Veritas Storage Foundation™ and High Availability Solutions Getting Started Guide

Linux for IBM Power

5.0 Release Update 3

symantec™

Getting Started Guide

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Product version: 5.0RU3a

Document   version: 5.0RU3.1

Legal Notice

Symantec Corporation
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Technical Support

Symantec Technical Support maintains support centers globally. Technical Support's primary role is to respond to specific queries about product features and functionality. The Technical Support group also creates content for our online Knowledge Base. The Technical Support group works collaboratively with the other functional areas within Symantec to answer your questions in a timely fashion. For example, the Technical Support group works with Product Engineering and Symantec Security Response to provide alerting services and virus definition updates.

Symantec's maintenance offerings include the following:

- A range of support options that give you the flexibility to select the right amount of service for any size organization
- Telephone and Web-based support that provides rapid response and up-to-the-minute information
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For information about Symantec's Maintenance Programs, you can visit our Web site at the following URL:

www.symantec.com/techsupp/

Contacting Technical Support

Customers with a current maintenance agreement may access Technical Support information at the following URL:

www.symantec.com/techsupp/

Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

- Product release level
- Hardware information
- Available memory, disk space, and NIC information
- Operating system

- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
  - Error messages and log files
  - Troubleshooting that was performed before contacting Symantec
  - Recent software configuration changes and network changes

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www.symantec.com/business/support/assistance_care.jsp

Customer Service is available to assist with the following types of issues:

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- Latest information about product updates and upgrades
- Information about upgrade assurance and maintenance contracts
- Information about the Symantec Buying Programs
- Advice about Symantec's technical support options
- Nontechnical presales questions
- Issues that are related to CD-ROMs or manuals

Maintenance agreement resources

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Asia-Pacific and Japan	customercare_apac@symantec.com
Europe, Middle-East, and Africa	semea@symantec.com
North America and Latin America	supportsolutions@symantec.com

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To access more information about Enterprise services, please visit our Web site at the following URL:

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Contents

Product overview

This chapter includes the following topics:

- Veritas Storage Foundation product suites

- About Veritas Storage Foundation and High Availability products

Veritas Storage Foundation product suites

Veritas Storage Foundation and High Availability Solutions 5.0 Release Update 3 adds support for Linux for IBM Power on the following platforms:

- Red Hat Enterprise Linux 5 (RHEL 5) with Update 2 (2.6.18-92.el5 kernel) or later on ppc64

- SUSE Linux Enterprise Server 10 (SLES 10) with SP2 (2.6.16.60-0.21) on ppc64

The following 5.0 RU3 documentation is updated and available on the product disc for this 5.0 RU3 release:

- *Veritas Storage Foundation and High Availability Solutions Getting Started Guide*

- *Veritas Storage Foundation Installation Guide*

- *Veritas Storage Foundation Release Notes*

- *Veritas Cluster Server Installation Guide*

- *Veritas Cluster Server Release Notes*

The 5.0 RU3 documentation is also available online from the Symantec Veritas Storage Foundation 5.0 RU3 website:

http://www.symantec.com/business/support/overview.jsp?pid=15107

The following table lists the Symantec products and optionally licensed features available with each Veritas Storage Foundation product suite.

Table 1-1   Contents of Veritas Storage Foundation products

Storage Foundation version	Products and features
Storage Foundation Basic	Veritas File System
	Veritas Volume Manager
Storage Foundation Standard	Veritas File System
	Veritas Volume Manager
	Optionally licensed features:
	Veritas Volume Replicator
Storage Foundation Standard HA	Veritas File System
	Veritas Volume Manager
	Veritas Cluster Server
	Optionally licensed features:
	Veritas Volume Replicator
Storage Foundation Enterprise	Veritas File System
	Veritas Volume Manager
	Veritas Storage Checkpoint option
	Optionally licensed features:
	Veritas Volume Replicator
Storage Foundation Enterprise HA	Veritas File System
	Veritas Volume Manager
	Veritas Storage Checkpoint option
	Veritas Cluster Server
	Optionally licensed features:
	Veritas Volume Replicator
Storage Foundation for Oracle Standard	Veritas File System
	Veritas Volume Manager
	Veritas Quick I/O option
	Veritas Extension for Oracle Disk Manager option
	Optionally licensed features:
	Veritas Volume Replicator

Table 1-1   Contents of Veritas Storage Foundation products *(continued)*

Storage Foundation version	Products and features
Storage Foundation for Oracle Enterprise	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Extension for Oracle Disk Manager option Veritas Storage Checkpoint option Veritas Storage Mapping option Veritas Database Flashsnap Optionally licensed features: Veritas Volume Replicator
Storage Foundation for DB2 Standard	Veritas File System Veritas Volume Manager Veritas Quick I/O option Optionally licensed features: Veritas Volume Replicator
Storage Foundation for DB2 Enterprise	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Storage Checkpoint option Veritas Database Flashsnap Optionally licensed features: Veritas Volume Replicator

Table 1-1   Contents of Veritas Storage Foundation products *(continued)*

Storage Foundation version	Products and features
Storage Foundation for DB2 Enterprise HA	Veritas File System Veritas Volume Manager Veritas Cluster Server Veritas Quick I/O option Veritas Extension for Oracle Disk Manager option Veritas Storage Checkpoint option Veritas Storage Mapping option Veritas Database Flashsnap Optionally licensed features: Veritas Volume Replicator
Storage Foundation for Sybase Standard	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Extension for Oracle Disk Manager option Optionally licensed features: Veritas Volume Replicator
Storage Foundation for Sybase Enterprise	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Extension for Oracle Disk Manager option Veritas Storage Checkpoint option Optionally licensed features: Veritas Volume Replicator

Table 1-1   Contents of Veritas Storage Foundation products *(continued)*

Storage Foundation version	Products and features
Storage Foundation for Sybase Enterprise HA	Veritas File System Veritas Volume Manager Veritas Cluster Server Veritas Quick I/O option Veritas Extension for Oracle Disk Manager option Veritas Storage Checkpoint option Veritas Storage Mapping option Optionally licensed features: Veritas Volume Replicator
Storage Foundation Cluster File System	Veritas File System Veritas Volume Manager Veritas Storage Checkpoint option Veritas Storage Mapping option Optionally licensed features: Veritas Volume Replicator
Storage Foundation Cluster File System HA	Veritas File System Veritas Volume Manager Veritas Cluster Server Veritas Storage Checkpoint option Veritas Storage Mapping option Optionally licensed features: Veritas Volume Replicator

Table 1-1   Contents of Veritas Storage Foundation products *(continued)*

Storage Foundation version	Products and features
Storage Foundation Cluster File System for Oracle RAC	Veritas File System
	Veritas Volume Manager
	Veritas Cluster Server
	Veritas Quick I/O option
	Veritas Extension for Oracle Disk Manager option
	Veritas Storage Checkpoint option
	Veritas Storage Mapping option
	Optionally licensed features:
	Veritas Volume Replicator

About Veritas Storage Foundation and High Availability products

The following sections describe the products and component software available in this Veritas Storage Foundation and High Availability Solutions 5.0 RU3 release.

Component software

The following component software is in this Veritas Storage Foundation and High Availability Solutions release.

Symantec Product Authentication Service

The Symantec Product Authentication Service is a common Symantec feature. This feature validates the identities that are based on existing network operating system domains (such as NIS and NT) or private domains. The authentication service protects communication channels among Symantec application clients and services through message integrity and confidentiality services.

Before you install the authentication service, read the Storage Foundation and High Availability Solutions appendix in the *Symantec Product Authentication Service Installation Guide*.

Refer to the Veritas Storage Foundation 5.0 RU3 documentation set online:

http://www.symantec.com/business/support/overview.jsp?pid=15107

Before setting up the authentication service, read the product installation guide and release notes.

Storage Foundation Manager

Storage Foundation Manager (SFM) provides a centralized management console for Veritas Storage Foundation products. You can use SFM to monitor, visualize, and manage storage resources and generate reports about those resources. SFM simplifies and improves management of complex data center resources and reduces planned and unplanned downtime.

To download Storage Foundation Manager 2.0 and related documentation, please visit:

http://www.go.symantec.com/vom

See the *Veritas Storage Foundation Manager Installation Guide* for more information.

For more information about SFM, visit the following URL:

http://www.symantec.com/enterprise/sfms

Web Server for Storage Foundation Host Management

Web Server for Storage Foundation Host Management provides web-based management capabilities for Storage Foundation products. After installing the Web server, you can remotely administer Storage Foundation products without requiring a client-side installation.

Veritas Cluster Server

Before you install this product, complete the following tasks:

- Read the product release notes.

- Review the preliminary information.

- Follow the instructions in the *Veritas Cluster Server Installation Guide*.

The 5.0RU3 release media contains the following documentation:

```
<distribution>/cluster_server/docs/vcs_notes.pdf
<distribution>/cluster_server/docs/vcs_install.pdf
<distribution>/cluster_server/docs/vcs_users.pdf
<distribution>/cluster_server/docs/vcs_bundled_agents.pdf
<distribution>/cluster_server/docs/vcs_agent_dev.pdf
```

where *<distribution>* is the architecture directory such as, `ppc64`.

Installation overview

Cluster Server is included in all Veritas high availability (HA) products. If you have purchased a Veritas product suite that includes Cluster Server, it is installed and updated as part of that product suite. Do not install or update it as an individual component.

About this product

Veritas Cluster Server by Symantec (VCS) is an open systems clustering solution that provides the following benefits:

- Eliminates the downtime
- Facilitates the consolidation and the failover of servers
- Effectively manages a wide range of applications in heterogeneous environments

Veritas high availability agents

Before you install this product, review the preliminary information and follow the instructions in the relevant agent installation and configuration guide.

The high availability agents are in the `cluster_server` directory. You cannot install or configure agents using the product installer. Before you start the installation, read the relevant agent installation and configuration guide.

These documents are located at the following directory in the release media.

For Linux:

```
<distribution>/cluster_server_agents/db2_agent/docs
/vcs_db2_install.pdf
<distribution>/cluster_server_agents/oracle_agent/docs
/vcs_oracle_install.pdf
<distribution>/cluster_server_agents/sybase_agent/docs
/vcs_sybase_install.pdf
```

where *<distribution>* is the architecture directory such as, `ppc64`.

Installation overview

Agents are typically installed as part of a Storage Foundation product.

About this product

Veritas agents provide high availability for specific resources and applications. Each agent manages resources of a particular type. For example, the Oracle agent manages Oracle databases. Typically, agents start, stop, and monitor resources and report state changes.

In addition to the database agents that are provided in this release, other agents are available through an independent Symantec offer. The independent Symantec offer is called the Veritas Cluster Server Agent Pack. The agent pack includes the currently shipping agents and is re-released quarterly to add the new agents that are now under development.

Contact your Symantec sales representative for the following details:

■ The application agents and the replication agents that are included in the agent pack

■ Agents under development

■ Agents available through Symantec consulting services

Supported high availability agents

The following high availability agents are supported.

For Linux:

Table 1-2 lists the supported software for the version 5.0 high availability agents for DB2, Oracle, and Sybase.

Table 1-2   Supported high availability agents

Agent	Agent version	VCS version	Application	Application version	OS version
DB2 Enterprise Server Edition 9.5 and 9.7	5.0 RU3	5.0 and later	DB2 Enterprise Server Edition	9.5 and 9.7	RHEL5, SLES 10
Oracle 10g R2	5.0 RU3	5.0 and later	Oracle Database Enterprise Edition	10g R2	RHEL5, SLES 10
Sybase	5.0 RU3	5.0 and later	Sybase Adaptive Server Enterprise Version 15	15	RHEL5, SLES 10

Before configuring a high availability agent with VCS, verify that you have the latest agent version.

See the *Veritas Cluster Server Release Notes* for information about the VCS agents for DB2, Oracle, and Sybase and the software versions that the agents support.

For a complete list of the Veritas high availability agents and the software that the agents support, see the Veritas Cluster Server Agents Support Matrix at:

http://www.symantec.com/business/cluster-server

Veritas Volume Replicator

Before you install this product, complete the following tasks:

- Read the product release notes.

- Review the preliminary information.

- Follow the instructions in the *Storage Foundation Installation Guide*.

Refer to the Veritas Storage Foundation 5.0 RU3 documentation set online:

http://www.symantec.com/business/support/overview.jsp?pid=15107

The 5.0RU3 release media contains the following documentation:

```
<distribution>/storage_foundation/docs
/sf_notes.pdf
<distribution>/storage_foundation/getting_started.pdf
distribution>/storage_foundation/docs/sf_install.pdf
```

where <*distribution*> is the architecture directory such as, `ppc64`.

About this product

Veritas Volume Replicator by Symantec is an optional, separately-licensable feature of Veritas Volume Manager. Volume Replicator is a fully integrated component of Veritas Volume Manager. This component replicates data to remote locations over any standard IP network to provide continuous data availability.

The Volume Replicator option is available with Veritas Storage Foundation Standard and Enterprise products.

Veritas Storage Foundation

Before you install this product, complete the following tasks:

- Read the product release notes.

- Review the preliminary information.

- Follow the instructions in the *Storage Foundation Installation Guide*.

Refer to the Veritas Storage Foundation 5.0 RU3 documentation set online:

http://www.symantec.com/business/support/overview.jsp?pid=15107

The 5.0RU3 release media contains the following documentation:

```
<distribution>/storage_foundation/docs
/sf_notes.pdf
```

```
<distribution>/storage_foundation/getting_started.pdf
<distribution>/storage_foundation/docs/sf_install.pdf
```

where *<distribution>* is the architecture directory such as, `ppc64`.

For HA installations, also read the following documents.

```
<distribution>/cluster_server/docs
/vcsone_getting_started.pdf
```

where *<distribution>* is the architecture directory such as, `ppc64`

Veritas Storage Foundation Basic

Veritas Storage Foundation Basic by Symantec (SF Basic) is a special product that is available on a separate Storage Foundation Basic disc. It is also available by download from the Symantec Web site. SF Basic is not part of the Storage Foundation and High Availability Solutions product suite. For complete information on ordering this product, licensing, and technical support, visit the following URL:

www.symantec.com/enterprise/sfbasic

Use SF Basic with Veritas Storage Foundation Management Server to set up a centrally managed host to monitor, visualize, and manage storage resources across multiple installations. SF Management Server is a separately available product. For information on ordering SF Management Server, visit the following Symantec Web site:

www.symantec.com/enterprise/sfms

About this product

Storage Foundation Basic supports all Storage Foundation Standard features, however, there are deployment, licensing, and technical support limitations.

Limited deployment

Storage Foundation Basic has a limited set of configurations.

SF Basic deployment is limited to the following configurations:

■ Maximum four VxVM volumes per physical server (excludes the system volumes that are required for starting root disks)

■ Maximum four VxFS file systems per physical server (excludes root file systems)

■ Maximum server capacity of two CPU sockets

Licensing

Storage Foundation Basic includes a limited-use license. Customers must comply with the terms stated in the End-User License Agreement.

Technical support

Technical support is self-service only, available from the Veritas Support Web site. You can purchase additional support corresponding to the terms of the Storage Foundation Basic license.

To access the self-service knowledge base, go to the following location:

http://entsupport.symantec.com

When contacting Support with questions about Storage Foundation Basic, be prepared to provide your product license key. You can determine your currently installed license by running the Veritas license report utility as shown in the following example:

```
# vxlicrep
....
License Key     = WXYZ-9999-WXY7-WXYZ-WXYZ-WX3
Product Name    = Veritas Storage Foundation Basic
```

Installation overview

The Veritas Storage Foundation software is on the Veritas Storage Foundation Basic disc. You cannot install Storage Foundation Basic if another Veritas Storage Foundation product is installed unless that product is first removed from the system.

Before you install this product, complete the following tasks:

■ Read the product release notes.

■ Review the preliminary information.

■ Follow the instructions in the release documents.

```
<distribution>/storage_foundation/docs
/sf_notes.pdf

<distribution>/storage_foundation/docs
/getting_started.pdf
<distribution>/storage_foundation/docs/sf_install.pdf
```

where *<distribution>* is the architecture directory such as, `ppc64`.

Storage Foundation Cluster File System

Before you install this product, complete the following tasks:

- Read the product release notes.

- Review the preliminary information.

- Follow the instructions in the *Storage Foundation Installation Guide*.

The 5.0RU3 release media contains the following documentation:

```
<distribution>/storage_foundation/docs/sf_notes.pdf
<distribution>/storage_foundation/getting_started.pdf
<distribution>/cluster_server/docs/vcs_notes.pdf
```

For HA installations, also read the following documents:

```
<distribution>
/cluster_server/docs/vcs_users.pdf
<distribution>/cluster_server/docs/vcs_bundled_agents.pdf
<distribution>/cluster_server/docs/vcs_agent_dev.pdf
```

where *<distribution>* is the architecture directory such as, `ppc64`.

About Veritas Storage Foundation Cluster File System

Veritas Storage Foundation Cluster File System by Symantec extends Veritas File System and Veritas Volume Manager to support shared data in a storage area network (SAN) environment. Using Storage Foundation Cluster File System, multiple servers can concurrently access shared storage and files transparently to applications.

Storage Foundation Cluster File System HA adds the failover functionality of Veritas Cluster Server. This functionality can protect everything from a single critical database instance to very large multiple-application clusters in networked environments. Veritas Storage Foundation Cluster File System also provides increased automation and intelligent management of availability and performance.

The Veritas Volume Replicator feature, which replicates data to remote locations over an IP network, can also be licensed with this product.

How the discs are organized

This chapter includes the following topics:

- Contents of the software discs in the media kit
- Disc directory structure

Contents of the software discs in the media kit

The Veritas Storage Foundation and High Availability Solutions media kit includes multiple software discs. The contents of each disc is shown on the disc label.

Find the location of the Getting Started Guide and Release Notes for each product in the corresponding product sections. Read the Getting Started guide and release notes for your product before you begin an installation procedure.

You can install only the Symantec software products for which you have purchased a license. Other products are included on the enclosed software discs but are not available.

Contents of the product disc

The following products are on the product disc:

- Veritas Cluster Server
- Veritas File System
- Veritas Volume Manager
- Veritas Volume Replicator
- Veritas Storage Foundation
- Veritas Storage Foundation Cluster File System
- Veritas Storage Foundation Cluster File System for Oracle RAC

■ Symantec Product Authentication Service

Disc directory structure

Table 2-1, Table 2-2, and Table 2-3 list the directory and contents of the Veritas Storage Foundation and High Availability Solutions 5.0RU3 discs.

Table 2-1   Storage Foundation and High Availability Solutions Disc 1 directories

Directory name	Contents—Red Hat Enterprise 5.0
`rhel5_ppc64`	For Linux for IBM Power systems
rhel5_ppc subdirectory:	
`authentication_service`	Symantec Authentication Services packages and documentation
`cluster_management_console`	Veritas Cluster Server Centralized Management Console packages and scripts
`cluster_server`	Veritas Cluster Server packages, scripts, and documentation
`cluster_server_agents`	Veritas Cluster Server high availability agents for DB2, Oracle, and Sybase packages, scripts, and documentation
`installer`	Product installation script
`perl`	Perl language binaries and library functions
`storage_foundation`	Veritas Storage Foundation, Veritas File System, and Veritas Volume Manager packages, scripts, and documentation
`storage_foundation_for_db2`	Veritas Storage Foundation for DB2 packages, scripts, and documentation
`storage_foundation_for_oracle`	Veritas Storage Foundation for Oracle packages, scripts, and documentation
`storage_foundation_cluster_file_system`	Veritas Storage Foundation Cluster File System packages, scripts, and documentation
`volume_manager`	Veritas Volume Manager packages and scripts
`volume_replicator`	Veritas Volume Replicator packages, scripts, and documentation

Table 2-1 Storage Foundation and High Availability Solutions Disc 1 directories *(continued)*

Directory name	Contents—Red Hat Enterprise 5.0
windows	Volume Replicator advisor Windows clients, VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer

Table 2-2 Storage Foundation and High Availability Solutions Disc 2 directories

Directory name	Contents—SUSE Linux Enterprise Server 10
sles10_ppc64	For Linux for IBM Power systems
sles10_ppc64 subdirectory:	
authentication_service	Symantec Authentication Services packages and documentation
cluster_management_console	Veritas Cluster Server Centralized Management Console packages and scripts
cluster_server	Veritas Cluster Server packages, scripts, and documentation
cluster_server_agents	Veritas Cluster Server high availability agents for DB2, Oracle, and Sybase packages, scripts, and documentation
installer	Product installation script
perl	Perl language binaries and library functions
storage_foundation	Veritas Storage Foundation, Veritas File System, and Veritas Volume Manager packages, scripts, and documentation
storage_foundation_for_db2	Veritas Storage Foundation for DB2 packages, scripts, and documentation
storage_foundation_for_sybase	Veritas Storage Foundation for Sybase packages, scripts, and documentation
storage_foundation_for_oracle	Veritas Storage Foundation for Oracle packages, scripts, and documentation
storage_foundation_cluster_file_system	Veritas Storage Foundation Cluster File System packages, scripts, and documentation

Table 2-2 Storage Foundation and High Availability Solutions Disc 2 directories *(continued)*

Directory name	Contents—SUSE Linux Enterprise Server 10
volume_manager	Veritas Volume Manager packages and scripts
volume_replicator	Veritas Volume Replicator packages, scripts, and documentation
windows	Volume Replicator advisor Windows clients, VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer

Table 2-3 Storage Foundation and High Availability Solutions Disc 3 directories

Directory name	Contents—Storage Foundation Basic
rhel5_ppc64	For ppc64 systems
sles10_ppc64	For ppc64 systems

Installation overview

This chapter includes the following topics:

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Documentation references, before you install

Before you install this product, become familiar with the following 5.0RU3 documentation:

- Review the product release notes and getting started guide

- Review the preliminary information

- Follow the instructions in the *Storage Foundation Installation Guide*.
  The 5.0 RU3 documentation is available on the product disk as well as the Symantec website at:
  http://www.symantec.com/business/support/overview.jsp?pid=15107

The 5.0RU3 release media contains the following documents:

```
<distribution>/storage_foundation/docs
/sf_notes.pdf
<distribution>/storage_foundation/docs/sf_install.pdf
<distribution>/storage_foundation/getting_started.pdf
```

where **<*distribution*>** is the architecture directory, such as `ppc64`.

Performing preinstallation checks and configuration

This installation guide is designed for system administrators who already have a knowledge of basic UNIX system and network administration. Basic knowledge includes commands such as `tar`, `mkdir`, and simple shell scripting. Also required is basic familiarity with the specific platform and operating system where Storage Foundation is installed.

Note: Upgrades are not supported in this RU3 release.

Only users with superuser privileges can install and initialize Storage Foundation.

Review the preinstallation requirements and system requirements. Install the operating system, before installing the Veritas software.

The product documentation is available on the web at the following location:

http://www.symantec.com/business/support/index.jsp

To produce a report of the preinstallation requirements, run the installer with the `precheck` option.

```
# ./installer -precheck
```

If patches to the Linux operating system are required, the patches should be applied prior to installing the Veritas products. Patches may be required to resolve Linux kernel, product performance, or other issues.

The system should be in a quiescent state before adding patches.

See the product *Release Notes* for last minute information on recommended patches.

For remote installation, or installation on multiple systems, set up remsh or ssh.

Mount the Veritas software disc, or download and uncompress the Storage Foundation software.

Mounting a software disc

Veritas software is provided on a DVD format disc. If you have the media kit, then get the software disc from the media kit.

To mount the software disc

1   Log in as superuser.

2   Place the Veritas software disc into a DVD drive connected to your system.

   Note: For platforms that do not have access to the cdrom, copy the software packages to virtual machines using ftp.

3   Insert the disc and type the following command:

   ```
   # mount -o ro /dev/cdrom /mnt/cdrom
   ```

4   Change to the appropriate distribution directory and product subdirectory to view the product release notes and installation guides, or install the products.

If you download a stand-alone Veritas product, the single product download files do not contain the general product installer. Use the installation script for the specific product to install the product.

To download the software

1   Verify that you have enough space on your filesystem to store the downloaded software.

   If you plan to install the software on the same system, make sure that you also have enough space for the installed software.

2   To see the space available, you can use the df command with the name of the local file system where you intend to download the software.

   ```
   # df -k filesystem
   ```

   Caution: When you select a location to download files, do not select a directory that contains Veritas products from a previous release or maintenance pack. You must download the Veritas 5.0 software and the Veritas 5.0RU3 software into separate directories.

3   Download the software, specifying the file system with sufficient space for the file.

Copying and unzipping the downloaded release

Before you can install the release, you must unzip the downloaded file, and extract the installation and products from the downloaded file.

To unzip the release

1   Create a new directory on a file system with sufficient space to store the installation software after the files are uncompressed. Let *parent_directory* be the name of the new directory to store the files for this release.

This directory must be clean, with no files present from previous installations or versions of any products.

```
# mkdir /parent_directory/install
```

2   Copy the compressed files from your download area to the installation directory as needed. This copy might be necessary if the area into which releases are downloaded is not on the system or area used for installations.

3   Go to the installation directory and unzip the compressed files.

```
# cd /parent_directory/install
# gunzip *.gz
```

To untar the downloaded file

◆   Untar the downloaded file to your new installation directory.

```
# cd /parent_directory/install
# tar xf filename1.tar
# tar xf filename2.tar
# tar xf filename3.tar
  .
  .
```

Installing and configuring Storage Foundation using the common product installer

The Veritas product installer is the recommended method to license and install Storage Foundation.

The following sample procedure is based on the installation of Storage Foundation on a single system.

The Veritas 5.0 RU3 release operates on the following operating system and hardware:

- Red Hat Enterprise Linux 5 (RHEL 5) with Update 2 (2.6.18-92.el5) or later on ppc64
- SuSE Linux Enterprise Server 10 (SLES 10) with SP2 (2.6.16.60-0.21-ppc64 kernels) on ppc64

To install Storage Foundation

1   To install on multiple systems, set up the systems so that commands between systems execute without prompting for passwords or confirmations.

2   Load and mount the software disc.

    See "Mounting a software disc" on page 29.

3   Move to the top-level directory on the disc.

4   From this directory, type the following command to install on the local system only. Also use this command to install on remote systems using the secure shell (ssh) utilities:

    # **./installer**

    If you use the remote shell utilities to install on remote systems, additionally specify the -rsh option:

    # **./installer -rsh**

    The sample installation assumes that ssh is used.

5   Enter I to install and press Return.

6   When the list of available products is displayed, select Veritas Storage Foundation, enter the corresponding number, and press Return.

7   You are prompted to enter the system names (in the following example, "host1") on which the software is to be installed. Enter the system name or names and then press Return.

    ```
    Enter the system names separated by spaces on which to
    install SF: host1
    ```

8 Enter the product license information.

Each system requires a product license before installation. License keys for additional product features should also be added at this time.

```
Enter a SF license key for host1:
XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-X

XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-X successfully registered on
host1
SF license registered on host1
```

9 You are prompted to enter additional license information, until all licenses for all systems have been entered. Then reply that you have no additional licenses to enter.

```
Do you want to enter another license key for host1?
[y,n,q] (n) n
```

10 You can choose to install required RPMs or all RPMs. Optional RPMs include man pages, for example.

Each option displays the disk space that is required for installation. Select which option you want to install and press Return.

For example, you should see output similar to the following:

```
SF can be installed without optional rpms to conserve
disk space.

1) Install required Veritas Storage Foundation rpms -
   491 MB required
2) Install all Veritas Storage Foundation rpms -
   625 MB required

Select the rpms to be installed on all systems?
[1-2,q,?] (2) 2
```

11 Configure Storage Foundation when prompted.

```
Are you ready to configure SF Basic? [y,n,q] (y) y
```

Note: Symantec recommends that you do not configure the software during installation. Configuration of software should be done after the installation using the Common Product Installer script `-configure` option available from the `/opt` directory. For example: `opt/VRTS/install/installsf -configure`

---

12 You have the option of specifying the default name of a disk group. If you specify a name, it is used for Veritas Volume Manager commands when a disk group is not specified.

Enter **n** if you do not want to specify the name of the default disk group at this time. You can set the name of the default disk group after installation.

If you specify the name of a default disk group, this step does not create the disk group. After installation, you can use the `vxdiskadm` command to create the disk group.

```
Do you want to set up a default disk group for each
system? [y,n,q,?] (y) y
```

13 If you responded `y`, then enter the information for the default disk group name.

```
Specify a default disk group name for system host1. [?] dg001
```

14 You are prompted to confirm the default disk group.

Note: If `nodg` is displayed, then the host will be configured to have no default disk group.

```
Is this correct? [y,n,q] (y) y
```

15 Verify the fully qualified hostname of the systems.

```
Is the fully qualified hostname of system
 "host1" = "host1.domain_name"? [y,n,q] (y) y
```

16 Enabling Veritas Storage Foundation Management Server management simplifies and improves management of complex data center resources, reducing planned and unplanned down time.

To enable centralized management using Storage Foundation Manager, download Veritas Storage Foundation Management Server from:

http:// www.go.symantec.com/vom

Press **Enter** to continue.

See the *Veritas Storage Foundation Manager Installation Guide* for more information.

17 The installation and configuration complete automatically, and the processes are started.

Check the log file, if needed, to confirm the installation and configuration.

```
Installation log files, summary file, and response file
are saved at:

        /opt/VRTS/install/logs/installer-****
```

Note: If you choose not to use the Veritas product installer, you will need to edit allow_unsupported_modules in /etc/modprobe.d/unsupported-modules. Please refer to Novell support document 7002793.

Installing SFCFS for Oracle RAC

The following procedure describes the installation of an SFCFS for Oracle RAC cluster with two nodes: 'galaxy' and 'nebula'.

To install on multiple systems, set up the systems such that commands between systems execute without prompting for password or confirmation.

The product installer 'installsfcfsrac' is the recommended program to license and install SFCFS for Oracle RAC.

Note: Default responses are enclosed in parentheses. Press 'Return' to accept default values.

To install SFCFS for Oracle RAC

1   Insert the product disc with the SFCFS for Oracle RAC software into a drive connected to the system.

2   Navigate to the directory containing the installation program.

```
# cd /dvd_mnt/distribution_arch/\
storage_foundation_cluster_file_system_for_oracle_rac/
```

3   Depending on the installation program you use, type the appropriate command:

Using installer program:

```
# ./installer galaxy nebula
```

Choose "I" for "Install/Upgrade a Product" and enter the number displayed against the product name. Press Return.

Using installsfcfsrac program:

```
# cd storage_foundation_cluster_file_system_for_oracle_rac
# ./installsfcfsrac galaxy nebula
```

4   During the initial system check, the installer verifies that communication between systems has been set up.

If the installer hangs or asks for a password, stop the installer and set up SSH or RSH communications appropriately. Then, run the installer again.

5   Enter the product license information.

Each system requires a product license before installation. License keys for additional product features should also be added at this time.

```
Enter a SFCFSRAC license key for galaxy?
```

6   Enter y to accept another license key, otherwise enter n to proceed.

```
Do you want to enter another license key for nebula?
[y,n,q] (n) n
```

The installer displays the option to install RPMs.

7 Enter the appropriate option to install the RPMs. Based on your requirement, you may install all the RPMs or select the RPMs you want to install.

```
Select the RPMs to be installed on all systems?
[1-2,q,?] (2) 2
```

The installer displays the list of RPMs that will be installed. Review the list of RPMs.

8 Enter n to configure SFCFS for Oracle RAC by running the installsfcfsrac script with the -configure option.

Note: Symantec recommends that you do not configure the software during installation. Configuration of software should be done after the installation using the -configure option available in the /opt directory. For example:

/opt/VRTS/install/installsf -configure

```
Are you ready to configure SFCFSRAC? [y,n,q] (y) n
```

For instructions:

On completion of installation of the selected packages, the installation logs are created. The installation logs can be referred in the event of any issues encountered during the installation.

Configuring SFCFS for Oracle RAC

After installation, configure the product by running the common product installation program installer or the product-specific installation program installsfcfsrac with the -configure option.

No configuration changes are made to the systems until all configuration questions are completed and confirmed.

To configure SFCFS for Oracle RAC

1 Log into the system as the root user and change to the directory containing the installation program 'installsfcfsrac'.

```
# cd /opt/VRTS/install
```

2 Run the following command to configure SFCFS for Oracle RAC:

- If you are using SSH:

```
# ./installsfcfsrac -configure
```

- If you are using RSH:

```
# ./installsfcfsrac -rsh -configure
```

3 Enter the names of the systems on which you want to configure SFCFS for Oracle RAC. Press Return.

```
Enter the system names separated by spaces on which to
configure SFCFSRAC: galaxy nebula
```

During the initial system check, the installer checks that communication between systems is set up appropriately.

The installer requires that SSH commands used between systems execute without prompting for passwords or confirmations. If the installer hangs or asks for a password, stop the installer and set up SSH or RSH as required. Then, run the installer again.

4 Enter additional licenses, if required.

```
Checking system licensing
SFCFSRAC license registered on galaxy
Do you want to enter another license key for galaxy? [y,n,q] (n) n
```

If there are any SFCFS for Oracle RAC processes running, these processes are stopped. Enter Return to continue.

5 Press Return to continue.

All systems are configured to create one cluster.

Enter the unique cluster name and Cluster ID number.

```
Enter the unique cluster name: [?] cluster2
Enter the unique Cluster ID number between 0-65535: [b,?] 76
```

The installer discovers the NICs available on the first system and reports them.

```
Discovering NICs on host1 ... discovered eth0 eth1 eth2 eth3
```

6 Enter private heartbeat NIC information for each host.

```
Enter the NIC for the first private heartbeat link
on host1: [b,?] eth1
Would you like to configure a second private heartbeat
link? [y,n,q,b,?] (y) y
Enter the NIC for the second private heartbeat link on
host1: [b,?] eth2
Would you like to configure a third private heartbeat
link? [y,n,q,b,?] (n) n
Do you want to configure an additional low priority
heartbeat link? [y,n,q,b,?] (n) n
Are you using the same NICs for private heartbeat links
on all systems? [y,n,q,b,?] (y) y
```

Warning: When you answer y, be sure that the same NICs are available on each system; the installer may not verify this.

Notice that in this example, eth0 is not selected for use as a private heartbeat NIC because it is already in use as the public network interface.

7 Review the information and enter y to confirm.

```
Is this information correct? [y,n,q]
```

If the information is not correct, enter n. The installer prompts you to enter the information again.

8 If you want to configure the product to use Veritas Security Services, enter y, otherwise enter n.

Warning: Before configuring a cluster to operate using Veritas Security Services, another system must already have Veritas Security Services installed and must be operating as a Root Broker. For more information on configuring a VxSS Root Broker, see the *Veritas Cluster Server Installation Guide*.

```
Would you like to configure SFCFSRAC to use
Veritas Security Services? [y,n,q] (n) n
```

9 Enter y to set the username and password, otherwise enter n.

```
Do you want to set the username and/or password for the Admin user
(default username = 'admin', password= 'password')? [y,n,q] (n)
```

Note: To add users (Administrator, Operator, or Guest), you need the user
name, password, and user privileges.

For more information, see the *Veritas Cluster Server Installation guide.*

10 Enter y if you want to add another user, otherwise enter n.

```
Do you want to add another user to the cluster? [y,n,q] (y)
```

11 Enter y if the information is correct, otherwise enter n.

```
Is this information correct? [y,n,q] (y)
```

12 Enter y to configure SMTP notification. If you do not want to configure SMTP
notification, enter n.

```
Do you want to configure SMTP notification? [y,n,q] (y) y
Active NIC devices discovered on galaxy: eth0
Enter the NIC for the SF Notifier to use on galaxy: [b,?] (eth0) eth0
Is eth0 to be the public NIC used by all systems [y,n,q,b,?] (y) y

Enter the domain-based hostname of the SMTP server
(example: smtp.yourcompany.com): [b,?] smtp.mycompany.com
Enter the full email address of the SNMP recipient
(example: user@yourcompany.com): [b,?] user@mycompany.com
Enter the minimum severity of events for which mail should be sent
to user@mycompany.com [I=Information, W=Warning, E=Error,
S=SevereError]: [b,?] E
```

Add other SMTP recipients, or respond **n** to continue.

Verify and confirm that the information is correct, by entering **y**, or enter it
again.

13 Enter y to configure SNMP notification. If you do not want to configure SNMP notification, enter n.

```
Do you want to configure SNMP notification? [y,n,q] (y) y
Active NIC devices discovered on galaxy: eth0
Enter the NIC for the SF Notifier to use on galaxy: [b,?] (eth0) eth0
Is eth0 to be the public NIC used by all systems [y,n,q,b,?] (y) y
Enter the SNMP trap daemon port: [b,?] (162) 162
Enter the SNMP console system name: [b,?] galaxy
Enter the minimum severity of events for which SNMP traps should
be sent to host1 [I=Information, W=Warning, E=Error,
S=SevereError]: [b,?] E
Would you like to add another SNMP console? [y,n,q,b] (n) n
```

14 Enter n if you want to use the operating system device naming scheme.

Enter y if you want to use enclosure-based naming scheme. The enclosure-based naming scheme is a feature of Veritas Volume Manager. You can reference disks using a symbolic name that is more meaningful than the operating system device name.

For more information, see the *Veritas Volume Manager Administrator's Guide*.

```
Do you want to set up the enclosure-based naming scheme?
[y,n,q,?] (n) n
```

15 Enter y if you want to specify the name of the default disk group at this time.

This step does not create the disk group. The default name specified is assumed by Veritas Volume Manager if a disk group is not specified while running commands. After installation, use the vxdiskadm command to create the disk group.

```
Do you want to set up a default disk group for each system?
[y,n,q,?] (y) y
```

Enter n if you do not want to specify the name of the default disk group at this time. You can set the name of the default disk group after installation by running the vxdctl defaultdg diskgroup command on a system.

For more information, see the vxdctl (1M) manual page.

16 If you responded $_Y$ in the previous step, enter the name of the default disk group.

```
Will you specify one disk group name for all eligible
systems? [y,n,q,?] (y) y
Specify a default disk group name for all systems. [?] diskgroup001
```

17 Validate the default disk group information, and press Return.

18 Verify the fully qualified hostname of the systems.

```
Is the fully qualified hostname of system
 "host1" = "host1.domain_name"? [y,n,q] (y) y
```

19 Enabling Veritas Storage Foundation Management Server management simplifies and improves management of complex data center resources, reducing planned and unplanned down time.

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http:// www.go.symantec.com/vom

Press **Enter** to continue.

See the *Veritas Storage Foundation Manager Installation Guide* for more information.

20 The installation and configuration complete automatically, and the processes are started.

Check the log file, if needed, to confirm the installation and configuration.

```
Installation log files, summary file, and response file
are saved at:

        /opt/VRTS/install/logs/installer-****
```

Where to find more information

This chapter includes the following topics:

■ Documentation

■ Service and support

Documentation

Veritas Storage Foundation and High Availability Solutions 5.0 Release Update 3 adds support for Red Hat Enterprise Linux 5 with Update 2 and SuSE Linux Enterprise Server 10 (SLES 10) with SP2 on the Linux for IBM Power platform.

The following documentation is updated and available on the product disc for this 5.0 RU3 release:

■ *Veritas Storage Foundation and High Availability Solutions Getting Started Guide*

■ *Veritas Storage Foundation Release Notes*

■ *Veritas Storage Foundation Installation Guide*

■ *Veritas Cluster Server Installation Guide*

■ *Veritas Cluster Server Release Notes*

Refer to the Veritas Storage Foundation 5.0 RU3 documentation set online:

http://www.symantec.com/business/support/overview.jsp?pid=15107

Veritas documents are in Adobe Portable Document Format (PDF) on the product discs or downloaded software.

Service and support

To access the self-service knowledge base, go to the following URL:

http://entsupport.symantec.com