Veritas Storage Foundation™
Cluster File System Release Notes

AIX

5.0
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Veritas Storage Foundation Cluster File System is a licensed product. See the Veritas Storage Foundation Cluster File System Installation Guide for license installation instructions.

Technical support

For technical assistance, visit http://support.veritas.com and select phone or email support. Use the Knowledge Base search feature to access resources such as TechNotes, product alerts, software downloads, hardware compatibility lists, and our customer email notification service.
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Release Notes

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Storage Foundation Cluster File System Release Notes

Introduction

Veritas Storage Foundation Cluster File System (SFCFS) and Storage Foundation Cluster File System High Availability (SFCFS HA) compose the clustering functionality of Veritas File System (VxFS) and are separately licensed features of Storage Foundation. Failover capabilities, such as monitoring system and application services and restarting them on a different system when hardware or software fails, are not required for the operation of SFCFS, but can be added to the cluster after installing and configuring SFCFS HA.

Note: Read the following Veritas Technical Support TechNote for the latest information on updates, patches, and software issues for this release:
http://support.veritas.com/docs/282024
New features

Veritas Storage Foundation Cluster File System provides the following new features:

Concurrent I/O support

This feature extends current support for concurrent I/O to cluster file systems. Semantics for concurrent read/write access on a file in a cluster file system matches those for a local mount.

Delaylog support

The -o delaylog mount option is now supported with cluster mounts. This is the default logging option for SFCFS.

Disk layout version support

Disk layout Versions 6 and 7 are both supported on SFCFS.

Nested mount support

This allows mounts of a VxFS file system on any VxFS mount point. There is no requirement to allow mounts of non-VxFS file system on a shared VxFS mount point. A directory on a shared VxFS file system may be used as a mount point for a VxFS file system, enabling nested mounts of shared file systems. The SFCFS and Veritas Cluster Server (VCS) administrator interface is enhanced to support nested mounts.

Support for 32 cluster nodes

The clustering functionality of SFCFS supports up to 32 nodes and has been tested on a 16-node cluster configuration.

Multiple transaction servers—a new major architectural enhancement to SFCFS

With this feature, SFCFS moves from a primary/secondary architecture, where only one node in the cluster processes metadata operations (file creates, deletes, grow, etc.) to a symmetrical architecture, where all nodes in the cluster can simultaneously process metadata operations. This allows SFSCFS to handle significantly higher metadata loads.
**System requirements**

The minimum system requirements for this release are:

- AIX 5.2 ML6 (legacy)
- AIX 5.3 TL4 with SP4

**Note:** SP4 was not available at the time of this release. Veritas 5.0 products also operate on AIX 5.3 with SP3, but you must install an interim fix. See the following TechNote for information on downloads, service pack availability, and other important issues related to this release.

[http://support.veritas.com/docs/282024](http://support.veritas.com/docs/282024)

Veritas 5.0 does not support AIX 5.1.

**SFCFS node requirements**

All nodes in a cluster file system must have the same operating system version and update level.

**Hardware compatibility**

For information on servers, network controllers, and disk subsystems that support SFCFS, see the hardware compatibility list available at [http://support.veritas.com](http://support.veritas.com).
Required patches

Patch requirements and versions are determined at the time of product release. Contact your vendor for the most current patch version and information. For a list of current patches for component products, see the Storage Foundation Release Notes.

No longer supported and future support issues

This section lists functions that are either:

■ not supported in 5.0
■ may not be supported in future releases

Version 4 disk layout

VxFS disk layout Version 4 is not supported in 5.0. Maintenance patches for the 4.0 release of SFCFS will continue to support previous disk layouts. Use the vxupgrade command to upgrade to disk layout Version 6 or 7.

See the Veritas Storage Foundation Cluster File System Administrator’s Guide.

Note: Version 7 is the default disk layout version for the 5.0 release.

seconly mount option

The seconly mount option might not be supported in the next major release.

I/O error mount options

In this and future releases, only ioerror=disable and ioerror=mdisable mount options are supported for cluster-mounted file systems. Other ioerror mount options are not supported.
Fixed issues

See the Veritas Storage Foundation Release Notes for the list of fixed issues.

Known issues

The following incidents were reported for this release.

fsck issues

Running fsck before upgrading to 5.0
Before upgrading to SFCFS 5.0, make sure that all the file systems are clean by running the fsck command. See the fsck(1M) manual page.
The fsck command replays the intent log to complete any outstanding transactions, then marks the file system as clean.

Warning: You must run fsck before upgrading an existing cluster file system to 5.0. If you upgrade to 5.0, and then run the fsck command, it will fail due to the incompatibility of older fsck binaries with the new kernel.

See the Veritas Storage Foundation Cluster File System Installation Guide for additional information on upgrade issues.

fsck may abort when applied to unclean file systems from VxFS 4.0
Due to an incompatibility in the VxFS fsck utility between the 5.0 and 4.0 releases, fsck may abort during intent log replay if it is run on older file systems. This only affects file systems that:
■ were previously running under VxFS 4.0
■ were multi-volume file systems or file systems on shared volumes
■ have not been cleanly unmounted prior for use in 5.0

Issues with node crashes and joins after the FCL is activated
If a node crashes or joins the cluster within 60 seconds of the FCL (File Change Log) being turned on, the FCL does not correctly record data.
[608169]
Known issues

Software disc cannot be ejected during installation

During installation, if any of the products were configured and started, the software disc cannot be ejected. This may prevent installation from continuing in following circumstances:

- If the language pack disc needs be loaded so that the associated packages can be installed.
- A product was installed that did not require a system reboot to complete the installation.

This problem is not an issue if a product was installed or upgraded that required a system reboot to complete the installation.

To avoid this problem at install time

1. Specify the `installonly` option to the installer script in addition to any other options.
2. Eject the software disc.
3. Run the installer script with the `configure` option specified.

If a software disc cannot be ejected

1. Stop the event source daemon:
   ```bash
   #/usr/sbin/vxddladm stop eventsource
   ```
2. Kill the `vxcached`, `vxrelocd` and `vxnotify` processes by using the `kill -9` command with their process IDs as reported by the `ps` command.
3. Eject the software disc.
4. Restart the VxVM daemon processes:
   ```bash
   #/usr/sbin/vxddladm start eventsource
   #/etc/vx/bin/vxcached
   #/etc/vx/bin/vxrelocd
   ```

Support for SFCFS configurations larger than 16 nodes

SFCFS 5.0 is capable of supporting cluster file systems with up to 32 nodes. Symantec has tested and qualified SFCFS 5.0 cluster file system configurations of up to 16 nodes at product release time. Support can be contacted for their approval and recommendations on cluster file system deployments larger than 16 nodes, based on the application workload. For the latest information on SFCFS support issues, see the following TechNote:

[http://support.veritas.com/docs/282024]
Software limitations

This section describes software limitations in this release of SFCFS.

Consistent distribution and kernel version for SFCFS
Cluster nodes must run the same distribution and kernel version. You cannot mix 32-bit and 64-bit kernels in the same cluster. Cluster nodes must run 64-bit kernels.

SFCFS agents cannot support Japanese mount points
None of the SFCFS agents (for example, cfsmntadm and cfsmount) work on a Japanese mount point. These commands fail on a Japanese operating system because the SFCFS agents require VCS and VCS currently does not support non-ASCII input.

Fencing
If during the SFCFS installation procedure you chose to enable fencing but have yet to configure the coordinator disks, Cluster Volume Manager will not join the cluster. If you choose to disable fencing, or if fencing cannot be supported in the current configuration, the following steps will disable fencing and allow shared disk groups to join:

1. Create the file /etc/vxfenmode on each node (if it does not already exist).
2. Add the string vxfen_mode=disabled to the file.

Required upgrade for Cluster Volume Manager protocol
The Cluster Volume Manager (CVM) protocol must be upgraded before upgrading the disk group from previous versions.

To upgrade the CVM protocol
1. Check the existing cluster protocol version:
   
   ```
   # vxdctl protocolversion
   ```

2. To upgrade the cluster protocol version to version 70 for the entire cluster, use the following command on the master node:
   
   ```
   # vxdctl upgrade
   ```
NIC detection during installation

Operating system limitations may affect the detection of valid network interconnect cards (NICs) during SFCFS/SFCFS HA installation. Specifically, more NICs for heartbeat links may be listed than are actually available. Verify which NICs are valid on your system before proceeding with the install.

To verify which NICs are valid, use the following command:

```
# ifconfig -a
```

Caching advisories

Caching advisories are set with the `mount` command on individual file systems, but are not propagated to other nodes of a cluster.

To work around this issue, set the required cache advisories with the `vxtuneefs` command instead.

Cached Quick I/O

This Quick I/O for Databases feature that caches data in the file system cache is not supported.

Quotas

When using quotas, the `UID` and `GID` for a user must be the same on each node in the cluster.

Local scope for named pipes

Named pipes created on a cluster-mounted file system have only a local scope pertaining to the local node.

Devices other than named pipes cannot be created using the `mknod` command.

No SFCFS mounted directories in LD_LIBRARY_PATH

If SFCFS-mounted directories are present in the `LD_LIBRARY_PATH` environment variable, the system may hang in circumstances such as a forced unmount. Do not define `LD_LIBRARY_PATH` to contain Storage Foundation Cluster File System mounted directories.

Turn off VCS volume-level monitoring before deleting a volume

If you are using VCS volume-level resource monitoring and you want to delete a volume, you must turn off monitoring for that volume before deleting it. If monitoring for the volume is not turned off, the VCS monitor disables access to
the disk group in which the volume resided by changing the activation mode to off. Failure to turn off monitoring will require intervention to change the disk group activation mode back to its original setting. See the \texttt{vxdg(1M)} online manual page for information on disk group activation modes.

**Swap files not supported**

Swap files are not supported on cluster-mounted file systems.

**Quick I/O, ODM, mount -o cio, and the VX\_CONCURRENT advisory are mutually exclusive**

The \texttt{VX\_CONCURRENT} advisory cannot be set on a file that is actively open by Quick I/O or ODM, nor can that file be concurrently opened with the \texttt{O\_CIO} flag. A file opened with the \texttt{O\_CIO} flag or that has the \texttt{VX\_CONCURRENT} advisory set may not be concurrently opened by Quick I/O or ODM. Quick I/O and ODM access are not allowed for any files on a file system that is mounted with the \texttt{-o cio} mount option.

**Support for Advanced Power Virtualization**

SFCFS does not support virtual clients.

**Available documentation**

After the installation procedure is complete, documents are available online under the \texttt{/optVRTS/docs} directory. Documents are provided as Adobe Portable Document Format (PDF) files and in a searchable HTML-based format. To view or print PDF documents, you must have the Adobe Acrobat Reader installed.

Installing documentation and online manual pages is optional.

**Veritas documentation disc**

The Veritas documentation disc provides searchable, HTML documentation for each product in this release. Printable PDF documents are also included on the disc. All documentation is organized by product groups.

**Release notes and installation guides**

Release notes and installation guides are not installed by any packages. Veritas recommends that you copy them from the software disc to the \texttt{/optVRTS/}
Available documentation

docs directory on your system after product installation so that they are available for future reference.

Release notes for component products of SFCFS are located under sfcfs/release_notes.

Installation guides for component products of SFCFS are located under sfcfs/docs.

Read the following installation guide and component product release notes before starting the installation:

- Veritas Storage Foundation Cluster File System Installation Guide (sfcfs_install.pdf)
- Veritas Storage Foundation Cluster File System Administrator’s Guide (sfcfs_admin.pdf)
- Veritas Storage Foundation Release Notes (sf_notes.pdf)
- Veritas Cluster Server Release Notes (vcs_notes.pdf)

Veritas Storage Foundation Cluster File System Guides

The following guides comprise the Veritas Storage Foundation Cluster File System documentation set:

<table>
<thead>
<tr>
<th>Guide Title</th>
<th>Filename</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veritas Storage Foundation Cluster File System Release Notes</td>
<td>sfcfs_notes.pdf</td>
</tr>
<tr>
<td>(this document)</td>
<td></td>
</tr>
<tr>
<td>Veritas Storage Foundation Cluster File System Installation</td>
<td>sfcfs_install.pdf</td>
</tr>
<tr>
<td>Guide</td>
<td></td>
</tr>
<tr>
<td>Veritas Storage Foundation Cluster File System Administrator’s</td>
<td>sfcfs_admin.pdf</td>
</tr>
<tr>
<td>Guide</td>
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Related documentation

The following manuals, along with the online help, provide important information about the software components for SFCFS/SFCFS HA.

**Veritas Storage Foundation Guides**

<table>
<thead>
<tr>
<th>Guide Title</th>
<th>Filename</th>
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<tbody>
<tr>
<td>Veritas Storage Foundation and High Availability Getting Started Guide</td>
<td>getting_started.pdf</td>
</tr>
<tr>
<td>Veritas Storage Foundation Release Notes</td>
<td>sf_notes.pdf</td>
</tr>
<tr>
<td>Veritas Storage Foundation Installation Guide</td>
<td>sf_install.pdf</td>
</tr>
<tr>
<td>Veritas Storage Foundation Intelligent Storage Provisioning Administrator’s Guide</td>
<td>sf_isp_admin.pdf</td>
</tr>
<tr>
<td>Veritas Storage Foundation Cross-Platform Data Sharing Administrator’s Guide</td>
<td>sf_cds_admin.pdf</td>
</tr>
<tr>
<td>Veritas Enterprise Administrator’s Guide</td>
<td>vea6x_users.pdf</td>
</tr>
<tr>
<td>Veritas Volume Manager Administrator’s Guide</td>
<td>vxvm_admin.pdf</td>
</tr>
<tr>
<td>Veritas Volume Manager Troubleshooting Guide</td>
<td>vxvm_tshoot.pdf</td>
</tr>
<tr>
<td>Veritas Volume Manager Hardware Notes</td>
<td>vxvm_hwnotes.pdf</td>
</tr>
<tr>
<td>Veritas FlashSnap Point-In-Time Copy Solutions Administrator’s Guide</td>
<td>flashsnap_admin.pdf</td>
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</tbody>
</table>
Veritas Cluster Server documentation

The following Veritas Cluster Server documentation is available with Veritas Storage Foundation Cluster File System HA:

<table>
<thead>
<tr>
<th>Guide Title</th>
<th>Filename</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veritas Cluster Server Release Notes</td>
<td>vcs_notes.pdf</td>
</tr>
<tr>
<td>Veritas Cluster Server Installation Guide</td>
<td>vcs_install.pdf</td>
</tr>
<tr>
<td>Veritas Cluster Server Agent Developer’s Guide</td>
<td>vcs_agent_dev.pdf</td>
</tr>
<tr>
<td>VCS Enterprise Agent for Oracle Installation and Configuration Guide</td>
<td>vcs_oracle_install.pdf</td>
</tr>
</tbody>
</table>
Veritas Volume Replicator documentation
The following Veritas Volume Replicator documentation is available with the Veritas Volume Replicator option:

<table>
<thead>
<tr>
<th>Guide Title</th>
<th>Filename</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veritas Volume Replicator Release Notes</td>
<td>vvr_notes.pdf</td>
</tr>
<tr>
<td>Veritas Volume Replicator Installation Guide</td>
<td>vvr_install.pdf</td>
</tr>
<tr>
<td>Veritas Volume Replicator Planning and Tuning Guide</td>
<td>vvr_planning.pdf</td>
</tr>
<tr>
<td>Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide</td>
<td>vvr_agents_config.pdf</td>
</tr>
</tbody>
</table>

Manual pages

The Veritas online manual pages are installed in `/opt/VRTS/man`. This directory must be added to the `MANPATH` environment variable.

If the `MANPATH` environment variable does not include `/opt/VRTS/man`, type:

```
man -M /opt/VRTS/man <cmd>
```

to view the desired manual page command.

**Note:** Installing documentation and online manual pages is optional.
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If you have any suggestions, additions, comments, or questions, please let me know.

Douglas C. Schmidt

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Apache Common Logging
Apache Jakarta Commons
Apache Lucene
Apache Portable Runtime
Apache Snmp4j - The Object Oriented SNMP API for Java
Apache Spring Framework
Apache Struts
Apache Tomcat
Apache Tomcat
Xerces C++

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Expat XML Parsing Library

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MD5.h

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JavaTip87: Automate the HourGlass Cursor
Kyle Davis
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