# Veritas™ Cluster Server Release Notes

Solaris

5.1

# Veritas™ Cluster Server Release Notes

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Product version: 5.1

Document version: 5.1.2

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350 Ellis Street
Mountain View, CA 94043

http://www.symantec.com

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# Release Notes

This document includes the following topics:



## Introduction

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

http://sfdoccentral.symantec.com/sf/5.1/solaris/pdf/vcs_notes.pdf

This is document version 5.1.2.

This document provides important information about Veritas Cluster Server (VCS) version 5.1 for Solaris. Review this entire document before you install or upgrade VCS.

The information in the Release Notes supersedes the information provided in the product documents for VCS.

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:

Solaris SPARC: http://entsupport.symantec.com/docs/334829

You can download the latest version of *Veritas Cluster Server Release Notes* from the link that is provided in the TechNote.

The hardware compatibility list 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.

# About Veritas Cluster Server

Veritas™ Cluster Server by Symantec (VCS) is a clustering solution that eliminates downtime, facilitates server consolidation and failover, and effectively manages a wide range of applications in heterogeneous environments.

## About VCS agents

VCS bundles agents to manage a cluster's key resources. The implementation and configuration of bundled agents vary by platform.

For more information about bundled agents, refer to the *Veritas Cluster Server Bundled Agents Reference Guide*.

The Veritas High Availability Agent Pack gives you access to agents that provide high availability for third-party storage solutions. Contact your Symantec sales representative for information about agents included in the agent pack, agents under development, and agents that are available through Symantec consulting services.

VCS provides a framework that allows for the creation of custom agents. Create agents in situations where the Veritas High Availability Agent Pack, the bundled agents, or the agents for enterprise applications do not meet your needs. You can also request a custom agent through Symantec consulting services.

For more information about the creation of custom agents, refer to the *Veritas Cluster Server Agent Developer's Guide*.

VCS also provides agents to manage key enterprise applications. Before configuring an enterprise agent with VCS, verify that you have a supported version of the agent.

See "Supported VCS agents" on page 36.

### About compiling custom agents

Custom agents developed in C++ must be compiled using Forte Developer 6 compilers. The following is the layout of libvcsagfw.so in usr/lib:

```
/usr/lib/libvcsagfw.so --> . /libvcsagfw.so.2
```

If you use custom agents compiled on older compilers, the agents may not work with VCS 5.0. If your custom agents use scripts, continue linking to ScriptAgent. Use Script50Agent for agents written for VCS 5.0.

## 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/

# New features

This section lists the features introduced in the VCS 5.1 release.

See the *Veritas Cluster Server Administrator's Guide* for details.

## Changes related to the VCS installer

This section lists the changes related to the VCS installer.

### Changes to VCS package location on the product disc

The VCS packages location on the product disc has changed from the cluster_server directory to the following:

/cdrom/pkgs

The VCS agent package for DB2, Oracle, and Sybase (VRTSvcsea) also resides in the same location as the other VCS packages.

### Change in VCS packaging standard on Solaris

With this release, the VCS packages on Solaris use the Solaris single file package standard and not the compressed packages. This change eliminates the need to copy the packages to a temporary directory, unzip and extract these packages, and then install. You can now directly install the packages from the product disc.

### Option to install only the minimal packages

The Veritas Cluster Server product installer provides options for installing only selected packages. You can install the minimal packages, the recommended packages, or all of the packages.

See the *Veritas Cluster Server Installation Guide* for more details.

### Rootpath option to uninstall scripts

The `-rootpath` option is used to specify the path from where the packages must be uninstalled. You must use this option if you did not install the packages on the default location.

On Solaris, -rootpath passes -R <*root_path*> to pkgrm.

## 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 Cluster Server Installation Guide*.

## Option to start or stop VCS

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 Cluster Server Installation Guide* for more details.

## New startup and shutdown environment variables for VCS

VCS now has environment variables to control the startup and shutdown of the following VCS modules during system startup and shutdown:

- LLT: The file /etc/default/llt has LLT_START and LLT_STOP variables.
- GAB: The file /etc/default/gab has GAB_START and GAB_STOP variables.
- I/O fencing: The file /etc/default/vxfen has VXFEN_START and VXFEN_STOP variables.
- VCS engine: The file /etc/default/vcs has VCS_START and VCS_STOP variables.

The installer enables these variables after you configure VCS. You must explicitly enable these variables if you perform a manual configuration.

See the *Veritas Cluster Server Installation Guide* and *Veritas Cluster Server Administrator's Guide* for more information.

## Support for installer resilience

If an installation or upgrade of VCS 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 Cluster Server Installation Guide* for more details.

## Support for I/O fencing configuration using the installer

You can use the -fencing option of the installvcs to configure I/O fencing. Based on the fencing mechanism you want to use in the cluster, the installer provides the following options to configure I/O fencing:

- Disk-based I/O fencing - when you want to use disks as coordination points.
- Server-based I/O fencing - when you want to use CP servers as coordination points or a combination of coordinator disks and CP servers as coordination points.

The installvcs configures I/O fencing in disabled mode at the end of VCS configuration. However, split-brain prevention capabilities are not activated in disabled mode. Symantec recommends you to configure I/O fencing in enabled mode to use disk-based or server-based I/O fencing.

See the *Veritas Cluster Server Installation Guide* for more details.

## Changes to configuring clusters in secure mode

You can now configure one of the nodes within the cluster as root and authentication broker if you do not want to set up an external root broker system. You can use the automatic configuration mode that the installer provides to configure a cluster node as the root broker.

The -security option of the installvcs no longer provides an option to configure root broker. You can only enable or disable AT for clusters using the -security option of the installvcs. You must use the installer or the installat program to install and configure root broker.

See the *Veritas Cluster Server Installation Guide* for more details.

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

In the previous releases of VCS, in certain secure enterprise environments where RSH or SSH communication was not enabled, the installer installed and configured VCS 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 VCS on other systems.

With this release of VCS, 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 VCS.

The Web-installer can perform the following functions:

- Install VCS
- Uninstall VCS
- Configure VCS
- Upgrade VCS
- Start and stop VCS
- 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.

## Support to enable rolling upgrades in future releases

VCS 5.1 adds support to enable rolling upgrades in future releases. These changes will help you upgrade to future versions of VCS with a minimal downtime of your infrastructure and applications during the upgrade process.

## 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/llthosts for node names. When found, the installer program presents these as default nodes for installation. If the llthosts 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 VCS on systems with IPv4, IPv6, or mixed stack configurations.

## 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 Solaris.

Refer to the *Veritas Cluster Server Installation Guide*'s section on Live Upgrade.

### 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

### Using aggregate links during installation

The installer program asks if you want to use an aggregate NIC, if so it configures the llttab file for you. Note that the installer program does not detect aggregate links.

### Command options to help troubleshoot installations

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

## Upgrade changes

The following lists upgrade changes in this release.

### Supported paths for VCS upgrades that do not require a node reboot

When you perform a typical upgrade using the installer program from VCS versions 5.0, 5.0 MP1, and 5.0 MP3 to VCS version 5.1, a node 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 changes 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 VCS 5.0 MP3 to SFHA 5.1, the installer displays the following error message:

```
VCS 5.0.30.00 is installed.
Upgrading VCS 5.0.30.00 directly to SFHA 5.1 is not supported.
```

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

- If a previous version of SFHA is installed, the installer supports partial product upgrade.
  You can upgrade only VCS or SF to version 5.1. For example, you can upgrade SFHA 5.0 MP3 to VCS 5.1. If you want to upgrade the complete SFHA stack later, you can run the installsf program.

See the *Veritas Cluster Server Installation Guide* for VCS supported upgrade paths.

### Other upgrade changes

You can use the `-upgrade` option of the installer to upgrade the product. Web-based installer also provides you with a similar option.

The installer program detects the installed product or products and upgrades them. The installer program detects the products in the following order: Storage Foundation RAC, Storage Foundation CFS, Storage Foundation High Availability, Storage Foundation, Veritas Cluster Server, Veritas Volume Manager/Veritas File System/Veritas Volume Replicator. The installer then upgrades any packages on the node and installs the 5.1 packages.

## Changes related to the VCS engine

This section lists the new features related to the VCS engine.

### Support for a universally unique ID (UUID) for each cluster

This release introduces a universally unique ID for each cluster.

The VCS installer configures a UUID value for each cluster at the end of the configuration. If you manually configure a cluster, you must use the uuidconfig.pl utility to create a cluster UUID.

### VCS engine allows deletion of individual value from a vector-type attribute

If there are multiple occurrences of the same value in the vector, then all instances of that value will be deleted.

## Changes related to the VCS commands

- The folder /opt/VRTS/bin includes links to commonly used VCS commands along with other SFHA product commands. Symantec recommends that you add this directory to your PATH environment variable.
  For the commands that do not reside in the common folder, the VCS user documents specify the complete path for the command.
- VCS 5.1 includes the following new options and changes for the ha commands:
  - The VCS engine allows deleting an individual element from a vector-type attribute. If the vector list has multiple occurrences of the same value, then the VCS engine deletes all the occurrences of the value.
  - The `hagrp -resources` command supports -clus | -localclus options.

    ```
    hagrp -resources group [-clus cluster | -localclus]
    ```

    The command displays the resource of a global group on a remote cluster *cluster*.
    The option -clus displays information for the cluster designated by the variable *cluster*. The option -localclus specifies the local cluster.
  - The hastatus command supports -time option.

    ```
    hastatus [-sound] [-time] -sys sys [ -sys sys ... ]
    ```

    The -time option prints the system time at which the status was received.
  - The hares command supports the -parentprop option for taking a resource offline.

    ```
    hares -offline [-ignoreparent | -parentprop] res -sys system
    ```

    The -parentprop option stops all the parent resources in order before VCS takes the specific resource offline.
  - The switch group command supports the -any option.

    ```
    hagrp -switch group -any [-clus cluster | -localclus]
    ```

    This option allows the switching of parallel global groups across a cluster. If you run this command to switch a parallel global service group across clusters, VCS brings the parallel service group online on all possible nodes in the remote cluster.
  - The ha commands with -modify option now support -insert option.
    It enables you to add one or more values in the vector/keylist attribute at a given index.

```
hares -modify resource attr -insert index value ...
```

See the *Veritas Cluster Server Administrator's Guide* for more information.

### VCS complies with Solaris 10 Service Management Facility (SMF)

VCS 5.1 complies with Solaris Service Management Facility (SMF). For more information about SMF, refer to the Sun website.

### First Failure Data Capture (FFDC) logs for support analysis

If VCS encounters some problem, then First Failure Data Capture (FFDC) logs are generated and dumped along with other core dumps and stack traces. If the debug logging is not turned on, these FFDC logs are useful to analyze the issues that require professional support.

See the *Veritas Cluster Server Administrator's Guide*.

### New UUIDCONFIG(1M) man page

The new man page for UUIDCONFIG(1M) describes how to manage the cluster UUID (universally unique id) on the VCS nodes.

### The hazonesetup commmand upgraded

The hazonesetup command now includes information on the autostart option and upgraded langauge.

## VCS support for IPv6

VCS components that support IPv6 are as follows:

- VCS engine information follows:
  - Supports IPv6 and IPv4 in a dual stack configuration and in a pure stack configuration (either IPv4 or IPv6).
  - Simulator on Windows supports IPv4 only.
  - You can use an IPv6 address as the value for the ClusterAddress attribute in the "Cluster" object.
- Wide-Area Connector (WAC) information follows:
  - You can use an IPv6 address as the value for the ClusterAddress attribute for the Cluster resource.

- The ClusterAddress of all participating clusters in a global cluster option configuration should be from the same family (either IPv6 or IPv4).

- Heartbeat agents—You can use IPv6 addresses as the value of the Arguments attribute for the Icmp and IcmpS agents.
- Steward—You can use a list of IPv6 addresses as the value for the Steward attribute in the cluster resource.

# Changes to bundled agents

This section describes changes to the bundled agents for VCS.

## New bundled agents

VCS has the following new agents:

- CoordPoint—Monitors coordination points in I/O fencing configurations.

The following Veritas Volume Replicator agents are now bundled as well:

- RVG—Brings the RVG online, monitors read and write access to the RVG, and takes the RVG offline.
- RVGPrimary—Attempts to migrate or takeover a Secondary to a Primary upon an application failover.
- RVGSnapshot—Creates and destroys a transactionally consistent space-optimized snapshot of all volumes in a VVR secondary replicated data set.
- RVGShared—Monitors the RVG in a shared environment.
- RVGLogowner—Assigns and unassigns a node as the logowner in the CVMcluster.
- RVGSharedPri—Attempts to migrate or takeover a Secondary to a Primary when a parallel service group fails over.

See the *Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide*.

See "No longer supported agents and components" on page 36.

## Other new features for the bundled agents

New features for the bundled agents follow:

- SMF support in the NFS agent
- The Zone agent supports BootState

- The Mount agent supports loopback mounts
- The IgnoreMultiNICBFailure attribute for the IPMultiNICB agent

See the *Veritas Cluster Server Bundled Agents Reference Guide*.

### IPv6 support for networking agents

Networking agents—You can configure all of the networking agents to bring online, take offline, and fail over IPv6 addresses.

## Managing clusters

### VCS Single Cluster Manager web console is no longer available

VCS Single Cluster Manager web console is no longer available. For Web-based administration, Symantec recommends that you use Veritas Cluster Server Management Server.

To download the most current version of VCS Management Console, go to http://www.symantec.com/business/cluster-server and click **Utilities**.

Upgrading removes Cluster Connector component if configured. You need to upgrade VCS Management Console (formerly CMC) to version 5.5 to manage this version of VCS. After you upgrade, you need to use Cluster Connector to Direct Connection conversion wizard in VCS Management Console.

### Changes to Symantec Java Runtime Environment Redistribution

Symantec Java Runtime Environment Redistribution (VRTSjre15) is no longer packaged with VCS. Symantec recommends users to install native JRE 1.5 for any Symantec components that require it.

Make sure that you meet at least one of the following requirements for the Symantec components to run successfully:

- JAVA_HOME is specified and it points to Java v1.5+ installation
- /opt/VRTSjre/jre1.5/bin/java exists
- /usr/bin/java is at least v1.5
- $PATH has java and is at least v1.5

### Changes to VCS Java Console, VCS Simulator and VCS wizards

Following are the changes to the VCS Java Console, VCS Simulator and VCS wizards.

- Cluster Manager (Java Console) is no longer packaged with VCS.
  Symantec recommends using Veritas Cluster Server Management Console to manage, monitor and report on multi-cluster environments. You can download this utility at no charge from http://go.symantec.com/vcsmc.
  If you wish to manage a single cluster using Cluster Manager (Java Console), a version is available for download from the same website.
  You can download VCS Java Console from http://go.symantec.com/vcsmc
- The Java-based configuration wizards (hawizards) for Oracle, NFS, application agents, and logical domains (LDoms) are not supported for this release. Use VCS Management Console, the command line, or Cluster Manager (Java Console) to configure service groups for these applications.
- VCS Simulator is no longer packaged with VCS. You can download VCS Simulator from http://www.symantec.com/business/cluster-server and click **Utilities**.

# New attributes

The following sections introduce attributes for VCS 5.1 and VCS 5.0 MP3.

## Attributes introduced in VCS 5.1

VCS 5.1 introduces the following new attributes. See the *Veritas Cluster Server Administrator's Guide* for more information.

Resource type attributes:

- ContainerOpts: Specifies the behavior of the agent in a container environment.
- CleanRetryLimit: Number of times to retry the clean function before moving a resource to ADMIN_WAIT state.
- EPClass: Enables you to control the scheduling class for the agent functions (entry points) except the online entry point.
- EPPriority: Enables you to control the scheduling priority for the agent functions (entry points) except the online entry point.
- FaultPropogation: Specifies if VCS should propagate the fault up to parent resources and take the entire service group offline when a resource faults.
- OnlineClass: Enables you to control the scheduling class for the online agent function (entry point).
- OnlinePriority: Enables you to control the scheduling priority for the online agent function (entry point).

Service group attribute:

- ContainerInfo: Specifies information about the container that the service group manages.

Cluster attributes:

- CID: The CID provides universally unique identification for a cluster.
- DeleteOnlineResource: Defines whether you can delete online resources.
- HostMonLogLvl: Controls the behavior of the HostMonitor feature.

## Attributes introduced in VCS 5.0 MP3

VCS 5.0MP3 introduced the following attributes.

Resource type attributes:

- FaultPropagation: Specifies if VCS should propagate the fault up to parent resources and take the entire service group offline when a resource faults.
- AgentFile: Complete name and path of the binary for an agent. Use when the agent binaries are not installed at their default locations.
- AgentDirectory: Complete path of the directory in which the agent binary and scripts are located. Use when the agent binaries are not installed at their default locations.

Cluster attributes:

- DeleteOnlineResource: Defines whether you can delete online resources.
- HostMonLogLvl: Controls the behavior of the HostMonitor daemon. Configure this attribute when you start the cluster. You cannot modify this attribute in a running cluster.
- EngineShutdown: Provides finer control over the hastop command.
- BackupInterval: Time period in minutes after which VCS backs up configuration files.
- OperatorGroups: List of operating system user account groups that have Operator privileges on the cluster.
- AdministratorGroups: List of operating system user account groups that have administrative privileges on the cluster.
- Guests: List of users that have Guest privileges on the cluster.

System attributes:

- EngineVersion: Specifies the major, minor, maintenance-patch, and point-patch version of VCS.

Service group attributes:

- TriggerResFault: Defines whether VCS invokes the resfault trigger when a resource faults.
- AdministratorGroups: List of operating system user account groups that have administrative privileges on the service group.
- OperatorGroups: List of operating system user account groups that have Operator privileges on the service group.
- Guests: List of users that have Guest privileges on the service group.

## Removed attributes

The following attributes are obsolete for VCS 5.1:

- OfflineProcScanInterval
- ProcScanInterval

The following attributes are obsolete for VCS 5.0 MP3:

- DiskHbStatus
- MajorVersion
- MinorVersion

## 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 |
| 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 |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| VRTSaa | VRTSsfmh | Consolidated into VRTSsfmh. | Veritas Enterprise Administrator action agent |
| VRTSacclib | 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 |
| VRTScmcdc | N/A | Obsolete in 5.0MP3. Delivered with 5.x CMC release. | User Documentation for Veritas Cluster Management Console |
| 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 |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| 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 |
| VRTSdbac | VRTSdbac | No change. | Veritas Oracle Real Application Cluster Support Package |
| VRTSdbcom | VRTSdbed | Consolidated into VRTSdbed. | Veritas Storage Foundation Common Utilities for Databases |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| 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 |
| 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 | VRTSvxfs | Consolidated into VRTSvxfs. | Veritas File System - Manual Pages |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| 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 |
| 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 |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| 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 |
| 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 |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| VRTSvcs | VRTSvcs | Expanded to include few VCS packages. | Veritas Cluster Server |
| VRTSvcsag | VRTSvcsag | Expanded to include agents previously included in VRTSvcsvr. | Veritas Cluster Server Bundled Agents |
| VRTSvcsdb | VRTSvcsea | Consolidated into VRTSvcsea. | Veritas High Availability Agent for DB2 |
| VRTSvcsdc | N/A | Obsolete in 5.0MP3. Documentation available in DVD media as PDFs. | User Documentation for Veritas Cluster Server |
| VRTSvcsmg | VRTSvcs | Consolidated into VRTSvcs. | Veritas Cluster Server English Message Catalogs |
| VRTSvcsmn | VRTSvcs | Consolidated into VRTSvcs. | Manual Pages for Veritas Cluster Server |
| VRTSvcsor | VRTSvcsea | Consolidated into VRTSvcsea. | Veritas High Availability Agent for Oracle |
| VRTSvcssy | VRTSvcsea | Consolidated into VRTSvcsea. | Veritas High Availability Agent for Sybase |
| VRTSvcsvr | VRTSvcsag | Consolidated into VRTSvcsag. | Veritas Cluster Server Agents for Veritas Volume Replicator |
| VRTSvdid | N/A | Obsolete in 5.1. | Veritas Device Identification API |
| VRTSvlic | VRTSvlic | No change. | Symantec License Utilities |
| 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 |

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

| 5.0 Package Name | 5.1 Package name | Explanation of changes | Package description |
|---|---|---|---|
| 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 |
| 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 |

# Changes to I/O fencing feature

This section lists the new features and changes related to the I/O fencing feature.

## Support for Coordination Point server

This release adds support for Coordination Point server (CP server). You can use CP server as a coordination point with server-based I/O fencing.

The Coordination Point server is a software solution based on the customized fencing mechanism, running on a remote system or cluster that provides arbitration functionality by allowing client cluster nodes to perform the fencing tasks.

See the *Veritas Cluster Server Administrator's Guide* for more information.

## Unique I/O fencing keys for coordinator disks

The vxfen driver now encodes the LLT cluster ID in the SCSI3 keys registered on the coordinator disks. If the disk is zoned to multiple clusters, the I/O fencing key allows you to identify which cluster a coordinator disk belongs to. VCS 5.1 does not support sharing of coordinator disks across multiple clusters.

See the *Veritas Cluster Server Administrator's Guide* for more information.

## New command options for vxfenclearpre

The vxfenclearpre command now includes the following options:

- A coordinator-only disk option
- An option to clear all keys from coordinator disks
- An option to clear all keys with the VF prefix from the coordinator disks
- An option to clear only the keys from the coordinator disks you specify in the clusterid

## New -W option for vxfenconfig command

The vxfenconfig command now has a -W option. You can use this option to display the supported and the current I/O fencing protocol versions.

## New vxfen_vxfnd_tmt tunable parameter

I/O fencing introduces a new tunable parameter vxfen_vxfnd_tmt. You can use this parameter to tune the time in seconds that the I/O fencing driver VxFEN must wait for the I/O fencing daemon VXFEND to return after completing a given task.

See the *Veritas Cluster Server Administrator's Guide* for more details.

## Changes to LLT

Changes to LLT are as follows:

- The lltconfig command includes the following new options:
  - –W, to print the LLT supported, broadcast, and current protocol version information.
  - –P, to make some of the LLT parameters configurable.
- Added a mechanism inside LLT to track the OS timeouts registered by LLT.
- Added a separate tunable "peertroublelo" for specifying the trouble time for lo-pri links.
- The default heartbeating mechanism in LLT is now point-to-point unicast and not broadcast heartbeating.

## Changes to GAB

This section lists the new features and changes related to GAB in this release.

### Registration monitoring

The registration monitoring feature lets you configure GAB behavior when the VCS engine (HAD) is killed and does not reconnect after a specified time interval. This feature uses the settings in the environment variables VCS_GAB_RMTIMEOUT and VCS_GAB_RMACTION that are defined in the vcsenv file.

The hashadow process is now a real-time process.

See the *Veritas Cluster Server Administrator's Guide* for more information.

### New -W option for gabconfig command

The gabconfig command now has a -W option. You can use this option to display the supported and the current gab protocol versions.

## Changes to VCS clusters running in secure mode

This section lists the changes in 5.1 for clusters running in secure mode.

### Support for passwordless login for non-root users

Support is added for passwordless login for non-root users to run HA commands on secure clusters.

See the *Veritas Cluster Server Administrator's Guide* for more information.

### Support to enable LDAP authentication in secure clusters using AT CLIs

You can now use the `addldapdomain` and the `atldapconf` commands to enable LDAP authentication in secure clusters.

See the *Veritas Cluster Server Installation Guide* for more details.

## Changes to VCS logs

In VCS 5.1, VCS prints warning messages to STDERR. In earlier releases, VCS sent warning messages to STDOUT.

## Updates to the VCS agent for Oracle

The Veritas Cluster Server agent for Oracle includes the following new or enhanced features:

- The VCS agent binaries for Oracle are now part of VRTSvcsea package. This package also includes the VCS agent binaries for DB2 and Sybase.
- If you installed the VCS agent binaries using the installer program, the program updates the main.cf file to include the appropriate agent types.cf files.
- The Oracle ASMInst agent has two new attributes: StartUpOpt and ShutDownOpt.

### The VCS agent for Oracle is zone-aware

The Oracle resource and the Netlsnr resource are zone-aware resources have predefined default values for the ContainerOpts attribute. The ContainerOpts attribute determines whether the zone-aware resource can run in the zone. It also determines whether the container information that is defined in the service group's ContainerInfo attribute is passed to the resource.

See the *Veritas Storage Foundation and High Availability Solutions Virtualization Guide*.

# VCS system requirements

This section describes system requirements for VCS.

The following information applies to VCS clusters. The information does not apply to SF Oracle RAC installations.

VCS requires that all nodes in the cluster use the same processor architecture and run the same operating system.

For example, in a cluster with nodes running Solaris, all nodes must run Solaris SPARC or Solaris x64.

All nodes in the cluster must run the same VCS version. Each node in the cluster may run a different version of the operating system, as long as the operating system is supported by the VCS version in the cluster.

## Supported hardware

The compatibility list 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 Veritas Cluster Server, review the current compatibility list to confirm the compatibility of your hardware and software.

## Supported Solaris operating systems

This release of the Veritas products is supported on the following Solaris operating systems:

- Solaris 9 (SPARC Platform 32-bit and 64-bit) update 4 or later
- Solaris 10 (SPARC or x64 Platform 64-bit) update 5 or later

If necessary, upgrade Solaris before you install the Veritas products.

For information about the use of this product in a VMware Environment on Solaris x64, refer to http://entsupport.symantec.com/docs/289033

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

http://entsupport.symantec.com/docs/334829

### Required Solaris patches for VCS

Before installing Veritas Storage Foundation, ensure that the correct Solaris patches are installed.

See http://sunsolve.sun.com for the latest Solaris patch updates.

The following updates and patches are required for VCS:

- Solaris 9 on SPARC
  Update 4 or later
  Patch 122300-29 is required for Live Upgrade
- Solaris 10 on SPARC
  Update 4 or later
- Solaris 10 on x64
  Update 5 or later

Before you install your Symantec products on Solaris operating systems, read the following TechNote and perform the instructions in it:

http://entsupport.symantec.com/docs/334829

## 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 Solaris SPARC is available at the following URL:

https://vos.symantec.com/patch/detail/2960

The patch for Solaris x64 is available at the following URL:

https://vos.symantec.com/patch/detail/2961

## Supported software

VCS supports the following volume managers and files systems:

- Veritas Storage Foundation (SF): Veritas Volume Manager (VxVM) with Veritas File System (VxFS)

  VCS 5.1 supports the following versions of SF:

  - SF 5.0 MP3
    - VxVM 5.0 with VxFS 5.0
    - VxVM 5.0 MP1 with VxFS 5.0 MP1
      (Solaris SPARC only)

- VxVM 5.0 MP3 with VxFS 5.0 MP3
- SF 5.1
  - VxVM 5.1 with VxFS 5.1

**Note:** VCS supports the previous version of SF and the next version of SF to facilitate product upgrades.

## Supported VCS agents

The Veritas agents for enterprise applications released with version 5.1 (VRTSvcsea) support VCS 5.1.

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

Table 1-2 lists the agents for enterprise applications and the software that the agents support.

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

| Agent | Application | Application version | Solaris version |
|---|---|---|---|
| DB2 | DB2 Enterprise Server Edition | 8.1, 8.2<br>9.1, 9.5, 9.7 | SPARC: Solaris 9, 10<br>x64: Solaris 10 |
| Oracle | Oracle | 9i<br>10g R1<br>10g R2<br>11g R1 | SPARC: Solaris 9, 10<br>x64: Solaris 10 |
| Sybase | Sybase Adaptive Server Enterprise | 12.5.x, 15.x | SPARC: Solaris 9, 10<br>x64: Solaris 10 |

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

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

# No longer supported agents and components

VCS no longer supports the following:

- For a list of removed attributes:
  See "Removed attributes" on page 23.
- Configuration wizards
- DiskReservation agent
- Disk agent
- CampusCluster agent
- NFSLock agent.
  Use the NFSRestart agent to provide high availability to NFS lock records.
- nfs_restart trigger.
  Use the NFSRestart agent to provide high availability to NFS lock records.
- ServiceGroupHB agent.
  This release does not support disk heartbeats. Symantec recommends using I/O fencing.
- Disk heartbeats (GABDisk).
  This release does not support disk heartbeats. Symantec recommends using I/O fencing.
- The updated Oracle agent does not support Oracle 8.0.x and Oracle 8.1.x.
- The updated DB2 Agent does not support DB2 7.2
- VCS documentation package (VRTSvcsdc)
  The VCS documentation package (VRTSvcsdc) is deprecated. The software disc contains the documentation for VCS in Portable Document Format (PDF) in the *cluster_server/docs* directory.
  Symantec recommends copying pertinent documents from the disc to your system directory /opt/VRTS/docs for reference.

# Fixed issues

The following presents incidents that have been fixed.

## Fixed issues for VCS 5.1

The following issues are fixed for VCS 5.1.

Table 1-3 lists the fixed issues for VCS 5.1.

**Table 1-3** VCS 5.1 fixed issues

| Incident | Description |
|---|---|
| 1830978 | Had may crash while sending notifications to notifier if the send fails. This happens due to incorrect data-access. |
| 1829180 | The VCSAG_SU() function from vcsag_i18n_inc.sh file, has incorrect options to execute the `su` command. |
| 1808754 | When bringing the Sybase resource online, the SqlTest.pl generates error in the agent log. |
| 1789808 | Cluster does not accept HA commands without reboot of whole cluster. |
| 1780722 | For a SAMBA GROUP, "netbios" resource, with CIDR address for interface, fails to come ONLINE. |
| 1730942 | For mount agent, the offline entry point logged fsadm ERROR when VxFSMountLock is set to 0. |
| 1710470 | Had may crash in a global cluster environment. In a global cluster environment, if the SystemList of a global group is modified to add new system in C1 then ResourceInfo attribute for all remote resources of this group, should get set to default value in C2 . This was not happening and hence hares -display for remote resources in C2 was causing _had to get SEGV. |
| 1665807 | After restarting rpcbind, NFS resource remains faulted even after it was restarted. |
| 1634031 | If a resource faults in a planned offline of a global group on node1 in a primary cluster, followed by planned online of the group in a remote cluster, the group can go online in the primary cluster if node1 gets rebooted, resulting in global concurrency violation. This may lead to data corruption. |
| 1599129 | Fixed an issue due to which the service group could not fail over after node panic. |
| 1588784 | VCS engine does not support system names starting with numbers. |
| 1587173 | The LC_ALL value was set to empty string by the hastart script even though it was not present in the environment. |
| 1542386 | Mount agent leaves defunct processes. |
| 1542331 | IPMultiNICB core dumps. |
| 1539089 | The agent framework leaked memory if there is continuous logging into agent's log file. |

**Table 1-3** VCS 5.1 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1537433<br>1403471 | In secure global cluster environment, VCS took a long time to detect a cluster fault of a remote cluster. This was because in secure connection, a socket was opened as a blocking socket. |
| 1531720 | Seeding of a port a does not seed other ports. |
| 1531512 | The Oracle agent picks up only the last corresponding action from oraerror.dat ignoring the previous actions. Even though the log shows the errors, the resource does not move to FAULT state. |
| 1404384<br>1456802 | HAD crashes while switching over Global group and PreSwitch is set to TRUE. |
| 1456724 | Group switch/failover logic does not complete if the parent group gets autodisabled in between. |
| 1142970 | VCS logs an error "SSL Handshake failed" if the client creates a channel and then disconnects. |
| 1403471<br>1397692 | The VCS clients may hang in connect() call if the target system or IP is down. |

## Fixed issues for VCS 5.0 MP3 RP2

The following issues were fixed in VCS MP3 5.0 RP2.

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues

| Incident | Description |
|---|---|
| 1713201 | [Agents] Fixed an issue in which the Oracle agent starts Oracle with a non-default Oracle userid but the monitor function does not detect it as online. When you have a dummy user that belongs to the same group as the Oracle binaries and is a part of the Owner attribute, the Oracle agent starts Oracle but the monitor function does not detect it as online. This happens because the ID of the Owner attribute and the id of the /proc/PID/object/a.out file are checked. The a.out file is the same as the $ORACLE_HOME/bin/oracle binary. Since these two do not match, the agent detects it as online. The user ID of $ORACLE_HOME/bin/oracle binary was matched to that of the /proc/PID/object/a.out file. If these two user ids matched, you cache the cookie and proceed with the next process. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1703756 | [VCS] Fixed an issue in which a warning message is displayed even when a parallel global group was brought online successfully. This happens because after a suitable target is determined, an internal variable is not incremented. This results in a re-visiting of the target selection algorithm, which causes error because the action is already initiated on the suitable target. |
| 1677412 | [Agents] Fixed an issue so that when the SystemList of the service group is modified, you do not start all agents but only the required agents. The agent that was stopped by a user on a system gets restarted even if the group has no resource of that agent type, when the SystemList is modified to add that system. On SystemList modification to add new systems in SystemList, the engine starts all the agents without ensuring if the group has a resource of that type. Code changes so that only agents for which the group has resources are started whenever the SystemList is modified to add a new system. |
| 1675815 | [HAD] Fixed an issue so that the HostMonitor objects like VCShmg (Group), VCSHM (Resource), and HostMonitor (Type) are not counted in each object's number. |
| 1672405 | [VCS] Fixed an issue in which a switch operation on a child service group with an OLH (Online Local Hard) and OLF (Online Local Firm) parent results in a switch of the OLH parent and the child group even though the OLF parent was online. In a situation, where two service groups depend on one child and one parent has an online local hard dependency (OLH) while the other parent has an online local firm dependency (OLF):<br><br>The command: hagrp -switch Hard_ParentSG -any switches both the parents. The command: hagrp -switch Hard_ParentSG -to sysB switches only the hard parent group along with the child group. When the hargp -switch command is executed with any of the following options:<br><br>hagrp -switch SG_parent -any<br><br>hagrp -switch SG_parent -to <sys><br><br>The parent group switches (while the child group is online) only in the case of a hard dependency. The switch does not happen in the case of soft or firm dependency. The switch operation succeeds for an OLH parent, if only the parent group is online. The child group has no other parents online. The OLH parent and child group can have other parents. However, the OLH child group is always a leaf node. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1668609 | [Agents] Fixed an issue in which the Proxy agent is updated to allow the target resource to be probed before scheduling the first probe of the Proxy resource. |
| 1638725 | [LLT] Fixed an issue in which the LLT timer function may not run as quickly as required if there are higher priority processes in the system. LLT uses the heartbeat mechanism between nodes to ensure and identify that the other node is alive. Any node in VCS/SFRAC sends heartbeat packets to all the other nodes in the cluster after every 50 millisecond. This heartbeat is sent with the LLT timer thread. Under a heavy load condition, LLT timer thread may not be scheduled to send heartbeat. If the LLT thread is on the busy node, it is not able to send a heartbeat for 16 seconds. The other node considers the busy node failed and this results in panic whenever the load of the busy node goes down and it starts communicating with the other node of cluster. The LLT heartbeat code has been moved from an llt thread context to a timer interrupt context. This ensures that the heartbeat is sent as soon as timer returns after 50 milliseconds. Interrupt handler will run real time and this removes scheduling delays. |
| 1638240 | [Agents] Fixed an issue in which the Sybase agent is unable to bring the Sybase resource online if the RUN_<servername> file is moved to some other (non default) location. The non default location for the Sybase dataserver RUN_<servername> file is not supported by the Sybase agent. Hence, if you move the RUN_<servername> file to some other location, the agent is unable to bring the Sybase resource online. A new attribute named Run_ServerFile of type string was introduced for the the Sybase and SybaseBk agents. The value of this attribute can be set to the absolute path of the RUN_<servername> file. |
| 1635792 | [VCS] Fixed an issue in which the Zpool monitor returned unknown when ZFS filesystem snapshot was created. The Zpool agent monitor checks if all the ZFS file systems are mounted. If the Zpool agent monitor does not find a file system mounted, it sets the UNKNOWN state flag. Thus, ZFS snapshots are not mounted and this results in the UNKNOWN flag being set for the ZPool resource. If the ZFS file system is a snapshot, the check for mounted status is not done and hence, the UNKNOWN state flag is not set. |
| 1634924 | [VCS] Fixed an issue in which the engine logs indicated CPU usage even after the HostMonitor resource is deleted. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1633973 | [VCS] Fixed an issue in which the node does not test the Authority attribute before bringing the faulted service group online, leading to concurrency violations and the service group being taken offline on the disaster recovery site. |
| 1633781 | [VCS] Fixed an issue in which the NFS resource goes to faulted state even after it is restarted if rpcbind/portmap daemon is restarted. During the online monitoring of the NFS resource, if the rpcbind/portmap daemon is restarted, the NFS resource monitor entry point detects the resource as offline unexpectedly. This triggers the clean entry point for the resource. The clean entry point gets executed successfully and thereafter, the NFS resource tries to restart itself. The monitor entry point after the restart again detects the NFS resource as offline and the resource goes to FAULTED state. The clean entry point is used to check whether the server daemons are running or not. If the server daemons are running, it does nothing and exits successfully. However, the running daemons do not indicate that they are registered with rpcbind/portmap. The rpcbind/portmap restart terminates the registrations of all RPC daemons. So the RPC service daemons must be restarted whenever the rpcbind/portmap restarts itself. Thus, the monitor was returning offline even when the daemons were running. The clean entry point now always restarts the server daemons. If the server daemons are running, it kills the running daemons. |
| 1632806/<br>1677496 | [GAB] Fixed an issue in which panic results when clients access the gab_api pointer through GAB_API_INIT. |
| 1603120 | [VCS] Fixed an issue where NFSRestart triggers were called despite no configured NFSRestart resources, which was detrimental to performance. |
| 1600786 | [Fencing] Fixed an issue in which I/O errors occur in case of a network partition at any point when the keys on the coordinator disks are being refreshed using the vxfenswap command. If the keys on coordinator disks are accidentally cleared, they can be refreshed using the vxfenswap command. However if there is a network partition at a particular point in the operation, it could result in I/O errors. If the keys that are registered on the coordinator disks are lost, the cluster may panic when a split-brain occurs. Using the vxfenswap script to replace the coordinator disks with the same disks will register the missing keys again without any risk of data corruption. However there is a possibility of seeing I/O errors because the algorithm registers the keys in the modify phase and if there is a network partition then the register(s) could override preempt(s) without synchronization. If the vxfenswap utility is run on existing coordinator disks, then the registrations are done in the commit phase instead of the modify phase. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1600484 | [VCS] Fixed an issue so that user names are checked and validated while verifying the configuration and modifying the UserNames attribute. A user with a special character in the userid is accepted if it is the second or later user in the UserNames attribute within the main.cf file. Only the first user name is checked for valid names. If the attribute UserNames has more than one user defined in the main.cf file or the command haclus -modify UserNames u1 p1 u2 p2 is run, then even invalid user names were accepted. |
| 1600452 | [Fencing] Fixed an issue in which the script to shutdown fencing (vxfen) produces an unexpected error message. |
| 1590726 | [VCS] Fixed an issue in which VCS generated notifications about high CPU/SWAP usage when notifications were configured. The HostMonitor feature is enhanced to give control to the user for enabling or (fully / partially) disabling the feature through the cluster object attribute - HostMonLogLvl. VCS has the HostMonitor feature enabled by default through the VCShmg group with a HostMonitor type resource VCShm. If notification is configured in VCS, you see the notifications whenever the CPU/SWAP usage is beyond critical levels. A new attribute HostMonLogLvlÃ is added. The values can be 'ALL', 'HMAgentLog' or 'DisableHMAgent', with 'ALL' as default. |
| 1589851 | [GAB] Fixed the cause of a system panic that was due to depleted memory reserves. |
| 1545229 | [Agents] Fixed an issue to allow control of entry point scheduling priorities and scheduling class using the new attributes EPPriority, EPClass, OnlinePriority, and OnlineClass. |
| 1545222 | [Agents] Fixed an issue to provide the ability to pass the entry point timeout value as a parameter to agent entry points in their argument list. |
| 1544263 | [Agents] Fixed an issue in which the Oracle agent performs an action corresponding to the last error even when it encounters multiple errors, thereby ignoring the previous error numbers. This happens because when the list of errors was parsed by the agent, it moved to the last error and got its state to perform the action corresponding to that error. The priority of actions are: FAILOVER, UNKNOWN, and IGNORE. If any error has FAILOVER/NOFAILOVER, the resource is FAULTED. If any error has UNKNOWN action, the resource is moved to UNKNOWN state. Else, we safely ignore the error and return the state as ONLINE. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1542391 | [Agents] Fixed an issue in which VCS indicated that the zone was online when it was not active by modifying the zone agent for better monitoring. The Zone agent uses the RUNNING state to determine if a non-global zone resource is online. A non-global zone can go into the running state even before all the services inside the non-global zone are stared. Added the BootState attribute to determine at what level the non-global zone is considered to be online: single-user, multi-user, or multi-user-server. |
| 1542382 | [Agents] Fixed an issue in which starting the Mount agent created a defunct process. |
| 1542326 | [Agents] Fixed an issue in which the IPMultiNICB agent crashes and produces core dump when monitoring an IP address that is brought up outside of VCS control. An IP address brought up outside of VCS control, e.g., as a part of a non-global zone configuration, can be monitored by an IPMultiNICB resource. Such a configuration exercises a code path in the agent which causes a core dump. Source code agent to fix the problem. |
| 1540807 | [GAB] Fixed an issue in which the error number returned by the gab_receive() function in the GAB library is wrong. The gab_receive() function returns -1, but the error number was set to 0. |
| 1539087 | [Agents] Fixed an issue in which the agent framework seems to be leaking memory during message logging. |
| 1537141 | [Agents] Fixed an issue in which the Mount agent leaks memory despite the installation of the 5.0MP3HF1 patch. |
| 1537111 | [VCS] VCS issues warning messages with ha commands on a ZFS root file system due to the priocntl() function being called with a NULL sched_class. |
| 1528584 | [Agents] Fixed an issue where the system performance dropped when a large number of application resources are configured and the Application agent searches the process table continuously. |
| 1522568 | [Agents] Fixed an issue in which the agent framework crashed while setting the resource name for the dependent attribute. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1509742 | [GAB] Fixed an issue in which GAB membership to VCS (Port h) may not occur, if VCS is brought online before the Port a membership occurs. Clients of the GAB service may not get cluster membership. Symantec recommends that GAB must be configured to provide membership only after a minimum quorum number of nodes join the cluster. If a client of GAB comes up before GAB Port a forms membership on that node, then this client may not get cluster membership until it starts up on at least the configured quorum number of nodes, not even if Port a or any other GAB Ports receive cluster membership. Previously, seeding of Port a would trigger seeding on all other ports by seeding a CONNECTS message on all those ports. However, this led to a race which was fixed via e1424927. The fix disabled CONNECTS which used to propagate the SEED bit to other ports. SEED bit is now propagated to other ports after Port 'a' reconfigures. The master for each port just runs the reconfiguration calculation after Port a reconfigures there. |
| 1504693 | [GAB/LLT] Fixed an issue in which LLT cannot provide backenable to GAB. This resulted in an error being produced from the GAB module gabwrite() function. |
| 1487725 | [Agents] Fixed an issue in which the zone agent monitor script failed with an unexpected error. In the month of December, the Zone agent monitor would fail with the message: ”Month '12' out of range 0..11 at /opt/VRTSvcs/bin/Zone/monitor line 164”. The Zone agent monitor code was not setting the timelocal() function properly. Correct monitor code. Note that the issue is related only to a specific month of the year. |
| 1482806 | [GAB] Fixed an issue in which uninstalling GAB produced the following error “Error in removing the gab entry in the /etc/devlinks.tab” when the GAB module was not loaded in the kernel. |
| 1469788/ 1469787 | [LLT] Fixed an issue in which LLT cannot be unloaded and returns the error message “Module LLT is in use” even when the system was shutdown. |
| 1465956 | [VCS] Fixed an issue in which you cannot delete a system even if it has no service group configured on it. Whenever a system is added, it is added to the SystemList of the VCShmg group (if HostMonitorLogLvl is enabled). While deleting the system from the cluster, VCS should silently delete this from the SystemList of VCShmg. However, it produces an error. VCS now lets you delete the system without displaying any error. |
| 1377324 | [Agents] Fixed a parsing error which caused an error message to appear in the /var/VRTSvcs/log/tmp/Oracle-0 file. |

**Table 1-4** VCS 5.0 MP3 RP2 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1368385 | [Agents] Fixed an issue in which DiskGroupSnap does not work if layered volumes are used. VxVM creates layered volumes by default, in case of larger volumes spanning multiple disks. The agent expects each volume to have a plex at each site but VxVM does not assign a site tag to plex and there is only one top level plex. Thus, the agent reports that the configuration is invalid. This was a limitation in the original agent when no layered volumes were supported. |
| 1362407 | [LLT] Fixed an issue in which the lltdump command failed to display all the LLT packets and produces the following error:<br><br>`bash-3.00# /opt/VRTSllt/lltdump -f /dev/bge2 CR C 60425 S 2559 D 00 P 000 rdy 0000 seq 000001dc len 0000 lltdump: cannot read messages on /dev/bge2: Error 0`<br><br>The lltdump command gets control and data information from dlpi streams read head queue. The initial buffer size passed to get control information was 36. The latest dlpi drivers like bge and nge have control information that is larger than 36. Insufficient buffer size for control information produces the error message “Cannot read messages ". The buffer size was increased from 36 to 64. |
| 1070177 | [Agents] Fixed an issue to include a new attribute to use the db2start command. There was no option to use the db2start command. Added optional attribute UseDB2start to allow users to start DB2 using the db2start command. |

## Fixed issues for VCS 5.0 MP3 RP1

The following issues were fixed in VCS 5.0 MP3 RP1.

**Table 1-5** VCS 5.0 MP3 RP1 fixed issues

| Incident | Description |
|---|---|
| 1457429 | Removed the VCS NOTICE V-16-1-53021 message after the hastart command is run. |
| 1427100 | Fixed an issue where LDom CfgFile did not work with LDom 1.0.3. |
| 1424927 | Optimized GAB connect messages. |
| 1414709 | The hagrp -offline command and hares -offline command now behave similarly when you bring the last resource in a service group offline. |

**Table 1-5** VCS 5.0 MP3 RP1 fixed issues *(continued)*

| Incident | Description |
|---|---|
| 1404384 | Global groups can switch over to a node where WAC is not running, when PreSwitch is set to 1 and HAD runs properly. |
| 1403471 | Reduced time for global cluster fault detection. |
| 1397738 | Support provided for Solaris 8 and Solaris 9 branded zones. |
| 1397692 | Removed a condition where VCS engine clients hung in connect when the target system was down. |
| 1379299 | LLT: fixed llt_recordmac() messages. |
| 1395905 | Changes implemented to close device file for device vxdmpconfig. |
| 1394624 | LLT: fixed an issue where the lltdlv thread spun indefinitely. |

# Known issues

The following issues are open for this release of VCS.

## Issues related to installing and upgrading VCS

This section covers the issues related to installing and upgrading VCS.

### Errors observed during partial upgrade of SFHA

While upgrading the VCS packages during an SFHA upgrade from 5.0 MP3 RP2 to 5.1, CPI failed to uninstall the I/O fencing packages (VRTSvxfen, VRTSllt,and VRTSgab). [1779129]

Workaround: Before upgrading SFHA from 5.0 MP3 RP2 to 5.1, you must apply the I/O fencing hotfix 5.0MP3RP2HF2.

### Error messages after upgrading to VCS 5.0 for Solaris SPARC

In a Solaris SPARC environment, the upgrade from a previous version of Storage Foundation to 5.0 Storage Foundation HA can result with the 5.0 VCS packages installed on your systems. In this situation, you may receive VCS error messages after you reboot your systems. These error messages are due to missing VCS configuration files. [592006]

Workaround: Uninstall the VCS packages or configure VCS on your systems.

See the *Veritas Cluster Server Installation Guide*.

### LLT module may not unload on Solaris 10 (SPARC)

When you uninstall VCS 5.0 MP3, LLT may not unload. This issue is specific to Solaris 10 on SPARC systems. [1297255]

Workaround: If LLT does not unload, you must reboot the system.

### Installing all products on alternate root produces incorrect failure messages during initial reboot

For Solaris 10 when installing all the SFHA products on alternate root, the following failure messages appear during the initial reboot off the alternate root disk. You can safely ignore these messages as the products have not yet been configured. These messages may also appear when using JumpStart to install.

```
Reading ZFS config: done.
May 20 10:44:06 svc.startd[7]: svc:/system/llt:default: Method
"/lib/svc/method/llt start" failed with exit status 1.
May 20 10:44:06 svc.startd[7]: svc:/system/llt:default: Method
"/lib/svc/method/llt start" failed with exit status 1.
May 20 10:44:07 svc.startd[7]: svc:/system/llt:default: Method
"/lib/svc/method/llt start" failed with exit status 1.
May 20 10:44:07 svc.startd[7]: system/llt:default failed: transitioned to
maintenance (see 'svcs -xv' for details)
```

## Operational issues for VCS

This section covers the operational issues for VCS.

### SMTP notification emails should contain the entity's name in the subject line

The SMTP notification emails should contain the subject's name in the subject line. [1836562]

### Saving large configuration results in very large file size for main.cf

If your service groups have a large number resources or resource dependencies, and if the PrintTree attribute is set to 1, saving the configuration may cause the configuration file to become excessively large in size and may impact performance. [616818]

Workaround: Disable printing of resource trees in regenerated configuration files by setting the PrintTree attribute to 0.

## AutoStart may violate limits and prerequisites load policy

The load failover policy of Service Group Workload Management may be violated during AutoStart when all of the following conditions are met: [251660]

- More than one autostart group uses the same Prerequisites.
- One group, G2, is already online on a node outside of VCS control, and the other group, G1, is offline when VCS is started on the node.
- The offline group is probed before the online group is probed.

In this scenario, VCS may choose the node where group G2 is online as the AutoStart node for group G1 even though the Prerequisites load policy for group G1 is not satisfied on that node.

Workaround: Persistently freeze all groups that share the same Prerequisites before using the `hastop -force` command to stop the cluster or node where any such group is online. This workaround is not required if the cluster or node is stopped without the force option.

## Trigger not invoked in REMOTE_BUILD state

In some situations, VCS does not invoke the injeopardy trigger if the system is a REMOTE_BUILD state. VCS fires the trigger when the system goes to the RUNNING state.

## The hagetcf script reports an error

Running the hagetcf script to gather information about the VCS cluster generates the following error:

```
tar: cannot stat ./var/VRTSvcs/log/.*A.log.  Not dumped.
```

Workaround: This message may be safely ignored.

## The hacf command supports a 4 KB string length

The hacf command does not support strings that are greater than 4 KB. [1234356]

## Node cannot join cluster because port v is not ready for configuration

This behavior is observed when a node leaves a cluster and another node tries to join the cluster at the same time. If the GAB thread is stuck in another process, the new node cannot join the cluster and GAB logs the following warning:

```
GAB WARNING V-15-1-20126 Port v not ready
for reconfiguration, will retry.
```

### DBMS security issue

The Symantec Shared DBMS feature creates the following configuration files:

- /etc/vxdbms/VERITAS_DBMS3_hostname/conf/databases.conf
- /etc/vxdbms/VERITAS_DBMS3_hostname/conf/databases1.conf
- /etc/vxdbms/VERITAS_DBMS3_hostname/conf/registration.dat

These configuration files are created or modified by vxdbms_start_db.pl, vxdbms_start-server.pl, and vxdbms_register.pl respectively.

The files are writable by everyone if the file mode creation mask is insufficiently restrictive. Symantec strongly recommends that you restrict the default file mode creation permissions (using the umask command) for root and administrator accounts to avoid a potential security issue. Specifically, change the group|world write and execute permissions in the default umask. At its least restrictive, the default umask for root should be 022. Symantec recommends setting to 077.

## Issues related to the VCS engine

This section covers the issues related to the VCS engine.

### hashadow core in restart_had /var/VRTSvcs/lock/.hadargs parse resulted in attempt to null pointer dereference

hashadow core in restart_had /var/VRTSvcs/lock/.hadargs parse resulted in attempt to null pointer dereference. [1836628]

### Extremely high CPU utilization can cause HAD to fail to heartbeat to GAB

When CPU utilization is very close to 100%, HAD may fail to heartbeat to GAB. [1818687]

### Missing host names in engine_A.log file

The GUI does not read the engine_A.log file. It reads the engine_A.ldf file, gets the message id from it, and then queries for the message from the bmc file of the appropriate locale (Japanese or English). The bmc file does not have system names present and so they are read as missing. [1736295]

### Systems with multiple CPUs and copious memory shut-down time may exceed the ShutdownTimeout attribute

The time taken by the system to go down may exceed the default value of the ShutdownTimeout attribute for systems that have a large numbers of CPUs and memory. [1472734 ]

Workaround: Increase the value of the ShutdownTimeout attribute based on your configuration.

### VCS engine may get stuck in LEAVING state

VCS engine may transition to the LEAVING state and may get stuck if you perform the following operations in succession:

- Run the `hares -online` command for a resource.
  While the resource comes online, its child resource faults.
- Run the `hastop -local` command on the same node from where you tried to bring the resource online.

Workaround: Issue the `hastop -local -force` command.

### Parent group faulting in zone 1 results in the child group being automatically failed over to zone 2

Parent group faulting in zone 1 results in the child group being automatically failed over to zone 2. [1859387]

## Issues related to the VCS bundled agents

This section covers issues related to the VCS bundled agents.

### Add Disk agent support for LDoms 1.2

Need to add support for disk-based backend devices for guest domains (LDoms 1.2 and higher).

### DiskGroupSnap agent assumes all nodes are part of a campus cluster configuration

The agent currently assumes that all nodes in the cluster are par of a campus cluster configuration. [1852521]

## RemoteGroup agent faults when set up for monitor only the local service group is taken offline

The agent returns offline for a resource when the service group goes offline, but has not yet called an offline entry point. This faults the resource. [1851078]

## Poor agent performance and inability to heartbeat to the engine

If the system has more than 200 configured resources, the agent may not get enough CPU cycles to function properly. This can prevent the agent from producing a heartbeat synchronously with the engine. If you notice poor agent performance and an agent's inability to heartbeat to the engine, check for the following symptoms.

Navigate to /var/VRTSvcs/diag/agents/ and look for files that resemble:

```
FFDC_AGFWMain_729_agent_type.log  FFDC_AGFWTimer_729_agent_type.log core
FFDC_AGFWSvc_729_agent_type.log   agent_typeAgent_stack_729.txt
```

Where *agent_type* is the type of agent, for example Application or FileOnOff. If you find these files, perform the next step.

Navigate to /var/VRTSvcs/log/ and check the engine_*.log file for messages that resemble:

```
2009/10/06 15:31:58 VCS WARNING V-16-1-10023 Agent agent_type
not sending alive messages since Tue Oct 06 15:29:27 2009
2009/10/06 15:31:58 VCS NOTICE V-16-1-53026 Agent agent_type
ipm connection still valid
2009/10/06 15:31:58 VCS NOTICE V-16-1-53030 Termination request sent to
agent_type agent process with pid 729
```

Workaround: If you see that both of the above criteria are true, increase the value of the AgentReplyTimeout attribute value. (Up to 300 seconds or as necessary.) [1853285]

## The agent framework does not detect if service threads hang inside an entry point

In rare cases, the agent framework does not detect if all service threads hang inside a C entry point. In this case it may not cancel them successfully. [1511211]

Workaround: If the service threads of the agent are hung, send a kill signal to restart the agent. Use the following command: `$ kill -9 hung agent's pid`. The `haagent -stop` command does not work in this situation.

## The ArgListValues attribute values for dependent resources may not populate correctly when a target resource is deleted and re-added

For resource attributes, deleting a resource prevents a dependent attribute's value from refreshing in the dependent resource's value.

For example, you have resource (*rD*), which depends on a resource's attribute value (*rT:Attr_rt*). When you delete the target resource (*rT*), and readd it (*rT*), the dependent resource (*rD*) does not get the correct value for the attribute (*Attr_rt*). [1539927]

Workaround: Set the value of the reference attribute (*target_res_name*) to an empty string.

```
# hares -modify rD target_res_name ""
```

Where *rD* is the name of the dependent resource, and *target_res_name* is the name of the reference attribute that contains the name of the target resource.

Set the value of the reference attribute (*target_res_name*) to the name of the target resource (*rT*).

```
# hares -modify rD target_res_name rT
```

## Application agent cannot monitor kernel processes

Application agent cannot monitor processes which have wildcard characters that give a special meaning to `grep` command. [1232043]

## Problem in failing over the IP resource

When a system panics, the IP address remains plumbed to the system for a while. In such a case, VCS may not succeed in failing over the IP resource to another system. This can be observed when a system panics during I/O Fencing.

Workaround: Increase the value of the OnlineRetryLimit attribute for the IP resource type.

## Volume agent may hang

Under extreme conditions, the volume agent may hang. This behavior has been observed under the following circumstances:

- Failover for the JNI Fibre Channel driver (JNIfcaPCI) was set to 0. Note this is not failover for VCS. The JNI driver has a variable called "failover" that defines the number of seconds after the target is declared offline and before it is declared failed. When target is declared failed, all pending commands are

flushed back to the application. This failover value is set in the file /kernel/drv/fca-pci.conf. Setting failover to 0 means that the target is never declared failed. With failover for the JNI driver set to 30 seconds, the agent behavior was normal.

- Fibre cable was disconnected from the switch (to simulate failure of the Fibre drives).

In general, an agent can hang when it attempts to cancel a service thread executing a C++ entry point that has timed out if that entry point has issued a blocking call that is not a valid cancellation point.

## Issues related to the I/O fencing for VCS

This section covers the issues related to I/O fencing feature for VCS.

### The vxfenclearpre script displays error messages

The vxfenclearpre script displays error messages if the /etc/vxfentab file is commented. (1512956)

The /etc/vxfentab file has the following comments:

```
#
# /etc/vxfentab
# DO NOT MODIFY this file it is generated by the
# VXFEN rc script from the file /etc/vxfendg
#
```

When you run the vxfenclearpre script, the following errors are displayed:

```
VXFEN vxfenadm ERROR V-11-2-1116 Cannot open:
# VXFEN vxfenadm ERROR V-11-2-1132 Open of file failed, errno =
-15344
VXFEN vxfenadm ERROR V-11-2-1205 READ_KEYS failed for:
# VXFEN vxfenadm ERROR V-11-2-1133 Error returned
VXFEN vxfenadm ERROR V-11-2-1116 Cannot open:
# VXFEN vxfenadm ERROR V-11-2-1132 Open of file failed, errno =
-15856
```

However, the vxfenclearpre script operation is successful.

Workaround: To avoid these error messages, delete the comments from the /etc/vxfentab file before you run the vxfenclearpre script.

## Delay in rebooting Solaris 10 nodes due to vxfen service timeout issues

When you reboot the nodes using the `shutdown -i6 -g0 -y` command, the following error messages may appear:

```
svc:/system/vxfen:default:Method or service exit
timed out. Killing contract 142
svc:/system/vxfen:default:Method "/lib/svc/method/vxfen stop"
failed due to signal Kill.
```

This error occurs because the vxfen client is still active when VCS attempts to stop I/O fencing. As a result, the vxfen stop service times out and delays the system reboot. [1897449]

Workaround: Perform the following steps to avoid this vxfen stop service timeout error.

**To avoid the vxfen stop service timeout error**

1 Stop VCS. On any node in the cluster, run the following command:

```
# hastop -all
```

2 Reboot the systems:

```
# shutdown -i6 -g0 -y
```

## The vxfenswap and the vxfentsthdw utilities fail when rsh or ssh communication is not set to the same node

The `vxfenswap` and the `vxfentsthdw` utilities fail if you do not set up rsh or ssh communication to the same node. In addition to the passwordless rsh or ssh communication requirement between the systems, these utilities also require passwordless ssh or rsh configuration to the same node. [1846387]

Workaround: Make sure you have ssh or rsh configured for passwordless logins to the node where you run these utilities.

## Preexisting split brain after rebooting nodes

If I/O fencing is configured in dmp mode, the fencing driver in VCS 5.0 uses Veritas DMP to handle SCSI commands to the disk driver. This allows fencing to use Veritas DMP for access to the coordinator disks. With certain disk arrays, when paths are failed over due to a path failure, the SCSI-3 persistent reservation keys for the previously active paths are not removed. If the nodes in a cluster are all

rebooted at the same time, then the cluster will not start due to a preexisting split-brain condition with a `Preexisting split brain` message. [609407]

Workaround: Use the vxfenclearpre script to remove the keys from the coordinator disks as well as from the data disks.

### Some vxfenadm options do not work with DMP paths

Some options of the vxfenadm utility do not work well with DMP paths such as /dev/vx/rdmp/sdt3.

Workaround: Use the -a option to register keys instead of -m option for DMP paths.

### The vxfenswap utility has an incorrect usage message for -n option

When you invoke the `vxfenswap` utility without the `-g` option, the utility displays a usage message of which the following line is incorrect [1847517]:

```
-n use /usr/bin/ssh for communication
instead of the default /usr/bin/ssh
```

The correct message is:

```
-n use /usr/bin/rsh for communication
instead of the default /usr/bin/ssh
```

## Issues related to LLT

This section covers the issues related to LLT.

### lltconfig -T query command displays a partially incorrect output

When the `lltconfig -T query` command is executed, the following output is displayed. [1859023]

```
# lltconfig -T query

Current LLT timer values (.01 sec units):

  heartbeat   = 50

  heartbeatlo = 100

  peertrouble = 200
```

```
  peertroublelo= 400

  peerinact   = 1600

  oos         = 10

  retrans     = 10

  service     = 100

  arp         = 30000

  arpreq         = 3000

  Current LLT flow control values (in packets):

  lowwater  = 40

  highwater = 200
```

The expected output is as follows:

```
# lltconfig -T query

Current LLT timer values (.01 sec units):

  heartbeat    = 50

  heartbeatlo  = 100

  peertrouble  = 200

  peertroublelo= 400

  peerinact    = 1600

  oos          = 10

  retrans      = 10

  service      = 100

  arp          = 30000
```

```
arpreq       = 3000

timetoreqhb  = 1400

reqhbtime    = 40

timetosendhb = 200
```

This discrepancy does not affect the functioning of LLT.

Workaround: Map the last three incorrect lines of the actual output to the expected output aas follows:

| Actual output | Expected output | Value |
|---|---|---|
| Current LLT flow control values (in packets): | timetoreqhb | 200 |
| lowwater | reqhbtime | 40 |
| highwater | timetosendhb | 200 |

## Removing the LLT links from a single node from a four-node cluster causes other nodes to panic

When LLT receives link down notification from the operating system, LLT immediately marks all the peer nodes down for the link on the node that LLT received the notification. However, on other nodes LLT waits for the peerinact time to discover that the link on one node is down. The node on which the LLT is down races for the coordinator disks first and wins the race. This defect causes the larger sub-cluster with three nodes to panic. [1849527]

## LLT port stats sometimes shows recvcnt larger than recvbytes

With each received packet, LLT increments the following variables:

- recvcnt (increment by one for every packet)
- recvbytes (increment by size of packet for every packet)

Both these variables are integers. With constant traffic, recvbytes hits and rolls over MAX_INT quickly. This can cause the value of recvbytes to be less than the value of recvcnt. [1788315]

This does not impact the LLT functionality.

### LLT may incorrectly declare port-level connection for nodes in large cluster configurations

When ports get registered and unregistered frequently on the nodes of the cluster, LLT may declare that a port-level connection exists with another peer node. This occurs in some corner cases even though a port is not even registered on the peer node. [1809827]

## Issues related to Symantec Product Authentication Service with VCS

This section covers the issues related to Symantec Product Authentication Service with VCS.

### The vcsat and cpsat commands may appear to be hung

The following commands may appear to be hung when you invoke them from the command shell:

- /opt/VRTScps/bin/cpsat
- /opt/VRTSvcs/bin/vcsat

This issue occurs when the command requires some user interaction. [1841185]

Workaround:

- To fix the issue for vcsat, run the commands as follows:

```
# export EAT_HOME_DIR=/opt/VRTSvcs
# /opt/VRTSvcs/bin/vssatvcs command_line_argument
# unset EAT_HOME_DIR
```

- To fix the issue for cpsat, run the commands as follows:

```
# export EAT_HOME_DIR=/opt/VRTScps
# /opt/VRTScps/bin/vssatcps command_line_argument
# unset EAT_HOME_DIR
```

### VCS may report AT error during system reboot

When you reboot the systems using the `shutdown -i6 -g0 -y` command, VCS reports the following AT error in the /var/adm/messages file and the /var/VRTSvcs/log/engine_A.log file, and VCS faults the VxSS service group.[1765594]

```
VCS ERROR V-16-1-13067 (host_name) Agent is calling clean
for resource (vxatd) because the resource became OFFLINE
```

```
unexpectedly, on its own.
VxSS State s245sf2 |OFFLINE|FAULTED|
VxSS State s245sf3 |ONLINE|
```

Workaround: This error occurs due to a timing issue and this message may be safely ignored.

# Issues related to global clusters

This section covers the issues related to global service groups.

## Global group fails to come online on the DR site with a message that it is in the middle of a group operation

When the node that runs the global group faults, VCS internally sets the MigrateQ attribute for the group and attempts to fail over the global group within another node in the local cluster. The MigrateQ attribute stores the node name on which the group was online. If the failover within the cluster does not succeed, then VCS clears the MigrateQ attribute for the groups. However, if the groups have dependencies which are more than one-level deep, then VCS does not clear the MigrateQ attribute for all the groups. [1795151]

This defect causes VCS to misinterpret that the group is in the middle of a failover operation within the local cluster and prevents the group to come online on the DR site with the following message:

```
VCS WARNING V-16-1-51042 Cannot online group global_group.
Group is in the middle of a group operation in cluster local_cluster.
```

Workaround: Perform the following steps on a node in the local cluster which is in the RUNNING state.

**To bring the global group online on the DR site**

1. Check whether the MigrateQ attribute is set for the global group you want to bring online on the remote cluster.

   ```
   # hagrp -display -all | grep -i migrateq
   ```

   This command displays the name of the faulted node on which the group was online.

2. Flush the global group that you want to bring online on the remote cluster.

   ```
   # hagrp -flush global_group -sys faulted_node -clus local_cluster
   ```

   where:

- *global_group* is the group that you want to bring online on the remote cluster.
- *faulted_node* is the node in the local cluster that hosted the global group and has faulted.
- *local_cluster* is the cluster at the local site.

The flush operation clears the node name from the MigrateQ attribute.

3 Bring the service group online on the remote cluster.

```
# hagrp -online global_group -any -clus remote_cluster
```

## The engine.logs file receives too many log messages on the secure site in global cluster environments

When the WAC process runs in secure mode on one site, and the other site does not use secure mode, the engine.logs file on the secure site gets logs every five seconds. [1539646]

Workaround: The two WAC processes in global clusters must always be started in either secure or non-secure mode. The secure and non-secure WAC connections will flood the engine_A.logs with the above messages.

## The haclus -state command displays inconsistent output in four-node cluster configurations

In four-node cluster configurations, the `haclus -state` command displays an inconsistent error message after a fault. [1179782]

## Setting up firedrill service group fails in a global cluster that runs in secure mode

In a global cluster that runs in secure mode, the fdsetup wizard fails to create a firedrill service group if Veritas Volume Replicator is used for replication. [1295115]

## Switch across clusters may cause concurrency violation

If you try to switch a global group across clusters while the group is in the process of switching across systems within the local cluster, then the group may go online on both the local and remote clusters. This issue affects only global groups. Local groups do not experience this behavior.

Workaround: Ensure that the group is not switching locally before attempting to switch the group remotely.

### Global service group does not go online on AutoStart node

At cluster startup, if the last system where the global group is probed is not part of the group's AutoStartList, then the group does not AutoStart in the cluster. This issue affects only global groups. Local groups do not display this behavior.

Workaround: Ensure that the last system to join the cluster is a system in the group's AutoStartList.

### Declare cluster dialog may not display highest priority cluster as failover target

When a global cluster fault occurs, the Declare Cluster dialog enables you to fail groups over to the local cluster. However, the local cluster may not be the cluster assigned highest priority in the cluster list.

Workaround: To bring a global group online on a remote cluster, do one of the following:

- From the Java Console, right-click the global group in the Cluster Explorer tree or Service Group View, and use the Remote Online operation to bring the group online on a remote cluster.
- From the Web Console, use the Operations links available on the Service Groups page to bring the global group online on a remote cluster.

### The gcoconfig command assigns priority 0 to all nodes

If you configure a global cluster using the /opt/VRTSvcs/bin/gcoconfig command, the gcoconfig utility assigns the same priority '0' to all the nodes that are in the SystemList of the ClusterService group. [857159]

Workaround: Edit main.cf and assign priority for cluster nodes in the SystemList of the ClusterService group.

Use one of the following approaches to edit the main.cf file:

- Veritas Cluster Server GUI
- VCS commands
- Stop VCS and manually edit the main.cf file.
  Note that this approach has HA downtime.

## Issues related to the VCS Agent for DB2

This section covers issues related to the VCS agent for DB2.

### All partitions fault even if there are errors on only one partition with the IndepthMonitor database

This issue occurs in an MPP environment when multiple partitions use the same database. If the Databasename attribute is changed to an incorrect value, all partitions using the database fault. [568887]

### Db2udb resource faults when IndepthMonitor is configured with a Japanese database

For locales other than English, you need to add the following lines to the $INSTHOME/sqllib/userprofile file. [590010]

The following example adds Japanese language support on Solaris:

```
LANG=ja
export LANG
```

## Issues related to the VCS Agent for Oracle

This section covers the issues related to the VCS agent for Oracle.

### NOFAILOVER action specified for certain Oracle errors

The Veritas Cluster Server agent for Oracle provides enhanced handling of Oracle errors encountered during detailed monitoring. The agent uses the reference file oraerror.dat, which consists of a list of Oracle errors and the actions to be taken.

See the *Veritas Cluster Server Agent for Oracle Installation and Configuration Guide* for a description of the actions.

Currently, the reference file specifies the NOFAILOVER action when the following Oracle errors are encountered:

```
ORA-00061, ORA-02726, ORA-6108, ORA-06114
```

The NOFAILOVER action means that the agent sets the resource's state to OFFLINE and freezes the service group. You may stop the agent, edit the oraerror.dat file, and change the NOFAILOVER action to another action that is appropriate for your environment. The changes go into effect when you restart the agent.

### Health check may not work

If you set MonitorOption to 1, health check monitoring may not function when the following message is displayed [589934]:

```
Warning message - Output after executing Oracle Health
Check is: GIM-00105: Shared memory region is corrupted.
```

Workaround: Set MonitorOption to 0 to continue monitoring the resource.

### ASM instance does not unmount VxVM volumes after ASMDG resource is offline

In configurations where ASMInstance resource is part of a separate parallel service group, the ASM instance does not unmount the volumes even after the ASMDG resource is taken offline. Therefore, the Volume resource cannot be taken offline. This issue occurs when you use VxVM volumes as ASM disk groups. [918022]

Workaround: Configure the ASMInstance resource as part of the failover service group where ASMDG resource is configured.

### Oracle 10g R1 on Solaris x64 requires a patch

In a Solaris x64 environment, after installing Oracle 10g R1 software, download and install the Oracle 10g R1 patch 4186426. You must install the Oracle patch before creating a database on the Solaris 64-bit operating system. Refer to the Oracle support website for additional information.

### Oracle database instance may terminate at regular intervals on Solaris x64

In a Solaris x64 environment, at regular short intervals, the Oracle database instance may terminate unexpectedly.

Workaround: The recommendation from Oracle is to set the database initialization parameters db_cache_size and java_pool_size to optimal values.

## Issues related to the VCS Agent for Sybase

This section covers issues related to the VCS agent for Sybase.

### Agent for Sybase may not detect Sybase resource is online

On Solaris SPARC, the agent for Sybase cannot successfully verify that the Sybase database is started if the process name of the running Sybase database exceeds 80 characters. When the agent is unable to detect the dataserver name, it faults the resource. [427962]

Workaround: Use a soft link to the $SYBASE directory to avoid potential issues with long path names.

See the *Veritas Cluster Server Agent for Sybase Installation and Configuration Guide* for instructions.

## Issues related to VCS in Japanese locales

This section covers the issues that apply to VCS 5.0 in a Japanese locale.

### Installer does not create user account and password

The product installer does not ask for a VCS user account and password in a Japanese locale. Only the English installer provides this function.

Workaround: Use the hauser command to create VCS user accounts after installation is complete.

### The GetSafeMsg() returns error when one of the parameters is already localized

Some log messages that use the date-string parameter may not print correctly in non-English locales. [1715258, 1825966]

### The gcoconfig script displays error messages in English

The gcoconfig script incorrectly displays English error messages. [1416136 ]

### The hahbsetup command displays messages and warnings in English

The `hahbsetup` command incorrectly displays messages and warnings in English. [1652562]

### The hares -action command displays output in English

The `hares -action` command incorrectly displays output in English. [1786747]

### The getcomms command does not create diagnostic file

The getcomms command does not successfully create a .tar diagnostic file in a Japanese locale. [311349]

Workaround: Change the system environment to LANG=C before running the getcomms command.

### Some messages and dialogs of VCS Java Console do not display correctly

A small number of messages and dialogs do not display correctly in the VCS Java Console. For example, the Oracle output from SqlTest.pl that is included in the VCS message V-16-20002-211 does not display correctly. [355710, 494575]

## Other known issues

This section covers other known issues.

### License package not completely removed from local zones

Some files from the licensing package (VRTSvlic) may not be removed from a local zone that was created after VRTSvlic was originally installed. An error message is displayed if all files are not removed.

Workaround: After the package removal process ends, run the following command from the global zone to remove any remaining VRTSvlic files:

```
rm -rf zonepath/root/var/sadm/pkg/VRTSvlic
```

If you are upgrading a product and local zones are configured, instead of using the installer upgrade procedure (or running the script from the command line), perform the upgrade in steps: Uninstall the product, and then reinstall the product.

### Cannot update patches if non-global zones are not in the RUNNING state

The patchadd command fails to update the patches if non-global zones are not in the running state. [860390]

Workaround: You must boot the non-global zones before you install any VCS 5.0 MP version.

**To apply patches to non-global zones**

1 On any system, type:

```
hastop -all
```

2 Check if the non-global zone is in the RUNNING state by typing the following command:

```
zoneadm list -iv
```

3 If the zones are not in the running state, boot the non-global zones on all the nodes where you want to install a 5.0 MP version.

```
zoneadm -z zone boot
```

# Software limitations

The following limitations apply to this release.

## Timing issues with AutoStart policy

Consider a case where the service group is offline and engine is not running on node 1. If you restart the engine on node 1 after HAD is killed on node 2 and before the engine is restarted on node 2, then VCS does not initiate the autostart policy of the group.

## Volumes outside of VCS control that are mount locked cannot be unmounted without specifying the key

If a VxFS file system has "mntlock=key" in its mount options, then you cannot unmount the file system without specifying the key. Groups having DiskGroup resources configured with UmountVolumes set, may fail to switch or failover if the volumes are mount locked. [1276594]

## Entry points that run inside a zone are not cancelled cleanly

Cancelling entry points results in the cancellation of only the `zlogin` process. The script entry points that run inside a zone are forked off using the `zlogin`command. However, the `zlogin` command forks off an `sh` command, which runs in the context of the Solaris zone. This shell process and its family does not inherit the group id of the `zlogin` process, and instead gets a new group id. Thus, it is difficult for

the agent framework to trace the children or grand-children of the shell process, which translates to the cancellation of only the `zlogin` process. [1179695]

Workaround: SUN Microsystems must provide an API or a mechanism to kill all the children of the `zlogin` process that was started to run the entry point script in the local-zone.

## Engine hangs when you perform a global cluster upgrade from 5.0 MP3 in mixed-stack environments

If you try to upgrade a mixed stack VCS environment (where IPv4 and IPv6 are in use), HAD may hang.

Workaround: When you perform an upgrade, all applicable configurations for VCS must use IPv4. [1820327]

## The operating system does not distinguish between IPv4 and IPv6 packet counts

In a dual-stack configuration, when you use packet counts and the IPv6 network is disabled, the NIC agent might not detect a faulted NIC. It might not detect a fault because while the IPv6 network is down its packet count still increases. The packet count increases because the operating system does not distinguish between the packet counts for IPv4 and IPv6 networks. The agent then concludes that the NIC is up. If you are using the same NIC device for IPv4 as well as IPv6 resources, set PingOptimize to 0 and specify a value for the NetworkHosts attribute for either the IPv6 or the IPv4 NIC resource. [1061253]

## DB2 RestartLimit value

When multiple DB2 resources all start at the same time with no dependencies, they tend to interfere or race with each other. This is a known DB2 issue.

The default value for the DB2 agent RestartLimit is 3. This higher value spreads out the re-start of the DB2 resources (after a resource online failure), which lowers the chances of DB2 resources all starting simultaneously. [1231311]

## Cluster address for global cluster requires resolved virtual IP

The virtual IP address must have a DNS entry if virtual IP is used for heartbeat agents.

## Use VCS installer to install or upgrade VCS when the zone root is on VxFS shared storage

You must use the VCS installer program to install or upgrade VCS when the zone root is on Veritas File System (VxFS). [1215671]

## Systems in a cluster must have same system locale setting

VCS does not support clustering of systems with different system locales. All systems in a cluster must be set to the same locale.

## VCS deletes user-defined VCS objects that use the HostMonitor object names

If you had defined the following objects in the main.cf file using the reserved words for the HostMonitor daemon, then VCS deletes these objects when the VCS engine starts [1293092]:

- Any group that you defined as VCShmg along with all its resources.
- Any resource type that you defined as HostMonitor along with all the resources of such resource type.
- Any resource that you defined as VCShm.

## Using agents in NIS

Programs using networked services (for example, NIS, NFS, RPC, or a TCP socket connection to a remote host) can hang if the host is disconnected from the network. If such a program is used as an agent entry point, a network disconnect can cause the entry point to hang and possibly time out. For example, if the host is configured to use NIS maps as a client, basic commands such as ps -ef can hang if there is network disconnect. Symantec recommends creating users locally. To reflect local users, configure:

/etc/nsswitch.conf

## VxVM site for the diskgroup remains detached after node reboot in campus clusters with fire drill

When you bring the DiksGroupSnap resource online, the DiskGroupSnap agent detaches the site from the target diskgroup defined. The DiskGroupSnap agent invokes VCS action entry points to run VxVM commands to detach the site. These commands must be run on the node where the diskgroup is imported, which is at the primary site.

If you attempt to shut down the node where the fire drill service group or the diskgroup is online, the node goes to a LEAVING state. The VCS engine attempts to take all the service groups offline on that node and rejects all action entry point requests. Therefore, the DiskGroupSnap agent cannot invoke the action to reattach the fire drill site to the target diskgroup. The agent logs a message that the node is in a leaving state and then removes the lock file. The agent's monitor function declares that the resource is offline. After the node restarts, the diskgroup site still remains detached. [1272012]

Workaround:

You must take the fire drill service group offline using the `hagrp -offline` command before you shut down the node or before you stop VCS locally.

If the node has restarted, you must manually reattach the fire drill site to the diskgroup that is imported at the primary site.

## Limitations with DiskGroupSnap agent

The DiskGroupSnap agent has the following limitations:

- The DiskGroupSnap agent does not support layered volumes. [1368385]
- If you use the Bronze configuration for the DiskGroupSnap resource, you could end up with inconsistent data at the secondary site in the following cases [1391445]:
  - After the fire drill service group is brought online, a disaster occurs at the primary site during the fire drill.
  - After the fire drill service group is taken offline, a disaster occurs at the primary while the disks at the secondary are resynchronizing.

  Symantec recommends that you use the Gold configuration for the DiskGroupSnap resource.

## Fire drill does not support volume sets

The fire drill feature for testing fault readiness of a VCS configuration supports only regular Volume Manager volumes. Volume sets are not supported in this release.

## Manually removing VRTSat package erases user credentials

Symantec recommends saving user credentials before manually removing the VRTSat package. If you need the credentials again, you can restore them to their original locations.

**To save user credentials**

1 Run the vssat showbackuplist command. The command displays the data files and backs them up into the SnapShot directory /var/VRTSatSnapShot. Output resembles the following:

```
vssat showbackuplist
B| /var/VRTSat/.VRTSat/profile/VRTSatlocal.conf
B| /var/VRTSat/.VRTSat/profile/certstore
B| /var/VRTSat/RBAuthSource
B| /var/VRTSat/ABAuthSource
B| /etc/vx/vss/VRTSat.conf
Quiescing ...
Snapshot Directory :/var/VRTSatSnapShot
```

2 Move the credentials to a safe location. Preserving the directory structure makes restoring the files easier.

**To restore user credentials**

1 Navigate to the SnapShot directory or the safe location where you previously saved credentials:

```
cd /var/VRTSatSnapShot/
```

2 Restore the files:

```
cp ABAuthSource /var/VRTSat/
cp RBAuthSource /var/VRTSat/
cp VRTSat.conf /etc/vx/vss/
cd /var/VRTSatSnapShot/
cp -rp profile /var/VRTSat/.VRTSat/
```

# I/O fencing limitations

## Stopping systems in clusters with I/O fencing configured

The I/O fencing feature protects against data corruption resulting from a failed cluster interconnect, or “split brain.” See the *Veritas Cluster Server Administrator's Guide* for a description of the problems a failed interconnect can create and the protection I/O fencing provides.

I/O fencing uses SCSI-3 PR keys to implement data protection. Keys are placed on I/O fencing coordinator points and on data disks. The VCS administrator must be aware of several operational changes needed when working with clusters

protected by I/O fencing. Specific shutdown procedures ensure keys are removed from coordinator points and data disks to prevent possible difficulties with subsequent cluster startup.

Using the reboot command rather than the shutdown command bypasses shutdown scripts and can leave keys on the coordinator points and data disks. Depending on the order of reboot and subsequent startup events, the cluster may warn of a possible split brain condition and fail to start up.

Workaround: Use the shutdown -r command on one node at a time and wait for each node to complete shutdown.

# Bundled agent limitations

This section covers the software limitations for VCS bundled agents.

## Mount resources can cause core dumps

Due to a known Solaris issue, certain system calls create memory leaks that can lead to a core dump. This happens in situations where the Mount resource's FSType attribute has a value of nfs, and is exacerbated when the resource is for a non-global zone and the value of the SecondLevelMonitor attribute is 1. [1827036]

## Volume agent clean may forcibly stop volume resources

When the attribute FaultOnMonitorTimeouts calls the Volume agent clean entry point after a monitor time-out, the vxvol -f stop command is also issued. This command forcibly stops all volumes, even if they are still mounted.

## NFS failover

If the NFS share is exported to the world (*) and the NFS server fails over, NFS client displays the following error, “Permission denied”.

To avoid this error, export NFS shares explicitly using FQDN.

## False concurrency violation when using PidFiles to monitor application resources

The PID files created by an application contain the PIDs for the processes that are monitored by Application agent. These files continue to exist even after a node running the application crashes. On restarting the node, the operating system may assign the PIDs listed in the PID files to other processes running on the node.

Thus, if the Application agent monitors the resource using the PidFiles attribute only, the agent may discover the processes running and report a false concurrency

violation. This could result in some processes being killed that are not under VCS control.

### VCS does not provide a bundled agent for volume sets

VCS 5.1 does not provide a bundled agent to manage and monitor Volume Manager volume sets. Problems with volume sets can only be detected at the DiskGroup and Mount resource levels.

Workaround: Set StartVolumes and StopVolumes attributes of the DiskGroup resource that contains volume set to 1. If a file system is created on the volume set, use a Mount resource to mount the volume set.

## Limitation with intentional offline functionality of VCS agent for Oracle

The Oracle resource never faults after an intentional offline.

Intentional offline functionality of VCS agent for Oracle requires you to enable health check monitoring. The agent uses Oracle's Health Check API to find the state of the database. If the API returns a graceful shutdown for the database, then the agent marks the resource state as INTENTIONAL OFFLINE. Later if the Oracle agent's online function does not succeed, the agent does not mark the resource as FAULTED. The state remains as INTENTIONAL OFFLINE because the agent receives the database state from the API as graceful shutdown during each monitor cycle. [1805719]

## Cluster Manager (Java console) limitations

This section covers the software limitations for Cluster Manager (Java Console).

### Use the VCS 5.1 Java Console to manage clusters

Cluster Manager (Java Console) from previous VCS versions cannot be used to manage VCS 5.1 clusters. Symantec recommends using the latest version of Cluster Manager.

See the *Veritas Cluster Server Installation Guide* for instructions on upgrading Cluster Manager.

### Run Java Console on a non-cluster system

Symantec recommends not running Cluster Manager (Java Console) for an extended period on a node in the cluster. The Solaris version of the Java Virtual Machine has a memory leak that can gradually consume the host system’s swap space. This leak does not occur on Windows systems.

### Cluster Manager does not work if the hosts file contains IPv6 entries

VCS Cluster Manager fail to connect to the VCS engine if the /etc/hosts file contains IPv6 entries.

Workaround: Remove IPv6 entries from the /etc/hosts file.

### VCS Simulator does not support I/O fencing

When running the Simulator, be sure the UseFence attribute is set to the default, "None."

## Undocumented commands, command options, and libraries

VCS contains undocumented commands and command options intended for development use only. Undocumented commands are not supported.

# Documentation errata

## Veritas Cluster Server Installation Guide

This section covers the additions or corrections to the *Veritas Cluster Server Installation Guide* for document version 5.1.0.

These additions or corrections may be included in later versions of the *Veritas Cluster Server Installation Guide* that can be downloaded from the Symantec Support website and sfdoccentral.

### Corrections for I/O fencing procedure

*Topic: Testing the disks using vxfentsthdw utility*

Issue: The procedure in the *Veritas Cluster Server Installation Guide* has a missing step after step 3.

Use the following info for the missing step:

Enter the names of the disks that you want to check. Each node may know the same disk by a different name:

```
Enter the disk name to be checked for SCSI-3 PGR on node
IP_adrs_of_galaxy in the format:
for dmp: /dev/vx/rdmp/cxtxdxsx
for raw: /dev/rdsk/cxtxdxsx
Make sure it's the same disk as seen by nodes IP_adrs_of_galaxy
```

```
and IP_adrs_of_nebula
  /dev/rdsk/c2t13d0s2

Enter the disk name to be checked for SCSI-3 PGR on node
IP_adrs_of_nebula in the format:
for dmp: /dev/vx/rdmp/cxtxdxsx
for raw: /dev/rdsk/cxtxdxsx
Make sure it's the same disk as seen by nodes IP_adrs_of_galaxy
and IP_adrs_of_nebula
  /dev/rdsk/c2t13d0s2
```

If the serial numbers of the disks are not identical. then the test terminates.

# Veritas Cluster Server Administrator's Guide

This section covers the additions or corrections to the *Veritas Cluster Server Administrator's Guide* for 5.1.

## VCS environment variables

In the VCS environment variables section, in the VCS environment variables table, in the row that starts with VCS_GAB_RMACTION, replace PANIC (in uppercase) with panic (in lowercase.) The following excerpt correctly describes its use.

Controls the GAB behavior when VCS_GAB_RMTIMEOUT exceeds.

You can set the value as follows:

- panic—GAB panics the system
- SYSLOG—GAB logs an appropriate message

## Registration monitoring

In Registration monitoring section, replace PANIC (in uppercase) with panic (in lowercase.) The following excerpt correctly describes its use.

You can control GAB behavior in this situation by setting the VCS_GAB_RMACTION parameter in the vcsenv file.

- To configure GAB to panic the system in this situation, set:

  ```
  VCS_GAB_RMACTION=panic
  ```

  In this configuration, killing the HAD and hashadow processes results in a panic unless you start HAD within the registration monitoring timeout interval.

### ContainerOpts is a resource type attribute not a resource attribute

In VCS attributes appendix, the ContainerOpts resource is incorrectly placed in the table for resource attributes. This is a resource type attribute.

## Veritas Cluster Server Bundled Agents Reference Guide

This section covers the additions or corrections to the *Veritas Cluster Server Bundled Agents Reference Guide* for 5.1.

### DiskGroup agent

Under the section, "Setting the noautoimport flag for a disk group" the sub-section that reads:

For VxVM versions 4.1 and 5.0

Should instead read:

For VxVM versions 4.1 and 5.0 or later

## Veritas Cluster Server Agent for DB2 Installation and Configuration Guide

This section covers the additions or corrections to the *Veritas Cluster Server Agent for DB2 Installation and Configuration Guide* for 5.1.

### Db2udb resource type attributes

In the Resource type attributes for DB2 appendix, the Db2udb resource type attributes optional attributes table, update the description of the UseDB2start attribute to include the following information.

If the setup is MPP, you must set the value of the UseDB2start attribute to 0. For MPP, VCS uses the actual hostname and needs the ability to start and stop each partition. For this purpose, VCS uses the `db2gcf` command and requires a value of 0 for the UseDB2start attribute.

# VCS documentation

The software disc contains the documentation for VCS in Portable Document Format (PDF) in the *cluster_server*/docs directory.

# VCS documentation set

Table 1-6 lists the documents that VCS includes.

**Table 1-6** VCS documentation

| Title | File name |
|---|---|
| *Veritas Cluster Server Installation Guide* | vcs_install.pdf |
| *Veritas Cluster Server Release Notes* | vcs_notes.pdf |
| *Veritas Cluster Server Administrator's Guide* | vcs_admin.pdf |
| *Veritas Cluster Server Bundled Agents Reference Guide* | vcs_bundled_agents.pdf |
| *Veritas Cluster Server Agent Developer's Guide* | vcs_agent_dev.pdf |
| *Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide* | vcs_vvr_agent.pdf |
| *Veritas Cluster Server Application Note: Dynamic Reconfiguration for Sun Servers* | vcs_dynamic_reconfig.pdf |
| *Veritas Storage Foundation™ and High Availability Solutions Virtualization Guide* | sfha_virtualization.pdf |
| *Veritas Cluster Server Agent for DB2 Installation and Configuration Guide* | vcs_db2_agent.pdf |
| *Veritas Cluster Server Agent for Oracle Installation and Configuration Guide* | vcs_oracle_agent.pdf |
| *Veritas Cluster Server Agent for Sybase Installation and Configuration Guide* | vcs_sybase_agent.pdf |

Table 1-7 lists the documentation for the VCS component - Symantec Product Authentication Service.

**Table 1-7** Documentation for VCS components

| Title | File name |
|---|---|
| *Symantec Product Authentication Service Installation Guide* | at_install.pdf |
| *Symantec Product Authentication Service Administrator's Guide* | at_admin.pdf |

## VCS manual pages

The manual pages for the VRTSllt, VRTSgab, and VRTSvcs are installed in /opt/VRTS/man. Set the MANPATH environment variable so the man(1) command can point to the VCS manual pages.

For Bourne or Korn shell (sh or ksh), type:

```
MANPATH=$MANPATH:/opt/VRTS/man
  export MANPATH
```

For C shell (csh or tcsh), type:

```
setenv MANPATH ${MANPATH}:/opt/VRTS/man
```

For more information, refer to the man(1) manual page.

## Documentation feedback

Your feedback on product documentation is important to us. Send suggestions for improvements and reports on errors or omissions to sfha_docs@symantec.com.

Include the document's title, its document version (located on the top of page two), the chapter title, and the section title of the text.