Veritas™ Cluster Server Release Notes

Linux

5.0 Maintenance Pack 4

Veritas Cluster Server Release Notes

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Release Notes

This document includes the following topics:

Introduction

This document provides important information about Veritas Cluster Server (VCS) version for Linux. 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/281993

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.

Changes introduced in this release

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

Support for additional Linux distributions

This release adds support for the following Linux distributions:

- Red Hat Enterprise Linux 4 Update 3 and later on x86_64
- Red Hat Enterprise Linux 5 Update 1 and later on x86_64
- Red Hat Enterprise Linux 5 Update 2 and later on PowerPC
- Oracle Enterprise Linux 4 Update 4 and later on x86_64
- Oracle Enterprise Linux 5 Update 1 and later on x86_64
- SUSE Linux Enterprise Server 9 Service Pack 3 on x86_64
- SUSE Linux Enterprise Server 10 Service Pack 2 on x86_64
- SUSE Linux Enterprise Server 10 Service Pack 3 on PowerPC
- SUSE Linux Enterprise Server 11 on x86_64
- SUSE Linux Enterprise Server 11 on PowerPC
- SUSE Linux Enterprise Server 10 Service Pack 3 on x86_64
- SUSE Linux Enterprise Server 10 Service Pack 2 on PowerPC

Changes to VCS agent for Oracle

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

- Support for Oracle 11gR2
  See "Supported VCS agents" on page 40.

If you are using Oracle's Automatic Storage Management (ASM) to manage storage, then you must configure the "ohasd" process on the system to automatically start the ocssd.bin process (Oracle's Cluster Synchronization Services Daemon process). Configure the "ohasd" process using the following command:

```
# $GRID_HOME/bin/crsctl modify resource ora.cssd -attr
AUTO_START=always
```

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

Enhancements to Samba agents

The Veritas Cluster Server agents for Samba includes the following enhanced features:

- Support for customized path or filename for smb.conf file
- Support for multiple Samba instances
- Improved performance
- Support for MS DFS proxy shares

Changes to bundled agents

New and modified attributes for the bundled agents in VCS 5.0 MP4

The new and modified attributes for the bundled agents in VCS 5.0 MP4 are as follows:

Table 1-1 New and modified attributes for VCS 5.0 MP4 agents for upgrades from VCS 5.0

Agent	New and modified attributes	Default Value
DiskGroup		
Modified attributes		
	PanicSystemOnDGLoss	0
MultiNICA		
New attributes		
	[boolean] Mii	0
SambaShare		
Modified attributes		

Table 1-1 New and modified attributes for VCS 5.0 MP4 agents for upgrades from VCS 5.0 *(continued)*

Agent	New and modified attributes	Default Value
	ArgList	{ "SambaServerRes:ConfFile", "SambaServerRes:LockDir", ShareName, ShareOptions, "SambaServerRes:Ports", SambaServerRes } Note: The change is that the attribute "SambaServerRes" is appended to ArgList of SambaShare agent type.
`Share`		
New attributes		
	[string] NFSRes	N/A
Modified attributes		
	ArgList	{ PathName, Client, OtherClients, Options, "NFSRes:State" } Note: The change is that the dependent attribute "NFSRes:State" is appended to ArgList of Share agent type.

Changes to DB2 agent

Support for DB2 9.7

The Veritas Cluster Server agent for DB2 now supports DB2 9.7.

New and modified attributes for the DB2 agent in VCS 5.0 MP4

The new and modified attributes for the DB2 agent in VCS 5.0 MP4 are as follows:

Table 1-2 New and modified attributes for VCS 5.0 MP4 DB2 agent for upgrades from VCS 5.0

Agent	New and modified attributes	Default Value
Db2udb		
Deleted attributes		
	ContainerName	N/A
	ContainerType	N/A
New attributes		
	[boolean] UseDB2start	0
	ArgList	{ DB2InstOwner, DB2InstHome, IndepthMonitor, DatabaseName, NodeNumber, StartUpOpt, ShutDownOpt, AgentDebug, Encoding, WarnOnlyIfDBQueryFailed, LastWarningDay, UseDB2start } Note: The change is that the two deleted attributes--ContainerName and ContainerType--are removed from ArgList and a new attribute UseDB2start is appended to the ArgList of Db2udb agent type.

Changes to Sybase agent

New and modified attributes for the Sybase agent in VCS 5.0 MP4

The new and modified attributes for the Sybase agent in VCS 5.0 MP4 are as follows:

Table 1-3 New and modified attributes for VCS 5.0 MP4 Sybase agent for upgrades from VCS 5.0

Agent	New and modified attributes	Default Value
Sybase		

Table 1-3 New and modified attributes for VCS 5.0 MP4 Sybase agent for upgrades from VCS 5.0 *(continued)*

Agent	New and modified attributes	Default Value
New attribute		
	[string] Run_ServerFile	N/A
Modified attribute		
	ArgList	{ Server, Owner, Home, Version, SA, SApswd, User, UPword, Db, Table, Monscript, DetailMonitor, Run_ServerFile } Note: The change is that the new attribute Run_ServerFile is appended to the ArgList of Sybase agent type.
`SybaseBk`		
New attribute		
	[string] Run_ServerFile	N/A
Modified attribute		
	ArgList	{ Backupserver, Owner, Home, Version, Server, SA, SApswd, Run_ServerFile } Note: The change is that the new attribute Run_ServerFile is appended to the ArgList of Sybase agent type.

Changes introduced in VCS 5.0 MP3

This section lists the changes introduced VCS 5.0 MP3.

Support for additional Linux distributions

This release adds support for the following Linux distributions:

- Oracle Enterprise Linux 4.0 Update 5 and Update 6
- Oracle Enterprise Linux 5.0 Update 1

- Red Hat Enterprise Linux 5.0 Update 1 and Update 2
- Red Hat Enterprise Linux 4.0 Update 4, Update 5, and Update 6
- SUSE Linux Enterprise Server 9 SP4
- SUSE Linux Enterprise Server 10 SP1 and SP2

See "Supported operating systems" on page 34.

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 *Veritas Cluster Server Bundled Agents Reference Guide*.

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 RPMs. 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 14.
- 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, 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 40.
- 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 40.

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 V5.1 or later.

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

VCS process to monitor utilization of CPU and Swap

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.

See "No longer supported" on page 41.

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.

DNS agent updates and monitors the hostname to IP address mapping

The DNS agent now updates and monitors the mapping of host names to IP addresses (A, AAAA, and PTR records), in addition to the canonical name (CNAME) mapping for a DNS zone when failing over nodes across subnets.

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

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:

Table 1-4 New and modified attributes for VCS 5.0 MP3 agents for upgrades from VCS 5.0

Agent	New and modified attributes	Default Value
Apache		
New attributes		
	PidFile	
	IntentionalOffline	0
DiskGroup		
New attributes		
	UmountVolumes	0
Modified attributes		
	SupportedActions	{ "license.vfd", "disk.vfd", "udid.vfd", "verifyplex.vfd", checkudid, numdisks, campusplex, joindg, splitdg, getvxvminfo, volinuse }
DNS		
New attributes		
	SupportedActions	{ "dig.vfd", "keyfile.vfd", "master.vfd" }
	ResRecord	
	CreatePTR	
	OffDelRR	
LVMVolumeGroup		
New attributes		
	SupportedActions	{ volinuse }
Mount		
New attributes		
	RegList	{ VxFSMountLock }

Table 1-4 New and modified attributes for VCS 5.0 MP3 agents for upgrades from VCS 5.0 *(continued)*

Agent	New and modified attributes	Default Value
	VxFSMountLock	0
Modified attributes		
	SupportedActions	{ "mountpoint.vfd", "mounted.vfd", "vxfslic.vfd", "chgmntlock", "mountentry.vfd" }
`NFSRestart`		
New attributes		
	SupportedActions	{ "lockdir.vfd", "nfsconf.vfd" }
`Share`		
New attributes		
	SupportedActions	{ "direxists.vfd" }

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 97.

- 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.

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

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 `vxfentsthdw` 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 vxfenswap utility.

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

Enhanced encryption mechanism for agent passwords

The vcsencrypt utility now supports stronger encryption mechanism for agent passwords. Use the vcsencrypt 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 for Security-Enhanced Linux on Redhat Enterprise Linux 5

VCS is enhanced to run on Security-Enhanced Linux (SE Linux) in the enabled and the enforced modes. VCS supports SE Linux only when the security context is within the "unconfined_t" environment.

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 introduced in VCS 5.0 MP2

This section lists the changes introduced in the VCS 5.0 MP2 release.

Support for Oracle Enterprise Linux

This release adds support for the Oracle Enterprise Linux distribution. Oracle Enterprise Linux is a redistribution by Oracle of Red Hat Enterprise Linux 4 Update 4 that has been customized for the Oracle product.

See "VCS system requirements" on page 33.

Changes introduced in VCS 5.0 MP1

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

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.

Support dropped for SANVolume agent

This release of VCS does not support the SANVolume agent that was shipped with VCS 5.0.

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.

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 14.

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 1-5 lists the EngineShutdown attribute's values and description.

Table 1-5 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.

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 *agent*Types.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

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.
- SANVolume—Monitors volumes in a SAN environment managed using Storage Foundation Volume Server.
- Apache (now bundled on all platforms)—Provides high availability to an Apache Web server.

See "No longer supported" on page 41.

Changes to licensing for VCS

Table 1-6 describes the licensing scheme that VCS now follows.

Table 1-6 VCS licensing scheme

License	What's included
VCS	This license includes the following: ■ VCS ■ Cluster Management Console ■ Database agents ■ Application agents ■ Virtual fire drill support

Table 1-6 VCS licensing scheme *(continued)*

License	What's included
VCS HA/DR	This license includes the following: ■ VCS ■ Cluster Management Console ■ Database agents ■ Application agents ■ Replication agents ■ Global clustering ■ Fire drill support

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 version. However, the nodes can have different update levels for a specific RHEL or OEL version, or different service pack levels for a specific SLES version.

See "Upgrading the operating system patch levels for VCS" on page 106.

Note: The system from where you install VCS must run the same Linux distribution as the target systems.

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/330441

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 operates on the Linux operating systems and kernels distributed by Oracle, Red Hat, and SUSE.

Table 1-7 lists the supported operating system versions for Oracle Enterprise Linux (OEL), Red Hat Enterprise Linux (RHEL), and SUSE Linux Enterprise Server (SLES). The table also lists the supported kernel versions and the architecture.

Table 1-7 Supported Linux operating system and kernel versions

Operating System	Kernel	Architecture
LoP based on RHEL 5 Update 2	2.6.18-92.el5	ppc64
LoP based on RHEL 5 Update 3	2.6.18-128.el5	ppc64
LoP based on SLES 10 with SP2	2.6.16.60-0.21-default 2.6.16.60-0.21-smp	ppc64
LoP based on SLES 10 with SP3	2.6.16.60-0.54.5-ppc64	ppc64
LoP based on SLES 11	2.6.27.19-5-ppc64	ppc64

Table 1-7 Supported Linux operating system and kernel versions *(continued)*

Operating System	Kernel	Architecture
OEL based on RHEL 4 Update 4	2.6.9-42.0.0.0.1.ELsmp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
OEL based on RHEL 4 Update 5	2.6.9-55.0.0.0.2.ELsmp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
OEL based on RHEL 4 Update 6	2.6.9-67.0.0.0.1.ELhugemem	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
OEL based on RHEL 4 Update 8	2.6.9-89.ELsmp	x86 (64-bit)
OEL based on RHEL 5 Update 1	2.6.18-53.el5	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
OEL based on RHEL 5 Update 4	2.6.18-164.el5	x86 (64-bit)
RHEL 4 Update 3	2.6.9-34.ELsmp 2.6.9.34.EL 2.6.9.34.ELlargesmp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
RHEL 4 Update 4	2.6.9-42.ELsmp 2.6.9.42.EL 2.6.9.42.ELlargesmp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
RHEL 4 Update 5	2.6.9-55.ELsmp 2.6.9.55.EL 2.6.9.55.ELlargesmp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
RHEL 4 Update 6	2.6.9-67.ELsmp 2.6.9-67.EL 2.6.9-67.ELlargesmp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)

Table 1-7 Supported Linux operating system and kernel versions *(continued)*

Operating System	Kernel	Architecture
RHEL 4 Update 8	2.6.9-89.ELsmp 2.6.9-89.EL 2.6.9-89.ELlargesmp	x86 (64-bit)
RHEL 5 Update 1	2.6.18-53.el5	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
RHEL 5 Update 4	2.6.18-164.el5	x86 (64-bit)
SLES 9 with SP3	2.6.5-7.244 EL	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
SLES 9 with SP4	2.6.5-7.308-default 2.6.5-7.308-smp	x86 (32-bit, 64-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)
SLES 10 with SP1	2.6.16.46-0.12-default 2.6.16.46-0.12-smp	x86 (32-bit) Intel Xeon (32-bit, 64-bit) AMD Opteron (32-bit,64-bit)

Note: If your system runs an older version of either Red Hat Enterprise Linux or SUSE Linux Enterprise Server, you must upgrade the operating system before you attempt to install the VCS software. Refer to the Oracle, Red Hat, or SUSE documentation for more information on upgrading your system.

Symantec supports only Oracle, Red Hat, and SUSE distributed kernel binaries.

Symantec products operate on subsequent kernel and patch releases provided the operating systems maintain kernel ABI (application binary interface) compatibility.

Information about the latest supported Red Hat erratas and updates and SUSE service packs is available in the following TechNote. The TechNote also includes any updates to the supported operating systems and software. Read this TechNote before you install Symantec products.

http://entsupport.symantec.com/docs/281993

Required Linux RPMs for VCS

Make sure you installed the following operating system-specific RPMs on the systems where you want to install or upgrade VCS. VCS will support any updates made to the following RPMs, provided the RPMs maintain the ABI compatibility.

Table 1-8 lists the RPMs that VCS requires for a given Linux operating system.

Table 1-8 Required RPMs

Operating system	Required RPMs
RHEL 4	compat-libgcc-296-2.96-132.7.2.i386.rpm compat-libstdc++-296-2.96-132.7.2.i386.rpm compat-libstdc++-33-3.2.3-47.3.i386.rpm glibc-2.3.4-2.41.i686.rpm libgcc-3.4.6-10.i386.rpm libstdc++-3.4.6-10.i386.rpm compat-libstdc++-33-3.2.3-47.3.x86_64.rpm glibc-2.3.4-2.41.x86_64.rpm glibc-common-2.3.4-2.41.x86_64.rpm libgcc-3.4.6-10.x86_64.rpm libstdc++-3.4.6-10.x86_64.rpm java-1.4.2-gcj-compat-1.4.2.0-27jpp.noarch.rpm
RHEL 5	compat-libgcc-296-2.96-138.i386.rpm compat-libstdc++-33-3.2.3-61.i386.rpm compat-libstdc++-296-2.96-138.i386.rpm glibc-2.5-24.i686.rpm libgcc-4.1.2-42.el5.i386.rpm libstdc++-3.4.6-10.i386.rpm compat-libstdc++-33-3.2.3-61.x86_64.rpm glibc-2.5-24.x86_64.rpm glibc-common-2.5-24.x86_64.rpm libgcc-4.1.2-42.el5.x86_64.rpm libstdc++-3.4.6-10.x86_64.rpm java-1.4.2-gcj-compat-1.4.2.0-40jpp.115.noarch.rpm

Table 1-8 Required RPMs *(continued)*

Operating system	Required RPMs
SLES 9	compat-32bit-9-200407011229.x86_64.rpm glibc-32bit-9-200710191304.x86_64.rpm compat-2004.7.1-1.2.x86_64.rpm glibc-2.3.3-98.94.x86_64.rpm libgcc-3.3.3-43.54.x86_64.rpm libstdc++-3.3.3-43.54.x86_64.rpm
SLES 10	compat-32bit-2006.1.25-11.2.x86_64.rpm glibc-32bit-2.4-31.54.x86_64.rpm compat-2006.1.25-11.2.x86_64.rpm compat-libstdc++-5.0.7-22.2.x86_64.rpm glibc-2.4-31.54.x86_64.rpm libgcc-4.1.2_20070115-0.21.x86_64.rpm libstdc++-4.1.2_20070115-0.21.x86_64.rpm
SLES11	glibc-2.9-13.2 glibc-32bit-2.9-13.2 libgcc43-4.3.3_20081022-11.18 libgcc43-32bit-4.3.3_20081022-11.18 libstdc++43-4.3.3_20081022-11.18 libstdc++43-32bit-4.3.3_20081022-11.18
IBM Power systems SLES11	glibc-2.9-13.2 glibc-32bit-2.9-13.2 libgcc43-32bit-4.3.3_20081022-11.18 libgcc43-4.3.3_20081022-11.18 libstdc++33-3.3.3-11.9 libstdc++43-32bit-4.3.3_20081022-11.18 libstdc++43-4.3.3_20081022-11.18

Table 1-8 Required RPMs *(continued)*

Operating system	Required RPMs
IBM Power systems SLES10	compat-2006.1.25-11.2 glibc-2.4-31.74.1 glibc-64bit-2.4-31.74.1 libgcc-4.1.2_20070115-0.29.6 libgcc-64bit-4.1.2_20070115-0.29.6 libstdc++-4.1.2_20070115-0.29.6 libstdc++-64bit-4.1.2_20070115-0.29.6 libstdc++33-3.3.3-7.8.1 libstdc++33-64bit-3.3.3-7.8.1
IBM Power systems RHEL5	compat-glibc-2.3.4-2.26 compat-glibc-headers-2.3.4-2.26 compat-libgcc-296-2.96-138 compat-libstdc++-296-2.96-138 compat-libstdc++-33-3.2.3-61 glibc-2.5-34 glibc-common-2.5-34 glibc-headers-2.5-34 libgcc-4.1.2-44.el5 libstdc++-4.1.2-44.el5

Supported software

Veritas Cluster Server supports the previous and next versions of Storage Foundation to facilitate product upgrades.

Refer to the LBN <URL> and the SCL <URL> for the latest updates on software support.

Veritas Cluster Server supports the previous and next versions of Storage Foundation to facilitate product upgrades, when available.

VCS supports the following volume managers and files systems:

- ext2, ext3, reiserfs, NFS, and bind on LVM2, Veritas Volume Manager (VxVM) 4.1 and 5.0, and raw disks.
- Veritas Volume Manager (VxVM) with Veritas File System (VxFS)

- VxVM 4.1 with VxFS 4.1
- VxVM 5.0 with VxFS 5.0
  (On RHEL and SLES only)
- VxVM 5.0 MP1 with VxFS 5.0 MP1
  (On RHEL and SLES only)
- VxVM 5.0 MP2 with VxFS 5.0 MP2
- VxVM 5.0 MP3 with VxFS 5.0 MP3
- VxVM 5.0MP4 with VxFS 5.0MP4

Note: Veritas Storage Foundation 5.0 and later versions support only 64-bit architecture on Linux. See *Veritas Storage Foundation Release Notes* for more details.

Supported VCS agents

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

Table 1-9 lists the agents for enterprise applications and the software that the agents support.

Table 1-9 Supported software for the VCS agents for enterprise applications

Agent	Agent version	VCS version	Application	Application version	OS version
DB2	5.0 MP4	5.0 and later	DB2 Enterprise Server Edition	8.1, 8.2 9.1, 9.5 9.7	RHEL4, RHEL5 SLES9, SLES10 SLES 11 on x86 (64-bit) OEL4, OEL5
				9.5 9.7	IBM Power systems RHEL5, SLES10, SLES11

Table 1-9 Supported software for the VCS agents for enterprise applications *(continued)*

Agent	Agent version	VCS version	Application	Application version	OS version
Oracle	5.0 MP4	5.0 and later	Oracle Database Enterprise Edition	9i 10g R1 10g R2 11g R1 11g R2	RHEL4, RHEL5 SLES9, SLES10 SLES 11 on x86 (64-bit) OEL4, OEL5
				10gR2	IBM Power systems RHEL5, SLES10
Sybase	5.0 MP4	5.0 and later	Sybase Adaptive Server Enterprise	12.5.x, 15	RHEL4, RHEL5 SLES9, SLES10 OEL4, OEL5
				12.5 15	IBM Power systems SLES10 SLES10, RHEL5

Note: The VCS agent for Orace version 5.2 with 5.0 MP4 provides intentional offline functionality for the Oracle agent. If you installed the 5.2 agent with an earlier version of VCS, you must disable the intentional offline functionality of the Oracle agent.

See the Installation and Configuration Guide for the agents 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:

- CampusCluster agent
- Apache agent configuration wizard
- 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.

About upgrading to 5.0 MP4

You can upgrade VCS using one of the following methods:

- Typical upgrade using Veritas product installer or the installmp
  See "VCS supported upgrade paths" on page 42.
  See "Upgrading VCS using the script-based installer" on page 46.
- Phased upgrade to reduce downtime
  See "Performing a phased upgrade from VCS 5.0 MP3" on page 49.

You can upgrade VCS 5.0 MP4 to Storage Foundation High Availability 5.0 MP4 using Veritas product installer or response files.

See the *Veritas Storage Foundation and High Availability Installation Guide*.

VCS supported upgrade paths

If you are currently running a cluster with any earlier VCS versions that is supported for upgrade, you can run the installer to upgrade to VCS 5.0 MP4.

Review the supported upgrade path tables for VCS clusters on RHEL and SLES operating systems.

The following variations apply to the upgrade paths:

- To upgrade VCS 4.1 MP4 on RHEL 5:
  - Upgrade to RHEL 5 U3
  - Upgrade VCS to 4.1 MP4 RP3
  - Upgrade to VCS 5.0 MP4
- To upgrade VCS 4.1 MP4 on SLES10:
  - Upgrade to SLES 10 SP2
  - Upgrade VCS to 4.1 MP4 RP3
  - Upgrade to VCS 5.0 MP4

Table 1-10 lists the supported upgrade paths for Red Hat Enterprise Linux and Oracle Enterprise Linux.

Table 1-10 Supported upgrade paths for RHEL and OEL

Upgrade scenarios	From VCS-RHEL	To VCS-RHEL
VCS upgrade and RHEL upgrade	VCS 4.1 MP4 on RHEL4 U3 VCS 5.0 on RHEL4 U3 VCS 5.0 MP1 on RHEL4 U3 VCS 5.0 MP2 on RHEL4 U3 VCS 5.0 MP3 on RHEL4 U4	VCS 5.0 MP4 RHEL4 U3 and later
	VCS 4.1 MP4 on RHEL5 VCS 4.1 MP4 RP3 on RHEL5 U2 VCS 5.0 MP3 on RHEL5 U1 and later VCS 5.0 MP3 on RHEL5 U2	VCS 5.0 MP4 on RHEL5 U1 and later
	IBM Power systems VCS 5.0 RU3 on RHEL5U2	IBM Power systems VCS 5.0 MP4 on RHEL5 U2 and later
VCS upgrade and OEL upgrade	VCS 5.0 MP2 on OEL4 U4 VCS 5.0 MP3 on OEL4 U5	VCS 5.0 MP4 on OEL4 U4 and later
	VCS 5.0 MP3 on OEL5 U1 VCS 5.0 MP3 on OEL5 U2	VCS 5.0 MP4 on OEL5 U1 and later

Table 1-11 lists the supported upgrade paths for SUSE Linux Enterprise Server

Table 1-11 Supported upgrade paths for SUSE Linux Enterprise Server

Upgrade scenarios	From VCS-SLES	To VCS-SLES
VCS upgrade and SLES upgrade	VCS 4.1 MP4 on SLES9 SP3 VCS 5.0 on SLES9 SP3 VCS 5.0 MP1 on SLES9 SP3 VCS 5.0 MP2 on SLES9 SP3 VCS 5.0 MP3 on SLES9 SP4	VCS 5.0 MP4 SLES9 SP4
	VCS 4.1MP3 on SLES10 VCS 4.1 MP4 on SLES10 SP1	VCS 5.0 MP4 on SLES10 SP2
	VCS 5.0 MP3 on SLES10 SP2	VCS 5.0 MP4 SLES10 SP2 VCS 5.0 MP4 SLES10 SP3
VCS upgrade	VCS 5.0 MP3 on SLES10 SP2 VCS 5.0 MP2 on SLES9 SP3 VCS 5.0 RU1 on SLES11	VCS 5.0 MP4 on SLES10 SP2 VCS 5.0 MP4 on SLES9 SP3 VCS 5.0 MP4 on SLES11
	VCS 5.0 RU4 on SLES10 SP3	VCS 5.0 MP4 on SLES10 SP3
	IBM Power systems VCS 5.0 RU3 on SLES10 SP2 VCS 5.0 RU4 SLES10 SP3 VCS 5.0 RU4 SLES11	IBM Power systems VCS 5.0 MP4 on SLES10 SP2 VCS 5.0 MP4 SLES10 SP3 VCS 5.0 MP4 SLES11

Operating system fresh installs and upgrades for VCS 5.0 MP4

If your system is running an older version of SUSE Linux Enterprise Server, you must upgrade the operating system before attempting to install the Veritas Cluster Server 5.0 Maintenance Pack (MP) 4 software.

Note: Not all platforms and products have a full installer for this release. In these cases, you must install an earlier version of the product and upgrade the product to the 5.0 MP4 release.

The VCS 5.0 MP4 release supports only fresh installs of VCS using the installer script for SLES 10 SP3 Linux on IBM™Power or SLES 11 for Linux on IBM™Power.

VCS supports both fresh installs and upgrades from the SF 5.0 Release Update (RU) 4 release or later for SLES 10 SP3 for x86_64-bit platforms in this release.

See the SUSE documentation as well as the installation section of this document for more information on upgrading your system.

Before upgrading from 4.x using the script-based installer

Before you upgrade VCS, perform the following steps if you are upgrading from VCS 4.x. You first need to remove deprecated resource types and modify changed values.

To prepare to upgrade to VCS 5.0 MP4 from VCS 4.x

1. Remove deprecated resources and modify attributes. The installer program can erase obsolete types and resources can be erased from the system or you can manually remove them.

2. Stop the application agents that are installed on the VxVM disk (for example the NBU agent).

   Perform the following steps to stop the application agents:

   - Take the resources offline on all systems that you want to upgrade.

     ```
     # hares -offline resname -sys sysname
     ```

   - Stop the application agents that are installed on VxVM disk on all the systems.

     ```
     # haagent -stop agentname -sys sysname
     ```

   - Ensure that the agent processes are not running.

     ```
     # ps -ef | grep Agent
     ```

This command does not list any processes in the VxVM installation directory.

3 Make sure that LLT, GAB, and VCS are running on all of the nodes in the cluster. The installer program cannot proceed unless these processes are running.

```
# lltconfig
```

LLT is running

```
# gabconfig -a

GAB Port Memberships
===================================================
Port a gen cc701 membership 01
Port h gen cc704 membership 01
```

Upgrading VCS using the script-based installer

You can use the product installer to upgrade VCS.

To upgrade VCS using the product installer

1 Log in as superuser and mount the product disc.

2 Start the installer.

```
# ./installer
```

or

```
# ./installmp
```

The installer starts the product installation program with a copyright message. It then specifies where it creates the logs. Note the log's directory and name.

3 If you are using the installer, then from the opening Selection Menu, choose: **I** for "Install/Upgrade a Product."

4 Enter the names of the nodes that you want to upgrade. Use spaces to separate node names. Press the Enter key to proceed.

The installer runs some verification checks on the nodes.

5 When the verification checks are complete, press the Enter key to continue.

The installer lists the rpms to upgrade.

6 The installer stops the product processes, uninstalls rpms, installs, upgrades, and configures VCS.

7 The installer lists the nodes that Symantec recommends you restart.

If you are upgrading from 4.x, you may need to create new VCS accounts if you used native OS accounts.

About phased upgrade

Perform a phased upgrade to minimize the downtime for the cluster. Depending on the situation, you can calculate the approximate downtime as follows:

You can fail over all your service groups to the nodes that are up.	Downtime equals the time that is taken to offline and online the service groups.
You have a service group that you cannot fail over to a node that runs during upgrade.	Downtime for that service group equals the time that is taken to perform an upgrade and restart the node.

Prerequisites for a phased upgrade

Before you start the upgrade, confirm that you have licenses for all the nodes that you plan to upgrade.

Planning for a phased upgrade

Plan out the movement of the service groups from node-to-node to minimize the downtime for any particular service group.

Some rough guidelines follow:

- Split the cluster in half. If the cluster has an odd number of nodes, calculate (n+1)/2, and start the upgrade with the even number of nodes.
- Split the cluster so that your high priority service groups remain online during the upgrade of the first subcluster.

Phased upgrade limitations

The following limitations primarily describe not to tamper with configurations or service groups during the phased upgrade:

- While you perform the upgrades, do not start any modules.

- When you start the installer, only select VCS.
- While you perform the upgrades, do not add or remove service groups to any of the nodes.
- Depending on your configuration, you may find that you cannot upgrade multiple nodes at the same time. You may only be able to upgrade one node at a time.
- For very large clusters, you might have to repeat these steps multiple times to upgrade your cluster.

Phased upgrade example

In this example, you have four nodes: node01, node02, node03, and node04. You also have four service groups: sg1, sg2, sg3, and sg4. For the purposes of this example, the cluster is split into two subclusters. The nodes node01 and node02 are in the first subcluster, which you first upgrade. The nodes node03 and node04 are in the second subcluster, which you upgrade last.

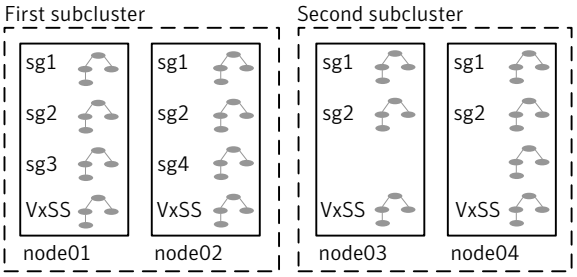
Each service group is running on the nodes as follows:

- sg1 and sg2 are parallel service groups and run on all the nodes.
- sg3 and sg4 are failover service groups. sg3 runs on node01 and sg4 runs on node02.
- VxSS service group runs on all nodes (secure mode is enabled)

In your system list, you have each service group that fails over to other nodes as follows:

- sg1 and sg2 are running on all the nodes.
- sg3 and sg4 can fail over to any of the nodes in the cluster.
- VxSS service group runs on all nodes

Figure 1-1 Example of phased upgrade set up



Phased upgrade example overview

This example's upgrade path follows:

- Move all the service groups from the first subcluster to the second subcluster.
- Upgrade the operating system on the first subcluster's nodes, if required.
- On the first subcluster, start the upgrade using the installation program.
- Get the second subcluster ready.
- Activate the first subcluster.
- Upgrade the operating system on the second subcluster's nodes, if required.
- On the second subcluster, start the upgrade using the installation program.
- Activate the second subcluster.

Performing a phased upgrade from VCS 5.0 MP3

This section explains how to perform a phased upgrade of VCS on four nodes with four service groups. Note that in this scenario, the service groups cannot stay online during the upgrade of the second subcluster. Do not add, remove, or change resources or service groups on any nodes during the upgrade. These changes are likely to get lost after the upgrade. The following example illustrates the steps to perform a phased upgrade. The phased upgrade is from VCS 5.0 MP3 in a secure cluster to VCS 5.0 MP4 in a secure cluster.

Moving the service groups to the second subcluster

Perform the following steps to establish the service group's status and to switch the service groups.

To move service groups to the second subcluster

1 On the first subcluster, determine where the service groups are online.

```
# hagrp -state
```

The output resembles:

```
#Group   Attribute System Value
sg1      State     node01 |ONLINE|
sg1      State     node02 |ONLINE|
sg1      State     node03 |ONLINE|
sg1      State     node04 |ONLINE|
sg2      State     node01 |ONLINE|
sg2      State     node02 |ONLINE|
sg2      State     node03 |ONLINE|
sg2      State     node04 |ONLINE|
sg3      State     node01 |ONLINE|
sg3      State     node02 |OFFLINE|
sg3      State     node03 |OFFLINE|
sg3      State     node04 |OFFLINE|
sg4      State     node01 |OFFLINE|
sg4      State     node02 |ONLINE|
sg4      State     node03 |OFFLINE|
sg4      State     node04 |OFFLINE|
VxSS     State     node01 |ONLINE|
VxSS     State     node02 |ONLINE|
VxSS     State     node03 |ONLINE|
VxSS     State     node04 |ONLINE|
```

2 Offline the parallel service groups (sg1 and sg2) and the VXSS group from the first subcluster. Switch the failover service groups (sg3 and sg4) from the first subcluster (node01 and node02) to the nodes on the second subcluster (node03 and node04).

```
# hagrp -offline sg1 -sys node01
# hagrp -offline sg2 -sys node01
# hagrp -offline sg1 -sys node02
# hagrp -offline sg2 -sys node02
# hagrp -offline VxSS -sys node01
# hagrp -offline VxSS -sys node02
# hagrp -switch sg3 -to node03
# hagrp -switch sg4 -to node04
```

3 On the nodes in the first subcluster, stop all VxVM volumes (for each disk group) that VCS does not manage.

4 Make the configuration writable on the first subcluster.

```
# haconf -makerw
```

5 Freeze the nodes in the first subcluster.

```
# hasys -freeze -persistent node01
# hasys -freeze -persistent node02
```

6 Dump the configuration and make it read-only.

```
# haconf -dump -makero
```

7 Verify that the service groups are offline on the first subcluster that you want to upgrade.

```
# hagrp -state
```

Output resembles:

```
#Group Attribute System Value
sg1  State node01 |OFFLINE|
sg1  State node02 |OFFLINE|
sg1  State node03 |ONLINE|
sg1  State node04 |ONLINE|
sg2  State node01 |OFFLINE|
sg2  State node02 |OFFLINE|
sg2  State node03 |ONLINE|
sg2  State node04 |ONLINE|
sg3  State node01 |OFFLINE|
sg3  State node02 |OFFLINE|
sg3  State node03 |ONLINE|
sg3  State node04 |OFFLINE|
sg4  State node01 |OFFLINE|
sg4  State node02 |OFFLINE|
sg4  State node03 |OFFLINE|
sg4  State node04 |ONLINE|
VxSS State node01 |OFFLINE|
VxSS State node02 |OFFLINE|
VxSS State node03 |ONLINE|
VxSS State node04 |ONLINE|
```

8 Perform this step on the nodes (node01 and node02) in the first subcluster if the cluster uses I/O Fencing. Use an editor of your choice and change the following:

- In the `/etc/vxfenmode` file, change the value of the vxfen_mode variable from scsi3 to disabled. You want the line in the `vxfenmode` file to resemble:

  ```
  vxfen_mode=disabled
  ```

- In the `/etc/VRTSvcs/conf/config/main.cf` file, change the value of the UseFence attribute from SCSI3 to NONE. You want the line in the `main.cf` file to resemble:

  ```
  UseFence = NONE
  ```

9 Back up the llttab, llthosts, gabtab, types.cf, main.cf and AT configuration files on the first subcluster.

```
# cp /etc/llttab /etc/llttab.bkp
# cp /etc/llthosts /etc/llthosts.bkp
# cp /etc/gabtab /etc/gabtab.bkp
# cp /etc/VRTSvcs/conf/config/main.cf \
     /etc/VRTSvcs/conf/config/main.cf.bkp
# cp /etc/VRTSvcs/conf/config/types.cf \
     /etc/VRTSvcs/conf/config/types.cf.bkp
# /opt/VRTSat/bin/vssat showbackuplist
B|/var/VRTSat/.VRTSat/profile/VRTSatlocal.conf
B|/var/VRTSat/.VRTSat/profile/certstore
B|/var/VRTSat/ABAuthSource
B|/etc/vx/vss/VRTSat.conf
Quiescing ...
Snapshot Directory :/var/VRTSatSnapShot
```

Upgrading the operating system on the first subcluster

You can perform the operating system upgrade on the first subcluster, if required. Refer to the operating system's documentation for more information.

Upgrading the first subcluster

You now navigate to the installer program and start it.

To start the installer for the phased upgrade

1. Confirm that you are logged on as the superuser and you mounted the product disc.
2. Navigate to the folder that contains installmp.
3. Make sure that VCS is running. Start the installvcs program, specify the nodes in the first subcluster (node1 and node2).

   ```
   # ./installmp node1 node2
   ```

   The program starts with a copyright message and specifies the directory where it creates the logs.
4. The installer performs a series of checks and tests to ensure communications, licensing, and compatibility.
5. When you are prompted, reply **y** to continue with the upgrade.

   ```
   Are you sure you want to install MP4? [y,n,q] (y)
   ```

6. The installer ends for the first subcluster with the following output:

   ```
   Maintenance Pack install completed.

   You must reboot or manually start up the product processes
   following the installation of Veritas Maintenance Pack.
   If you have not already configured the product, use the
   -configure option with the appropriate product
   installation script in the /opt/VRTS/install/ directory.

   Execute '/sbin/shutdown -r now' to properly restart your systems.
   ```

   The upgrade is finished on the first subcluster. Do not reboot the nodes in the first subcluster until you complete the Preparing the second subcluster procedure.

Preparing the second subcluster

Perform the following steps on the second subcluster before rebooting nodes in the first subcluster.

To prepare to upgrade the second subcluster

1 Get the summary of the status of your resources.

```
# hastatus -summ
-- SYSTEM STATE
-- System               State                Frozen

A  node01               EXITED                1
A  node02               EXITED                1
A  node03               RUNNING               0
A  node04               RUNNING               0

-- GROUP STATE
-- Group           System  Probed     AutoDisabled    State

B  SG1             node01   Y          N               OFFLINE
B  SG1             node02   Y          N               OFFLINE
B  SG1             node03   Y          N               ONLINE
B  SG1             node04   Y          N               ONLINE
B  SG2             node01   Y          N               OFFLINE
B  SG2             node02   Y          N               OFFLINE
B  SG2             node03   Y          N               ONLINE
B  SG2             node04   Y          N               ONLINE
B  SG3             node01   Y          N               OFFLINE
B  SG3             node02   Y          N               OFFLINE
B  SG3             node03   Y          N               ONLINE
B  SG3             node04   Y          N               OFFLINE
B  SG4             node01   Y          N               OFFLINE
B  SG4             node02   Y          N               OFFLINE
B  SG4             node03   Y          N               OFFLINE
B  SG4             node04   Y          N               ONLINE
B  VxSS            node01   Y          N               OFFLINE
B  VxSS            node02   Y          N               OFFLINE
B  VxSS            node03   Y          N               ONLINE
B  VxSS            node04   Y          N               ONLINE
```

2 Stop all VxVM volumes (for each disk group) that VCS does not manage.

3 Make the configuration writable on the second subcluster.

```
# haconf -makerw
```

4 Unfreeze the service groups.

```
# hagrp -unfreeze sg1 -persistent
# hagrp -unfreeze sg2 -persistent
# hagrp -unfreeze sg3 -persistent
# hagrp -unfreeze sg4 -persistent
# hagrp -unfreeze VxSS -persistent
```

5 Dump the configuration and make it read-only.

```
# haconf -dump -makero
```

6 Take the service groups offline on node03 and node04.

```
# hagrp -offline sg1 -sys node03
# hagrp -offline sg1 -sys node04
# hagrp -offline sg2 -sys node03
# hagrp -offline sg2 -sys node04
# hagrp -offline sg3 -sys node03
# hagrp -offline sg4 -sys node04
# hagrp -offline VxSS -sys node03
# hagrp -offline VxSS -sys node04
```

7 Verify the state of the service groups.

```
# hagrp -state
#Group       Attribute    System     Value
SG1            State      node01    |OFFLINE|
SG1            State      node02    |OFFLINE|
SG1            State      node03    |OFFLINE|
SG1            State      node04    |OFFLINE|
SG2            State      node01    |OFFLINE|
SG2            State      node02    |OFFLINE|
SG2            State      node03    |OFFLINE|
SG2            State      node04    |OFFLINE|
SG3            State      node01    |OFFLINE|
SG3            State      node02    |OFFLINE|
SG3            State      node03    |OFFLINE|
SG3            State      node04    |OFFLINE|
VxSS           State      node01    |OFFLINE|
VxSS           State      node02    |OFFLINE|
VxSS           State      node03    |OFFLINE|
VxSS           State      node04    |OFFLINE|
```

8 Perform this step on node03 and node04 if the cluster uses I/O Fencing. Use an editor of your choice and change the following:

- In the `/etc/vxfenmode` file, change the value of the vxfen_mode variable from scsi3 to disabled. You want the line in the `vxfenmode` file to resemble:

  ```
  vxfen_mode=disabled
  ```

- In the `/etc/VRTSvcs/conf/config/main.cf` file, change the value of the UseFence attribute from SCSI3 to NONE. You want the line in the `main.cf` file to resemble:

  ```
  UseFence = NONE
  ```

Activating the first subcluster

Get the first subcluster ready for the service groups.

To activate the first subcluster

1 Perform this step on node01 and node02 if the cluster uses I/O Fencing. Use an editor of your choice and revert the following to an enabled state before you reboot the first subcluster's nodes:

- In the `/etc/VRTSvcs/conf/config/main.cf` file, change the value of the UseFence attribute from NONE to SCSI3. You want the line in the `main.cf` file to resemble:

  ```
  UseFence = SCSI3
  ```

- In the `/etc/vxfenmode` file, change the value of the vxfen_mode variable from disabled to scsi3. You want the line in the `vxfenmode` file to resemble:

  ```
  vxfen_mode=scsi3
  ```

2 Reboot the node01 and node02 in the first subcluster.

3 Seed node01 and node02 in the first subcluster.

```
# gabconfig -xc
```

4 Make the configuration writable on the first subcluster.

```
# haconf -makerw
```

5 Unfreeze the nodes in the first subcluster.

```
# hasys -unfreeze -persistent node01
# hasys -unfreeze -persistent node02
```

6 Dump the configuration and make it read-only.

```
# haconf -dump -makero
```

7 Bring the service groups online on node01 and node02.

```
# hagrp -online sg1 -sys node01
# hagrp -online sg1 -sys node02
# hagrp -online sg2 -sys node01
# hagrp -online sg2 -sys node02
# hagrp -online sg3 -sys node01
# hagrp -online sg4 -sys node02
# hagrp -online VxSS -sys node01
# hagrp -online VxSS -sys node02
```

Upgrading the operating system on the second subcluster

You can perform the operating system upgrade on the second subcluster, if required. Refer to the operating system's documentation for more information.

Before you perform the operating system upgrade, make sure to disable VCS, VXFEN, GAB, and LLT.

To disable VCS, VXFEN, GAB, and LLT

- On the second subcluster, perform the following commands:

```
# chkconfig vcs off
# chkconfig vxfen off
# chkconfig gab off
# chkconfig llt off
```

Perform the operating system upgrade. After you finish the operating system, enable VCS, VXFEN, GAB and LLT.

To enable VCS, VXFEN, GAB and LLT

- On second subcluster, perform following commands:

```
# chkconfig llt on
# chkconfig gab on
# chkconfig vxfen on
# chkconfig vcs on
```

Upgrading the second subcluster

Perform the following procedure to upgrade the second subcluster (node03 and node04).

To start the installer to upgrade the second subcluster

1. Confirm that you are logged on as the superuser and you mounted the product disc.
2. Navigate to the folder that contains installmp.
3. Make sure that VCS is running. Start the installvcs program, specify the nodes in the first subcluster (node1 and node2).

   ```
   # ./installmp node1 node2
   ```

   The program starts with a copyright message and specifies the directory where it creates the logs.

4 The installer performs a series of checks and tests to ensure communications, licensing, and compatibility.

5 When you are prompted, reply **y** to continue with the upgrade.

```
Are you sure you want to install MP4? [y,n,q] (y)
```

6 The installer ends for the first subcluster with the following output:

```
Maintenance Pack install completed.

You must reboot or manually start up the product processes
following the installation of Veritas Maintenance Pack.
If you have not already configured the product, use the
-configure option with the appropriate product
installation script in the /opt/VRTS/install/ directory.

Execute '/sbin/shutdown -r now' to properly restart your systems.
```

Finishing the phased upgrade

You now have to reboot the nodes in the second subcluster.

To finish the upgrade

1 Perform this step on node03 and node04 if the cluster uses I/O Fencing. Use an editor of your choice and revert the following to an enabled state before you reboot the second subcluster's nodes:

- In the `/etc/vxfenmode` file, change the value of the vxfen_mode variable from disabled to scsi3. You want the line in the `vxfenmode` file to resemble:

  ```
  vxfen_mode=scsi3
  ```

2 Reboot the node03 and node04 in the second subcluster.

The nodes in the second subcluster join the nodes in the first subcluster.

3 Check to see if VCS and its components are up.

```
# gabconfig -a
GAB Port Memberships
===============================================================
Port a gen   nxxxnn membership 0123
Port b gen   nxxxnn membership 0123
Port h gen   nxxxnn membership 0123
```

4 Run an `hastatus -sum` command to determine the status of the nodes, service groups, and cluster.

```
# hastatus -sum

-- SYSTEM STATE
-- System          State           Frozen

A  node01          RUNNING         0
A  node02          RUNNING         0
A  node03          RUNNING         0
A  node04          RUNNING         0

-- GROUP STATE
-- Group    System    Probed   AutoDisabled   State

B  VxSS     node01    Y        N              ONLINE
B  VxSS     node02    Y        N              ONLINE
B  VxSS     node03    Y        N              ONLINE
B  VxSS     node04    Y        N              ONLINE
B  sg1      node01    Y        N              ONLINE
B  sg1      node02    Y        N              ONLINE
B  sg1      node03    Y        N              ONLINE
B  sg1      node04    Y        N              ONLINE
B  sg2      node01    Y        N              ONLINE
B  sg2      node02    Y        N              ONLINE
B  sg2      node03    Y        N              ONLINE
B  sg2      node04    Y        N              ONLINE
B  sg3      node01    Y        N              ONLINE
B  sg3      node02    Y        N              OFFLINE
B  sg3      node03    Y        N              OFFLINE
B  sg3      node04    Y        N              OFFLINE
B  sg4      node01    Y        N              OFFLINE
B  sg4      node02    Y        N              ONLINE
B  sg4      node03    Y        N              OFFLINE
B  sg4      node04    Y        N              OFFLINE
```

5 After the upgrade is complete, mount the VxFS file systems and start the VxVM volumes (for each disk group) that VCS does not manage.

In this example, you have performed a phased upgrade of VCS. The service groups were down when you took them offline on node03 and node04, to the time VCS brought them online on node01 or node02.

Upgrading the operating system on the first subcluster

You can perform the operating system upgrade on the first subcluster, if required. Refer to the operating system's documentation for more information.

Upgrading the first subcluster

You now navigate to the installer program and start it.

To start the installer for the phased upgrade

1. Confirm that you are logged on as the superuser and you mounted the product disc.
2. Navigate to the folder that contains installmp.
3. Make sure that VCS is running. Start the installvcs program, specify the nodes in the first subcluster (node1 and node2).

   ```
   # ./installmp node1 node2
   ```

   The program starts with a copyright message and specifies the directory where it creates the logs.
4. The installer performs a series of checks and tests to ensure communications, licensing, and compatibility.
5. When you are prompted, reply **y** to continue with the upgrade.

   ```
   Are you sure you want to install MP4? [y,n,q] (y)
   ```

6. The installer ends for the first subcluster with the following output:

   ```
   Maintenance Pack install completed.

   You must reboot or manually start up the product processes
   following the installation of Veritas Maintenance Pack.
   If you have not already configured the product, use the
   -configure option with the appropriate product
   installation script in the /opt/VRTS/install/ directory.

   Execute '/sbin/shutdown -r now' to properly restart your systems.
   ```

   The upgrade is finished on the first subcluster. Do not reboot the nodes in the first subcluster until you complete the Preparing the second subcluster procedure.

Fixed issues

Refer to the following sections depending on the VCS version:

- See "Issues fixed in VCS 5.0 MP4" on page 62.
- See "Issues fixed in VCS 5.0 MP3" on page 67.
- See "Issues fixed in VCS 5.0 MP1" on page 70.
- See "Issues fixed in VCS 5.0" on page 72.

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 MP4

Table 1-12 lists the fixed incidents for VCS 5.0 MP4.

Table 1-12 VCS 5.0 MP4 fixed issues

Incident	Fix description
1487322	The default location of the Run_ServerFile in Sybase and SybaseBk agents can now be defined.
1469787	The file descriptor opened by HAD on /dev/llt now closes on exec.
1451717	The hasys command displays an error message when non-existent attributes are specified with the -display command.
1450300	NFS agent now supports export over multiple IP addresses.
1440459	Modified the init.d script of vxfen to ensure that the vxfen service starts after the vxvm-boot service, when the system boots up.
1425599	The setsockopt function is called with SO_BSDCOMPAT, only on linux kernel versions where it is supported.
1424929	Fixed the race condition while sending the GAB CONNECTS message.
1414709	After all the resources get offline, the IntentOnline attribute of the service group resets to 0.
1404384	Global groups can now switch over to the target cluster when the Preswitch's attribute value is set to TRUE.
1365195	CPUUsage should be computed as 'long long' value.
1386527	Removed the buffer overflow that occurred during CPU usage computation.

Table 1-12 VCS 5.0 MP4 fixed issues *(continued)*

Incident	Fix description
1369622	Steward process now starts as a daemon when invoked with 'steward -start'.
568201	LLT: lltconfig should continue after failed link command.
1097471	The agent framework should not convert IntentionalOffline to Offline, (1) in first probe, (2) when probe is requested in Offline state.
1232043	Application agent cannot monitor kernel processes.
1368385	DiskGroupSnap does not work if layered volumes are used
1433143	File not found errors while executing custom SQL script.
1476158	Sybase agent returns online if kernel message is received.
1477722	hares error gets written to stdout instead of stderr.
1484665	Process agent will not probe if encrypted password has spaces in it.
1505957	Mount agent leaves defunct process.
1509742	The HAD h port is not coming up after upgrading the first node of the cluster.
1516696	Online local hard and firm dependencies are not honored during HAD startup (not persistent).
1534285	The same old stale value of HostUtilization attribute is seen.
1536333	hasys -delete gives error: VRTSmhg configured on this system.
1538207	AGFW does not clear the Monitor Timedout flag on Agent RESTART.
1540807	GAB: Fix errno to be thread specific in GAB library.
1543386	Oracle agent does not perform actions in oraerror.dat.
1544263	Oracle agent picks up only the last corresponding action from Oracle error message ignoring the previous error numbers.
1545222	Need ability to pass static attribute/EPTimeout value in ArgListValues.
1556549	Parent group not autostarted when some of the resoures are online before VCS is started.
1587010	Could not start the statd daemons.Start mountd failed.

Table 1-12 VCS 5.0 MP4 fixed issues *(continued)*

Incident	Fix description
1588312	NFSRestart:offline scripe do not stop nfsd.
1590725	Introduce attribute to disable hostmonitor related logging.
1596691	Default domain name is shown as A for secure cluster when haxxx is run for remote host
1630437	NFS clients get permission denied errors after NFS server failover.
1631012	LLT: For UDP4, lltconfig configures a link even if an IP address is not plumbed on that link.
1633973	Group faulted while offline on node fails-over if that node is rebooted; for global group with no Authority, policy ignores it.
1634399	Mount agent does not support NFS version 4 in Linux, even though NFS agent supports it.
1635044	vxfen scripts should pick SSH/SCP from environment variables if SSH/SCP are not available in the standard path.
1665036	VxFEN startup process on retry can give error RFSM GAB err 16 when cluster is fencing a node out of the cluster.
1668609	Update Proxy agent to allow target resource to get probed.
1671221	On switch, Partial Group goes in ONLINE state, if group was partial due to a resource reported IntentionalOffline state on node1.
1671746	gcoconfig picks up same multiple interface name if dual stack is configured for atlease two interfaces.
1672405	hagrp -switch -to misses a parent SG.
1672447	DiskGroup Agent: Change PanicSystemOnDgLoss default value.
1672857	HostMonitor logs contains error codes.
1675438	Steward process hogs CPU on RHEL5 Linux.
1703756	Error message prompt while online global parallel group for the first time.
1705397	The clean of the IP resource would take offline the underneath NIC resource.
1710469	HAD SIGSEGV encountered called from VCSCondCvwait().

Table 1-12 VCS 5.0 MP4 fixed issues *(continued)*

Incident	Fix description
1711919	Engine is sending snapshot for the untouched system.
1731157	DNS Agent clean does not complete if the resource is reported offline outside of the VCS.
1735139	Mount agent fails to stat filesystem greater than 4 TB.
1749323	LLT should give error if an attempt is made to configure more than 8 links (LLT_MAX_LINK)
1786224	NIC agent does not detect network cable pull event and it does not report OFFLINE.
1792984	.nfs_lock_ file not removed after system crash and monitor complains.
1807047	Issues found with SqlTest.pl script for Sybase agent
1822731	vxfenswap failed to swap the coordinated disks.
1823144	Move nfs* triggers to sample directory.
1831944	Linux init scripts should allow tuning of gab_conn_wait.
1832093	Oracle Configuration Wizard crashes with nullPointerException & ERROR:V-16-12-1533 (Enter netmask ...).
1832721	Presence of file /var/lib/nfs/etab upon reboot causes incorrect operation of Share Agent.
1834858	Remote Group faults when set up as monitoronly and local SG is taken offline.
1836575	SMTP notification email should contain Entity name in subject line.
1836633	hashadow core in restart_had /var/VRTSvcs/lock/.hadargs parse resulted in attempt to deref null ptr.
1839222	OracleAgent core dumps.
1839299	GAB (fd 18) is continuously returning EAGAIN for vxconfigd port w.
1839338	LLT: panic in gab_initllt() via gab_drv_init() via gab_config_drv() while installsfrac -configure.
1840045	User registerignore in vxfentsthdw instead of register.
1852513	DiskGroupSnap - assumes all nodes are part of the campus cluster configuration.

Table 1-12 VCS 5.0 MP4 fixed issues *(continued)*

Incident	Fix description
1874248	Do not set MonitorOnly to 0 if ExternalStateChange does not have OfflineGroup value.
1884737	Port h halting system due to internal protocol error on gab_sf_dlv_gaps().
1898247	Netlsnr offline script does not kill listener process when IP is plumbed but the underlying MultiNicA resource is faulted.
1906771	ASMagent connecting as sysdba instead of sysasm for 11gR2.
1906772	ASM agent not detecting cssd process for 11gR2.
1915907	hares allows to create resources which has . special character.
1922408	vxfentsthdw should detect storage arrays which interpret NULL keys as valid for registrations/reservations.
1923602	During link failure multinic agent failed to fail over the VIP to other active devices.
1927676	LLT ports are left in an inconsistent state when multiple GAB clients unregister.
1945539	Add check for ohasd daemon for 11g R2 in ASMInst agent.
1946354	mii agent in MultiNICA should use ethtool.
1950425	ASMDGAgent should disable and enable diskgroups in offline and online EPs for 11g R2.
1956141	SambaServer agent cant determine running status of resource due to checking wrong pid file
1957467	VCS init scripts should honor the number of systems configured in main.cf or the GAB configuration while deciding on mode (single node / multi node) to start VCS.
1958244	Notifier Agent is unable to get local IP address in linked-based IPMP.
1971264	Prerequisites/Limits attributes not being honored if service group faults during switch.
1974589	Removing a link from LLT results in PANIC due to an invalid lower STREAMS queue.

Issues fixed in VCS 5.0 MP3

Table 1-13 lists the fixed incidents for VCS 5.0 MP3.

Table 1-13 VCS 5.0 MP3 fixed issues

Incident	Fix description
612587	The haclus -wait command does not hang now when cluster name is not specified.
618961	On SUSE nodes, when the fencing driver calls the kernel panic routine, this routine could get stuck in sync_sys() call and cause the panic to hang. This allows both sides of the split-brain to remain alive. This issue is fixed so that the cluster node panics after split-brain.
797703	The output of the vxfenadm command with -d option had unwanted "^M" character attached to the RFSM state information of all nodes. The output of the vxfenadm command now does not display the unwanted "^M" characters.
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.
862507	GAB_F_SEQBUSY is now not set when the sequence request is not sent.
896781	The issue that caused systems to panic intermittently after you disable array side switch port is fixed.
900244	When a service group switches over, NFS clean is not called anymore.
914752	Optimized LLT to print "node inactive" messages less frequently so as to not flood the dmesg buffer.
926849	Fixed an issue that prevented service groups with IPMultiNIC resources from failing back.
989935	The clean and monitor functions of the Application agent can now detect the same process/application run by different users.
1016548	The issue that caused node panic with message “GAB: Port f halting system due to network failure” is fixed.
1032572	The vxfen-startup script is modified to use the xpg4 awk utility (/usr/xpg4/ bin/awk).

Table 1-13 VCS 5.0 MP3 fixed issues *(continued)*

Incident	Fix description
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.
1050999	Resolved a HAD issue that caused the ShutdownTimeout value to not work correctly.
1051193	The vxfen unconfigure command now uses the correct key to preempt/abort from now faulted paths.
1053377	/usr/bin:/bin:/usr/sbin:/sbin is added first in the PATH env variable so that 'df', 'uname', and so on are picked up from these paths.
1055379	vxfentsthw works without error when raw device file is not present .
1056559	Fixed an issue where the NFSRestart monitor threw a, “too many open files error.”
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.
1096394	Fixed an issue where notifier blocked the IPM socket.
1099651	Fixed the issue where the Process agent flooded the log and message files with the V-16-1001-9004 error message.
1102457	The vxfen initialization code has been modified to properly initialize parameters and avoid dereferencing of null pointer.
1113667	Replaced a fork call with a safer one.
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.

Table 1-13 VCS 5.0 MP3 fixed issues *(continued)*

Incident	Fix description
1137118	The fencing driver retries startup for some time before deciding on a pre-existing split brain.
1156189	The Sybase resource can now come online even if –s appears in the path of the server name of the resource attribute definition.
1162291	Application agent now inherits user defined LANG parameter.
1174520	The VCS engine now does not assert if a service group with single system in SystemList is unfreezed.
1174911	Group switch/failover logic now completes if parent group gets autodisabled.
1186414	The hastart command and the triggers now run on the locale specified by the LANG variable.
1187580	Issues with the ActionTimeout attribute are fixed.
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.
1205904	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 the `getent passwd` command to check the user details defined in the Owner attribute.
1217482	Fixed the cluster_connector.sh script to use the correct signal to stop the Java process when the CMC group goes offline.
1218881	The Apache version was incorrectly parsed for IBMIHS.
1228409	With UmountVolumes attribute of DiskGroup agent set to 1, the resource can failover with open volumes outside the VCS control.
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.

Table 1-13 VCS 5.0 MP3 fixed issues *(continued)*

Incident	Fix description
1241260	OnlineRetryCount, OnlineWaitCount, and OfflineWaitCount values are reset when a resource is flushed.
1247347	The Mount agent error message now indicates that there are trailing spaces in the BlockDevice or MountPoint attribute value. The user must remove these extra spaces for the resource to be correctly configured.
1256313	While unfreezing a group, check if there exists concurrency violation. Fire a concurrency violation trigger to remove the concurrency.
1259756	When NFSv4Support is set to 0, the nfsd and mountd daemons start with "--no-nfs-version 4" option.
1268550	The DiskGroup agent is enhanced to support large storage configurations.
1280144	Subroutines are added to set and reset locale in the ag_i18n_inc module.
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.
1298642	The Mount agent umounts all the bindfs filesystems associated with the mount point before taking the resource offline.
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

Table 1-14 lists the fixed issues for VCS 5.0 MP1.

Table 1-14 VCS 5.0 MP1 fixed issues

Incident	Fix description
830848	The hawizard command hangs.

Table 1-14 VCS 5.0 MP1 fixed issues *(continued)*

Incident	Fix description
784335	The Oracle agent cannot identify the shell when the /etc/passwd file has multiple occurrence of the $Owner string.
702597	VCS ignores the value of the cluster-level attribute EngineShutdown while the system is shutting down.
702594	The Oracle agent does export SHLIB_PATH and other environment in CSH.
646372	The `hatype -modify ... -delete ...` command works incorrectly. The command deletes the first element of the keylist attribute.
627647	The Action entry point for Oracle fails because set_environment() function prototype differs.
627568	The STARTUP_FORCE value needs to be added in the drop-down list of StartUpOpt values in the Oracle and RAC wizards as the default value for StartUpOpt.
625490	For the agent framework module, ag_i18n_inc.sh does not invoke halog when script entry points use the VCSAG_LOGDBG_MSG API, even if the debug tag is enabled.
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.
619770	The IcmpAgent crashes intermittently.
619219	Running the hastart command twice causes an assertion to be displayed.
616964	In a secure environment, the RemoteGroup agent does not authenticate on a remote host for the first time.
616580	Importing resource types fails on Simulator on Windows systems.
615582	The RefreshInfo 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.

Table 1-14 VCS 5.0 MP1 fixed issues *(continued)*

Incident	Fix description
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 ClusterService online on the last running node on the cluster, the hasim -stop command appears to hang.
570992	Cluster Management Console does not display some icons properly.
545469	The Monitor entry point does not detect an online when the Oracle instance is not started by the user defined in the Owner 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 1-15 lists the fixed issues for VCS 5.0.

Table 1-15 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.”

Table 1-15 VCS 5.0 fixed issues *(continued)*

Incident	Issue description
314206	A known issue in Red Hat Enterprise Linux 4 could cause unmount to fail. When an NFS client does some heavy I/O, unmounting a resource in the NFS service group may fail while taking the service group offline. Refer to bugzilla id 154387 for more information.
584243	hares options do not filter correctly.
515644	hacf does not handle MAXARG values of vector/associative attributes in the main.cf.
426932	Indeterministic service thread cancellation.
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]

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

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

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

AutoStart may violate limits and prerequisites load policy

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

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

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

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

Trigger not invoked in REMOTE_BUILD state

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

The hagetcf script reports an error

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

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

Workaround: This message may be safely ignored.

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.

VCS controlled mount fails, while manual mount of volume succeeds

Security-enhanced Linux must be disabled, because the Security-enhanced (SE) Linux support is provided for evaluation purposes only and the Security policy files are not currently available for the Veritas product stack. Problems such as the mount issue in the subject title can result when Security-enhanced Linux is enabled.

Workaround: To disable SE Linux at boot time on both SLES 9 and RHEL 4, set the kernel boot parameter selinux to 0 (selinux=0) and reboot the machine. Assuming the system has been configured for booting from the machine machine_name, edit the file /boot/machine_name/menu.lst to include selinux=0 on the kernel line. Then reboot the machine to ensure the setting takes effect.

Network interfaces change their names after reboot

On SUSE systems, network interfaces change their names after reboot even with `HOTPLUG_PCI_QUEUE_NIC_EVENTS=yes and MANDATORY_DEVICES="..."` set.

Workaround: Use `PERSISTENT_NAME= eth`*X* where *X* is the interface number for all interfaces.

Unloading DiskRes driver requires a reboot on RHEL 4

On systems running RHEL 4, you must reboot a system after if you are upgrading or replacing the DiskRes driver.

Performance issues with LLT over UDP

LLT over UDP has the following performance issues:

- See "Slow performance of LLT over UDP if a link goes down" on page 76.
- See "Slow performance of LLT over UDP on SLES 9" on page 76.

Slow performance of LLT over UDP if a link goes down

If LLT is configured over UDP and a link goes down, then you may encounter severe degradation in the performance over the remaining link.

Workaround: On all nodes in the cluster, set the LLT window size to small values. The default value is 400. Setting it to 100 can bring the performance close to normal.

To set window limit add this line in /etc/llttab:

```
set-flow        window:100
```

To change at runtime use lltconfig(1m)

```
$ lltconfig -F window:100
```

Slow performance of LLT over UDP on SLES 9

LLT over UDP requires properly assigned IP addresses for the Ethernet interfaces used for the LLT private links. Using ifconfig to set up the IP addresses for Ethernet interfaces may not be reliable on SLES 9.

Workaround: The issue is not observed when IP addresses are set using YaST or YaST2.

Note: LLT over UDP might give problems on Red Hat Enterprise Linux. The systems might keep logging warnings, CPU usage might increase and the systems might hang.

Unmount fails while taking service group offline

A known issue in Red Hat Enterprise Linux 4 could cause unmount to fail. When an NFS client does some heavy I/O, unmounting a resource in the NFS service group may fail while taking the service group offline. Refer to Red Hat's Bugzilla id 154387 for more information.

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.

Offlining one IP resource fails other IP resources on the same node

When you plumb a new IP address on any interface, the IP address is marked as secondary if another IP address exists on the interface in the same subnet. If you remove the primary IP address from the interface, all the secondary IP addresses in the subnet are also removed. So, if you offline one IP resource, the other IP resources on the same node fail. [1205382]

Workaround: Configure the base IP address in the same subnet as that of the primary IP address.

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/llttab

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*.

Installer may throw error when aggregated interfaces are chosen for SLES

If you chose to configure aggregated interfaces for private heartbeats for systems that run on SLES during the VCS configuration, the installer may throw error when verifying the NIC configuration. When the installer does not find “Persistent Network Interface Names” for the chosen aggregated interfaces, the installer throws an error with id CPI ERROR V-9-0-0. [1363800]

Workaround: Symantec recommends you to choose NICs and not aggregated interfaces for systems that run SLES during VCS configuration. Later when the installer prompts to start VCS after configuration, you must manually edit the /etc/llttab file to replace name of NICs with that of aggregated interfaces and then start VCS.

See *Veritas Cluster Server Installation Guide*.

Issues related to the VCS engine

This section covers the issues related to the VCS engine.

CPUUsage should be computed as 'long long' value

If System attribute CPUUsageMonitoring is set to monitor CPU Usage and the system is up and running for sufficiently long time, the CPUUsage is always computed as 100% even though there is no load on the system. [1365195]

Workaround: Freeze the system so that it is not considered as a target for failover. If there are groups online on this node, switch all the groups to another node in the cluster. Reboot the system. Unfreeze the system.

Resources in a parent service group may fail to come online if the AutoStart attribute for the resources is set to 0

This issue occurs for service groups linked with online local firm dependency, where the AutoStart attribute for all the resources of the parent service group is set to 0 (false) and at least one of these resources is up and running outside VCS control before VCS comes up. The AutoStart attribute of the parent service group itself does not matter.

If you take the resources of the parent service group offline individually and then switch or fail over the child service group to another node in the cluster, the child

service group comes online on the node but the parent service group does not come online on that node. [1363506]

The following error is displayed in the VCS Engine logs for resources of the parent service group: "VCS WARNING V-16-1-10285 Cannot online: resource's group is frozen waiting for dependency to be satisfied"

Workaround: In such a scenario, while taking the parent service group resources offline, use the following command for the last resource:

```
hagrp –offline service_group -sys system_name -clus cluster_name
```

Here, *service_group* is the name of the parent service group, *system_name* is the name of the system on which the service group is brought offline, and *cluster_name* is the name of the cluster to which the system belongs.

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.

On a default OEL4U4 install, VCS kernel components cannot start up

By default, OEL4U4 systems boot up in Xen-enabled kernels.

```
# uname -a
```

```
Linux host1 2.6.18-164.el5xen #1 SMP Thu March 4 04:41:04 EDT 2010
x86_64 x86_64 x86_64 GNU/Linux
```

However, VCS kernel modules are built only for the non-Xen kernels:

```
# cat kvers.lst
```

```
2.6.18-8.el5v
```

```
2.6.18-8.el5
```

Workaround: Set up your system for booting into the non-Xen kernels. For instructions, refer to the OS vendor's documentation.

Issues related to the VCS bundled agents

This section covers issues related to the VCS bundled agents.

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]

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.

DiskReservation might fault Mount resources

When the DiskReservation resource is brought online, the agent also does a BLKRRPART ioctl on the disks. This causes the block subsystem to see new block devices. Consequently, the OS launches the block hotplug agent to handle the events. The hotplug agent, as part of its work, unmounts any stale entries.[364315]

Because the hotplug agents are asynchronous, it is difficult to find whether all the hotplug agents have finished processing. So, the DiskReservation resource goes ONLINE even while the hotplug agents are running, which is fine with SCSI reservation as the disks are reserved. However, when the DiskReservation resource goes ONLINE, a dependent Mount resource could also come up. And it is possible that the hotplug agent does its unmount after the Mount agent does its mount and a monitor cycle. If the Monitor entry point of the Mount resource is called after the unmount, VCS will never see the Mount resource as online. If the Monitor is called before the unmount, the resource goes ONLINE, and then in the next Monitor cycle, goes to FAULTED state.

Workaround: To avoid this, the DiskReservation agent is hard coded so that the Monitor entry point of the DiskReservation resource is called HOTPLUG_DELAY seconds after the Online entry point of the DiskReservation resource completes.

HOTPLUG_DELAY is hard-coded to 5 seconds so that the first monitor happens 5 seconds after the DiskReservation resource is brought online.

If the hotplug agent cannot complete within the default HOTPLUG_DELAY time, set the OnlineRetryLimit and RestartLimit of the Mount type to 1.

NFS Lock recovery is not supported on SLES 9 and SLES 11

Due to SLES issues, NFS lock recovery is not supported.

No support for NFSv4 on SLES9

VCS does not support NFS v4 on SLES9.

NFS cannot handle minor number greater than 255

NFS cannot handle minor numbers greater than 255. [292216]

Workaround: Ensure that minor number of the VxVM diskgroup is not greater than 255.

NFS security feature

The NFS security feature does not work in a VCS environment. The NFSSecurity attribute is reserved for future use. [568498]

LVMVolumeGroup agent error on SE-Linux

If the LVMVolumeGroup agent is configured for SE-Linux, you may notice that the following error is logged in the audit log every monitor cycle: [1056433]

```
msg=audit(1189772065.053:232113): avc:
denied  { search } for  pid=29652
comm="vgdisplay" name="LVMVolumeGroup" ...
```

Workaround: Use the following command to stop getting these messages.

```
# setsebool -P vcs_lvmagent_support true
```

Issues related to the I/O fencing for VCS

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

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.

Some vxfenadm options do not work with DMP paths

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

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

Issues related to global service groups

This section covers the issues related to global service groups.

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]

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.

Using LVM in a GCO environment may cause concurrency violation

Logical Volume Manager (LVM) on Linux operating system is not supported with all replication technologies. Before using LVM with a VCS replication agent, read the documentation for the agent and the late breaking news for the Agent Pack.

http://support.veritas.com/docs/282004.

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]

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 for Oracle 10g R1 and 10g R2

For Oracle 10g R1 and 10g R2, 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.

Health check monitoring is not supported for Oracle 11g R1 and 11g R2

The Oracle agent with 11g R1 and 11g R2 does not support Health check monitoring using the MonitorOption attribute. If the database is 11g R1 or 11g R2, the MonitorOption attribute for Oracle resource should be set to 0.

Intentional Offline feature is not supported for Oracle 11g R1 and 11g R2

The Oracle agent with 11g R1 and 11g R2 database does not support the Intentional Offline feature.

Pfile or SPfile is not supported on ASM diskgroups

The ASMInst agent does not support pfile or spfile for ASM Instance on ASM diskgroups in 11g R2. Symantec recommends you to store the file on the local file system.

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).

32-bit JRE requirement

This release requires the installation of the 32-bit JRE ibm-java-ppc-jre-6.0-6.0.ppc. (1870929)

VCS wizards fail on RHEL5

On RHEL5 VCS clusters, the VCS wizards fail to load because the JRE requirements are not met. To run the wizards, you must install the deprecated libxp packages. [974041]

Workaround: Install the following RPM.

```
# rpm -qlp xorg-x11-libXp-32bit-7.2-18.x86_64.rpm

/usr/lib/libXp.so.6
/usr/lib/libXp.so.6.2.0
```

Cluster Manager (Java Console) hangs on Linux

The Cluster Monitor may hang while adding a new cluster panel and may fail to refresh the GUI. [527301]

Workaround: Kill the VCSGui process and restart the Cluster Manager (Java Console).

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.

Upgrading from VCS 4.x (with CC5.0) leaves the CMC group frozen

If a VCS 4.x cluster running Cluster Connector 5.0 is upgraded to VCS 5.0 MP3, the CMC service group and other groups (except for ClusterService) are frozen and cannot come online after upgrading and rebooting the node. [1367670]

Workaround: The CMC group must be brought offline manually before upgrading from VCS 4.x (with CC 5.0) to VCS 5.0MP3.

Upgrade of the Cluster Connector can make the cluster state UNKNOWN on Management Server

If Cluster Connector is upgraded to 5.0 MP3, the cluster may show the state as "UNKNOWN" on the Management Server. This is due to missing attribute values. [1361602, 1202222]

Workaround: Execute the following commands to restore the CMC_ClusterConfig resource to the original state.

```
# haconf -makerw

# hagrp -offline CMC -any

# hares -modify CMC_ClusterConfig MSPort 14145

# hares -modify CMC_ClusterConfig ClusterType vcs

# haconf -dump -makero

# hagrp -online CMC -any
```

Restart the CMC group.

MSPort attribute of CMC_ClusterConfig is set to 0 after upgrading from VCS 4.x and 5.0 MP1 to 5.0 MP3

Cluster Connector cannot connect to Management Server after upgrading VCS from 4.x and 5.0 MP1 to 5.0 MP3. [1364500]

This is because the MSPort attribute of CMC_ClusterConfig has a value of 0, instead of 14145. This issue is not observed if VCS is upgraded from version 5.0 to to 5.0 MP3 directly.

The HostMonitor group is displayed in the GUI when connected to CMC (or) Java GUI

The HostMonitor group (VCShmg) is displayed in the GUI when connected to CMC (or) Java GUI on clusters running 5.0MP3. This group is not displayed to the user using the command line interface on cluster nodes. [1315640]

VRTScmc directory still exists in /opt/ after uninstalling VCS

After uninstalling VCS, the VRTScmc directory still exists in /opt/ even though the rpm is removed. This directory should be removed after the rpm is removed. [1315832]

The following directories are undeleted after uninstalling VCS.

/etc/VRTScmc

/opt/VRTScmc/bin

/opt/VRTScmc/conf

/opt/VRTSweb

Login issue for CMC on a secure cluster

Entering any string in the Domain Name allows you to log into the Cluster Management Console for a cluster running in secure mode. [1208237]

Blank page is displayed on the cluster details page of the DR alert tab

A blank page is displayed on DR alert tab of the cluster details page after multiple DR alerts are generated. [1194391]

When the cluster has only one DR alert, the alerts page is displayed properly.

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.

Error in LVMVolumeNFSGroup template for AIX

In the VCS Simulator, the AIX_NFS cluster gives error while loading the LVMVolumeGroupNFS template. [1363967]

This problem can also affect real AIX clusters if they try to load this template.

Workaround: For the Simulator, navigate to the Templates/aix directory under the VCS Simulator installation directory (C:\Program Files\VERITAS\VCS Simulator on Windows, /opt/VRTScssim on Unix). Open the LVMVolumeNFSGroup.tf file and look for all instances of the MajorNumber = "". Remove the empty double-quotes and set the correct integer value for MajorNumber.

For real clusters, make identical changes to /etc/VRTSvcs/Templates/LVMVolumeNFSGroup.tf.

Issues related to VCS in Japanese locales

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

Installer does not create user account and password

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

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

Symantec Web Server (VRTSWeb) requires restart after installing language packs

Cluster Management Console does not list Japanese as a language option after installing the language pack. [588560]

Workaround: Restart Symantec Web Server.

Error running CmdServer in Japanese eucjp locale

The command servers displays an unsupported encoding error when you run the Java Console in the Japanese eucjp locale. The error does not appear when you run the console in the Japanese UTF-8 locale. [533291]

Remote system log displays in English in Japanese locale

Log messages in the Java Console from remote systems display in English in the Japanese locale. [859457]

The perform check option in the virtual fire drill wizard does not work in Japanese locale

Running the perform check command in the virtual fire drill wizard in the Japanese locale results in the following error message [865446]:

```
No fire drill found for type <typename> of resource.
```

Workaround: Change the locale to English, when you run fire drill wizard with the perform check option.

Other known issues

This section covers other known issues.

Rebooting may fail due to disk reservation conflict

If a shared disk is reserved by one node, the other node may not boot up [315015]. During reboot, when the VxVM is coming up, the VM tries to read the private region data for all disks it can see, including the one reserved by the DiskReservation on some other node. The read goes through Dynamic Multipathing, which propagates only the EIO. Consequently, the rest of VM does not realize that a RESERVATION_CONFLICT has occurred, and retries the private region read. The rebooted node comes up only after the VM has done all the retries.

Workaround: Use vxdiskadm utility to remove all disks from VM that the DiskReservation uses. Reboot each node on which you remove the disks.

Software limitations

The following limitations apply to this release.

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.

Limitation when you use the installer from a remote system

If you use the installer from a remote system, then the remote system must have the same operating system and architecture as that of the target systems where you want to install VCS. [589334]

Systems in a cluster must have same system locale setting

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

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

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

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

No support for NIC names larger than 8 characters

VCS does not support NIC names that are longer than eight characters. [605163]

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

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

Workaround:

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

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

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/
```

Using the KDE desktop

Some menus and dialog boxes on Cluster Manager (Java Console) may appear misaligned or incorrectly sized on a KDE desktop. To ensure the proper appearance and functionality of the console on a KDE desktop, use the Sawfish window manager. You must explicitly select the Sawfish window manager even if it is supposed to appear as the default window manager on a KDE desktop.

NFS locking

Due to RHEL 4 Update 2, update 3, and SLES 9 SP3 issues, lock recovery is not yet supported. Refer to issue 73985 for RHEL issues and bugzilla id 64901 for SLES 9 issues.

System reboot after panic

If the VCS kernel module issues a system panic, a system reboot is required [293447]. The supported Linux kernels do not automatically halt (CPU) processing. Set the Linux “panic” kernel parameter to a value other than zero to forcibly reboot the system. Append the following two lines at the end of the /etc/sysctl.conf file:

```
force a reboot after 60 seconds
  kernel.panic = 60
```

Security-Enhanced Linux is not supported on RHEL 4, SLES 9, SLES 10, and SLES 11

VCS does not support Security-Enhanced Linux (SELinux) on RHEL 4, SLES 9, SLES 10, and SLES 11. [1056433]

To disable SELinux at boot time on RHEL 4, SLES 9, SLES 10, or SLES 11 distributions, set the kernel boot parameter selinux to 0 (selinux=0) and reboot the machine.

For example, if the system is configured to boot from the grub, then do the following:

- Edit the file /boot/grub/menu.lst to include selinux=0 on the kernel line.
- Reboot the machine to ensure the setting takes effect.

Bundled agent limitations

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

NFS wizard limitation

The NFS wizard allows only one NFS service group to be created. You need to create additional groups manually.

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

This issue occurs on SLES 9 systems.

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

Workaround: Upgrade nfs-utils to the package version “nfs-utils-1.0.6-103.28”.

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, and MultiNICA agents for VCS 5.0 do not support the IPv6 enhanced IP protocol.

VCS does not provide a bundled agent for volume sets

5.0 MP4 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.

Mount agent

The Mount agent mounts a block device at only one mount point on a system. After a block device is mounted, the agent cannot mount another device at the same mount point.

Share agent

To ensure proper monitoring by the Share agent, verify that the /var/lib/nfs/etab file is clear upon system reboot. Clients in the Share agent must be specified as fully qualified host names to ensure seamless failover.

Driver requirements for DiskReservation agent

The DiskReservation agent has a reserver module in the kernel mode that reserves disks persistently. Any driver that works correctly with the scsiutil utility shipped with the VRTSvcsdr package is supported. Refer to the manual page for scsiutil functionality.

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.

Documentation errata

Veritas Cluster Server Installation Guide

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

Installing the Cluster Manager (Java Console)

In the Installation Guide, the details and the procedure to install VCS Cluster Manager (Java Console) on Linux are incorrect. Refer to this section for correct details.

The installvcs program installs the VCS Java Console RPM only if you choose to install all the RPMs. If you chose to install only the required RPMs, then perform the following procedure to install the Cluster Manager (Java Console) on Linux.

Note: If you want to install the VCS Java Console on a Windows workstation, you must do it after you install and configure VCS. Refer to the "Installing the Java Console on a Windows workstation" topic in the guide.

To install the Cluster Manager (Java Console) on Linux

1 Insert the VCS software disc into a drive on the system.

The software automatically mounts the disc on /mnt/cdrom.

2 If the disc does not get automatically mounted, then enter:

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

3 Navigate to the folder that contains the RPMs.

```
# cd /mnt/cdrom/dist_arch/cluster_server/rpms
```

Where *dist* is rhel4, rhel5, sles9, or sles10, and *arch* is i686 or x86_64 for RHEL and i586 or x86_64 for SLES.

4 Install the RPM using the rpm -i command.

```
#rpm -i VRTScscm-5.0.40.00-MP4_GENERIC.noarch.rpm
```

Upgrading the VCS Simulator

The procedure given to upgrade VCS Simulator is incorrect.

Upgrade the VCS Simulator using the following procedure:

- Uninstall the old version of VCS Simulator.
  Before uninstalling, make sure to back up the configuration, in case you have modified it.
- Install the latest version of VCS Simulator.
  Manually copy the configuration of which you had taken a backup.
  See *Veritas Cluster Server User's Guide* for installation instructions.

Corrections to the Installation Guide

The following corrections apply to the *Veritas Cluster Server Installation Guide*: [1389741]

- *Topic: Preparing to configure the clusters in secure mode*
  Issue: The prerequisites information has a typo.
  Read the following para:
  The system clocks of the rook broker and authentication brokers must be in sync.
  As:

The system clocks of the root broker and authentication brokers must be in sync.

- *Topic: Setting up /etc/llttab*
  Issue: The name of the sample file is incorrect.
  Replace the following text:
  The order of directives must be the same as in the sample file /opt/VRTSllt/llttab.
  With:
  The order of directives must be the same as in the sample file /opt/VRTSllt/sample-llttab.
- *Topic: Configuring I/O fencing*
  Issue: In step 6 of the procedure, the sample command to check the updated /etc/vxfenmode configuration is incorrect.
  Replace the following command:

```
# more /etc/vxfenmode galaxy
```

  With:

```
galaxy> # more /etc/vxfenmode
```

Creating a single-node cluster manually

In the chapter "Installing VCS on a single node," one of the tasks in Table 9-2 is to create and modify the VCS configuration files. The following reference topic "Configuring VCS" is missing in the *Veritas Cluster Server Installation Guide*.

Upgrading the operating system patch levels for VCS

VCS nodes can have different update levels for a specific RHEL or OEL version, or different service pack levels for a specific SLES version. Use the following procedure to upgrade the patch levels of an operating system on VCS nodes.

See "Supported operating systems" on page 34.

To upgrade the operating system patch levels on VCS nodes

1. Switch the service groups from the node where you want to upgrade the patch level to a different node in the cluster.

```
# hagrp -switch servicegroup -to nodename
```

2. If you plan to upgrade the patch levels on more than one VCS node, repeat steps 3 to 7 on each of those nodes.

3 Stop VCS.

```
# hastop -local
```

4 Stop VCS command server.

```
# killall CmdServer
```

5 Stop I/O fencing, GAB, and LLT.

```
# /etc/init.d/vxfen stop
# /etc/init.d/gab stop
# /etc/init.d/llt stop
```

6 Upgrade the patch level for the operating system to one of the supported patch levels.

7 Reboot the upgraded node.

8 Switch back the service groups to the upgraded node.

Veritas Cluster Server User's Guide

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

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.

Corrections for I/O fencing utilties and procedures

Replace the following topics in the *Veritas Cluster Server User's Guide* for 5.0 Maintenance Pack 4 with the information in this Release Notes.

About administering I/O fencing

The I/O fencing feature provides the following utilities that are available through the VRTSvxfen package:

vxfentsthdw	Tests hardware for I/O fencing
vxfenconfig	Configures and unconfigures I/O fencing Checks the list of coordinator disks used by the vxfen driver.
vxfenadm	Displays information on I/O fencing operations and manages SCSI-3 disk registrations and reservations for I/O fencing
vxfenclearpre	Removes SCSI-3 registrations and reservations from disks
vxfenswap	Replaces coordinator disks without stopping I/O fencing
vxfendisk	Generates the list of paths of disks in the diskgroup. This utility requires that Veritas Volume Manager is installed and configured.

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

Removing and replacing a failed disk

If a disk in the coordinator disk group fails verification, remove the failed disk or LUN from the vxfencoorddg disk group, replace it with another, and retest the disk group.

To remove and replace a failed disk

1 Use the vxdiskadm utility to remove the failed disk from the disk group.

Refer to the *Veritas Volume Manager Administrator's Guide*.

2 Add a new disk to the node, initialize it, and add it to the coordinator disk group.

See the *Veritas Cluster Server Installation Guide* for instructions to initialize disks for I/O fencing and to set up coordinator disk groups.

If necessary, start the disk group.

See the *Veritas Volume Manager Administrator's Guide* for instructions to start the disk group.

3 Retest the disk group.

Removing preexisting keys

If you encountered a split-brain condition, use the vxfenclearpre utility to remove SCSI-3 registrations and reservations on the coordinator disks as well as on the data disks in all shared disk groups.

You can also use this procedure to remove the registration and reservation keys created by another node from a disk.

To clear keys after split-brain

1 Stop VCS on all nodes.

```
# hastop -all
```

2 Make sure that the port h is closed on all the nodes. Run the following command on each node to verify that the port h is closed:

```
# gabconfig -a
```

Port h must not appear in the output.

3 If you have any applications that run outside of VCS control that have access to the shared storage, then shut down all other nodes in the cluster that have access to the shared storage. This prevents data corruption.

4 Start the vxfenclearpre script:

5 Read the script's introduction and warning. Then, you can choose to let the script run.

```
Do you still want to continue: [y/n] (default : n) y
```

The script cleans up the disks and displays the following status messages.

```
Cleaning up the coordinator disks...

Cleaning up the data disks for all shared disk groups...

Successfully removed SCSI-3 persistent registration and
reservations from the coordinator disks as well as the
shared data disks.

Reboot the server to proceed with normal cluster startup...
#
```

Replacing I/O fencing coordinator disks when the cluster is online

Review the procedures to add, remove, or replace one or more coordinator disks in a cluster that is operational.

Warning: The cluster might panic if any node leaves the cluster membership before the vxfenswap script replaces the set of coordinator disks.

To replace a disk in a coordinator diskgroup when the cluster is online

1 Make sure system-to-system communication is functioning properly.

2 Make sure that the cluster is online.

```
I/O Fencing Cluster Information:
================================
Fencing Protocol Version: 201
Fencing Mode:
Fencing SCSI3 Disk Policy: dmp
Cluster Members:
  * 0 (galaxy)
  1 (nebula)
RFSM State Information:
  node 0 in state 8 (running)
  node 1 in state 8 (running)
```

3 Import the coordinator disk group.

The file /etc/vxfendg includes the name of the disk group (typically, vxfencoorddg) that contains the coordinator disks, so use the command:

```
# vxdg -tfC import `cat /etc/vxfendg`
```

where:

-t specifies that the disk group is imported only until the node restarts.

-f specifies that the import is to be done forcibly, which is necessary if one or more disks is not accessible.

-C specifies that any import locks are removed.

4 Turn off the coordinator attribute value for the coordinator disk group.

```
# vxdg -g vxfencoorddg set coordinator=off
```

5 To remove disks from the coordinator disk group, use the VxVM disk administrator utility vxdiskadm.

6 Perform the following steps to add new disks to the coordinator disk group:

- Add new disks to the node.
- Initialize the new disks as VxVM disks.
- Check the disks for I/O fencing compliance.
- Add the new disks to the coordinator disk group and set the coordinator attribute value as "on" for the coordinator disk group.

See the *Veritas Cluster Server Installation Guide* for detailed instructions.

Note that though the disk group content changes, the I/O fencing remains in the same state.

7 Make sure that the /etc/vxfenmode file is updated to specify the correct disk policy.

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

8 From one node, start the vxfenswap utility. You must specify the diskgroup to the utility.

The utility performs the following tasks:

- Backs up the existing /etc/vxfentab file.
- Creates a test file /etc/vxfentab.test for the diskgroup that is modified on each node.

- Reads the diskgroup you specified in the vxfenswap command and adds the diskgroup to the /etc/vxfentab.test file on each node.
- Verifies that the serial number of the new disks are identical on all the nodes. The script terminates if the check fails.
- Verifies that the new disks can support I/O fencing on each node.

9 If the disk verification passes, the utility reports success and asks if you want to commit the new set of coordinator disks.

10 Review the message that the utility displays and confirm that you want to commit the new set of coordinator disks. Else skip to step 11.

```
Do you wish to commit this change? [y/n] (default: n) y
```

If the utility successfully commits, the utility moves the /etc/vxfentab.test file to the /etc/vxfentab file.

11 If you do not want to commit the new set of coordinator disks, answer n.

The vxfenswap utility rolls back the disk replacement operation.

Corrections for troubleshooting I/O fencing procedures

Replace the following topics in the *Veritas Cluster Server User's Guide* for 5.0 Maintenance Pack 4 with the information in this Release Notes.

How vxfen driver checks for preexisting split-brain condition

The vxfen driver functions to prevent an ejected node from rejoining the cluster after the failure of the private network links and before the private network links are repaired.

For example, suppose the cluster of system 1 and system 2 is functioning normally when the private network links are broken. Also suppose system 1 is the ejected system. When system 1 restarts before the private network links are restored, its membership configuration does not show system 2; however, when it attempts to register with the coordinator disks, it discovers system 2 is registered with them. Given this conflicting information about system 2, system 1 does not join the cluster and returns an error from vxfenconfig that resembles:

```
vxfenconfig: ERROR: There exists the potential for a preexisting
split-brain. The coordinator disks list no nodes which are in
the current membership. However, they also list nodes which are
not in the current membership.

I/O Fencing Disabled!
```

Also, the following information is displayed on the console:

```
<date> <system name> vxfen: WARNING: Potentially a preexisting
<date> <system name> split-brain.
<date> <system name> Dropping out of cluster.
<date> <system name> Refer to user documentation for steps
<date> <system name> required to clear preexisting split-brain.
<date> <system name>
<date> <system name> I/O Fencing DISABLED!
<date> <system name>
<date> <system name> gab: GAB:20032: Port b closed
```

However, the same error can occur when the private network links are working and both systems go down, system 1 restarts, and system 2 fails to come back up. From the view of the cluster from system 1, system 2 may still have the registrations on the coordinator disks.

To resolve actual and apparent potential split-brain conditions

- Depending on the split-brain condition that you encountered, do the following:

Actual potential split-brain condition—system 2 is up and system 1 is ejected	1 Determine if system1 is up or not. 2 If system 1 is up and running, shut it down and repair the private network links to remove the split-brain condition. 3 Restart system 1.
Apparent potential split-brain condition—system 2 is down and system 1 is ejected	1 Physically verify that system 2 is down. Verify the systems currently registered with the coordinator disks. Use the following command: `# vxfenadm -g all -f /etc/vxfentab` The output of this command identifies the keys registered with the coordinator disks. 2 Clear the keys on the coordinator disks as well as the data disks using the `vxfenclearpre` command. 3 Make any necessary repairs to system 2. 4 Restart system 2.

Replacing defective disks when the cluster is offline

If the disk becomes defective or inoperable and you want to switch to a new diskgroup in a cluster that is offline, then perform the following procedure.

In a cluster that is online, you can replace the disks using the vxfenswap utility.

Review the following information to replace coordinator disk in the coordinator disk group, or to destroy a coordinator disk group.

Note the following about the procedure:

- When you add a disk, add the disk to the disk group vxfencoorddg and retest the group for support of SCSI-3 persistent reservations.
- You can destroy the coordinator disk group such that no registration keys remain on the disks. The disks can then be used elsewhere.

To replace a disk in the coordinator disk group when the cluster is offline

1. Log in as superuser on one of the cluster nodes.
2. If VCS is running, shut it down:

   ```
   # hastop -all
   ```

   Make sure that the port h is closed on all the nodes. Run the following command to verify that the port h is closed:

   ```
   # gabconfig -a
   ```

3. Import the coordinator disk group. The file /etc/vxfendg includes the name of the disk group (typically, vxfencoorddg) that contains the coordinator disks, so use the command:

   ```
   # vxdg -tfC import `cat /etc/vxfendg`
   ```

   where:

   -t specifies that the disk group is imported only until the node restarts.

   -f specifies that the import is to be done forcibly, which is necessary if one or more disks is not accessible.

   -C specifies that any import locks are removed.

4. To remove disks from the disk group, use the VxVM disk administrator utility, vxdiskadm.

   You may also destroy the existing coordinator disk group. For example:

   - Verify whether the coordinator attribute is set to on.

     ```
     # vxdg list vxfencoorddg |  grep flags: | grep coordinator
     ```

- If the coordinator attribute value is set to on, you must turn off this attribute for the coordinator disk group.

  ```
  # vxdg -g vxfencoorddg set coordinator=off
  ```

- Destroy the disk group.

  ```
  # vxdg destroy vxfencoorddg
  ```

5 Add the new disk to the node, initialize it as a VxVM disk, and add it to the vxfencoorddg disk group.

6 Test the recreated disk group for SCSI-3 persistent reservations compliance.

7 After replacing disks in a coordinator disk group, deport the disk group:

```
# vxdg deport `cat /etc/vxfendg`
```

8 Verify that the I/O fencing module has started and is enabled.

```
# gabconfig -a
```

```
# vxfenadm -d
```

Make sure that I/O fencing mode is not disabled in the output.

9 If necessary, restart VCS on each node:

```
# hastart
```

Incorrect I/O fencing tunable parameter name mentioned

The Veritas Cluster Server User's Guide mentions vxfen_debug_sz as one of the tunable parameters for I/O fencing. Replace vxfen_debug_sz with:

dbg_log_size

User's Guide does not mention about the OfflineWaitLimit attribute

The Appendix titled 'VCS Attributes' of the *Veritas Cluster Server User's Guide* does not mention about the OfflineWaitLimit attribute.

VCS 5.0 MP3 includes a new resource type level attribute OfflineWaitLimit:

OfflineWaitLimit (user-defined) **Note:** This attribute can be overridden.	Description: 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. Type and dimension: integer-scalar Default: 0

Veritas Cluster Server Bundled Agents Reference Guide

This section covers the additions or corrections to the *Veritas Cluster Server Bundled Agents Reference Guide* for 5.0 MP4.

ProcessOnOnly agent

Replace the agent's description with the following text:

The ProcessOnOnly agent starts and monitors a process that you specify. You can use the agent to make a process highly available or to monitor it. This resource's Operation value is OnOnly. VCS uses this agent internally to mount security processes in a secure cluster.

Replace the text under the Dependency heading with the following text:

No child dependencies exist for this resource.

Remove or ignore figure 5-4 under the Dependency header, it is incorrect.

Manual pages errata

The man page for `haremajor`(1m) includes AIX related information. Refer to the man page in the release notes for correct information on Linux.

haremajor

`haremajor` – Change the major numbers for disk partitions or volumes.

SYNOPSIS

```
haremajor -sd major_number
haremajor -vx major_number_vxio major_number_vxspec
haremajor -atf major-number
```

AVAILABILITY

VRTSvcs

DESCRIPTION

The `haremajor` command can be used to reassign major numbers of block devices such as disk partitions or Veritas Volume Manager volumes. NFS clients know the major and minor numbers of the block device containing the file system exported on the NFS server. Therefore, when making the NFS server highly available, it is important to make sure that all nodes in the cluster that can act as NFS servers have the same major and minor numbers for the block device. The `haremajor` command can be used to change major numbers used by a system when necessary. Use the `-sd` option to reassign a major number for a disk partition managed by the SD driver. Minor numbers will automatically be the same on both systems. Use the `-vx` option to reassign the major number for the Volume Manager volume device driver (vxio) as well as the vxspec device used by the Volume Manager process vxconfigd. Currently assigned major numbers can be determined by entering the command:

```
grep '^vx' /etc/name_to_major
```

Note that minor numbers for volumes can be changed using the `reminor` option of the `vxdg` command; see the manual page for vxdg(1M). Use the `-atf` option to reassign the major number for the ATF (Application Transparent Failover) driver on a system.

OPTIONS

- -sd *majornumber*
  Reassign the major number used by the SD driver on the system to *major_number*.
- -vx *major_number_vxio*
  Reassign the major numbers used by the Volume Manager device drivers.
- -atf *major_number*
  Reassign a major number used by ATF driver to *major_number*.

SEE ALSO

vxdg(1M)

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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 MP4 documentation online at the following URL:

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

VCS documentation set

Table 1-16 lists the documents that VCS includes.

Table 1-16 VCS documentation

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

Table 1-17 lists the documentation for the VCS component - Symantec Product Authentication Service.

Table 1-17 Documentation for VCS components

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

VCS manual pages

The manual pages for VCS packages are installed in /opt/VRTS/man. Manual pages are divided into sections 1, 1m, 3n, 4, and 4m. Edit the man(1) configuration file /etc/man.config to view these pages.

To edit the man(1) configuration file

1. If you use the man command to access manual pages, set LC_ALL to "C" in your shell to ensure that the pages are displayed correctly.

   ```
   export LC_ALL=C
   ```

   See incident 82099 on the Red Hat Linux support website for more information.

2. Add the following line to /etc/man.config:

   ```
   MANPATH /opt/VRTS/man
   ```

   where other man paths are specified in the configuration file.

3. Add new section numbers. Change the line:

   ```
   MANSECT         1:8:2:3:4:5:6:7:9:tcl:n:l:p:o
   ```

   to

   ```
   MANSECT         1:8:2:3:4:5:6:7:9:tcl:n:l:p:o:3n:1m
   ```

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. Include the title and document version (located on the second page), and chapter and section titles of the text on which you are reporting.