

Veritas Storage Foundation™ and High Availability Solutions Getting Started Guide

Linux

5.0 Maintenance Pack 3



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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
- Upgrade assurance that delivers automatic software upgrade protection
- Global support that is available 24 hours a day, 7 days a week
- Advanced features, including Account Management Services

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/business/support/index.jsp

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

Licensing and registration

If your Symantec product requires registration or a license key, access our technical support Web page at the following URL:

www.symantec.com/techsupp/

Customer service

Customer service information is available at the following URL:

www.symantec.com/techsupp/

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

- Questions regarding product licensing or serialization
- Product registration updates, such as address or name changes
- General product information (features, language availability, local dealers)
- 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

If you want to contact Symantec regarding an existing maintenance agreement, please contact the maintenance agreement administration team for your region as follows:

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

Additional enterprise services

Symantec offers a comprehensive set of services that allow you to maximize your investment in Symantec products and to develop your knowledge, expertise, and global insight, which enable you to manage your business risks proactively.

Enterprise services that are available include the following:

Symantec Early Warning Solutions	These solutions provide early warning of cyber attacks, comprehensive threat analysis, and countermeasures to prevent attacks before they occur.
Managed Security Services	These services remove the burden of managing and monitoring security devices and events, ensuring rapid response to real threats.
Consulting Services	Symantec Consulting Services provide on-site technical expertise from Symantec and its trusted partners. Symantec Consulting Services offer a variety of prepackaged and customizable options that include assessment, design, implementation, monitoring, and management capabilities. Each is focused on establishing and maintaining the integrity and availability of your IT resources.
Educational Services	Educational Services provide a full array of technical training, security education, security certification, and awareness communication programs.

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

www.symantec.com

Select your country or language from the site index.

Contents

Technical Support	4	
Chapter 1	Product overview	9
	Veritas Storage Foundation product suites	9
	About Veritas Storage Foundation and High Availability	
	products	13
	Component software	13
	Veritas Cluster Server	15
	Veritas high availability agents	15
	Veritas Volume Replicator	17
	Veritas Storage Foundation	18
	Veritas Storage Foundation Basic	19
	Veritas Storage Foundation for DB2	21
	Veritas Storage Foundation for Oracle	22
	Veritas Storage Foundation for Sybase	22
	Storage Foundation Cluster File System	23
	Storage Foundation Cluster File System for Oracle RAC	24
Chapter 2	How the discs are organized	25
	Contents of the software discs in the media kit	25
	Contents of the product disc	25
	Contents of the documentation disc	26
	Contents of the maintenance pack disc	26
	Disc directory structure	26
Chapter 3	Installation overview	35
	Documentation references, before you install	35
	Performing preinstallation checks and configuration	35
	Configuring secure shell (ssh) or remote shell before installing	
	products	36
	Configuring and enabling ssh	37
	Restarting ssh	41
	Enabling rsh for Linux	41
	Mounting a software disc	43

	Downloading the Storage Foundation and High Availability software	43
	Copying and unzipping the downloaded release	44
	Installing and configuring Storage Foundation using the common product installer	44
Chapter 4	Where to find more information	49
	Documentation	49
	Service and support	49

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

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 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 Standard HA	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Extension for Oracle Disk Manager option Veritas Cluster Server Optionally licensed features: Veritas Volume Replicator
Storage Foundation Enterprise	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Storage Checkpoint option Veritas Extension for Oracle Disk Manager option Optionally licensed features: Veritas Volume Replicator
Storage Foundation Enterprise HA	Veritas File System Veritas Volume Manager Veritas Quick I/O option Veritas Storage Checkpoint option Veritas Extension for Oracle Disk Manager 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 Oracle 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 DB2 Standard	Veritas File System Veritas Volume Manager Veritas Quick I/O 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 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
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 Cluster File System	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 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 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 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 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*.

This document is located at the following directory in the release media.

```
<distribution>/authentication_service/docs/vxat_install.pdf
```

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

Before you select this method of setting up the authentication service, also read the product installation guide and release notes.

Storage Foundation Management Server

Storage Foundation Management Server (SF Management Server) provides a centralized management console for Veritas Storage Foundation products. You can use SF Management Server to monitor, visualize, and manage storage resources and generate reports about those resources. You are prompted to set up an optional SF Management Server managed host during every Storage Foundation product installation. SF Management Server is not available on the Storage Foundation and High Availability Solutions release and must be obtained separately. For information on ordering SF Management Server, visit the following URL:

www.symantec.com/enterprise/sfms

Cluster Management Console

The Veritas Cluster Server Cluster Management Console enables administration and analysis of all clusters in an enterprise from a single console. The console uses any supported Web browser. Review the following guide for detailed installation information.

This document is located at the following directory in the release media.

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

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

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 *Storage Foundation Installation Guide*.

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

```
<distribution>/cluster_server/docs/vcs_notes.pdf  
<distribution>/cluster_server/docs/vcs_install.pdf
```

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

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_agents` 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.

```
<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, `rhel4_x86_64`.

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 VCS agents

Veritas agents support a specified application version on if the application vendor supports that version on .

[Table 1-2](#) lists the agents for enterprise applications and the software that the agents support.

Table 1-2 Supported software for the VCS agents for enterprise applications

Agent	Agent version	VCS version	Application	Application version	version
DB2	5.0 MP3	5.0 and later	DB2 Enterprise Server Edition	8.1, 8.2 9.1, 9.5	RHEL4, RHEL5 SLES9, SLES10 OEL4, OEL5
Oracle	5.2	5.0 and later	Oracle	9i 10g R1 10g R2 11g R1	RHEL4, RHEL5 SLES9, SLES10 OEL4, OEL5
Sybase	5.0 MP3	5.0 and later	Sybase Adaptive Server Enterprise	12.5.x, 15	RHEL4, RHEL5 SLES9, SLES10 OEL4, OEL5

Note: The VCS agent for Oracle version 5.2 with VCS 5.0 MP3 provides intentional offline functionality for the Oracle agent. If you installed the 5.2 agent with an earlier version of VCS, you must disable the intentional offline functionality of the Oracle agent.

See the Installation and Configuration Guide for the agent for more details.

For a list of the VCS application agents and the software that the agents support, see the [Veritas Cluster Server Agents Support Matrix](#) at Symantec website.

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*.

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

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

where *<distribution>* is the architecture directory such as, *rhel14_x86_64*.

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*.

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

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

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

For HA installations, also read the following documents.

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

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

where *<distribution>* is the architecture directory such as, `rhe14_x86_64`.

About this product

Veritas Storage Foundation by Symantec includes Veritas File System by Symantec (VxFS) and Veritas Volume Manager by Symantec (VxVM) with various feature levels.

Veritas File System is a high performance journaling file system that provides easy management and quick-recovery for applications. Veritas File System delivers scalable performance, continuous availability, increased I/O throughput, and structural integrity.

Veritas Volume Manager removes the physical limitations of disk storage. You can configure, share, manage, and optimize storage I/O performance online without interrupting data availability. Veritas Volume Manager also provides easy-to-use, online storage management tools to reduce downtime.

You add high availability functionality to Storage Foundation HA by installing Veritas Cluster Server software.

VxFS and VxVM are included in all Veritas Storage Foundation products. If you have purchased a Veritas Storage Foundation product, VxFS and VxVM are installed and updated as part of that product. Do not install or update them as individual components.

Veritas Storage Foundation has the following products:

- Storage Foundation Standard
- Storage Foundation Standard HA
- Storage Foundation Enterprise
- Storage Foundation Enterprise HA

See “[Veritas Storage Foundation product suites](#)” on page 9. lists the Veritas products and optionally licensed features available with each Storage Foundation version.

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 *Storage Foundation Installation Guide*.

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

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

Upgrade paths

Storage Foundation Basic offers several upgrade paths.

Storage Foundation Basic provides the following upgrade paths:

- Upgrade from SF Basic to Storage Foundation Standard or Storage Foundation Enterprise by installing the appropriate license key.
- Upgrade from SF Basic to Storage Foundation Enterprise plus Veritas Volume Replicator by installing the appropriate license keys and products.
- Upgrade from SF Basic to any other Storage Foundation product by uninstalling SF Basic and by installing the newly licensed product.

To determine the release level of any Storage Foundation product on your system, run the `vxlicrep` command.

See the *Storage Foundation Installation Guide* for more information on upgrades.

Veritas Storage Foundation for DB2

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*.

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

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

For HA installations, also refer to the following documents.

```
<distribution>/cluster_server/docs/vcs_notes.pdf  
<distribution>/cluster_server/docs/vcs_install.pdf
```

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

About Veritas Storage Foundation for DB2®

Veritas Storage Foundation for DB2® by Symantec is an integrated set of system software enhancements and configuration guidelines. The enhancements and guidelines help DB2 database administrators configure a database system with high performance, availability, manageability, and reliability.

You add high availability functionality to Storage Foundation for DB2 HA by installing Veritas Cluster Server software.

Veritas Storage Foundation for Oracle

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*.

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

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

For HA installations, also refer to the following documents.

```
<distribution>/cluster_server/docs/vcs_notes.pdf  
<distribution>/cluster_server/docs/vcs_install.pdf
```

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

About Veritas Storage Foundation for Oracle®

Veritas Storage Foundation for Oracle® by Symantec is an integrated set of system software enhancements and configuration guidelines. The enhancements and guidelines help Oracle database administrators configure a database system with high performance, availability, manageability, and reliability.

You add high availability functionality to Storage Foundation for Oracle HA by installing Veritas Cluster Server software.

Veritas Storage Foundation for Sybase

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*.

These documents are located at the following directories in the release media:

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

For high-availability installations, also refer to the following documents:

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

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

About Veritas Storage Foundation for Sybase®

Veritas Storage Foundation for Sybase® by Symantec is an integrated set of system software enhancements and configuration guidelines. The enhancements and guidelines help Sybase database administrators configure a database system with high performance, availability, manageability, and reliability.

You add high availability functionality to Storage Foundation for Sybase HA by installing Veritas Cluster Server software.

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*.

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

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

where *<distribution>* is the architecture directory such as, `rhel14_x86_64`.

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.

Storage Foundation Cluster File System for Oracle RAC

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*.

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

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

where *<distribution>* is the architecture directory such as, `rhel4_x86_64`.

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 installation guide and release notes for each product in the corresponding product sections. Read the installation 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 Cluster Server Central Management Console
- 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

Contents of the documentation disc

The Veritas documentation disc provides searchable, HTML documentation for each product in this release. Printable PDF documents are also included on the disc. By product group is how the documentation is organized. The documents are also on the disc in PDF format under the product directories. You can view and print selected PDF files using Acrobat Reader.

Review the documentation disc `README` in the top-level directory.

Contents of the maintenance pack disc

Maintenance pack discs are not available in every release.

If you have a Veritas Storage Foundation and High Availability Solutions maintenance release, the kit contains a disc with software patches or updated packages. After installing the product, mount the maintenance software disc. Go to the appropriate product directory and review the release notes for upgrade instructions.

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 5.0 MP3 discs.

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

Directory name	Contents—Red Hat Enterprise Linux 4.0 and 5.0
<code>rhel4_i686</code>	For i686 systems
<code>rhel4_x86_64</code>	For x86 64-bit systems
<code>rhel5_i686</code>	For i686 systems
<code>rhel5_x86_64</code>	For x86 64-bit systems
<code>rhel4_i686</code> subdirectory:	
<code>authentication_service</code>	Symantec Authentication Services packages and documentation

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

Directory name	Contents—Red Hat Enterprise Linux 4.0 and 5.0
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
installmp	Maintenance patch installation script
perl	Perl language binaries and library functions
windows	VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer
rhel4_x86_64 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
file_system	Veritas File System packages and scripts
installer	Product installation script
installmp	Maintenance patch installation script
perl	Perl language binaries and library functions

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

Directory name	Contents—Red Hat Enterprise Linux 4.0 and 5.0
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
windows	Volume Replicator advisor Windows clients, VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer
rhel5_i686 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
installmp	Maintenance patch installation script
perl	Perl language binaries and library functions

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

Directory name	Contents—Red Hat Enterprise Linux 4.0 and 5.0
windows	VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer
rhel5_x86_64 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
file_system	Veritas File System packages and scripts
installer	Product installation script
installmp	Maintenance patch 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 Linux 4.0 and 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 9 and 10
sles9_i586	For i586 systems
sles9_x86_64	For x86 64-bit systems
sles10_i586	For i586 systems
sles10_x86_64	For x86 64-bit systems
sles9_i586 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
installmp	Maintenance patch installation script
perl	Perl language binaries and library functions
windows	VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer
sles9_x86_64 subdirectory:	

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

Directory name	Contents—SUSE Linux Enterprise Server 9 and 10
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
file_system	Veritas File System packages and scripts
installer	Product installation script
installmp	Maintenance patch 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
windows	Volume Replicator advisor Windows clients, VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer
sles10_i586 subdirectory:	

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

Directory name	Contents—SUSE Linux Enterprise Server 9 and 10
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
installmp	Maintenance patch installation script
perl	Perl language binaries and library functions
windows	VCS Windows installers, VCS Cluster Server Centralized Management installers, Symantec Product Authentication Services installer
sles10_x86_64 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
file_system	Veritas File System packages and scripts
installer	Product installation script
installmp	Maintenance patch installation script
perl	Perl language binaries and library functions

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

Directory name	Contents—SUSE Linux Enterprise Server 9 and 10
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
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
rhel4_x86_64	For x86 64-bit systems
rhel5_x86_64	For x86 64-bit systems
sles9_x86_64	For x86 64-bit systems
sles10_x86_64	For x86 64-bit systems

Installation overview

This chapter includes the following topics:

- [Documentation references, before you install](#)
- [Performing preinstallation checks and configuration](#)
- [Configuring secure shell \(ssh\) or remote shell before installing products](#)
- [Mounting a software disc](#)
- [Downloading the Storage Foundation and High Availability software](#)
- [Copying and unzipping the downloaded release](#)
- [Installing and configuring Storage Foundation using the common product installer](#)

Documentation references, before you install

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

- [Review the product release notes](#)
- [Review the preliminary information](#)

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.

If you already have an earlier version of any of the Veritas products installed, refer to the upgrade procedures.

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

Review the preinstallation requirements and system requirements. Upgrade the operating system, if needed, 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 rsh or ssh.

See “[Configuring secure shell \(ssh\) or remote shell before installing products](#)” on page 36.

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

See “[Mounting a software disc](#)” on page 43.

See “[Downloading the Storage Foundation and High Availability software](#)” on page 43.

Configuring secure shell (ssh) or remote shell before installing products

Establishing communication between nodes is required to install Veritas software from a remote system, or to install and configure a cluster. The node from which the installation utility is run must have permissions to run `rsh` (remote shell) or `ssh` (secure shell) utilities. These utilities must run as `root` on all cluster nodes or remote systems.

Note: When installing on an RHEL5 / OEL5 system with SELinux enabled, only ssh is supported due to RedHat's SELinux policy restrictions.

This section contains an example of how to set up ssh password free communication. The example sets up ssh between a source system (system1) that contains the installation directories, and a target system (system2). This procedure also applies to multiple target systems.

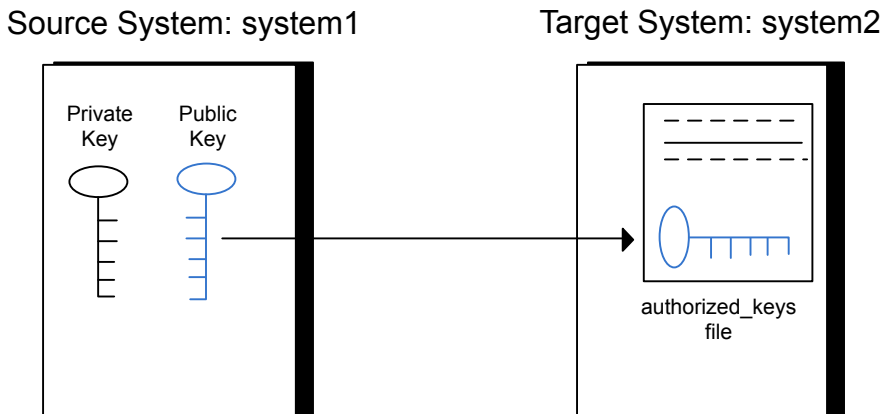
Configuring and enabling ssh

The ssh program enables you to log into and execute commands on a remote system. ssh enables encrypted communications and an authentication process between two untrusted hosts over an insecure network.

In this procedure, you first create a DSA key pair. From the key pair, you append the public key from the source system to the `authorized_keys` file on the target systems.

Figure 3-1 illustrates this procedure.

Figure 3-1 Creating the DSA key pair and appending it to target systems



Read the ssh documentation and online manual pages before enabling ssh. Contact your operating system support provider for issues regarding ssh configuration.

Visit the OpenSSH website that is located at: <http://openssh.org> to access online manuals and other resources.

To create the DSA key pair

- 1 On the source system (system1), log in as root, and navigate to the root directory.

```
system1 # cd /
```

- 2 To generate a DSA key pair on the source system, type the following command:

```
system1 # ssh-keygen -t dsa
```

System output similar to the following is displayed:

```
Generating public/private dsa key pair.  
Enter file in which to save the key (/root/.ssh/id_dsa):
```

- 3 Press Enter to accept the default location of `/root/.ssh/id_dsa`.
- 4 When the program asks you to enter the passphrase, press the Enter key twice.

```
Enter passphrase (empty for no passphrase):
```

Do not enter a passphrase. Press Enter.

```
Enter same passphrase again:
```

Press Enter again.

- 5 Output similar to the following lines appears.

```
Your identification has been saved in /root/.ssh/id_dsa.  
Your public key has been saved in /root/.ssh/id_dsa.pub.  
The key fingerprint is:  
1f:00:e0:c2:9b:4e:29:b4:0b:6e:08:f8:50:de:48:d2 root@system1
```

To append the public key from the source system to the `authorized_keys` file on the target system, using secure file transfer

- 1 From the source system (system1), move the public key to a temporary file on the target system (system2).

Use the secure file transfer program.

In this example, the file name `id_dsa.pub` in the root directory is the name for the temporary file for the public key.

Use the following command for secure file transfer:

```
system1 # sftp system2
```

If the secure file transfer is set up for the first time on this system, output similar to the following lines is displayed:

```
Connecting to system2 ...
The authenticity of host 'system2 (10.182.00.00)'
can't be established. DSA key fingerprint is
fb:6f:9f:61:91:9d:44:6b:87:86:ef:68:a6:fd:88:7d.
Are you sure you want to continue connecting (yes/no)?
```

- 2 Enter `yes`.

Output similar to the following is displayed:

```
Warning: Permanently added 'system2,10.182.00.00'
(DSA) to the list of known hosts.
root@system2 password:
```

- 3 Enter the root password of system2.
- 4 At the `sftp` prompt, type the following command:

```
sftp> put /root/.ssh/id_dsa.pub
```

The following output is displayed:

```
Uploading /root/.ssh/id_dsa.pub to /root/id_dsa.pub
```

- 5 To quit the SFTP session, type the following command:

```
sftp> quit
```

- 6 Add the `id_dsa.pub` keys to the `authorized_keys` file on the target system. To begin the `ssh` session on the target system (system2 in this example), type the following command on system1:

```
system1 # ssh system2
```

Enter the root password of system2 at the prompt:

```
password:
```

Type the following commands on system2:

```
system2 # cat /root/id_dsa.pub >> /root/.ssh/authorized_keys
system2 # rm /root/id_dsa.pub
```

- 7 When you install from a source system that is also an installation target, also add the local system `id_dsa.pub` key to the local `authorized_keys` file. The installation can fail if the installation source system is not authenticated.

To add the local system `id_dsa.pub` key to the local `authorized_keys` file, enter the following command:

```
system1 # cat /root/.ssh/id_dsa.pub >> /root/.ssh/authorized_keys
```

- 8 Run the following commands on the source installation system. If your `ssh` session has expired or terminated, you can also run these commands to renew the session. These commands bring the private key into the shell environment and make the key globally available for the user `root`:

```
system1 # exec /usr/bin/ssh-agent $SHELL
system1 # ssh-add
```

```
Identity added: /root/.ssh/id_dsa
```

This shell-specific step is valid only while the shell is active. You must execute the procedure again if you close the shell during the session.

To verify that you can connect to a target system

- 1 On the source system (system1), type the following command:

```
system1 # ssh -l root system2 uname -a
```

where `system2` is the name of the target system.

- 2 The command should execute from the source system (system1) to the target system (system2) without the system requesting a passphrase or password.
- 3 Repeat this procedure for each target system.

Restarting ssh

After you complete this procedure, ssh can be restarted in any of the following scenarios:

- After a terminal session is closed
- After a new terminal session is opened
- After a system is restarted
- After too much time has elapsed, to refresh ssh

To restart ssh

- 1 On the source installation system (system1), bring the private key into the shell environment.

```
system1 # exec /usr/bin/ssh-agent $SHELL
```

- 2 Make the key globally available for the user `root`

```
system1 # ssh-add
```

Enabling rsh for Linux

The following section describes how to enable remote shell.

Note: When installing on an RHEL5 / OEL5 system with SELinux enabled, rsh is not supported due to RedHat's SELinux policy restrictions.

Veritas recommends configuring a secure shell environment for Veritas product installations.

See [“Configuring and enabling ssh”](#) on page 37.

See the operating system documentation for more information on configuring remote shell.

To enable rsh

- 1 To ensure that the `rsh` and `rsh-server` packages are installed, type the following command:

```
# rpm -qa | grep rsh
rsh-server-0.17-25.3
rsh-0.17-25.3
```

If it is not already in the file, type the following command to append the line "rsh" to the `/etc/securetty` file:

```
# echo "rsh" >> /etc/securetty
```

- 2 In the `/etc/pam.d/rsh` file, change the "auth" type from "required" to "sufficient" for "pam_rhosts_auth.so":

```
auth      sufficient      pam_rhosts_auth.so
```

- 3 To enable the rsh server, type the following command:

```
# chkconfig rsh on
```

- 4 Modify the `.rhosts` file. Each line of the `.rhosts` file contains a fully qualified domain name or IP address for each remote system. This file also contains the name of a user having access to the local system. For example, if the root user must remotely access `system1` from `system2`, add an entry for `system2.companyname.com` to the `.rhosts` file on `system1` by typing the following command:

```
# echo "system2.companyname.com" >> $HOME/.rhosts
```

- 5 Install the Veritas product.
 - 6 Remove the "rsh" entry in the `/etc/securetty` file.
 - 7 Disable the rsh server by typing the following command:
- 8 After you complete an installation procedure, delete the `.rhosts` file from each user's `$HOME` directory to ensure security:

```
# rm -f $HOME/.rhosts
```

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.
- 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.

Downloading the Storage Foundation and High Availability software

One method of obtaining the Storage Foundation and High Availability software is to download it to your local system from the Symantec Web site.

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.

The estimated space that is needed for download, gunzip, and tar extract is 5 GB.

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
```

- 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.

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.

See [“Configuring secure shell \(ssh\) or remote shell before installing products”](#) on page 36.

- 2 Load and mount the software disc.
See [“Mounting a software disc”](#) on page 43.
- 3 Move to the top-level directory on the disc.

```
# cd /mnt/cdrom
```

- 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.

Veritas Storage Foundation for Oracle and Veritas Storage Foundation for DB2 (not available on Oracle Enterprise Linux 4) can also be installed using this procedure. Select the number corresponding to one of those products, if desired.

Do not select the "Storage Foundation Cluster File System for Oracle RAC" option unless you have the correct license and setup.

- 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 or all . Optional 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? [y,n,q] (y) y
```

12 Choose whether you want to use enclosure-based naming. The enclosure-based naming scheme (rather than disk device naming) is a feature of Veritas Volume Manager. You can reference disks using a symbolic name that is more meaningful than the operating system's normal device access name.

See the *Veritas Volume Manager Administrator's Guide*.

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

- 13** 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
```

- 14** If you responded **y**, then enter the information for the default disk group name.

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

- 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** This product can be configured as a Storage Foundation Manager managed host or a stand-alone host.

Several prerequisites are necessary to configure the system as a Storage Foundation Manager managed host.

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

```
Enable Storage Foundation Management Server Management?
[y,n,q] (y) n
```

17 The Veritas Storage Foundation software is verified and configured.

Start the Veritas Storage Foundation processes.

```
Do you want to start Veritas Storage Foundation processes  
now? [y,n,q] (y) y
```

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

You can access product documentation in the following ways:

- Mount the Documentation disc which contains all product guides and release notes.
- Purchase hard-copy software guides by contacting your salesperson.

Service and support

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

<http://entsupport.symantec.com>

