

Veritas Storage Foundation[™] Cluster File System Release Notes

AIX

5.0 Maintenance Pack 1



Veritas Storage Foundation Cluster File System Release Notes

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Storage Foundation Cluster File System 5.0 Maintenance Pack 1

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Symantec Corporation
20330 Stevens Creek Blvd.
Cupertino, CA 95014
www.symantec.com

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For technical assistance, visit

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Storage Foundation Cluster File System Release Notes

Introduction

This document provides information specific to the Maintenance Pack 1 (MP1) for Storage Foundation Cluster File System (SFCFS) 5.0.

- For information on topics not covered in this document, such as SFCFS-specific software fixes and limitations, see the *Veritas Storage Foundation Cluster File System 5.0 Release Notes*.
- For information on Storage Foundation, including software fixes and limitations for Veritas File System, Veritas Volume Replicator, and Veritas Volume Manager, see the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

Note: Read the following Veritas Technical Support TechNote for the latest information on updates, patches, and software issues for this release:

<http://entsupport.symantec.com/docs/282024>

The information in this TechNote may be crucial for the correct operation of Storage Foundation. Current information on the availability of fixes to the AIX operating system is available in this TechNote.

System requirements

This section describes the system requirement for this release.

AIX operating system requirements

SFCFS requires the following minimum AIX operating system and the appropriate technology level (TL) and service pack (SP) requirements:

- AIX 5.2 TL8 and above
- AIX 5.3 TL5 with SP1 and above

Install or migrate AIX 5.2 or 5.3, and then install the appropriate SP before installing Storage Foundation Cluster File System.

Note: The installation script for SFCFS verifies that the installation of AIX is at the proper TL before the upgrade to MP1 begins. Additional requirements for SP or other fixes are not verified by the install script. Refer to the following TechNote for any additional requirements that may exist:

<http://entsupport.symantec.com/docs/282024>

The script will abort without upgrading any component of SFCFS if the target system fails to meet the AIX TL requirements.

Storage Foundation Cluster File System 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://entsupport.symantec.com/docs/283161>

Component product release notes

In addition to reading these Release Notes, review all component product release notes before installing the product. The following component product release notes are included as PDF files on the Veritas software disc:

Veritas Storage Foundation Release Notes (sf_notes.pdf)

Veritas Cluster Server Release Notes (vcs_notes.pdf)

Because release notes are not installed by any packages and are not on the documentation disc, it is recommended that you copy them from the software disc to the `/opt/VRTS/docs` directory so they are available on your system for reference.

Migrating from AIX 5.2 to AIX 5.3

See the *Veritas Storage Foundation 5.0 MP1 Release Notes* for instructions on migrate from AIX 5.2 to AIX 5.3.

Installing for the first time

For new installations, first install Veritas Storage Foundation Cluster File System 5.0, then upgrade to the MP1 level. Review and follow the installation procedure for Storage Foundation Cluster File System 5.0 described in the *Veritas Storage Foundation Cluster File System 5.0 Installation Guide*. Follow the procedures in this document to upgrade Storage Foundation Cluster File System to 5.0 MP1.

Preparing to upgrade to 5.0 MP1

If you are upgrading an installed Veritas Storage Foundation 5.0 or 5.0 RP1 system, read the *Veritas Storage Foundation Installation Guide* or *Veritas Storage Foundation Cluster File System Installation Guide* for instructions on how to preserve the existing configuration information.

In particular, perform the following actions:

- Make a record of the mount points for VxFS file systems and VxVM volumes that are defined in the `/etc/filesystems` file. You will need to recreate these entries in the `/etc/filesystems` file on the freshly installed system.
- Before upgrading, ensure that you have made backups of all data that you want to preserve. In particular, you will need the information in such as `/etc/filesystems`. You should also run the `vxlicrep`, `vxdisk list`, and `vxprint -ht` commands, and record the output from these. You may need this information to reconfigure your system after the upgrade.
- Use the `vxlicrep` command to make a record of the currently installed Veritas licenses.

You should also review the *Veritas Storage Foundation Release Notes* or *Veritas Storage Foundation Cluster File System Release Notes*, and all documents in the `release_notes` directory for important release information.

Upgrading to 5.0 MP1

An upgrade requires stopping cluster failover functionality during the entire procedure. The upgrade is performed in a number of stages depending on the type of upgrade you are performing. The supported upgrade paths are:

- SFCFS 5.0 to 5.0 MP1
- SFCFS 5.0 RP1 to 5.0 MP1

Caution: Phased upgrade procedure results in system PANIC on configurations where LLT is configured over UDP and this known issue is fixed in 5.0 MP1. This issue is specific to configurations where LLT is configured over UDP and not present in usual LLT Ethernet configurations.

Full upgrade procedure should be used for upgrading from SFCFS 5.0 or SFCFS 5.0 RP1 to SFCFS 5.0 MP1 on configurations where LLT is configured over UDP.

Phased upgrade stages

A phased upgrade minimizes downtime by upgrading portions of the cluster, one at a time. Although the entire cluster is offline for a shorter period than a full upgrade, this method requires command-line interaction and some manual configuration.

Stages of a phased upgrade

- 1 Freeze service group operations and stop VCS on the cluster.
- 2 Select a group of one or more cluster nodes to upgrade, and leave a group of one or more nodes running.
- 3 Take the first group offline and install the software patches.
- 4 Take the second group offline **before** bringing the first group online.
- 5 Bring the first group (with the newly installed patches) online to restart cluster failover services.
- 6 Upgrade the remaining nodes in the second group and bring them online. The cluster is fully restored.

Proceed to [“Performing a phased upgrade”](#) on page 12.

Full upgrade stages

A full upgrade upgrades the product on the entire cluster and the cluster remains offline for the duration of the procedure. Minimal command-line interaction and some manual configuration are required.

Stages of a full upgrade

- 1 Freeze service group operations and stop VCS on the cluster.
- 2 Take all nodes in the cluster offline and install the software patches.
- 3 Bring all the nodes (with the newly installed patches) online to restart cluster failover services. The cluster is fully restored.

Proceed to “[Performing a full upgrade](#)” on page 15.

Performing a phased upgrade

This section describes how to upgrade to 5.0 MP1.

To upgrade to 5.0 MP1

- 1 Log in as superuser.
- 2 Verify that `/opt/VRTS/bin` is in your PATH so you can execute all product commands.
- 3 From any node in the cluster, make the VCS configuration writable:

```
# haconf -makerw
```
- 4 Enter the following command to freeze HA service group operations on each node:

```
# hasys -freeze -persistent node_name
```
- 5 Make the configuration read-only:

```
# haconf -dump -makero
```
- 6 Select the group of nodes that are to be upgraded first, and follow [step 7](#) through [step 32](#) for these nodes.
- 7 Stop VCS by entering the following command on each node in the group being upgraded:

```
# hastop -local
```
- 8 On each node, use the following command to check if any VxFS file systems or Storage Checkpoints are mounted:

```
# mount | grep vxfs
```
- 9 On each node in the cluster, unmount all Storage Checkpoints and file systems:

```
# umount /checkpoint_name  
# umount /filesystem
```
- 10 If there are still disk groups that are imported at this time then proceed to [step 11](#), otherwise skip to [step 14](#).
- 11 If you have created any Veritas Volume Replicator (VVR) replicated volume groups (RVGs) on your system, perform the following steps:
 - a Stop all applications that are involved in replication. For example, if a data volume contains a file system, unmount it.
 - b Use the `vxrvrg stop` command to stop each RVG individually:

```
# vxrvrg -g diskgroup stop rvg_name
```

- c On the Primary node, use the `vxrlink status` command to verify that all RLINKs are up-to-date:

```
# vxrlink -g diskgroup status rlink_name
```

To avoid data corruption, do not proceed until all RLINKs are up-to-date.
- 12 Stop activity to all VxVM volumes. For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.
- 13 On each node, stop all VxVM volumes by entering the following command for each disk group:

```
# vxvol -g diskgroup stopall
```
- 14 Check if the VEA service is running:

```
# /opt/VRTS/bin/vxsvcctl status
```

If the VEA service is running, stop it:

```
# /opt/VRTS/bin/vxsvcctl stop
```
- 15 Insert the Veritas software disc on any node and mount the CD-ROM. For example:

```
# mount -V cdrfs -o ro /dev/cd0 /mnt/cdrom
```
- 16 Change to the top-level directory on the CD-ROM:

```
# cd /mnt/cdrom
```
- 17 To upgrade the Storage Foundation Cluster File System, you must invoke the `installmp` command from one of your cluster nodes using the option that corresponds to your configuration:
 - To install on the local system only, enter the following command:

```
# ./installmp
```
 - To install on more than one system using secure shell (SSH) utilities, enter the following command:

```
# ./installmp node_name1 node_name2 ...
```
 - To install on more than one system using remote shell (RSH) utilities, enter the following command:

```
# ./installmp node_name1 node_name2 ... -rsh
```
- 18 After the initial system checks are complete, press **Return** to start the requirements checks.
- 19 After the requirements checks are complete, press **Return** to start upgrading the packages. If you are upgrading multiple nodes, you have the option of upgrading them simultaneously. You will be prompted after the upgrade is complete.
- 20 When installation is complete, note the locations of the summary, log, and response files indicated by the installer.

- 21 Stop VCS on each of the second group of nodes:

```
# hastop -local
```
- 22 Reboot the upgraded nodes. Assuming the reboot was successful, application failover is now available for the first group of nodes.
- 23 If necessary, reinstate any missing mount points in the `/etc/filesystems` file on each node.
- 24 If any VCS configuration files need to be restored, stop the cluster, restore the files to the `/etc/VRTSvcs/conf/config` directory, and restart the cluster.
- 25 Make the VCS configuration writable again from any node in the upgraded group:

```
# haconf -makerw
```
- 26 Enter the following command on each node in the upgraded group to unfreeze HA service group operations:

```
# hasys -unfreeze -persistent node_name
```
- 27 Make the configuration read-only:

```
# haconf -dump -makero
```
- 28 Bring the CVM service group online on each node in the upgraded group:

```
# hagrp -online cvm -sys node_name
```
- 29 Restart all the volumes by entering the following command for each disk group:

```
# vxvol -g diskgroup startall
```
- 30 If you stopped any RVGs in [step 11](#), restart each RVG:

```
# vxrvg -g diskgroup start rvg_name
```
- 31 Remount all VxFS file systems and Storage Checkpoints on all nodes:

```
# mount /filesystem  
# mount /checkpoint_name
```
- 32 Check if the VEA service was restarted:

```
# /opt/VRTS/bin/vxsvcctrl status
```

If the VEA service is not running, restart it:

```
# /opt/VRTS/bin/vxsvcctrl start
```
- 33 Repeat [step 7](#) through [step 32](#) for the second group of nodes.

Note: When the installer installs software, some software may be applied rather than committed. It is the responsibility of the system administrator to commit the software, which can be performed later using the `-c` option of the `installmp` command.

Performing a full upgrade

The following procedure describes upgrading a standalone system.

To upgrade the Storage Foundation software on a standalone system

- 1 Log in as superuser.
- 2 Verify that `/opt/VRTS/bin` is in your PATH so you can execute all product commands.
- 3 On any node in the cluster, run the following command:

```
# hstop -all
```

This stops VCS on all nodes in the cluster.
- 4 Use the following command to check if any VxFS file systems or Storage Checkpoints are mounted:

```
# mount | grep vxfs
```
- 5 Unmount all Storage Checkpoints and file systems:

```
# umount /checkpoint_name  
# umount /filesystem
```
- 6 If there are still disk groups that are imported at this time then proceed to [step 7](#), otherwise skip to [step 10](#).
- 7 If you have created any Veritas Volume Replicator (VVR) replicated volume groups (RVGs) on your system, perform the following steps:
 - a Stop all applications that are involved in replication. For example, if a data volume contains a file system, unmount it.
 - b Use the `vxrvrg stop` command to stop each RVG individually:

```
# vxrvrg -g diskgroup stop rvg_name
```
 - c On the Primary node, use the `vxrlink status` command to verify that all RLINKs are up-to-date:

```
# vxrlink -g diskgroup status rlink_name
```

To avoid data corruption, do not proceed until all RLINKs are up-to-date.
- 8 Stop activity to all VxVM volumes. For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.
- 9 Stop all VxVM volumes by entering the following command for each disk group:

```
# vxvol -g diskgroup stopall
```

To verify that no volumes remain open, use the following command:

```
# vxprint -Aht -e v_open
```

- 10 Check if the VEA service is running:

```
# /opt/VRTS/bin/vxsvcctl status
```

If the VEA service is running, stop it:

```
# /opt/VRTS/bin/vxsvcctl stop
```
- 11 Insert the Veritas software disc on any node and mount the CD-ROM. For example:

```
# mount -V cdrfs -o ro /dev/cd0 /mnt/cdrom
```
- 12 Change to the top-level directory on the CD-ROM:

```
# cd /mnt/cdrom
```
- 13 To upgrade the Storage Foundation Cluster File System, you must invoke the `installmp` command from one of your cluster nodes using the option that corresponds to your configuration:
 - To install on the local system only, enter the following command:

```
# ./installmp
```
 - To install on more than one system using secure shell (SSH) utilities, enter the following command:

```
# ./installmp node_name1 node_name2 ...
```
 - To install on more than one system using remote shell (RSH) utilities, enter the following command:

```
# ./installmp node_name1 node_name2 ... -rsh
```
- 14 After the initial system checks are complete, press **Return** to start the requirements checks.
- 15 After the requirements checks are complete, press **Return** to start upgrading the packages. If you are upgrading multiple nodes, you have the option of upgrading them simultaneously. You will be prompted after the upgrade is complete.
- 16 When installation is complete, note the locations of the summary, log, and response files indicated by the installer.
- 17 Shut down and reboot the system.
- 18 If necessary, reinstate any missing mount points in the `/etc/filesystems` file.
- 19 If any VCS configuration files need to be restored, stop the cluster, restore the files to the `/etc/VRTSvcs/conf/config` directory, and restart the cluster.
- 20 Restart all the volumes by entering the following command for each disk group:

```
# vxvol -g diskgroup startall
```
- 21 If you stopped any RVGs in [step 7](#), restart each RVG:

```
# vxrvg -g diskgroup start rvg_name
```


22 Remount all VxFS file systems and Storage Checkpoints:

```
# mount /filesystem
# mount /checkpoint_name
```

23 Check if the VEA service was restarted:

```
# /opt/VRTS/bin/vxsvcctl status
```

If the VEA service is not running, restart it:

```
# /opt/VRTS/bin/vxsvcctl start
```

Note: When the installer installs software, some software may be applied rather than committed. It is the responsibility of the system administrator to commit the software, which can be performed later using the `-c` option of the `installmp` command.

Removing 5.0 MP1

Roll back of the 5.0 MP1 packages to the release 5.0 version of the packages is not supported. To restore release 5.0 on your system, you must completely remove 5.0 MP1, then reinstall Veritas Storage Foundation Cluster File System 5.0.

To uninstall the Veritas software

- 1 Log in as superuser.
- 2 Verify that `/opt/VRTS/bin` is in your `PATH` so you can execute all product commands.
- 3 Run the `hastop -all` command to take all service groups offline, and shut down VCS:

```
# /opt/VRTSvcs/bin/hastop -all
```

Note: Do not use the `-force` option when executing `hastop`. This will leave all service groups online and shut down VCS, causing undesired results during uninstallation of the packages.

- 4 Use the following command to check if any VxFS file systems or Storage Checkpoints are mounted:

```
# mount | grep vxfs
```
- 5 Unmount all Storage Checkpoints and file systems:

```
# umount /checkpoint_name
# umount /filesystem
```
- 6 Stop activity to all VxVM volumes. For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.
- 7 Stop all VxVM volumes by entering the following command for each disk group:

```
# vxvol -g diskgroup stopall
```

To verify that no volumes remain open, use the following command:

```
# vxprint -Aht -e v_open
```
- 8 Check if the VEA service is running:

```
# /opt/VRTS/bin/vxsvcctl status
```

If the VEA service is running, stop it:

```
# /opt/VRTS/bin/vxsvcctl stop
```

- 9 To shut down and remove the installed Veritas packages, use the appropriate command in the `/opt/VRTS/install` directory. For example, to uninstall the Storage Foundation Cluster File System, use the following commands:

```
# cd /opt/VRTS/install
# ./uninstallsfcfs [-rsh]
```

You can use this command to remove the packages from one or more systems. The `-rsh` option is required if you are using the remote shell (RSH) rather than the secure shell (SSH) to uninstall the software simultaneously on several systems.

Note: Provided that the remote shell (RSH) or secure shell (SSH) has been configured correctly, this command can be run on a single node of the cluster to install the software on all the cluster nodes.

After uninstalling the Veritas software, reinstall the release 5.0 software as described in the *Veritas Storage Foundation Installation Guide*, *Veritas Storage Foundation Cluster File System Installation Guide*, or *Veritas Cluster Server (VCS) Installation Guide*.

Software limitations

Veritas Storage Foundation Cluster File System software limitations in the 5.0 release are listed in the *Veritas Storage Foundation Cluster File System 5.0 Release Notes*.

The *Veritas Storage Foundation Cluster File System 5.0 Release Notes* can be viewed at the following URL:

<http://entsupport.symantec.com/docs/283986>

The Veritas Storage Foundation, Veritas Volume Manager, Veritas File System, Veritas Volume Replicator, and Veritas Storage Foundation for Databases software limitations are listed in the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

See the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

There are no new Veritas Storage Foundation Cluster File System software limitations in this MP1 release.

Fixed issues

Veritas Storage Foundation Cluster File System fixed issues in the 5.0 release are listed in the *Veritas Storage Foundation Cluster File System 5.0 Release Notes*.

The *Veritas Storage Foundation Cluster File System 5.0 Release Notes* can be viewed at the following URL:

<http://entsupport.symantec.com/docs/283986>

The Veritas Storage Foundation, Veritas Volume Manager, Veritas File System, Veritas Volume Replicator, and Veritas Storage Foundation for Databases fixed issues are listed in the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

See the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

The following are new Veritas Storage Foundation Cluster File System fixed issues in this MP1 release:

Incident	Description
612406	Push the entire extent for an ilist hole. This will prevent multi-entry holes.
645227	The file system was hanging due to a rare race between the merge and activation of File Change Log (FCL) which lead to a deadlock. The problem has been resolved by ensuring that the merge threads try for the FCL global lock and proceed only if the lock is available.
770917	In some code paths related to large directory support, the cluster member (node) was not taking and holding the ownership of the inode for which the extents are to be re-organized. So, an assertion was being triggered when another member node of the cluster tried to revoke ownership of the inode. The problem has been resolved by correcting the ownership issues in large directory related code paths.
771892	A deadlock was occurring during CFS recovery. Log replay, which is performed as the first step during CFS recovery when a node crashes, was found to block in certain scenarios on an inode that the replay is trying to process. The problem has been resolved by freeing all inodes in the chunk one at a time without marking other inodes as busy.

Incident	Description
771970	When a file is truncated, the truncate request is shipped to the cluster member that has the current ownership of the inode. There were certain inconsistencies in pre-splitting a buffer in the presence of clones, when the truncate request was shipped to another node of the cluster leading to an assertion. The problem has been resolved by changing the truncation code paths to handle the pre-splitting of buffers at a later stage during truncation, for both locally mounted and cluster mounted file systems.
771999	A node in a cluster was hanging under heavy CFS activity in the cluster. When all the worker threads servicing callbacks from a queue were blocked, the callbacks that were still lying in the same queue faced a deadlock. The problem has been resolved by queuing the callbacks that need to be processed to unblock other callbacks into a different queue, and processing them at a higher priority.
775611	Upon encountering an I/O error, the file system is correctly disabled but an internal inconsistency check fails. The check failure in this instance is quite benign and cannot cause customer data corruption since the file system is safely disabled upon encountering an I/O error of this nature. To further diagnose this condition, a new consistency check has been added.
782024	Under heavy inode cache stress, file system recovery on a cluster file system was hanging after an I/O error. The problem has been resolved by ensuring that the code paths that attempt to reuse an inode do not wait for a dirty/bad/inactive inode to become free if recovery initiated by a disabled file system is currently in progress. If there are no inodes available for re-use, a new inode will be allocated to ensure that the recovery proceeds to completion.
793030	The vxfsutil.h was using 'struct timeval' in one of the function declarations without including time.h resulting in a warning message during compilation. The problem has been resolved by including time.h in vxfsutil.h.

For a list of additional issues fixed in this release, see the following TechNote:
<http://entsupport.symantec.com/docs/285869>

Known issues

Veritas Storage Foundation Cluster File System known issues in the 5.0 release are listed in the *Veritas Storage Foundation Cluster File System 5.0 Release Notes*.

The *Veritas Storage Foundation Cluster File System 5.0 Release Notes* can be viewed at the following URL:

<http://entsupport.symantec.com/docs/283986>

The Veritas Storage Foundation, Veritas Volume Manager, Veritas File System, Veritas Volume Replicator, and Veritas Storage Foundation for Databases known issues are listed in the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

See the *Veritas Storage Foundation 5.0 MP1 Release Notes*.

The following are new Veritas Storage Foundation Cluster File System known issues in this MP1 release:

vxvol command fails

Sometimes when the cluster starts with multiple nodes, some shared volumes might remain in DISABLED state due to the failure of the `vxvol` command. If this occurs, the following message appears on the console:

```
VxVM vxvol ERROR V-5-1-10128 Error in cluster processing
```

Workaround: Follow these steps to recover from this situation:

- 1 For all the CVMVolDg and CFSMount resources that are faulted, run the following command on one of the nodes:

```
# hares -clear resourcename -sys system01
# hares -clear resourcename -sys system02
# hares -clear resourcename -sys system03
# hares -clear resourcename -sys system04
```
- 2 Start all volumes that are disabled by entering the following command on the CVM Master:

```
# vxvol -g diskgroup startall
```
- 3 For all the CVMVolDg resources whose faults were cleared in [step 1](#), run the following command on one of the nodes:

```
# hares -online resourcename -sys system01
# hares -online resourcename -sys system02
# hares -online resourcename -sys system03
# hares -online resourcename -sys system04
```
- 4 Mount the file systems by running the following command on any one node of the cluster:

```
# cfsmount filesystem
```

Oracle-AIX

Problems uninstalling or upgrading Veritas Storage Foundation for Oracle when Veritas Storage Foundation Cluster File System is installed on the same system

If Veritas Storage Foundation for Oracle and Veritas Storage Foundation Cluster File System are installed on the same machine, do not use the installer to uninstall if you are planning to uninstall only one product.

If you want to uninstall the product, you must uninstall the Veritas Storage Foundation for Oracle packages manually.

To uninstall the Veritas Storage Foundation for Oracle packages

- 1 Review the uninstallation requirements in the *Veritas Storage Foundation Installation Guide*.
- 2 Follow steps 1 through 2 in the uninstallation procedure in “Removing Storage Foundation packages” in the *Veritas Storage Foundation Installation Guide*.
- 3 Remove the Veritas Storage Foundation for Oracle packages using the `installp -u` command.

```
# installp -u VRTSorgui VRTSdbed VRTSdbdoc VRTSdbcom
```

If Veritas Storage Foundation for Oracle and Veritas Storage Foundation Cluster File System are installed on the same machine and you are upgrading both products, use the installer to upgrade Veritas Storage Foundation Cluster File System first. Then, use the installer to upgrade Veritas Storage Foundation for Oracle.

If the second upgrade fails, remove the Veritas Storage Foundation for Oracle packages as described above, then run the installer to upgrade Veritas Storage Foundation for Oracle. [840486]

DB2-AIX

Problems uninstalling or upgrading Veritas Storage Foundation for DB2 when Veritas Storage Foundation Cluster File System is installed on the same system

If Veritas Storage Foundation for DB2 and Veritas Storage Foundation Cluster File System are installed on the same machine, do not use the installer to uninstall if you are planning to uninstall only one product.

If you want to uninstall the product, you must uninstall the Veritas Storage Foundation for DB2 packages manually.

To uninstall the Veritas Storage Foundation for DB2 packages

- 1 Review the uninstallation requirements in the *Veritas Storage Foundation Installation Guide*.
- 2 Follow steps 1 through 2 in the uninstallation procedure in “Removing Storage Foundation packages” in the *Veritas Storage Foundation Installation Guide*.
- 3 Remove the Veritas Storage Foundation for DB2 packages using the `installp -u` command.

```
# installp -u VRTSd2gui VRTSdb2ed VRTSdbdoc VRTSdbcom
```

If Veritas Storage Foundation for DB2 and Veritas Storage Foundation Cluster File System are installed on the same machine and you are upgrading both products, use the installer to upgrade Veritas Storage Foundation Cluster File System first. Then, use the installer to upgrade Veritas Storage Foundation for DB2.

If the second upgrade fails, remove the Veritas Storage Foundation for DB2 packages as described above, then run the installer to upgrade Veritas Storage Foundation for DB2. [840486]

