

Veritas Storage Foundation™ for Sybase ASE CE 6.0.1 Release Notes - Linux

Veritas Storage Foundation™ for Sybase ASE CE Release Notes

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- Hardware information

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- Operating system
- Version and patch level
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- Router, gateway, and IP address information
- Problem description:
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 - Troubleshooting that was performed before contacting Symantec
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Europe, Middle-East, and Africa semea@symantec.com

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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.

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

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For information regarding the latest HOWTO articles, documentation updates, or to ask a question regarding product documentation, visit the Storage and Clustering Documentation forum on Symantec Connect.

<https://www-secure.symantec.com/connect/storage-management/forums/storage-and-clustering-documentation>

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Veritas Storage Foundation for Sybase ASE CE Release Notes

This document includes the following topics:

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About this document

This document provides important information about Veritas Storage Foundation for Sybase ASE CE (SF Sybase CE) version 6.0.1 for Linux. Review this entire document before you install or upgrade SF Sybase CE.

The information in the Release Notes supersedes the information provided in the product documents for SF Sybase CE.

This is "Document version: 6.0.1 Rev 5" of the *Veritas Storage Foundation for Sybase ASE CE Release Notes*. Before you start, make sure that you are using the latest version of this guide. The latest product documentation is available on the Symantec Web site at:

<https://sort.symantec.com/documents>

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 on the software media in PDF formats:

`/docs/product_name`

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* (6.0.1)
- *Veritas Cluster Server Release Notes* (6.0.1)
- *Veritas Storage Foundation Cluster File System High Availability Release Notes* (6.0.1)

About Veritas Storage Foundation for Sybase ASE CE

Veritas Storage Foundation™ for Sybase® Adaptive Server Enterprise Cluster Edition (SF Sybase CE) by Symantec leverages proprietary storage management and high availability technologies to enable robust, manageable, and scalable deployment of Sybase ASE CE on UNIX platforms. The solution uses 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.

SF Sybase CE integrates existing Symantec storage management and clustering technologies into a flexible solution which administrators can use to:

- Create a standard toward application and database management in data centers. SF Sybase CE provides flexible support for many types of applications and databases.

- Set up an infrastructure for Sybase ASE CE that simplifies database management while fully integrating with Sybase ASE CE clustering solution.
- Apply existing expertise of Symantec technologies toward this product.

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

Benefits of SF Sybase CE

SF Sybase CE provides the following benefits:

- Use of a generic clustered file system (CFS) technology or a local file system (VxFS) technology for storing and managing Sybase ASE CE installation binaries.
- Support for file system-based management. SF Sybase CE provides a generic clustered file system technology for storing and managing Sybase ASE CE data files as well as other application data.
- Use of Cluster File System (CFS) for the Sybase ASE CE quorum device.
- Support for a standardized approach toward application and database management. A single-vendor solution for the complete SF Sybase CE software stack lets you devise a standardized approach toward application and database management. Further, administrators can apply existing expertise of Veritas technologies toward SF Sybase CE.
- Easy administration and monitoring of SF Sybase CE clusters using Veritas Operations Manager.
- Enhanced scalability and availability with access to multiple Sybase ASE CE instances per database in a cluster.
- Prevention of data corruption in split-brain scenarios with robust SCSI-3 Persistent Reservation (PR) based I/O fencing.
- Support for sharing all types of files, in addition to Sybase ASE CE database files, across nodes.
- Increased availability and performance using Veritas Dynamic Multi-Pathing (DMP). DMP provides wide storage array support for protection from failures and performance bottlenecks in the Host Bus Adapters (HBAs) and Storage Area Network (SAN) switches.
- Fast disaster recovery with minimal downtime and interruption to users. Users can transition from a local high availability site to a wide-area disaster recovery environment with primary and secondary sites. If a node fails, clients that are attached to the failed node can reconnect to a surviving node and resume access

to the shared database. Recovery after failure in the SF Sybase CE environment is far quicker than recovery for a failover database.

- Support for block-level replication using VVR.

About Symantec Operations Readiness Tools

[Symantec Operations Readiness Tools \(SORT\)](#) is a Web site that automates and simplifies some of the most time-consuming administrative tasks. SORT helps you manage your datacenter more efficiently and get the most out of your Symantec products.

SORT can help you do the following:

- | | |
|---|--|
| Prepare for your next installation or upgrade | <ul style="list-style-type: none">■ List product installation and upgrade requirements, including operating system versions, memory, disk space, and architecture.■ Analyze systems to determine if they are ready to install or upgrade Symantec products.■ Download the latest patches, documentation, and high availability agents from a central repository.■ Access up-to-date compatibility lists for hardware, software, databases, and operating systems. |
| Manage risks | <ul style="list-style-type: none">■ Get automatic email notifications about changes to patches, array-specific modules (ASLs/APMs/DDIs/DDIs), and high availability agents from a central repository.■ Identify and mitigate system and environmental risks.■ Display descriptions and solutions for hundreds of Symantec error codes. |
| Improve efficiency | <ul style="list-style-type: none">■ Find and download patches based on product version and platform.■ List installed Symantec products and license keys.■ Tune and optimize your environment. |

Note: Certain features of SORT are not available for all products. Access to SORT is available at no extra cost.

To access SORT, go to:

<https://sort.symantec.com>

Important release information

- For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:
<http://www.symantec.com/docs/TECH164885>
- For the latest patches available for this release, go to:
<https://sort.symantec.com/>
- The hardware compatibility list contains information about supported hardware and is updated regularly. For the latest information on supported hardware visit the following URL:
<http://www.symantec.com/docs/TECH170013>
Before installing or upgrading Storage Foundation and High Availability Solutions products, review the current compatibility list to confirm the compatibility of your hardware and software.

Changes introduced in SF Sybase CE 6.0.1

This section lists the changes in Veritas Storage Foundation for Sybase ASE CE 6.0.1.

New versioning process for SFHA Solutions products

Symantec made some changes to simplify the versioning process to ensure that customers have a unified experience when it comes to deploying our different products across Storage, Availability, Backup, Archiving and Enterprise Security products. With this change, all the products will have a 3 digit version. In complying with this approach, the current SFHA Solutions release is available as version 6.0.1.

New directory location for the documentation on the software media

The PDF files of the product documentation are now located in the `/docs` directory on the software media. Within the `/docs` directory are subdirectories for each of the bundled products, which contain the documentation specific to that product. The `sfha_solutions` directory contains documentation that applies to all products.

Changes related to installation and upgrades

The product installer includes the following changes in 6.0.1.

Locally-installed installation and uninstallation scripts now include the release version

When you run local scripts (`/opt/VRTS/install`) to configure Veritas products, the names of the installed scripts now include the release version.

Note: If you install your Veritas product from the install media, continue to run the `installsfpsybasece` command without including the release version.

To run the script from the installed binaries, run the `installsfpsybasece<version>` command.

Where `<version>` is the current release version with no periods or spaces.

For example, to configure the 6.0.1 version of your product, run this command:

```
# /opt/VRTS/install/installsfpsybasece601 -configure
```

VxVM private region backup pre-checks for disk groups prior to upgrade

The installer verifies that recent backups of configuration files of all the disk groups in VxVM private region have been saved in the `/etc/vx/cbr/bk` directory prior to doing an upgrade. If not, a warning message is displayed.

Warning: Backup `/etc/vx/cbr/bk` directory.

Additional installation postcheck options

The `postcheck` option has been enhanced to include additional checks.

You can use the installer's post-check option to perform the following checks:

- General checks for all products.
- Checks for Volume Manager (VM).
- Checks for File System (FS).
- Checks for Cluster File System (CFS).

Support for tunables file templates

You can use the installer to create a tunables file template. If you start the installer with the `-tunables` option, you see a list of all supported tunables, and the location of the tunables file template.

Enhancement to the CoordPoint agent

The CoordPoint agent monitors changes to the Coordinator Disk Group constitution, such as when a disk is deleted from the Coordinator Disk Group due to accidental execution of a VxVM administrative command or if the VxVM private region of a disk is corrupted.

The agent performs detailed monitoring on the CoordPoint resource and reports faults. You can tune the frequency of the detailed monitoring by setting the `LevelTwoMonitorFreq` attribute introduced in this release. For example, if you set this attribute to 5, the agent monitors the Coordinator Disk Group constitution in every fifth monitor cycle.

For more information on the CoordPoint agent, see the *Veritas Cluster Server Bundled Agents Reference Guide*.

For information on configuring the CoordPoint agent using script-based installer and manually configuring the CoordPoint agent to monitor coordinator disks, see the *Veritas Cluster Server Installation Guide*.

For more information on replacing I/O fencing coordinator disks or coordinator diskgroup when the cluster is online, see the *Veritas Cluster Server Administrator's Guide*.

System requirements

This section describes the system requirements for this release.

Important preinstallation information

Before you install SF Sybase CE, make sure you have reviewed the following information:

- Hardware compatibility list for information about supported hardware:
<http://www.symantec.com/docs/TECH170013>
- Sybase ASE CE documentation for additional requirements pertaining to your version of Sybase ASE CE.

Hardware requirements

[Table 1-1](#) lists the hardware requirements for SF Sybase CE.

Table 1-1 Hardware requirements for basic clusters

Item	Description
SF Sybase CE systems	Two to four systems with two or more CPUs. For details on the additional requirements for Sybase ASE CE, see the Sybase ASE CE documentation.
DVD drive	A DVD drive on one of the nodes in the cluster.
Disk space	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: # <code>./installsfbasece -precheck node_name</code> For details on the additional space that is required for Sybase ASE CE, see the Sybase ASE CE documentation.
RAM	Each SF Sybase CE system requires at least 2 GB.
Network	Two or more private links and one public link. 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. Symantec recommends gigabit Ethernet using enterprise-class switches for the private links.
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. For current updates, visit the Symantec Operation Readiness Tools Installation and Upgrade page: https://sort.symantec.com/land/install_and_upgrade.

Table 1-2 shows the supported operating systems for this release.

Note: Sybase has not yet announced support for the SLES 11 and RHEL 6 platforms. Therefore SF Sybase CE on RHEL 6 or SLES 11 is not supported by Symantec. Refer to the following TechNote for the latest information on the supported operating systems and Sybase database versions. The TechNote will be updated once Sybase supports Sybase ASE CE on RHEL 6 or SLES 11 platforms, and Symantec qualifies the same. <http://www.symantec.com/docs/DOC4848>.

Table 1-2 Supported operating systems

Operating systems	Levels	Kernel version	Chipsets
SUSE Linux Enterprise 10	SP4	2.6.16.60-0.85.1	64-bit x86, EMT*/Opteron 4.1 64-bit only

* Extended Memory Technology

Note: Only 64-bit operating systems are supported.

Note: For SLES11 SP2 kernel versions later than February, 2012, you need to apply the following Veritas patch: sf-sles11_x86_64-6.0.1.100. This patch is available on the patch download page at <https://sort.symantec.com/patch/detail/6732>.

Symantec supports only SUSE distributed kernel binaries.

Symantec products operate on subsequent kernel and patch releases provided the operating systems maintain kernel Application Binary Interface (ABI) compatibility.

Supported Sybase ASE CE releases

SF Sybase CE supports Sybase ASE CE 15.5 only at time of publication.

For the latest information on the supported Sybase ASE CE database versions, see the following Technical Support TechNote:

<http://www.symantec.com/docs/DOC4848>

See the Sybase ASE CE documentation for more information.

Supported SF Sybase CE configurations

The following Sybase configuration options are required in an SF Sybase CE environment:

- Set SF Sybase CE fencing to "sybase" mode.

- Configure Sybase private networks on LLT links
- Set Sybase cluster membership to "vcs" mode.
- Configure Sybase instances under VCS control.

Supported replication technologies for global clusters

SF Sybase CE supports the software replication technology Veritas Volume Replicator (VVR) for global cluster configurations.

SF Sybase CE: Issues fixed in 6.0.1

This section covers the incidents that are fixed in SF Sybase CE 6.0.1.

Issues fixed in SF Sybase CE 6.0.1

[Table 1-3](#) lists the issues fixed in SF Sybase CE 6.0.1.

Table 1-3 Issues fixed in SF Sybase CE 6.0.1

Incident number	Description
2580393	Removal of SAN cable from any node in a global cluster setup takes application service groups offline on all nodes.

Known issues

This section covers the known issues in this release.

SF Sybase CE issues

This section lists the known issues in SF Sybase CE for this release.

Sybase Agent Monitor times out (1592996)

Problem: The Sybase Agent Monitor has issues of timing out, in cases where qrmutil reports delay.

The Sybase Agent monitor times out, if qrmutil fails to report the status to the agent within the defined MonitorTimeout for the agent.

Solution: If any of the following configuration parameters for Sybase Database is increased, it will require a change in its MonitorTimeout value:

- quorum heartbeat interval (in seconds)
- Number of retries

If the above two parameters are changed, Symantec recommends that the MonitorTimeout be set to a greater value than the following: $((\text{number of retries} + 1) * (\text{quorum heartbeat interval})) + 5$.

Installer warning (151550)

Problem: During configuration of Sybase instance under VCS control, if the quorum device is on CFS and is not mounted, the following warning message appears on the installer screen:

```
Error: CPI WARNING V-9-40-5460 The quorum file
/qrmnt/qfile cannot be accessed now. This may be due to a
file system not being mounted.
```

The above warning may be safely ignored.

Unexpected node reboot while probing a Sybase resource in transition (1593605)

Problem: A node may reboot unexpectedly if the Sybase resource is probed while the resource is still in transition from an online to offline state.

Normally the monitor entry point for Sybase agent completes with 5-10 seconds. The monitor script for the Sybase agent uses the qrmutil binary provided by Sybase. During a monitor, if this utility takes longer time to respond, the monitor entry point will also execute for longer duration before returning status.

Resolution: During the transition time interval between online and offline, do not issue a probe for the Sybase resource, otherwise the node may reboot.

Unexpected node reboot when invalid attribute is given (2567507)

Problem: A node may reboot unexpectedly if the Home, Version, or Server attributes are modified to invalid values while the Sybase resources are online in VCS.

Resolution: Avoid setting invalid values for the Home, Version, or Server attributes while the Sybase resources are online in VCS, to avoid panic of the node.

AutoFailOver = 0 attribute absent in the sample files at /etc/VRTSagents/ha/conf/Sybase (2615341)

Problem: AutoFailOver = 0 attribute is not present in the sample files at /etc/VRTSagents/ha/conf/Sybase.

Resolution: If you copy the main.cf file from the /etc/VRTSagents/ha/conf/Sybase location, add the AutoFailOver = 0 attribute to the binmnt and sybasece service groups.

"Configuration must be ReadWrite : Use haconf -makerw" error message appears in VCS engine log when hastop -local is invoked (2609137)

A message similar to the following example appears in the /var/VRTSvcs/log/engine_A.log log file when you run the `hastop -local` command on any system in a SF Sybase CE cluster that has `CFSMountresources`:

```
2011/11/15 19:09:57 VCS ERROR V-16-1-11335 Configuration must be
ReadWrite : Use haconf -makerw
```

The `hastop -local` command successfully runs and you can ignore the error message.

Workaround: There is no workaround for this issue.

Installation known issues

This section describes the known issues during installation and upgrade.

Stopping the installer during an upgrade and then resuming the upgrade might freeze the service groups [2574731]

The service groups freeze due to upgrading using the product installer if you stopped the installer after the installer already stopped some of the processes and then resumed the upgrade.

Workaround:

You must unfreeze the service groups manually after the upgrade completes.

To unfreeze the service groups manually

- 1 List all the frozen service groups

```
# hagr -list Frozen=1
```

- 2 Unfreeze all the frozen service groups:

```
# haconf -makerw  
# hagr -unfreeze service_group -persistent  
# haconf -dump -makero
```

The Configure Sybase ASE CE Instance in VCS option creates duplicate service groups for Sybase binary mount points (2560188)

The CPI installer does not check to see if Sybase binary mount points are already configured on systems, nor does it give an error message. It creates a duplicate service group for Sybase binary mount points.

This issue will be resolved in a later release.

The uninstaller does not remove all scripts (2696033)

After removing SF Sybase CE, some of the RC scripts remain in the `/etc/rc*.d/` folder. This is due to an issue with the `chkconfig` rpm in RHEL6 and updates. You can manually remove the scripts from the `/etc/rc*.d/` folder after removing the VxVM packages.

Workaround:

Install the `chkconfig-1.3.49.3-1` `chkconfig` rpm from the RedHat portal. Refer to the following links:

<http://grokbase.com/t/centos/centos/117pfne4zz/centos-6-0-chkconfig-strange-behavior>

<http://rhn.redhat.com/errata/RHBA-2012-0415.html>

Veritas File System modules fail to unload during uninstall or upgrade if a break-off snapshot volume is created or reattached (2851403)

If a break-off snapshot volume is created or reattached on the system, the Veritas File System modules, `vxportal` and `vxfs`, may fail to unload during uninstall or upgrade. The situation occurs if the SmartMove feature is enabled, which is the default setting. When you use the installer to uninstall or upgrade, you may see a message similar to the following:

Veritas Storage Foundation Shutdown did not complete successfully

```
vxportal failed to stop on dblxx64-21-v1  
vxfs failed to stop on dblxx64-21-v1
```

Workaround:

- 1 Open a new session and manually unload the modules that failed to unload. Use commands similar to the following:

```
# /sbin/modprobe -r vxportal  
# /sbin/modprobe -r vxfs
```

- 2 Because some processes failed to stop, the installer recommends a reboot and asks you if you want to continue.

Press `y` to continue to the next phase. You can ignore the reboot requirement.

I/O fencing known issues

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

The `vxfenswap` utility does not detect failure of coordination points validation due to an RSH limitation (2531561)

The `vxfenswap` utility runs the `vxfenconfig -o modify` command over RSH or SSH on each cluster node for validation of coordination points. If you run the `vxfenswap` command using RSH (with the `-n` option), then RSH does not detect the failure of validation of coordination points on a node. From this point, `vxfenswap` proceeds as if the validation was successful on all the nodes. But, it fails at a later stage when it tries to commit the new coordination points to the VxFEN driver. After the failure, it rolls back the entire operation, and exits cleanly with a non-zero error code. If you run `vxfenswap` using SSH (without the `-n` option), then SSH detects the failure of validation of coordination of points correctly and rolls back the entire operation immediately.

Workaround: Use the `vxfenswap` utility with SSH (without the `-n` option).

After you run the `vxfenswap` utility the CoordPoint agent may fault (3462738)

After you run the `vxfenswap` utility, if the value of the `FaultTolerance` attribute of the CoordPoint agent is more than the majority (more than 50%) of the coordination points then the Coordination Point agent faults.

Workaround: Manually set the value of the `FaultTolerance` attribute of `CoordPoint` agent to be less than the majority (more than 50%) of the coordination points.

Fencing does not come up on one of the nodes after a reboot (2573599)

If VxFEN unconfiguration has not finished its processing in the kernel and in the meantime if you attempt to start VxFEN, you may see the following error in the `/var/VRTSvcs/log/vxfen/vxfen.log` file:

```
VXFEN vxfenconfig ERROR V-11-2-1007 Vxfen already configured
```

However, the output of the `gabconfig -a` command does not list port b. The `vxfenadm -d` command displays the following error:

```
VXFEN vxfenadm ERROR V-11-2-1115 Local node is not a member of cluster!
```

Workaround: Start VxFEN again after some time.

Stale .vxfendargs file lets hashadow restart vxfend in Sybase mode (2554886)

When I/O fencing is configured in customized mode, `vxfend`, the user mode daemon of I/O fencing, creates the `/opt/VRTSvcs/lock/.vxfendargs` file. VCS uses this file to restart the `vxfend` daemon when it gets killed. However, VCS does not use this file when I/O fencing is configured in Sybase mode. This file is not removed from the system when I/O fencing is unconfigured.

If user configures I/O fencing in Sybase mode and an old `/opt/VRTSvcs/lock/.vxfendargs` file is present in the system from an earlier configuration of I/O fencing in customized mode, then VCS attempts to restart the `vxfend` daemon every time it is killed. This interferes with the functioning of I/O fencing in the Sybase mode.

Workaround: Before you configure I/O fencing in Sybase mode, delete the `/opt/VRTSvcs/lock/.vxfendargs` file if it is present in the system.

Virtual machine may return the not-responding state when the storage domain is inactive and the data center is down (2848003)

In a Red Hat Enterprise Virtualization Environment, if the storage domain is in an inactive state and the data center is in down state, the virtual machine may return a not-responding state and the KVMGuest resource in OFFLINE state.

Workaround: To resolve this issue:

- 1 Activate the storage domain in RHEV-M.
- 2 Check that the data center is in the up state.

Fencing may show the RFSM state as replaying for some nodes in the cluster (2555191)

Fencing based on coordination point clients in Campus cluster environment may show the RFSM state as replaying for some nodes in the cluster.

Workaround:

Restart fencing on the node that shows RFSM state as replaying.

Cannot run the vxfcntlsh utility directly from the install media if VRTSvxfen package is not installed on the system (2858190)

If VRTSvxfen package is not installed on the system, then certain script files that are needed for the vxfcntlsh utility to function are not available. So, without the VRTSvxfen package installed on the system you cannot run the utility from the install media.

Workaround: Install VRTSvxfen package, then run the utility from either the install media or from the `/opt/VRTSvcs/vxfen/bin/` location.

The vxfcntlsh utility fails to launch before you install the VRTSvxfen package (2858190)

Before you install the VRTSvxfen package, the file of `/etc/vxfen.d/script/vxfen_scriptlib.sh` where stores the vxfcntlsh utility does not exist. In this case, the utility bails out.

Workaround:

Besides installing the VRTSvxfen package, run the vxfcntlsh utility directly from the installation DVD.

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 25.

Only one Sybase instance is supported per node

In a Sybase ASE CE cluster, SF Sybase CE supports only one Sybase instance per node.

SF Sybase CE is not supported in the Campus cluster environment

SF Sybase CE does not support the Campus cluster. SF Sybase CE supports the following cluster configurations. Depending on your business needs, you may choose from the following setup models:

- Basic setup
- Secure setup
- Central management setup
- Global cluster setup

See the *Installation Guide* for more information.

Hardware-based replication technologies are not supported for replication in the SF Sybase CE environment

You can use Veritas Volume Replicator (VVR), which provides host-based volume replication. Using VVR you can replicate data volumes on a shared disk group in SF Sybase CE. Hardware-based replication is not supported at this time.

SF Sybase CE installation is not supported by Web installer

SF Sybase CE does not support the Web-based installer at this time. You can use one of the following methods to install and configure SF Sybase CE.

- Interactive installation and configuration using the script-based installer
- Silent installation using the response file

See the *Installation Guide* for more information.

Limitations related to installation

This section covers installation-related limitations.

Limitations related to rolling upgrade

Rolling upgrade with responsefile to 6.0.1 is not supported.

Limitations related to I/O fencing

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

Preferred fencing limitation when VxFEN activates RACER node re-election

The preferred fencing feature gives preference to more weighted or larger subclusters by delaying the smaller subcluster. This smaller subcluster delay is effective only if the initial RACER node in the larger subcluster is able to complete the race. If due to some reason the initial RACER node is not able to complete the race and the VxFEN driver activates the racer re-election algorithm, then the smaller subcluster delay is offset by the time taken for the racer re-election and the less weighted or smaller subcluster could win the race. This limitation though not desirable can be tolerated.

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.

In a cluster using SCSI-3 based fencing, I/O fencing implements data protection by placing the SCSI-3 PR keys on both the data disks and coordinator disks. In a cluster using CP server-based fencing, I/O fencing implements data protection by placing the SCSI-3 PR keys on data disks and similar registrations on CP server. 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 coordination 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 coordination 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.

Uninstalling VRTSvxvm causes issues when VxFEN is configured in SCSI3 mode with dmp disk policy (2522069)

When VxFEN is configured in SCSI3 mode with dmp disk policy, the DMP nodes for the coordinator disks can be accessed during system shutdown or fencing arbitration. After uninstalling VRTSvxvm RPM, the DMP module will no longer be

loaded in memory. On a system where VRTSvxvm RPM is uninstalled, if VxFEN attempts to access DMP devices during shutdown or fencing arbitration, the system panics.

Documentation

Product guides are available in the PDF format on the software media in the `/docs/product_name` directory. Additional documentation is available online.

Make sure that you are using the current version of documentation. The document version appears on page 2 of each guide. The publication date appears on the title page of each document. The latest product documentation is available on the Symantec website.

<http://sort.symantec.com/documents>

Documentation set

Table 1-4 lists the documentation for Veritas Storage Foundation for Sybase ASE CE.

Table 1-4 Veritas Storage Foundation for Sybase ASE CE documentation

Document title	File name
<i>Veritas Storage Foundation for Sybase ASE CE Release Notes</i>	sfsybasece_notes_601_lin.pdf
<i>Veritas Storage Foundation for Sybase ASE CE Installation and Configuration Guide</i>	sfsybasece_install_601_lin.pdf
<i>Veritas Storage Foundation for Sybase ASE CE Administrator's Guide</i>	sfsybasece_admin_601_lin.pdf

Table 1-5 lists the documentation for Veritas Storage Foundation Cluster File System High Availability.

Table 1-5 Veritas Storage Foundation Cluster File System High Availability documentation

Document title	File name
<i>Veritas Storage Foundation Cluster File System High Availability Release Notes</i>	sfdfs_notes_601_lin.pdf
<i>Veritas Storage Foundation Cluster File System High Availability Installation Guide</i>	sfdfs_install_601_lin.pdf

Table 1-5 Veritas Storage Foundation Cluster File System High Availability documentation (*continued*)

Document title	File name
<i>Veritas Storage Foundation Cluster File System High Availability Administrator's Guide</i>	sfcs_admin_601_lin.pdf

[Table 1-6](#) lists the documents for Veritas Cluster Server.

Table 1-6 Veritas Cluster Server documentation

Title	File name
<i>Veritas Cluster Server Installation Guide</i>	vcs_install_604_lin.pdf
<i>Veritas Cluster Server Release Notes</i>	vcs_notes_604_lin.pdf
<i>Veritas Cluster Server Administrator's Guide</i>	vcs_admin_601_lin.pdf
<i>Veritas Cluster Server Bundled Agents Reference Guide</i>	vcs_bundled_agents_601_lin.pdf
<i>Veritas Cluster Server Agent Developer's Guide</i> (This document is available online, only.)	vcs_agent_dev_601_unix.pdf
<i>Veritas Cluster Server Agent for DB2 Installation and Configuration Guide</i>	vcs_db2_agent_601_lin.pdf
<i>Veritas Cluster Server Agent for Oracle Installation and Configuration Guide</i>	vcs_oracle_agent_601_lin.pdf
<i>Veritas Cluster Server Agent for Sybase Installation and Configuration Guide</i>	vcs_sybase_agent_601_lin.pdf

[Table 1-7](#) lists the documentation for Veritas Storage Foundation.

Table 1-7 Veritas Storage Foundation documentation

Document title	File name
<i>Veritas Storage Foundation Release Notes</i>	sf_notes_601_lin.pdf
<i>Veritas Storage Foundation Installation Guide</i>	sf_install_601_lin.pdf
<i>Veritas Storage Foundation Administrator's Guide</i>	sf_admin_601_lin.pdf
<i>Veritas File System Programmer's Reference Guide</i> (This document is available online, only.)	vxfs_ref_601_lin.pdf

[Table 1-8](#) lists the documentation for Veritas Storage Foundation and High Availability Solutions products.

Table 1-8 Veritas Storage Foundation and High Availability Solutions products documentation

Document title	File name
<i>Veritas Storage Foundation and High Availability Solutions Solutions Guide</i>	sfhas_solutions_601_lin.pdf
<i>Veritas Storage Foundation and High Availability Solutions Virtualization Guide</i>	sfhas_virtualization_601_lin.pdf
<i>Veritas Storage Foundation and High Availability Solutions Replication Administrator's Guide</i>	sfhas_replication_admin_601_lin.pdf

If you use Veritas Operations Manager (VOM) to manage Veritas Storage Foundation and High Availability products, refer to the VOM product documentation at:

<http://sort.symantec.com/documents>

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
```

The latest manual pages are available online in HTML format on the Symantec website at:

<https://sort.symantec.com/documents>