

VERITAS Storage Foundation™ 4.1

Release Notes

Linux

Maintenance Pack 1

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Contents

VERITAS Storage Foundation 4.1 Maintenance Pack 1 Release Notes	1
Introduction	1
New and Enhanced Features	2
System Requirements	2
Supported Linux Operating Systems	2
Memory Requirements	4
Supported DB2 Versions	4
Software and Hardware Requirements	4
VERITAS Volume Manager 4.1 MP1 Licenses	4
Cross-Platform Data Sharing Licensing	5
Component Product Release Notes	5
Installing for the First Time	6
Upgrading to Storage Foundation 4.1 MP1	8
Verifying Software Versions	13
Removing the MP1 Packages	14
Fixed Issues	16
VERITAS Volume Manager Fixed Issues	16
VERITAS File System Fixed Issues	18
VERITAS Volume Replicator Fixed Issues	19
Documentation Issues	20
VERITAS File System Documentation Issues	20
Software Issues	20
VERITAS File System Software Issues	20



VERITAS Volume Replicator Software Issues	21
Software Limitations	21
VERITAS Volume Manager Software Limitations	21
VERITAS File System Software Limitations	22
VERITAS Volume Replicator Software Limitations	23
No Longer Supported	23
32-bit Operating Systems	23
Getting Help	24
Third-Party Legal Notices	25



VERITAS Storage Foundation 4.1 Maintenance Pack 1 Release Notes

Introduction

This document provides release information about the products in the VERITAS Storage Foundation 4.1 Maintenance Pack 1 (MP1) Linux product line:

- ◆ VERITAS Storage Foundation (QuickStart, Standard, Standard HA, Enterprise, and Enterprise HA)
- ◆ VERITAS Storage Foundation *for DB2* (Standard, Enterprise, and HA Editions)
- ◆ VERITAS Volume Manager (VxVM)
- ◆ VERITAS File System (VxFS)
- ◆ VERITAS Cluster Server (VCS)

Each of these products is activated by a single license key. You must obtain a license key before installing the product. For information on obtaining a license key, see the *VERITAS Storage Foundation Installation Guide*.

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

<http://support.veritas.com/docs/277033>

Review this entire document before installing your VERITAS Storage Foundation product.

Note Throughout this document, reference numbers for issues are included in square brackets, for example [xxxxxx], where xxxxxx is a number. If you contact VERITAS Technical Support about an issue, please provide the reference number where available.



New and Enhanced Features

Asynchronous I/O Support

This release includes support for Linux native Asynchronous I/O (AIO). This provides an interface for the submission of one or more I/O requests in one system call, without the need for the application thread to await I/O completion.

AIO is of significant benefit to database management systems, such as DB2 and Sybase.

System Requirements

Supported Linux Operating Systems

Storage Foundation operates on the following Linux operating systems and kernel binaries distributed by Red Hat and SUSE:

Operating System	Architecture	Kernel
Red Hat Enterprise Linux 4 Update 1	x86 (32-bit)	2.6.9-11EL 2.6.9-11ELsmp 2.6.9-11ELhugemem
	x86_64 (Intel Xeon, AMD Opteron)	2.6.9-11EL 2.6.9-11ELsmp
	IA64 (Intel)	2.6.9-11EL
Red Hat Enterprise Linux 4 Update 2	x86 (32-bit)	2.6.9-22EL 2.6.9-22ELsmp 2.6.9-22ELhugemem
	x86_64 (Intel Xeon, AMD Opteron)	2.6.9-22EL 2.6.9-22ELsmp
	IA64 (Intel)	2.6.9-22EL



Operating System	Architecture	Kernel
SUSE Linux Enterprise Server 9 Service Pack 1	IA64 (Intel)	2.6.5-7.139-default 2.6.5-7.145-default
	x86_64 (Intel Xeon, AMD Opteron), x86 (32-bit)	2.6.5-7.139-smp 2.6.5-7.139-default 2.6.5-7.145-smp 2.6.5-7.145-default
SUSE Linux Enterprise Server 9 Service Pack 2	IA64 (Intel)	2.6.5-7.201-default
	x86_64 (Intel Xeon, AMD Opteron), x86 (32-bit)	2.6.5-7.201-smp 2.6.5-7.201-default
SUSE Linux Enterprise Server 9 Service Pack 3	IA64 (Intel)	2.6.5-7.241-default
	x86_64 (Intel Xeon, AMD Opteron), x86 (32-bit)	2.6.5-7.241-smp 2.6.5-7.241-default

Note For SUSE SLES9 SP2 installations, kernel version 2.6.5-7.201 or greater is required because versions 2.6.5-7.191 (SP2) and 2.6.5-7.193 have a bug [Incident 425945] that stops dynamic multipathing (DMP) failover from working. This is fixed in the 2.6.5-7-201 kernel version. For the available SUSE Linux maintenance web site contact Novell.

On IA64 systems, upgrading SLES 9 to SP2 removes the `sfdisk` binary, which is required by VxVM. See TechNote 278873 for instructions on how to install this binary:

<http://support.veritas.com/docs/278873>

32-bit Storage Foundation Cluster File System (SFCFS) is not supported by 4.1 MP1 on SUSE SLES 9.

Supported Linux Operating System Updates

VERITAS products will 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 erratas and updates and SUSE service packs is available in the following TechNote. Read this TechNote *before* installing any VERITAS product.

<http://support.veritas.com/docs/277033>



Memory Requirements

A minimum of 1 GB of memory is strongly recommended.

Supported DB2 Versions

DB2 8.2, also referred to as DB2 8.1 with FixPak 7, or later is supported on the Linux operating systems listed above.

Software and Hardware Requirements

The compatibility list contains the latest information about supported hardware and software and is updated regularly.

Note Before installing or upgrading VERITAS Volume Manager, review the current compatibility list to confirm the compatibility of your hardware and software.

For the most up-to-date Hardware Compatibility List detailing supported Array Support Libraries (ASLs), visit the VERITAS support site at <http://support.veritas.com>, select **Volume Manager > Volume Manager for UNIX**, click on **Compatibility**, and enter the product version and platform details.

If you do not find your hardware or software listed or if you have questions about the information in the compatibility list, contact VERITAS Technical Services.

VERITAS Volume Manager 4.1 MP1 Licenses

The following table shows the levels of licensing in VERITAS Volume Manager 4.1 MP1 and the features supported at each level:

VxVM License	Description of Supported Features
Full	Concatenation, spanning, rootability, volume resizing, multiple disk groups, co-existence with native volume manager, striping, mirroring, DRL logging for mirrors, striping plus mirroring, mirroring plus striping, RAID-5, RAID-5 logging, Smartsync, hot sparing, hot-relocation, online data migration, online relayout, volume snapshots, volume sets, Intelligent Storage Provisioning, FastResync with Instant Snapshots, Storage Expert, Device Discovery Layer (DDL), Dynamic Multipathing (DMP), and VERITAS Enterprise Administrator (VEA).
Add-on License	The feature that augments the Full VxVM license is VERITAS Volume Replicator (VVR).



Note You need a Full VxVM license to make effective use of add-on license to VxVM.

To see the license features that are enabled in VxVM 4.1 MP1, enter the following command:

```
# vxdctl license
```

Cross-Platform Data Sharing Licensing

Note The Cross-Platform Data Sharing (CDS) feature is also referred to as Portable Data Containers.

The ability to import a CDS disk group on a platform that is different from the platform on which the disk group was last imported is controlled by a CDS license. CDS licenses are included as part of the VERITAS Storage Foundation license.

Component Product Release Notes

Release notes for component products in all versions of the VERITAS Storage Foundation are located under the `storage_foundation/release_notes` directory of the VERITAS Storage Foundation disc or the `cluster_server/release_notes` directory of the VERITAS Cluster Server disc. It is important that you read the relevant component product release notes before installing any version of VERITAS Storage Foundation:

VERITAS Storage Foundation Release Notes (sf_notes.pdf)

VERITAS Storage Foundation Cluster File System Release Notes (sfdfs_notes.pdf)

VERITAS Cluster Server Release Notes (vcs_notes.pdf)

Because release notes are not installed by any packages, VERITAS recommends that you copy them to the `/opt/VRTS/docs` directory after the product installation so that they are available for future reference.



Installing for the First Time

If you are installing the VERITAS Storage Foundation 4.1 MP1 software for the first time and not upgrading an existing system, read the *VERITAS Storage Foundation Installation Guide* for pre-installation instructions. Also review the *VERITAS Storage Foundation Release Notes* and all documents in the `release_notes` directory for important release information.

Caution Existing data could be destroyed on any disks that are touched by upgrading the operating system. While upgrading, do not reconfigure any disks other than the root disk. To ensure the integrity of your data, it is recommended that you back it up before starting the upgrade.

▼ To install the Storage Foundation software

1. Before installing VERITAS Storage Foundation 4.1 MP1, you must install the VERITAS Storage Foundation 4.1 as described in the *VERITAS Storage Foundation 4.1 Installation Guide*. However, run the product installation script instead of the generic `installer` script. For example, if you are installing the Storage Foundation software, enter the following command from the top-level directory of the mounted CD-ROM:

```
# ./installsf -installonly [-usersh]
```

The `-installonly` option is required to perform the installation without configuring the software. The `-usersh` option is required if you are using the remote shell (RSH) rather than the secure shell (SSH) to install 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.

For help on how to respond to the installation prompts, see the *VERITAS Storage Foundation 4.1 Installation Guide*.

2. Insert the VERITAS Storage Foundation 4.1 MP1 software disc and mount the CD-ROM. For example:

```
# mount -o ro /dev/cdrom /mnt/cdrom
```

3. Move to the top-level directory on the CD-ROM:

```
# cd /mnt/cdrom
```



4. To install the Storage Foundation 4.1 MP1, 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, enter the following command:

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

```
# ./installmp system_name1 system_name2 ...
```
 - ◆ To install on more than one system using remote shell (RSH) utilities, enter the following command:

```
# ./installmp system_name1 system_name2 ... -usersh
```
5. After the initial system checks have completed successfully, press **Enter** to start the requirements checks for the upgrade.
6. After the requirement checks have completed successfully, press **Enter** to begin upgrading the packages.
7. If you are upgrading multiple systems, you can choose to upgrade the systems simultaneously.
8. After the upgrade of the packages is complete, press **Enter**.
9. Run the same installation script that you used in [step 1](#), this time specifying the `-configure` option to configure the software, for example:

```
# ./installsf -configure [-usersh]
```

For help on how to respond to the installation prompts, see the *VERITAS Storage Foundation 4.1 Installation Guide*.



Upgrading to Storage Foundation 4.1 MP1

▼ To upgrade to Storage Foundation 4.1 MP1

1. Log in as superuser.
2. Make a complete backup of all data on the system. In particular, you will need the information in files such as `/boot/grub/menu.lst`, `/etc/grub.conf` or `/etc/lilo.conf` (as appropriate), and `/etc/fstab`.
3. Run the `vxlicrep`, `vxdisk list`, and `vxprint -ht` commands and record the output. Use this information to reconfigure your system after the upgrade.
4. If you are upgrading a standalone system proceed to [step 5](#). If you are upgrading a cluster, perform the following steps.

- a. Use `hastop` command to stop the cluster:

```
# /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 VERITAS Cluster Server (VCS), causing undesired results while upgrading the packages.

All nodes in a cluster must currently be running the VERITAS Storage Foundation 4.1 software, and the correct licenses must be present on these system.

- b. If you are upgrading the HA version of the VERITAS Storage Foundation 4.1 software, follow the guidelines given in the *VERITAS Cluster Server 4.1 Installation Guide*, *VERITAS Cluster Server 4.1 Release Notes* and the *VERITAS Cluster Server 4.1 MP1 Release Notes* for information on preserving your VCS configuration across the upgrade procedure.
5. Perform any necessary preinstallation checks and configuration. See the *VERITAS Storage Foundation 4.1 Installation Guide* for more information.



6. Check if the system's root disk is under VxVM control:

```
# df -v /
```

The root disk is under VxVM control if `/dev/vx/dsk/rootvol` is listed as being mounted as the root (`/`) file system. If so, unmirror and unencapsulate the root disk as described in the following steps:

- a. Use the `vxplex` command to remove all the plexes of the volumes `rootvol`, `swapvol`, `usr`, `var`, `opt` and `home` that are on disks other than the root disk.

For example, the following command removes the plexes `mirrootvol-01`, and `mirswapvol-01` that are configured on a disk other than the root disk:

```
# vxplex -o rm dis mirrootvol-01 mirswapvol-01
```

Note Do not remove the plexes on the root disk that correspond to the original disk partitions.

- b. Enter the following command to convert all the encapsulated volumes in the root disk back to being accessible directly through disk partitions instead of through volume devices:

```
# /etc/vx/bin/vxunroot
```

Following the removal of encapsulation, the system is rebooted from the unencapsulated root disk.

7. Check if any VERITAS File Systems or Storage Checkpoints are mounted:

```
# df -T | grep vxfs
```

8. Unmount all Storage Checkpoints and VERITAS File Systems:

```
# umount /checkpoint_name  
# umount /filesystem
```



9. Verify that all file systems have been cleanly unmounted:

```
# echo "8192B.p S" | fsdb -t vxfs filesystem | grep clean
flags 0 mod 0 clean clean_value
```

A *clean_value* value of 0x5a indicates the file system is clean, 0x3c indicates the file system is dirty, and 0x69 indicates the file system is dusty. A dusty file system has pending extended operations.

- a. If a file system is not clean, enter the following commands for that file system:

```
# fsck -t vxfs filesystem
# mount -t vxfs filesystem mountpoint
# umount mountpoint
```

This should complete any extended operations that were outstanding on the file system and unmount the file system cleanly.

There may be a pending large fileset clone removal extended operation if the `umount` command fails with the following error:

```
file system device busy
```

You know for certain that an extended operation is pending if the following message is generated on the console:

```
Storage Checkpoint asynchronous operation on file_system file
system still in progress.
```

- b. If an extended operation is pending, you must leave the file system mounted for a longer time to allow the operation to complete. Removing a very large fileset clone can take several hours.
- c. Repeat [step 9](#) to verify that the unclean file system is now clean.
10. If you have created any VERITAS Volume Replicator (VVR) replicated volume groups (RVGs) on your system, perform the following steps. Otherwise, proceed to [step 11](#) on page 11.
- a. Stop all applications that are involved in replication. For example, if a data volume contains a file system, unmount it.
- b. Use the `vxrvg stop` command to stop each RVG individually:

```
# vxrvg -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
```

Caution To avoid data corruption, do not proceed until all RLINKs are up-to-date.

- d. If you are going to use cross-version replication between any release of 4.0 and 4.1, perform the following step on the host that is running version 4.1 to make the tunable value persistent. Otherwise, proceed to [step 11](#).

```
# vxvoltune vol_vvr_use_host_byte_order 1
```

11. 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.
12. 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
```

13. Comment out any mount points in the `/etc/fstab` file for VERITAS File Systems, or for any file systems that are configured on VxVM volumes.

14. Check if the VEA service is running:

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

If the VEA service is running, stop it:

```
# /opt/VRTS/bin/vxsvcctrl stop
```

15. Insert the disc containing the VERITAS software into the CD-ROM drive, and mount the CD-ROM on a suitable mount point, for example:

```
# mount -o ro /dev/cdrom /mnt/cdrom
```

16. Move to the top-level directory on the CD-ROM:

```
# cd /mnt/cdrom
```



17. To upgrade the Storage Foundation, 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, enter the following command:

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

```
# ./installmp system_name1 system_name2 ...
```
 - ◆ To install on more than one system using remote shell (RSH) utilities, enter the following command:

```
# ./installmp system_name1 system_name2 ... -usersh
```
18. After the initial system checks have completed successfully, press **Enter** to start the requirements checks for the upgrade.
19. After the requirement checks have completed successfully, press **Enter** to begin upgrading the packages.
20. If you are upgrading multiple systems, you can choose to upgrade the systems simultaneously.
21. After the upgrade of the packages is complete, press **Enter**.
22. (Optional) If you are going to upgrade your system, perform the following:
 - a. Upgrade your system, and patch it to a kernel version. For more information on supported operating systems and kernel versions, see [“Supported Linux Operating Systems”](#) on page 2.
23. Shut down and reboot the system.
24. If necessary, reinstate any missing mount points in the `/etc/fstab` file.



25. Restart all the volumes by entering the following command for each disk group:

```
# vxvol -g diskgroup startall
```

26. Restart each RVG:

```
# vxrvrg -g diskgroup start rvg_name
```

27. Remount all VERITAS File Systems and Storage Checkpoints:

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

28. Check if the VEA service was restarted:

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

a. If the VEA service is not running, restart it:

```
# /opt/VRTS/bin/vxsvcctrl start
```

29. If you are going to use cross-version replication between any release of 4.0 and 4.1 in [step d](#), reboot the system.

There are several optional configuration steps that you may perform:

- ◆ If you want to use features of VERITAS Storage Foundation 4.1 for which you do not currently have an appropriate license installed, obtain the license and run the `vxlicinst` command to add it to your system.
- ◆ To encapsulate and mirror the boot disk, follow the procedures in the “Administering Disks” chapter of the *VERITAS Volume Manager 4.1 Administrator’s Guide*.
- ◆ If you upgraded a cluster, restore any VCS configuration files as described in the *VERITAS Cluster Server 4.1 Installation Guide* and *VERITAS Cluster Server 4.1 Release Notes*.

Verifying Software Versions

To list the VERITAS packages installed on your system, enter the following command:

```
# rpm -qa | grep VRTS
```



Removing the MP1 Packages

Roll back of the MP1 packages to the release 4.1 version of the packages is not supported. To restore release 4.1 on your system, you must completely remove MP1, then reinstall VERITAS Storage Foundation 4.1.

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. If the systems are running as an HA cluster, use the following 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. Check if the root disk is under VxVM control by running this command:

```
# df -v /
```

The root disk is under VxVM control if `/dev/vx/dsk/rootvol` is listed as being mounted as the root (`/`) file system. If so, `unmirror` and `unencapsulate` the root disk as described in the following steps:

- a. Use the `vxplex` command to remove all the plexes of the volumes `rootvol`, `swapvol`, `usr`, `var`, `opt` and `home` that are on disks other than the root disk.

For example, the following command removes the plexes `mirrootvol-01`, and `mirswapvol-01` that are configured on a disk other than the root disk:

```
# vxplex -o rm dis mirrootvol-01 mirswapvol-01
```

Note Do not remove the plexes on the root disk that correspond to the original disk partitions.

- b. Enter the following command to convert all the encapsulated volumes in the root disk back to being accessible directly through disk partitions instead of through volume devices. There must be at least one other disk in the `rootdg` disk group in addition to the root disk for `vxunroot` to succeed.

```
# /etc/vx/bin/vxunroot
```

Following the removal of encapsulation, the system is rebooted from the unencapsulated root disk.

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

```
# df -T | grep vxfs
```

6. Unmount all Storage Checkpoints and file systems:

```
# umount /checkpoint_name
# umount /filesystem
```

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
```

Caution 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. 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 or VERITAS Storage Foundation *for DB2* packages, use the following commands:

```
# cd /opt/VRTS/install
# ./uninstallsf [-usersh]
```

You can use this command to remove the packages from one or more systems. The `-usersh` 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 4.1 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*.

Fixed Issues

VERITAS Volume Manager Fixed Issues

The following issues have been fixed in this release of VxVM

Incident	Description
368959	Device discovery could fail to identify Compaq SMART Array devices correctly.
378131	A clustered system with shared volumes could panic under certain circumstances.



Incident	Description
380287	The VxVM configuration daemon (<code>vxconfd</code>) could hang under certain circumstances in a cluster connected to an A/A array.
381908	When SCSI-3 PGR fencing was used in a VCS environment, the <code>vxfsenadm</code> command could report LUNs with multiple invalid keys after deporting a disk group.
384130	When an I/O path failed, the DMP error daemon processed the error at the LUN level, which could lead to long failover and I/O restart times.
391955	A corrupted I/O queue could occur on a DCO to a striped-mirror volume in a shared disk group.
394647	Access to raw devices are not supported for the component volumes volume sets. A fix is available as a special patch for release 4.1. This patch is not included in this maintenance pack.
411141	A false serial split brain error was raised on the master node of a cluster if a slave node and one of the attached arrays were brought down together.
411143	Takeover of the master node in a cluster did not succeed if PGR registration on one path had failed for some reason.
416359	A false serial split brain error was raised on a standalone system if one of two arrays containing a disk group was brought down.
414370	Deporting shared disk groups in a cluster took a long time if the disk group contained a large number of disks.
417747	The default value of the <code>dmp_failed_io_threshold</code> tunable was set to 1600 hours on Linux rather than the correct value of 16 hours.
419372	Importing a shared disk group on a slave node in a cluster could take a long time.
425952	The VERITAS Volume Manager modules would not load if a customer-specific kernel patch obtained from Red Hat had been installed.



VERITAS File System Fixed Issues

The following issues have been fixed in this release of VxFS:

Incident	Description
i153805	Under certain conditions, VxFS VxMS plugin function <code>vxfs_map_get_subobj_link_prop()</code> could return an incomplete list of subobjids for volume sets.
i154605	The CPU usage for synchronous flushes of large files has been reduced.
i152441	VxFS's kernel stack usage has been significantly reduced.
i154324	On IA64, the use of <code>do_gettimeofday()</code> by VxFS could have caused a server to lock up when under heavy load. VxFS's use of <code>do_gettimeofday()</code> has been modified to avoid this condition.
i154530	The semantics of handling the <code>fdatasync()</code> system call have been improved in VxFS.
i154708	Improvements have been made to VxFS to improve the write throughput under certain conditions; especially for random writes.
i154842	The <code>vxfsstat(1M)</code> command could have reported a negative 'Kbyte current' value for the buffer cache statistics.
i154881	Improvements have been made in VxFS to reduce the performance impact when a system is under heavy memory load.
i154222	In certain cases, manual tuning of VxFS could interfere with VxFS's dynamic tuning. For example, using the VxFS module load parameter <code>vxfs_ninode=n</code> to set the upper-bound of VxFS's inode cache would also modify the maximum size of VxFS's buffer-cache.
i154232	A failed snapshot mount could have result in the unmounting of the primary returning <code>device is busy</code> .
i154519	Under certain conditions, <code>vxedquota(1M)</code> command would return an invalid uid error for user IDs above 67 million.
497597	Loading VxFS module on an x86_64 system with more than 32GB of memory, causes the module load to never return.



VERITAS Volume Replicator Fixed Issues

The following issues have been fixed in this release of VVR:

Incident	Description
278838	When replicating in TCP mode, the default Nagle algorithm results in very slow replication because it attempts to coalesce small messages from the Secondary, which delays their transmission.
279096	After a disk failure on the Secondary, the <code>secondary_log_err</code> flag on the Primary was not cleared even after the disk on the Secondary was fixed.
296372	Under certain conditions, I/O could hang when issued during a checkpoint attach.
304305	When replicating using TCP, the algorithm for choosing the number of connections has been enhanced.
308169	There is potential for a panic when an SRL I/O error occurs during a pending transaction that is waiting for I/Os to finish.
310204	You cannot resize the SRL while automatic synchronization or DCM replay is in progress. Also, the SRL resize operation does not preserve checkpoint information.
312769	For disk group version 90, if the SRL is disassociated and associated again before the Secondary assumes the role of Primary, the <code>srl_conf</code> table is corrupted or not initialized.
316409	Under certain conditions, VVR could hang when connecting to the remote host during a transaction.
346446	In a clustered Primary and Secondary with NAT support enabled, if you switch the virtual IP from one node to the other, either on the Primary or the Secondary, the heartbeat messages are either sent from the incorrect node or are received by the incorrect node, respectively. This results in the heartbeat messages not being acknowledged, causing the RLINK to disconnect and replication to stop.
370768	In certain cases, with a high volume of concurrent writes, replication can stop because VVR on the Primary sends too many messages that are not in the order expected on the Secondary.
383627	The <code>vxlink stats</code> command incorrectly reports certain errors as timeout errors but actually they should be reported as memory errors.



Documentation Issues

VERITAS File System Documentation Issues

The *VERITAS File System 4.1 Administrator's Guide* incorrectly states that to increase the system memory size value, make the following change in `/etc/modprobe.conf` file. This is documented incorrectly in the Internal Inode Table Size section, refer to the table below for the correct operating system and file:

Operating System	File
Red Hat Enterprise Linux 4	<code>/etc/modprobe.conf</code>
SUSE Linux Enterprise Server 9	<code>/etc/modprobe.conf.local</code>

Software Issues

Software issues listed in the Storage Foundation 4.1 still apply.

For a list of the VERITAS Storage Foundation 4.1 software issues, see the *VERITAS Storage Foundation 4.1 Release Notes*, which is included with the VERITAS Storage Foundation 4.1. Also, the *VERITAS Storage Foundation 4.1 Release Notes* is available online at:

http://ftp.support.veritas.com/pub/support/products/Foundation_Suite/277925.pdf

Additional software issues for this 4.1 MP1 release are listed below.

VERITAS File System Software Issues

The following are the software issues in this release of VxFS:

Incident	Description
i153943	The VERITAS manual pages are installed in the <code>/opt/VRTS/man</code> directory. The <code>df_vxfs(1M)</code> manual page is in the <code>/opt/VRTS/bin</code> directory. Both of these directories must be added to the <code>MANPATH</code> environment variable.

VERITAS Volume Replicator Software Issues

For a list of the known issues in VVR 4.1, see the *VERITAS Volume Replicator 4.1 Release Notes*, which is included with VVR 4.1. Also, the *VERITAS Volume Replicator 4.1 Release Notes* is available online at:

http://ftp.support.veritas.com/pub/support/products/Volume_Replicator/277944.pdf

In addition, the following software issue applies to this release:

Incident	Description
429318	You cannot associate VxVM ISP volumes of the type stripe-mirror to an RVG.
497131	Under certain conditions, VVR may hang while executing the <code>vradm.in resizesrl</code> command. Workaround: Reboot the host.

Software Limitations

The following sections describe VERITAS Storage Foundation software limitations that exist in this release.

VERITAS Volume Manager Software Limitations

Root Disk Encapsulation Fails After Installing an ASL

Root disk encapsulation can fail if a new array support library (ASL) has been installed but not enabled. Before starting the encapsulation, enable the newly installed ASL by rebooting the system or by running the following command:

```
# vxdctl enable
```



VERITAS File System Software Limitations

Volume Management Support

The VERITAS File System (VxFS) is only supported on VERITAS Volume Manager (VxVM) volumes.

Sendfile Support

The current version of VxFS does not support the `sendfile()` system call. In order to use Apache with VxFS, please use the Apache configuration Option “EnableSendFile Off”.

Stack Overflow

There is a known issue in Red Hat Enterprise 4 Update 1 32-bit system that is unlikely to occur but may result in a stack overflow. The issue was reported to Red Hat and is documented in Novell’s Bugzilla bug number 162257. Contact Novell for their Bugzilla web site.

This is only an issue for Red Hat Enterprise 4 Update 1 32-bit systems, it is fixed in Red Hat Enterprise 4 Update 2.

Security-Enhanced Linux

VxFS includes Security-Enhanced Linux (SE Linux) support for evaluation purposes only. VxFS conforms to the requirements of the SE Linux API. However, security policy files are not available for the VERITAS product stack.

Large Number of ACLs Over NFS Can Cause Kernel Panic on SLES9 SP1

The use of a large number of access control lists (ACLs) over NFS version 3 can result in a kernel panic on SUSE SLES9 SP1. This is not an issue if the maximum number of ACLs is restricted to 300.

This issue is not specific to VxFS. This is a core operating system issue, and is described in detail in Novell’s Bugzilla bug number 85745. Contact Novell for their Bugzilla web site.



VERITAS Volume Replicator Software Limitations

Length of RLINK Names

VVR does not support RLINK names that exceed 31 characters. If the host name and domain name together exceed 31 characters, the `vxmake rlink` command fails. [151336]

Unsupported Internet Protocol Versions

VVR does not support IPv6. All nodes in a VVR environment must use IPv4. [135504]

RAID-5 Volume

VVR does not support Volume Manager RAID-5 volumes as part of RVGs. Hardware RAID-5 is supported.

Disk Group Split and Join

VVR does not support Disk Group Split and Join. This means that you cannot use Disk Group Split and Join on data volumes in an RVG. However, you can take snapshots of data volumes and use DGSJ on the snapshots.

Importing a Disk Group with VVR Objects

If a private disk group containing VVR objects is imported on two nodes, as well as the problems documented for VxVM objects, the SRL is corrupted and a full resynchronization of the Secondary is required.

Volumes in Boot Disk Group

It is not recommended to have replicated volumes in the boot disk group (`bootdg`).

No Longer Supported

32-bit Operating Systems

This release of VERITAS Storage Foundation 4.1 MP1 is the last major version to support 32-bit operating systems on Linux.



Getting Help

For technical assistance, visit <http://support.veritas.com> and select phone or email support. This site also provides access to resources such as TechNotes, product alerts, software downloads, hardware compatibility lists, and the VERITAS customer email notification service. Use the Knowledge Base Search feature to access additional product information, including current and past releases of product documentation.

Diagnostic tools are also available to assist in troubleshooting problems associated with the product. These tools are available on disc or can be downloaded from the VERITAS FTP site. See the `README.VRTSspt` file in the `/support` directory for details.

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Digital Encryption Standard (DES) - MIT

MIT and Dennis Ferguson

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The End

Perl Compatible Regular Expressions

Philip Hazel

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PCRE is a library of functions to support regular expressions whose syntax and semantics are as close as possible to those of the Perl 5 language.

Written by: Philip Hazel <ph10@cam.ac.uk>

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Stricat.c

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Tomcat

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