

Veritas Storage Foundation™ Cluster File System Release Notes

AIX

5.1



Veritas Storage Foundation™ Cluster File System Release Notes

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Product version: 5.1

Document version: 5.1.2

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Symantec Corporation
350 Ellis Street
Mountain View, CA 94043
<http://www.symantec.com>

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Symantec's maintenance offerings include the following:

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

- Version and patch level
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- Router, gateway, and IP address information
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 - Troubleshooting that was performed before contacting Symantec
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Europe, Middle-East, and Africa	semea@symantec.com
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Educational Services	Educational Services provide a full array of technical training, security education, security certification, and awareness communication programs.

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Storage Foundation Cluster File System Release Notes

This document includes the following topics:

- [Overview of this release](#)
- [Changes in Storage Foundation Cluster File System](#)
- [Storage Foundation for Databases supported features](#)
- [System requirements](#)
- [Component product release notes](#)
- [Software limitations](#)
- [Fixed issues](#)
- [Known issues](#)
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- [Documentation](#)

Overview of this release

Before you continue, make sure that you are using the current version of this guide. It is online at:

http://sfdoccentral.symantec.com/sf/5.1/aix/sfcfs_notes.pdf

This document is Document version: 5.1.2.

This document provides release information about the products in the Veritas Storage Foundation Cluster File System 5.1 product line:

- Veritas Storage Foundation™ Cluster File System (SFCFS) (Standard, Standard HA, Enterprise, and Enterprise HA)
- Veritas™ Volume Manager (VxVM)
- Veritas™ File System (VxFS)

See the *Veritas Storage Foundation Cluster File System Installation Guide*.

For the latest patches available for this release, go to: <http://vos.symantec.com/>.

For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:

<http://entsupport.symantec.com/docs/334998>

The hardware compatibility list (HCL) contains information about supported hardware and is updated regularly. For the latest information on supported hardware visit the following URL:

<http://entsupport.symantec.com/docs/330441>

Before installing or upgrading Storage Foundation and High Availability Solutions products, review the current compatibility list to confirm the compatibility of your hardware and software.

Review this entire document before installing your Veritas Storage Foundation Cluster File System product.

This document does not contain release information for Veritas Cluster Server.

See the *Veritas Cluster Server Release Notes*.

About Veritas Operations Services

Veritas Operations Services (VOS) is a Web-based application that is designed specifically for Veritas CommandCentral and Veritas Storage Foundation and High Availability products. VOS increases operational efficiency and helps improve application availability.

VOS automates and simplifies administrator tasks, including:

- Determining if systems are ready to install or upgrade Veritas products
- Gathering deployment and usage information on Veritas products
- Receiving notifications about the latest updates for:
 - Patches
 - Hardware Compatibility Lists (HCLs)
 - Array Support Libraries (ASLs)

- Array Policy Modules (APMs)
- Determining whether your Veritas product configurations conform to best practices
- Managing server and environmental configuration data from a single Website
- Interpreting Unified Message Identifier (UMI) codes and their solutions
- Identifying and downloading patches for Veritas products

To access VOS, go to:

<http://vos.symantec.com/>

Changes in Storage Foundation Cluster File System

This section describes the changes in Veritas Storage Foundation 5.1.

Installation and upgrade

Storage Foundation Cluster File System installation and upgrade includes the following changes in 5.1:

Veritas keyless licensing

This release of the Veritas products introduces the option to install without a license key. A license key is used during the installation of a software to identify that the user has the right to use the software. Previous releases of Veritas products required that you obtain a license key prior to installation. The installer required that you enter a valid license key before the Veritas software was installed.

The keyless license strategy does not eliminate the need to obtain a license. A software license is a legal instrument governing the usage or redistribution of copyright protected software. The administrator and company representatives must ensure that a server or cluster is entitled to the license level for the products installed. Symantec reserves the right to ensure entitlement and compliance through auditing.

In this release of the Veritas products, the product installer does not require that you enter a license key. The installer prompts you to select one of the following licensing methods:

- Install a license key for the product and features that you want to install.
- Continue to install without a license key.
The installer prompts for the product modes and options that you want to install, and then sets the required product level.

Within 60 days of choosing this option, you must install a valid license key corresponding to the license level entitled or continue with keyless licensing by managing the server or cluster with a management server. If you do not comply with the above terms, continuing to use the Veritas product is a violation of your end user license agreement, and results in warning messages. For more information about keyless licensing, see the following URL:
<http://go.symantec.com/sfhakeyless>

If you upgrade to this release from a prior release of the Veritas software, the product installer does not change the license keys that are already installed. The existing license keys may not activate new features in this release.

If you upgrade with the product installer, or if you install or upgrade with a method other than the product installer, you must do one of the following to license the products:

- Run the `vxkeyless` command to set the product level for the products you have purchased. This option also requires that you manage the server or cluster with a management server.
- Use the `vxlicinst` command to install a valid product license key for the 5.1 products you have purchased.

You can also use the above options to change the product levels to another level that you are authorized to use.

Symantec recommends updating to keyless licensing for the following reasons:

- it enables 5.1 functionality.
- it allows you to change the product level easily.

For information about setting or changing the product level, see the Installation Guide for your Veritas product.

See the `vxkeyless(1m)` manual page.

Packaging updates

[Table 1-1](#) lists the updates related to packages for this release.

Table 1-1 List of packages

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
N/A	VRTScps	New package.	Veritas Cluster Server Coordination Point Server

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
N/A	VRTSvcsea	New package.	Veritas Cluster Server Enterprise Agents
N/A	VRTSsfmh	New package.	Veritas Storage Foundation Managed Host
N/A	VRTSaslapm	New package.	Volume Manager ASL/APM
SYMClma	N/A	Obsolete in 5.0MP3. Functionality dropped.	Symantec License Inventory Agent
VRTSaa	VRTSsfmh	Consolidated into VRTSsfmh.	Veritas Enterprise Administrator action agent
VRTSaclib	N/A	Obsolete in 5.1. Not available for fresh installation. Only available to upgrade customers.	Veritas Cluster Server ACC Library 5.0 by Symantec
VRTSalloc	N/A	Obsolete in 5.1. Functionality dropped.	Veritas Storage Foundation Intelligent Storage Provisioning
VRTSat	VRTSat	No change.	Symantec Product Authentication Service
VRTScavf	VRTScavf	No change.	Veritas Cluster Server Agents for Storage Foundation Cluster File System
VRTSccg	VRTSsfmh	Consolidated into VRTSsfmh.	Veritas Enterprise Administrator Central Control Grid
VRTScfsdc	N/A	Obsolete in 5.0MP3. Documentation available in DVD media as PDFs.	Veritas Cluster File System Documentation
VRTScmccc	N/A	Obsolete in 5.1. Delivered with 5.x CMC release.	Veritas Cluster Management Console Cluster Connector
VRTScmedc	N/A	Obsolete in 5.0MP3. Delivered with 5.x CMC release.	User Documentation for Veritas Cluster Management Console

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTScmcm	N/A	Obsolete in 5.0MP3. Delivered with 5.x CMC release.	Veritas Cluster Management Console for multicluster environments
VRTScmcs	N/A	Obsolete in 5.1. Delivered with 5.x CMC release.	Veritas Cluster Management Console for single cluster environments
VRTScs	N/A	Obsolete in 5.0MP3. Delivered with SFM release.	Veritas Centralized Management for Storage Foundation Management Server
VRTScscm	N/A	Obsolete in 5.1. Available for download from http://go.symantec.com/vcsmc	Veritas Cluster Server Cluster Manager
VRTScscw	N/A	Obsolete in 5.1.	Veritas Cluster Server Configuration Wizards
VRTScsdoc	N/A	Obsolete in 5.0MP3. Delivered with SFM release.	Veritas Enterprise Administrator Central Server Documentation
VRTScsocw	N/A	Obsolete in 5.1.	Veritas Cluster Server Oracle and RAC Configuration Wizards
VRTScssim	N/A	Obsolete in 5.1. Available for download from http://go.symantec.com/vcsmc .	Veritas Cluster Server Simulator
VRTScutil	VRTScutil	Expanded to include few VCS packages.	Veritas Cluster Utility
VRTScweb	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas Enterprise Administrator Central Server Documentation
VRTSd2gui	N/A	Obsolete in 5.1. Functionality dropped.	Veritas Storage Foundation Graphical User Interface for DB2
VRTSdb2ed	N/A	Obsolete in 5.1. Functionality dropped.	Veritas Storage Foundation for DB2

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTSdbac	VRTSdbac	No change.	Veritas Oracle Real Application Cluster Support Package
VRTSdbcom	VRTSdbed	Consolidated into VRTSdbed.	Veritas Storage Foundation Common Utilities for Databases
VRTSdbdoc	N/A	Obsolete in 5.0MP3. Documentation available in DVD media as PDFs.	Veritas Storage Foundation Documentation for Databases
VRTSdbed	VRTSdbed	Expanded to include DBED packages.	Veritas Storage Foundation for Oracle
VRTSdbms3	N/A	Obsolete in 5.1. Sybase ASA repository no longer used in 5.1.	Symantec Shared DBMS
VRTSdcli	N/A	Obsolete in 5.1.	Veritas Distributed Command Line Interface
VRTSdcp	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas Disk Correlator Provider
VRTSddlpr	N/A	Obsolete in 5.1. Functionality merged into VRTSob.	Veritas Device Discovery Layer Services Provider
VRTSdsa	N/A	Obsolete in 5.1. Functionality dropped.	Veritas Datacenter Storage Agent
VRTSdsm	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas Datacenter Storage Manager
VRTSfas	N/A	Obsolete in 5.0MP3. Functionality dropped.	Veritas FlashSnap Agent for Symmetrix
VRTSfasag	N/A	Obsolete in 5.0MP3. Functionality dropped.	Veritas Cluster Server Agents for Veritas FlashSnap Agent for Symmetrix

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTSfasdc	N/A	Obsolete in 5.0MP3. Functionality dropped.	Veritas FlashSnap Agent for Symmetrix Documentation
VRTSfsdoc	N/A	Obsolete in 5.0MP3. Documentation available in DVD media as PDFs.	Veritas File System Documentation
VRTSfsman	VRTSvxf	Consolidated into VRTSvxf.	Veritas File System - Manual Pages
VRTSfsmnd	VRTSfssdk	Consolidated into VRTSfssdk.	Veritas File System SDK - Manual Pages
VRTSfspro	VRTSob	Consolidated into VRTSob.	Veritas File System Management Services Provider
VRTSfssdk	VRTSfssdk	No change.	Veritas File System SDK
VRTSfsweb	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas File System Provider Web Client Extension
VRTSgab	VRTSgab	No change.	Veritas Group Membership and Atomic Broadcast
VRTSgapms	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas Generic Array Plug-in for Mapping Services
VRTSgcsha	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas GCS high availability agents
VRTSgcspr	N/A	Obsolete in 5.0MP3. Delieverd with SFM release.	Veritas SAN Global Configuration Server Object Bus Provider
VRTSglm	VRTSglm	No change.	Veritas Global Lock Manager
VRTSgms	VRTSgms	No change.	Veritas Group Messaging Services
VRTSicsco	N/A	Obsolete in 5.1.	Symantec Infrastructure Core Services Common

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTSjre	N/A	Obsolete in 5.0MP3.	Veritas Java Runtime Environment Redistribution
VRTSjre15	N/A	Obsolete in 5.1.	Symantec Java Runtime Environment Redistribution
VRTSllt	VRTSllt	No change.	Veritas Low Latency Transport
VRTSmapro	N/A	Consolidated into VRTSob.	Veritas Storage Mapping Provider
VRTSmh	VRTSsfmh	Consolidated into VRTSsfmh.	Veritas Storage Foundation Management host
VRTSob	VRTSob	No change.	Veritas Enterprise Administrator Service
VRTSobc33	N/A	Obsolete in 5.1. Functionality Delivered with SFM release	Veritas Enterprise Administrator Core
VRTSobgui	N/A	Obsolete in 5.1. Functionality Delivered with SFM release.	Veritas Enterprise Administrator
VRTSobweb	N/A	Obsolete in 5.1. Functionality Delivered with SFM release.	Veritas Enterprise Administrator Web Console
VRTSodm	VRTSodm	No change	Veritas Oracle Disk Manager
VRTSorgui	N/A	Obsolete in 5.1. No longer supported.	Veritas Storage Foundation Graphical User Interface for Oracle
VRTSpbx	N/A	Obsolete in 5.1.	Symantec Private Branch Exchange
VRTSperl	VRTSperl	No change.	Veritas Perl 5.8.8 redistribution
VRTSsmf	N/A	Obsolete in 5.0MP3.	Symantec Service Management Framework

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTSspt	VRTSspt	No change.	Veritas Software Support Tools
VRTSsybed	N/A	Obsolete in 5.1. Functionality dropped.	Veritas Storage Foundation for Sybase
VRTSvail	N/A	Obsolete in 5.1. Functionality Delivered with SFM release.	Veritas Array Providers
VRTSvcsc	VRTSvcsc	Expanded to include few VCS packages.	Veritas Cluster Server
VRTSvcscag	VRTSvcscag	Expanded to include agents previously included in VRTSvcscvr.	Veritas Cluster Server Bundled Agents
VRTSvcscdb	VRTSvcscsea	Consolidated into VRTSvcscsea.	Veritas High Availability Agent for DB2
VRTSvcscdc	N/A	Obsolete in 5.0MP3. Documentation available in DVD media as PDFs.	User Documentation for Veritas Cluster Server
VRTSvcscmsg	VRTSvcsc	Consolidated into VRTSvcsc.	Veritas Cluster Server English Message Catalogs
VRTSvcscmn	VRTSvcsc	Consolidated into VRTSvcsc.	Manual Pages for Veritas Cluster Server
VRTSvcscor	VRTSvcscsea	Consolidated into VRTSvcscsea.	Veritas High Availability Agent for Oracle
VRTSvcscsy	VRTSvcscsea	Consolidated into VRTSvcscsea.	Veritas High Availability Agent for Sybase
VRTSvcscvr	VRTSvcscag	Consolidated into VRTSvcscag.	Veritas Cluster Server Agents for Veritas Volume Replicator
VRTSvcscdid	N/A	Obsolete in 5.1.	Veritas Device Identification API
VRTSvcscvki	VRTSvcscvki	No change.	Veritas Kernel Interface
VRTSvcscvlic	VRTSvcscvlic	No change.	Symantec License Utilities

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTSvmdoc	N/A	Obsolete in 5.0MP3. Documentation available in DVD media as PDFs.	User Documentation for Veritas Volume Manager
VRTSvmman	VRTSvxvm	Consolidated into VRTSvxvm.	Manual Pages for Veritas Volume Manager
VRTSvmpro	N/A	Consolidated into VRTSob.	Veritas Volume Manager Management Services Provider
VRTSvmweb	N/A	Obsolete in 5.0MP3. Delivered with SFM release.	Veritas Volume Manager Management Services Web Client Extensions
VRTSvrdoc	N/A	Obsolete in 5.0MP3. Documentation available in DVD media as PDFs.	User Documentation for Veritas Volume Replicator
VRTSvrpro	N/A	Consolidated into VRTSob.	Veritas Volume Replicator Management Services Provider
VRTSvrw	N/A	Obsolete in 5.1. Delivered with SFM release.	Veritas Volume Replicator Web Console
VRTSvsvc	N/A	Obsolete in 5.0MP3.	Veritas Volume Server and Client Provider
VRTSvxfen	VRTSvxfen	No change.	Veritas I/O Fencing
VRTSvxfs	VRTSvxfs	Expanded to include VRTSfsman (man pages). On Linux: VRTSvxfs-common and VRTSvxfs-platform packages are consolidated into single VRTSvxfs package.	Veritas File System
VRTSvxmsa	N/A	Obsolete in 5.1. Functionality dropped.	Veritas VxMS Mapping Service, Application Libraries

Table 1-1 List of packages (*continued*)

5.0 Package Name	5.1 Package name	Explanation of changes	Package description
VRTSvxvm	VRTSvxvm	Expanded to include VRTSvxman (man pages). On Linux: VRTSvxvm-common and VRTSvxvm-platform packages are consolidated into single VRTSvxvm package.	Veritas Volume Manager binaries
VRTSweb	N/A	Obsolete in 5.1.	Symantec Web Server

Install options for Storage Foundation High Availability and the Storage Foundation Cluster File System High Availability

The product installation programs now prompt you for whether you want to install the high availability packages when you are installing Storage Foundation or Storage Foundation Cluster File System. This change enables you to explicitly choose which functionality is installed. In previous releases, the installed license key determined what functionality was installed.

The product installer displays Storage Foundation High Availability and Storage Foundation Cluster File System High Availability on the product selection menu.

Improved response file generation

You can now create response files without performing a live installation, using the installation simulator.

Option to install only the minimal packages

The product installer now provides several options for which packages to install. For each product, you can install the minimal packages, the recommended packages or all of the packages.

When you install with the product installer, you can select from one of the following install options:

- Minimal filesets: installs only the basic functionality for the selected product.
- Recommended filesets: installs the full feature set without optional filesets.
- All filesets: installs all available filesets.

When you install with a product install script, such as `installsf`, you can use the following options to the install script:

- `-minpkgs`: displays the filesets and patches required for basic functionality.
- `-recpkgs`: displays the recommended filesets and patches.
- `-allpkgs`: displays all available filesets and patches.

Veritas extension for Oracle Disk Manager fileset is installed by default for Storage Foundation and Storage Foundation Cluster File System

The Veritas extension for Oracle Disk Manager package is supported with a Storage Foundation license.

In this release, the product installer now installs the required fileset for ODM by default when Storage Foundation is installed.

For Storage Foundation Cluster File System, the GMS `VRTSgms.bff` fileset is also installed.

Storage Foundation Cluster File System support with NPIV technology

Storage Foundation Cluster File System now supports the AIX VIO environment where VIOS is configured with NPIV capable FC adapters connected to a NPIV capable SAN (SAN switch that is NPIV capable).

The HCL support is identical to dedicated HBAs to LPARs/micro-partitions. For storage arrays which include features such as SCSI-3 or active/active multi-pathing, when attached through the VIO Server this functionality is available for storage provisioned with NPIV.

This release of Storage Foundation Cluster File System also provides DMP support for booting off (rootvg) NPIV devices. Devices in VIO client appear as regular SCSI disks, so Storage Foundation Cluster File System identifies these LUNs based on the array properties where LUNs are provisioned from. This functionality enables Storage Foundation Cluster File System (specifically, DMP) to treat these devices like any regular SAN storage array LUNs. In the legacy VIO environment, with NPIV, Storage Foundation Cluster File System would claim the devices as vSCSI LUNs. With NPIV, the VIO client environment is transparent to Storage Foundation Cluster File System and all the Storage Foundation Cluster File System commands behave the same way as they would in a regular physical AIX server.

This functionality is supported for both Storage Foundation Cluster File System and Storage Foundation Cluster File System High Availability.

Option to create response file templates

You can use the `-makeresponsefile` option of the installer to create response file templates.

The installer also generates a response file after each successful installer task, such as installation, configuration, uninstallation, or upgrade. These response files contain the details that you provided to the installer questions in the form of values for the response file variables. The response file also contains descriptions and explanations of the variables and their values.

See the *Veritas Storage Foundation Cluster File System Installation Guide*.

Option to start or stop Storage Foundation Cluster File System HA

After the installation and configuration is complete, the installer starts the processes that the installed products use. You can use the product installer to stop or start the processes and load or unload the drivers, if required.

See the *Veritas Storage Foundation Cluster File System Installation Guide* for more details.

Support for installer resilience

If an installation or upgrade of Storage Foundation Cluster File System is interrupted, the next time you re-run it the installer discovers the presence of an installer instance. The installer then gives an option to resume the installation or upgrade.

See the *Veritas Storage Foundation Cluster File System Installation Guide* for more details.

Installation options for NIM

The installer program can generate sample finish or configuration scripts that integrate with native installation tools. These sample scripts include all of the relevant Symantec packages in the correct order for installation. This feature is supported for installations, not upgrades.

Installer does not proceed with installation in RSH/SSH disabled environments

In the previous releases of Storage Foundation Cluster File System, in certain secure enterprise environments where RSH or SSH communication was not enabled, the installer installed and configured Storage Foundation Cluster File System only on the local system and the systems with which it could communicate.

The installer also generated a response file that you could copy to the other systems in the cluster to identically install and configure Storage Foundation Cluster File System on other systems.

With this release of Storage Foundation Cluster File System, the installer mandates the availability of either RSH or SSH communication between the systems to perform any installer task.

Support for Web-based installer

This release supports an interactive installation using the Web-based installer. You can use a Web-interface to install and configure Storage Foundation Cluster File System HA.

The Web-installer can perform the following functions:

- Install Storage Foundation Cluster File System HA
- Uninstall Storage Foundation Cluster File System HA
- Configure Storage Foundation Cluster File System HA
- Upgrade Storage Foundation Cluster File System HA
- Start and stop Storage Foundation Cluster File System HA
- Perform an installation precheck

The installer program's default answer is no to configure optional features

The installer's default answer to configure optional features is now no. You must enter **y** if you want to configure certain optional features.

Gathering requirements using the installer program

You can use the `-requirements` option of the installer to gather the installation requirements. Web-based installer also provides you with a similar option.

The following information is displayed:

- Required operating system level
- Required patches
- Required disk space
- Other requirements

Support to continue installation after a successful precheck

The installer program has more sophisticated precheck, installation, and configuration options, which follow in outline:

- When you perform a successful precheck, you have the option to continue with the installation.
- After a successful installation, you have the option to continue with the configuration, or you can return to the configuration later.

Selecting default systems for installation

From the local system, the installer program checks for the `/etc/llhosts` for node names. When found, the installer program presents these as default nodes for installation. If the `llhosts` file is not present, then no default node names are provided.

Communication modes

By default, the installer program uses SSH for communication. The installer program switches to RSH if password-less SSH is not enabled.

For RSH communication, the `-rsh` option is available.

The installer programs supports mixed RSH and SSH modes on nodes in a cluster. The installation program can install on systems which may have heterogeneous (RSH and/or SSH) communication modes enabled.

IPv6 support for the installer programs

You can now use the installer to install and configure Storage Foundation Cluster File System HA on systems with IPv4, IPv6, or mixed stack configurations.

The following limitations apply:

- RSH is not supported on AIX
- SSH on AIX requires that you enable `sshd`.

Adding a node using the `-addnode` option

The `-addnode` option has been added to the installer to add a node to a running cluster. Based on the existing cluster configuration, the installer also configures the new node to use Symantec Product Authentication service and to use I/O fencing.

The installer also supports adding a node to a single node cluster, but stops the cluster during the addition of the node.

Installer support for alternate boot disk

The installer program supports install, uninstallation, and upgrades on alternate boot disks for AIX.

Refer to the *Veritas Storage Foundation Cluster File System Installation Guide*.

Silent and automated installation enhancements for response files

The installer program supports silent installations using response files.

Operations that you can perform using response files follow:

- Fresh installations
- Configurations
- Uninstallations
- Upgrades from previous supported releases

Command options to help troubleshoot installations

You can run the installer with the `-debug` option and the `-trace` option to troubleshoot an installation.

Supported paths for SFCFS upgrades that do not require a system reboot

When you perform a typical upgrade using the installer program from SFCFS version 5.0 MP3 to SFCFS version 5.1, a system reboot is not required.

Upgrades that follow any other upgrade paths require a reboot.

Changes related to the installer for cross-product upgrades

This release includes the following change related to the cross-product upgrades.

If you try to perform a cross-product upgrade, the installer now gracefully exits with an error message.

For example, if you choose to upgrade SFCFS 5.0 MP3 to SF Oracle RAC 5.1, the installer displays the following error message:

```
SFCFS 5.0.30.00 is installed.  
Upgrading SFCFS 5.0.30.00 directly to SFRAC 5.1 is not supported.
```

The installer does not support a direct upgrade from a previous SFCFS version to SF Oracle RAC version 5.1. You must upgrade SF or SFHA to version 5.1, and then install the 5.1 version of the stack product.

See the appropriate product Installation Guides for upgrade instructions.

See the *Veritas Storage Foundation Cluster File System Installation Guide* for supported upgrade paths.

Storage Foundation Cluster File System

Storage Foundation Cluster File System includes the following changes in 5.1:

Veritas Enterprise Administrator Graphical User Interface

The Veritas Enterprise Administrator (VEA) console is no longer packaged with Storage Foundation products. Symantec recommends use of Storage Foundation Manager to manage, monitor and report on Storage Foundation product environments. You can download this utility at no charge at <http://go.symantec.com/vom>. If you wish to continue using VEA, a version is available for download from <http://go.symantec.com/vom>.

Addition of Storage Foundation for Databases (SFDB) functionality

Storage Foundation for Cluster File System previously provided enhanced I/O methods to improve database performance and a set of tools for ease of management of storage in a database environment:

- Veritas extension for Oracle Disk Manager (ODM)
- Veritas extension for Cached Oracle Disk Manager (Cached ODM)
- Veritas Quick I/O
- Veritas Cached Quick I/O
- Storage Checkpoints
- FlashSnap
- Dynamic Storage Tiering

For information on the I/O and database management features available with a Standard license:

See the *Veritas Storage Foundation Advanced Features Guide*.

For release 5.1, the Storage Foundation for Databases (SFDB) feature for enhanced management of Oracle databases is included with Enterprise licensing for Storage Foundation Cluster File System and Storage Foundation Cluster File System HA.

The SFDB tools provide enhanced ease-of-use commands which can be run by a database administrator without root privilege to optimize storage for an Oracle database environment. This extended functionality is supported for configurations with single instance Oracle and includes the following:

- Database Checkpoints
- Database FlashSnap
- Database Cloning
- Database Dynamic Storage Tiering

For information on using SFDB tools, see the *Veritas Storage Foundation: Storage and Availability Management for Oracle Databases* guide.

SFDB new features

New features in the Storage Foundation for Databases tools package for database storage management for release 5.1:

- SQLite repository
- Multiple disk group support for FlashSnap
- Mapped mount points for individual volumes for Database Flashsnap clones
- Oracle Dataguard support
- Oracle Enterprise Manager (OEM) Plugin
- Cached ODM support

SFDB feature changes

If you are upgrading from Storage Foundation for Oracle (HA) 4.x or 5.0 to Storage Foundation for Cluster File System 5.1, the following changes in functionality will apply.

Commands which have changed:

- `sfua_db_config` functionality is changed: this command is no longer needed to create a SFDB repository. The functionality of `sfua_db_config` is now used to set user and group access to various SFDB directories.
- Use the `dbed_update` command to create a new SQLite SFDB repository.
- `sfua_rept_adm` was used in release 5.0 to perform repository backup and restore and this command will be obsolete in release 5.1.

- The `sfua_rept_util` command is used to perform SQLite repository backup and restore.
- The `sfua_rept_migrate` command is added for migrating the SFDB repository from the 4.x or 5.0 release to the 5.1 release.

Commands which continue to be supported:

- `dbed_update`
- **Database Storage Checkpoint commands:** `dbed_ckptcreate`, `dbed_ckptdisplay`, `dbed_ckptmount`, `dbed_ckptquota`, `dbed_ckptremove`, `dbed_ckptrollback`, `dbed_clonedb`, `dbed_ckptumount`
- **Quick I/O commands:** `qio_getdbfiles`, `qio_recreate`, `qio_convertdbfiles`
- **Database Flashsnap commands:** `dbed_vmchecksnap`, `dbed_vmclonedb`, `dbed_vmsnap`
- **Database Dynamic Storage Tiering commands:** `dbdst_addvol`, `dbdst_admin`, `dbdst_classify`, `dbdst_convert`, `dbdst_file_move`, `dbdst_partition_move`, `dbdst_preset_policy`, `dbdst_rmvol`, `dbdst_show_fs`, `dbdst_tbs_move`, `dbdst_report`

SFDB features which are no longer supported

Commands which are no longer supported in release 5.1:

- `ORAMAP (libvxoramap)`
- **Storage mapping commands** `dbed_analyzer`, `vxstorage_stats`
- **DBED providers(DBEDAgent), Java GUI, and** `dbed_dbprocli`.
The SFDB Oracle features can only be accessed through the command line interface. However, Veritas Storage Foundation Manager 2.1 (a separately licensed product) can display Oracle database information such as tablespaces, database to LUN mapping, and tablespace to LUN mapping.
- **Storage statistics: commands** `dbdst_makelbfs`, `vxdbs_fstatsummary`, `dbdst_fiostat_collector`, `vxdbs_get_datafile_stats`
- `dbed_saveconfig`, `dbed_checkconfig`
- `dbed_ckptplan`, `dbed_ckptpolicy`
- `qio_convertdbfiles -f` option which is used to check for file fragmentation
- `dbed_scheduler`

The following features are longer supported in release 5.1:

- Storage Foundation for DB2 tools

- Storage Foundation for Sybase tools

Clustered NFS Support

This new Clustered NFS (CNFS) feature is expected to gracefully handle failure of any node and reclaim the advisory locks taken by NFS clients in such a way as to not accidentally lose any existing lock grants without notification.

See the *Veritas Storage Foundation Cluster File System Administrator's Guide* for more information.

See the `cfsshare(1M)` manual page.

Storage Foundation for Databases supported features

Note: Storage Foundation Cluster File System supports running SFDB tools with Oracle databases only.

For the most current information on Storage Foundation Cluster File System products and single instance Oracle versions supported, see:

<http://entsupport.symantec.com/docs/331625>

System requirements

This topic includes system requirements for 5.1

Hardware and software requirements

The hardware compatibility list contains information about supported hardware and is updated regularly. Before installing or upgrading Storage Foundation and High Availability Solutions products, review the current compatibility list to confirm the compatibility of your hardware and software.

For the latest information on supported hardware, visit the following URL:

<http://entsupport.symantec.com/docs/330441>

For information on specific HA setup requirements, see the *Veritas Cluster Server Installation Guide*.

Supported AIX operating systems

This section lists the supported operating systems for this release of Veritas products.

Product installation scripts verify the required update levels. The installation process terminates if the target systems do not meet the maintenance level requirements.

For any Veritas cluster product, all nodes in the cluster must have the same operating system version and update level.

The minimum system requirements for this release are as follows:

AIX 5.3 at one of the following levels:

- TL7 with SP6
- TL8 with SP4
- or any higher TLs.

AIX 6.1 at one of the following levels:

- TL0 with SP6
- TL1 with SP2
- or any higher TLs.

For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:

<http://entsupport.symantec.com/docs/334998>

Storage Foundation Cluster File System node requirements

All nodes in a Cluster File System must have the same operating system version and update level.

Disk space requirements

Before installing any of the Veritas Storage Foundation products, confirm that your system has enough free disk space.

Use the "Perform a Preinstallation Check" (P) menu or the `-precheck` option of the product installer to determine whether there is sufficient space.

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

Storage Foundation and High Availability Solutions 5.1 patches

Symantec strongly recommends that you install Storage Foundation and High Availability Solutions (SFHA) 5.1 Patch 1 immediately after you install SFHA 5.1.

The patch for AIX is available at the following URL:

<https://vos.symantec.com/patch/detail/2956>

Component product release notes

In addition to reading these Release Notes, review all component product release notes before installing the product.

The component product release notes for this release are included as PDF files on the software disc:

- *Veritas Storage Foundation Release Notes* (`sf_notes.pdf`)
- *Veritas Storage Foundation for Oracle RAC Release Notes* (`sfrac_notes.pdf`)
- *Veritas Cluster Server Release Notes* (`vcs_notes.pdf`)

Software limitations

The following sections describe Storage Foundation Cluster File System software limitations that exist in this release.

See the *Veritas Cluster Server Release Notes* for VCS software limitations.

Veritas Storage Foundation Cluster File System software limitations

The following are software limitations in this release of Veritas Storage Foundation Cluster File System.

LLT over IPv6 UDP cannot detect other nodes while Storage Foundation Cluster File System tries to form a cluster

LLT over IPv6 requires link-local scope multicast to discover other nodes when Storage Foundation Cluster File System tries to form a cluster. If multicast networking is undesirable, or unavailable in your environment, use the address of the peer nodes to eliminate the need for the multicast traffic. [1533308]

Workaround: Add the `set-addr` entry for each local link into the `/etc/llttab` file. You add the entry to specify the address of the peer nodes that are available on the corresponding peer links. For example, you add the following lines into the

lftab file to specify the set-addr entry for a node. In this example, the node's IPv6 address is fe80::21a:64ff:fe92:1d70.

```
set-addr 1 link1 fe80::21a:64ff:fe92:1d70
set-arp 0
```

Workload partition environment

The Veritas Storage Foundation Cluster File System is supported inside workload partition (WPAR) environment only through NFS mount options.

Veritas Volume Manager software limitations

The following are software limitations in this release of Veritas Volume Manager.

Cluster Volume Manager (CVM) fail back behavior for non-Active/Active arrays (1441769)

This describes the fail back behavior for non-Active/Active arrays in a CVM cluster. This behavior applies to A/P, A/PF, APG, A/A-A, and ALUA arrays.

When all of the Primary paths fail or are disabled in a non-Active/Active array in a CVM cluster, the cluster-wide failover is triggered. All hosts in the cluster start using the Secondary path to the array. When the Primary path is enabled, the hosts fail back to the Primary path. However, suppose that one of the hosts in the cluster is shut down or brought out of the cluster while the Primary path is disabled. If the Primary path is then enabled, it does not trigger failback. The remaining hosts in the cluster continue to use the Secondary path. When the disabled host is rebooted and rejoins the cluster, all of the hosts in the cluster will continue using the Secondary path. This is expected behavior.

For A/P,APG, A/A-A, and ALUA arrays, if the disabled host is rebooted and rejoins the cluster before the Primary path is enabled, enabling the path does trigger the failback. In this case, all of the hosts in the cluster will fail back to the Primary path.

Veritas File System software limitations

The following are software limitations in this release of Veritas File System

Cached ODM

You can enable Cached ODM only for files on local file systems. It can not be enabled for files on Cluster File System.

Fixed issues

The following sections describe Storage Foundation Cluster File System issues that were fixed in this release.

See the *Veritas Cluster Server Release Notes* for VCS fixed issues.

Veritas Storage Foundation Cluster File System fixed issues

All Veritas Storage Foundation Cluster File System 5.1 includes fixed issues from 5.0 and later unless otherwise noted.

[Table 1-2](#) describes fixed issues in the Veritas Storage Foundation Cluster File System 5.1 release.

Table 1-2 Veritas Storage Foundation Cluster File System 5.1 fixed issues

Incident	Description
1414489	Fixed an issue in ODM related to post commit transaction.
1663269	Fixed a panic that was due to bad inode errors in an SFCFS environment.
1714229	Fixed the duplicate mount entries found for a VxFS file system in a cluster.
1805983	Fixed a panic in <code>vxfs:vx_loadedele</code> that was due to a NULL pointer dereference.
1854700	Fixed the cause of inode errors on SFCFS file systems.

[Table 1-3](#)

Table 1-3 Veritas Storage Foundation Cluster File System 5.0 MP3 RP2 fixed issues

Incident	Description
1286525	Fixed an issue in which Java threads hung on SFCFS functions.
1518713	The <code>vxfsckd -n</code> command now initializes the <code>nthrs</code> variable.
1539892	Fixed an issue in which a clustered file system that was mounted on one node required <code>fsck</code> to be run.
1591313	Fixed the cause of a loop in the <code>vx_dele_get_freespace()</code> call due to a <code>smap</code> being marked bad.

Table 1-3 Veritas Storage Foundation Cluster File System 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1600241	Fixed the cause of a hang that occurred after another node in the cluster crashed.

[Table 1-4](#)

Table 1-4 Veritas Storage Foundation Cluster File System 5.0 MP3 RP1 fixed issues

Incident	Description
1487928	Fixed the build script to compile packages to enable the storage keys feature.

Veritas Volume Manager and Veritas Volume Replicator fixed issues

The Storage Foundation Cluster File System 5.1 includes cumulative fixes for Veritas Volume Manager and Veritas Volume Replicator since the 5.0MP3 release. The following tables describe these fixed issues.

[Table 1-5](#) describes fixed issues in the Veritas Volume Manager 5.1 release.

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues

Incident	Description
1822681	memory leak in vxio/voldr1_cleansio_start.
1822200	VRAS:Diff sync failed when remaining sync size is 4TB.
1819777	Panic issue in voldiosio_start() as race window exists while handling duplicate DA records
1810749	CR 6874695 - vxlustart -V deleted existing BEs
1805826	panic in vol_klog_clear_trans on Solaris x86
1804262	VVR:File system I/O of size bigger than 256k fails with error ENXIO after 2TB(>2G blocks)offset.
1797540	VxVM: vxdisk resize intermittently causes vxconfigd to dump core.
1795541	vxddladm disablevscsi does not work for this customer

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1782036	Sun: SC cannot open libvxvmisc.so after upgrade to 5.1
1779257	VVR:Disable Secondary logging through a tunable.
1765779	Man Page change for vxiod
1764972	vxdiskadm option 5 fails with "/usr/lib/vxvm/voladm.d/bin/disk.repl"
1762561	DMP: System panic when perform excludearray operation with powerpath
1762534	vxctl settz and vxconfigd core dump if TZ environment variable is not set.
1755869	tunable addition: gabmaxsend and receiver flowcontrol watermark
1755830	kmsg: sender: the logic for resend of messages needs to be optimized
1755810	kmsg: sender thread is woken up unnecessarily during flowcontrol
1755788	for a broadcast message, sender thread may end up sending the same message multiple times (not resend)
1755735	recovery I/Os get broken down to voliomem_chunk_size
1755707	vxtask list shows the same taskid for parent and child tasks
1755689	During recovery, -o delayrecover option does not work as expected for value of 0
1755628	kmsg layer: with heavy messaging in the cluster the receiver thread slows down processing
1755519	kmsg layer: receiver side flowcontrol is not supported
1755466	vol_find_ilock: searching of ilock is inefficient
1745992	CVR:I/O hang in 4 node CVR cluster
1744672	Oakmont::Primary slave hangs in volcvm_rvgrecovery_send_ioct() TC remote_write_reconfigure_2.tc
1744224	FMR3: multiple vxplex attach cmds running in parallel on a volume lead to clearing DCO map and subsequently lead to corruption
1742702	vxvmconvert fails, probably due to wrong disk capacity calculation

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1739513	while mirroring 1 tb storage,after 800gb all VM commands hangs
1733811	System panic on voldco_isdirty code path while doing vxsnap make operation after upgrading from DCO version 10
1732200	[DMP][Usability] When NEW dmp_native_multipathing tunable is set to 'on' - unlabelled LUNs vanish from format until turned off
1728587	VVR: Replication started with a checkpoint remains inconsistent/cant_sync after SRL is drained if the replication is interrupted
1728269	Incorrect cur_pri_path updation for A/PG arrays leading to dmp database inconsistency
1725041	VVR: VRAS: vradm addsec fails with "V-5-52-502 Host name or IP XXX.YYY.ZZZ is not configured or available on the Primary."
1722984	Memory leak in vold_dg_get_clone_disks() .
1718008	Unable to initialize EFI LUNs controlled by EMC Powerpath driver, vxprtvtoc "Syntax Error" occurs.
1715889	Unable to encapsulate an unmanaged EMC DMX PP LUN
1711269	System hang showing kmsg receiver thread hogging CPU
1710030	AIX: Issue with LUN size more than TB
1678370	VM_VVR: RLINK disconnected and "vx" commands hung on Secondary while load in progress
1678292	[SxRT sparc/x64] vxdmppadm get tpdnodename error
1677217	DMP does not autofailback to the Primary paths following LCC card restoration.
1676061	System panic'd after 2 out of 4 paths to disk were removed.
1674847	Fixed an issue with vxconfigd not starting after a system reboot.
1673764	vxconfigd loses licensing information
1673002	Need to remove thousands of empty /tmp/vx.* directories.
1653972	VxVM volume device permissions change after running 'scgdevs' (Suncluster) command

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1638494	VVR:vxnetd stop causing 100% CPU & vx commands hanging
1638174	oakmont:vxconfigd memory leak found
1637514	Issues with tentative evacuation of disks, when aborted in between using vxevac
1594928	Avoid unnecessary retries on error buffers when disk partition is nullified.
1592700	cvmvoldg monitor failed due to awk: Input line cannot be longer than 3,000 bytes - VRTScavf 5.0.31.0
1591146	mirrored volume grow doesn't works well if "mirror=enclosure" option is used, it leads to data corruption issue.
1589018	num_retries field is getting re-initialized to initial value leading to looping and delay in error handling time.
1588978	vxdmppadm getattr arrayname <array> partitionsize misreports DEFAULT partitionsize for subsequent entries
1555461	DMP did not handle the failure in one half of the customer SAN
1545999	Oracle hangs from time to time - VxVM 5.0 MP3 on RHEL5
1545835	vxconfigd core dump during system boot after VxVM4.1RP4 applied.
1543908	While running vxevac command, Oracle process thread stuck into ogetblk() which leads to i/o hang.
1541662	System panicked in DRL code when running flashsnap
1538053	CVM_MSG_REQ_GSLOCK repeatedly resent resulting in hang
1537821	VxVM private buffer's b_fsid field is not set properly, which breaks PRM
1531406	Race condition between Dynamic Reconfiguration thread and DMP error analysis code path lead to panic in gendmpiodone.
1530126	DMP : dmplinux_unplug() panic on linux, for no associated node in dmpnode
1517760	VRAS: vradmind core dump if stats collection is enabled

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1510252	I/Omem chunks are not combined, causing panic at module unload time
1506690	VxVM utility scripts assume DA name is a valid path name.
1503309	VxVM: DMP doesn't log error returned from below driver/SCSI.
1483298	Man page for vxctl does not include all options that are listed in -H.
1480102	dmp disabled all paths of EVA8100 even though just unplugged primay FC cables
1475710	For VxVM patches the postinstall script must not copy /usr/lib/libthread to /etc/vx/slib/
1475703, 1369599	Export API libvxvm_get_disks() and libvxvm_get_subpaths() should return the same path for the same device
1475697	Provide an API for checking multi- ownership and status of a diskgroup
1475691	VxVM should recognize disks in use by ZFS or SVM
1471821	'initdmp' section in vxctl manpage still incorrect
1471784	[5.0MP3RP1 x64] vm can not create stripe-mirror/mirror-stripe/mirror volume with maxsize.
1471771	vxdisksetup should call 'mount' with complete pathname
1471581	vxconfigd may hang if no SCSI timeout value is set while issuing various SCSI commands
1471487	Critical Minimum Queue and Round-robin Improvements
1471263	machine has panicked when added the disk from dg as a foreign device using "vxdmpadm addforeign".
1470732	5.0MP3 : vxconfigd dumps core if all paths are excluded.
1470251	volslabd utilized 100% cpu time
1470102	vxdmpadm getattr for failoverpolicy and tpdmode is giving usage error.
1469351	User confused about snap operations when split to new DG
1468647	vxdmpdebug fails to find ugettxt

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1463197	no path disable event occurs during I/O error analysis in dmp when pulling a FC cable out with 5.0MP3
1460101	[VxVM]Proper handling of DMP PGR ioctl's in case of errors/warnings from below driver.
1443748	In a clustered environment the recovery of volumes having DCO v20 taking lots of time with no I/O load
1443046	System panic in vxio:voldrl_trans_copy
1441123	VxFS Corruption Detected when DCM log plex are attached with mirrored volume and VVR is not configured.
1437869	Need to examine package dependencies, especially wrt SUNWscpu...
1437006	DMP: Evaluation of DMP I/O statistics and TC development to verify correctness of the values displayed
1433535	DDL: Data corruption protection activated message should be reported by vxdisk scandisks and vxctl enable CLI
1430001	VM: VVR: Not able to modify any of the volume manager kernel tunable on 4.1MP3 perf.
1425250	vx commands are hanging in EDC testing
1424194	vxclustadm reinit doesn't allow new nodes to join CVM cluster
1422008	After installed vm patch on AIX, "install-db" would be created if the vxio in "Defined" state.
1421752	High kernel CPU usage when DRL is turned on
1415547	Tool request - Verification tool to detect corrupted DCO.
1409031	VVR: Rlink fail to connect due to failure of memory allocation for incoming message buffer
1402599	VVR: Print warning message in syslog if it hit high water mark for latency protection
1398914	Support cdsdisk format on devices that do not support scsi modesense on page 3 and page 4.
1396566	Permissions set using vxedit is not consistent

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1391652	No path disable event and I/O hang occurred when pulled out both paths of A/PG array with 4.0MP2RP8
1388324	Unresolved symbols in libvxvmc.so
1386592	tmp files not cleaned up after running vxdisksetup
1369610	Error message from vxdg import misleading/incorrect when disk is write-protected
1369597	vxlufinish uses wrong solaris command for unmounting alternate root environment - should use luumount
1361625	with use_all_paths=yes, get a reservation conflict
1321282	vxdisk scandisk hung in site failure scenario (EDC Testing)
1317186	Security: Remove tmp files in scripts before using them
1299512	incorrect vxdg free output and vxconfigd core dump
1293910	vxdmproot man page needs correction on arrays supported by DMP for SAN booting
1292633	PFTO value is set for only one paths though the DMP node has multiple paths.
1277808	VVR: Write testcase for link-breakoff snapshot with RVG.
1274204	vxbrk_rootmir fails if a volume name = end of another vol name
1235023	V-5-1-4597 vxdg join failed. Transaction aborted waiting for io drain
1230827	vxdisksetup init succeeds but both prtvtoc & vxdiskunsetup fail with error "No Such Device"
1224778	Write disable R2 device(SRDF)not seen after boot
1222625	VCS 5.x CVMCluster Agent doesn't handle non-C locales.
1212256	Panic in uphysdone due to double Iodone on the buffer
1183283	vxconfigstore -p returns with syntax error
1176510	Enhance vxdiskadm to handle custom-made rootdisk and rootmirror

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
1172961	AIX: VxVM should call uphysio() with a proper value for bufcnt argument
1153020	CVM master's behavior with dgfailpolicy=leave in 5.0 differs from the description of manual
1123203	vxconfigd hang in transaction commit while acquiring rwsleep write lock
1114870	System panic in voliorem_seek() due to wrong calculation of no of dco I/O extents.
1082431	During VCS During cluster shutdown of a node, vxconfigd died requiring a reboot
1082149	vxconvert command fails to convert for VPATH devices
1068259	VVR:Primary hang in case of TCP replication, secondary not sending ack
1060336	vxresize should not roll back if fsadm failed but disabled vxfs
1037289	IO Errors during SVC node add/remove test sequence
1020554	Diskgroup are not importing on every second or 3rd reboot. Needs to manually import it and mount the volumes
1016617	vxsnap refresh on SOSS fails with "VxVM vxvol WARNING V-5-1-10070 Failed to synchronize the volume(s)"
1012999	APIs needed for checking whether diskgroup is shared and status of diskgroup
996429	Unable to set no limit for cmd logs using vxcmdlog -n no_limit
990338	FMR Refreshing a snapshot should keep the same name for the snap object
963951	INSTSNAPTMP marked dco log not getting deleted during vxrecover or volume restart
818389	a scsi-2 release is causing a panic
795129	cmhaltcl on one of the cluster nodes causes one of the disk groups to lose shared flag

Table 1-5 Veritas Volume Manager and Veritas Volume Replicator 5.1 fixed issues (*continued*)

Incident	Description
786357	Request to make voldrl_volumemax_drtregs a tunable
597517	unable to initialize EFI labeled >1tb PP devices
543638	vxdumpadm/vxdiskunsetup doesn't work well if tpdmode=native
339282	RFE : Failed to create more than 256 config copies in one DG
339187	CVM activation tag in vxprint -m output breaks vxprint
314738	vx dg split fails if the cvm master changes
298072	vxio reports "Illegal vminor encountered" even when there is no rootability
248925	If vx dg import returns error, parse it

Table 1-6 describes fixed issues in the Veritas Volume Manager 5.0MP3 RP1 release.

Table 1-6 Veritas Volume Manager and Veritas Volume Replicator 5.0MP3 RP1 fixed issues

Incident	Description
1512521	StorageKeys: Adding compilation flag for VxVM to make function pointer references to legacy modules work in AIX 6.1 key aware code.
1455062	Fixed an issue with the master node crashing if a node leaves before responding to the MV- serialization protocol.
1449266	Fixed a panic in dmp_get_path_deferq while creating a volume.
1443752	Fixed an issue in a clustered environment the recovery of volumes having DCO v20 taking lots of time with no I/O load.
1443706	Fixed an issue in FMR3, I/Os initiating DCO updates for clearing DRL async clear region may not wait for its completion.
1441131	Fixed an issue with VxFS Corruption Detected when DCM log plex are attached with mirrored volume and VVR is not configured.
1441072	Fixed an issue with siteread policy is not honored.

Table 1-6 Veritas Volume Manager and Veritas Volume Replicator 5.0MP3 RP1 fixed issues (*continued*)

Incident	Description
1442369 1224659	Fixed a bug in vxconfigbackupd script leading to 0 byte binconfig file being created.
1441020	Fixed a secondary panic due to double free of message with TCP protocol and 16 connection.
1440837	Fixed a panic due to memory allocation failure in interrupt context.
1436917	Fixed an issue with after installing VM patch on AIX, install-db would be created if the vxioin Defined state.
1435471	Fixed an issue with the cluster nodes panicking in voldco_or_pvmbuf_to_pvmbufcode after installing 5.0 MP3.
1431279	Fixed an issue with vxconfigd core dumps.
1428106	Fixed a system panic in vxio:voldr1_trans_copy.
1427284	Fixed an issue with vxdmpadm dumped core when executing vxdmpadm list dmpnode command.
1427267	Fixed a CVR panic in VOLSIOQ_MORE due to corrupted volsioq_start queue.
1425919	Fixed an issue with vxesdlooping using 100% of one CPU.
1425434	Fixed an issue with CVR fails to connect rlinks followed by vxconfigd hangs on secondary.
1414441	The vxsnap manual page includes mirror=enclosure parameter to avoid being mirrored on the same enclosure.
1414381	Fixed an issue with VVR I/O hanging due to the wrong generation number assignment after recovery.
1411636	Fixed a secondary log error causing rlink disconnect after IBC unfreeze.
1403123	Fixed an issue with vxconfigd sleeping and no vx commands were responding.
1397879	Enhanced the vxresize manual page to run from non-CVM master.
1397712	Fixed an issue with the vxsnap restore manual page is unable to properly freeze or thaw file systems in a CVM environment.

Table 1-6 Veritas Volume Manager and Veritas Volume Replicator 5.0MP3 RP1 fixed issues (*continued*)

Incident	Description
1396427	Enhanced DMP to handle failing IO when it is not able to interpret sense data.
1389584	Fixed a system panic in vol_putdisk() code.
1389512	Able to force import diskgroup version 80 in VxVM 5.0.
1387033	Fixed a system panic in bcopy() due to null passed in from volioctl_copyin()
1385922	Fixed a system panic due to memory allocation.
1376656	Fixed an issue with vxcached never deletes old snaps when cache hits HWM.
1372340	Fixed an issue with vxplexcore dumps during vxassist addlog due to DRL log length being less than 33 blocks.
1368752	Fixed an issue when there are no mirrors to read, VOL_READ_MIRRORS ioctl returns -1 instead of 1.
1364335	Created a command to verify whether the DMP is controlling the rootdisk.
1364332	Fixed an issue with the VM commands not working on DMP Enabled boot path.
1364324	Fixed an issue with VSCSI: A/P LBI/O policy not working with enabled DMP support on boot devices.
1364320	Fixed a issue with vxdmproot install causing machine to hang upon reboot.
1314301	Fixed an issue with vxlustart.
1266730	Fixed the vxtask command to display the resync progress subtask for shared volumes with DRL.
1230360	Fixed a system panic in vol_klog_start() due to accessing freed mv read_sio.
1192105	Fixed the vxdg -n [newdg] deport [origdg] command causing a memory leak.
1182475	Fixed the vxdg split failing if the CVM master changes.

Table 1-6 Veritas Volume Manager and Veritas Volume Replicator 5.0MP3 RP1 fixed issues (*continued*)

Incident	Description
425273	Fixed an issue with VVR RU thread not starting nio after it is created from than waiting for all replicas to have NIO's created.

Table 1-7 describes fixed issues in the Veritas Volume Manager 5.0MP3 RP2 release.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues

Incident	Description
850816	You can now delete snap objects from a mounted volume.
1097258	The vxconfigd daemon no longer hangs when an array is disconnected.
1108839	Turning on the dmp_cache_open tunable no longer slows down the vxconfigd daemon when run with 2048 dual path LUNs.
1184280	Added additional debug messages around the VE_BADPROTOV error message to improve debugging.
1195591	Fixed the cause of a panic when a cluster had an empty RVG.
1222125	Fixed an issue in which after converting a big volume group, you could not mount a file system on the volume.
1224659	Fixed an issue in which the vxconfigbackup -p script sometimes created a zero-length .binconfig file.
1286298	Fixed an issue in which proper locks were not taken in all necessary places while modifying last_sent_seqno.
1287975	The vxclustadmcommand has a segmentation fault when the main.cf file contains lines that are greater than 512 characters.
1314961	Fixed an issue in which if a disk tag name contained long DBCS characters, the configuration daemon was not accessible.
1321272	Fixed the an issue in which some VxVM commands hung after disconnecting, then reconnecting to the FC site link.
1321298	Fixed the cause of a vxconfigd daemon core dump that occurred after reconnecting the FC site link and heartbeat link.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1370927	Fixed an issue in which the VTOC of disks in a cluster became corrupted.
1374603	Fixed a cause of data corruption in the <code>dmp_bypass_iodone()</code> call.
1380386	The appropriate number of I/O threads are now created for systems with more than 8 CPUs.
1388883	Fixed an issue in which rebooting a controller caused the diskgroups to be disabled.
1393764	Fixed an issue in which the <code>vxconfigd</code> daemon hung on a node that tried to become the master on site 2 when the Fibre Channel and heartbeat link was disabled at same time.
1408367	Fixed the cause of a system panic when <code>mutex_panic()</code> was called from <code>vol_rwsleep_wrlock()</code> .
1411438	The dynamic multi-pathing tunable <code>dmp_enable_restore</code> value is now persistent when it is set to OFF.
1414336	Fixed an issue in which some disk devices did not appear in the <code>vxdisk list</code> command output.
1414469	Fixed an issue in which the <code>vxddladm listsupport alldid</code> not display up-to-date information.
1416080	Fixed the cause of a system panic in the <code>vol_change_disk()</code> routine that was due to NULL pointer dereference.
1421353	Fixed an issue in which I/O got stuck in the <code>drl_logbusy</code> queue due to corruption of the age node LRU list.
1425338	Fixed an issue in which connect rlinks failed to be connected, followed by <code>vxconfigd</code> hanging on a secondary node.
1445884	Fixed an issue in which the <code>vxdisk -e list</code> command dumped core.
1446208	Changed message V-5-1-2140 from an error message to an informational message.
1446216	Fixed an issue in which LUN mapping changes on node 0 caused node 1 and node 2 to panic.
1449001	Enabled the auto-compiler flag selection, which is used for enabling and disabling storage keys support.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1449264	Fixed the cause of a panic in <code>dmp_get_path_deferq</code> that occurred while creating a volume.
1450348	Fixed a potential hang/panic that was due to a race condition between an RU thread and a volume read completing during DCM replay.
1457132	Fixed the cause of data corruption when running the <code>vxddmpadm disable pathand vxddmpadm disable ctrl</code> commands.
1458792	Fixed an issue in which the <code>*unit_io</code> and <code>*pref_io</code> tunables became set to 32 MB after upgrading from the Storage Foundation 5.0 MP1 release to the 5.0 MP3 release.
1459831	Fixed an issue in which replication hung due to a deadlock on a secondary that had a TCP multiconnection and was managed by <code>nmcom</code> .
1460582	Fixed an issue in which the <code>vxddmpadm -f disable enclosure</code> command failed with a Segmentation Fault and dumped core.
1461314	DMP no longer uses the SCSI bypass on single path disks for path-suppressing TPD.
1461338	VxVM now correctly handles CPU affinity switching.
1461717	Fixed an issue in which the <code>vxsnap make</code> command caused the <code>vxconfigd</code> daemon to hang.
1463547	Fixed the cause of a <code>vxconfigd</code> core dump that occurred when dynamically reconfiguring a LUN.
1469487	The I/O buffer start time is no longer modified as part of error analysis.
1470548	Fixed an issue in which a campus cluster detached site could not be reattached.
1471003	Fixed an issue in which the <code>vxddg -s import oradg</code> command failed with following error on a campus cluster: V-5-1-10978 Disk group oradg: import failed: required lock not held in transaction
1471658	Fixed the cause of a <code>vxconfigd</code> daemon core dump that occurred in the <code>priv_get_all_udid_entry()</code> call.
1471754	Fixed the cause of a <code>vxconfigd</code> daemon core dump that occurred in the <code>ssb_increment_dg_abort()</code> call.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1471763	Fixed the cause of the following error: build_devlink_list: readlink failed for /dev/vx/rdisk/ludg: Invalid argument
1471813	The vxddmpadm start restorecommand now indicates that the restore daemon cannot be started when the dmp_enable_restore tunable is set to OFF.
1472736	Fixed the cause of a system panic in the vxddmp module that was due to a NULL pointer dereference.
1473638	Fixed the cause of a failover in the IOCTL context for coordinator disks.
1475707	Added an error message for attempting to import unwritable disks.
1477143	The cluster volume manager failback protocol is now triggered when cur_pri is null and at least one DMP node of the same LUN group is DMPNODE_SHARED.
1479729	Fixed the cause of an I/O hang on the primary node after a secondary node crashed.
1479735	Fixed the cause of an I/O hang on a slave if the master (logowner) crashed with a data change map active.
1480315	Fixed an issue in which VxVM performed a full re-sync of a volume that was created in the background when the volume's diskgroup was imported.
1482687	Fixed the cause of an I/O hang during and after CVM reconfiguration following a reboot of the master node.
1483164	Fixed an issue in which disks with the NOLABEL state were usable via the CLI.
1483201	Fixed an issue in which the Device Discovery Layer (DDL) sometimes set the unique disk identifier (UDID) value to INVALID. Multiple disks set to INVALID resulted in the following error: VxVM vxio V-5-0-1056 new disk disk_id has a non-unique UDID
1483643	Fixed an issue in which a raid 5 volume would not start on 3PAR Thin Provisioning LUNs.
1484919	Fixed an issue in which a system that was upgraded to the 5.0 MP3 release could not be booted.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1485379	Fixed an issue in which the <code>vxtask -l list</code> command displayed incorrect progress of the <code>vxsnap addmir</code> command, which was used to link a snapshot volume to the source volume.
1488084	Fixed an issue in which the <code>vxmpadm iostat</code> command reported different amounts of read/write blocks than the <code>vxstat</code> , <code>iostat</code> , and <code>sar -d</code> commands.
1500389	The <code>vxrootadm</code> command now automatically enables the <code>use-nvramrc?</code> variable.
1501165	Changed the V-5-1-2140 message from an error to a warning.
1502842	Fixed an issue in which the <code>dmppolicy.infofile</code> did not get updated after upgrading the packages from Storage Foundation (SF) 5.0 MP3 RP1 to SF 5.1.
1503168	Fixed an issue in which the diskgroup for disks without a private region (nopriv disks) could not be imported.
1507291	Fixed an issue in which setting the <code>dmp_monitor_fabric</code> value to ON triggered unexpected offlining of paths on a DMX4 array.
1507935	Fixed an issue in which the <code>vxconfigdaemon</code> dumped core when the <code>settag</code> keyword was used to specify a long site name in a campus cluster.
1508462	Fixed the cause of a <code>vxconfigd</code> hang that occurred due to a split brain condition on a cluster.
1512352	Fixed an issue in which the <code>vxconfigstore</code> command failed with the following error: VxVM vxconfigstore ERROR V-5-2-3706 Diskgroup configuration
1512805	Fixed an issue in which two disks from different enclosures with the same array volume ID were treated as duplicate array volume IDs.
1515581	Fixed an issue in which recreating a shared diskgroup put CVMVolDg in an empty KSTATE and offlined clustered file systems.
1525121	Fixed an issue in which EFI disks were in an error state after installing the Storage Foundation 5.0 MP3 RP1 patches.
1525819	Fixed an issue in which the <code>vxconfigbackup</code> command failed to work on a diskgroup that had 2 TB LUNs.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1527247	Fixed an issue in which the vxstat command showed twice the I/O activity on a mirror volume compared to the source volume.
1528368	Fixed the cause of an I/O hang during the data change map transition after performing vxresize operations on the primary node.
1529157	The vxdisk -e listcommand output now includes a wider range of values for the TYPE and STATUS columns.
1532363	Fixed an issue in which the vxdisk updateudid command is corrupted the UDID of a disk, which made diskgroup imports fail.
1534038	Fixed an issue in which DMP stats sometimes used invalid I/O stats entries, which led to a panic on the host.
1534379	Fixed an issue in which the vxdg split command failed with the following error: Internal configuration daemon error
1543803	Fixed an issue in which the vxconvertcommand failed to convert a volume group.
1544051	Fixed an issue in which the incorrect bit was being checked for an EMC Symmetrix thin device.
1586879	Improved performance of the vxdisk online command when used on large configurations.
1589022	Fixed the cause of an infinite loop in the DMP error handling code path with a CLARIION array, which led to an I/O hang.
1589172	Fixed an issue in which the vxdisksetupand vxdiskunsetup commands sometimes failed for EFI disks.
1589881	Fixed an issue in which the dump device was changed to none (dumps disabled) after encapsulating a boot disk.
1590314	The vxdmpadm getsubpaths dmpnodename command now validates the dmpnodenamevalue before getting the subpath information.
1594325	Backed out *unit_ioand *pref_io changes that were made in the 5.0 release.
1596811	Improved performance when re-enabling individual paths.

Table 1-7 Veritas Volume Manager and Veritas Volume Replicator 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1597868	Fixed an issue in which, on a secondary node, rlink paused and generated the “Incorrect magic number or unexpected upid” error message, and the secondary_log_err flag got set.
1598145	Fixed the cause of a crash in the vxdmproot install command during startup on an AIX 5.3 SAN boot disk.
1598706	Fixed the cause of a system crash that occurred while mirroring the rootdisk.
1661938	Enhanced the vxconfigd daemon to take advantage of the AIX very large address space model.
1663338	Fixed an issue in which I/O load balancing to LUNs between two VIO servers not working.
1675221	Fixed an issue in which the vxdmppadm setattr enclosure command created identical disk attribute names.
1677416	Fixed some CVM join and takeover issues that occurred in shared Active/Passive storage configurations that were due CVM sending messages that were more than 64k in size.
1711339	VVR tunables can now be modified using the vxtune command.
1714619	Fixed the cause of the panic due to DMP calling iodone() twice.

Veritas File System fixed issues

The Storage Foundation Cluster File System 5.1 includes cumulative fixes for Veritas File System since the 5.0MP3 release. The following tables describe these fixed issues.

[Table 1-8](#) describes fixed issues in the Veritas File System 5.1 release.

Table 1-8 Veritas File System 5.1 fixed issues

Incident	Description
1477763	The <code>qiostat -l</code> command now shows accurate hit percentages.
1603264	Fixed a panic that occurred while removing Storage Checkpoints, which requires a very long full <code>fsck</code> .

Table 1-8 Veritas File System 5.1 fixed issues (*continued*)

Incident	Description
1744587	Fixed a mount failure that occurred while mounting file systems that are greater than 10 TB.
1745875	Fixed a hang issue with the <code>fsckptadm create</code> command.
1804512	Fixed a <code>umount</code> failure that returned EBUSY.

[Table 1-9](#) describes fixed issues in the Veritas File System 5.0 MP3 RP2 release.

Table 1-9 Veritas File System 5.0 MP3 RP2 fixed issues

Incident	Description
847454	The VxFS <code>cp</code> command now has similar performance as the JFS2 <code>cp</code> command.
1298054	Fixed an issue in which ODM randomly displayed the following error: ORA-17500: ODM err:ODM ERROR V-41-4-2-42-11 Resource temporarily unavailable
1299313	Fixed the cause of a panic in <code>vx_unlockmap()</code> due to a null <code>ml_tranp</code> pointer.
1317905	Fixed the cause of a core dump when running the <code>quotacheck</code> command with more than 30 quota-enabled file systems in the <code>/etc/fstab</code> file.
1363639	Fixed the cause of an exception in the <code>vx_vnmap_min()</code> call that was due to the <code>vx_fsext_info()</code> call of a force unmounted file system having a null <code>fse_fsext_info</code> pointer.
1387074	Fixed the cause of the <code>fsclustadm cfsdeinit</code> command failing with the "device busy" error.
1416745	Fixed an issue in which the <code>dm_get_allocinfo()</code> call failed with the EIO error for EXT4 inodes with indirects.
1432323	Fixed a loop issue in which the <code>vx_do_putpage()</code> call due to the page going beyond <code>i_wsize</code> .
1443034	Fixed the cause of hangs with the <code>vxresizeand fsadm -b</code> commands on a VxFS file system.

Table 1-9 Veritas File System 5.0 MP3 RP2 fixed issues (*continued*)

Incident	Description
1445008	Fixed the cause of a system panic that occurred when auditing files on a VxFS file system.
1445131	Fixed a bug in the <code>vx_ifree_scan_list()</code> call in <code>vx_iflush.c</code> .
1454783	The <code>vx_multi_bufinval()</code> call now releases the CPU for a local mount with large extents.
1459329	New VxFS tunables and new <code>vxfsstat</code> counters now increase the number of VMM buffers per PDT, which improves performance.
1500197	Scanning of pages in <code>v_write</code> during <code>putpage</code> no longer causes GAB/LLT failure.
1517415	Fixed the cause of a core dump when running the <code>ncheck</code> command.
1526568	The <code>vx_tflush_map()</code> call no longer disables the file system when a map is marked bad without having an actual I/O error.
1542572	Fixed a rounding-up of length issue in the <code>vx_fsync_range()</code> call.
1591301	Fixed an issue in which a <code>smap</code> was marked bad due to punching a hole in the allocated AU.
1633530	Fixed an issue in which calling <code>vx_setext()</code> while having the <code>VX_GROWFILE</code> flag set sometimes failed to grow the file or exposed uninitialized data.
1667628	Implemented a new tunable, <code>flush_chunk_size</code> , which is used by the <code>vx_putpage_dirty()</code> and <code>vx_mm_invalidatep()</code> calls.
1701842	Fixed a cause of Concurrent I/O returning the <code>ENOTSUP</code> error to DB2, which caused DB2 to crash.

[Table 1-10](#) describes fixed issues in the Veritas File System 5.0 MP3 RP1 release.

Table 1-10 Veritas File System 5.0 MP3 RP1 fixed issues

Incident	Description
1366772	Fixed a performance issue.
1398904	Fixed an issue with VxFS filesystems temporarily hang in <code>vx_delay()</code> .
1400046	Fixed an issue with the <code>fsapadm enforceckpt mount_point</code> command that resulted in a core dump.

Table 1-10 Veritas File System 5.0 MP3 RP1 fixed issues (*continued*)

Incident	Description
1412160	Fixed a core dump caused by a VxFS function call while setting DST attributes.
1412465	Fixed a <code>vxresize</code> command failure to resize a volume, but the command could resize the file system.
1414178	Fixed an issue with VxFS using too much CPU while looking for odd-sized extents (<code>vxi_alloc_fail</code>).
1415188	Fixed a full <code>fsck</code> core dump that was caused by running out of swap space, which resulted in a malloc failure.
1423867	Optimized <code>vx_convnode_data_files()</code> .
1487928	Fixed the build script to compile packages to enable the storage keys feature.
1517337	Fixed a panic issue with lockcount of an FS thread upon <code>thread_terminate()</code> .

Known issues

The following are known issues in this release of Storage Foundation Cluster File System.

See the *Veritas Cluster Server Release Notes* for VCS known issues.

Veritas Storage Foundation Cluster File System known issues

The `cfsshare share` command may result in duplicate monitoring of the volumes (1871316)

When you run the `cfsshare share` command to NFS-export a file system that is already present in VCS configuration, there may be a case where multiple CVMVolDg resources get created to monitor different volumes within the same disk group. However, the CVMVolume attribute of each of the multiple CVMVolDg resources gets populated with more volumes than those required within the disk group. This results in duplicate monitoring of the volumes.

Workaround

Manually edit the CVMVolume attribute in the `main.cf` file to include only the specific volumes that are relevant to each CVMVoIdg resource.

The CVMVoIdg and CFSSMount resources may go to faulted state (1437947)

If the timezone of a system is changed on the fly where there is CVMVoIdg resources already in ONLINE state with the cluster running, the CVMVoIdg resources will be reported as OFFLINE in the next monitor cycle. Then in turn CVMVoIdg and CFSSMount resources will go to faulted state.

Workaround

Bring down the cluster using the `hastop -all` command before changing the timezone and then start the cluster by entering `hastart` on all the nodes.

SFCFS license keys are installed instead of SFCFSHA license keys if you aborted SFCFSHA installation at the licensing stage (1864906)

For keyless licensing, if you abort the installation process at the licensing stage for SFCFSHA or if you manually remove the license keys for SFCFSHA, then during configuration, SFCFS license keys are installed instead of the SFCFS HA license keys.

Workaround

Before configuring SFCFS HA, you must take either of the following actions:

- Manually add the license key for SFCFSHA with the following command:

```
# vxkeyless set SFCFSHAENT
```
- Run the installer, and license SFCFSHA by selecting **L** at installer task selection.

Not all the objects are visible in the SFM GUI (1821803)

After upgrading SF stack from 5.0MP3RP2 to 5.1, the volumes are not visible under the Volumes tab and the shared diskgroup is discovered as Private and Deported under the Disgroup tab in the SFM GUI.

Workaround

To resolve this known issue

- ◆ On each manage host where `VRTSsfmh 2.1` is installed, run:

```
# /opt/VRTSsfmh/adm/dclisetup.sh -U
```

Installer fails with a message that VRTSvlic is not installed

If you run the installer to configure, upgrade, or uninstall a cluster with three or more nodes, the installer may fail with a message that the VRTSvlic fileset is not installed. This failure occurs because of an installer timing issue. [1865116]

Workaround: You can either try to start the installer script again which resolves the timing issue or you can use the `-serial` option of the installer.

If you modify resource names, Cluster Volume Manager cannot start (1444545)

If you modify the `main.cf` configuration file, do not change the CVM or CFS resource names. These names must appear in lower case. If you change them, CVM/CFS fails to start or go online.

A Symantec technical note describes this issue in more detail.

<http://atlas.veritas.com/avf/aca-1/dispatch.exe/mynotes/lookup/309236/0>

Hang occurs in rare case of double fault scenario (1835639)

A rare corner case can occur in AIX. This is a double-fault scenario, where first one array of a mirror=enclosure configuration is offlined/disabled and then a node crashes. If these two events happen then the VxFEN module as well as actual I/O load and VxVM transactions on surviving nodes may hang requiring reboot.

All the LUNS for a Storage Foundation Cluster File System host must be larger than 32MB (1471732)

All the LUNS presented to the host where Storage Foundation stack is installed, should be greater than 32MB in size. In case of smaller size disks are presented to host, the host may PANIC while trying to access these LUNS. One of the ways to prevent the host from PANIC on boot is to unmap or remove the small size LUNS from hosts view

When master node loses access to complete storage, detached sites remain in RECOVER state even after reattaching and recovering the sites

In a campus cluster environment, if the master node loses access to complete storage, all but one of the sites is detached and the DCO volumes may get detached if the `dgfailpolicy` is set to `dgdisable`. If the detached sites are reattached and recovered, the site still remains in RECOVER state. [1828142]

Workaround: Change the status of the site as described in the following procedure to resolve the issue.

To change the status of the site

1 Log onto the CVM master node.

2 Reattach the detached sites:

```
# vxdg -g dg_name reattachsite site_name
```

The site remains in RECOVER state.

3 Restore DCO volumes by unpreparing and preparing the volumes.

Unprepare the volumes:

```
# vxsnap -g dg_name -f unprepare vol_name
```

Prepare the volumes:

```
# vxsnap -g dg_name prepare vol_name dnl=on
```

4 Reattach the detached sites:

```
# vxdg -g dg_name reattachsite site_name
```

5 Verify that the state of the detached sites is now ACTIVE:

```
# vxprint
```

Veritas Storage Foundation for Databases (SFDB) tools known issues

The following are known issues with Storage Foundation for Databases (SFDB) tools.

Reverse Resync not supported if database is created using Oracle Managed Files (1192729)

If an Oracle database is created with Oracle Managed Files (OMF), then `reverse_resync` operations would fail.

The following errors are displayed:

```
oracle@swlx07:~> /opt/VRTSdbed/bin/dbed_vmsnap -S $ORACLE_SID \  
-f sp4 -o
```

```
reverse_resync_begin  
dbed_vmsnap started at 2007-12-28 12:02:42
```

```
SFORA dbed_vmsnap WARNING V-81-5725 After reverse_resync_commit  
is performed, you need to recreate the Authentication Password  
File using the ORAPWD utility.
```

```
SFORA dbed_vmsnap ERROR V-81-4882 An error occurred while  
reconfiguring Oracle instance 'sfora'.
```

```
SFORA dbed_vmsnap ERROR V-81-4881 Log file is at  
/tmp/dbed_vmclonedb.12313/nomount.log.
```

```
SFORA dbed_vmsnap ERROR V-81-4918 Database sfora has not been  
correctly recovered.
```

```
SFORA dbed_vmsnap ERROR V-81-4881 Log file is at  
/tmp/dbed_vmclonedb.12313/recover.log.
```

Workaround

The `reverse_resync` operation for a database created with OMF is not supported in the 5.1 release.

There is no workaround for this issue.

dbed_vmclonedb -p failed to create clonedb with modified pfile (852188)

If you are running the `dbed_vmclonedb -p` or the `dbed_clonedb -p` command, the pfile modification will fail if there is an unquoted or unescaped special character in the primary instance's pfile. The following error will be displayed:

```
SFORA pfile_mod ERROR V-81-5781 Parse error in file  
/oracle/dbs/<pfile_name>. line 6: .
```

```
SFORA dbed_vmclonedb WARNING V-81-5788 Pfile modification failed.  
Clone instance <CLONE SID> may not start.
```


Workaround

To avoid this issue, make sure all special characters in the primary instance's pfile are either placed within quotes or escaped.

You can check the Oracle Reference Manual for a list of special characters which must be either placed within quotes or escaped when used as pfile parameter values. In some cases, Oracle will process pfile correctly at startup even if a parameter values contains unquoted special characters. However, the pfile parser we use strictly enforces the pfile specification contained in the Oracle Reference Manual.

Note: The primary instance's pfile is saved at the time of snapshot creation. If you attempt to clone the database using that snapshot you will be using the saved pfile, not the current pfile. Therefore you must create a new snapshot in order to ensure that the clone will use an updated pfile.

Clone command fails on an Oracle RAC database (1399393)

The commands `dbed_vmclondb` and `dbed_clonedb` will fail on an Oracle RAC database when the clone SID name contains the primary SID name in the beginning.

For example, the following commands, which have "Prod" as the primary SID and "Prod1" as the clone SID, produce the following error message:

```
# dbed_vmclondb -S Prod -o recoverdb \  
new_sid=Prod1,server_name=srv_name -f snapplan -r relocate_path  
# dbed_vmclondb -S Prod -o mountdb \  
new_sid=Prod1,server_name=srv_name -f snapplan -r relocate_path  
# dbed_clonedb -S Prod1 -m mount_point -c ckpt_name  
ERROR V-81-4882 An error occurred while reconfiguring Oracle instance  
'clone_SID'
```

Database fails over during Flashsnap operations (1469310)

In an SFHA environment, if the database fails over during Flashsnap operations such as the `dbed_vmsnap -o resync` command and various error messages appear. This issue occurs because Flashsnap commands do not create a VCS resource for the SNAP disk group. As such, when the database fails over, only the primary disk group is moved to another node.

Storage Foundation for Databases (SFDB) tools support for using Oracle Data Guard with Oracle RAC (1801265)

Storage Foundation for Databases (SFDB) tools do not support use of Data Guard with Oracle RAC in this release.

Clone command fails for instant checkpoint on Logical Standby database (1736516)

The `dbed_clonedb` command does not work on Logical standby database when using instant checkpoint.

Flashsnap reverse resync command fails on offhost flashsnap cloning (1810711)

Performing `dbed_vmsnap -o reverse_resync_begin` fails if an off-host clone has been created on the snapshot before.

Clone command fails if archive entry is spread on multiple lines (1764885)

If you have a `log_archive_dest_1` in single line in the `init.ora` file, then `dbed_vmclonedb` will work but `dbed_vmcloneb` will fail if you put in multiple lines for `log_archive_dest_1`.

Reattach command fails in a multiple disk group environment if the snapshot operation fails (1840672)

In a multiple disk group environment, if the snapshot operation fails then `dbed_vmsnap` fails to reattach all the volumes. This operation must be performed as root user.

DBED features are not integrated with GCO

DBED features are not integrated with Global Cluster Option (GCO). After GCO migration, be aware that DBED features will not be functional. [1241070]

Database FlashSnap snapplan creation and validation failed for standby database if standby redo log is mislocated (1873738)

Mislocated standby redo log files may cause errors during Database FlashSnap snapplan creation and validation for standby database in a Oracle Data Guard environment.

The `dbed_vmchecksnap` command may fail with the following error messages:

```
$ dbed_vmchecksnap -S stand \  
-H $ORACLE_HOME -f snp -o setdefaults -t dblxxeon02  
SFORA vxsnapadm ERROR V-81-5907 open() /snap_data11r1/FLAS11r1/redo01.log  
      failed (No such file or directory).  
SFORA vxsnapadm ERROR V-81-5526 Empty or open file  
      /snap_data11r1/FLAS11r1/redo01.log failed.  
Snapplan snp for stand.
```

Workaround

Create empty redo log files by using the touch command so that `dbed_vmchecksnap` can succeed without any errors.

For example:

```
$ touch /snap_data11r1/FLAS11r1/redo01.log
$ touch /snap_data11r1/FLAS11r1/redo02.log
$ touch /snap_data11r1/FLAS11r1/redo03.log
```

Veritas Volume Manager known issues

The following are known issues in this release of Veritas Volume Manager (VxVM).

The cluster may hang if a node goes down (1835718)

The cluster may hang if a node goes down while one array is disabled or offline in a mirror=enclosure configuration.

This may occur, if a node panics or loses power while one array of a mirror=enclosure configuration is offline or disabled, then the cluster, fencing, I/O loads, and VxVM transactions hang.

There is no workaround at this time.

Performing Thin Reclamation on sliced format disk causes data corruption (1834848)

This issue occurs only for the Thin Reclamation feature on a sliced format disk. When reclaiming the thin disks within the disk group, this issue occurs if the thin disks are initialized using sliced format. The `vxdisk reclaim` command or `fsadm -R` command option corrupts the data on the file system.

Workaround

Avoid performing any reclaim operation on the disk group with thin reclamation disk on it.

If performing the reclaim is required, initialize the thin reclaim disk as `cdsdisk` format.

Existing disk groups and file systems will not be affected, because the thin reclamation feature is only supported from Storage Foundation Cluster File System 5.0MP3 release and onwards.

The path failure due to filer panic in the netapp array may occasionally cause longer path failover time or longer I/O delay (1835139)

The path failure due to filer panic in the netapp array may occasionally cause longer path failover time or the longer I/O delay which varies from 100 seconds to 400 seconds. The long failover time is due to the race between the I/O code path and the path failover code path, which is more likely to happen with heavy I/O load.

Workaround

There is no workaround for this issue. The poor path failover time is not avoidable at this time.

The requestleave policy is not supported if disk cache objects (DCOs) or dirty region logs (DRLs) are configured (1796617)

When disk cache objects (DCOs) or dirty region logs (DRLs) are configured, the `dgfailpolicy` should not be set to `requestleave`. This release 5.1 does not support this scenario because it could result in data corruption or compromise application availability.

vxconvert failures if PowerPath disks are formatted as simple disks (857504)

If a PowerPath disk is formatted as a simple disk (a foreign device), then the `vxconvert` utility may fail during conversion of LVM to VxVM. To view the format of the disk, use the `vxdisk list` command.

This issue may also occur if the `/etc/vx/darecs` file contains an `hdiskpower` disk entry. This entry may be present if PowerPath disks were configured as foreign disks in Storage Foundation Cluster File System 4.0, and the entry was not changed after subsequent upgrades.

VxVM might report false serial split brain under certain scenarios (1834513)

VxVM might detect and report a false serial split brain when all the following conditions are met:

- One or more arrays that provide the shared storage for the cluster are being powered off

- At the same time when the arrays are being powered off, an operation that requires an internal transaction is initiated (such as VxVM configuration commands)

In such a scenario, disk group import will fail with a split brain error and the vxsplitlines output will show 0 or 1 pools.

Workaround:

To recover from this situation, run the following command:

```
/etc/vx/diag.d/vxprivutil set <device-path> ssbid=<dm id>
```

The <dm id>, which is also the ssbid, can be retrieved from the config copy by running the following command:

```
/etc/vx/diag.d/vxprivutil dumpconfig <device-path>
```

VxVM starts before OS device scan is done (1635274)

While working with some arrays, VxVM may start before all devices are scanned by the OS. This slow OS device discovery may result in malfunctioning of VM, fencing and VCS due to partial disks seen by VxVM.

Workaround

After the fabric discovery is finished, issue the `vxdisk scandisks` command to bring newly discovered devices into the VxVM configuration.

After installing Volume Manager, you may be prompted to reinstall it (1704161)

If you remove pre-5.1 Volume Manager packages and then install 5.1 Volume Manager without using the product installer, the following message is displayed:

```
The Volume Manager appears to be installed already. You should use vxdiskadm to add more disks to the system. Installation with vxinstall will attempt to reinstall the Volume Manager from the beginning. Depending upon how your system is currently configured, a reinstallation may fail and could leave your system unusable.
```

```
Are you sure you want to reinstall [y,n,q,?] (default: n)
```

Workaround

When you are prompted to reinstall, enter **y**.

Note: This message is not displayed if you install Volume Manager with the product installer.

To display localized characters on the VEA interface, you need to change your language preferences (1666997)

If you change the locale in your operating system, the Veritas Enterprise Administrator (VEA) interface displays messages half in the new language and half in the previous language.

Workaround

To correct this issue, change the language on your VEA Preferences screen.

Veritas File System known issues

The following are known issues in this release of Veritas Storage Foundation.

Possible write performance degradation with VxFS local mounts

Some applications that allocate large files without explicit preallocation may exhibit reduced performance with the VxFS 5.1 release compared to the VxFS 5.0 MP3 release due to a change in the default setting for the tunable `max_seqio_extent_size`. One such application is DB2. Hosting DB2 data on a single file system extent maximizes the potential for sequential pre-fetch processing. When DB2 detects an application performing sequential reads against database data, DB2 begins to read ahead and pre-stage data in cache using efficient sequential physical I/Os. If a file contains many extents, then pre-fetch processing is continually interrupted, nullifying the benefits. A larger `max_seqio_extent_size` value reduces the number of extents for DB2 data when adding a data file into a tablespace without explicit preallocation.

The `max_seqio_extent_size` tunable controls the amount of space that VxFS automatically preallocates to files that are allocated by sequential writes. Prior to the 5.0 MP3 release, the default setting for this tunable was 2048 file system blocks. In the 5.0 MP3 release, the default was changed to the number of file system blocks equaling 1 GB. In the 5.1 release, the default value was restored to the original 2048 blocks.

The default value of `max_seqio_extent_size` was increased in 5.0 MP3 to increase the chance that VxFS will allocate the space for large files contiguously, which tends to reduce fragmentation and increase application performance. There are two separate benefits to having a larger `max_seqio_extent_size` value:

- Initial allocation of the file is faster, since VxFS can allocate the file in larger chunks, which is more efficient.
- Later application access to the file is also faster, since accessing less fragmented files is also more efficient.

In the 5.1 release, the default value was changed back to its earlier setting because the larger 5.0 MP3 value can lead to applications experiencing "no space left on device" (ENOSPC) errors if the file system is close to being full and all remaining space is preallocated to files. VxFS attempts to reclaim any unused preallocated space if the space is needed to satisfy other allocation requests, but the current implementation can fail to reclaim such space in some situations.

If your workload has lower performance with the VxFS 5.1 release and you believe that the above change could be the reason, you can use the `vxtunefs` command to increase this tunable to see if performance improves.

To restore the benefits of the higher tunable value

- 1 Increase the tunable back to the 5.0 MP3 value, which is 1 GB divided by the file system block size.

Increasing this tunable also increases the chance that an application may get a spurious ENOSPC error as described above, so change this tunable only for file systems that have plenty of free space.

- 2 Shut down any application that are accessing any large files that were created using the smaller tunable setting.
- 3 Copy those large files to new files, which will be allocated using the higher tunable setting.
- 4 Rename the new files back to the original names.
- 5 Restart any applications were shut down earlier.

The dynamic vmm buffer allocation feature requires certain AIX APARs to be installed (1849083)

VxFS supports the use of the dynamic vmm buffer allocation (D_REFUND) feature, which IBM added to AIX 6.1 TL2 and later releases of AIX. However, IBM fixed some issues in the D_REFUND feature through certain APARs, which you must install to use the D_REFUND feature with VxFS. The TL of the operating system determines which APAR you must install:

Operating system

AIX 6.1 TL2

Required APAR

IZ41494, which is packaged in SP3

Operating system	Required APAR
AIX 6.1 TL3	IZ37627
AIX 6.1 TL4	IZ38189

No longer supported

This section describes Storage Foundation Cluster File System features that are not supported in this release.

The following features are not supported in this release of Storage Foundation Cluster File System products:

- The `seconly` feature in SFCFS
- Storage Expert
- The use of the `vxvoladm` command line utility
- Intelligent Storage Provisioning (ISP)

VVR will use TCP as default protocol from next release

In Storage Foundation Cluster File System 5.1 and previous releases, VVR uses UDP as the default transport protocol for communicating between the primary and secondary. In future releases, the default protocol will be switched to TCP. Users will have the option to manually switch back to UDP.

Documentation

Product guides are available on the software disc in PDF format. Symantec's Veritas Storage Foundation Cluster File System documentation is also available on the Symantec website.

Symantec's Veritas Storage Foundation Cluster File System 5.1 documentation set is available at the following URL:

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

Relevant component product release notes

Read the relevant component product release notes before installing any version of Veritas Storage Foundation.

The following documents are relevant component product release notes:

- *Veritas Cluster Server Release Notes* (`vcs_notes.pdf`)
- *Veritas Storage Foundation for Oracle RAC Release Notes* (`sfrac_notes.pdf`)
- *Veritas Storage Foundation Release Notes* (`sf_notes.pdf`)

Storage Foundation guides

The following manuals, along with the online help, comprise the Veritas Storage Foundation documentation set:

[Table 1-11](#) describes the guides in the Veritas Storage Foundation documentation set.

Table 1-11 Guides in Veritas Storage Foundation documentation set

Guide Title	Filename
<i>Veritas Storage Foundation and High Availability Getting Started Guide</i>	<code>getting_started.pdf</code>
<i>Veritas Storage Foundation read me first</i>	<code>readme_first.txt</code>
<i>Veritas Storage Foundation Release Notes</i>	<code>sf_notes.pdf</code>
<i>Veritas Storage Foundation Installation Guide</i>	<code>sf_install.pdf</code>
<i>Veritas Storage Foundation: Storage and Availability Management for Oracle Databases</i>	<code>sf_adv_ora.pdf</code>
<i>Veritas Storage Foundation Advanced Features Administrator's Guide</i>	<code>sf_advanced_admin.pdf</code>
<i>Veritas File System Administrator's Guide</i>	<code>vxfs_admin.pdf</code>
<i>Veritas File System Programmer's Reference Guide</i>	<code>vxfs_ref.pdf</code>
<i>Veritas Volume Manager Administrator's Guide</i>	<code>vxvm_admin.pdf</code>
<i>Veritas Volume Manager Troubleshooting Guide</i>	<code>vxvm_tshoot.pdf</code>

Veritas Storage Foundation Cluster File System documentation

The following Veritas Storage Foundation Cluster File System documentation is available with all Veritas Storage Foundation HA product suites:

[Table 1-12](#) describes the Veritas Storage Foundation Cluster File System (CFS) documentation set.

Table 1-12 Guides in Veritas Storage Foundation Cluster File System documentation set

Guide Title	Filename
<i>Veritas Storage Foundation Cluster File System Release Notes</i>	sfcfs_notes.pdf
<i>Veritas Storage Foundation Cluster File System Installation Guide</i>	sfcfs_install.pdf
<i>Veritas Storage Foundation Cluster File System Administrator's Guide</i>	sfcfs_admin.pdf
<i>Veritas Storage Foundation: Storage and Availability Management for Oracle Databases</i>	sf_adv_ora.pdf
<i>Veritas Storage Foundation Advanced Features Administrator's Guide</i>	sf_advanced_admin.pdf

Veritas Cluster Server documentation

The following Veritas Cluster Server documentation is available with all Veritas Storage Foundation HA product suites:

[Table 1-13](#) describes the Veritas Cluster Server documentation set.

Table 1-13 Guides in Veritas Cluster Server documentation set

Guide Title	Filename
<i>Veritas Cluster Server Release Notes</i>	vcs_notes.pdf
<i>Veritas Cluster Server Installation Guide</i>	vcs_install.pdf
<i>Veritas Cluster Server Agent Developer's Guide</i>	vcs_agent_dev.pdf
<i>Veritas Cluster Server Bundled Agents Reference Guide</i>	vcs_bundled_agents.pdf
<i>Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide</i>	vcs_vvr_agent.pdf
<i>VCS Enterprise Agent for Oracle Installation and Configuration Guide</i>	vcs_oracle_install.pdf
<i>VCS Enterprise Agent for DB2 Installation and Configuration Guide</i>	vcs_db2_install.pdf
<i>VCS Enterprise Agent for Sybase Installation and Configuration Guide</i>	vcs_sybase_install.pdf

Veritas Volume Replicator documentation

The following Veritas Volume Replicator documentation is available with the Veritas Volume Replicator option:

[Table 1-14](#) describes the Veritas Volume Replicator documentation set.

Table 1-14 Guides in Veritas Volume Replicator documentation set

Guide Title	Filename
<i>Veritas Volume Replicator Administrator's Guide</i>	vvr_admin.pdf
<i>Veritas Volume Replicator Planning and Tuning Guide</i>	vvr_planning.pdf
<i>Veritas Volume Replicator Advisor User's Guide</i>	vvr_advisor_users.pdf

Veritas Storage Foundation for Oracle RAC documentation

The following Storage Foundation for Oracle RAC documentation is available with all Veritas Storage Foundation HA product suites:

[Table 1-15](#) describes the Storage Foundation for Oracle RAC documentation set.

Table 1-15 Guides in Storage Foundation for Oracle RAC documentation set

Guide Title	Filename
<i>Veritas Storage Foundation™ for Oracle RAC Installation and Configuration Guide</i>	sfrac_install.pdf
<i>Veritas Storage Foundation™ for Oracle RAC Release Notes</i>	sfrac_notes.pdf
<i>Veritas Storage Foundation™ for Oracle RAC Administrator's Guide</i>	sfrac_admin.pdf
<i>Veritas Storage Foundation: Storage and Availability Management for Oracle Databases</i>	sf_adv_ora.pdf

Manual Pages

The Veritas online manual pages are installed in the `/opt/VRTS/man` directory. This directory can be added to the `MANPATH` environment variable.

If the `MANPATH` environment variable does not include `/opt/VRTS/man`, you can view the desired manual page by entering the following command:

```
# man -M /opt/VRTS/man manual_page_name
```