

# Veritas™ Cluster Server Release Notes

AIX

5.0 Maintenance Pack 3



# Veritas Cluster Server Release Notes

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# Release Notes

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## Introduction

This document provides important information about Veritas Cluster Server (VCS) version 5.0 Maintenance Pack 3 for AIX. 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 information on updates, patches, and software issues for this release, use the following TechNote on the Symantec Enterprise Support website:

<http://entsupport.symantec.com/docs/282024>

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

## 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 30.

### About compiling custom agents

Custom agents developed in C++ must be compiled using the IBM C for AIX Compiler Version 7.0. Use the `-brtl` flag for runtime linking with the framework library.

# Changes introduced in this release

This section lists the changes introduced in this release of VCS.

## LVMVG support in a VIO server environment

Changes in AIX and VIOS now enable the LVMVG agent to work in a VIO server environment. AIX and VIOS must be at the following required levels:

- The AIX operating system level must be AIX 5.3 TL5 SP6 or later.
- The VIOS version must be VIOS 1.3 Fix Pack 8.1 or later.

## Changes to Cluster Management Console 5.0

SFHA 5.0 MP3 has the following changes for Cluster Management Console 5.0:

- If you perform a fresh VCS 5.0 MP3 installation, the installer installs the Cluster Management Console 5.0 cluster connector and single cluster management console components as part of the optional VCS filesets. However, the installer does not provide an option to configure these components.

If you already have a management server of Cluster Management Console 5.0, you can use direct connection to manage the newly configured VCS 5.0 MP3 cluster. Symantec recommends that you install and configure the latest version 5.1 of VCS Management Console.

See “[VCS Management Console 5.1](#)” on page 9.

- If you upgrade VCS to 5.0 MP3 and if you used Cluster Management Console 5.0 to manage the cluster, you may continue to use it with VCS 5.0 MP3.

## VCS Management Console 5.1

The installation media for this release also offers Veritas Cluster Server (VCS) Management Console 5.1. VCS Management Console was earlier known as Cluster Management Console.

VCS Management Console 5.1 can manage VCS 5.0 MP3 clusters using direct connection. You can also install the cluster connector for VCS Management Console 5.1 on the VCS 5.0 MP3 clusters.

Refer to the *Veritas Cluster Server Management Console Implementation Guide* for installation, upgrade, and configuration instructions.

For information on updates and patches for VCS Management Console 5.1, see <http://entsupport.symantec.com/docs/290657>

To download the most current version of VCS Management Console, go to [www.symantec.com](http://www.symantec.com), browse to the Cluster Server page and click Utilities.

## Changes to VCS agent for Oracle

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

- Support for Oracle 11g  
See “[Supported VCS agents](#)” on page 30.
- Support for Oracle ASM
- Support to detect intentional offline
- Support to choose CUSTOM as one of the start up options when you use Hot backup feature of Oracle
- Support for csh and tcsh shell when Health check monitoring is enabled
- Support for a new action entry point pfile.vfd

See the *Veritas Cluster Server Agent for Oracle Installation and Configuration Guide* for more information.

## VCS agent for DB2 supports DB2 9.5

The Veritas Cluster Server Agent for DB2 supports DB2 9.5.

See “[Supported VCS agents](#)” on page 30.

See the *Veritas Cluster Server Agent for DB2 Installation and Configuration Guide* for more information.

## Change in attributes

This release has the following changes for VCS attributes:

- AYATimeout - VCS heartbeat attribute  
The default value of the heartbeat attribute AYATimeout is changed from 300 seconds to 30 seconds. [622413]
- Preonline - VCS service group attribute  
You can now localize the Preonline attribute for the nodes in a cluster. [530440]
- AutoFailOver - VCS service group attribute  
If you have configured system zones in campus clusters, you can fail over that service group manually across system zones.

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

## New attributes

This release introduces the following new system attributes:

- **HostMonitor**—Monitors the usage of resources on the host.
- **HostUtilization**—Indicates the usage percentages of resources on the host.

This release introduces the following new service group attributes:

- **PreSwitch**—Indicates whether the VCS engine should switch a service group in response to a manual group switch.
- **PreSwitching**—Indicates that the VCS engine invoked the PreSwitch action function for the agent; however, the action function is not yet complete.

This release introduces the following new resource type level attribute:

- **OfflineWaitLimit**—Indicates the number of monitor intervals to wait for the resource to go offline after completing the offline procedure. Increase the value of this attribute if the resource is likely to take a longer time to go offline.

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

## Support for intentional offline

Certain VCS agents can identify when an application has been intentionally shut down outside of VCS control. If an administrator intentionally shuts down an application outside of VCS control, VCS does not treat it as a fault. VCS sets the service group state as offline or partial, depending on the state of other resources in the service group. This feature allows administrators to stop applications without causing a failover. The intentional offline feature is available for agents registered as V51 or later.

See the *Veritas Cluster Server Agent Developer's Guide* for information on agents that support this feature.

## High Availability fire drill support for additional bundled agents

The following bundled agents now support High Availability fire drill:

- DNS
- LVMVG
- Mount
- NFSRestart
- Share

## VCS process to monitor resource utilization

VCS uses the HostMonitor daemon to monitor the resource utilization of CPU and Swap. VCS reports to the engine log if the resources cross the threshold limits that are defined for the resources.

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

## Support for VxFS file system lock

If the VxFS file system has "mntlock=key" in its mount options, then you cannot unmount the file system without specifying the key. This prevents accidental unmounts when a resource is online.

See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information.

## Changes to bundled agents

VCS 5.0 MP3 introduces the following new agents:

- DiskGroupSnap—Verifies the configuration and data integrity in a campus cluster environment.
- VCS 5.0 MP3 includes the following new bundled agents for Samba.
  - SambaServer agent—Monitors the smbd process.
  - SambaShare agent—Use to make a Samba Share highly available or to monitor it.
  - NetBIOS agent—Use to make the nmbd process highly available or to monitor it.

See [“No longer supported”](#) on page 31.

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

### Change in behavior: DiskGroup agent

If you set the value of the PanicSystemOnDGLoss attribute to 1, VCS panics the system when the disk group becomes unavailable irrespective of whether you use I/O fencing.

See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information.

## IP and NIC agents support EtherChannel

The IP and NIC bundled agents support EtherChannel use with VCS 5.0MP3. EtherChannel is responsible for providing local adapter swapping, which is outside of VCS control. EtherChannel Backup and active-active modes are supported.

You can use the NIC agent to monitor the aggregated interface, and use the IP agent to configure and monitor an IP address on the aggregated interface.

See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information.

## New and modified attributes for the bundled agents in VCS 5.0 MP3

The new and modified attributes for the bundled agents in VCS 5.0 MP3 are as follows:

Apache	<p>New attributes:</p> <ul style="list-style-type: none"> <li>■ SupportedActions</li> <li>■ PidFile</li> <li>■ IntentionalOffline</li> </ul>
DNS	<p>New attributes:</p> <ul style="list-style-type: none"> <li>■ SupportedActions</li> <li>■ ResRecord</li> <li>■ CreatePTR</li> <li>■ OffDelRR</li> <li>■ TSIGKeyFile</li> </ul>
DiskGroup	<p>New attribute:</p> <ul style="list-style-type: none"> <li>■ UmountVolumes</li> </ul> <p>Modified attribute:</p> <ul style="list-style-type: none"> <li>■ SupportedActions</li> </ul>
LVMVG	<p>New attribute:</p> <ul style="list-style-type: none"> <li>■ SupportedActions</li> </ul>
Mount	<p>New attribute:</p> <ul style="list-style-type: none"> <li>■ VxFSMountLock</li> </ul> <p>Modified attribute:</p> <ul style="list-style-type: none"> <li>■ SupportedActions</li> </ul>

NFSRestart	New attribute: <ul style="list-style-type: none"><li>■ SupportedActions</li></ul>
Share	New attribute: <ul style="list-style-type: none"><li>■ SupportedActions</li></ul>

## Enhancements to VCS campus clusters

VCS 5.0 MP3 includes the following enhancements to campus cluster configurations:

- Support for campus clusters using VxVM remote mirror configuration  
In a campus cluster setup, you can configure VxVM diskgroups for remote mirroring.
- Support for fire drill in campus clusters using the DiskGroupSnap agent  
A fire drill tests the disaster-readiness of a configuration by mimicking a failover without stopping the application and disrupting user access.  
The DiskGroupSnap agent is used to perform the fire drill in campus clusters. You can bring online, take offline, and monitor the fire drill versions of disk groups for testing.  
You can configure this agent to either use the disks at the secondary site (Bronze configuration) or use the disks configured on a dummy site at the secondary site (Gold configuration). Symantec recommends that you use the Gold configuration for the DiskGroupSnap resource.  
See [“Limitations with DiskGroupSnap agent”](#) on page 58.
- Support for manual failover of service groups across system zones in campus clusters  
The AutoFailOver attribute controls the service group behavior in response to service group and system faults. For campus clusters, you can set the value of the AutoFailOver attribute as 2 to manually fail over the service group across the system zones that you defined in the SystemZones attribute.  
The manual failover functionality requires that you enable the HA/DR license and that the service group is a non-hybrid service group.

See the *Veritas Cluster Server User’s Guide* and the *Veritas Cluster Server Bundled Agents Reference Guide* for more information.

## Support for secure communication in global clusters

In global clusters, VCS provides the option of making the following communications secure:

- Communication between the wide-area connectors
- Communication between the wide-area connectors and the Steward process

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

## LLT supports NIC bonding

You can configure NIC bonds (aggregated interfaces) as private links under LLT. LLT treats each aggregated interface as a single link. So, you must configure these NICs that form the bond in such a way that the NICs are connected to the same switch or hub.

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**Note:** If the NICs are connected to different switches or hubs, you must establish connection between the switches or hubs.

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See the *Veritas Cluster Server Installation Guide* for instructions to configure private heartbeats that use aggregated interfaces.

## I/O fencing supports iSCSI devices

You can now use iSCSI devices as coordinator disks for I/O fencing. However, I/O fencing supports iSCSI devices only when you use DMP disk policy. Make sure that the `/etc/vxfenmode` file has the disk policy set to DMP before you use iSCSI devices as coordinator disks.

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

<http://entsupport.symantec.com/docs/283161>

See the *Veritas Cluster Server Installation Guide* for instructions to configure I/O fencing using DMP policy.

## Changes to I/O fencing commands

Following are the changes to the I/O fencing commands:

- The `vxfcntlsthdw` command now supports `-d` option for dmp devices.
- The `vxfenconfig -l` command lists the coordinator disks that the `vxfen` driver uses.

Refer to the corresponding manual pages for more information on the commands.

## Support to replace coordinator disks in a running cluster

You can now replace the coordinator disks in a running cluster using the `vxfsnwap` utility.

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

## Enhanced encryption mechanism for agent passwords

The `vcscrypt` utility now supports stronger encryption mechanism for agent passwords. Use the `vcscrypt` utility to generate a security key that you can use to create a more secure password for the agent.

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

## Support to add a node to a cluster running in secure mode

You can use the `installvcs` to add a node to a cluster running in secure mode.

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

## Multi-tiered application support using the RemoteGroup agent for global groups

VCS supports the RemoteGroup agent when it points to a global group. The RemoteGroup agent must map the state of the global group in the local cluster.

See the *Veritas Cluster Server User's Guide* for more information on the functionality of this agent.

## VCS documentation is available on the software disc

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.

## Changes in VCS 5.0 MP1 Update 1 for AIX 6.1

This section includes the changes in the 5.0 MP1 Update 1 for AIX 6.1 release of VCS.

## Support for AIX 6.1

This release of VCS introduces support for AIX 6.1. Note that the VCS 5.0 MP1 patch was for previous versions of the AIX operating system.

## DNS agent supports A, AAAA records with corresponding PTR records

The DNS agent supports A and AAAA records. To accommodate this, and improve the agent, the HostName and Alias attributes have been replaced with the ResRecord attribute.

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

## Changes introduced in VCS 5.0 MP1

This section lists the changes introduced in the VCS 5.0 MP1 release.

### DNS agent supports secure DNS updates

The DNS agent has a new attribute called TSIGKeyFile. The attribute is required when you configure DNS for secure updates. The attribute specifies the absolute path to the file containing the private TSIG (Transaction Signature) key.

For details on the TSIG key:

### Change in string size for some attribute values

For group name, resource name, attribute name, type name, and VCS username and password, the string size is limited to 1024 characters.

### Updates to the NIC agent

For a virtual device, you must configure the NetworkHosts attribute. Symantec recommends configuring more than one host to take care of the NetworkHost itself failing. [781376]

### VCS FEN messages are now VxFEN messages

Error messages that are related to the fencing module, VCS FEN, are now read as VxFEN.

## Campus cluster support

You can configure a campus cluster using functionality provided by Veritas Volume Manager.

To set up a campus cluster, make sure the disk group contains mirrored volumes. The mirrors must be on separate storage at different sites. Use site tags to distinguish between mirrors located at different sites. You could also use enclosure-based naming.

See the *Veritas Volume Manager Administrator's Guide* for detailed instructions. Symantec recommends using I/O fencing in campus clusters.

## Change in behavior: hastop command

VCS ignores the value of the cluster-level attribute `EngineShutdown` while the system is shutting down. [702597]

## Change in behavior: BrokerIP attribute of the RemoteGroup agent

The `BrokerIP` attribute now requires only the IP address. Do not include the port number when you configure the attribute. [789878]

For a secure remote cluster only, if you need the `RemoteGroup` agent to communicate to a specific authentication broker, then set this attribute.

Type: string-scalar

Example: "128.11.245.51"

## Fire drill support in Veritas Cluster Management Console

Veritas Cluster Management Console adds support for fire drills. The console lets you run fire drills and displays the status of the last fire drill.

- Viewing the status of the last fire drill—The service group listing tables display a column for the Physical Fire Drill Status, which indicates the results of the last fire drill.
- Running a fire drill.
  - Verify that replication for an application is working correctly.
  - Verify that a secondary disaster recovery (DR) application service group can be brought online successfully.
- Viewing fire drill logs—If a service group is configured with a physical fire drill group, a tab labelled Fire Drill Logs appears on the secondary tab bar in the

Group:Summary view. Click this tab to view the VCS log messages about the fire drill group on the remote cluster and the resources that belong to it.

See the *Veritas Cluster Server User's Guide* for information about fire drills.

## Viewing the status of the last fire drill

The column Fire Drill Status has been added to service group listing tables. A service group listing table is on the Cluster:Groups view.

For VCS global service groups that are configured with a fire drill group, this column indicates the results of the most recently run fire drill. The following are the possible states:

unknown	No fire drill has been run or the Cluster Management Console has come online after the most recent fire drill
running	Fire drill in progress
passed	Fire drill group came online on the secondary cluster
failed	Fire drill group did not come online on the secondary cluster

If multiple management servers are connected to the global cluster that contains the primary global group, the table does not show fire drill status for that group.

## Running a fire drill

The Cluster Management Console supports fire drills in multi-cluster mode only. Before you run a fire drill, you must do the following:

- Configure the local (primary) and remote (secondary) global groups
- Set up the replication for the storage at the primary and secondary sites
- Configure the fire drill group using the FDSETUP command line wizard.

### To run a fire drill from the Cluster Management Console

- 1 On the navigation bar, click **Home**.
- 2 On the secondary tab bar, click **Clusters**.
- 3 In the Home:Clusters view, in the Clusters Listing table, click the name of the primary global cluster.
- 4 On the secondary tab bar, click **Groups**.

- 5 In the Cluster:Groups view, in the Groups Listing table, click the name of the primary global group.
- 6 In the Group:Summary view, in the Remote Operations task panel, click **Run fire drill**.

You can view results of the fire drill in the Cluster:Groups view, the Group:Summary view, and in the Group:Fire Drill Logs view.

## Viewing fire drill logs

Running a fire drill creates fire drill logs. If a service group is configured with a fire drill group, a tab labeled Fire Drill Logs appears on the secondary tab bar in the Group:Summary view.

### To view fire drill logs

- 1 On the navigation bar, click **Home**.
- 2 On the secondary tab bar, click **Clusters**.
- 3 In the Home:Clusters view, in the Clusters Listing table, click the name of a VCS global cluster.

The global cluster must contain a global service group (primary group) that is configured with a fire drill group at a secondary location.

- 4 On the secondary tab bar, click **Groups**.
- 5 In the Cluster:Groups view, in the Groups Listing table, click the name of the primary global group.
- 6 In the Group:Summary view, on the secondary tab bar, click **Fire Drill Logs**.

This tab contains VCS log messages about the fire drill group on the remote (secondary) cluster and the resources that belong to it.

## Features introduced in VCS 5.0

This section lists the features introduced in the VCS 5.0 release.

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

### Cluster Management Console

The new Cluster Management Console replaces Cluster Manager (Web Console) and CommandCentral Availability.

Cluster Management Console enables administration and analysis for VCS clusters in your enterprise from a single console. You can install Cluster Management

Console on a stand-alone system to manage multiple clusters or you can install the console on cluster nodes to manage a local cluster. When installed to manage a local cluster, the console is configured as part of the ClusterService group and the AppName attribute is set to cmc.

See [“VCS Management Console 5.1”](#) on page 9.

## Cluster Monitor is now called Cluster Connector

CommandCentral Availability installed a component called Cluster Monitor on cluster nodes. The updated component is called Cluster Connector.

## VCS privileges for operating system user groups

VCS 5.0 lets you assign VCS privileges to native users at an operating system (OS) user group level in secure clusters.

Assigning a VCS role to a user group assigns the same VCS privileges to all members of the user group, unless you specifically exclude individual users from those privileges.

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

## Five levels of service group dependencies

VCS now supports configuring up to five levels of service group dependencies. The exception is the online local hard dependency, for which only two levels are supported.

## New RemoteGroup agent to monitor service groups in remote clusters

The new RemoteGroup agent monitors and manages service groups in a remote cluster. See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information about the agent.

## Enhancements to the hastop command

You can customize the behavior of the hastop command by configuring the new EngineShutdown attribute for the cluster.

[Table 1-1](#) lists the EngineShutdown attribute's values and description.

**Table 1-1** EngineShutdown attribute values

Attribute value	Description
Enable	Process all hastop commands. This is the default behavior.
Disable	Reject all hastop commands.
DisableClusStop	Do not process the hastop -all command; process all other hastop commands.
PromptClusStop	Prompt for user confirmation before running the hastop -all command; process all other hastop commands.
PromptLocal	Prompt for user confirmation before running the hastop -local command; reject all other hastop commands.
PromptAlways	Prompt for user confirmation before running any hastop command.

## Simulator supports deleting simulated clusters

VCS Simulator now supports deleting simulated clusters.

Symantec recommends using the same tool (command line or Java Console) to create and delete a cluster. For example, if you created the cluster from the Java Console, delete the cluster from the Java Console.

## I/O fencing updates: DMP support

Dynamic multi-pathing (DMP) allows coordinator disks to take advantage of the path failover and the dynamic adding and removal capabilities of DMP. You can configure coordinator disks to use Veritas Volume Manager DMP feature.

You can set the coordinator disks to use either raw or DMP as the hardware path to a drive.

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

## Minimal downtime upgrade to VCS 5.0

See the *Veritas Cluster Server Installation Guide* for a strategy on upgrading to VCS 5.0 while ensuring a minimal downtime for your applications.

## Backup of VCS configuration files

VCS backs up all configuration files (*config.cf*) including *main.cf* and *types.cf* to *config.cf.autobackup*. The configuration is backed up only if the `BackupInterval` attribute is set and the configuration is writable.

When you save a configuration, VCS saves the running configuration to the actual configuration file (i.e. *config.cf*) and removes all autobackup files. This does away with the VCS behavior of creating stale files.

If you do not configure the `BackupInterval` attribute, VCS does not save the running configuration automatically.

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

## Support for security services

VCS 5.0 uses the Symantec Product Authentication Service to provide secure communication between cluster nodes and clients, including the Java and the Web consoles. VCS uses digital certificates for authentication and uses SSL to encrypt communication over the public network.

## HAD diagnostics

When the VCS engine HAD dumps core, the core is written to the directory `/var/VRTSvcs/diag/had`, where the diagnostic information is stored. When HAD and GAB encounter heartbeat problems, VCS runs the script `/opt/VRTSvcs/bin/vcs_diag` to collect the diagnostic information.

The current working directory of VCS engine is `VCS_DIAG` whose default value is `$VCS_HOME/diag`. In earlier versions of VCS, the default directory of HAD was `VCS_HOME` whose default value was `/opt/VRTSvcs`.

## Separate logger thread for HAD

The VCS engine, HAD, runs as a high-priority process to send heartbeats to kernel components and to respond quickly to failures. In VCS 5.0, HAD runs logging activities in a separate thread to reduce the performance impact on the engine due to logging.

## Enhanced NFS lock failover

The new `NFSRestart` agent provides high availability to NFS locks. Use the agent in conjunction with the NFS agent.

See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information.

## Support for VLAN interfaces

The NIC and MultiNICA agents now support VLAN interfaces. The agents do not configure the NICs, but can monitor them.

See the OS vendor's documentation on how to configure VLAN on your host, and ensure that the switch or router connected to such an interface is compatible with your configuration. Both server-side and switch-side VLAN configurations are supported.

## Virtual fire drill

VCS supports a virtual fire drill capability that lets you test whether a resource can fail over to another node in the cluster. Virtual fire drills detect discrepancies between the VCS configuration and the underlying infrastructure on a node; discrepancies that might prevent a service group from going online on a specific node.

See the *Veritas Cluster Server User's Guide* for more information on running virtual fire drills.

## New term: Daemon Down Node Alive (DDNA)

Daemon Down Node Alive (DDNA) is a condition in which the VCS high availability daemon (HAD) on a node fails, but the node is running. When HAD fails, the hashadow process tries to bring HAD up again. If the hashadow process succeeds in bringing HAD up, the system leaves the DDNA membership and joins the regular membership.

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

## Change in behavior: Use comma or semicolon as delimiter

VCS 5.0 does not support using spaces as delimiters to separate vector, association, or keylist values. You must use a comma or a semicolon as a delimiter.

## Change in behavior: New format for engine version

The new EngineVersion attribute replaces the MajorVersion and MinorVersion attributes. VCS stores version information in the following format:

*major.minor.maintenance\_patch\_num.point\_patch\_num*

For example:

5.0.30.0

## Change in behavior for the resfault trigger

VCS now provides finer control over the resfault trigger. The resfault trigger is now invoked if the `TriggerResFault` attribute is set to 1.

## Change in behavior: New location for enterprise agents

VCS enterprise agents are now installed in the `/opt/VRTSagents/ha/bin` directory.

The *agentTypes.cf* files are now located at `/etc/VRTSagents/ha/conf/agent`.

## Change in behavior: New location of message catalogs and attribute pools

VCS stores binary message catalogs (BMCs) at the following location:

`/opt/VRTS/messages/language/module_name`

The variable *language* represents a two-letter abbreviation.

The attribute pools also move from `/var` to `/opt`.

## Change in behavior: New option for the hastart and had commands

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Use the `-v` option to retrieve concise information about the VCS version. Use the `-version` option to get verbose information.

## Changes to bundled agents

VCS introduces the following new agents:

- NFSRestart—Provides high availability for NFS record locks.
- RemoteGroup—Monitors and manages a service group on another system.
- Apache (now bundled on all platforms)—Provides high availability to an Apache Web server.

See “[No longer supported](#)” on page 31.

## Changes to licensing for VCS

[Table 1-2](#) describes the licensing scheme that VCS now follows.

**Table 1-2** VCS licensing scheme

License	What's included
VCS	This license includes the following: <ul style="list-style-type: none"> <li>■ VCS</li> <li>■ Cluster Management Console</li> <li>■ Database agents</li> <li>■ Application agents</li> <li>■ Virtual fire drill support</li> </ul>
VCS HA/DR	This license includes the following: <ul style="list-style-type: none"> <li>■ VCS</li> <li>■ Cluster Management Console</li> <li>■ Database agents</li> <li>■ Application agents</li> <li>■ Replication agents</li> <li>■ Global clustering</li> <li>■ Fire drill support</li> </ul>

**Note:**

Database agents are included on the VCS 5.0 disc. The replication and application agents are available via the Veritas High Availability Agent Pack.

## New attributes

VCS 5.0 introduces the following new attributes. See the *Veritas Cluster Server User's Guide* for more information.

Resource type attributes:

- **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:

- **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

VCS 5.0 does not use the following attributes:

- **DiskHbStatus**—Deprecated. This release does not support disk heartbeats. Symantec recommends using I/O fencing.
- **MajorVersion**—The **EngineVersion** attribute provides information about the VCS version.
- **MinorVersion**—The **EngineVersion** attribute provides information about the VCS version.

## Updates to the DB2 agent

The Veritas High Availability Agent for DB2 introduces the following changes:

- The attributes **StartUpOpt** and **ShutDownOpt** provide new start up and shut down options. Using the **StartUpOpt** attribute, you can start the instance or partition, activate database commands after processes start, or create customized start up sequences. Using the **ShutDownOpt** attribute, you can perform a normal stop or customize your shut down sequence.
- In previous releases when you enabled in-depth monitoring (**IndepthMonitor=1**), it executed a default SQL query. The in-depth monitor

now allows you to classify actions for DB2 errors according to their severity. You can associate predefined actions with each error code with a monitoring script that you can customize. You can find a sample of in-depth monitoring script in the following directory:

/etc/VRTSagents/ha/conf/Db2udb/sample\_db2udb.

You must install the custom script in the /opt/VRTSagents/ha/bin/Db2udb directory to enable indepth monitoring.

- You can enable the AgentDebug attribute to get more debugging information from the agent and the database.

## Updates to the Oracle agent

The Veritas High Availability Agent for Oracle introduces the following changes:

- **New monitoring option**—The basic monitoring option of the Oracle agent now allows health check monitoring in addition to the process check monitoring. You can choose the health check monitoring option for Oracle 10g and later.
- **Support for virtual fire drills**—VCS requires you to keep the configurations in sync with the underlying infrastructure on a cluster node. Virtual fire drills detect such discrepancies that prevent a service group from going online on a specific system.

Refer to the *Veritas Cluster Server User's Guide* for more information.

The agent uses the Action entry point to support the virtual fire drill functionality.

## Updates to the Sybase agent

The Veritas High Availability Agent for Sybase introduces the following changes:

- The agent supports Sybase ASE 12.5.x and 15.
- The agent supports encrypted passwords.

## 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.

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.

See “[Supported hardware](#)” on page 29.

See “[Supported operating systems](#)” on page 29.

Before you install your Symantec products on AIX 6.1, you must read the Late Breaking News TechNote:

<http://entsupport.symantec.com/docs/282024>

## Veritas Installation Assessment Service

The Veritas Installation Assessment Service (VIAS) utility assists you in getting ready for a Veritas Storage Foundation and High Availability Solutions installation or upgrade. The VIAS utility allows the preinstallation evaluation of a configuration, to validate it prior to starting an installation or upgrade.

<https://vias.symantec.com/>

## 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/283161>

Before installing or upgrading Veritas Cluster Server, review the current compatibility list to confirm the compatibility of your hardware and software.

## Supported operating systems

VCS supports the following operating system versions:

- AIX 5.3 TL7 with SP2 or later is required  
See “[Required patches](#)” on page 29.
- AIX 6.1 TL0 with SP4 or later is required  
See “[Required patches](#)” on page 29.

## Required patches

Before you install your Symantec products on AIX 5.3 or 6.1, you must read the following TechNote and perform the instructions in it:

<http://entsupport.symantec.com/docs/300577>

## Supported software

VCS supports the following volume managers and files systems:

- Logical Volume Manager (LVM)
- Journaled File System (JFS) and Enhanced Journaled File System (JFS2) on LVM
- Veritas Volume Manager (VxVM) with Veritas File System (VxFS)
  - VxVM 4.0 with VxFS 4.0
  - VxVM 5.0 with VxFS 5.0
  - VxVM 5.0 MP1 with VxFS 5.0 MP1
  - VxVM 5.0 MP1 Update 1 with VxFS 5.0 MP1 Update1 (AIX 6.1 only)
  - VxVM 5.0 MP3 with VxFS 5.0 MP3

## Supported VCS agents

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

[Table 1-3](#) lists the agents for enterprise applications and the software that the agents support.

**Table 1-3** Supported software for the VCS agents for enterprise applications

Agent	Agent version	VCS version	Application	Application version	AIX version
DB2	5.0 MP3	5.0 and later	DB2 Enterprise Server Edition	8.1, 8.2 9.1, 9.5	AIX 5.3, AIX 6.1
Oracle	5.2	5.0 and later	Oracle	9i 10g R1 10g R2 11g R1	AIX 5.3, AIX 6.1
Sybase	5.0 MP3	5.0 and later	Sybase Adaptive Server Enterprise	12.5.x, 15	AIX 5.3, AIX 6.1

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

VCS no longer supports the following:

- 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

Refer to the following sections depending on the VCS version:

- See “[Issues fixed in VCS 5.0 MP3](#)” on page 31.
- See “[Issues fixed in VCS 5.0 MP1 Update 1 for AIX 6.1](#)” on page 34.
- See “[Issues fixed in VCS 5.0 MP1](#)” on page 36.
- See “[Issues fixed in VCS 5.0](#)” on page 37.

For a list of additional issues fixed in this release, see the following TechNote:

<http://entsupport.symantec.com/docs/285869>

## Issues fixed in VCS 5.0 MP3

[Table 1-4](#) lists the fixed incidents for VCS 5.0 MP3.

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

Incident	Fix description
612587	The haclus -wait command does not hang now when cluster name is not specified.

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

Incident	Fix description
805121	Partial groups go online erroneously if you kill and restart the VCS engine.
861792	Service groups are now listed in the groups table in the Recover Site wizard.
914752	Optimized LLT to print "node inactive" messages less frequently so as to not flood the dmesg buffer.
995508	The NIC agent is modified to run haping three times before concluding that an interface is down.
1032572	The vxfen-startup script is modified to use the xpg4 awk utility (/usr/xpg4/ bin/awk).
1038373	Fixed an issue where LLT was causing panic because it was referencing freed memory.
1045128	Resolved an issue that caused gab to panic during initialization.
1051193	The vxfen unconfigure command now uses the correct key to preempt/abort from now faulted paths.
1057418	The I/O fencing component can now retrieve the serial number of LUNs from a Pillar Data array. I/O fencing can now start without any issues and port b comes up for PillarData Arrays.
1061056	Child process of the agents now do not make calls to the logging functions of the VCSAgLog object.
1067667	When the VCS engine is stopping with evacuation, even if resource faults for a group with OnlineRetryLimit greater than zero, the evacuation completes.
1099651	Fixed the issue where the Process agent flooded the log and message files with the V-16-1001-9004 error message.
1133171	When new resources are added, the service threads in the corresponding agent will get created upto a maximum of NumThreads threads.
1133223	All the thread unsafe calls are replaced with thread safe calls.
1137118	The fencing driver retries startup for some time before deciding on a pre-existing split brain.

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

Incident	Fix description
1156189	The Sybase resource can now come online even if -s appears in the path of the server name of the resource attribute definition.
1161339	Application agent now inherits user defined LANG parameter.
1189542	Service Group state now does not turn from PARTIAL to ONLINE after killing the VCS engine. The issue is fixed to show the correct state of the service group.
1193697	The default heartbeating mechanism in LLT is now point-to-point and not broadcast heartbeating.
926544	Mount agent's problem to monitor two Mount resources with same MountPoint but different BlockDevice is fixed.
1214464	The VCS agent for Sybase now uses getent passwd to check the user details defined in the Owner attribute.
1228356	The VCS agent for DB2 now uses getent passwd to check the user details defined in the Owner attribute.
1230862	The nfs_postoffline trigger can now read the value of the NFS agent's Nservers attribute.
1233409	With the latest AIX DLPI driver changes, the calls to LLT are in interrupt context and not in process context. This change caused LLT and GAB to panic. LLT is now interrupt safe and calls to LLT clients are in process context to fix the panic issues.
1241260	OnlineRetryCount, OnlineWaitCount, and OfflineWaitCount values are reset when a resource is flushed.
1256313	While unfreezing a group, check if there exists concurrency violation. Fire a concurrency violation trigger to remove the concurrency.
1268550	The DiskGroup agent is enhanced to support large storage configurations.
1269305	When systems are busy, LLT panics when xmalloc calls are made from interrupt context. To resolve this issue, LLT checks for current execution context before making xmalloc calls.
1274390	Resolved an issue that caused deadlock when multiple LLT clients registered ports with LLT.
1280144	Subroutines are added to set and reset locale in the ag_i18n_inc module.

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

Incident	Fix description
1281976	The AIX mlockall function call that caused the VCS engine to core dump is removed.
1282209	Output from action entry point is now visible to the caller.
1285439	The clean script of the VCS agent for Sybase now supports removal of the IPC resources that the Sybase processes allocate.
1296465	If the ClusterService group is online on the same node on which a global service group is also online and if the node goes down, then the service group is failed over to a remote site.
1379532	The online script of the VCS agent for Oracle is fixed to use the startup force command when the value of the StartUpOpt attribute is set to STARTUP_FORCE.

## Issues fixed in VCS 5.0 MP1 Update 1 for AIX 6.1

[Table 1-5](#) lists the fixed issues for VCS 5.0 MP1 Update 1 for AIX 6.1.

**Table 1-5** VCS 5.0 MP1 Update 1 for AIX 6.1 fixed issues

Incident	Fix description
1218881	The Apache version was incorrectly parsed for IBMIHS.
1206153	Updated DNS name validation to better conform to RFC definition.
1201174	To resolve an inconsistent HAD core dump in VCSMutexDestroy, HAD now always calls VCSExit not exit.
1199313	Increased the binary capacity to accommodate larger configurations (MAXDATA increase for HAD).
1187827	To resolve online and monitor issues, changed DNS agent.
1187580	Resolved certain ActionTimeout attribute issues.
1186414	Repaired a problem where hastart and triggers needed to run on the locale specified by the LANG variable.
1180976	Fixed esballoc and allocb calls to not modify internal flags that can cause a panic under stress conditions.
1177984	Resolved an issue where the <code>haclus -modify BackupInterval</code> hung when resetting the value to the same value.

**Table 1-5** VCS 5.0 MP1 Update 1 for AIX 6.1 fixed issues (*continued*)

Incident	Fix description
1174911	Group switch/failover logic now completes if parent group gets autodisabled during fail over.
1174520	If a ServiceGroup with a single system in a SystemList is unfrozen, HAD no longer asserts.
1168476	Multiple MultiNICA issues resolved (@netHosts array, getAliases subroutine, and %niclist hash).
1161339	The Application agent now inherits the user defined LANG parameter.
1139831	Support SyncODM attribute for scalable volume groups added.
1116813	In the Java Console, fixed an issue where the Global group wizard gives lowest priority to the local (primary in some cases) cluster.
1116600	The Oracle Agent does not correctly identify state if the SID value is same for two resources in two different containers.
1113667	Replaced a fork call with a safer one.
1105310	When msgid 13319 is added using the <code>halog -add</code> command, the core no longer dumps.
1096394	Fixed an issue where notifier blocked the IPM socket.
1093791	Fixed an issue where it took a long time to detect a secondary site fault after the loss of wac and HAD.
1056559	Fixed an issue where the NFSRestart monitor threw a, "too many open files error."
1053377	Changed the path value so that VCS picks up the correct df etc values.
1050999	Resolved a HAD issue that caused the ShutdownTimeout value to not work correctly.
1016548	Fixed an issue where a node panicked with a GAB: Port f halting system due to network failure message.
1014281	Fixed an issue where Oracle encountered vcsipc send error 12, not enough space, under high interconnect traffic.
995504	Fixed an issue where haping intermittently timed out with an error.
995199	The Process agent no longer dumps core if more than two Process resources are configured.

**Table 1-5** VCS 5.0 MP1 Update 1 for AIX 6.1 fixed issues (*continued*)

Incident	Fix description
862507	When the sequence request is unsent, GAB_F_SEQBUSY is not set.
313089	The MultiNICB agent now moves the default route to an active interface after a failover.

## Issues fixed in VCS 5.0 MP1

[Table 1-6](#) lists the fixed issues for VCS 5.0 MP1.

**Table 1-6** VCS 5.0 MP1 fixed issues

Incident	Fix description
796655	The DNS agent does not support secure updates.
784335	The Oracle agent cannot identify the shell when the <code>/etc/passwd</code> file has multiple occurrence of the <code>\$Owner</code> string.
781376	The NIC agent fails to work in virtual ethernet environments.
774893	The fencing module panics if <code>scsi_disk_policy</code> is set to <code>dmp</code> .
702597	VCS ignores the value of the cluster-level attribute <code>EngineShutdown</code> while the system is shutting down.
702594	The Oracle agent does export <code>SHLIB_PATH</code> and other environment in CSH.
646372	The <code>hatype -modify ... -delete ...</code> command works incorrectly. The command deletes the first element of the keylist attribute.
627647	The Action entry point for Oracle fails because <code>set_environment()</code> function prototype differs.
627568	The <code>STARTUP_FORCE</code> value needs to be added in the drop-down list of <code>StartUpOpt</code> values in the Oracle and RAC wizards as the default value for <code>StartUpOpt</code> .
625490	For the agent framework module, <code>ag_i18n_inc.sh</code> does not invoke <code>halog</code> when script entry points use the <code>VCSAG_LOGDBG_MSG</code> API, even if the debug tag is enabled.

**Table 1-6** VCS 5.0 MP1 fixed issues (*continued*)

Incident	Fix description
620529	Cluster Management Console does not display localized logs. If you installed language packs on the management server and on VCS 5.0 cluster nodes, Cluster Management Console did not initially show localized logs.
619219	Running the <code>hastart</code> command twice causes an assertion to be displayed.
616964	In a secure environment, the <code>RemoteGroup</code> agent does not authenticate on a remote host for the first time.
616580	Importing resource types fails on Simulator on Windows systems.
615582	The <code>RefreshInfo</code> entry point for Mount agent generates erroneous messages.
609555	The Remote Group Agent wizard in the Java GUI rejects the connection information for the remote cluster with the domain type other than the local cluster. Fix: The RGA Wizard can now connect to all supported domain types irrespective of the domain type of local cluster.
608926	The template file for the DB2 agent does not contain the complete information for building a DB2 MPP configuration. The template does not include a service group required in the configuration.
598476	If you have a service group with the name <code>ClusterService</code> online on the last running node on the cluster, the <code>hasim -stop</code> command appears to hang.
570992	Cluster Management Console does not display some icons properly.
545469	The <code>Monitor</code> entry point does not detect an online when the Oracle instance is not started by the user defined in the <code>Owner</code> attribute.
244988	Very large login name and password takes all the service groups offline. Fix: For group name, resource name, attribute name, type name, and VCS username and password, the string size is limited to 1024 characters.
243186	Assertion in VCS engine.

## Issues fixed in VCS 5.0

[Table 1-7](#) lists the fixed issues for VCS 5.0.

**Table 1-7** VCS 5.0 fixed issues

Incident	Issue description
n/a	The concurrency violation trigger could not offline a service group if the group had a parent online on the system with local firm dependency. The concurrency violation continued until the parent was manually taken offline.
n/a	The configuration page for the Symantec Web server (VRTSWeb) offered two Japanese locale options. Both options had UTF-8 encoding, and there were no functional difference between the two.
n/a	The agent for Oracle obtained its initialization parameters from the pfile. VCS could not monitor Oracle instances created from the spfile.
n/a	When installing Cluster Manager on a Windows XP system, the following error appeared: "The installer has insufficient privileges to access this directory: C:\Config.Msi."
648584	Made the LLT timer and service threads' priorities a tunable entity.
584243	hares options do not filter correctly.
520034	Issues supporting multiple instances of MultiNICA agent.
515644	hacl does not handle MAXARG values of vector/associative attributes in the main.cf.
426932	Indeterministic service thread cancellation.
297779	Support multiple MultiNICB instances.
271167	Provide finer control over the hastop -all command.
254947	GAB and LLT device files have open permissions.
252347	Behavior of parent group is incorrect when groups are linked with online global firm and child group faults.
248069	Commands do not close socket after successful termination.
247698	Need to move logging activities out of single-threaded HAD.
246238	Information required when had is restarted either by hashadow or gab.

## Known issues

The following issues are open for this release of VCS.

## Operational issues for VCS

This section covers the operational issues for VCS.

### 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]

### Question marks in Application agent logs

Questions marks may appear in the Application agent logs. You can safely ignore them. [1220322]

### 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.

## 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.
```

## Using the coordinator attribute

This release contains an attribute for disk groups called coordinator, which configures disks as coordinator disks by the I/O fencing driver. Setting the attribute prevents the coordinator disks from being reassigned to other disk groups. See the Veritas Volume Manager documentation for additional information about the coordinator attribute.

The attribute requires that the disk group contain an odd number of disks. Symantec recommends that you use only three coordinator disks. Using more (five or seven) disks may result in different subclusters.

## HAD cannot join clusters if ulimit is low

The default ulimit may restrict the amount of memory that can be allocated by a process. Run the following command to verify this limit:

```
ulimit -a
      data seg size      (kbytes -d) 131072
```

In case of very large main.cf configurations (example 10,000 lines) or multi-node large clusters, or a combination of these, the VCS engine HAD fails to join clusters. This could be a result of HAD not being able to allocate enough memory to facilitate transfer of main.cf across cluster nodes.

Workaround: Increase the data seg size to an appropriate value by running the `ulimit -d value` command.

## Some alert messages do not display correctly

The following alert messages do not display correctly [612268]:

51033	Global group %s is unable to failover within cluster %s and AutoFailOver is %s. Administrative action is required.
51032	Parallel global group %s faulted on system %s and is unable to failover within cluster %s. However, group is still online/partial on one or more systems in the cluster
51031	Unable to automatically fail over global group %s remotely because local cluster does not have Authority for the group.
51030	Unable to find a suitable remote failover target for global group %s. Administrative action is required
50916	Unable to automatically failover global group %s remotely due to inability to communicate with remote clusters. Please check WAN connection and state of wide area connector.
50914	Global group %s is unable to failover within cluster %s and ClusterFailOverPolicy is set to %s. Administrative action is required.
50913	Unable to automatically fail over global group %s remotely because clusters are disconnected and ClusterFailOverPolicy is set to %s. Administrative action is required.
50836	Remote cluster %s has faulted. Administrative action is required.
50761	Unable to automatically fail over global group %s remotely because ClusterList values for the group differ between the clusters. Administrative action is required.

## Issues related to the installer

This section covers the issues related to the installer.

### **Installer may not discover all the aggregated interfaces**

The product installer may not discover all the aggregated interfaces. So, during the product configuration you must choose the NICs or the aggregated interfaces that the installer discovers for private heartbeats. [1286021]

Workaround: If you want to choose aggregated interfaces that the installer did not discover for private heartbeats then you must manually edit the `/etc/lfttab` file to replace name of NICs with that of aggregated interfaces before you start VCS when the installer prompts after product configuration.

See *Veritas Cluster Server Installation Guide*.

## Issues related to the VCS engine

This section covers the issues related to the VCS engine.

### **GAB may kill HAD**

In certain situations of heavy load on nodes, GAB can kill HAD. [1200256]

### **Engine may hang in LEAVING state**

When the `hares -online` command is issued for a parent resource when a child resource faults, and the `hares -online` command is followed by the `hastop -local` command on the same node, then the engine transitions to the leaving state and hangs.

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

### **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.

## Issues related to the VCS bundled agents

This section covers issues related to the VCS bundled agents.

### **Application agent cannot monitor kernel processes**

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

### **RemoteGroup agent's monitor function may time out when remote system is down**

If a RemoteGroup agent tries to connect to a system (specified as `IpAddress`) that is down, the monitor function of the RemoteGroup agent times out for the resource. [1397692]

### **NIC agent does not detect failure when you pull network cable**

A link test using the `haping -l` command may not report the correct status of the NIC. The ethernet driver relies on the software state to detect the status of the NIC. The driver does not use the hardware state to detect NIC status.

If you set the `LinkTestRatio` to a value other than 1, the agent relies on the OS driver for the status of the interface, so if the cable is pulled the agent does not detect a failure. [565151]

Workaround: Make sure the `LinkTestRatio` attribute is set to 1.

### **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.

### **Taking a group with the Mount resource offline can take several minutes if the file system is busy**

When a file system has heavy I/O, the `umount` command can take several minutes to respond. However, the `umount` command deletes the mount point from mount command output before returning. Per IBM, this is the expected and supported behavior on AIX. The `umount` command's processing later puts the mount point back if the mount point is found busy. Meanwhile, the default `OfflineTimeout` value of the Mount agent can get exceeded, which in turn invokes the Clean agent function. The Clean function can find the mount point's entry absent from the mount command output and exit with success. The unmounting, however, may not have happened yet. If unmounting did not occur, offlining resources below the Mount resource (for example the LVMVG or DiskGroup resources) can fail.

The Mount resource's Offline agent function then proceeds to unmount the mount point. After several attempts, the Clean scripts that clean the resources below the Mount resource succeed and the group goes offline.

See the *Veritas Cluster Server User's Guide* for more information about the `OfflineTimeout` attribute.

### **Manually reattach the MultiNICB agent interfaces after failover**

In order to prevent the operating system from attempting to send packets through a broken interface (cable unplugged), VCS detaches the interface when it detects that the interface is down. However when the interface is brought up (cable plugged in) again, you need to re-attach the interface to enable VCS to monitor it. [1016532]

To attach the interface, type:

```
chdev -l interface -a state='up'
```

For example, if the fixed interface is en4, enter:

```
chdev -l en4 -a state='up'
```

This release does not address the failure of standby interfaces—the standby interfaces are the ones where the virtual IP is not configured. If a standby interface fails, the current agent does not detach it. Hence, if there are two interfaces within the MultiNICB resource, this can result in a 50% packet loss when the virtual IP address is pinged from within the subnet. No packet loss occurs if the virtual IP address is pinged from outside the subnet.

Workaround: Manually detach the broken interface and reattach it after it is fixed. The command to detach an interface is:

```
chdev -l interface -a state='detach'
```

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

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

### 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` message. [609407]

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

### Stopping vxfen when the fencing module is being configured

Trying to stop the `vxfen` driver when the fencing module is being configured results in the following error.

```
VXFEN vxfenconfig ERROR V-11-2-1013 Unable to unconfigure vxfen  
VXFEN vxfenconfig ERROR V-11-2-1022 Active cluster is currently fencing.
```

Workaround: This message may be safely ignored.

## The vxfen driver reports an error when stopping I/O fencing

If I/O fencing is started in disabled mode, and if you change the `/etc/vxfenmode` file later to `scsi3`, the vxfen driver throws the following spurious error when you stop vxfen:

```
ERROR: failed to stop vxfen
```

However, the actual I/O fencing stop operation is successful. [1301698]

Workaround: This error may be safely ignored.

## I/O fencing configuration fails if fencing module is running on another node

The `vxfenconfig -c` command fails if any of the following commands are running on other nodes in the cluster:

```
/sbin/vxfenconfig -U
```

```
/sbin/vxfenconfig -c
```

```
vxfenconfig -U
```

```
vxfenconfig -c
```

## 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/rmdp/sdt3`.

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

## Issues related to global service groups

This section covers the issues related to global service groups.

### Switching over a global service group can cause the VCS engine to crash

When the `hagrp -switch` command is invoked on a cluster node, VCS engine may crash if all of the following conditions apply [1404384]:

- The value of the PreSwitch attribute for the global group is true, and
- The target cluster has more than one node, and
- The ClusterService service group is not online on the target node

**Workarounds:** When you use the `switch` command, use the `-nopre` override. This override prevents the PreSwitch actions on the target cluster. Another option is to try to fail over the ClusterService service group on the target node in the remote cluster.

### **Fault detection takes time in a global cluster running in secure mode**

For global clusters running in secure mode, VCS may take a long time to detect a cluster fault on a remote cluster. [1403471]

### **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.

## 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/sql/lib/userprofile file. [590010]

The following example adds Japanese support for AIX:

```
export LANG=Ja_JP
```

## 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 High Availability 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.

## Issues related to the Cluster Manager (Java Console)

This section covers the issues related to the Cluster Manager (Java Console).

### Cluster Manager does not load the LVMVolumeNFSGroup.tf template

Cluster Manager (Java Console) provides an option to add a new service group based on a template. However, the Cluster Manager displays the following error while loading the LVMVolumeNFSGroup.tf template from the /etc/VRTSvcs/Templates folder [1268419]:

```
VCS ERROR V-16-10-64  
Could not load:-  
/etc/VRTSvcs/Templates/LVMVolumeNFSGroup.tf
```

Refer to the *Veritas Cluster Server User's Guide* for other ways to add a service group using the Cluster Manager.

## Exception when selecting preferences

On Windows systems, selecting the Java (Metal) look and feel of the Java Console may cause a Java exception. [585532]

Workaround: After customizing the look and feel, close restart the Java Console.

## Java Console errors in a localized environment

When connected to cluster systems using locales other than English, the Java Console does not allow importing resource types or loading templates from localized directories. [585532]

Workaround: The workaround is to copy the types files or templates to directories with english names and then perform the operation.

## Printing to file from the VCS Java Console throws exception

VCS Java Console and Help throw an exception while printing to a file from a system that does not have a printer configured. Also, the content is not written to the file.

Workaround: Before printing, make sure at least one printer is configured on the system where the VCS Java Console is launched.

## Common system names in a global cluster setup

If both local and remote systems have a common system name in a global cluster setup, group operations cannot be performed on those systems using the Java console.

Workaround: Use command-line interface to perform group operations.

## Some Cluster Manager features fail to work in a firewall setup

In certain environments with firewall configurations between the Cluster Manager and the VCS cluster, the Cluster Manager fails with the following error message [1392406]:

```
V-16-10-13 Could not create CmdClient. Command Server  
may not be running on this system.
```

Workaround: You must open port 14150 on all the cluster nodes.

## Issues related to the VCS Management Console

This section covers the issues that are related to the VCS Management Console.

## Cluster Connector installation and configuration for fresh install of VCS 5.0 MP3 is not available

If you want to manage clusters that have VCS 5.0MP3, you must use the direct connection mode.

## Installation using a response file for a cluster enabled with Symantec Product Authentication Service does not create the CMC service group

Installing VCS using a response file (using the installer program with the `-responsefile` option) for a cluster that uses Symantec Product Authentication Service does not create the CMC service group.

Workaround: Perform the installation with the response file. After installation, manually edit the `main.cf` file to add CMC-related types and resources. You can then bring these service groups online. [1218568]

## Wrong file size error for ClusterConnectorConfigType.cf file

If you use the 5.0 MP1 `installmp` script to apply the maintenance patch to the `VRTScmccc.rte` file set, and then reject the patches using the `installp -r VRTScmccc.rte` command, you get following error messages: [806706]

```
sysck: 3001-049 Wrong file size.  
The file /etc/VRTSvcs/conf/config/ClusterConnectorConfigType.cf has  
an actual size of 754 bytes (expected size: 789 bytes).  
sysck: 3001-017 Errors were detected validating the files  
for package VRTScmccc.rte.
```

Workaround: You may ignore these messages. The `/etc/VRTSvcs/conf/config/ClusterConnectorConfigType.cf` file is restored back to the original 5.0GA version.

This error is specific to the `VRTScmccc.rte` file set. The `VRTScmcs.rte` file set does not exhibit any errors when rejected using the `installp -r` command.

## Warning messages in the log file when running the installmp command

The `installmp` command logs the following messages. [782798]

```
warning: user vcsbuild does not exist - using root  
warning: group fcf does not exist - using root  
warning: user vcsbuild does not exist - using root  
warning: group fcf does not exist - using root
```

Workaround: None. You may ignore these messages.

## Known issue for the Migrate Site task

The Migrate Site task starts the Migrate Site wizard that enables you to migrate one or more global service groups to one or more remote target clusters. The Cluster Management Console does not migrate a faulted service group. If you attempt to migrate a faulted service group, you may see an entry similar to the following in the management server log:

```
2006-11-20 10:38:33 INFO      Unable to use the -force option when
the cluster that has Authority for the group is not completely
down {vrts.vxcs.mcm.gui.web.actions.wizard.MigrateSiteLastPage
lookupFinish() }
```

Workaround: In the Global Application Group Selection panel, select only service groups that are in the online or partial state. Do not select service groups that are in the faulted state.

## Erroneous output from gares command

The `gares` command returns a value for the Start attribute that is different from what the `hares` command returns. The local values are inverted (exchanged). For example, if `gares` returns 1, `hares` returns 0. [853969]

Workaround: This situation can result if the attribute values with local scope are missing for a newly-added system in the system list of a service group. Use the `switch` command for the `CMC_CC` service group (for configurations that use the cluster connector) or `reconnect` to the cluster (for configurations that use direct connection).

## Cluster Management Console displays fatal errors

CMC displays fatal errors when it encounters an invalid XML file for an agent. [595973]

Workaround: None. Make sure the XML files for custom agents are valid.

## The database fails to back up or restore to a path with Japanese characters

The database fails to back up or restore to the specified path with Japanese characters in it, when the command `gadb -backup` is run. [767796]

Workaround: Use English folder names when backing up, then copy the database file to the Japanese folder manually, if required.

## Cannot uninstall updates on Windows management server

On Windows, uninstalling the VCS 5.0 MP1 management server using Add or Remove Programs removes only the entry from the Add or Remove Programs list. No files are removed. You must perform a management server uninstallation using the original VCS 5.0 uninstallation program. You cannot revert a VCS 5.0 MP1 management server back to a VCS 5.0 management server. [841149]

## View displays incorrect version

After upgrading to the Cluster Management Console for VCS 5.0 MP1, the Admin:Management Server view (Admin -> Management Server) shows an incorrect version of 5.0.1136.0 and an incorrect installation history. The correct information is in the About box. [856103]

## Default SMTP and SNMP addresses in notification policies for Cluster Management Console

When you configure notification settings, the Edit SMTP Settings task asks you to provide default email or default SNMP console addresses. The policy configuration wizard uses these addresses only to populate the recipient lists during policy configuration. The wizard does not automatically configure policies with these addresses.

When you launch the Notification Policy Configuration wizard, the default email address you specified appears in the Notification Recipients dialog box.

If you add email addresses to this list, the wizard adds them to the policy along with the default address. However, if you delete all the addresses from the Email Recipients list, including the default email address, the wizard configures no email addresses in the policy.

Leave default email addresses in the recipients list to configure them into the policy.

The same behavior applies to specifying default SNMP addresses.

## Console displays logs in English and Japanese

If your management server is configured to run in the Japanese locale, but the managed cluster does not have the Japanese language pack installed, the management server displays a mix of logs in English and Japanese. [778176]

Workaround: Make sure the managed cluster has the Japanese language pack installed.

## Some Cluster Management Console controls not immediately active

In some versions of Internet Explorer, you may need to click Flash-based screens, popups, and wizards once before the controls become active. Controls that require this activating click show the following message when you roll over them with your mouse pointer [603415]:

```
Press SpaceBar or Click to activate this Control
```

## Login screen may not display after inactivity timeout

If your Cluster Management Console is inactive and the session times out, your next action in the console should return you to the login screen. However, if your next action is to request a sort or a new page, the console will not sort the data or load the page.

Workaround: Use the browser refresh feature and the login screen will display.

## Very large clusters may not load into Cluster Management Console

Very large clusters may not load into Cluster Management Console. [493844]

Workaround: To accommodate very large clusters, increase the value of the `loadClusterQueryTimeout` property in the management server configuration file, `/opt/VRTScmc/conf/ManagementServer.conf`. The management server generates this file upon startup.

### To load large clusters into Cluster Management Console

- 1 Stop the Cluster Management Server web console:

```
/opt/VRTSweb/bin/stopApp cmc
```

- 2 Add the following line to the file `/opt/VRTScmc/conf/ManagementServer.conf`:

```
loadClusterQueryTimeout=60000
```

Adjust the value as needed to allow complete initial load of your cluster information.

- 3 Start the Cluster Management Server web console:

```
/opt/VRTSweb/bin/startApp cmc ../VERITAS
```

## **Log entries in the Management Server:Logs view**

The Management Server:Logs view might contain log entries for the management server and for the cluster. [610333]

Management server log entries have the value site in the Object Type column. Cluster log entries have the value cluster in the Object Type column.

## **Cannot install if VxAT 4.3 is installed**

If you have installed Symantec Product Authentication Services on a system using the 4.3 client/server installer, install of Cluster Management Console will not succeed because the path to the AT binaries is not in the path. Since this path is not present, the custom action DLL in our MSI will not be able to run certain AT-related commands. [617861]

Workaround: Add the path for the AT binaries before attempting a Cluster Management Console install.

## **Windows management server uninstall using Add or Remove Programs does not remove folder**

After using Add or Remove Programs to remove (uninstall) the Windows management server, an empty Cluster Management Console folder remains:

The default path is C:\Program Files\VERITAS.

Workaround: Delete the empty folder after the uninstall.

## **Windows cluster monitor uninstall does not remove folder**

After a Windows cluster monitor uninstall, an empty folder remains:

The default path is C:\Program Files\VERITAS.

Workaround: Delete the empty folder after the uninstall.

## **Uninstalling Cluster Connector does not remove entry from Add\Remove Programs on Windows**

After you uninstall cluster connector on Windows cluster nodes, the Add or Remove Programs control panel continues to show an entry for cluster connector. This persistent entry prevents any reinstallation of cluster connector. [599424]

Workaround: Remove the Veritas Cluster Management Console entry from the list using Windows Installer Cleanup Utility. Run the utility to remove the entry on each node. If you do not have the utility, you may download it from the Microsoft support site.

## Windows install over Terminal Services needs Service Pack 4

Per Microsoft, Windows 2000 without at least Service Pack 4 has problems installing multiple MSI files that alter the same registry key over Terminal Services.

Workaround: If you want to install to a Windows 2000 host using Terminal Services, first ensure that the system has Windows 2000 Service Pack 4 installed.

## Removing the CMC\_SERVICES domain

Uninstalling the management server in multi-cluster environments does not remove the *CMC\_SERVICES* domain. [612176]

You can verify the existence of this domain using the following command:

```
vssat showpd --pdrtype ab --domain CMC_SERVICES
```

You must manually remove the *CMC\_SERVICES* domain using the command line. To manually remove all the peripherals in the *CMC\_SERVICES* domain, enter the following command:

```
vssat deleteprpl --pdrtype ab --domain  
CMC_SERVICES --prplname principalname
```

Enter the following command to remove the domain:

```
vssat deletepd --pdrtype ab --domain CMC_SERVICES@hostname
```

You can determine the host name using the following command:

```
vssat showpd
```

## Issues related to VCS Simulator

This section covers the issues related to VCS Simulator.

### Simulator clusters with Windows configurations fail to start on UNIX host platforms

The following clusters are affected: *Win\_Exch\_2K3\_primary*, *Win\_Exch\_2K3\_secondary*, *Win\_Exch\_2K7\_primary*, *Win\_Exch\_2K7\_secondary*, *WIN\_NTAP\_EXCH\_CL1*, *WIN\_NTAP\_EXCH\_CL2*, *Win\_SQL\_Exch\_SiteA*, *Win\_SQL\_Exch\_SiteB*, *WIN\_SQL\_VVR\_C1*, *WIN\_SQL\_VVR\_C2*. [1363167]

Workaround: For each of these clusters, there is a separate directory named after the cluster under the VCS Simulator installation directory

C:\Program Files\VERITAS\VCS Simulator on Windows

/opt/VRTScssim on Unix

Perform the following steps:

- Navigate to the conf/config directory under this cluster specific directory.
- Open the types.cf file in an editor and change all instances of the string "i18nstr" to "str".
- Open the SFWTypes.cf file in an editor if it exists in this directory and change all instances of the string "i18nstr" to "str".
- Repeat these steps for the following files if they exist: MSSearchTypes.cf, SQLServer2000Types.cf, ExchTypes.cf, SRDFTypes.cf.

## Other known issues

This section covers other known issues.

### **The -s option with the hapng command does not work as expected**

The hapng -s command does not work as expected. [1211284]

## Software limitations

The following limitations apply to this release.

### HAD reports incorrect CPU utilization

API issues cause HAD to report incorrect CPU use. [1214140]

### 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.

## System names in VCS

Systems specified in the VCS configuration file, `main.cf`, and in the files `/etc/nodename` and `/etc/llhosts`, must be consistent. The names cannot include periods and thus must not be in the fully qualified form. If you create the file `/etc/VRTSvcs/conf/sysname` to contain system names used by `main.cf`, VCS uses the file to verify the names.

## 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 `VCSshm` 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 `VCSshm`.

## GAB panics the systems while VCS gets diagnostic data

On receiving a `SIGABRT` signal from GAB, VCS engine forks off `vcs_diag` script. When VCS engine fails to heartbeat with GAB, often due to heavy load on the system, the `vcs_diag` script does a `sys req` to dump the stack trace of all processes in the system to collect diagnostic information. The dump of stack trace is intended to give useful information for finding out which processes puts heavy load. However, the dumping puts extra load on the system that causes GAB to panic the system in such heavy loads. See *Veritas Cluster Server User's Guide* for more information. [383970]

Workaround: Disable the `vcs_diag` script. To disable, rename the file `/opt/VRTSvcs/bin/vcs_diag` to `/opt/VRTSvcs/bin/vcs_diag.backup`.

## 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/netsvc.conf
```

## 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.

## 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.

## 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 `hagrps -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.

## 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/
```

## Limitation with RDAC driver and FASTT array for coordinator disks that use raw disks

For multipathing to connected storage, AIX uses the RDAC driver for FASTT arrays. Since it is an active/passive array, only the current active path is exposed to clients. The I/O fencing driver, vxfen, can use only a single active path and has no foreknowledge of the passive paths to the coordinator disks on an array. If the single active path fails, all nodes in the cluster lose access to the coordinator disks.

The loss of the path to the coordinator disks can potentially go unnoticed until a reboot, split brain, or any other reason that leads to a cluster membership change occurs. In any of these conditions, the cluster cannot form, and all nodes panic to prevent data corruption. No data loss occurs.

Workaround: Use DMP and specify paths to coordinator disks as DMP paths rather than raw disks to avoid this limitation.

## I/O fencing limitations

### Fencing is not supported in a VIO server environment

Certain SCSI3-PR command subsets that are critical to use fencing are not yet available.

### 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 User'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-III Persistent Reserve keys to implement data protection. Keys are placed on I/O fencing coordinator disks 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 disks 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 disks 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.

## Virtualizing shared storage using VIO servers and client partitions

AIX 5.3, with proper patches to the operating system and client partitions, is capable of running multiple virtualized partitions within a single frame. You can split the CPU, memory, and certain adapters (networking and storage), into smaller virtual units that the partitions can then use.

In an Advanced POWER™ Virtualization (APV) environment, AIX uses the VIO Server to monitor and manage the I/O paths for the virtualized client partitions. At a very high level, the VIO server provides a partition's access to storage that is external to the physical computer. The VIO server encapsulates the physical hardware into virtual adapters called virtual SCSI adapters (server adapter). On the client side, you can create virtual adapters (client adapters) that map to the server adapter and enable a partition to connect to external storage.

---

**Note:** Fencing is not supported in a VIO server environment.

---

The VIO server provides similar mechanisms to share limited networking resources across partitions. Refer to the manual that came with your system to help set up partitions, and to configure and use the various components such as VIO server and HMC, which are integral parts of IBM's APV environment.

The minimum patch level for using VIO servers with VCS is: Fix Pack 7.1.2.0.0.

### Supported storage

Refer to the IBM data sheet:

<http://techsupport.services.ibm.com/server/vios/documentation/datasheet.html>

## Disk Restrictions

When using VCS in combination with VIO servers and their client partitions, you need to ensure that no reservations are placed on the shared storage. This enables client partitions on different systems to access and use the same shared storage.

- If the shared storage is under MPIO control, set the `reserve_policy` attribute of the disk to `no_reserve`.
- If the shared storage is not under MPIO control, look up the array documentation to locate a similar attribute to set on the disk.

Internal testing on EMC disks shows that this field maps as the `reserve_lock` attribute for EMC disks. In this case, setting it to `no` achieves the same result.

## Accessing the same LUNs from Client Partitions on different Central Electronics Complex (CEC) modules

This section briefly outlines how to set shared storage so that it is visible from client partitions on different CEC modules.

With the VIO server and client partitions set up and ready, make sure that you have installed the right level of operating system on the client partitions, and that you have mapped the physical adapters to the client partitions to provide access to the external shared storage.

To create a shareable diskgroup, you need to ensure that the different partitions use the same set of disks. A good way to make sure that the disks (that are seen from multiple partitions) are the same is to use the disks serial numbers, which are unique.

Run the following commands on the VIO server (in non-root mode), unless otherwise noted.

Get the serial number of the disk of interest:

```
$ lsdev -dev hdisk20 -vpd
hdisk20
U787A.001.DNZ06TT-P1-C6-T1-W500507630308037C-
L401 0401A00000000 IBM FC 2107

Manufacturer.....IBM
Machine Type and Model.....2107900
Serial Number.....7548111101A
EC Level.....131
Device Specific.(Z0).....10
```

```
Device Specific. (Z1).....0100  
...
```

Make sure the other VIO server returns the same serial number. This ensures that you are viewing the same actual physical disk.

List the virtual SCSI adapters.

```
$ lsdev -virtual | grep vhost  
vhost0 Available Virtual SCSI Server Adapter  
vhost1 Available Virtual SCSI Server Adapter
```

---

**Note:** Usually vhost0 is the adapter for the internal disks. vhost1 in the example above maps the SCSI adapter to the external shared storage.

---

Prior to mapping hdisk20 (in the example) to a SCSI adapter, change the reservation policy on the disk.

```
$ chdev -dev hdisk20 -attr reserve_policy=no_reserve  
hdisk20 changed
```

For hdisk20 (in the example) to be available to client partitions, map it to a suitable virtual SCSI adapter.

If you now print the reserve policy on hdisk20 the output resembles:

```
$ lsdev -dev hdisk20 attr reserve_policy  
value  
no_reserve
```

Next create a virtual device to map hdisk20 to vhost1.

```
$ mkvdev -vdev hdisk20 -vadapter vhost1 -dev mp1_hdisk5  
mp1_hdisk5 Available
```

Finally on the client partition run the cfmgr command to make this disk visible via the client SCSI adapter.

You can use this disk (hdisk20 physical, and known as mp1\_hdisk5 on the client partitions) to create a diskgroup, a shared volume, and a eventually a shared file system.

Perform regular VCS operations on the clients vis-a-vis service groups, resources, resource attributes, etc.

## Bundled agent limitations

This section covers the software limitations for VCS 5.0 bundled agents.

### **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 hostnames.

### **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.

### **Networking agents do not support IPv6 protocol**

The bundled IP, NIC, IPMultiNIC, MultiNICA, IPMultiNICB, and MultiNICB agents for VCS 5.0 do not support the IPv6 enhanced IP protocol.

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

VCS 5.0 does not provide a bundled agent to detect Volume Manager volume sets, Problems with volumes and 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.

## Cluster Management Console limitations

This section covers the software limitations for Cluster Management Console.

### **Cluster connector not supported on some OS versions**

Cluster Management Console does not support cluster connector on AIX 5.1, Solaris 7, and RHEL 3.0. If your cluster runs on any of these platforms, you must use direct connection to manage the cluster from a management server.

### **Limited peer management server support**

Peer management server support is limited to a configuration of two management servers in an enterprise. An enterprise of three or more management servers is not supported in this release.

### **Management server cannot coexist with GCM 3.5 Master**

The Cluster Management Console management server should not be installed on the same system with a GCM 3.5 Master. These two products will conflict with each other and are not supported running on the same system.

### **Agent info files needed for Agent Inventory report**

By design, the Agent Inventory report requires agent info files that supply the information reported on individual agents. These files are shipped with agents in VCS.

### **Global clusters must be CMC-managed clusters**

All clusters forming a global cluster (using the VCS 4.0 Global Cluster Option) must be managed clusters in order for Veritas Cluster Management Console views to display correct and consistent information. Managed clusters are running the cluster connector or have a direct connection with the management server.

### **Windows Active Directory installation requires NetBIOS**

If you install Cluster Management Console management server in a Windows Active Directory domain, NetBIOS must be turned on. A native (non-NetBIOS) Active Directory environment is not supported in this release.

## Remote root broker not supported on Windows

If you set up a management server on a Windows system, you must configure a root broker on the management server system. This release does not support specifying a remote root broker during management server install [841739].

The root broker can be changed after install using the `configureRemoteRoot.exe` installed in `C:\Program Files\VERITAS\Cluster Management Console\bin` (default install directory).

## Cluster Manager (Java console) limitations

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

### Use the VCS 5.0 Java Console to manage clusters

Cluster Manager (Java Console) from previous VCS versions cannot be used to manage VCS 5.0 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 system 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 and wizards do not work if the hosts file contains IPv6 entries

VCS Cluster Manager and Wizards 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.

## VCS documentation

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

You can access the VCS 5.0 MP3 documentation online at the following URL:

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

## VCS documentation set

[Table 1-8](#) lists the documents that VCS includes.

**Table 1-8** VCS documentation

Title	File name
<i>Veritas Cluster Server Installation Guide</i>	vcs_install.pdf
<i>Veritas Cluster Server Release Notes</i>	vcs_notes.pdf
<i>Veritas Cluster Server User's Guide</i>	vcs_users.pdf
<i>Veritas Cluster Server Bundled Agents Reference Guide</i>	vcs_bundled_agents.pdf
<i>Veritas Cluster Server Agent Developer's Guide</i>	vcs_agent_dev.pdf
<i>Veritas Cluster Server Agent for DB2 Installation and Configuration Guide</i>	vcs_db2_install.pdf
<i>Veritas Cluster Server Agent for Oracle Installation and Configuration Guide</i>	vcs_oracle_install.pdf
<i>Veritas Cluster Server Agent for Sybase Installation and Configuration Guide</i>	vcs_sybase_install.pdf

[Table 1-9](#) lists the documentation for the VCS component - Symantec Product Authentication Service.

**Table 1-9** Documentation for VCS components

Title	File name
<i>Symantec Product Authentication Service Installation Guide</i>	at_install.pdf
<i>Symantec Product Authentication Service Administrator's Guide</i>	at_admin.pdf

## VCS manual pages

The manual pages for the VRTSllt, VRTSgab, and VRTSvc 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 errata

### Veritas Cluster Server User's Guide

This section covers the additions or corrections to the *Veritas Cluster Server User's Guide* for 5.0 MP3.

#### Logging in to VCS non-interactively using the LDAP credentials

User's guide does not include the procedure to log in to VCS non-interactively using the LDAP credentials. [1382394]

If you do not have root privileges, VCS prompts for your VCS user name and password when you execute `haxxx` commands. You can use the `halogin` command to save the authentication information so that you do not have to enter your credentials every time you run a VCS command.

#### To store the LDAP credentials

- 1 Set the following environment variables:

- VCS\_HOST—Node where VCS is running to which the user must connect (can be a remote host)
  - VCS\_DOMAIN—Name of the LDAP domain to which the user belongs
  - VCS\_DOMAINTYPE—Type of VxSS domain: ldap
- 2 Log on to VCS using the halogin command:  

```
# halogin vcsusername password
```

#### To run haxxx commands non-interactively using the LDAP credentials you stored

- 1 Set the VCS\_HOST environment variable.
- 2 Unset the VCS\_DOMAIN and VCS\_DOMAINTYPE environment variables if these are already set. After unsetting if you run the haxxx commands, VCS does not prompt for the password.

## Veritas Cluster Server Centralized Management Guide

This section covers the corrections to the *Veritas Cluster Server Centralized Management Guide* for 5.0. Numbers in parentheses indicate the page number of the Centralized Management Guide where this information appears.

### Backing up the database

Backing up the database (page 158) is necessary so that crucial configuration and historical information can be recovered in the event of a failure. You can back up the database using the Cluster Management Console or the CLI. During the backup task, an archived copy of the database file and the associated transaction log file are backed up to a physically separate location. This location can be a tape drive or a disk drive. [703139]

#### To backup the database to a file

- 1 In the **Administration: Management Server Database** view, in the **Operations** task panel, click **Backup database to a file**.
- 2 In the **Enter a valid directory or tape drive on the server** dialog box, enter an existing directory path on the management server.

If the directory path you specify does not exist, the database backup command does not create it.

- 3 Click **OK**.

### To backup the database to a file using the command line

- ◆ Enter the following command to back up the database:

```
gadb -backup -to archive
```

This command creates an archive backup file that contains both the database and transaction log. The database archive file is created in the directory path specified by *archive*. The database archive file name is of the form:

```
CCAvailDbBackUp@yyyy-mm-dd_hh_mi_ss.1
```

The timestamp portion is in GMT.

### Creating custom reports

The section on accessing the database information contains references to `$ms_host`, which is a variable. Read `$ms_host` as *ms\_host*.

When configuring ODBC, replace *ms\_host* with the name of the management server host. Do not include the \$ sign in the host name.

## Documentation feedback

Your feedback on product documentation is important to us. Send suggestions for improvements and reports on errors or omissions to [clustering\\_docs@symantec.com](mailto:clustering_docs@symantec.com). Include the title and document version (located on the second page), and chapter and section titles of the text on which you are reporting.