

# Veritas Storage Foundation™ Cluster File System Release Notes

Solaris

5.1 Service Pack 1

# Veritas Storage Foundation™ Cluster File System Release Notes

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# Storage Foundation Cluster File System Release Notes

This document includes the following topics:

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- [Important release information](#)
- [Changes in version 5.1 SP1](#)
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## About this document

This document provides important information about Veritas Storage Foundation Cluster File System (SFCFS) version for Solaris. Review this entire document before you install SFCFS.

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

This is Document version: 5.1SP1.2 of the *Veritas Storage Foundation Cluster File System Release Notes*. Before you start, ensure that you are using the latest version of this guide. The latest product documentation is available on the Symantec Web site at:

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

For the latest information on updates, patches, and known issues regarding this release, see the following TechNote on the Symantec Technical Support website:

<http://www.symantec.com/docs/TECH141448>

## Component product release notes

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

Product guides are available at the following location in PDF formats:

*/product\_name/docs*

Symantec recommends copying the files to the `/opt/VRTS/docs` directory on your system.

This release includes the following component product release notes:

- *Veritas Storage Foundation Release Notes (5.1 SP1)*
- *Veritas Cluster Server Release Notes (5.1 SP1)*

For information regarding software features, limitations, fixed issues, and known issues of component products:

- Veritas Cluster Server (VCS)  
See *Veritas Cluster Server Release Notes (5.1 SP1)*.
- Storage Foundation (SF)  
See *Veritas Storage Foundation Release Notes (5.1 SP1)*.

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  - Hardware compatibility lists (HCLs)
  - Array Support Libraries (ASLs)
  - Array Policy Modules (APMs)
  - High availability agents
- Determine whether your Symantec enterprise product configurations conform to best practices
- Search and browse the latest product documentation
- Look up error code descriptions and solutions

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**Note:** Certain features of SORT are not available for all products.

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## Important release information

- The latest product documentation is available on the Symantec Web site at: <http://www.symantec.com/business/support/overview.jsp?pid=15107>

- For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:  
<http://entsupport.symantec.com/docs/334829>
- For the latest patches available for this release, go to:  
<http://sort.symantec.com/>

## Changes in version 5.1 SP1

This section lists the changes for Veritas Storage Foundation Cluster File System.

### Changes related to the installation

The product installer includes the following changes.

#### Rolling upgrade support

To reduce downtime, the installer supports rolling upgrades. A rolling upgrade requires little or no downtime. A rolling upgrade has two main phases. In phase 1, the installer upgrades kernel packages on a subcluster. In phase 2, non-kernel packages are upgraded.

All high availability products support a rolling upgrade. You can perform a rolling upgrade from 5.1 or from any RPs to the current release.

You can perform a rolling upgrade using the script-based or Web-based installer.

See the *product installation guide*.

#### Using the installer for Veritas Dynamic Multi-pathing (DMP)

You can use the script- or Web-based installer to install, configure, and uninstall Veritas Dynamic Multi-pathing. You can enable DMP using the DMP license or using any Storage Foundation license key.

#### Using the installer for Symantec Virtual Store (SVS)

You can use the script- or Web-based installer to install, configure, and uninstall Symantec VirtualStore. You can enable SVS using an SVS license.

#### Unencapsulation not required for some upgrade paths

Unencapsulation is no longer required for certain upgrade paths.

See the *product installation guide*.

## The new VRTSamf package is now included in all high availability products

The new VRTSamf package is now included in all high availability products. The asynchronous monitoring framework (AMF) allows the more intelligent monitoring of resources, lower resource consumption, and increased availability across clusters.

See the *product installation guide*.

## The VRTScutil and VRTSacclib packages are no longer in use

For all high availability products, the VRTScutil and VRTSacclib packages are no longer required.

See the *product installation guide*.

## Installer-related changes to configure LLT private links, detect aggregated links, and configure LLT over UDP

For all high availability products, the installer provides the following new features in this release to configure LLT private links during the Storage Foundation Cluster File System HA configuration:

- The installer detects and lists the aggregated links that you can choose to configure as private heartbeat links.
- The installer provides an option to detect NICs on each system and network links, and sets link priority to configure LLT over Ethernet.
- The installer provides an option to configure LLT over UDP.
- The installer now supports VCS cluster configuration up to 64 nodes.

See the *product installation guide*.

## Web-based installer supports configuring Storage Foundation Cluster File System HA cluster in secure mode

You can now configure the Storage Foundation Cluster File System HA cluster in secure mode using the Web-based installer.

See the *product installation guide*.

## Web-based installer supports configuring disk-based fencing for Storage Foundation Cluster File System HA

You can now configure disk-based fencing for the Storage Foundation Cluster File System HA cluster using the Web-based installer.

See the *product installation guide*.

### **The installer can automatically detect and configure LLT links**

The installer detects link connection status among all cluster nodes and chooses the most suitable links for LLT communication. It then can set the priority of the LLT private heartbeat links based on their media speed. Aggregated and bonded NICs are supported.

See the *product installation guide*.

### **The Web-based installer supports adding nodes**

The Web-based installer has increased parity with the script-based installer. It now supports the ability to add nodes to a cluster. It also supports configuring secure clusters and fencing configuration.

### **The installer provides automated, password-less SSH configuration**

When you use the installer, it enables SSH or RSH communication among nodes. It creates SSH keys and adds them to the authorization files. After a successful completion, the installer removes the keys and system names from the appropriate files.

When you use the installer for SSH communications, meet the following prerequisites:

- The SSH (or RSH) daemon must be running for auto-detection.
- You need the superuser passwords for the systems where you plan to install VCS.

### **The installer can check product versions**

You can use the installer to identify the version (to the MP/RP/SP level depending on the product) on all platforms. Activate the version checker with `./installer -version system_name`.

Depending on the product, the version checker can identify versions from 4.0 onward.

## **Packaging updates**

The following lists package changes in this release.

## Changes related to Storage Foundation Cluster File System

Storage Foundation Cluster File System includes the following changes in 5.1 SP1:

### Common Internet File System

This new Common Internet File System (CIFS) feature lets you share CFS file systems using CIFS protocol that can be accessed by Window clients. Upon node failure or service group failover, the CIFS shares continue to be served by other cluster nodes.

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

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

### Cluster File System agents and Asynchronous Monitoring Framework support

The Cluster File System (CFS) agents (CFSMount and CFSfsckd) are Asynchronous Monitoring Framework (AMF) aware.

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

### CVMVolDg agent changes

This section describes the changes in the CVMVolDg agent.

#### Support for importing shared disk groups

The CVMVolDg agent now imports the shared disk group from the CVM master node, if the disk group is not already imported, when the corresponding CVMVolDg resource is brought online.

#### Support for deporting shared disk groups

When the last online CVMVolDg resource for a shared disk group is taken offline, the CVMVolDg agent now deports the disk group if the `CVMDeportOnOffline` attribute is set to 1.

Review the following notes before setting the attribute value:

- If multiple CVMVolDg resources are configured for a shared disk group, set the value of the `CVMDeportOnOffline` attribute to 1 for all of the resources. The CVM disk group is deported based on the order in which the CVMVolDg resources are taken offline. If the CVMVolDg resources in the disk group contain a mixed setting of 1 and 0 for the `CVMDeportOnOffline` attribute, the

disk group is deported only if the attribute value is 1 for the last CVMVolDg resource taken offline. If the attribute value is 0 for the last CVMVolDg resource taken offline, the disk group is not deported.

- The shared disk group is not deported if it contains open volumes.

### Support for I/O polling on volume sets

You can enable the CVMVolDg agent to perform periodic I/O polling on volume sets by specifying their names in the `CVMVolumeIoTest` attribute of the resource. This enables the CVMVolDg agent to proactively check the availability of the volume sets by reading 4 KB blocks from its component volumes every monitor cycle. Errors, if any, are reported to the log file `/var/VRTSvcs/log/engine_A.log`.

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**Note:** The CVMVolDg agent takes a volume set offline if the file system metadata volume in a volume set is discovered to be offline in a monitor cycle. However, if the CFSMount resource goes offline and the file system on the volume set is unmounted, the agent retains the online state of the volume set even if the metadata volume in the volume set is offline. This is because the CVMVolDg agent is unable to determine whether or not the volumes that are offline are metadata volumes.

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### New attribute `CVMDeportOnOffline`

The `CVMDeportOnOffline` attribute setting enables the CVMVolDg agent to determine whether or not a shared disk group must be deported when the corresponding CVMVolDg resource is taken offline. Set the value of this attribute to 1 if you want the agent to deport the disk group when the CVMVolDg resource is taken offline. The default value is set to 0.

You can set the attribute by running the following command:

```
# haconf -makerw
# hares -modify cvmvoldg_res CVMDeportOnOffline 1
# haconf -dump -makero
```

Verify the value of the attribute:

```
# hares -display cvmvoldg_res | grep CVMDeportOnOffline
```

## Issuing Cluster Volume Manager (CVM) commands from the slave node

In previous releases, Cluster Volume Manager (CVM) required that you issue configuration commands for shared disk groups from the master node of the cluster. Configuration commands change the object configuration of a CVM shared

disk group. Examples of configuration changes include creating disk groups, importing disk groups, deporting disk groups, and creating volumes. In this release, you can issue commands from any node, even when the command changes the configuration of the shared disk group. You do not need to know which node is the master to issue the command. If you issue the command on the slave node, CVM ships the commands from the slave node to the master node. CVM then executes the command on the master node.

Note the following limitations for issuing CVM commands from the slave node:

- This functionality is only available in VCS clusters. It is not supported for Sun Clusters.
- The CVM protocol version must be at least 100.
- CVM does not support executing all commands on the slave node. You must issue the following commands only on the master node:

- Commands that specify a controller name. For example:

```
# vxassist -g shareddg make sharedvol 20M ctlr:fscsi0
```

- Commands that specify both a shared disk group and a private disk group. For example:

```
# vxdg destroy privatedg shareddg
```

- Commands that include the defaults file as an argument. For example:

```
# vxassist -d defaults_file
```

- Veritas Volume Replicator (VVR) commands including `vxibc`, `vxrlink`, `vxrsync`, `vxrvg`, `vrport`, `vrstat`, and `vradmin`.

- The `vxdisk` command.

## Changing the CVM master online

Cluster Volume Manager (CVM) now supports changing the CVM master from one node in the cluster to another node, while the cluster is online. CVM migrates the master node, and reconfigures the cluster.

Symantec recommends that you switch the master when the cluster is not handling VxVM configuration changes or cluster reconfiguration operations. In most cases, CVM aborts the operation to change the master, if CVM detects that any configuration changes are occurring in the VxVM or the cluster. After the master change operation starts reconfiguring the cluster, other commands that require configuration changes will fail.

To change the master online, the cluster must be cluster protocol version 100 or greater.

## Changes to Thin Provisioning and Thin Reclamation features

The following sections describe the changes related to Thin Provisioning and Thin Reclamation features.

### SmartMove default changed

The default value of the system tunable `usefssmartmove` is now set to all. The change results in taking advantage of SmartMove feature during operations involving all types of disks – not just thin disks. It requires SmartMove feature support from VxFS. If required, you can change the default using the `vxdefault` command.

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

### New initialization options for the `vxassist grow` command

The `vxassist grow` operation has new options for the initialization type. These changes align the initialization types for `vxassist grow` and `vxassist create` commands.

<code>init=sync</code>	If the volume has multiple plexes, VxVM synchronizes the data between the plexes during initialization.
<code>init=zero</code>	Initializes the volume or grown region, and initializes the associated data plexes to zeroes. If the volume resides on thin reclaimable LUNs, VxVM also reclaims the space within the storage array
<code>init=active</code>	Initializes the volume or grown region without modifying the existing data on the plexes.
<code>init=default</code>	Performs the default operation.

For more information, see the `vxassist(1m)` manual page.

### Relayout operations on VxFS mounted volumes now use SmartMove

This is a performance related enhancement. Relayout operations on VxFS mounted volumes take advantage of its SmartMove capability. The change results in faster relayout of the volume.

## Reclamation writes are not counted in write statistics

When you issue a reclamation command on a LUN, a disk group, or an enclosure, the request is passed down as writes to the Volume Manager from VxFS. This feature differentiates the writes generated by reclamation from the writes generated by normal application IO in the stats. By default, the reclamation writes are not shown with the `vxstat` command. To display the reclamation writes, use the command:

```
# vxstat -fm
```

## Changes related to Veritas File System

Veritas File System includes the following changes:

### Autolog replay on mount

The `mount` command automatically runs the VxFS `fsck` command to clean up the intent log if the `mount` command detects a dirty log in the file system. This functionality is only supported on file systems mounted on a Veritas Volume Manager (VxVM) volume.

### Dynamic Storage Tiering is rebranded as SmartTier

In this release, the Dynamic Storage Tiering (DST) feature is rebranded as SmartTier.

### FileSnap

FileSnaps provide an ability to snapshot objects that are smaller in granularity than a file system or a volume. The ability to snapshot parts of a file system name space is required for application-based or user-based management of data stored in a file system. This is useful when a file system is shared by a set of users or applications or the data is classified into different levels of importance in the same file system.

See the *Veritas Storage Foundation Advanced Features Administrator's Guide*.

### Online migration of a native file system to VxFS file system

The online migration feature provides a method to migrate a native file system to the VxFS file system. The migration takes minimum amounts of clearly bounded, easy to schedule downtime. Online migration is not an in-place conversion and requires a separate storage. During online migration the application remains online and the native file system data is copied over to the VxFS file system.

See the *Veritas Storage Foundation Advanced Features Administrator's Guide*.

## SmartTier sub-file movement

In this release, the Dynamic Storage Tiering (DST) feature is rebranded as SmartTier. With the SmartTier feature, you can now manage the placement of file objects as well as entire files on individual volumes.

See the *Veritas Storage Foundation Advanced Features Administrator's Guide* and the `fspadm(1M)` manual page.

## Tuning performance optimization of inode allocation

You can now set the `delicache_enable` tunable parameter, which specifies whether performance optimization of inode allocation and reuse during a new file creation is turned on or not.

See the *Veritas File System Administrator's Guide* and the `vxtunefs(1M)` manual page.

## Veritas File System is more thin friendly

You can now tune Veritas File System (VxFS) to enable or disable thin-friendly allocations.

## Changes related to Veritas Volume Manager

Veritas Volume Manager (VxVM) includes the following changes:

### Changes to DMP coexistence with native multi-pathing

The following limitations apply when using DMP with native multi-pathing:

- DMP does not display extended attributes for devices under the control of the native multi-pathing driver, MPxIO. Extended attributes include the AVID, TP, TP\_RECLAIM, SSD, RAID levels, snapshots, and hardware mirrors.
- DMP does not support enabling MPxIO on some controller ports and not on the other ports that access the same enclosure. You must enable MPxIO either for all of the paths of a LUN or for none of the paths.
- If an array of any class other than Active/Active (A/A) is under the control of MPxIO, then DMP claims the devices in A/A mode.  
DMP does not store path-specific attributes such as primary/secondary paths, port serial number, and the array controller ID.

## Veritas Volume Manager persisted attributes

The `vxassist` command now allows you to define a set of named volume allocation rules, which can be referenced in volume allocation requests. The `vxassist` command also allows you to record certain volume allocation attributes for a volume. These attributes are called persisted attributes. You can record the persisted attributes and use them in later allocation operations on the volume, such as growing the volume.

## Automatic recovery of volumes during disk group import

After a disk group is imported, disabled volumes are enabled and started by default. To control the recovery behavior, use the `vxdefault` command to turn on or off the tunable `autostartvolumes`. If you turn off the automatic recovery, the recovery behaves the same as in previous releases. This behavior is useful if you want to perform some maintenance after importing the disk group, and then start the volumes. To turn on the automatic recovery of volumes, specify `autostartvolume=on`.

After a disk group split, join, or move operation, Veritas Volume Manager (VxVM) enables and starts the volumes by default.

## Enhancements to the `vxrootadm` command

The `vxrootadm` command has the following new options:

- `vxrootadm split`  
Splits the root disk mirror into a new root disk group.
- `vxrootadm join`  
Reattaches mirrors from an alternate root disk group to the current (booted) root disk group.
- `vxrootadm addmirror`  
Adds a mirror of the root disk to the root disk group, for redundancy in case the current root disk fails.
- `vxrootadm rmmirror`  
Deletes a root disk mirror from the current (booted) root disk group.

See the `vxrootadm(1m)` man page.

## Cross-platform data sharing support for disks greater than 1 TB

Previous to this release, the `cdsdisk` format was supported only on disks up to 1 TB in size. Therefore, cross-platform disk sharing (CDS) was limited to disks of

size up to 1 TB. Veritas Volume Manager (VxVM) 5.1 SP1 removes this restriction. VxVM 5.1 SP1 introduces CDS support for disks of size greater than 1 TB as well.

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**Note:** The disk group version must be at least 160 to create and use the `cdsdisk` format on disks of size greater than 1 TB.

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## Default format for auto-configured disk has changed

By default, VxVM initializes all auto-configured disks with the `cdsdisk` format. To change the default format, use the `vxdiskadm` command to update the `/etc/default/vxdisk` file.

## Changes related to Veritas Dynamic Multi-Pathing (DMP)

The following sections describe changes in this release related to DMP.

### Veritas Dynamic Multi-Pathing (DMP) support for native logical volumes

In previous Veritas releases, DMP was only available as a feature of Veritas Volume Manager (VxVM). DMP supported VxVM volumes on DMP metadevices, and Veritas File System (VxFS) file systems on those volumes. This release extends DMP metadevices to support ZFS. You can create ZFS pools on DMP metadevices. DMP only supports ZFS on Solaris 10. There is no support for SVM.

In this release, Veritas Dynamic Multi-Pathing does not support Veritas File System (VxFS) on DMP devices.

DMP also supports creating single instance Oracle ASM or migrating an existing single instance of Oracle ASM onto DMP devices.

See the *Veritas Dynamic Multi-Pathing Administrator's Guide* for details.

### Enhancements to DMP I/O retries

Veritas Dynamic Multi-Pathing (DMP) has a new tunable parameter, `dmp_lun_retry_timeout`. This tunable specifies a retry period for handling transient errors.

When all paths to a disk fail, there may be certain paths that have a temporary failure and are likely to be restored soon. If I/Os are not retried for a period of time, the I/Os may be failed to the application layer even though some paths are experiencing a transient failure. The DMP tunable `dmp_lun_retry_timeout` can be used for more robust handling of such transient errors by retrying the I/O for the specified period of time in spite of losing access to all the paths.

The DMP tunable `dmp_failed_io_threshold` has been deprecated.

See the `vxndmpadm(1m)` man page for more information.

## Changes related to Veritas Volume Replicator

Veritas Volume Replicator includes the following changes:

### **vvrcheck configuration utility**

There is now a configuration utility, `/etc/vx/diag.d/vvrcheck`, that displays current replication status, detects and reports configuration anomalies, and creates statistics files that can be used by display tools. The `vvrcheck` also runs diagnostic checks for missing daemons, valid licenses, and checks on the remote hosts on the network. For more information, see the `vvrcheck(1M)` man page.

### **Default network protocol is now TCP/IP**

TCP/IP is now the default transport protocol for communicating between the Primary and Secondary sites. However, you have the option to set the protocol to UDP.

For information on setting the network protocol, see the *Veritas™ Volume Replicator Administrator's Guide*.

### **Veritas Volume Replicator supports data replication from SPARC to Solaris x86-64 platforms**

Beginning in Storage Foundation 5.1 SP1, you can replicate data from SPARC to Solaris x86-64 platforms without extensive downtime in your environment. However, once the data is replicated in the Solaris x86-64 environment, you must convert the byte order from little-endian to big-endian, so the applications can work with it.

For information on converting the byte order of a file system, see the *Veritas Storage Foundation™ Advanced Features Administrator's Guide*. Other conversion information is application-dependent.

### **Checksum is disabled by default for the TCP/IP protocol**

Beginning with Storage Foundation 5.1 with TCP as the default network protocol, VVR does not calculate the checksum for each data packet it replicates. VVR relies on the TCP checksum mechanism. However, if a node in a replicated data set is using a version of VVR earlier than 5.1 SP1PR4, VVR calculates the checksum regardless of the network protocol.

If you are using UDP/IP, checksum is enabled by default.

## Improved replication performance in the presence of snapshots on the Secondary site

The effect of snapshots on the Secondary site is less drastic on replication performance.

## Changes related to Storage Foundation for Databases (SFDB) tools

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

- Cached ODM support for clusters
- Cached ODM Manager support
- The Database Dynamic Storage Tiering (DBDST) feature is rebranded as SmartTier for Oracle and includes expanded functionality to support management of sub-file objects.
- Oracle 11gR2 support

New commands for 5.1 SP1:

- SmartTier for Oracle: commands added to support storage tiering of sub-file objects: `dbdst_obj_view`, `dbdst_obj_move`
- Cached ODM: command added to support Cached ODM Manager: `dbed_codm_adm`

## Changes to LLT

This release includes the following new features and changes to LLT:

- LLT startup time through the LLT init script is now optimized to use a constant time. LLT takes less than 16 seconds to start irrespective of the number of links specified in `/etc/llttab` file.  
In the previous releases, LLT took around  $(5 * \text{number\_of\_links\_specified\_in\_the\_}/etc/llttab\_file)$  seconds to start.
- The `lltstat` command includes the following new options:
  - `lltstat -nv active`  
This command filters the output of `lltstat -nv` to display the status of only the active nodes in the cluster.
  - `lltstat -nv configured`

This command filters the output of `lltstat -nv` to display the status of only the configured nodes in the cluster. Configured nodes include active nodes and any additional nodes which are listed in the `/etc/llthosts` file.

See the `lltstat` manual page for more information.

- Support for different link speeds for LLT links  
LLT now removes the restriction to use private NICs with same media speed. You can now use different media speed for the private NICs and configure the NICs with lesser speed as low-priority links to enhance LLT performance.
- Support for destination-based load balancing  
LLT now also provides destination-based load balancing where the LLT link is chosen based on the destination node id and the port. With destination-based load balancing, LLT sends all the packets of a particular destination on a link.

See the *product installation guide* and the *product administration guide* for more details.

## Changes to GAB

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

- GAB logging daemon  
GAB implements a distributed network protocol. For situations when GAB decides to take the drastic action of killing its userland client process or panicking a node to resolve an issue, data from the affected node alone may not suffice for a meaningful support analysis. The new `gablogd` daemon attempts to address this issue. GAB starts this daemon by default at GAB configuration time.

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

## Changes to I/O fencing

This section covers the new features and changes related to I/O fencing in this release.

### Support for preferred fencing

Traditional fencing prevents a split-brain condition by allowing only one of multiple sub-clusters to continue its operation in case a network partition disrupts regular communication between nodes. The preferred fencing feature gives preference to one sub-cluster over other sub-clusters in determining the surviving sub-cluster. This preference is based on factors such as which of the sub-clusters is running higher priority applications or the total importance of nodes which form that sub-cluster or both.

See the *product installation guide* and the *product administration guide* for more details.

## Enhancements to server-based fencing

This release includes the following enhancements and new features related to server-based fencing:

- **Single CP-server based fencing**  
Support to use a single highly available CP server that is configured on an SFHA cluster to provide server-based fencing support for multiple application clusters

## Support to migrate between fencing modes when the cluster is running

The `vxfsnwap` utility now supports migrating between disk-based and server-based fencing configurations in a cluster that is running.

See the *product administration guide* for more details.

## No longer supported

The following features are not supported in this release of SFCFS products:

- Bunker replication is not supported in a Cluster Volume Manager (CVM) environment.

## Veritas Storage Foundation for Databases (SFDB) tools features which are no longer supported

Commands which are no longer supported as of version 5.1:

- **ORAMAP** (`libvxoramap`)
- **Storage mapping commands** `dbed_analyzer`, `vxstorage_stats`
- **DBED providers** (DBEDAgent), Java GUI, and `dbed_dbprocli`.  
The SFDB tools features can only be accessed through the command line interface. However, Veritas Operations Manager (a separately licensed product) can display Oracle database information such as tablespaces, database to LUN mapping, and tablespace to LUN mapping.
- **Storage statistics: commands** `dbdst_make1bfs`, `vxdbts_fstatsummary`, `dbdst_fiostat_collector`, `vxdbts_get_datafile_stats`
- `dbed_saveconfig`, `dbed_checkconfig`

- `dbed_ckptplan`, `dbed_ckptpolicy`
- `qio_convertdbfiles -f` option which is used to check for file fragmentation
- `dbed_scheduler`
- `sfua_rept_migrate` with `-r` and `-f` options

## System requirements

This section describes the system requirements for this release.

### Supported Solaris operating systems

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

- Solaris 9 (32-bit and 64-bit, SPARC) with Update 7, 8, and 9  
Symantec VirtualStore is only supported on Solaris 9 (SPARC Platform 64-bit).

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**Note:** In the next major release, Veritas products will not support Solaris 9.

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- Solaris 10 (64-bit, SPARC or x86\_64) with Update 6, 7, 8, and 9  
Solaris 10 (SPARC and x86\_64) with Update 9 requires VRTSvxvm patch 142629-08 (SPARC) or 142630-08 (x86\_64)  
Symantec VirtualStore is only supported on Solaris 10 (SPARC or X86 Platform 64-bit).

For the most up-to-date list of operating system patches, refer to the Release Notes for your product.

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

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

### Memory requirements

2 GB of memory is required for Veritas Storage Foundation Cluster File System.

### CPU requirements

A minimum of 2 CPUs is required for Veritas Storage Foundation Cluster File System.

## Node requirements

Solaris Storage Foundation 5.1 SP1 Cluster File System supports mixed cluster environments with Solaris 9 and Solaris 10 SPARC operating systems as long as all the nodes in the cluster have the same CPU architecture.

## Database requirements

Veritas Storage Foundations product features are supported for the following database environments:

**Table 1-1**

Veritas Storage Foundations feature	DB2	Oracle	Sybase
Oracle Disk Manager, Cached Oracle Disk Manager	No	Yes	No
Quick I/O, Cached Quick I/O	Yes	Yes	Yes
Concurrent I/O	Yes	Yes	Yes
Storage Checkpoints	Yes	Yes	Yes
Flashsnap	Yes	Yes	Yes
SmartTier	Yes	Yes	Yes
Database Storage Checkpoints	No	Yes	No
Database Flashsnap	No	Yes	No
SmartTier for Oracle	No	Yes	No

Storage Foundation for Databases (SFDB) tools Database Checkpoints, Database Flashsnap, and SmartTier for Oracle are supported only for Oracle database environments.

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

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

Review the current Oracle documentation to confirm the compatibility of your hardware and software.

## Disk space requirements

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

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

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

## Number of nodes supported

SFCFS supports cluster configurations with up to 64 nodes.

For more updates on this support, see the Late-Breaking News TechNote on the Symantec Technical Support website:

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

## Fixed issues

This section covers the incidents that are fixed in this release.

See the corresponding Release Notes for a complete list of fixed incidents related to that product.

See "[Documentation](#)" on page 84.

## Veritas Storage Foundation Cluster File System fixed issues

This section describes the incidents that are fixed in Veritas Storage Foundation Cluster File System.

### Veritas Storage Foundation Cluster File System: Issues fixed in 5.1 RP2

**Table 1-2** Veritas Storage Foundation Cluster File System 5.1 RP2 fixed issues (listed incident number, parent number)

Fixed issues	Description
1982730, 1952484	Fixed a panic in <code>vx_recv_getemapmsg()</code> due to an alignment fault.
2043651, 1991446	Changing the nodes in a cluster from <code>largefiles</code> to <code>noLargefiles</code> with the <code>fsadm</code> command no longer results in the following error when you re-mount the nodes:  <pre>UX:vxfs mount: ERROR: V-3-21272: mount option(s) incompatible with file system</pre>

**Table 1-2** Veritas Storage Foundation Cluster File System 5.1 RP2 fixed issues (listed incident number, parent number) *(continued)*

Fixed issues	Description
1933839, 1807536	Added support for <code>VX_FREEZE_ALL</code> ioctl in a cluster environment.
2069672, 2069059	Fixed a hang issue in a cluster environment.
2049381, 2049378	Fixed an issue that caused database checkpoint rollback to fail on a non-English locale setup.
2092088, 2030289	Fixed a file system corruption issue in a cluster environment that occurred when mounting the file system on the secondary node while the primary node was 100% full.

## Veritas Storage Foundation Cluster File System: Issues fixed in 5.1 RP1

**Table 1-3** Veritas Storage Foundation Cluster File System 5.1 RP1 fixed issues (listed incident number, parent number)

Fixed issues	Description
1980842, 1983222	Fixed issue in <code>cfsadmin</code> command for RVG volumes.
1878583, 1544221	<code>getattr</code> call optimization to speedup the case when binaries are being mmaped from many nodes on CFS.

## Veritas File System fixed issues

This section describes the incidents that are fixed in Veritas File System in this release.

**Table 1-4** Veritas File System fixed issues

Incident	Description
2026603	Added quota support for the user "nobody".
2026625	The <code>sar -v</code> command now properly reports VxFS inode table overflows.

**Table 1-4** Veritas File System fixed issues (*continued*)

Incident	Description
2050070	Fixed an issue in which the volume manager area was destroyed when spinlock was held.

## Veritas File System: Issues fixed in 5.1 RP2

**Table 1-5** Veritas File System fixed issues in 5.1 RP2

Fixed issues	Description
1995399	Fixed a panic due to null i_fsext pointer de-reference in vx_inode structure
2016373	Fixed a warning message V-3-26685 during freeze operation without nested mount points
2036841	Fixed a panic in vx_set_tunefs
2081441	Fixed an issue in vxedquota regarding setting quota more than 1TB
2018481	Fixed an issue in fsppadm(1M) when volume did not have placement tags
2066175	Fixed panic in vx_inode_mem_deinit
2025155	Fixed an issue in fsck(1m) which was trying to free memory which was not allocated.
2043634	Fixed an issue in quotas API
1933844	Fixed a panic due to race condition in vx_logbuf_clean()
1960836	Fixed an issue in Thin Reclaim Operation
2026570	Fixed a hang issue in vx_dopreamble () due to ENOSPC error.
2026622	Fixed a runqueue contention issue for vx_worklists_thr threads
2030889	Fixed a hang issue during fsppadm(1m) enforce operation with FCL
2036214	Fixed a core dump issue in ncheck(1m) in function printname().
2076284	Optimized some VxMS api for contiguous extents.
2085395	Fixed a hang issue in vxfsckd.
2059621	Fixed a panic due to null pointer de-reference in vx_unlockmap()

**Table 1-5** Veritas File System fixed issues in 5.1 RP2 (*continued*)

Fixed issues	Description
2016345	Fixed an error EINVAL issue with O_CREATE while creating more than 1 million files.
1976402	Fixed the issue in fsck replay where it used to double fault for 2TB luns.
1954692	Fixed a panic due to NULL pointer de-reference in vx_free()
2026599	Fixed a corruption issue when Direct IO write was used with buffered read.
2030773	Fixed issue with fspadm(1m) where it used to generate core when an incorrectly formatted XML file was used.
2026524	Fixed a panic in vx_mkimtran()
2080413	Fixed an issue with storage quotas
2084071	Fixed an issue in fcladm(1m) where it used to generate core when no savefile was specified
2072165	Fixed an active level leak issue while fsadm resize operation.
1959374	Fixed a resize issue when IFDEV is corrupt
2098385	Fixed a performance issue related to 'nodatainlog' mount option.
2112358	Fixed an issue with file-system I/O statistics.

## Veritas File System: Issues fixed in 5.1 RP1

**Table 1-6** Veritas File System 5.1 RP1 fixed issues (listed incident number/parent number)

Fixed issues	Description
1979429	mount usage error message is thrown while using from /opt/VRTS/bin
1978029	fsadm -R returns EFAULT in certain scenarios.
1976287	conform.backup test is skipped even if no local zone is available.
1973739	vxdisk reclaim fails on dg version 140 works only with ver 150-Cannot reclaim space on dg/vols created on 5.0MP3 after 5.1 upgrade.
1973539	Wrong boundary for reclamation on Hitachi AMS2000 Series

**Table 1-6** Veritas File System 5.1 RP1 fixed issues (listed incident number/parent number) (*continued*)

Fixed issues	Description
1972882	use separate structures for ioctl interfaces and CFS messages
1972207	full fsck is very slow on an fs with many ilist holes.
1969334	'vxupgrade' test failed.
1967027	LM-conform test odm hits an assert of "f:fdd_advreload:2"
1961790	LM.CMDS->fsck->full->scripts->fextop_12 fails
1960436	CFS.Comform->revnlookup hit "vx_msgprint" via "vx_cfs_iread" on the slave node
1958198	cfs odm stress/noise tests failed due to "bcmp error"
1957365	CFS-Conformance test failed
1957296	CFS-Conformance-Reconfig test hit assert "f:vx_validate_cistat:3"
1957043	LM -conformance/fcl/fcl_fsetquota.3 is failing
1957035	CFS cmds:fsck is failing
1957032	fsqa lm vxmssnap.9 test fails
1956926	cfs-cmds aborting due to fsck, mount, fsted, libtst 64-bit binaries
1954897	CFS-Conformance test hit assert "f:vx_mark_fset_clean:2"
1953913	LM-Command "vxedquota" test failed.
1952827	LM / CFS - Cmds-> alerts test failed.
1952818	LM / CFS -Cmds-> vxtunefs test failed.
1949962	Fix the vxrsh and vxproxyrshd processes for cfs reconfig testing.
1949077	cfs.conform.dbed hits assert "..f:vx_imap_process_inode:4a". by "..vx_workitem_process".
1948451	kernel-conform "sunprpriv" and "getattr" tests are missing
1947359	mkdstfs fails to add new volumes
1947356, 1883938	Due to incorrect Makefile 'make clobber' is removing mkdstfs

**Table 1-6** Veritas File System 5.1 RP1 fixed issues (listed incident number/parent number) (*continued*)

<b>Fixed issues</b>	<b>Description</b>
1946442	tot build setup machine running LM-cmds -> fspadm got failures.
1946433	Enhance mkdstfs for explicitly selecting the purpose of volumes data vs metadata
1946431	mkdstfs only adds to existing volume tags
1946134	fsadm keeps relocating and copying already relocated and copied reorg-ed regions of a file in subsequent passes.
1944283	fcl close is not happening properly
1943116	mkdstfs uses wrong perl instead of /opt/VRTS/bin/perl
1943116	mkdstfs uses wrong perl instead of /opt/VRTS/bin/perl
1940870	Documentation/Test discrepancies
1940409	CFS support for cached ODM
1940390	Cached ODM needs improvements for async requests codm
1934107, 1891400	Incorrect ACL inheritance
1934103	[PRI-1] Performance issues with mmap VxFS 4.1MP4 RP2
1934101	cfs Test cfs-stress-enterprise hit the same assert :f:vx_cwfrz_wait:2
1934098, 1860701	clone removal can block resive ops
1934096, 1746491	core dump of fsvmap.
1934095, 1838468	Data page fault at vx_qiostats_update due to fiostats structure already free'd
1934094, 1846461	vxfsstat metrics to monitor UNHASHED entries in the dcache
1934085, 1871935	secondaries ias_ilst not updated fully.
1933975, 1844833	fsadm shrink fs looping in vx_reorg_emap due to VX_EBMAPMAX from vx_reorg_enter_zfod

**Table 1-6** Veritas File System 5.1 RP1 fixed issues (listed incident number/parent number) (*continued*)

Fixed issues	Description
1933844	bad mutex panic in VxFS
1933635, 1914625	[VxFS] Behavior of DST Access age-based file placement policy with preferred files
1931973	fsppadm gives spurious messages when run from multiple CFS nodes found only from 5.1 onwards
1908776	UX:vxfs mount: ERROR: V-3-22168: Cannot open portal device...
1906521	CFS-conform/quotas test hit assert vx_populate_pnq via vx_detach_fset
1902241	9-15a driver regression observed on SFCFSORA TPCC test
1897458, 1805046	wrong alert generation from vxfs when file system usage threshold is set
1895454	Sol10x86 lm.conform->ts some TCs fail
1878583	CFS: getattr call optimization to speedup the case when binaries are being mmaped from many nodes on CFS.

## Veritas Volume Manager fixed issues

This section describes the incidents that are fixed in Veritas Volume Manager in this release. This list includes Veritas Volume Replicator and Cluster Volume Manager fixed issues.

**Table 1-7** Veritas Volume Manager fixed issues

Incident	Description
150476	Add T for terabyte as a suffix for volume manager numbers
155930	Improve debug output from VxVM JBOD recognition code. SUN Bug ID 4905792
248925	If vxdg import returns error, parse it
311664	vxconfigd/dmp hang due to a problem in the dmp_reconfig_update_cur_pri() function's logic
321733	Need test case to deport a disabled dg.

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
339282	Failed to create more than 256 config copies in one DG. SUN Bug ID 6284604
543638	vxdmpadm/vxdiskunsetup doesn't work well if tpdmode=native.
597517	Tunable to initialize EFI labeled >1tb PP devices.
1097258	vxconfigd hung when an array is disconnected.
1239188	Enhance vxprivutil to enable, disable, and display config+log copies state.
1301991	When vxconfigd is restarted with -k option, all log messages are sent to stdout. syslog should be the default location.
1321475	Join Failure Panic Loop on axe76 cluster.
1361625	With use_all_paths=yes, reservation conflict is encountered.
1441406	'vxdisk -x list' displays wrong DGID.
1458792	After upgrade from SF5.0mp1 to SF5.0mp3, *unit_io and *pref_io was set to 32m.
1475690, 1939810	additional diagnostics required in vxclust/vxconfigd. SUN Bug ID 4955341
1479735	CVR: I/O hang on slave if master (logowner) crashes with DCM active.
1485075	DMP sending I/O on an unopened path causing I/O to hang
1504466	VxVM: All partitions aren't created after failing original root disk and restoring from mirror.
1513385	VVR:Primary panic during autosync or dcm replay.
1528121	FMR: wrong volpagemod_max_memsz tunable value cause buffer overrun
1528160	An ioctl interrupted with EINTR causes frequent vxconfigd exits.
1586207	"vxsnap refresh" operations fail occasionally while data is replicating to secondary.
1589022	Infinite looping in DMP error handling code path because of CLARIION APM, leading to I/O hang.
1594928	Avoid unnecessary retries on error buffers when disk partition is nullified.
1662744	RVG offline hung due to I/Os pending in TCP layer

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
1664952	Refreshing private region structures degrades performance during "vxdisk listtag" on a setup of more than 400 disks.
1665094	Snapshot refresh causing the snapshot plex to be detached.
1713670	'vxassist -g <dg-name> maxsize' doesn't report no free space when applicable
1715204	Failure of vxsnap operations leads to orphan snap object which cannot be removed.
1728809	vxdiskadm option -17 -5/6 unwanted message getting displayed. SUN Bug ID 6899126
1766452	vradmind dumps core during collection of memory stats.
1792795	Supportability feature/messages for plex state change, DCO map clearance, usage of fast re-sync by vxplex
1825270	I/O failure causes VCS resources to fault, as dmpnode get disabled when storage processors of array are rebooted in succession
1825516	Unable to initialize and use ramdisk for VxVM use.
1826088	After pulling out the Fibre Channel cables of a local site array, plex becomes DETACHED/ACTIVE.
1829337	Array firmware reversal led to disk failure and offlined all VCS resources
1831634	CVR: Sending incorrect sibling count causes replication hang, which can result in I/O hang.
1831969	VxVM: ddl log files are created with world write permission
1835139	I/Os hung after giveback of NetApp array filer
1840055	VRTSvxvm will change how it starts volumes upon dg import. SUN Bug ID 6887011
1840673	After adding new LUNs, one of the nodes in 3 node CFS cluster hangs
1840832	vxrootadm does not update the partition table while doing a grow operation
1843233 1908756	vxvm core dumps during live upgrade pkgadd VRTSvxvm to altroot. SUN Bug ID 6875379
1846165	Data corruption seen on cdsdisks on Solaris-x86 in several customer cases

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
1850166	vxdisk resize failed after LUN was expanded in the backend alongwith disk geometry change
1857558	Need to ignore jeopardy notification from GAB for SFCFS/RAC, since oracle CRS takes care of fencing in this stack
1857729	CVM master in the VVR Primary cluster panicked when rebooting the slave during VVR testing
1860892	Cache Object corruption when replaying the CRECs during recovery
1869995	VVR: Improve Replication performance in presence of SO snapshots on secondary.
1871447	Mirrored encapsulated disk panics on boot when the primary is removed & mpxio is enabled
1872743	Layered volumes not startable due to duplicate rid in vxrecover global volume list.
1874034	Race between modunload and an incoming IO leading to panic
1880279	Evaluate the need for intelligence in vxattachd to clear stale keys on failover/shared dg's in CVM and non CVM environment.
1881336	VVR: Primary node panicked due to race condition during replication
1884070	When running iotest on a volume, the primary node runs out of memory
1886007	vxesd leaking File descriptors
1889747	vxlustart customer is unable to do live upgrade with Solaris Zone on vxfs
1897007	vxesd coredumps on startup when the system is connected to a switch which has more than 64 ports
1899688	VVR: Every I/O on smartsync enabled volume under VVR leaks memory
1899943	CPS based fencing disks used along with CPS servers does not have coordinator flag set
1901827	vxdg move fails silently and drops disks.
1907796	Corrupted Blocks in Oracle after Dynamic LUN expansion and vxconfigd core dump
1915356	I/O stuck in vxvm causes a cluster node panic.

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
1920614	SF 5.1 vxdg man page does not include disk group version 150. SUN Bug ID 6909778
1932023	vxdiskadm option 'Allow multipathing of all disks on a controller by VxVM' fails due to script errors
1933350	SF 5.1 - /usr/sbin/vxtrace -IE has a Segmentation Fault(coredump) and/or while running VRTSexplorer. SUN Bug ID 6914659
1933375	Tunable value of 'voliomem_chunk_size' is not aligned to page-size granularity
1933528	During Dynamic reconfiguration vxvm disk ends up in error state after replacing physical LUN.
1935297	vxconfigd dumps core in get_prop()
1936611	vxconfigd core dump while splitting a diskgroup
1938708	With EBN naming, root (un)encapsulation is not handling dump/swap device properly
1938907	WWN information is not displayed due to incorrect device information returned by HBA APIs
1946941	vxsnap print shows incorrect year
1947832	unnecessary messages to console: "WARNING: dmpEngenio _fini function called". SUN Bug ID 6920339
1954062	vxrecover results in os crash
1955693	VxVM 5.0MP3RP3 patch 122058-13 disables vxfsldlic service and prevents boot multi-user mode after jumpstart installation
1956777	CVR: Cluster reconfiguration in primary site caused master node to panic due to queue corruption
1959244	After creation of zpool on a device, the type is not shown as "auto:ZFS" in the output of vxdisk list
1960341	Toggling of naming scheme is not properly updating the daname in the vxvm records.
1969526	Panic in voldiodone when a hung priv region I/O comes back
1972848	vxconfigd dumps core during upgradation of VxVM

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
1974393	Cluster hangs when the transaction client times out
1982178	vxdiskadm option "6" should not list available devices outside of source diskgroup
1982715	vxclustadm dumps core during memory re-allocation.
1992537	Memory leak in vxconfigd causing DiskGroup Agent to timeout
1992872	vxresize fails after DLE.
1993953	CVM Node unable to join in Sun Cluster environment due to wrong coordinator selection
1998447	Vxconfigd dumps core due to incorrect handling of signal
1999004	I/Os hang in VxVM on linked-based snapshot
2002703	Misleading message while opening the write protected device.
2009439	CVR: Primary cluster node panicked due to queue corruption
2010426	Tag setting and removal do not handle wrong enclosure name
2015577	VVR init scripts need to exit gracefully if VVR license not installed.
2016099	man pages get wrongly installed in /opt/opt/VRTS directory after installing VRTSjavm package
2016129	Tunable to disable OS event monitoring by vxesd
2019525	License not present message is wrongly displayed during system boot with SF5.1 and SFM2.1
2021737	vxdisk list shows HDS TrueCopy S-VOL read only devices in error state.
2025593	vxdg join hang/failure due to presence of non-allocator inforecords and when tagmeta=on
2027831	vxdg free not reporting free space correctly on CVM master. vxprint not printing DEVICE column for subdisks.
2029480	Diskgroup join failure renders source diskgroup into inconsistent state
2029735	System panic while trying to create snapshot
2034104	Unable to initialize a disk using vxdiskadm

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
2034564	I/Os hung in serialization after one of the disks which formed the raid5 volume was pulled out
2036929	Renaming a volume with link object attached causes inconsistencies in the disk group configuration
2038137	System panics if volrdmirbreakup() is called recursively. SUN Bug ID 6963215
2038735	Incorrect handling of duplicate objects resulting in node join failure and subsequent panic.
2040150	Existence of 32 or more keys per LUN leads to loss of SCSI3 PGR keys during cluster reconfiguration
2049952	In Japanese locale vxrootadm shows incorrect messages
2052203	Master vold restart can lead to DG disabled and abort of pending transactions.
2052459	CFS mount failed on slave node due to registration failure on one of the paths
2054201	'vxctl enable' triggers SCSI errors on EMC CLARiiON MirrorView read-only devices.
2055609	Allocation specifications not being propagated for DCO during a grow operation
2060785	Primary panics while creating primary rvg
2060974	vxrootadm sets wrong prtvtoc
2061066	vxisforeign command fails on internal cciss devices
2061758	Need documentation on list of test suites available to evaluate CDS code path and verification of the code path.
2063348	Improve/modify error message to indicate its thin_reclaim specific
2066111	dmp paths of unlabelled disks getting disabled upon listing of disks
2067038	Correction of EFI detection logic in DMP after fix provided by Sun/Oracle
2067473	SF 5.1 SP1 Beta - failure to register disk group with Sun Cluster. SUN Bug ID 6960757

**Table 1-7** Veritas Volume Manager fixed issues (*continued*)

Incident	Description
2070531	Campus cluster: Couldn't enable site consistency on a dcl volume, when trying to make the disk group and its volumes siteconsistent.
2075801	VVR: "vxnetd stop/start" panicked the system due to bad free memory
2076700	VVR: Primary panic due to NULL pointer dereference
2076818	VxVM: vxvm-startup2 hangs at bootup on some systems while running 'svcadm enable -s /network/iscsi/initiator'. SUN Bug IDs 6924834
2078115	dmpnode of a zpool device wrongly shows state as "auto:error"
2094685	Diskgroup corruption following an import of a cloned BCV image of a SRDF-R2 device
2097320	Events generated by dmp_update_status() are not notified to vxconfigd in all places.
2105722	VVR: I/O hang on Primary with link-breakoff snapshot
2108628	vxunroot to align the dump device with that of the remaining boot device
2112568	System panics while attaching back two Campus Cluster sites due to incorrect DCO offset calculation
2118003	5.1_sp1 vxlogger64 core dumps with "-help". SUN Bug ID 6977493
2122009	vxddladm list shows incorrect hba information after running vxconfigd -k
2126731	vxdisk -p list output is not consistent with previous versions
2131814	VVR: System panic due to corrupt sio in _VOLRPO_REMOVE

## Veritas Volume Manager: Issues fixed in 5.1 RP2

**Table 1-8** Veritas Volume Manager 5.1 RP2 fixed issues

Fixed issues	Description
1504466	VxVM: All partitions aren't created after failing original root disk and restoring from mirror.  Sun Bug ID: 6791545

**Table 1-8** Veritas Volume Manager 5.1 RP2 fixed issues (*continued*)

Fixed issues	Description
1897007	vxesd core dumps on startup when the system is connected to a switch which has more than 64 ports. Sun Bug ID: 6902146
1920894	vxcheckhbaapi can loop forever. Sun Bug ID: 6905587
1993953	CVM Node unable to join in Sun Cluster environment due to wrong coordinator selection. Sun Bug ID: 6935505
2021737	vxdisk list shows HDB TrueCopy S-VOL read only devices in error state. Sun Bug ID: 6953184
2112568	System panics while attaching back two Campus Cluster sites due to incorrect DCO offset calculation. Sun Bug ID: 6980990
1097258	vxconfigd hung when an array is disconnected.
1441406	'vxdisk -x list' displays wrong DGID.
1485075	DMP sending I/O on an unopened path causing I/O to hang.
1513385	VVR:Primary panic during autosync or dcm replay.
1662744	RVG offline hung due to I/Os pending in TCP layer.
1665094	Snapshot refresh causing the snapshot plex to be detached.
1781461	Prompt user in the early phase of encapsulation to run vxdiskunsetup within vxdiskadm when disk is sliced.
1829337	Array firmware reversal led to disk failure and offlined all VCS resources.
1831969	VxVM: ddl log files are created with world write permission.
1871447	Mirrored encapsulated disk panics on boot when the primary is removed & mpvio is enabled.
1874034	Race between modunload and an incoming IO leading to panic.
1880279	Evaluate the need for intelligence in vxattachd to clear stale keys on failover/shared dg's in CVM and non CVM environment.

**Table 1-8** Veritas Volume Manager 5.1 RP2 fixed issues (*continued*)

Fixed issues	Description
1882789	Enabling a path to the EMC lun in LDOM environment fails.
1899943	CPS based fencing disks used along with CPS servers does not have coordinator flag set.
1901847	ISCSI devices not visible to VxVM after boot since VxVM discovers devices before ISCSI device discovery.
1911546	Vxrecover hung with layered volumes.
1920761	I/O hang observed after connecting the storage back to master node in case of local detach policy.
1923906	CVM: Master should not initiate detaches while leaving the cluster due to complete storage failure.
1929074	vxbootsetup not processing volumes in an ordered manner.
1929083	Vxattachd fails to reattach site in absence of vxnotify events.
1932023	vxdiskadm option 'Allow multipathing of all disks on a controller by VxVM' fails due to script errors.
1933375	Tunable value of 'voliomem_chunk_size' is not aligned to page-size granularity.
1933477	Disk group creation on EFI disks succeeds but with error messages.
1933528	During Dynamic reconfiguration vxvm disk ends up in error state after replacing physical LUN.
1936611	vxconfigd core dump while splitting a diskgroup.
1938708	With EBN naming, root (un)encapsulation is not handling dump/swap device properly.
1942985	Improve locking mechanism while updating mediatype on vxvm objects.
1946936	CVM: IO hangs during master takeover waiting for a cache object to quiesce.
1946939	CVM: Panic during master takeover, when there are cache object I/Os being started on the new master.
1946941	vxsnap print shows incorrect year.
1952177	Machine panics after creating RVG.

**Table 1-8** Veritas Volume Manager 5.1 RP2 fixed issues (*continued*)

Fixed issues	Description
1956777	CVR: Cluster reconfiguration in primary site caused master node to panic due to queue corruption.
1960341	Toggling of naming scheme is not properly updating the daname in the vxvm records.
1972755	TP/ETERNUS:No reclaim seen with Stripe-Mirror volume.
1974393	Avoiding cluster hang when the transaction client timed out.
1982715	vxclustadm dumping core while memory re-allocation.
1983768	IO hung on linked volumes while carrying out third mirror breakoff operation.
1989662	/opt/VRTSsfmh/bin/vxlist causes panic.
1992537	Memory leak in vxconfigd causing DiskGroup Agent to timeout.
1992872	Vxresize fails after DLE.
1996162	Bootdg not reset after unencapsulation.
1998447	Vxconfigd dumped core due to incorrect handling of signal.
1999004	I/Os hang in VxVM on linked-based snapshot.
2006454	AxRT5.1P1: vxsnap prepare is displaying vague error message.
2010426	Tag setting and removal do not handle wrong enclosure name.
2011316	VVR: After rebooting 4 nodes and try recoveringRVGwill panic all the slave nodes.
2012016	Slave node panics while vxrecovery is in progress on master.
2015570	File System read failure seen on space optimized snapshot after cache recovery.
2015577	VVR init scripts need to exit gracefully if VVR license not installed.
2016129	DDL: Tunable to disable OS event monitoring by vxesd.
2019525	License not present message is wrongly displayed during system boot with SF5.1 and SFM2.1.
2029480	Diskgroup join failure renders source diskgroup into inconsistent state.

**Table 1-8** Veritas Volume Manager 5.1 RP2 fixed issues (*continued*)

Fixed issues	Description
2029735	System panic while trying to create snapshot.
2031462	Node idle events are generated every second for idle paths controlled by Third Party drivers.
2034104	Unable to initialize a disk using vxdiskadm.
2034564	I/Os hung in serialization after one of the disk which formed the raid5 volume was pulled out.
2036929	renaming a volume with link object attached causes inconsistencies in the disk group configuration.
2038735	Incorrect handling of duplicate objects resulting in node join failure and subsequent panic.
2040150	Existence of 32 or more keys per LUN leads to loss of SCSI3 PGR keys during cluster reconfiguration.
2049952	Vxrootadm shows incorrect messages in Japanese on VxVM5.1RP1 with L10N for Solaris.
2052459	CFS mount failed on slave node due to registration failure on one of the paths.
2053975	Snapback operation panicked the system.
2055609	Allocation specifications not being propagated for DCO during a grow operation.
2059046	FMR:TP: snap vol data gets corrupted if vxdisk reclaim is run while sync is in progress.
2060974	vxrootadm sets wrong prtvtoc on VxVM5.1RP1.
2061066	vxisforeign command fails on internal cciss devices.
2065669	After upgrading to 5.1, reinitializing the disk makes public region size smaller than the actual size.
2078111	When the IOs are large and need to be split, DRL for linked volumes cause I/Os to hang.
2113831	vxconfigd core dumps while including the previously excluded controller.
2126731	VxVM 5.1: vxdisk -p list output is not consistent with previous versions.

## Veritas Volume Manager: Issues fixed in 5.1 RP1

**Table 1-9** Veritas Volume Manager 5.1 RP1 fixed issues

Fixed issues	Description
1972852, 1972848	vxconfigd dumped core in dg_config_compare() while upgrading to 5.1.
1955693	VxVM 5.0MP3RP3 patch 122058-13 disables vxfsdlic service and prevents boot multi-user mode after jumpstart
1938484	EFI: Prevent multipathing don't work for EFI disk
1937841	VxVM: checkin the fmrshowmap utility
1915356	I/O stuck in vxvm caused cluster node panic
1935297	vxconfigd dumps core in get_prop()
1907796	Corrupted Blocks in Oracle after Dynamic LUN expansion and vxconfigd core dump
1901827	vxvg move failed silently and drops disks.
1899688	[VVR] Every I/O on smartsync enabled volume under VVR leaks memory
1889747	vxlustart customer is unable to do live upgrade with Solaris Zone on vxfs
1886007	vxconfigd lose license information, vxesd leaking File descriptors
1884070	When running iotest on volume, primary node runs out of memory
1881336	VVR: Primary Panic in vol_ru_replica_sent()
1872743	Layered volumes not startable due to duplicate rid in vxrecover global volume list.
1870049	Dump device changed to none after boot disk encapsulation
1860892	Cache Object corruption when replaying the CRECs during recovery
1857729	CVM master in the VVR Primary cluster panic when rebooting the slave during VVR testing
1850166	vxvm vxdisk error v-5-1-8643 device 0_bpcs001_fra: resize failed:
1846165	Data corruption seen on cdsdisks on Solaris-x86 in several customer cases
1840832	vxrootadm does not update the partition table while doing a grow operation

**Table 1-9** Veritas Volume Manager 5.1 RP1 fixed issues (*continued*)

Fixed issues	Description
1840673	After adding new luns one of the nodes in 3 node CFS cluster hangs
1835139	CERT : pnate test hang I/O greater than 200 seconds during the filer giveback
1834848	TP:Solaris:reclamation causes data corruption
1826088	After pulling out FC cables of local site array, plex became DETACHED/ACTIVE
1825516	Unable to initialize and use ramdisk for VxVM use
1825270	Need for dmp_revive_paths( in dmp reconfiguration/restore_demon code path.
1792795	supportability feature/messages for plex state change, DCO map clearance, usage of fast re-sync by vxplex
1766452	VVR: VRAS: AIX: vradmind dumps core during collection of memory stats.
1664952	Refreshing private region structures degrades performance during "vxdisk listtag" on a setup of more than 400 disks.
1528160	An ioctl interrupted with EINTR causes frequent vxconfigd exit()'s on 4.1MP4RP3
1479735	CVR: I/O hang on slave if master (logowner) crashes with DCM active.

## LLT, GAB, and I/O fencing fixed issues

[Table 1-10](#) lists the fixed issues for LLT, GAB, and I/O fencing.

**Table 1-10** LLT, GAB, and I/O fencing fixed issues

Incident	Description
1908938	[GAB] In a large cluster, cascaded lowest node failures result in GAB panic during sequence space recovery.
1840826	[GAB] Prevent 'gabconfig -c' while port 'a' is in the middle of iofence processing.
1861439 1849527	[LLT] Removing the LLT links from a single node in a four-node cluster causes other nodes to panic.

**Table 1-10** LLT, GAB, and I/O fencing fixed issues (*continued*)

Incident	Description
2066020	[LLT] The <code>dlpiping</code> utility exits with an error similar to " <code>dlpiping: send ECHO_REQ failed.</code> "
2005045	[LLT] The <code>hastart</code> command fails to start HAD on one of the nodes with message " <code>GabHandle::open failed errno = 16</code> " in <code>syslog</code> after HAD is stopped on all the nodes in the cluster simultaneously.
1859023	[LLT] The <code>lltconfig -T query</code> command displays a partially incorrect output
1846387 2084121	[Fencing] The <code>vxfenswap</code> and the <code>vxfentsthdw</code> utilities fail when <code>rsh</code> or <code>ssh</code> communication is not set to the same node.
1922413	[Fencing] The <code>vxfentsthdw</code> utility should detect storage arrays which interpret NULL keys as valid for registrations/reservations.
1847517	[Fencing] The <code>vxfenswap</code> utility has an incorrect usage message for <code>-n</code> option
1992560	[Fencing] The <code>vxfentsthdw</code> utility uses <code>scp</code> to communicate with the local host.
1512956	[Fencing] The <code>vxfenclearpre</code> utility displays error messages
2143933	[VxCPS] For a four-node cluster, the installer fails to configure server-based fencing which uses three CP servers as its coordination points. The process fails while registering the CP clients on the third CP server.
2097935	[VxCPS] Need strict host name matching in coordination point installer.
1886802	[VxCPS] The <code>hamsg</code> command does not load localized messages defined in the <code>VRTSvcsCPS.bmc</code> file.

## Storage Foundation for Databases (SFDB) tools fixed issues

This section describes the incidents that are fixed in Veritas Storage Foundation for Databases tools in this release.

**Table 1-11** Veritas Storage Foundation for Databases tools fixed issues

Incident	Description
1857357	Removing the <code>VRTSodm 5.1 SP1</code> package may leave <code>/dev/odm</code> mounted in non-global zones preventing the <code>odm</code> module from unloading

**Table 1-11** Veritas Storage Foundation for Databases tools fixed issues  
*(continued)*

Incident	Description
1873738	The dbed_vmchecksnap command may fail
1399393	Clone command fails on an Oracle RAC database
1736516	Clone command fails for instant checkpoint on Logical Standby database
1789290	dbed_vmclonedb -o recoverdb for offhost fails for Oracle 10gr2 and prior versions
1810711	Flashsnap reverse resync command fails on offhost flashsnap cloning

## Known issues

This section covers the known issues in this release.

See the corresponding Release Notes for a complete list of known issues related to that product.

See [“Documentation”](#) on page 84.

## Symantec VirtualStore

This section describes the known issues in this release of Symantec VirtualStore (SVS).

### **Virtual machines created by the FileSnap wizard might not boot correctly if during the FileSnap process the VirtualStore cluster node, the ESX Server, or the vCenter Server reboots (2164664, 2374229)**

In some cases when you clone using FileSnap, and one of the following servers crashes or reboots while the clone process is in progress, the clones might not get created correctly:

- SVS nodes
- ESX host on which the clones are being created
- vCenter Server

Even if the clones appear in the vCenter inventory as created, the clones GuestOS might not be able to boot.

### Workaround

Delete all of the clones that were created when the servers crashed or were rebooted, and redo the FileSnap operation.

## Issues related to installation

This section describes the known issues during installation and upgrade.

### Installation precheck can cause the installer to throw a license package warning (2320279)

If the installation precheck is attempted after another task completes (for example checking the description or requirements) the installer throws the license package warning. The warning reads:

```
VRTSvlic package not installed on system_name
```

#### Workaround:

The warning is due to a software error and can be safely ignored.

### While configuring authentication passwords through the Veritas product installer, the double quote character is not accepted (1245237)

The Veritas product installer prompts you to configure authentication passwords when you configure Veritas Cluster Server (VCS) as a secure cluster, or when you configure Symantec Product Authentication Service (AT) in authentication broker (AB) mode. If you use the Veritas product installer to configure authentication passwords, the double quote character (") is not accepted. Even though this special character is accepted by authentication, the installer does not correctly pass the characters through to the nodes.

**Workaround:** There is no workaround for this issue. When entering authentication passwords, do not use the double quote character (").

### Incorrect version listed after upgrading (2121881)

When you upgrade from SFCFS 5.1 RP2 to SFCFS 5.1 SP1, the previous version is incorrectly listed as 5.1.001.000

### Incorrect error messages: error: failed to stat, etc. (2120567)

During installation, you may receive errors such as, "error: failed to stat /net: No such file or directory." Ignore this message. You are most likely to see this message

on a node that has a mount record of `/net/x.x.x.x`. The `/net` directory, however, is unavailable at the time of installation.

## EULA changes (2161557)

The locations for all EULAs have changed.

The English EULAs now appear in `/product_dir/EULA/en/product_eula.pdf`

The EULAs for Japanese and Chinese now appear in those language in the following locations:

The Japanese EULAs appear in `/product_dir/EULA/ja/product_eula.pdf`

The Chinese EULAs appear in `/product_dir/EULA/zh/product_eula.pdf`

## Manual installation or uninstall of kernel component packages and patches require boot archive updates

After manually installing and uninstalling the packages or the patches corresponding to kernel components such as LLT, GAB, and VXFEN, make sure to update the boot archive. [2159242]

- In case of primary boot environment, run the following command:

```
# bootadm update-archive
```

- In case of an alternate root environment, run the following command:

```
# bootadm update-archive -R [altrootpath]
```

See the `bootadm` manual page for Solaris.

## Upgrade or uninstallation of Storage Foundation Cluster File System HA may encounter module unload failures (2159652)

When you upgrade or uninstall Storage Foundation Cluster File System HA, some modules may fail to unload with error messages similar to the following messages:

```
fdd failed to stop on node_name  
vxfs failed to stop on node_name
```

The issue may be observed on any one or all the nodes in the sub-cluster.

**Workaround:** After the upgrade or uninstallation completes, follow the instructions provided by the installer to resolve the issue.

## During product migration the installer overestimates disk space use (2088827)

The installer displays the space that all the product packages and patches needs. During migration some packages are already installed and during migration some packages are removed. This releases disk space. The installer then claims more space than it actually needs.

**Workaround:** Run the installer with `-nospacecheck` option if the disk space is less than that installer claims but more than actually required.

## The VRTSacclib package is deprecated (2032052)

The VRTSacclib package is deprecated. For installation, uninstallation, and upgrades, note the following:

- Fresh installs: Do not install VRTSacclib.
- Upgrade: Uninstall old VRTSacclib and install new VRTSacclib.
- Uninstall: Ignore VRTSacclib.

## Installed 5.0 MP3 without configuration, then upgrade to 5.1 SP1, installer can not continue (2016346)

If you install 5.0MP3 without configuration, you cannot upgrade to 5.1SP1. This upgrade path is not supported.

**Workaround:** Uninstall 5.0 MP3, and then install 5.1 SP1.

## Live Upgrade may fail on Solaris 9 if packages and patches are not current (2052544)

Live Upgrade may fail on a Solaris 9 host if a VxFS file system is in `/etc/vfstab`.

**Workaround:** On the Solaris 9 host, install the Live Upgrade packages `SUNWlucfg`, `SUNWluu`, and `SUNWlur` from a Solaris 10 image. After you install the packages, install the latest Live Upgrade patch.

For more information on required packages and patches, visit the following site and search on "Live Upgrade requirements."

<http://wikis.sun.com>

## During Live Upgrade, installer displays incorrect message about VRTSaa package removal

If you use Live Upgrade to upgrade SFCFS 5.0MP1 to SFCFS 5.1 SP1, the installer may display a message that the VRTSaa package failed to uninstall.

### Workaround:

Verify whether the VRTSaa package was removed correctly from the alternate boot disk.

```
# pkginfo -R alternate_root_path -l VRTSaa
```

For example, run the following command

```
# pkginfo -R /altroot.5.10 -l VRTSaa
```

If the VRTSaa package was removed, you can ignore this error.

If the VRTSaa package was not removed, remove the package manually:

```
# pkgrm -R alternate_root_path -l VRTSaa
```

For example, run the following command

```
# pkgrm -R /altroot.5.10 -l VRTSaa
```

## SFCFSHA upgrade shows partial upgrade warning

When you install 5.1 SFCFSHA and try to upgrade to SFCFSHA 5.1SP1 using the `./installsfcfs` command, you may receive a partial upgrade error message.

**Workaround:** Use the `./installer -upgrade` command instead of the `./installsfcfs` command.

## Installer is unable to split a cluster that is registered with one or more CP servers

Splitting a cluster that uses server-based fencing is currently not supported.  
[2110148]

You can split a cluster into two and reconfigure Storage Foundation Cluster File System HA on the two clusters using the installer. For example, you can split a cluster *clus1* into *clus1A* and *clus1B*.

However, if you use the installer to reconfigure the Storage Foundation Cluster File System HA, the installer retains the same cluster UUID of *clus1* in both *clus1A* and *clus1B*. If both *clus1A* and *clus1B* use the same CP servers for I/O fencing, then the CP server allows registration only from the cluster that attempts to register first. It rejects the registration from the cluster that attempts next. Thus, the installer reports failure during the reconfiguration of the cluster that uses server-based fencing.

Workaround: None.

## Veritas Storage Foundation Cluster File System known issues

This section describes the known issues in this release of Veritas Storage Foundation Cluster File System (SFCFS).

### Miscalculated file set usage (2123429)

When file set quotas are enabled, it may be possible for VxFS to get into a state where it thinks a very large number of blocks are allocated to checkpoints. This issue can be seen using the `fscckptadm` command:

```
# fscckptadm getquotalimit /mnt1
Filesystem  hardlimit  softlimit  usage  action_flag
/mnt1      10000     10000     18446744073709551614
```

This could cause writes to checkpoints to fail. It could also trigger the removal of removable checkpoints.

#### Workaround

If this occurs, disabling and re-enabling file set quotas causes VxFS to recalculate the number of blocks used by checkpoints:

```
# fscckptadm quotaoff /mnt1
# fscckptadm quotaon /mnt1
# fscckptadm getquotalimit /mnt1
Filesystem  hardlimit  softlimit  usage  action_flag
/mnt1      10000     10000     99
```

### The `cfsmntadm add` command may fail with no errors (2169538)

The `cfsmntadm add` command fails, if one host name is a substring of another host name in the list.

---

**Note:** VOM is affected by this issue when adding a CFS mount to a cluster that has systems with host names that are substrings of each other.

---

#### Workaround

Run the `cfsmntadm` command with the `"all="` option on one of the nodes in the CFS cluster to add the cfsmounts to all nodes.

## Multiple CFSmount resources are in a single service group they may not all come online after a reboot (2164670)

In some cases when multiple CFSmount resources are in a single service group they may not all come online after a reboot. You will need to manually bring them online after a reboot.

### Workaround

Create a resource dependency between the various CFSmount resources.

## installer –makeresponsefile detects the wrong product (2044525)

If you generate a response file to upgrade SFCFS or SFCFSHA using the `./installer -makeresponsefile` command, and then choose `G (Upgrade a Product)` option, the installer detects it as SFCFS RAC.

You can safely ignore that the installer detects it as SFCFS RAC.

## CVMVolDg agent may fail to deport CVM disk group

The CVM disk group is deported based on the order in which the CVMVolDg resources are taken offline. If the CVMVolDg resources in the disk group contain a mixed setting of 1 and 0 for the `CVMDeportOnOffline` attribute, the disk group is deported only if the attribute value is 1 for the last CVMVolDg resource taken offline. If the attribute value is 0 for the last CVMVolDg resource taken offline, the disk group is not deported.

**Workaround:** If multiple CVMVolDg resources are configured for a shared disk group, set the value of the `CVMDeportOnOffline` attribute to 1 for all of the resources.

## NFS issues with VxFS Storage Checkpoint (1974020)

NFS clients mounting VxFS Storage Checkpoints that are NFS-exported by SFCFS cluster nodes using a Virtual IP may receive the following error message upon Virtual IP failover:

```
Stale NFS file handle
```

This is a result of major numbers of VxFS Storage Checkpoints not necessarily being the same on all SFCFS cluster nodes.

**Workaround:** There is no workaround at this time.

## Application group attempts to come online on primary site before fire drill service group goes offline on the secondary site

The application service group comes online on the primary site while the fire drill service group attempts to go offline at the same time, causing the application group to fault. (2107386)

**Workaround:** Ensure that the fire drill service group is completely offline on the secondary site before the application service group comes online on the primary site.

## Adding a node fails when using the Web-based installer (2173672)

When you add a node using the Web-based installer you cannot proceed beyond starting GAB on new node if the cluster uses secure CPS.

## Veritas Volume Manager known issues

The following are the Veritas Volume Manager known issues for this release.

### Node join can lead to hang if an upgrade of the cluster protocol version is in progress (2103567)

If you attempt to join a node to the cluster while Cluster Volume Manager (CVM) is upgrading the cluster protocol version, the system may hang. This issue occurs if the node is attempting to join the cluster after you issue the `vxctl upgrade` command to upgrade the CVM cluster.

#### **Work-around:**

Avoid joining a new node to the cluster until the CVM cluster upgrade is completed.

### Issues when removing the VxVM 5.1SP1 patch

If you back out the VxVM 5.1SP1 patch, note the following issues:

- VxVM 5.1SP1 introduces a new disk group version. If you upgrade disk groups or create new disk groups with the new disk group version, VxVM 5.1 cannot access these disk groups if you back out the 5.1SP1 patch.
- When you back out the VxVM 5.1SP1 patch, VxVM recreates the `/etc/vx/volboot` file with the default contents. If the existing VxVM 5.1 configuration had a modified `/etc/vx/volboot` file, these modifications are lost when you back out the patch.

- The VxVM 5.1SP1 patch changes certain files in the `/etc/vx` directory, such as the `dmppolicy.info` file. After backing out the patch, the VxVM 5.1 may have issues in parsing these files.

**Workaround:**

Do not upgrade disk groups to version 160 until you are sure you do not need to back out the patch.

### **Veritas Volume Manager (VxVM) might report false serial split brain under certain scenarios (1834513)**

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

- One or more arrays that provide the shared storage for the cluster are being powered off
- At the same time when the arrays are being powered off, an operation that requires an internal transaction is initiated (such as VxVM configuration commands)

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

**Workaround:**

**To recover from this situation**

- 1 Retrieve the disk media identifier (`dm_id`) from the configuration copy:

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

The `dm_id` is also the serial split brain id (`ssbid`)

- 2 Use the `dm_id` in the following command to recover from the situation:

```
# /etc/vx/diag.d/vxprivutil set device-path ssbid=dm_id
```

### **vxdisk -f init can overwrite some of the public region contents (1190117)**

If a disk was initialized by a previous VxVM version or defined with a smaller private region than the new default of 32 MB, then the public region data will be overridden.

**Workaround:**

Specify explicitly the length of `privoffset`, `puboffset`, `publen`, and `privlen` while initializing the disk.

## The relayout operation fails when there are too many disks in the disk group. (2015135)

The attempted relayout operation on a disk group containing approximately more than 300 LUNs or disks may fail with the following error:

```
Cannot setup space
```

## Enabling tagmeta=on on a disk group causes delay in disk group split/join operations (2105547)

When `vxldg set tagmeta=on` is run on a diskgroup, multiple iterations of disk group split/join operations on the disk group causes huge delay in split/join operations.

## Expanding a LUN to a size greater than 1 TB fails to show correct expanded size (2123677)

This issue occurs when you perform a Dynamic LUN Expansion for a LUN that is smaller than 1 TB and increase the size to greater than 1 Tb. After the expansion, Veritas Volume Manager (VxVM) fails ongoing I/O, and the public region size is reset to original size. After you run the `vxdisk scandisks` command, VxVM does not show the correct expanded size of the LUN. The issue is due to underlying Solaris issues. Refer to Sun Bug Id 6929449 and Sun Bug Id 6912703.

**Workaround:** There is no workaround for this issue.

## Co-existence check might fail for CDS disks

In Veritas Volume Manager (VxVM) 5.1 SP1, VxVM introduces the ability to support Cross-platform Data Sharing (CDS) on disks larger than 1 TB. VxVM uses the SUN VTOC Table to initialize the `cdsdisk` layout on devices up to 1 TB. VxVM uses the GUID Partition Table (GPT) to initialize the `cdsdisk` layout on devices larger than 1 TB.

In layouts where SUN VTOC Table is used for initialization (typically, when the disk size has never exceeded 1 TB), the AIX co-existence label can be found at sector 7 and VxVM ID block (also known as HP co-existence label) can be found at sector 16.

In layouts where GPT is used for initialization (typically, when the disk size is currently greater than or had earlier exceeded 1 TB), the AIX co-existence label is placed at sector 55 and VxVM ID block (also known as HP co-existence label) is placed at sector 64. Consequently, AIX utilities would not be able to recognize a `cdsdisk` initialized using GPT to be a valid VxVM disk. Symantec is working with IBM and third party OEMs to enhance the co-existence check in these utilities.

**Workaround:** There is no workaround for this issue.

## Removing a volume from a thin LUN in an alternate boot disk group triggers disk reclamation (2080609)

If you remove a volume from an alternate boot disk group on a thin LUN, this operation triggers thin reclamation, which may remove information required for the disk to be bootable. This issue does not affect the current boot disk, since VxVM avoids performing a reclaim on disks under the bootdg.

**Workaround:** If you remove a volume or plex from an alternate boot disk group with the `vxedit` command, specify the `-n` option to avoid triggering thin reclamation. For example:

```
# vxedit -g diskgroup -rfn rm volumename
```

## I/O fails on some paths after array connectivity is restored, due to high restore daemon interval (2091619)

If a path loses connectivity to the array, the path is marked with the `NODE_SUSPECT` flag. After the connectivity is restored, the restore daemon detects that the path is restored when the restore daemon probes the paths. The restore daemon clears the `NODE_SUSPECT` flag and makes the path available for I/O. The restore daemon probes the paths at the interval set with the tunable parameter `dmp_restore_interval`. If you set the `dmp_restore_interval` parameter to a high value, the paths are not available for I/O until the next interval.

## Suppressing the primary path of an encapsulated SAN boot disk from Veritas Volume Manager causes the system reboot to fail (1933631)

If you suppress the primary path of an array from VxVM control and then reboot the system, the system boot fails.

If you have an encapsulated SAN boot device with multiple primary paths, the issue occurs when you suppress the first primary path. When you configure a SAN boot device, the primary path is set as a boot device. In general, the first path of the SAN boot device corresponds to the first configured path during SAN boot. Even if another primary path is configured as a boot device, suppressing the first device from VxVM causes the boot to fail.

### **Workaround:**

When the boot device is suppressed from VxVM, change the OS boot device sequencing accordingly.

For Solaris SPARC system, use the `eeprom boot-device` command to set the boot device sequencing.

For Solaris x86-64 systems, use the `eeeprom bootpath` command to set the boot device sequencing.

## Node is not able to join the cluster with high I/O load on the array with Veritas Cluster Server (2124595)

When the array has a high I/O load, the DMP database exchange between master node and joining node takes a longer time. This situation results in VCS resource online timeout, and then VCS stops the join operation.

### Workaround:

Increase the online timeout value for the HA resource to 600 seconds. The default value is 300 seconds.

### To set the OnlineTimeout attribute for the HA resource type CVMCluster

- 1 Make the VCS configuration to be read/write:

```
# haconf -makerw
```

- 2 Change the OnlineTimeout attribute value of CVMCluster:

```
# hatype -modify CVMCluster OnlineTimeout 600
```

- 3 Display the current value of OnlineTimeout attribute of CVMCluster:

```
# hatype -display CVMCluster -attribute OnlineTimeout
```

- 4 Save and close the VCS configuration:

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

## Changes in enclosure attributes are not persistent after an upgrade to VxVM 5.1 SP1 (2082414)

The Veritas Volume Manager (VxVM) 5.1 SP1 includes several array names that differ from the array names in previous releases. Therefore, if you upgrade from a previous release to VxVM 5.1 SP1, changes in the enclosure attributes may not remain persistent. Any enclosure attribute set for these arrays may be reset to the default value after an upgrade to VxVM 5.1 SP1. Manually reconfigure the enclosure attributes to resolve the issue.

[Table 1-12](#) shows the Hitachi arrays that have new array names.

**Table 1-12** Hitachi arrays with new array names

Previous name	New name
TagmaStore-USP	Hitachi_USP
TagmaStore-NSC	Hitachi_NSC
TagmaStoreUSPV	Hitachi_USP-V
TagmaStoreUSPVM	Hitachi_USP-VM
<New Addition>	Hitachi_R700
Hitachi AMS2300 Series arrays	New array names are based on the Model Number 8x. For example, AMS_100, AMS_2100, AMS_2300, AMS_2500, etc.

In addition, the Array Support Library (ASL) for the enclosures XIV and 3PAR now converts the cabinet serial number that is reported from Hex to Decimal, to correspond with the value shown on the GUI. The persistence of the enclosure name is achieved with the `/etc/vx/array.info` file, which stores the mapping between cabinet serial number and array name. Because the cabinet serial number has changed, any enclosure attribute set for these arrays may be reset to the default value after an upgrade to VxVM 5.1 SP1. Manually reconfigure the enclosure attributes to resolve the issue.

The cabinet serial numbers are changed for the following enclosures:

- IBM XIV Series arrays
- 3PAR arrays

## Veritas File System known issues

This section describes the known issues in this release of Veritas File System (VxFS).

### VxFS read ahead can cause stalled I/O on all write operations (1965647)

Changing the `read_ahead` parameter can lead to frozen I/O. Under heavy load, the system can take several minutes to recover from this state.

**Workaround:** There is no workaround for this issue.

## Shrinking a file system that is larger than 1 TB takes a long time (2097673)

Shrinking a file system shrink via either the `fsadm` command or `vxresize` command can take a long time to complete in some cases, such as if the shrink size is large and some large extent of a file is overlapping with the area to be shrunk.

**Workaround:** One possible workaround is to use the `vxtunefs` command and set `write_pref_io` and `write_nstream` to high values, such that `write_pref_io` multiplied by `write_nstream` is around 8 MB.

## Storage Checkpoints can exceed the quota limit (2102201)

Under some circumstances, Storage Checkpoints can exceed the quota limit set by the `fsckptadm setquotalimit` command. This issue can arise if all of the following conditions are met:

- The Storage Checkpoint quota has been enabled.
- The Storage Checkpoint quota is not exceeded.
- A file content modification operation, including removing a file, needs to push some or all blocks of the file to the Storage Checkpoint.
- Number of blocks that need to be pushed to the Storage Checkpoint is enough to exceed Storage Checkpoint quota hard limit.

**Workaround:** There is no workaround for this issue.

## vxfsconvert can only convert file systems that are less than 1 TB (2108929)

The `vxfsconvert` command can only convert file systems that are less than 1 TB. If the file system is greater than 1 TB, the `vxfsconvert` command fails with the "Out of Buffer cache" error.

## Running fsppadm enforce twice results in the "Too many open files" error (2118911)

If you run the `fsppadm enforce` command twice, with the second instantiation running before the first instantiation completes, one of the instantiations displays the "Too many open files" error. This error only displays if the maximum open file limit on the system is too low.

**Workaround:** Set the maximum open file limit with the `ulimit` command to higher than the current limit.

## Truncate operation of a file with a shared extent in the presence of a Storage Checkpoint containing FileSnaps results in an error (2149659)

This issue occurs when Storage Checkpoints are created in the presence of FileSnaps or space optimized copies, and one of the following conditions is also true:

- In certain cases, if a FileSnap is truncated in the presence of a Storage Checkpoint, the `i_nblocks` field of the inode, which tracks the total number of blocks used by the file, can be miscalculated, resulting in inode being marked bad on the disk.
- In certain cases, when more than one FileSnap is truncated simultaneously in the presence of a Storage Checkpoint, the file system can end up in a deadlock state.

This issue causes the following error to display:

```
f:xted_validate_cuttran:10 or f:vx_te_mklbtran:1b
```

**Workaround:** In the first case, run a full `fsck` to correct the inode. In the second case, restart the node that is mounting the file system that has this deadlock.

## When online migration is in progress, `df` command with no mount point or device argument fails with error 1 (2162822)

When online migration is in progress, the `df` command with no mount point or device argument fails with error 1.

The `df` command also gives an error for every file system undergoing migration. The error is similar to the following example:

```
df: cannot statvfs /mntpt/lost+found/file_system:  
No such file or directory
```

**Workaround:** To avoid the error, specify a mount point or device.

## Tunable not enabling the lazy copy-on-write optimization for FileSnaps (2164568)

The lazy copy-on-write tunable does not enable the lazy copy-on-write optimization for FileSnaps.

**Workaround:** There is no workaround for this issue.

## **vxfilesnap fails to create the snapshot file when invoked with the following parameters: vxfilesnap source\_file target\_dir (2164744)**

The `vxfilesnap` command fails to create the snapshot file when invoked with the following parameters:

```
# vxfilesnap source_file target_dir
```

Invoking the `vxfilesnap` command in this manner is supposed to create the snapshot with the same filename as the source file inside of the target directory.

**Workaround:** You must specify the source file name along with the target directory, as follows:

```
# vxfilesnap source_file target_dir/source_file
```

## **cfsmount with the seconly option fails on Solaris 10 SPARC (2104499)**

On Solaris 10 SPARC, the `cfsmount` command fails if you specify the `seconly` option.

**Workaround:** There is no workaround for this issue.

## **Panic due to null pointer de-reference in vx\_unlockmap() (2059611)**

A null pointer dereference in the `vx_unlockmap()` call can cause a panic. A fix for this issue will be released in a future patch.

**Workaround:** There is no workaround for this issue.

## **Installing the VRTSvxfs 5.1 RP2 package on non-global zones can fail (2086894)**

Installing the VRTSvxfs 5.1 RP2 patch on non-global zones can fail with the following error messages:

```
package VRTSvxfs failed to install - interrupted:
pkgadd: ERROR: duplicate pathname zone_path/root/etc/fs/vxfs/qioadmin
pkgadd: ERROR: duplicate pathname zone_path/root/kernel/drv/vxportal.conf
pkgadd: ERROR: duplicate pathname zone_path/root/etc/vx/cdslimitstab
pkgadd: ERROR: duplicate pathname
    zone_path/root/opt/VRTSvxfs/etc/access_age_based.xml
pkgadd: ERROR: duplicate pathname
```

```
zone_path/root/opt/VRTSvxfs/etc/access_age_based_2tier.xml  
...
```

**Workaround:** The following procedure installs the VRTSvxfs 5.1 RP2 package on a non-global zone.

#### To install VRTSvxfs 5.1 RP2 on a non-global zone

- 1 Remove the VRTSvxfs 5.1 RP1 package.
- 2 Reinstall the VRTSvxfs 5.1 package.
- 3 Install the VRTSvxfs 5.1 RP2 package.

### Possible error during an upgrade and when there is a local zone located on a VxFS file system(1675714)

During an upgrade and when there is local zone located on VxFS, you may receive an error message similar to the following:

```
Storage Foundation Uninstall did not complete successfully  
VRTSvxvm package failed to uninstall on pilotv240-1
```

**Workaround:** You must reboot after the upgrade completes.

### Possible write performance degradation with VxFS local mounts (1837394)

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

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

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

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

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

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

#### To restore the benefits of the higher tunable value

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

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

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

## Veritas Volume Replicator known issues

This section describes the known issues in this release of Veritas Volume Replicator (VVR).

## SFCFS 5.0MP3 Rolling Patch 2 required for replication between 5.0 MP3 and 5.1 SP1 (1800600)

In order to replicate between Primary sites running SFCFS 5.0 MP3 and Secondary sites running SFCFS 5.1 SP1, or vice versa, you must install the SFCFS 5.0MP3 Rolling Patch 2 on the nodes using 5.0MP3. This patch resolves several outstanding issues for replicating between versions.

## In an IPv6-only environment RVG, data volumes or SRL names cannot contain a colon

Issue: After upgrading VVR to an IPv6-only environment in 5.1 release, `vradmin` commands may not work when a colon is specified in the RVG, data volume(s) and/or SRL name. It is also possible that after upgrading VVR to an IPv6-only environment, `vradmin createpri` may dump core when provided with RVG, volume and/or SRL names containing a colon in it.

**Workaround:** Make sure that colons are not specified in the volume, SRL and RVG names in the VVR configuration

## `vradmin` commands might fail on non-logowner node after logowner change (1810827)

When VVR is used for replicating shared disk groups in an SFCFS or SFRAC environment consisting of three or more nodes, a logowner change event might, in rare instances, render `vradmin` commands unusable on some or all of the cluster nodes. In such instances, the following message appears in the "Config Errors:" section of the output of the `vradmin repstatus` and `vradmin printrvg` commands:

```
vradmind not reachable on cluster peer
```

In addition, all other `vradmin` commands (except `vradmin printvol`) fail with the error:

```
"VxVM VVR vradmin ERROR V-5-52-488 RDS has configuration error related to the master and logowner."
```

This is due to a defect in the internal communication sub-system, which will be resolved in a later release.

**Workaround:** Restart `vradmind` on all the cluster nodes using the following commands:

```
# /etc/init.d/vras-vradmind.sh stop
# /etc/init.d/vras-vradmind.sh start
```

## While vradmin changeip is running, vradmind may temporarily lose heart beats (2162625)

This issue occurs when you use the `vradmin changeip` command to change the host name or IP address set in the Primary and Secondary RLINKs. While the `vradmin changeip` command runs, `vradmind` may temporarily lose heart beats, and the command terminates with an error message.

### Workaround:

#### To resolve this issue

- 1 Depending on the application I/O workload, uncomment and increase the value of the `IPM_HEARTBEAT_TIMEOUT` variable in the `/etc/vx/vras/vras_env` on all the hosts of the RDS to a higher value. The following example increases the timeout value to 120 seconds.

```
export IPM_HEARTBEAT_TIMEOUT
IPM_HEARTBEAT_TIMEOUT=120
```

- 2 Restart `vradmind` to put the new `IPM_HEARTBEAT_TIMEOUT` value into affect. Enter the following:

```
# /etc/init.d/vras-vradmind.sh stop
# /etc/init.d/vras-vradmind.sh start
```

## vradmin syncvol command compatibility with IPv6 addresses (2075307)

The `vradmin syncvol` command does not work with the compressed form of IPv6 addresses. In IPv6 environments, if you run the `vradmin syncvol` command and identify the target host using compressed form of the IPv6 address, the command fails with following error message:

```
# vradmin -s -full syncvol vol1 fe80::221:5eff:fe49:ad10:dg1:vol1
VxVM VVR vradmin ERROR V-5-52-420 Incorrect format for syncvol.
```

Also, if you run the `vradmin addsec` command and you specify the Secondary host using the compressed IPv6 address, the `vradmin syncvol` command also fails – even if you specify the target as `hostname`.

**Workaround:** When you use the `vradmin addsec` and `vradmin syncvol` commands, do not specify compressed IPv6 addresses; instead, use hostnames.

## **RVGPrimary agent operation to start replication between the original Primary and the bunker fails during failback (2054804)**

The RVGPrimary agent initiated operation to start replication between the original Primary and the bunker fails during failback – when migrating back to the original Primary after disaster recovery – with the error message:

```
VxVM VVR vxrlink ERROR V-5-1-5282 Error getting information from remote host. Internal Error.
```

The issue applies to global clustering with a bunker configuration, where the bunker replication is configured using storage protocol. It occurs when the Primary comes back even before the bunker disk group is imported on the bunker host to initialize the bunker replay by the RVGPrimary agent in the Secondary cluster.

### **Workaround:**

#### **To resolve this issue**

- 1 Before failback, make sure that bunker replay is either completed or aborted.
- 2 After failback, deport and import the bunker disk group on the original Primary.
- 3 Try the start replication operation from outside of VCS control.

## **Bunker replay did not occur when the Application Service Group was configured on some of the systems in the Primary cluster, and ClusterFailoverPolicy is set to "AUTO" (2047724)**

The time that it takes for a global cluster to fail over an application service group can sometimes be smaller than the time that it takes for VVR to detect the configuration change associated with the primary fault. This can occur in a bunkered, globally clustered configuration when the value of the `ClusterFailoverPolicy` attribute is `Auto` and the `AppGroup` is configured on a subset of nodes of the primary cluster.

This causes the RVGPrimary online at the failover site to fail. The following messages appear in the VCS engine log:

```
RVGPrimary:RVGPrimary:online:Diskgroup bunkerdname could not be imported on bunker host hostname. Operation failed with error 256 and message VxVM VVR vradm ERROR V-5-52-901 NETWORK ERROR: Remote server unreachable... Timestamp VCS ERROR V-16-2-13066 (hostname) Agent is calling clean for resource(RVGPrimary) because the resource is not up even after online completed.
```

### **Workaround:**

### To resolve this issue

- ◆ When the configuration includes a bunker node, set the value of the `OnlineRetryLimit` attribute of the `RVGPrimary` resource to a non-zero value.

## Interrupting the `vradm` `syncvol` command may leave volumes open (2063307)

Interrupting the `vradm syncvol` command may leave volumes on the Secondary site in an open state.

**Workaround:** On the Secondary site, restart the `in.vxrsyncd` daemon. Enter the following:

```
# /etc/init.d/vxrsyncd.sh stop
# /etc/init.d/vxrsyncd.sh start
```

## The `RVGPrimary` agent may fail to bring the application service group online on the new Primary site because of a previous primary-elect operation not being run or not completing successfully (2043831)

In a primary-elect configuration, the `RVGPrimary` agent may fail to bring the application service groups online on the new Primary site, due to the existence of previously-created instant snapshots. This may happen if you do not run the `ElectPrimary` command to elect the new Primary or if the previous `ElectPrimary` command did not complete successfully.

**Workaround:** Destroy the instant snapshots manually using the `vxrvg -g dg -P snap_prefix snapdestroy rvg` command. Clear the application service group and bring it back online manually.

## A snapshot volume created on the Secondary, containing a VxFS file system may not mount in read-write mode and performing a read-write mount of the VxFS file systems on the new Primary after a global clustering site failover may fail (1558257)

### Issue 1:

When the `vradm ibc` command is used to take a snapshot of a replicated data volume containing a VxFS file system on the Secondary, mounting the snapshot volume in read-write mode may fail with the following error:

```
UX:vxfs mount: ERROR: V-3-21268: /dev/vx/dsk/dg/snapshot_volume  
is corrupted. needs checking
```

This happens because the file system may not be quiesced before running the `vradm in ibc` command and therefore, the snapshot volume containing the file system may not be fully consistent.

**Issue 2:**

After a global clustering site failover, mounting a replicated data volume containing a VxFS file system on the new Primary site in read-write mode may fail with the following error:

```
UX:vxfs mount: ERROR: V-3-21268: /dev/vx/dsk/dg/data_volume  
is corrupted. needs checking
```

This usually happens because the file system was not quiesced on the original Primary site prior to the global clustering site failover and therefore, the file systems on the new Primary site may not be fully consistent.

**Workaround:** The following workarounds resolve these issues.

For issue 1, run the `fsck` command on the snapshot volume on the Secondary, to restore the consistency of the file system residing on the snapshot.

For example:

```
# fsck -F vxfs /dev/vx/dsk/dg/snapshot_volume
```

For issue 2, run the `fsck` command on the replicated data volumes on the new Primary site, to restore the consistency of the file system residing on the data volume.

For example:

```
# fsck -F vxfs /dev/vx/dsk/dg/data_volume
```

**If using VEA to create a replicated data set fails, messages display corrupt strings in the Japanese locale (1726499, 1377599)**

When using VEA to create a replicated data set, because the volumes do not have a DCM log on all nodes, the message window displays corrupt strings and unlocalized error messages.

**Workaround:** There is no workaround for this issue.

## **vxassist layout removes the DCM (2162522)**

If you perform a layout that adds a column to a striped volume that has a DCM, the DCM is removed. There is no message indicating that this has happened. To replace the DCM, enter the following:

```
#vxassist -g diskgroup addlog vol logtype=dcm
```

## **vxassist and vxresize operations do not work with layered volumes that are associated to an RVG (2162579)**

This issue occurs when you try a resize operation on a volume that is associated to an RVG and has a striped-mirror layout.

### **Workaround:**

#### **To resize layered volumes that are associated to an RVG**

- 1 Pause or stop the applications.
- 2 Wait for the RLINKs to be up to date. Enter the following:  

```
# vxrlink -g diskgroup status rlink
```
- 3 Stop the affected RVG. Enter the following:  

```
# vxrvrg -g diskgroup stop rvrg
```
- 4 Disassociate the volumes from the RVG. Enter the following:  

```
# vxvol -g diskgroup dis vol
```
- 5 Resize the volumes. In this example, the volume is increased to 10 GB. Enter the following:  

```
# vxassist -g diskgroup growto vol 10G
```
- 6 Associate the data volumes to the RVG. Enter the following:  

```
# vxvol -g diskgroup assoc rvrg vol
```
- 7 Start the RVG. Enter the following:  

```
# vxrvrg -g diskgroup start rvrg
```
- 8 Resume or start the applications.

## **vradmin functionality may not work after a master switch operation (2163712)**

In certain situations, if you switch the master role, `vradmin` functionality may not work. The following message displays:

```
VxVM VVR vxrlink ERROR V-5-1-15861 Command is not supported for command shipping. Operation must be executed on master
```

### **Workaround:**

To restore `vradmin` functionality after a master switch operation

- 1 Restart `vradmind` on all cluster nodes. Enter the following:

```
# /etc/init.d/vras-vradmind.sh stop  
# /etc/init.d/vras-vradmind.sh start
```

- 2 Re-enter the command that failed.

## **Cannot relayout data volumes in an RVG from concat to striped-mirror (2162537)**

This issue occurs when you try a relayout operation on a data volume which is associated to an RVG, and the target layout is a striped-mirror.

### **Workaround:**

To relayout a data volume in an RVG from concat to striped-mirror

- 1 Pause or stop the applications.
- 2 Wait for the RLINKs to be up to date. Enter the following:

```
# vxrlink -g diskgroup status rlink
```

- 3 Stop the affected RVG. Enter the following:

```
# vxrvg -g diskgroup stop rvg
```

- 4 Disassociate the volumes from the RVG. Enter the following:

```
# vxvol -g diskgroup dis vol
```

- 5 Relayout the volumes to striped-mirror. Enter the following:

```
# vxassist -g diskgroup relayout vol layout=stripe-mirror
```

6 Associate the data volumes to the RVG. Enter the following:

```
# vxvol -g diskgroup assoc rvg vol
```

7 Start the RVG. Enter the following:

```
# vxrvg -g diskgroup start rvg
```

8 Resume or start the applications.

## Issues related to Symantec Product Authentication Service with VCS

This section covers the known issues related to Symantec Product Authentication Service (AT) in this release.

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

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

- `/opt/VRTScps/bin/cpsat`
- `/opt/VRTSvc/bin/vcsat`

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

Workaround:

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

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

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

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

### Storage Foundation Cluster File System HA may report AT error during system reboot

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

```
VCS ERROR V-16-1-13067 (host_name) Agent is calling clean
for resource (vxatd) because the resource became OFFLINE
unexpectedly, on its own.
VxSS State s245sf2 |OFFLINE|FAULTED|
VxSS State s245sf3 |ONLINE|
```

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

## Issues related to LLT

This section covers the known issues related to LLT in this release.

### LLT port stats sometimes shows recvcnt larger than recvbytes

With each received packet, LLT increments the following variables:

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

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

This does not impact the LLT functionality.

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

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

## Issues related to I/O fencing

This section covers the known issues related to I/O fencing in this release.

### All nodes in a sub-cluster panic if the node that races for I/O fencing panics

At the time of a network partition the lowest node in each sub-cluster races for the coordination points on behalf of that sub-cluster. If the lowest node is unable to contact a majority of the coordination points or the lowest node itself

unexpectedly panics during the race, then all the nodes in that sub-cluster will panic. [1965954]

### **Coordination Point agent does not provide detailed log message for inaccessible CP servers**

The Coordination Point agent does not log detailed information of the CP servers that are inaccessible. When CP server is not accessible, the agent does not mention the UUID or the virtual IP of the CP server in the engine log. [1907648]

### **Preferred fencing does not work as expected for large clusters in certain cases**

If you have configured system-based or group-based preferred fencing policy, preferred fencing does not work if all the following cases are true:

- The fencing setup uses customized mode with one or more CP servers.
- The application cluster has more than eight nodes.
- The node weight for a single node (say galaxy with node id 0) is more than the sum total of node weights for the rest of the nodes.
- A network fault occurs and the cluster partitions into two with the single node (galaxy) on one part and the rest of the nodes on the other part.

Under such circumstances, for group-based preferred fencing, the single node panics even though more high priority services are online on that node. For system-based preferred fencing, the single node panics even though more weight is assigned to the node. [2161816]

See the *product administration guide* for more information on preferred fencing.

### **Server-based I/O fencing fails to start after configuration on nodes with different locale settings**

On each (application cluster) node, the vxfen module retrieves and stores the list of the UUIDs of coordination points. When different nodes have different locale settings, the list of UUIDs on one (application) node does not match with that of the other (application) nodes. Hence, I/O fencing does not start after configuration. [2112742]

Workaround: Start I/O fencing after fixing the locale settings to use the same values on all the (application) cluster nodes.

## Reconfiguring Storage Foundation Cluster File System HA with I/O fencing fails if you use the same CP servers

When you reconfigure an application cluster that uses server-based I/O fencing (customized fencing mode), the installer does not remove the application cluster information from the CP servers before the reconfiguration. As a result, if you reconfigure the application cluster and choose to configure I/O fencing in customized mode using the same CP servers, then reconfiguration of server-based fencing for the application cluster fails. [2076240]

**Workaround:** Manually remove the application cluster information from the CP servers after you reconfigure Storage Foundation Cluster File System HA but before you reconfigure server-based I/O fencing for the application cluster.

See the *Veritas Cluster Server Administrator's Guide* for instructions to remove the application cluster information from the CP servers.

## CP server cannot bind to multiple IPs (2085941)

Coordination point server (CP server) binds only to a single virtual IP and listens on the same. Application clusters cannot access the CP server if it fails to establish connection to this virtual IP. Therefore, if the connection fails because of the subnet in which the virtual IP of the CP server exists, you cannot access the CP server even if there is another subnet through which the client can connect to the CP server over a different IP.

**Resolution:** No known resolution for this issue.

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

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

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

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

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

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

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

```
# hastop -all
```

- 2 Reboot the systems:

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

**VXFEN service goes to maintenance mode when restarted if the VCS engine is running**

On Solaris 10, if you restart the vxfen service when the VCS engine is running, then the vxfen service goes into maintenance mode. You must stop the VCS engine before you restart or disable the vxfen service, and then enable the vxfen service. [2116219]

## Veritas Storage Foundation for Databases (SFDB) tools known issues

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

**Database fails over during Flashsnap operations (1469310)**

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

**Workaround**

There is no workaround for this issue.

The error messages depend on the timing of the database failover. To fix the problem, you need to bring the FlashSnap state to `SNAP_READY`. Depending on the failure, you may have to use base VxVM commands to reattach mirrors. After mirrors are attached, you need to wait until the mirrors are in `SNAPDONE` state. Re-validate the snapplan again.

## Reattach command failure in a multiple disk group environment (1840672)

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

### Workaround

In case the reattach operation fails, use the following steps to reattach the volumes.

#### To reattach volumes in a multiple disk group environment if the snapshot operation fails

- 1 Join the snapshot disk groups to primary disk groups. The snapshot disk group name is a concatenation of “SNAPSHOT\_DG\_PREFIX” parameter value in `snapplan` and primary disk group name. Use the following command to join the disk groups:

```
# vxdg join snapshot_disk_group_name  
          primary_disk_group_name
```

- 2 Start all the volumes in primary disk group.

```
# vxvol -g primary_disk_group_name startall
```

- 3 Reattach the snapshot volumes with primary volumes. The snapshot volume name is a concatenation of “SNAPSHOT\_VOL\_PREFIX” parameter value in `snapplan` and primary volume name. Use the following command to reattach the volumes.

```
# vxsnap -g primary_disk_group_name reattach snapshot_volume_name  
          source=primary_volume_name
```

Repeat this step for all the volumes.

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

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

### Workaround

There is no workaround for this issue.

## **VCS agent for Oracle: Health check monitoring is not supported for Oracle database 11g R1 and 11g R2 (1985055)**

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

Workaround: Set MonitorOption attribute for Oracle resource to 0.

## **Software limitations**

This section covers the software limitations of this release.

See [“Documentation”](#) on page 84.

### **Veritas Storage Foundation Cluster File System software limitations**

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

#### **cfsmntadm command does not verify the mount options (2078634)**

You must confirm if the mount options are correct which are then passed to the `cfsmntadm` command. If the mount options are incorrect, the mount fails and the CFSMount resource will not come online. You can check the VCS engine log file for any mount failure messages.

### **Veritas File System software limitations**

The following are software limitations in the 5.1 SP1 release of Veritas Storage Foundation.

#### **Recommended limit of number of files in a directory**

To maximize VxFS performance, do not exceed 100,000 files in the same directory. Use multiple directories instead.

### **Veritas Volume Manager software limitations**

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

#### **Converting a multi-pathed disk (2695660)**

When converting a multi-pathed disk that is smaller than 1 TB from a VTOC label to an EFI label, you must issue the `format -e` command for each path. For example,

if a node has two paths, `c1t2d0s2` and `c2t2d0s2`, you must run the `format -e` command on each of the two paths.

## DMP settings for NetApp storage attached environment

To minimize the path restoration window and maximize high availability in the NetApp storage attached environment, set the following DMP tunables:

**Table 1-13**

Parameter name	Definition	New value	Default value
<code>dmp_restore_interval</code>	DMP restore daemon cycle	60 seconds.	300 seconds.
<code>dmp_path_age</code>	DMP path aging tunable	120 seconds.	300 seconds.

The change is persistent across reboots.

### To change the tunable parameters

- 1 Issue the following commands:

```
# vxddmpadm settune dmp_restore_interval=60
# vxddmpadm settune dmp_path_age=120
```

- 2 To verify the new settings, use the following commands:

```
# vxddmpadm gettune dmp_restore_interval
# vxddmpadm gettune dmp_path_age
```

## Dynamic LUN Expansion may fail on Solaris for EMC Clariion LUNs (2148851)

For EMC Clariion LUNs, if you perform Dynamic LUN Expansion operation using the `vxddisk resize` command while the I/O is in progress, the `vxddisk resize` command may fail with the following error:

```
VxVM vxddisk ERROR V-5-1-8643 Device device_name: resize failed:
New geometry makes partition unaligned
```

### Work-around:

To resolve the issue, perform the following steps.

**To recover from the error**

- 1 Stop the I/O.
- 2 Reboot the system with the following command:

```
# reboot -- r
```

- 3 Retry the operation.

## Veritas Volume Replicator software limitations

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

### Replication in a shared environment

Currently, replication support is limited to 4-node cluster applications.

### IPv6 software limitations

VVR does not support the following Internet Protocol configurations:

- A replication configuration from an IPv4-only node to an IPv6-only node and from an IPv6-only node to an IPv4-only node is not supported, because the IPv6-only node has no IPv4 address configured on it and therefore VVR cannot establish communication between the two nodes.
- A replication configuration in which an IPv4 address is specified for the `local_host` attribute of a primary RLINK and an IPv6 address is specified for the `remote_host` attribute of the same RLINK.
- A replication configuration in which an IPv6 address is specified for the `local_host` attribute of a primary RLINK and an IPv4 address is specified for the `remote_host` attribute of the same RLINK.
- IPv6 is not supported in a CVM and VVR cluster where some nodes in the cluster are IPv4-only and other nodes in the same cluster are IPv6-only, or all nodes of a cluster are IPv4-only and all nodes of a remote cluster are IPv6-only.
- VVR does not support Edge and NAT-PT routers that facilitate IPv4 and IPv6 address translation.

### VVR support for replicating across Storage Foundation versions

VVR supports replication between Storage Foundation 5.1SP1 and the prior major releases of Storage Foundation (5.0 MP3 and 5.1). Replication between versions is supported for disk group versions 140, 150, and 160 only. Both the Primary and Secondary hosts must be using a supported disk group version.

## Limitations related to I/O fencing

This section covers I/O fencing-related software limitations.

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

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

I/O fencing uses SCSI-3 PR keys to implement data protection. Keys are placed on I/O fencing coordinator points and on data disks. The VCS administrator must be aware of several operational changes needed when working with clusters protected by I/O fencing. Specific shutdown procedures ensure keys are removed from coordinator points and data disks to prevent possible difficulties with subsequent cluster startup.

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

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

## Veritas Storage Foundation for Databases tools software limitations

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

### Oracle Data Guard in an Oracle RAC environment

Database snapshots and Database Checkpoints are not supported in a Data Guard and Oracle RAC environment.

### Upgrading if using Oracle 11.1.0.6

If you are running Oracle version 11.1.0.6 and upgrading a Storage Foundation product to 5.1SP1: upgrade the Oracle binaries and database to version 11.1.0.7 before moving to SP1.

## Documentation errata

The following sections, if present, cover additions or corrections for Document version: 5.1SP1.2 of the product documentation. These additions or corrections

may be included in later versions of the product documentation that can be downloaded from the Symantec Support website and the Symantec Operations Readiness Tools (SORT).

See the corresponding Release Notes for documentation errata related to that component or product.

See [“Documentation”](#) on page 84.

See [“About Symantec Operations Readiness Tools”](#) on page 8.

## Veritas Volume Replicator Administrator's Guide

*Topic:* Migrating to IPv6 when VCS global clustering and VVR agents are not configured

*Issue:* The procedure, "To migrate VVR from the IPv4 network to the IPv6 network," has missing information in step 6. In the updated contents of the `main.cf` file, add the following statement to the end of the NIC `nicres1` block:

```
Protocol = IPv6
```

*Topic:* Migrating to IPv6 when VCS global clustering and VVR agents are configured

*Issues:* The procedure, "To migrate VVR to the IPv6 network," requires the following additions:

Step 4 In the example of modifying VCS global clustering attributes, add the following command after `hares -modify gconic Device bgel`:

```
# hares -modify gconic Device Protocol IPv6
```

Step 6 Near the bottom of the VCS `main.cf` file, add the following statement to the end of the NIC `gconic` block:

```
Protocol = IPv6
```

Step 7 In the list of commands to modify the IP and NIC attributes of the service group, add the following command after `hares -modify nic Enabled 1`:

```
# hares -modify gconic Device Protocol IPv6
```

Step 9 In the example service group content, add the following statement to the end of the NIC `nic` block:

```
Protocol = IPv6
```

Step 11 To bring down the network interface, enter the following command:

```
# ifconfig IPv4_interface down
```

## Correction for setting up a disaster recovery fire drill

*Topic: Setting up a disaster recovery fire drill*

Issue: The content below is incorrect:

After the fire drill service group is taken offline, reset the value of the ReuseMntPt attribute to 1 for all Mount resources.

Use the following corrected information:

After the fire drill service group is taken offline, reset the value of the ReuseMntPt attribute to 0 for all Mount resources.

## Documentation

Product guides are available on the documentation disc in PDF formats. Symantec recommends copying pertinent information, such as installation guides and release notes, from the disc to your system's `/opt/VRTS/docs` directory for reference.

### Documentation set

[Table 1-14](#) lists the documentation for Veritas Storage Foundation Cluster File System.

**Table 1-14** Veritas Storage Foundation Cluster File System documentation

Document title	File name
<i>Veritas Storage Foundation Cluster File System Release Notes</i>	sfcfs_notes_51sp1_sol.pdf
<i>Veritas Storage Foundation Cluster File System Installation Guide</i>	sfcfs_install_51sp1_sol.pdf
<i>Veritas Storage Foundation Cluster File System Administrator's Guide</i>	sfcfs_admin_51sp1_sol.pdf

[Table 1-15](#) lists the documentation for Symantec VirtualStore.

**Table 1-15** Symantec VirtualStore documentation

Document title	File name
<i>Veritas Storage Foundation Cluster File System Release Notes</i> The Symantec VirtualStore content is documented in the <i>Veritas Storage Foundation Cluster File System Release Notes</i> .	sfdfs_notes_51sp1_sol.pdf
<i>Symantec VirtualStore Installation and Configuration Guide</i>	virtualstore_install_51sp1_sol.pdf
<i>Symantec VirtualStore Administrator's Guide</i>	virtualstore_admin_51sp1_sol.pdf

**Table 1-16** lists the documents for Veritas Cluster Server.

**Table 1-16** Veritas Cluster Server documentation

Title	File name
<i>Veritas Cluster Server Installation Guide</i>	vcs_install_51sp1_sol.pdf
<i>Veritas Cluster Server Release Notes</i>	vcs_notes_51sp1_sol.pdf
<i>Veritas Cluster Server Administrator's Guide</i>	vcs_admin_51sp1_sol.pdf
<i>Veritas Cluster Server Bundled Agents Reference Guide</i>	vcs_bundled_agents_51sp1_sol.pdf
<i>Veritas Cluster Server Agent Developer's Guide</i>	vcs_agent_dev_51sp1pr4.pdf
<i>Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide</i>	vcs_vvr_agent_51sp1_sol.pdf
<i>Veritas Cluster Server Application Note: Dynamic Reconfiguration for Oracle Servers</i>	vcs_dynamic_reconfig_51sp1_sol.pdf
<i>Veritas Storage Foundation and High Availability Solutions Virtualization Guide</i>	sfha_virtualization_51sp1_sol.pdf
<i>Veritas Cluster Server Agent for DB2 Installation and Configuration Guide</i>	vcs_db2_agent_51sp1_sol.pdf
<i>Veritas Cluster Server Agent for Oracle Installation and Configuration Guide</i>	vcs_oracle_agent_51sp1_sol.pdf
<i>Veritas Cluster Server Agent for Sybase Installation and Configuration Guide</i>	vcs_sybase_agent_51sp1_sol.pdf

[Table 1-17](#) lists the documentation for Veritas Storage Foundation.

**Table 1-17** Veritas Storage Foundation documentation

Document title	File name
<i>Veritas Storage Foundation Release Notes</i>	sf_notes_51sp1_sol.pdf
<i>Veritas Storage Foundation and High Availability Installation Guide</i>	sf_install_51sp1_sol.pdf
<i>Veritas Storage Foundation: Storage and Availability Management for Oracle Databases</i>	sf_adv_ora_51sp1_sol.pdf
<i>Veritas Storage Foundation Advanced Features Administrator's Guide</i>	sf_adv_admin_51sp1_sol.pdf

[Table 1-18](#) lists the documentation for Veritas Volume Manager and Veritas File System.

**Table 1-18** Veritas Volume Manager and Veritas File System documentation

Document title	File name
<i>Veritas Volume Manager Administrator's Guide</i>	vxvm_admin_51sp1_sol.pdf
<i>Veritas Volume Manager Troubleshooting Guide</i>	vxvm_tshoot_51sp1_sol.pdf
<i>Veritas File System Administrator's Guide</i>	vxfs_admin_51sp1_sol.pdf
<i>Veritas File System Programmer's Reference Guide</i>	vxfs_ref_51sp1_sol.pdf

[Table 1-19](#) lists the documentation for Veritas Volume Replicator.

**Table 1-19** Veritas Volume Replicator documentation

Document title	File name
<i>Veritas Volume Replicator Administrator's Guide</i>	vvr_admin_51sp1_sol.pdf
<i>Veritas Volume Replicator Planning and Tuning Guide</i>	vvr_planning_51sp1_sol.pdf
<i>Veritas Volume Replicator Advisor User's Guide</i>	vvr_advisor_users_51sp1_sol.pdf

[Table 1-20](#) lists the documentation for Symantec Product Authentication Service (AT).

**Table 1-20** Symantec Product Authentication Service documentation

Title	File name
<i>Symantec Product Authentication Service Release Notes</i>	vxat_notes.pdf
<i>Symantec Product Authentication Service Administrator's Guide</i>	vxat_admin.pdf

## Manual pages

The manual pages for Veritas Storage Foundation and High Availability Solutions products are installed in the `/opt/VRTS/man` directory.

Set the `MANPATH` environment variable so the `man(1)` command can point to the Veritas Storage Foundation manual pages:

- For the Bourne or Korn shell (`sh` or `ksh`), enter the following commands:

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

- For C shell (`csh` or `tcsh`), enter the following command:

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

See the `man(1)` manual page.

