 1: Prepare to Update the Sun StorEdge EBS Software on the Server

To prepare to update the Sun StorEdge EBS software:

1. Determine whether all criteria to complete the index conversion is met. See ["Updating from a Previous Release" on page 14](#).

2. Back up all client file indexes and generate a bootstrap for the server.

If no current bootstrap and backup of all client file indexes exists, perform scheduled backups on all clients before updating to the next Sun StorEdge EBS release.

For example, to save the bootstrap information, enter the following command:

```
savegrp -O group
```

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

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

```
mminfo -B
```

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

Task 2: Update the Sun StorEdge EBS Software

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

1. Keep a copy of the current configuration.
2. Shut down the Sun StorEdge EBS software using the following command:

```
nsr_shutdown
```

3. Remove the earlier Sun StorEdge EBS release, but do *not* remove the client file indexes, the resource files, and the media database.

For more information, see ["Uninstalling the Sun StorEdge EBS Software" on page 36](#).

4. Install the new release of the Sun StorEdge EBS software. For more information, see ["Installing the Sun StorEdge EBS Software" on page 25](#).



Important: Do *not* start the Sun StorEdge EBS daemons.

5. Apply any required Sun StorEdge EBS software patches.
6. Restart the Sun StorEdge EBS software by running the Sun StorEdge EBS startup script:

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

The media database and the client file index are converted automatically.

The client file index conversion can be enhanced by running multiple instances of the **nsrck** program concurrently. This process converts multiple client file indexes in parallel. To convert multiple client file indexes in parallel, perform one of the following:

- Specify the client file index to convert, as follows:
nsrck *client_name*
- Enter the **nsrck** command without a client name. This initiates the conversion of the next client in the list.

Each instance of **nsrck** occupies a portion of the server's processing, memory, and space-swapping capability. Balance the speed of index conversion against other Sun StorEdge EBS server needs. Monitor system performance using a diagnostic tool to determine the optimum number of **nsrck** instances to launch.

7. Once the media database is converted, run scheduled backups. These backups, however, are not browsable until the associated client is converted.

New Resource Database Replaces **nsr.res**, **nsrjb.res**, and **nsrla.res** Files

In Sun StorEdge EBS releases earlier than 7.0, all resource information was stored in *.res files. To provide better performance and improved scalability, Sun StorEdge EBS release 7.3 replaces the following files with a new Sun StorEdge EBS resource database:

/nsr/res/nsr.res
/nsr/res/nsrjb.res

The configuration information for the */nsr/res/nsr.res* and the */nsr/res/nsrjb.res* files now resides in the following directory structure:

/nsr/res/nsrdb/00
.
.
.
/nsr/res/nsrdb/09

The configuration information for the Sun StorEdge EBS Client Execution daemon (**nsrexecd**) now resides in the following directory structure:

/nsr/res/nsrla/00
.
.
.
/nsr/res/nsrladb/09

Within this directory structure, each resource is stored in a separate numbered file. As new resources are created (such as, Client, Group, or Pool resources), new files are added in these directories.

Task 3: Enable and Register the Software

To enable and register the Sun StorEdge EBS software, see ["Chapter 5: Evaluating and Licensing Sun StorEdge EBS Software" on page 64.](#)

Chapter 3: Installing the Sun StorEdge EBS Software

This chapter explains how to install, update, or uninstall Sun StorEdge EBS software. It includes the following sections:

- ["Software Installation Roadmap" on page 17](#)
- ["Software Installation Requirements" on page 18](#)
- ["Installing the Sun StorEdge EBS Software" on page 25](#)
- ["Verifying the Installation" on page 32](#)
- ["Uninstalling the Sun StorEdge EBS Software" on page 36](#)

Software Installation Roadmap

The following roadmap provides an overview of the installation tasks:

1. Ensure that all installation requirements are satisfied, see ["Software Installation Requirements" on page 18](#).
2. Access the installation files, see ["Task 1: Access the Sun StorEdge EBS Software" on page 26](#).
3. Install the Sun StorEdge EBS software. See the appropriate section:
 - ["Task 2: Install the Sun StorEdge EBS Software" on page 26](#).
 - ["Task 3: Change the Sun StorEdge EBS Servers with Access to a Client" on page 30](#).
 - ["Task 4: Start the Sun StorEdge EBS Daemons" on page 31](#).

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

4. Test the Sun StorEdge EBS software, see ["Verifying the Installation" on page 32](#).
5. Enable and register the Sun StorEdge EBS software, see ["Chapter 5: Evaluating and Licensing Sun StorEdge EBS Software" on page 64](#).

Software Installation Requirements

The system requirements differ for each Sun StorEdge EBS installation type. For details, see:

- ["General Requirements" on page 18](#)
- ["TCP/IP Requirements" on page 18](#)
- ["Client Software Requirements" on page 19](#)
- ["Storage Node Requirements" on page 19](#)
- ["Storage Device Requirements" on page 19](#)
- ["Server Software Requirements" on page 19](#)
- ["Console Server Software Requirements" on page 21](#)



Important: Before installing Sun StorEdge EBS software, ensure that the operating system is up-to-date with the most recent patches.

General Requirements

Sun StorEdge EBS software does not support locales (defined by the operating system) or code sets that remap characters having 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. For detailed information, refer to the *Sun StorEdge EBS Administration Guide*.

TCP/IP Requirements

The following are requirements for TCP/IP network communication when using Sun StorEdge EBS software:

- All Sun StorEdge EBS server, storage node, and client host computers must have TCP/IP installed and configured.
- The Sun StorEdge 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.

- If the Sun StorEdge EBS server host is a Dynamic Host Configuration Protocol (DHCP) client, it must have a reserved address.
- If DHCP with dynamic addresses is used, DHCP must be synchronized with DNS.

Client Software Requirements

For Sun StorEdge EBS clients on the same hardware platform as the Sun StorEdge EBS server, use the same installation files to install the clients and server. For Sun StorEdge EBS clients on other hardware platforms, you must purchase a separate ClientPak license. For more information, contact Sun or an Authorized Sun Reseller.

The client software can be installed either on a remote network file system-mounted directory or a local drive.

Storage Node Requirements

To install the Sun StorEdge 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. For a list of supported devices, refer to the Legato Compatibility Guides.
- Sun StorEdge EBS software also supports the use of file type and advanced file type devices. For details, refer to the *Sun StorEdge EBS Administration Guide*.

Storage Device Requirements

You must install one or more storage devices prior to installing the Sun StorEdge EBS server software. For a current list of the supported devices, refer to the Legato Compatibility Guides.



Important: You *must* use a nonrewinding device for Sun StorEdge EBS backups. Sun StorEdge EBS software writes a filemark on the volume at the end of each backup. When the next backup occurs, Sun StorEdge 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 Sun StorEdge EBS server installation requirements:

- ["System Requirements" on page 19](#)
- ["Installation Guidelines" on page 20](#)

System Requirements

To install Sun StorEdge EBS software on a Solaris server, ensure that:

- The system meets the space requirements listed in [Table 1 on page 20](#).
- There is a directory on the server large enough for the Sun StorEdge EBS client and server indexes and the media database (usually */nsr*). The installation script checks for space and suggests one or more locations for the indexes and media database.

- The system pathname of at least one storage device is used by the Sun StorEdge 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.
For example: `/dev/rmt/0cbl`
Note: The tape device must be nonrewinding.
- Acrobat Reader software has been installed. This software is required to read the documentation PDF files. Acrobat Reader requires a directory with enough space to install the software.

Installation Guidelines

On the Sun StorEdge EBS server, install all of the Sun StorEdge EBS software in the following order:

1. Client
2. Storage Node
3. Server
4. Console Server

It is recommended that the Sun StorEdge EBS software packages all be installed on the server during the same installation session.

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

During the `pkgadd` process, ensure that no Sun StorEdge EBS processes are running and do *not* start the Sun StorEdge EBS daemons until the final package is installed.

[Table 1 on page 20](#) lists the default locations on the server that the installation script uses, and the disk space required.

Table 1. Default Locations and Space Requirements (Part 1 of 2)

Software/Documentation Files	Sun StorEdge EBS Server Default Location	Space Needed
Sun StorEdge EBS program files	<code>/usr/bin/nsr</code>	13 MB
Sun StorEdge EBS daemon and utility command files (if you install <i>LGTolicm</i> , add 1 MB)	<code>/usr/sbin/nsr</code>	90 MB
Online client file indexes; media database	<code>/nsr</code>	varies

Table 1. Default Locations and Space Requirements (Part 2 of 2)

Software/Documentation Files	Sun StorEdge EBS Server Default Location	Space Needed
Sun StorEdge EBS device drivers (note that 39 MB of drivers are now installed in <i>/usr/sbin/nsr</i>)	<i>/usr/kernel/drv</i> <i>/usr/sbin</i> <i>/usr/lib/nsr</i>	40 MB
Sun StorEdge EBS man pages	<i>/usr/share/man</i>	1 MB
Adobe Acrobat Reader	<i>/opt/Acrobat3/bin</i>	8 MB
Documentation PDFs	optional	varies

Console Server Software Requirements

The general requirements for installing the Console server include:

- An installed and licensed network of Sun StorEdge EBS servers, clients, and storage nodes.
- A Java Runtime Environment (JRE), which is required in order to do the following:
 - Support the command line reporting feature.
 - Download the Console client and display the user interface.

The JRE version must be 1.4.2 or later, up to but *not* including version 1.5.

System Requirements for the Console Server and Database

[Table 2 on page 21](#) provides a list of system requirements for installing the Console server and database.

Table 2. Console Server System Requirements (Part 1 of 2)

System Feature	Requirement
Processor and RAM	Minimum: 500 MHz with 128 MB of RAM; 512 MB to run reports. As the number of Sun StorEdge EBS servers being monitored increases, increase the computer's capabilities. • 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 7, 8, 9, 10
Software	The following programs must already be installed and running: • Sun StorEdge EBS client, release 7.3

Table 2. Console Server System Requirements (Part 2 of 2)

System Feature	Requirement
Java Runtime Environment	JRE 1.4.x, starting from version 1.4.2; up to but <i>not</i> including version 1.5. This is required to run the command line reporting feature.
Browsers	One of the following: • Netscape Communicator 6.2.3 on the supported Solaris platforms • Mozilla 1.4, 1.7 on the supported Solaris platforms
Available disk space	• Solaris Server: 350 MB + x, where: x is a buffer of disk space for the Console database. For more information, see "System Requirements for the Sun StorEdge EBS Console Client" on page 22. • JRE with Web Start: 55 MB

System Requirements for the Sun StorEdge EBS 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 3 on page 22](#) provides a list of system requirements for installing the Console client.

Table 3. Console Client System Requirements

System Feature	Requirement
Operating system	Solaris 7, 8, 9, 10
Java Runtime Environment	JRE 1.4.x, starting from version 1.4.2.
Browsers	One of the following: • Netscape Communicator 6.2.3 on the Solaris version 7, 8, and 9. • Mozilla 1.4, 1.7 on the supported Solaris version 7, 8, 9, and 10.
Available disk space	• Console client: 10 MB • JRE with Web Start: 55 MB
RAM	A minimum of 512 MB to run reports
Graphics card	Must support display of both: • At least 16-bit color (at least 65,000 colors) • Screen resolution of at least 1024 x 768

Estimating the Size of the Console Database

The Console server collects data from the Sun StorEdge 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 with the most available space.

Console integrates and processes this information to produce reports that facilitate trend analysis, capacity planning, and problem detection. For more information about reports, refer to the *Sun StorEdge EBS Administration Guide*.

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

- The number of Sun StorEdge 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 .5 GB and several GB. Allow for this when planning hardware requirements.

Console software stores the types of data shown in [Table 4 on page 23](#).

Table 4. Data Stored

Type of Data	Description
Save set media database information	Describes how long a save set took to run successfully, how many files were backed up, and how much data was saved.
Savegroup completion data	Describes how many groups and save sets were attempted and their success or failure.
Savegroup output	Provides all of the save output for troubleshooting backup problems.

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

Estimate Space Needed for Save Set Data

Assume that a Sun StorEdge EBS server handling 300 clients across 30 groups generates 1,000 save sets per week. This server would generate about 0.30 MB of save set media database information per week. If the server is more active or less active, adjust this estimate accordingly.

To estimate the total space required for save set reporting data, multiply the weekly amount by the number of Sun StorEdge EBS servers that the Console server monitors and then by the number of weeks in the save set retention policy.

Estimate Space Needed for Savegroup Completion Data

Assume that a Sun StorEdge EBS server handling 300 clients across 30 groups and generating 1,000 save sets per week. This server would produce approximately 0.20 MB of savegroup completion data per week. If the server is more active or less active, adjust this estimate accordingly.

To estimate the total space required for save group completion data, multiply the weekly amount by the number of Sun StorEdge EBS servers that the Console server monitors, and then by the number of weeks in the completion data retention policy.

Estimate Space Needed for Save Set Output

Assume that a Sun StorEdge EBS server handling 300 clients across 30 groups and generating 1,000 save sets per week produces approximately 0.25 MB of save set output messages per week. If the server is more active or less active, adjust this estimate accordingly.

To estimate the total space required for save set output, multiply the weekly amount by the number of Sun StorEdge EBS servers that the Console server monitors, and then by the number of weeks in the save set output retention policy.

Displaying International Fonts in Non-US Locale Environments

Console software can run (in English mode) on localized operating systems; it supports retrieving double-byte characters from Sun StorEdge EBS data. If the appropriate non-English font is not available on the Console client, however, the retrieved data appears as gibberish.

To use or view data from a localized, non-English Sun StorEdge EBS server, ensure that the appropriate font is available to the Console client. Do this in *one* of two ways:

- *Change the language locale* to match that of the localized Sun StorEdge EBS language locale.
- *Choose a language font* that is already loaded in the operating system (and which matches the localized Sun StorEdge EBS language locale) by selecting Font from the View menu on the Console menu bar.

How to Change the Language Locale to Match that of Localized Sun StorEdge EBS Data

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

- Before login, select the Options button on the Login dialog box. Select:
Options>Language> [*then select a locale from one of three alphabetical lists presented*]
- After login, enter the **setenv** command to change the locale. Depending on the desired language, choose one of the following:
 - To match the French Sun StorEdge EBS locale, enter **setenv LANG fr** and **setenv LC_ALL fr**.
 - To match the Japanese Sun StorEdge EBS locale, enter **setenv LANG ja** and **setenv LC_ALL ja**.
 - To match the Simplified Chinese Sun StorEdge EBS locale, enter **setenv LANG zh** and **setenv LC_ALL zh**.

How to Change the Language Font to View Localized Sun StorEdge EBS Data

Instead of changing the language locale, it is also possible to change the Console font, so that localized Sun StorEdge EBS data can be viewed from the Console software. In order to do this, the desired font must already be loaded in the operating system of the Console server and client.

1. To select a language font, go to the Console menu bar and select Font from the View menu. The Change Font dialog box appears.
2. From the menu, select the appropriate font.
3. Select a font size, if a size other than the default is needed.
4. Click OK.

How to Use a Non-US Locale

Keep the following points in mind when using Console software in a non-US locale environment:

- Support for the language locale and various language character sets comes 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 StorEdge EBS software automatically recognizes the font for the associated localized language.
- If the required font is loaded in the operating system, any language locale can then select the appropriate language font from the View menu.

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

Installing the Sun StorEdge EBS Software

The following sections explain how to access and install the Sun StorEdge EBS software:

- ["Task 1: Access the Sun StorEdge EBS Software" on page 26](#)
- ["Task 2: Install the Sun StorEdge EBS Software" on page 26](#)
- ["Task 3: Change the Sun StorEdge EBS Servers with Access to a Client" on page 30](#)
- ["Task 4: Start the Sun StorEdge EBS Daemons" on page 31](#)

Task 1: Access the Sun StorEdge EBS Software

To access the Sun StorEdge EBS software:

1. Log in as root to the system where the Sun StorEdge EBS software is being installed.
2. Mount the CD-ROM drive.
3. Locate the appropriate directory on the CD-ROM.
4. Set the PATH environment variable for user root to contain the directory where the Sun StorEdge EBS executables reside. For information, see [Table 1 on page 20](#).

Task 2: Install the Sun StorEdge EBS Software

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

The Sun StorEdge EBS software can be installed in a default or nondefault location. For installation instructions, see:

- ["Installing to a Default Location" on page 26](#)
- ["Installing to a Nondefault Location" on page 29](#)

Installing to a Default Location

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

- ["Client" on page 26](#)
- ["Storage Node" on page 27](#)
- ["Server" on page 27](#)
- ["Console Server" on page 27](#)

Client

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

1. Enter the following command:

```
pkgadd -d /cdrom/cdrom0/solaris
```



Important: Do *not* press the [Enter] key for the default response *All*. Accepting the default installs the server.

2. Enter the appropriate option number to install the client package (*SUNWebsc*). The client package temporarily requires 35 MB of free space on the client computer.
3. (Optional) Enter the appropriate option number to install the man pages (*SUNWebsm*).

Storage Node

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

1. Enter the following command:

```
pkgadd -d /cdrom/cdrom0/solaris
```

2. Enter the appropriate options to install the following packages. Software packages on the storage node must be installed in the following order:

- *SUNWebsc* (client software package)
- *SUNWebsn* (storage node software package)
- *SUNWebsm* (optional man pages)

Server

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

1. Keep a copy of the current configuration. The Sun StorEdge EBS software installation script modifies the */etc/rpc* and */etc/syslog.conf* files during the installation process.

Enter the following commands:

```
cp /etc/rpc /etc/rpc.old
```

```
cp /etc/syslog.conf /etc/syslog.conf.old
```

2. Enter following command:

```
pkgadd -d /cdrom/cdrom0/solaris
```

3. Enter 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)

Console Server

To manage the Sun StorEdge EBS server, install the Sun StorEdge EBS Console and Sun StorEdge EBS client software on one machine in the data zone. 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. For details, see "[Console Server Software Requirements](#)" on page 21.

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

1. Ensure that JRE version 1.4.2 is installed. This enables the command line reporting feature.
 - a. Change to the directory where the JRE is to be installed.
 - b. Run the following script:

```
pkgadd -d /cdrom/cdrom0/solaris/j2re-1_4_2-solaris-sparc.sh
```
 - c. Accept the Java licensing agreement.
2. Start the Sun StorEdge EBS software installation:

```
pkgadd -d /cdrom/cdrom0/solaris
```



Important: Do *not* press the [Enter] key for the default response *All*. Accepting the default installs the server.

3. Enter 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. Enter the appropriate option number to install the Console server package (*SUNWebsg*).
5. (Optional) Enter the appropriate option number to install the man pages (*SUNWebsm*).
6. Follow the prompts to install the software. For example:
 - 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.
 - For the Console server, use the default port number (9001) or use a custom port number. Valid port numbers are between 1024 and 49151.



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

7. Start the Sun StorEdge EBS Console daemons:

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

The Sun StorEdge EBS Console daemons include the following:

- **gstd**
- **dbsrv9**
- **gsttclsh**

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

On the Sun StorEdge EBS server:

- a. Specify the process owner of the Console daemon process.

If the Console server is on a:

- Windows host:

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

- Solaris, or Linux only host:

```
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.

Installing to a Nondefault Location

By default, the following Sun StorEdge EBS software is installed in the */usr* directory. If there is insufficient disk space on the */usr* partition, the following Sun StorEdge 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)

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

The Sun StorEdge EBS man pages package (*SUNWebsm*) must always be installed in the default location. For a listing of the default locations and size requirements, see [Table 1 on page 20](#).



Important: Do *not* relocate any of the packages if NetWorker Module software is already installed on the computer.

To install the Sun StorEdge 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 StorEdge 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. Enter the following command:

```
pkgadd -d /cdrom/cdrom0/solaris
```

When the following prompt appears in the script, enter 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 3: Change the Sun StorEdge EBS Servers with Access to a Client

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

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

1. Shut down the Sun StorEdge EBS daemons:

```
nsr_shutdown
```

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



Important: If the */nsr/res/servers* file is empty or does not exist, any Sun StorEdge 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 StorEdge 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 **-s server_name** in the startup file.

Task 4: Start the Sun StorEdge EBS Daemons

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

1. Start the Sun StorEdge EBS daemons:

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

2. Verify that the Sun StorEdge EBS daemons are running:

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

[Table 5 on page 31](#) lists the Sun StorEdge EBS daemons that should be running.

Note: The Sun StorEdge EBS daemon **nsrmmd** is only present if one or more devices are enabled.

Table 5. Sun StorEdge EBS Daemons

Sun StorEdge EBS Installation Packages	Sun StorEdge EBS Daemons
Sun StorEdge EBS server	nsrd , nsrexecd , nsrindexd , nsrmmdbd , nsrmmd , nsrjobd , nsrmmgd , nsrlcpd
Sun StorEdge EBS client	nsrexecd
Sun StorEdge EBS storage node	nsrexecd , nsrmmd , nsrlcpd

3. If the output does not list **nsrd** and **nsrexecd** as current processes, run the following command to start the Sun StorEdge EBS daemons on the Sun StorEdge EBS server:

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

Note: You might need to install the UTF-8 converters available with your operating system. For example: *SUNWuiu8*.

Verifying the Installation

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

This section includes the following procedures:

- ["Task 1: Start the Console for the First Time" on page 32](#)
- ["Task 2: Add a Sun StorEdge EBS Server to the Sun StorEdge EBS Console Server" on page 33](#)
- ["Task 3: Configure a Device" on page 34](#)
- ["Task 4: Test the Sun StorEdge EBS Software Installation" on page 35](#)

Task 1: Start the Console for the First Time

These steps assume that the Sun StorEdge EBS software is installed and that all of the software and hardware requirements have been met on the computer that will access the Console. For information about the Console, see ["Sun StorEdge EBS Console Server" on page 12](#).

To start the Console server software for the first time:

1. Start a web browser session.
2. Enter 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`

3. From the Welcome page, click Start.
4. From the Security Warning screen, click Start to install and run Sun StorEdge EBS Console.
5. Enter the following command to start the Console server:

`/etc/init.d/gst start`

6. If JRE 1.4.2 was *not* already installed on the system, a prompt to install it appears. Follow the on-screen instructions to install JRE.

7. In the Sun StorEdge EBS Management Console Login dialog box, enter the user name and password.



Important: 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.

8. 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 by using any of the following methods:

- Point the browser to the same URL as in ["Task 1: Start the Console for the First Time" on page 32.](#)
- Double-click the Sun StorEdge EBS Console product name in the Java Web Start Application Manager.

Task 2: Add a Sun StorEdge EBS Server to the Sun StorEdge EBS Console Server

To add and select a Sun StorEdge EBS server:

1. Start the Sun StorEdge 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. Enter a hostname and alias for the Sun StorEdge EBS server. The Sun StorEdge EBS server appears in the right pane and left pane.
6. From the left pane, select the Sun StorEdge EBS server.
7. From the right pane, select the Sun StorEdge EBS application.
8. From the Enterprise menu, select Launch Application. The Sun StorEdge EBS Administration window is launched.

If the server connection fails, refer to the server connectivity information in the *Sun StorEdge EBS Administration Guide* to troubleshoot the problem.

Task 3: Configure a Device

If not already configured, configure a device before testing the Sun StorEdge EBS software.

You can configure one of the following devices:

- ["Stand-Alone Tape Device" on page 34](#)
- ["Stand-Alone File or Advanced File Device" on page 34](#)
- ["Autochanger or Silo" on page 35](#)

For details on configuring a device, refer to the *Sun StorEdge EBS Administration Guide*.

Stand-Alone Tape Device

To configure a stand-alone tape device:

1. In the server's Sun StorEdge EBS Administration interface, click the Devices button.
2. From the left pane, select Devices.
3. From the left pane, select Storage Nodes.
4. Right-click the storage node to which the device is to be configured.
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 StorEdge EBS Administration interface, click the Devices button.
2. From the left pane, select Devices.
3. From the File menu, select New. The Create Devices Window appears.
4. For the Name attribute, enter 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. The Label window appears.
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 StorEdge EBS Administration interface, click the Devices button.
2. From the left pane, select Storage Nodes.
3. Right-click the storage node to which the device is to be configured.
4. Select Configure All Libraries.
5. Click Start Configuration after filling in the requested information.
6. Click Finish on the configuration window, once the configuration has completed.

Task 4: Test the Sun StorEdge EBS Software Installation

Test a Sun StorEdge EBS installation by performing an ad hoc (manual) backup of a file or folder. You can also use the Sun StorEdge EBS Client Configuration Wizard to configure a scheduled backup. For detailed information about the wizard, refer to the *Sun StorEdge EBS Administration Guide*.

To test the Sun StorEdge EBS software on a stand-alone device:

1. Start the Sun StorEdge EBS Management Console software and then start the Sun StorEdge EBS nwbackup program.

To start the Sun StorEdge EBS nwbackup program:

- a. From the Administration window, click Monitoring.
- b. From the Monitoring menu, select Launch Sun StorEdge EBS User Application. The Sun StorEdge EBS Backup window appears.

The Sun StorEdge EBS nwbackup program provides a graphical interface through which ad hoc (manual) backups are performed. For general information about the Sun StorEdge EBS nwbackup program, see the *Sun StorEdge EBS Administration Guide*.

Note: Before starting a backup, you might need to add the client to the Sun StorEdge EBS Server. When the backup is launched, the server name is derived from the Sun StorEdge EBS Administration window of the server from which it was launched. The client name is taken from the machine where the Sun StorEdge EBS Management Console was started.

2. From the Sun StorEdge EBS nwbackup program, select Launch Backup.
 - a. In the left pane of the Backup window, click the appropriate directory folder.
 - b. Select each directory and/or file you intend for manual backup by performing one of the following:
 - Select the directory or file and click the Mark button.
To clear an item, click the Unmark button.
 - Click the directory or file.

When you mark a directory or file for backup, a check mark appears next to that item.

- c. Click the Start button to begin the ad hoc backup.

The Backup Status dialog box displays the progress of the backup. When the Sun StorEdge EBS server has successfully finished the backup, the **nwbackup** program displays the following (or a similar) message:

Backup completion time: 2-15-03 3:27p

Note: If the backup fails, an error message will appear. Error messages are also written to the Sun StorEdge EBS log file. If the test backup was not successfully completed, refer to the troubleshooting information in the *Sun StorEdge EBS Administration Guide* to determine the cause.

Uninstalling the Sun StorEdge EBS Software

Use the **pkgrm** command to uninstall individual Sun StorEdge EBS packages or all of the Sun StorEdge EBS packages at the same time.

This section includes the following procedures:

- ["Software Dependencies" on page 36](#)
- ["Uninstalling the Sun StorEdge EBS Software" on page 36](#)

Software Dependencies

The Sun StorEdge EBS software packages depend on each other. Uninstall them in the following order:

- *SUNWebss*
- *SUNWebsn*
- *SUNWebsg*

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

- *SUNWebsc*
- *SUNWebsm*

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

Uninstalling the Software

To remove the Sun StorEdge EBS software packages:

1. Log in as root on the system where the software is being removed.
2. Enter the **nsr_shutdown** command to shut down the Sun StorEdge EBS daemons. A list of Sun StorEdge EBS daemons that will be shut down appears, along with a prompt that asks whether to continue with the **nsr_shutdown** command.
3. Enter the following command to shut down the Console server:

```
/etc/init.d/gst stop
```

4. Enter the **pkgrm** command to remove the software. For example:

- To remove *all* the packages, enter the following command:

pkgrm SUNWebss SUNWebsn SUNWebsg SUNWebsc SUNWebsm



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

- To remove *only* the:
 - Server software, enter the following command:
pkgrm SUNWebss
 - Storage node software, enter the following command:
pkgrm SUNWebsn

- Console server software, enter the following command:
pkgrm SUNWebsg

The *SUNWebsg* package must be uninstalled before the *SUNWebsc* package.

- Client software, enter the following command:
pkgrm SUNWebsc
- Sun StorEdge EBS man pages, enter the following command:
pkgrm SUNWebsm

This removes the *SUNWebsm* package from the server, storage node, or client where the man pages are installed.

Chapter 4: Installing Sun StorEdge EBS Software in a Sun Cluster Version 3.0 or 3.1 Environment

This chapter explains how to install Sun StorEdge EBS software in a Sun Cluster version 3.0 or 3.1, environment. It includes the following sections:

- ["Installation Requirements" on page 38](#)
- ["Updating from a Previous Release of Sun StorEdge EBS Software" on page 41](#)
- ["Installing Sun StorEdge EBS Software in a Cluster" on page 41](#)
- ["Installing a Virtual Sun StorEdge EBS Console Server" on page 54](#)
- ["Configuring an External Client to a Virtual Server" on page 60](#)
- ["Defining Ownership of a Raw Partition for Virtual Clients" on page 61](#)
- ["Tracking Scheduled Saves" on page 61](#)
- ["Uninstalling the Sun StorEdge EBS Software" on page 62](#)
- ["Sun StorEdge EBS Cluster Script" on page 63](#)

A Sun Cluster system enables applications to be run and administered as highly available resources (data services). For detailed information about Sun Cluster 3.0 or 3.1, refer to the appropriate Sun documentation.



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

Installation Requirements

The following sections discuss the software and hardware required to install and configure the Sun StorEdge EBS server or client software within a Sun Cluster environment:

- ["Software Requirements" on page 39](#)
- ["Hardware Requirements" on page 39](#)
- ["Configuration Options" on page 39](#)
- ["System Information Requirements for a Highly Available Sun StorEdge EBS Server" on page 39](#)

Before proceeding, review the ["Software Installation Roadmap" on page 17](#). For the most up-to-date information regarding software and hardware requirements, refer to the Legato Compatibility Guides.

Software Requirements

To install a Sun StorEdge EBS virtual server, ensure that the following software is installed on each node in the cluster:

- Solaris 8 or Solaris 9 operating environment is installed
- Sun Cluster version 3.0 or 3.1 is installed
- Volume Manager software (Solstice DiskSuite/Solaris Volume Manager)

Hardware Requirements

To install the Sun StorEdge EBS software, ensure that the following hardware requirements are met for server installation only:

- Multihosted disks that are used as a mount point for global file systems to 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

For information on how to configure the following, refer to the *Sun StorEdge EBS Administration Guide*:

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

System Information Requirements for a Highly Available Sun StorEdge EBS Server

[Figure 1 on page 40](#) and [Table 6 on page 40](#) display the system information needed to install a highly available Sun StorEdge EBS software within a Sun Cluster environment.

A general cluster configuration consisting of two or more nodes and at least one Sun StorEdge EBS server. In this illustration:

- Node 1 is a computer with its own Local Disk.
- Node 2 is a computer with its own Local Disk.
- Highly available Sun StorEdge EBS Server on the Virtual Server owns Shared Disks.

In this example, the Sun StorEdge EBS server can fail over between Node 1 and Node 2; however, the Sun StorEdge EBS server only runs on one node at a time.

The Sun StorEdge EBS server inherits the virtual server's IP address. Although Sun StorEdge EBS software is installed on all the physical nodes within the cluster, the server software is active on only one node at a time. If a hardware or software breakdown occurs on the node on which the Sun StorEdge EBS server is running, the Sun StorEdge EBS server moves to another node in the cluster.

The Sun StorEdge EBS client software runs on all the physical nodes within the cluster, regardless of whether or not the Sun StorEdge EBS server resource group is running. This allows the backup of the physical client to proceed, as long as the node is running. Only one instance of the client software (**nsrexecd**) runs on each physical node within the cluster. The Sun StorEdge EBS client software is designed to recognize more than one client (physical client plus virtual client) that might be associated with a single physical node.

Figure 1. Sample Cluster Configuration

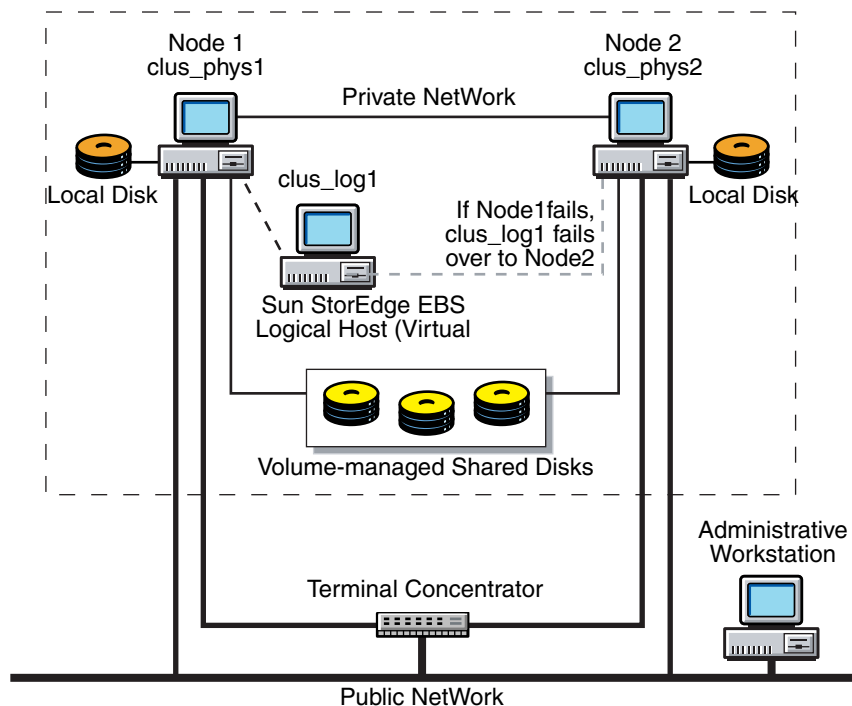


Table 6. Required Information: Highly Available Sun StorEdge EBS Server

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

Updating from a Previous Release of Sun StorEdge EBS Software

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

1. Collect the following Sun StorEdge EBS software system information:
 - The location of the Sun StorEdge EBS server global */nsr* directory on the shared storage.
 - The location of the Sun StorEdge 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 StorEdge EBS software to back up the cluster. Ensure that you have a recent backup of the indexes and bootstrap using the **savegrp -O** command.
4. Remove the Sun StorEdge EBS software cluster configuration files and uninstall the Sun StorEdge EBS software. Do not remove the global and local */nsr* directories.

For instructions on uninstalling the Sun StorEdge EBS software, see ["Uninstalling the Sun StorEdge EBS Software" on page 62](#).

5. If required, upgrade the Sun Cluster software. For instructions, refer to the Sun Cluster documentation.
6. Install and configure the Sun StorEdge EBS 7.3 software.

Ensure that:

- You specify the same local */nsr* and global */nsr* directories.
- The Sun StorEdge EBS client type resource properties for *Owned_paths* and *Clientname* are the same as before the upgrade.
- The Sun StorEdge 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.

For detailed instructions on installing Sun StorEdge EBS software in a Sun Cluster environment, see ["Installing Sun StorEdge EBS Software in a Cluster" on page 41](#).

Installing Sun StorEdge EBS Software in a Cluster

To install the Sun StorEdge EBS software in a Sun Cluster environment, see the following:

- ["Installing a Sun StorEdge EBS Virtual Server" on page 42](#)
- ["Installing a Virtual Sun StorEdge EBS Console Server" on page 54](#)
- ["Installing Only the Sun StorEdge EBS Client Software in a Cluster" on page 56](#)

Installing a Sun StorEdge EBS Virtual Server

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

- ["Task 1: Install the Sun StorEdge EBS Software" on page 42](#)
- ["Task 2: Define the Sun StorEdge EBS Server as Highly Available" on page 43](#)
- ["Task 3: Create an Instance of the Sun StorEdge EBS Server Resource Group" on page 44](#)
- ["Task 4: \(Optional\) Add a HAStoragePlus Resource to an Existing Sun StorEdge EBS Server Resource Group" on page 46](#)
- ["Task 5: Grant Access to the Highly Available Sun StorEdge EBS Server" on page 47](#)
- ["Task 6: Configure the Sun StorEdge EBS Server" on page 49](#)
- ["Task 7: Configure Clients under the Sun StorEdge EBS Server" on page 49](#)
- ["Task 8: Create Instances of the Sun StorEdge EBS Client Resource Type" on page 50](#)
- ["Task 9: Register Licenses for the Highly Available Sun StorEdge EBS Server" on page 51](#)
- ["Task 10: Authorize the Software" on page 53](#)

Task 1: Install the Sun StorEdge EBS Software

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



Important: Ensure that the:

- Solaris 8 or Solaris 9 operating environment and Sun Cluster 3.0 or 3.1 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 StorEdge EBS software on nodes that will be running the Sun StorEdge EBS resource group:

1. Access the Sun StorEdge EBS software from the distribution media. For detailed installation instructions, see ["Chapter 3: Installing the Sun StorEdge EBS Software" on page 17](#).
2. Keep a copy of the current configuration. The Sun StorEdge EBS software installation script modifies the */etc/rpc* and */etc/syslog.conf* files during the installation process. Enter the following commands:

```
cp /etc/rpc /etc/rpc.old
```

```
cp /etc/syslog.conf /etc/syslog.conf.old
```

3. Enter the **pkgadd** command as follows:

```
pkgadd -d .
```

4. Press [Enter] to install all of the packages on the server. Sun recommends installing all the software on the server at the same time.



Important: Start the Sun StorEdge EBS daemons *only* after the last Sun StorEdge EBS package is installed.

Install selected software packages 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)
5. Start the Sun StorEdge EBS daemons:
`/etc/init.d/networker start`
 6. Press [q] to exit.

Task 2: Define the Sun StorEdge EBS Server as Highly Available

To define and configure the Sun StorEdge 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 StorEdge EBS server process:
 - a. Run the cluster configuration script **networker.cluster** located in */usr/sbin/nsr*. For an example of the script, see ["Sun StorEdge EBS Cluster Script" on page 63](#).
 This script defines the *SUNWebss* and the *SUNWebsc* resource types that the Sun StorEdge EBS software requires.
 - b. In response to the following prompts, enter the following information:
 Enter directory where local NetWorker database is installed
 [/nsr]?
 – Enter the location of the local Sun StorEdge EBS database directory provided during the installation procedure. For example: */space/nsr*
 Do you wish to configure for both NetWorker server and client?
 Yes or No [Yes]?
 – Enter Yes to configure the server software. This also installs the client software by default.
 – Enter 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]?

- Enter Yes to ensure compatibility with other cluster environments.
Enter the Logical Hostname to be used for NetWorker?
 - Enter the published logical hostname to be used by the highly available Sun StorEdge EBS server. For example: *clus_vir1*
- In what path will this nsr directory be created/located?
- Enter the pathname of the globally mounted */nsr* directory that will contain the configuration information for the highly available Sun StorEdge EBS server.

Notes:

- For more information, see ["System Information Requirements for a Highly Available Sun StorEdge EBS Server" on page 39](#).
- 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 StorEdge EBS Server Resource Group

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

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

To create an instance of the Sun StorEdge EBS server resource group, perform the following 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 hstorageplus -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 how to set up locally mounted global systems, refer to the Sun Cluster 3.0 or 3.1 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/space
```

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

- 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=hstorageplus \  
-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 StorEdge EBS resource group:

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



Example: A Highly Available Sun StorEdge EBS Server

In the following example, a highly available Sun StorEdge EBS server uses the logical hostname *backup_server*. The highly available Sun StorEdge 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 StorEdge EBS logical host is also a client of the highly available Sun StorEdge 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 an Existing Sun StorEdge EBS Server Resource Group

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

1. Determine whether the HAStoragePlus resource type is registered within the cluster:

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

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

```
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/clus_vir1/space \  
-x AffinityOn=True
```

4. Enable the HAStoragePlus resource:

```
scswitch -e -j hastorageplus
```

5. Set up a dependency for the Sun StorEdge 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 StorEdge EBS Server

Before a Sun StorEdge 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 StorEdge EBS Server resource group, this file is located in the globally mounted file system. Otherwise, this file is located on a local disk.



Important: If the */nsr/res/servers* file is empty or does not exist, any Sun StorEdge 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 StorEdge EBS server:

1. On one node in the cluster:
 - a. Stop the Sun StorEdge EBS daemon 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 StorEdge EBS servers, one per line, to be granted access to this client.
 - Add an entry for the Sun StorEdge EBS logical hostname first. Then add entries for each physical host that can run the Sun StorEdge EBS resource group.

For example:

```
clus_vir1  
clus_phys1  
clus_phys2
```

2. On each node in the cluster:

- a. Shut down the Sun StorEdge EBS processes and verify that all Sun StorEdge EBS daemons have stopped:

```
nsr_shutdown
```

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

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

```
clus_vir1
```

```
clus_phys1
```

```
clus_phys2
```

- d. Restart the Sun StorEdge EBS processes:

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

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

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

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

On each client that is outside of the cluster:

- a. Shut down the Sun StorEdge EBS processes:

```
nsr_shutdown
```

- b. Verify that all Sun StorEdge EBS daemons have stopped:

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

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

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

For example:

```
clus_vir1
```

```
clus_phys1
```

```
clus_phys2
```

- d. Restart the Sun StorEdge EBS daemons:

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

Task 6: Configure the Sun StorEdge EBS Server

To configure the Sun StorEdge EBS server:

1. Log in as root on the cluster node that is currently running the Sun StorEdge EBS server resource group.
2. Start the Sun StorEdge 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 StorEdge 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 StorEdge EBS directory. For example, if the local Sun StorEdge EBS directory was created in `/var/nsr`, each client member has the following links:

- `/nsr->/nsr.NetWorker.local`
- `/nsr.NetWorker.local->/var/nsr`

To configure each client under the Sun StorEdge EBS server:

1. (Optional) Define save groups as required:



Important: Save groups must have the Autorestart attribute enabled and the Manual Restart option disabled in order for their save sets to restart after a virtual client or Sun StorEdge EBS server failover.

2. Make each physical client within the cluster a Sun StorEdge EBS client of the Sun StorEdge EBS server.

For each physical client in the cluster:

- a. Create a new Sun StorEdge EBS client.
- b. Enter the name of the physical client for the Name attribute.

For more information, refer to the *Sun StorEdge EBS Administration Guide*

3. Make each virtual client within the cluster a Sun StorEdge EBS client of the virtual Sun StorEdge EBS server.

For each virtual client in the cluster:

- a. Create a new Sun StorEdge EBS client.
- b. For the Name attribute, enter 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.

On the node on which the Sun StorEdge EBS server resides, run the following command:

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

If the test probe does not display the correct scheduled backups and index, see ["Tracking Scheduled Saves" on page 61](#).

Task 8: Create Instances of the Sun StorEdge EBS Client Resource Type

An instance of the Sun StorEdge 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 and 3.1 are either logical hostnames or shared addresses.



Important: All globally mounted file systems (except the `/global/.devices/...` file systems) must be owned by a resource group and defined in a Sun StorEdge 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 StorEdge 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.clnt \  
-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[,...]
```

For more information, see the following examples:

- ["Example: A Highly Available Informix Database Server" on page 51](#)
- ["Example: A Scalable Apache Web Server" on page 51](#)

2. Run a test probe to verify that the Client and Group resources are properly configured.

On the node on which the Sun StorEdge EBS server resides, run the following command:

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

If the test probe does not display the scheduled backups and index, refer to the section on "Tracking Scheduled Saves" in the *Sun StorEdge EBS Administration Guide*.



Example: A Highly Available Informix Database Server

In the following 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 StorEdge EBS virtual client to the existing resource group *informix_rg*, enter the following command:

```
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: A Scalable Apache Web Server

In the following 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 StorEdge EBS virtual client to the existing resource group *apache_rg*, enter the following command:

```
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 StorEdge EBS Server

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

1. Order licenses from Sun for the type of Sun StorEdge EBS server and client configuration you are using.

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 on to the system that is currently running the Sun StorEdge EBS resource group.
3. Perform the following operations to enter the purchased enabler codes:
 - a. If you have been evaluating the Sun StorEdge EBS highly available software and have now purchased the software:
 - Upgrade from the base evaluation enabler to the purchased enabler by entering the following command:
nsrcap -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, enter the following command:
nsrcap -v -c *enabler_code*
4. Ensure that the highly available Sun StorEdge EBS server is defined as a part of the cluster.
5. On each node that is currently running the Sun StorEdge EBS server resource group, run the following command and capture the output:
hostid
This prints the numeric identifier of the current host.
6. Log on to the computer that is currently running the Sun StorEdge EBS server resource group.
 - a. Create a file named */nsr/res/hostids* that contains the host IDs of all the cluster nodes that were captured in the previous steps. Use the following syntax:
hostid1:hostid2:hostid3:...
For example: *12345678:87654321:13572468*
 - b. Restart the server by taking the highly available Sun StorEdge EBS server offline and then putting it back online, as follows:
scswitch -F -g *NetWorker*
scswitch -Z -g *NetWorker*
7. On one node in the cluster:
 - a. Start the Sun StorEdge EBS Console. Use the logical hostname for the highly available Sun StorEdge EBS server.
 - b. From the Sun StorEdge EBS Administration window, note the host ID number for the appropriate cluster license.
 - c. Register the Sun StorEdge EBS software.



Important: Do *not* change the logical hostname for the highly available Sun StorEdge EBS server. If you change the logical host configuration for the highly available Sun StorEdge EBS server after you update the software, you must permanently license and authorize the highly available Sun StorEdge EBS server.

Task 10: Authorize the Software

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

1. On one node in the cluster, start the Sun StorEdge EBS Console. Use the logical hostname for the highly available Sun StorEdge EBS server.
2. Complete the customer information and contact information fields:
 - a. Start the Sun StorEdge EBS Console software.
 - b. From the Administration window, click Configuration.
 - c. In the left pane, select the Sun StorEdge 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 StorEdge EBS Console Server

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

- ["Task 1: Install the Sun StorEdge EBS Management Software in a Cluster" on page 54](#)
- ["Task 2: Define the Sun StorEdge EBS Management Server as a Highly Available Application" on page 54](#)

Task 1: Install the Sun StorEdge EBS Management Software in a Cluster

To install the Sun StorEdge 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 StorEdge EBS Console server software (*SUNWebsg*) on each node in the cluster.

For detailed instructions, see ["Installing the Sun StorEdge EBS Software" on page 25](#).

Task 2: Define the Sun StorEdge EBS Management Server as a Highly Available Application

To define and configure Sun StorEdge 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 StorEdge EBS server process:
 - a. Run the cluster configuration script **gst_ha.cluster** located in */opt/SUNWebsg/bin/nsr*. This script defines the *GST_HA.serv* resource type that the Sun StorEdge 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_gstadb 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_gstadb 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. When the authorization keys arrive, perform the following steps:
 - a. On one node in the cluster, start the Sun StorEdge EBS Administrator program using the logical hostname for the highly available Sun StorEdge EBS server:

```
nwadmin -s clus_vir1
```

- 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 StorEdge EBS Client Software in a Cluster

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

To install a Sun StorEdge EBS cluster client, perform the following tasks:

- ["Task 1: Install the Sun StorEdge EBS Cluster Client Software" on page 56](#)
- ["Task 2: Configure Sun StorEdge EBS Client Software as Highly Available" on page 57](#)
- ["Task 3: Create Instances of the Client Resource Type" on page 58](#)
- ["Task 4: Define the List of Trusted Sun StorEdge EBS Servers" on page 59](#)
- ["Task 5: Configure Clients Under the Sun StorEdge EBS Server" on page 59](#)



Important: Ensure that the Sun StorEdge EBS client software is installed on each node in the cluster.

Task 1: Install the Sun StorEdge EBS Cluster Client Software



Important: Ensure that the Solaris 8 operating environment and Sun Cluster 3.0 or 3.1 software are already installed on all cluster nodes and that those nodes boot in cluster mode.

Also, ensure that the PATH environment variable includes `/usr/sbin` and `/usr/cluster/bin`.

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

1. Access the Sun StorEdge EBS software from the distribution media.

For detailed installation instructions, see ["Chapter 3: Installing the Sun StorEdge EBS Software" on page 17](#).

2. Enter the `pkgadd` command:

```
pkgadd -d .
```



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

3. Enter the appropriate option number to install the client package. The package temporarily requires 70 MB of free space on the client computer.
4. (Optional) Enter the appropriate option number to install the man pages.
5. Start the Sun StorEdge EBS daemons:
`/etc/init.d/networker start`
6. When all the applicable packages have been added, and the prompt appears, press [q] to exit.

Task 2: Configure Sun StorEdge EBS Client Software as Highly Available

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

1. Log in as root on each node where the Sun StorEdge 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 StorEdge EBS software requires.
 - b. In response to the prompts, enter the following information:
Enter directory where local NetWorker database is installed
[/nsr]?
 - Enter the location of the local Sun StorEdge EBS database directory provided during the installation procedure. For example: `/space/nsr`Do you wish to configure for both NetWorker server and client? Yes or No [Yes]?
 - Enter No. This configures only the client software.

Notes:

- For more information, see ["System Information Requirements for a Highly Available Sun StorEdge EBS Server" on page 39](#).
- Any changes to the configuration can be undone by running the **`networker.cluster -r`** option and then running the **`networker.cluster`** script again.

Task 3: Create Instances of the Client Resource Type

An instance of the Sun StorEdge 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 and 3.1 are either logical hostnames or shared addresses.



Important: All globally mounted file systems (except the `/global/.devices/...` file systems) must be owned by a logical host and defined in a Sun StorEdge 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 StorEdge 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.clnt \
-x clientname=virtual_hostname -x owned_paths=pathname_1, pathname_2[,...]
```



Example: A Highly Available Informix Database Server

In the following example, the Informix database server is configured to use the DNS registered hostname `informix_llrs`.

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

- `SUNW.informix` resource named `informix_res`
- `SUNW.LogicalHostname` resource named `informix_llrs`

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 StorEdge EBS virtual client to the existing resource group `informix_rg`, enter the following command:

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



Example: A Scalable Apache Web Server

In the following 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 StorEdge EBS virtual client to the existing resource group *apache_rg*:

```
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 StorEdge EBS Servers

Before a Sun StorEdge 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 StorEdge EBS server resource group, this file is located in the globally mounted file system. Otherwise, this file is located on a local disk.



Important: If the */nsr/res/servers* file is empty or does not exist, any Sun StorEdge 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 StorEdge EBS servers, perform the following steps on each node in the cluster:

1. Shut down the Sun StorEdge EBS processes and verify that all Sun StorEdge 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 StorEdge EBS servers, one per line, that require access to this client.
3. Check the Sun StorEdge 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.
4. Restart the Sun StorEdge EBS daemons:

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

Task 5: Configure Clients Under the Sun StorEdge EBS Server

To configure the Sun StorEdge EBS server:

1. Make each physical client within the cluster a Sun StorEdge EBS client of the Sun StorEdge EBS server.

For each physical client in the cluster:

- a. Create a new Sun StorEdge EBS client.
- b. For the Name attribute, enter the name of the physical client.

Note: If a physical Client is backed up to a Sun StorEdge 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 StorEdge EBS server.

For each virtual client in the cluster:

- a. Create a new Sun StorEdge EBS client.
- b. For the Name attribute, enter the name of the Sun StorEdge 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 using the Sun StorEdge EBS application.

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

Configuring an External Client to a Virtual Server

Use this procedure to configure and back up an external Sun StorEdge EBS client to a highly available Sun StorEdge EBS server. Before a Sun StorEdge 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 StorEdge 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 StorEdge EBS client that is outside of the cluster:

1. Shut down the Sun StorEdge EBS processes:

```
nsr_shutdown
```

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

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

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

- a. Add the set of Sun StorEdge EBS servers, one per line, that require access to this client.
- b. Add an entry for the Sun StorEdge EBS logical hostname first. Then add entries for each physical host that can run the Sun StorEdge 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 StorEdge EBS virtual client, ensure that the raw device path appears in the owned paths field of the *LGTO.clnt* resource.



Example: A Highly Available Web Server

In the following example, a highly available web server uses the shared address *web_server*. The web server services are placed under the control of the resource group *apache_rg*. 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 StorEdge EBS Client resource named *apache_nrw*, enter the following:

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

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

Tracking Scheduled Saves

To verify that the Client and Group resources have been properly configured, run a test probe for each client from the node where the Sun StorEdge EBS is running:

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

If the test probe does not display all the scheduled save sets, do one of the following and run a second test probe to verify the configuration:

- Check the cluster configuration. If necessary, reconfigure the cluster.
- Ensure that the save sets defined for the client are owned by that client. If necessary, redistribute the client save sets to the appropriate Client resources.



Important: Misconfiguration of the cluster resources might cause scheduled save sets to be dropped from the backup. For more information, refer to the *Sun StorEdge EBS Administration Guide*.

To override scheduled save rules (not path ownership rules), run the following command on each node in the cluster:

```
touch networker_bin_dir/pathownerignore
```

This command allows any path to be backed up for a client, whether it is owned by the virtual client or physical node. For detailed information, refer to the *Sun StorEdge EBS Administration Guide*.

If **pathownerignore** was used, check that the Sun StorEdge EBS scheduled save uses the correct client index. If it uses the wrong index, save sets can be forced to go to a specific index:

1. From the Sun StorEdge EBS Administration window, select a client and edit its properties.
2. For the Backup command attribute, enter the name of a backup script that contains **save -c *client_name***.

For detailed information about the Backup command attribute, refer to the *Sun StorEdge EBS Administration Guide*.

Uninstalling the Sun StorEdge EBS Software

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

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

For more 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. Enter the following command to shut down the Sun StorEdge EBS daemons:
nsr_shutdown

Note: Remove the Sun StorEdge EBS software packages in the following order:

- a. *SUNWebss*
- b. *SUNWebsn*
- c. *SUNWebsg*
- d. *SUNWebsc*

The man pages (*SUNWebsm*) and document files have no dependencies — remove them at any time.

- d. Enter the following command to remove *all* the packages:

pkgrm SUNWebss SUNWebsn SUNWebsg SUNWebsc SUNWebsm

Sun StorEdge EBS Cluster Script

This section demonstrates the typical responses you would give to the prompts of the **networker.cluster** script, assuming the following configuration:

- Virtual server: *clus_vir1*
- Mount point: */global/nw*

networker.cluster

```
-----
Sun Cluster 3.0 extends the Solaris operating environment into a
cluster operating system. A cluster is a collection of loosely
coupled computing nodes that provide a single client view of
network services or applications.
```

```
To complete this procedure, one must have a logical host defined
on which the NetWorker server can be entered
```

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

```
Shutting down NetWorker services...
```

```
Enter directory where local NetWorker database is installed
[/nsr]? /space/nsr
```

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

```
Do you wish to configure for both NetWorker server and client?
```

```
Yes or No [Yes]? Yes
```

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

```
NSR_SHARED_DISK_DIR and NSR_SERVICE_ID
```

```
Yes or No [Yes]? Yes
```

```
Enter the Logical Hostname to be used for NetWorker? clus_vir1
```

```
The shared directory of the NetWorker server (the nsr directory)
must be on a globally mounted file system.
```

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

```
/global/nw
```

```
Creating /usr/sbin/nsr/lcmap file ...
```

```
-rwxrwxr-x  1 root          1707 Aug 20 12:44 /usr/sbin/nsr/lcmap
```

```
Finished creating /usr/sbin/nsr/lcmap file.
```

```
resource type is not registered
```

```
Defining LGTO.clnt resource type with RGM.
```

```
resource type is not registered
```

```
Defining LGTO.serv resource type with RGM.
```

```
NetWorker has been successfully cluster-configured.
```

Chapter 5: Evaluating and Licensing Sun StorEdge EBS Software

This chapter explains how to enable the Sun StorEdge EBS software and features for permanent use. The chapter also describes the Sun StorEdge EBS licensing model and provides a basic explanation of licensing for the different Sun StorEdge EBS Editions, modules, and features, but it does not provide a comprehensive description of every possible licensing scenario. For specific licensing questions, contact a Sun sales representative.

When the Sun StorEdge EBS software is installed, it is in a temporary evaluation mode with all of the features available.

The chapter includes the following sections:

- ["How Sun StorEdge EBS Software Is Licensed" on page 64](#)
- ["The Evaluation Process" on page 65](#)
- ["The Licensing Process" on page 66](#)
- ["Multiplatform Licensing" on page 69](#)

How Sun StorEdge EBS Software Is Licensed

Licensing Sun StorEdge EBS software means entering enabler and authorization codes on the server for the Sun StorEdge EBS environment. Without these codes, the software or added features will not run beyond the evaluation period.

Each installation of Sun StorEdge EBS server software must be licensed with a base enabler that “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, and the server enforces the licensing.

The Sun StorEdge EBS software editions enable varying degrees of functionality. Add-on enablers allow a broader scope of features.

The Evaluation Process

Evaluating Sun StorEdge EBS software can take place in two ways:

- Evaluating a new installation of the software on a Sun StorEdge EBS server
- Evaluating Sun StorEdge EBS features on an existing Sun StorEdge EBS installation

Evaluating a New Installation

When you first install the Sun StorEdge EBS software, you can evaluate it with all the 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 using the Sun StorEdge EBS software to back up data. The base enabler is the license that enables the Edition purchased. To obtain a base enabler, contact either Sun Sales or a Sun Reseller. For more information about entering and authorizing the enabler, see ["The Licensing Process" on page 66](#).

To continue using some of the features that were available with the evaluation software, you may need to purchase add-on enablers, depending on the Edition of base enabler you purchase.

Evaluating Features on an Existing Installation

If you are evaluating one or more Sun StorEdge EBS features on an Edition of Sun StorEdge EBS software that has already been installed and enabled, you must enter a temporary enabler for each feature. The temporary enabler is valid for 45 days.

- To obtain a temporary enabler code, refer to the Roadmap in the Sun StorEdge EBS media kit, or contact Sun Sales or a Sun Reseller.
- To enter the temporary enabler code, see ["How to Enter a Temporary Enabler Code" on page 65](#).

By the end of the evaluation period, you must purchase, enter, and authorize the corresponding license enablers to continue using features you have evaluated. For instructions, see ["The Licensing Process" on page 66](#). For more information about the different Sun StorEdge EBS Editions and features, see ["Multiplatform Licensing" on page 69](#).

How to Enter a Temporary Enabler Code



Important: The temporary enabler code is valid on only one computer in a network. If you enter the same code on more than one computer in a network, a copy protection violation error occurs and the Sun StorEdge EBS server software is disabled on all Sun StorEdge EBS servers with duplicate enablers.

To enter the temporary enabler code:

1. Start the Sun StorEdge EBS Console software.
2. From the Console window, click Enterprise.
3. From the left pane, select the Enterprise icon. The Sun StorEdge EBS server appears in the right pane and left pane.
4. From the left pane, select the Sun StorEdge EBS server.
5. From the right pane, select the Sun StorEdge EBS application.
6. From the Enterprise menu, select Launch Application. The Administration window launches.
7. From the Administration window, click Configuration.
8. In the left pane, select Registration.
9. From the File menu, select New.
10. In the Enabler Code attribute, enter the enabler code.
11. (Optional) In the Comment attribute, enter a description of the license.
12. Click OK.

The Licensing Process

To permanently use Sun StorEdge 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 Sun StorEdge EBS software, as well as for individual features. To purchase the license enabler, contact a Sun sales representative.

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.

The following sections explain how to enter and authorize the license enabler:

- ["Task 1: Enter the License Enabler Code" on page 66](#)
- ["Task 2: Obtain an Authorization Code" on page 67](#)
- ["Task 3: Enter the Authorization Code" on page 68](#)

Task 1: Enter the License Enabler Code

License enabler codes are included in either the letter announcing the updated or upgraded software, or on the Enabler Certificate you receive when you purchase a software license. This depends on whether the software purchased is a first-time purchase, or an updated or upgraded version.

Note: To save time when entering a number of 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 re-enabled manually after their licenses were installed.

How to Enter a License Enabler Code

To enter an enabler code:

1. Start the Sun StorEdge EBS Console software.
2. From the Console window, click Enterprise.
3. From the left pane, select the Enterprise icon. The Sun StorEdge EBS server appears in the right pane and left pane.
4. From the left pane, select the Sun StorEdge EBS server.
5. From the right pane, select the Sun StorEdge EBS application.
6. From the Enterprise menu, select Launch Application. The Administration window launches.
7. From the Administration window, click Configuration.
8. In the left pane, select Registration.
9. From the File menu, select New. The Create Registration dialog box appears.
10. In the Enabler Code attribute, enter the enabler code.
11. (Optional) In the Comment attribute, enter a description of the license.
12. Click OK.

The new license is added and appears in the right pane. Repeat the procedure to add any additional enabler codes.

Task 2: Obtain an Authorization Code

Registration of Sun StorEdge EBS software takes place by obtaining an authorization code. Obtain a unique authorization code through one of the following methods:

- ["Using the Sun Website" on page 67](#)
- ["By Email" on page 68](#)



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

Using the Sun Website

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 StorEdge EBS license will be sent by email.

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

By Email

To register the software and obtain an authorization code by email:

1. Start the Sun StorEdge EBS Console software.
2. From the Console window, click Enterprise.
3. From the left pane, select the Enterprise icon. The Sun StorEdge EBS server appears in the right pane and left pane.
4. From the left pane, select the Sun StorEdge EBS server.
5. From the right pane, select the Sun StorEdge EBS application.
6. From the Enterprise menu, select Launch Application. The Administration window launches.
7. From the Administration window, click Configuration.
8. In the left pane, select the Sun StorEdge EBS server.
9. From the File menu, select Properties. The Properties dialog box appears.
10. Select the Customer Information tab and complete your contact information.
11. Send your contact information to Sun Licensing by emailing the registration information.

An authorization code that permanently enables the updated Sun StorEdge EBS software will be sent to you.

Task 3: Enter the Authorization Code

To complete the licensing process, you must enter the unique authorization code on the Sun StorEdge 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 Sun Support.



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

Contact Product Licensing at to obtain a new authorization code. The host IDs for the original server and the new server are required. The host ID appears in the server's Registrations properties window.

How to Enter an Authorization Code

To enter an authorization code:

1. Start the Sun StorEdge EBS Console software.
2. From the Console window, click Enterprise.
3. From the left pane, select the Enterprise icon. The Sun StorEdge EBS server appears in the right pane and left pane.
4. From the left pane, select the Sun StorEdge EBS server.
5. From the right pane, select the Sun StorEdge EBS application.
6. From the Enterprise menu, select Launch Application. The Administration window launches.
7. From the Administration window, click Configuration.
8. In the left pane, click Registration.
9. In the right pane, right-click the license to be authorized, then select Properties. The Properties dialog box appears.
10. In the Auth Code attribute, enter the authorization code for the product (the authorization code assigned to the specified permanent enabler or update enabler code).
11. Click OK. The license is now permanently enabled.

Multiplatform Licensing

The client connections that come with a Sun StorEdge EBS server can be used for only that server platform; a ClientPak license allows the Sun StorEdge EBS server to back up clients of different platforms. For example, the client connections accompanying a Sun StorEdge EBS server for Windows can be used only for Windows client computers; similarly, the client connections that come with a Sun StorEdge EBS server for Solaris can be used for Solaris clients only. With a ClientPak for UNIX, other UNIX platforms can be enabled for use with the Sun StorEdge EBS Server for Solaris. The ClientPak for UNIX supports all UNIX platforms; therefore, the UNIX ClientPak is sufficient for all UNIX clients backed up by a UNIX or Windows server.

Note: The Sun StorEdge EBS software treats Linux as a separate operating system, so a ClientPak for Linux is necessary to back up Linux clients by either UNIX or Windows servers.



Example: Multiplatform Licensing Schemes

A company was using an AIX server to back up Solaris, Linux, and Windows NT clients. It needed two ClientPak licenses, one for Solaris and one for Windows. The company added HP-UX and AIX clients, which required the addition of a ClientPak license for UNIX.

As the company grew and needed to add a server, it added a Windows 2000 server, which backed up the Windows NT and subsequent Windows 2000 clients without requiring a ClientPak. The company also made the AIX computer a Sun StorEdge EBS server to back up the HP-UX, Solaris, and AIX clients, using a single ClientPak for UNIX.

Update Enablers

To update existing Sun StorEdge EBS software to a major release, an update enabler is necessary. Update enablers are required for any major Sun StorEdge EBS software upgrade from release 4.0 and later, including the current Sun StorEdge EBS release.

With a first-time purchase of Sun StorEdge 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.

Required Update Enablers

[Table 7 on page 70](#) lists the Sun StorEdge EBS releases that require update enablers.

Table 7. Update Enablers

Upgrade from	to 5.0	to 5.5, 5.5.1	to 6.0	to 6.1	to 7.0	to 7.1	to 7.2	to 7.3
Any release prior to 5.0	yes	yes	yes	yes	yes	yes	yes	yes
5.0		yes	yes	yes	yes	yes	yes	yes
5.5, 5.5.1			yes	yes	yes	yes	yes	yes
6.0				no	yes	yes	yes	yes
6.1					yes	yes	yes	yes
7.0						no	no	yes
7.1							no	yes
7.2								yes

Additional Licenses

This section describes a few of the additional licenses required to operate some of the Sun StorEdge EBS features. For a complete list, contact a Sun sales representative.

Client Connection Licenses

Every computer to be backed up in a Sun StorEdge EBS data zone requires a client connection license, even the Sun StorEdge EBS server. The client connection license may be one of the licenses supplied with the base enabler or purchased separately. A cluster client or NDMP data server requires a special type of client connection license, as described in ["Cluster Clients" on page 71](#) or ["NDMP Licensing" on page 71](#).

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 StorEdge EBS client host, only one NetWorker Module enabler is required for that one host.

Cluster Clients

For each physical node in a cluster, you must purchase a Cluster Client Connection, which takes the place of one standard client connection. For more information about licensing computers in a cluster, refer to the *Sun StorEdge EBS Administration Guide*.

NDMP Licensing

NDMP licensing requires one NDMP Client Connection per NDMP data server. The NDMP Client Connection is valid for any supported NDMP data server. The NDMP data server does not require a standard client connection.