

# Veritas Storage Foundation™ Cluster File System for Oracle® RAC Release Notes

Linux

5.1 Service Pack 1



# Veritas Storage Foundation™ Cluster file System for Oracle RAC Release Notes

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Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

- Product release level

- Hardware information
- Available memory, disk space, and NIC information
- Operating system
- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
  - Error messages and log files
  - Troubleshooting that was performed before contacting Symantec
  - Recent software configuration changes and network changes

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If your Symantec product requires registration or a license key, access our technical support Web page at the following URL:

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- Product registration updates, such as address or name changes
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- Latest information about product updates and upgrades
- Information about upgrade assurance and support contracts
- Information about the Symantec Buying Programs
- Advice about Symantec's technical support options
- Nontechnical presales questions
- Issues that are related to CD-ROMs or manuals

## Support agreement resources

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Asia-Pacific and Japan [customercare\\_apac@symantec.com](mailto:customercare_apac@symantec.com)

Europe, Middle-East, and Africa [semea@symantec.com](mailto:semea@symantec.com)

North America and Latin America [supportolutions@symantec.com](mailto:supportsolutions@symantec.com)

## Documentation

Product guides are available on the media in PDF format. Make sure that you are using the current version of the documentation. The document version appears on page 2 of each guide. The latest product documentation is available on the Symantec website.

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

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## About Symantec Connect

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# Storage Foundation Cluster File System for Oracle RAC Release Notes

This document includes the following topics:

- [About this document](#)
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## About this document

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

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

This is Document version: 5.1SP1.2 of the *Veritas Storage Foundation Cluster File System for Oracle RAC 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>

## Component product release notes

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.

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 Service Pack 1)*.
- Storage Foundation (SF)  
See *Veritas Storage Foundation Release Notes (5.1 Service Pack 1)*.
- Storage Foundation Cluster File System (5.1 Service Pack 1)  
See *Veritas Storage Foundation Cluster File System Release Notes (5.1 Service Pack 1)*.

## About Veritas Storage Foundation Cluster File System for Oracle RAC

Veritas Storage Foundation™ Cluster File System for Oracle® RAC (SFCFS RAC) leverages proprietary storage management and high availability technologies to enable robust, manageable, and scalable deployment of Oracle RAC on the Linux platform. The solution uses Veritas Cluster File System technology that provides

the dual advantage of easy file system management as well as the use of familiar operating system tools and utilities in managing databases.

The solution stack comprises the Veritas Cluster Server (VCS), Veritas Cluster Volume Manager (CVM), Veritas Oracle Disk Manager (VRTSodm), Veritas Cluster File System (CFS), and Veritas Storage Foundation, which includes the base Veritas Volume Manager (VxVM) and Veritas File System (VxFS).

## Benefits of SFCFS RAC

SFCFS RAC provides the following benefits:

- Support for file system-based management. SFCFS RAC provides a generic clustered file system technology for storing and managing Oracle data files as well as other application data.
- Use of volume management technology for placement of Oracle Cluster Registry (OCR) and voting disks. The technology provides robust shared raw interfaces for placement of OCR and voting disks. In the absence of SFCFS RAC, separate LUNs need to be configured for OCR and voting disks.
- Support for a standardized approach toward application and database management. A single-vendor solution for the complete SFCFS RAC software stack lets you devise a standardized approach toward application and database management. Further, administrators can apply existing expertise of Veritas technologies toward SFCFS RAC.
- Increased availability and performance using dynamic multi-pathing (DMP). DMP provides wide storage array support for protection from failures and performance bottlenecks in the HBAs, SAN switches, and storage arrays.
- Easy administration and monitoring of SFCFS RAC clusters from a single web console.
- Support for many types of applications and databases.
- Improved file system access times using Oracle Disk Manager (ODM).
- Ability to configure ASM disk groups over CVM volumes to take advantage of dynamic multi-pathing (DMP).
- Enhanced scalability and availability with access to multiple Oracle RAC instances per database in a cluster.
- Support for backup and recovery solutions using volume-level and file system-level snapshot technologies. SFCFS RAC enables full volume-level snapshots for off-host processing and file system-level snapshots for efficient backup and rollback.

- Ability to failover applications without downtime using clustered file system technology.
- Support for sharing all types of files, in addition to Oracle database files, across nodes.

## About Symantec Operations Readiness Tools

Symantec™ Operations Readiness Tools (SORT) is a set of Web-based tools and services that lets you proactively manage your Symantec enterprise products. SORT automates and simplifies administration tasks, so you can manage your data center more efficiently and get the most out of your Symantec products. SORT lets you do the following:

- Collect, analyze, and report on server configurations across UNIX or Windows environments. You can use this data to do the following:
  - Assess whether your systems are ready to install or upgrade Symantec enterprise products
  - Tune environmental parameters so you can increase performance, availability, and use
  - Analyze your current deployment and identify the Symantec products and licenses you are using
- Upload configuration data to the SORT Web site, so you can share information with coworkers, managers, and Symantec Technical Support
- Compare your configurations to one another or to a standard build, so you can determine if a configuration has "drifted"
- Search for and download the latest product patches
- Get notifications about the latest updates for:
  - Patches
  - 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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To access SORT, go to:

<http://sort.symantec.com>

## 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/335001>
- For the latest patches available for this release, go to: <http://sort.symantec.com/>

## Changes in version 5.1 Service Pack 1

This section describes the new features and changes in version 5.1 SP1.

### Changes related to the installation and upgrades

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 *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration Guide*.

#### Unencapsulation not required for some upgrade paths

Unencapsulation is no longer required for certain upgrade paths.

See the *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration Guide*.

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

The new VRTSamf RPM 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 *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration 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 *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration 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 SFCFS RAC 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.

See the *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration Guide*.

## **Web-based installer supports configuring SFCFS RAC cluster in secure mode**

You can now configure the SFCFS RAC cluster in secure mode using the Web-based installer.

See the *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration 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 *Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration Guide*.

## 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.

## 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*.

## In-place upgrade of Veritas Volume Manager in presence of root disk encapsulation

When you upgrade from Veritas Volume Manager (VxVM) 5.1 to VxVM SFCFS RAC 5.1 SP1, you can upgrade the `VRTSvxvm` RPM without having to unencapsulate the root disk. The Veritas installer uses the `rpm -U` command to perform an in-place upgrade. Previously, the installer uninstalled the old `VRTSvxvm` RPM and installed the new one.

## 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) SFCFS RAC 5.1 SP1 removes this restriction. VxVM SFCFS RAC 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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## 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:

- 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 sharedg make sharedvol 20M ctlr:fscsi0
```

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

```
# vxdg destroy privatedg sharedg
```

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

```
# vxassist -d defaults_file
```

- Veritas Volume Replicator (VVR) commands including `vxibc`, `vxlink`, `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.

## 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 departs 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
```

## No longer supported

This section lists software versions and features that are no longer supported. Symantec advises customers to minimize the use of these features.

SFCFS RAC does not support the following:

- **ASMInst agent**  
The ASMInst agent is no longer supported in SFCFS RAC environments. The ASM instances are managed by Oracle Clusterware.
- **Use of crossover cables**  
Oracle does not support the use of crossover cables for cluster interconnects due to the possibility of data corruption and other software limitations.

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**Note:** Crossover cables are however known to function without any issues in SFCFS RAC. While the SFCFS RAC Technical support team may continue to provide support on related issues for existing deployments, this support may be constrained in some respects as it is no longer a supported configuration by Oracle.

The use of crossover cables is discouraged for new deployments.

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

## System requirements

This section describes the system requirements for this release.

### Important preinstallation information

Before you install SFCFS RAC, make sure you have reviewed the following information:

- **Hardware compatibility list for information about supported hardware:**  
<http://entsupport.symantec.com/docs/330441>
- **Disk storage array support information:**  
<http://entsupport.symantec.com/docs/283282>
- **Oracle documentation for additional requirements pertaining to your version of Oracle.**

## Hardware requirements

[Table 1-1](#) lists the hardware requirements for SFCFS RAC.

**Table 1-1** Hardware requirements for basic clusters

Item	Description
SFCFS RAC systems	Two to sixteen systems with two or more CPUs at 2GHz or higher.
DVD drive	A DVD drive on one of the nodes in the cluster.
Disk space	<p>You can evaluate your systems for available disk space by running the product installation program. Navigate to the product directory on the product disc and run the following command:</p> <pre># ./installsfcfsrc -precheck node_name</pre> <p>For details on the additional space that is required for Oracle, see the Oracle documentation.</p>
RAM	<p>Each SFCFS RAC system requires at least 2 GB.</p> <p>Symantec recommends additional amount of at least twice the Oracle SGA size.</p>
Swap space	See the Oracle Metalink document: 169706.1
Network links	<p>Two or more private links and one public link.</p> <p>Links must be 100BaseT or gigabit Ethernet directly linking each node to the other node to form a private network that handles direct inter-system communication. These links must be of the same type; you cannot mix 100BaseT and gigabit.</p> <p>Symantec recommends gigabit Ethernet using enterprise-class switches for the private links.</p>
Fiber Channel or SCSI host bus adapters	At least one additional SCSI or Fibre Channel Host Bus Adapter per system for shared data disks.

## Supported Linux operating systems

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

The Veritas 5.1 Service Pack 1 release supports the following operating systems and hardware:

- Red Hat Enterprise Linux 5 (RHEL 5) with Update 3 (2.6.18-128.el5 kernel) or later on AMD Opteron or Intel Xeon EM64T (x86\_64)
- SUSE Linux Enterprise Server 10 (SLES 10) with SP2 (2.6.16.60-0.21 kernel) or SP3 on AMD Opteron or Intel Xeon EM64T (x86\_64)
- SUSE Linux Enterprise Server 11 (SLES 11) (2.6.27.19-5-default kernel) or SUSE Linux Enterprise Server 11 (SLES 11) with SP1 on AMD Opteron or Intel Xeon EM64T (x86\_64)
- Oracle Enterprise Linux 5 (OEL 5) with Update 3 or later (Red Hat compatible kernel mode only)

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**Note:** 64-bit operating systems are only supported.

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If your system is running an older version of either Red Hat Enterprise Linux, SUSE Linux Enterprise Server, or Oracle Enterprise Linux, you must upgrade it before attempting to install the Veritas software. Consult the Red Hat, SUSE, or Oracle documentation for more information on upgrading or reinstalling your system.

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

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

Information about the latest supported Red Hat errata and updates and SUSE service packs is available in the following TechNote. Read this TechNote before you install Symantec products.

<http://entsupport.symantec.com/docs/335001>

## Required operating system patches

Oracle RAC requires the following patch on systems running SLES10 SP2:  
kernel 2.6.16.60-0.39.3

## Supported database software

For the latest information on supported Oracle database versions, see the following Technical Support TechNote:

<http://entsupport.symantec.com/docs/280186>

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**Note:** SFCFS RAC supports only 64-bit Oracle.

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The following database versions are supported:

- Oracle RAC 10g Release 2
- Oracle RAC 11g Release 1

## Supported replication technologies for global clusters

SFCFS RAC supports the software replication technology Veritas Volume Replicator (VVR) for global cluster configurations.

## Fixed issues in SFCFS RAC 5.1 SP1

For the list of issues fixed in the component products of SFCFS RAC 5.1 SP1:

- Veritas Cluster Server  
See *Veritas Cluster Server Release Notes (5.1 Service Pack 1)*.
- Veritas Storage Foundation  
See *Veritas Storage Foundation Release Notes (5.1 Service Pack 1)*.
- Veritas Storage Foundation Cluster File System  
See *Veritas Storage Foundation Cluster File System Release Notes (5.1 Service Pack 1)*.

## Known issues

This section covers the known issues in this release.

For Oracle RAC issues:

See [“Oracle RAC issues”](#) on page 20.

For SFCFS RAC issues:

See [“SFCFS RAC issues”](#) on page 21.

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

See [“Documentation”](#) on page 24.

## Oracle RAC issues

This section lists the known issues in Oracle RAC.

## SFCFS RAC issues

This section lists the known issues in SFCFS RAC for this release.

### Issues related to installation

This section describes the known issues during installation and upgrade.

#### **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.

#### **The VRTSaclib RPM is deprecated (2032052)**

The VRTSaclib RPM is deprecated. For installation, uninstallation, and upgrades, note the following:

- Fresh installs: Do not install VRTSaclib.
- Upgrade: Ignore VRTSaclib.
- Uninstall: Ignore VRTSaclib.

#### **Error messages in syslog (1630188)**

If you install or uninstall a product on a node, you may see the following warnings in syslog: /var/log/message. These warnings are harmless and can be ignored.

```
Jul  6 10:58:50 swlx62 setroubleshoot: SELinux is preventing the
semanage from using potentially mislabeled files
(/var/tmp/installer-200907061052eVe/install.swlx62.VRTSvxvm). For
complete SELinux messages. run sealert -l ed8978d1-0b1b-4c5b-a086-
67da2a651fb3
```

```
Jul  6 10:58:54 swlx62 setroubleshoot: SELinux is preventing the
semanage from using potentially mislabeled files
(/var/tmp/installer-200907061052eVe/install.swlx62.VRTSvxvm). For
complete SELinux messages. run sealert -l ed8978d1-0b1b-4c5b-a086-
67da2a651fb3
```

```
Jul  6 10:58:59 swlx62 setroubleshoot: SELinux is preventing the
restorecon from using potentially mislabeled files
```

#### **Ignore certain errors after an operating system upgrade—after a product upgrade with encapsulated boot disks (2030970)**

Ignore certain errors after an operating system upgrade after a product upgrade with encapsulated boot disks.

You can ignore the following errors after you upgrade the operating system after a product upgrade that occurred with an encapsulated boot disk. Examples of the errors follow:

```
The partitioning on disk /dev/sda is not readable by
The partitioning tool parted, which is used to change the
partition table.
You can use the partitions on disk /dev/sda as they are.
You can format them and assign mount points to them, but you
cannot add, edit, resize, or remove partitions from that
disk with this tool.
```

Or

```
Root device: /dev/vx/dsk/bootdg/rootvol (mounted on / as reiserfs)
Module list: pilix mptspi qla2xxx silmimage processor thermal fan
reiserfs aedd (xennet xenblk)
```

```
Kernel image: /boot/vmlinuz-2.6.16.60-0.54.5-smp
Initrd image: /boot/initrd-2.6.16.60-0.54.5-smp
```

The operating system upgrade is not failing. The error messages are harmless.

**Workaround:** Remove the `/boot/vmlinuz.b4vxvm` and `/boot/initrd.b4vxvm` files (from an un-encapsulated system) before the operating system upgrade.

## 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.

## Kernel warning messages when Veritas modules load

For SLES 10, a warning message resembling the following may be displayed in the console or the system log when Veritas modules are loaded into the kernel.

```
Warning: module not supported by Novell, setting U taint flag.  
module license 'Proprietary. Send bug reports to  
support@symantec.com' taints kernel.
```

These warning messages are displayed because the Veritas modules are proprietary. They can safely be 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 GAB

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

### Trace messages from the gablogd daemon on the console for RHEL5 Update 5 or later

On RHEL5 Update 5 or later, the `gablogd` daemon prints informational and trace messages similar to the following [2139883]:

```
INFO: task gablogd:22812 blocked for more than 120 seconds.  
"echo 0 > /proc/sys/kernel/hung_task_timeout_secs" disables this message.  
gablogd    D ffff81004100daa0    0 22812    1    23106 22809 (NOTLB)  
 ffff810faf539e38 00000000000000082 0000000000000084c 0000000000000001  
 ffff810faf539de8 00000000000000007 ffff810fc2a130c0 ffff810138ee8100  
 000019f130082599 00000000000018572 ffff810fc2a132a8 00000001f76c3d63
```

Call Trace:

```
[<fffffffff88ee3690>] :gab:gab_linux_sv_wait+0x53/0x68  
[<fffffffff8008e68d>] default_wake_function+0x0/0xe  
[<fffffffff88ecd4c8>] :gab:gab_daemonlog+0xae1/0xc52  
[<fffffffff88ee326c>] :gab:gab_linux_ioctl+0x10e/0x1a3  
[<fffffffff88ee331d>] :gab:gab_linux_compat_ioctl+0x1c/0x20  
[<fffffffff800fbe53>] compat_sys_ioctl+0xc5/0x2b2  
[<fffffffff8006249d>] sysenter_do_call+0x1e/0x76
```

Workaround: As the operating system message indicates, set the following:

```
echo 0 > /proc/sys/kernel/hung_task_timeout_secs
```

## Software limitations

This section covers the software limitations of this release.

See the corresponding Release Notes for a complete list of software limitations related to that component or product.

See [“Documentation”](#) on page 24.

## Oracle Disk Manager (ODM) limitation

Oracle Disk Manager (ODM) uses the Quick I/O driver for asynchronous I/O. Do not turn off the Quick I/O mount option, which is the default.

## SELinux supported in disabled and permissive modes only

SELinux (Security Enhanced Linux) is supported only in "Disabled" and "Permissive" modes. After you configure SELinux in "Permissive" mode, you may see a few messages in the system log. You may ignore these messages.

## 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 1-2](#) lists the documentation for Veritas Storage Foundation Cluster File System for Oracle RAC.

**Table 1-2** Veritas Storage Foundation Cluster File System for Oracle RAC documentation

Document title	File name
<i>Veritas Storage Foundation Cluster File System for Oracle RAC Installation and Configuration Guide</i>	sfcsracs_install_51SP1_lin.pdf
<i>Veritas Storage Foundation Cluster File System for Oracle RAC Release Notes</i>	sfcsracs_notes_51SP1_lin.pdf

[Table 1-3](#) lists the documents for Veritas Cluster Server.

**Table 1-3** Veritas Cluster Server documentation

Title	File name
<i>Veritas Cluster Server Installation Guide</i>	vcs_install_51SP1_lin.pdf
<i>Veritas Cluster Server Release Notes</i>	vcs_notes_51SP1_lin.pdf
<i>Veritas Cluster Server Administrator's Guide</i>	vcs_admin_51SP1_lin.pdf
<i>Veritas Cluster Server Bundled Agents Reference Guide</i>	vcs_bundled_agents_51SP1_lin.pdf
<i>Veritas Cluster Server Agent Developer's Guide</i>	vcs_agent_dev_51sp1.pdf
<i>Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide</i>	vcs_vvr_agent_51SP1_lin.pdf
<i>Veritas Cluster Server Agent for DB2 Installation and Configuration Guide</i>	vcs_db2_agent_51SP1_lin.pdf
<i>Veritas Cluster Server Agent for Oracle Installation and Configuration Guide</i>	vcs_oracle_agent_51SP1_lin.pdf
<i>Veritas Cluster Server Agent for Sybase Installation and Configuration Guide</i>	vcs_sybase_agent_51SP1_lin.pdf

[Table 1-4](#) lists the documentation for Veritas Storage Foundation.

**Table 1-4** Veritas Storage Foundation documentation

Document title	File name
<i>Veritas Storage Foundation Release Notes</i>	sf_notes_51SP1_lin.pdf
<i>Veritas Storage Foundation and High Availability Installation Guide</i>	sf_install_51SP1_lin.pdf

**Table 1-4** Veritas Storage Foundation documentation (*continued*)

Document title	File name
<i>Veritas Storage Foundation Cluster File System Release Notes</i>	sfcfs_notes_51SP1_lin.pdf
<i>Veritas Storage Foundation Cluster File System Administrator's Guide</i>	sfcfs_admin_51SP1_lin.pdf
<i>Veritas Storage Foundation: Storage and Availability Management for Oracle Databases</i>	sf_adv_ora_51SP1_lin.pdf
<i>Veritas Storage Foundation Advanced Features Administrator's Guide</i>	sf_adv_admin_51SP1_lin.pdf

[Table 1-5](#) lists the documentation for Veritas Volume Manager and Veritas File System.

**Table 1-5** Veritas Volume Manager and Veritas File System documentation

Document title	File name
<i>Veritas Volume Manager Administrator's Guide</i>	vxvm_admin_51SP1_lin.pdf
<i>Veritas Volume Manager Troubleshooting Guide</i>	vxvm_tshoot_51SP1_lin.pdf
<i>Veritas File System Administrator's Guide</i>	vxfs_admin_51SP1_lin.pdf
<i>Veritas File System Programmer's Reference Guide</i>	vxfs_ref_51SP1_lin.pdf

[Table 1-6](#) lists the documentation for Veritas Volume Replicator.

**Table 1-6** Veritas Volume Replicator documentation

Document title	File name
<i>Veritas Volume Replicator Administrator's Guide</i>	vvr_admin_51SP1_lin.pdf
<i>Veritas Volume Replicator Planning and Tuning Guide</i>	vvr_planning_51SP1_lin.pdf
<i>Veritas Volume Replicator Advisor User's Guide</i>	vvr_advisor_users_51SP1_lin.pdf

[Table 1-7](#) lists the documentation for Symantec Product Authentication Service (AT).

**Table 1-7** 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.

Manual pages are divided into sections 1, 1M, 3N, 4, and 4M. Edit the `man(1)` configuration file `/etc/man.config` to view these pages.

### To edit the man(1) configuration file

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

```
export LC_ALL=C
```

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

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

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

where other man paths are specified in the configuration file.

- 3 Add new section numbers. Change the line:

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

to

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