

VERITAS File System™ 3.5

Release Notes

Solaris

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VERITAS

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VERITAS File System Release Notes

This guide provides information on VERITAS File System™ (VxFS) release 3.5. The 3.5 release of VxFS operates on the following Solaris operating systems:

- ◆ Solaris 2.6
- ◆ Solaris 7 (32-bit and 64-bit)
- ◆ Solaris 8 (32-bit and 64-bit)
- ◆ Solaris 9 (32-bit and 64-bit)

VERITAS Cluster File System (CFS), the clustering functionality of VxFS, is supported only on Solaris 8 and Solaris 9 (see [“Using Cluster File Systems”](#) on page 4 for more information). The VERITAS File System package includes VxFS software, documentation, and the optionally licensed VERITAS Quick I/O™ for Databases and VERITAS QuickLog™ features.

Review this entire document before installing VxFS. Topics include:

- ◆ [New Features](#)
- ◆ [End of Product Support](#)
- ◆ [Using VERITAS Quick I/O and VERITAS QuickLog](#)
- ◆ [Using Cluster File Systems](#)
- ◆ [Compatibility With Previous Versions of VxFS](#)
- ◆ [VxFS Packages](#)
- ◆ [Required Solaris Patches](#)
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- ◆ [Getting Help](#)
- ◆ [Licensing and Support From Sun Microsystems](#)



New Features

VxFS Release 3.5 has the following new features and changes.

▼ Solaris 9 Support

VERITAS File System now operates on Solaris 9 in 32-bit and 64-bit mode.

▼ 32-Terabyte File System Support

The 3.5 release is the first major VxFS release to support a new disk layout (version 5) that enables the creation of file system up to 32 terabytes in size. File systems created on VxFS 3.5 will by default use the new disk layout, but files created on Version 5 can still only be a maximum of two terabytes. File systems larger than 1TB can be created only on 64-bit kernels and must be created on a VERITAS Volume Manager™ volume. An eight terabyte file system requires a 2K block size, a 16 TB file system requires a 4K block size, and a 32 TB file system requires an 8K block size. An online conversion utility, `vxupgrade`, is provided to upgrade existing disk layouts to Version 5 on mounted file systems.

▼ New VERITAS Product Distribution Method

The VERITAS software disc has an automated installation and licensing procedure that lets you install packages using an Installation Menu instead of installing from the command line. This automated installation process is valid only for new product installations and cannot be used to upgrade from previous product versions.

VERITAS has also introduced a website from which you can quickly and easily obtain a license key for the products that you have purchased. The *Product License and Installation Guide*, included with the VERITAS software disc, provides complete information. Review the *Product License and Installation Guide* before installing VxFS.

▼ VERITAS Enterprise Administrator

The VERITAS Enterprise Administrator (VEA) is the new global graphical user interface used by VERITAS products. Some major VxFS functions, such as mounting, defragmenting, and creating snapshot file systems can be performed through the VEA GUI. VEA is installed with the VERITAS Volume Manager. See the *VERITAS Volume Manager User's Guide – VERITAS Enterprise Administrator* for details on configuring the GUI and using VxFS functionality.

▼ Group Quotas

The VxFS quota-related commands now support group quotas along with individual user disk quotas. The quota commands have a `-g` option to distinguish group operations, and a group quotas file, `quotas.grp`, is required to maintain group quota information.

▼ New and Enhanced Tunable Parameters

The following tunables were added or updated for 3.5:

<code>hsm_write_prealloc</code>	Preallocates uninitialized space in a managed region of a file to improve performance when using HSM applications with VxFS.
<code>read_ahead</code>	Detects complex read-ahead patterns in addition to sequential reads.
<code>write_throttle</code>	Alters the number of dirty pages generated before flushing to disk to take advantage of new disk storage technology.

See the `vxtunefs(1M)` manual page for more information. A kernel tunable, `vx_maxlink`, determines the number of sub-directories that can be created under a directory. `vx_maxlink` is set in the system configuration file. See the *VERITAS File System Administrator's Guide* for more information.

▼ Maximum QuickLog Log Size Increased

To improve performance, the QuickLog device log size maximum was increased from two gigabytes to 500 gigabytes.

▼ VxFS Command Enhancements

The `vxdump` command now enables backups at the file or directory level.

The `vxrestore` command now bypasses the system buffer cache when restoring data. This allows a system's buffer cache to remain intact while doing an extensive restore operation which typically improves system performance. The `vxrestore -c` option preserves backwards compatibility by allowing `vxrestore` to use the buffer cache.

The `vxupgrade` command can now upgrade an existing VxFS file system to the Version 5 layout while the file system remains online.

The `vxfsconvert` command can now convert unmounted file systems with Version 1 and Version 2 disk layouts to Version 5. VxFS Version 4 disk layouts cannot be converted to Version 5 offline.

The `logiosize=size` option was added to the `mount` command to enhance the performance of storage devices that employ a *read-modify-write* feature. To obtain the maximum performance from such devices, intent log writes can be done in 512, 1024, 2048, 4096, or 8192 bytes.



End of Product Support

This release is the last to support the VxFS Version 1 and Version 2 disk layouts. You can still mount these older disk layout versions, but you cannot create them using the VERITAS `mkfs` command. VERITAS recommends that you upgrade file systems using these older disk layouts to Version 5. See “[Compatibility With Previous Versions of VxFS](#)” below for information on upgrading.

This is the last release to support the QuickLog statistic gathering functionality provided by the `qlogstat` command. Also, future releases of QuickLog will support only one VxFS file system per QuickLog device instead of the current 32 file systems per QuickLog device.

Sun Microsystems has announced the End of Support Life for Solaris 2.6. Contact Sun customer support for more information.

Using VERITAS Quick I/O and VERITAS QuickLog

The VERITAS File System package, `VRTSvxfss`, includes two separately licensed products, VERITAS Quick I/O for Databases and VERITAS QuickLog. These features are described in the *VERITAS File System Administrator's Guide*. A QuickLog license is included with VERITAS Editions products and VERITAS Foundation Suite. Quick I/O is available only with VERITAS Editions products.

See “[Getting Help](#)” on page 20 for contact information on these products.

Using Cluster File Systems

Cluster File System (CFS) is the file system clustering functionality of VxFS. CFS is a separately licensable feature of VxFS that requires several other VERITAS products to enable communication services and provide shared disk storage resources. The VERITAS Cluster Server™ (VCS) and VERITAS Volume Manager™ (VxVM) are packaged with VxFS in the SANPoint Foundations Suite (SPFS) to provide a complete clustering environment. There is also high availability version, SPFS HA.

See “[Getting Help](#)” on page 20 for contact information on these products.

Compatibility With Previous Versions of VxFS

Note VERITAS recommends upgrading any previously installed VxFS file system to VxFS 3.5 with Version 5 disk layout.

VxFS 3.5 file systems employ disk layout Version 5. With the 3.5 release, you can no longer create Version 1 or Version 2 disk layout file systems, but the older disk layout file systems can still be mounted. You should begin upgrading any Version 1 or Version 2 disk layout file systems to Version 5 for them to be usable on future releases of VxFS. Cluster file systems and Storage Checkpoints require the Version 4 or higher disk layout to operate.

You can do the upgrade online using the `vxupgrade` command (see the `vxupgrade(1M)` manual page for details). You can use `vxfsconvert` (see `vxfsconvert(1M)`) on unmounted file systems. The following are issues to consider when planning disk layout upgrades:

- ◆ Version 1 disk layout file systems can support more than 8 million inodes, while Version 2 disk layout file systems have an 8 million inode limit.
- ◆ The Version 1 disk layout provides finer control of disk geometry than subsequent disk layouts. This finer control is not relevant on disks employing newer technologies, but can still be applicable on older hardware. If you are using Version 1 disk layout file systems on older hardware that needs fine control of disk geometry, a disk layout upgrade may be problematic.
- ◆ Images of Version 1 or Version 2 disk layout file systems created by copy utilities, such as `dd` or `volcopy`, will become unusable after a disk layout upgrade. Offline conversions tools will be provided in the next VxFS feature release to aid in migrating volume-image backup copies of Version 1 and Version 2 disk layout file systems to a Version 5 disk layout.



VxFS Packages

There are multiple software discs in the VERITAS product distribution. VxFS is on *VERITAS Storage Solutions 3.5 for Solaris* Disc 1. The following file system packages in the `file_system/pkg` directory of Disc 1:

- ◆ `VRTSvxfs`—VxFS software and online manual pages
- ◆ `VRTSfsdoc`—VxFS Documentation
- ◆ `VRTSvlic`—VERITAS products licensing facility
- ◆ `VRTSfspro`—VERITAS File System Management Services Provider
- ◆ `VRTSob`—VERITAS Enterprise Administrator Service
- ◆ `VRTSobgui`—VERITAS Enterprise Administrator

`VRTSvxfs` is the required VxFS binary package and `VRTSfsdoc` is the optional VxFS documentation package.

`VRTSvlic` is the required licensing package for all VERITAS products. `VRTSvlic` may already be available on your system if you have installed another VERITAS 3.5 product.

`VRTSfspro`, `VRTSob`, and `VRTSobgui` are part of the VERITAS Enterprise Administrator (VEA) GUI. These packages are typically installed by the VERITAS Volume Manager or VERITAS Foundation Suite™ and are not required for VxFS to operate.

See the *VERITAS File System Installation Guide* for complete instructions on how to install the VxFS packages.

Note VxFS is a licensed product; you must obtain a license key before installing it. License keys valid for VxFS 2.3.x and other 3.x File Systems are also valid for VERITAS 3.5 File Systems. For information on obtaining a license key, see the *VERITAS File System Installation Guide*.

Required Solaris Patches

For VERITAS File System functionality to work reliably on Solaris 8, you must have the following Solaris patches, or their later versions, installed:

108528-14 (requires patches 108987-09, 111293-04, 111310-01, 111111-03, and 112396-02)
108901-04

Add the patches in the following order or they will not install correctly:

112396-01
108987-09
111293-01
111310-01
111111-03
108528-14
108901-04

Documentation

The following documents accompany this VxFS release as Adobe Portable Document Format (PDF) files:

- ◆ *VERITAS File System Installation Guide*
- ◆ *VERITAS File System Administrator's Guide*

The `VRTSvxfs` package contains manual pages for VxFS commands and utilities.

The *VERITAS File System Release Notes* are provided on the VERITAS software disc in the file `vxfs_notes.pdf` under the `file_system/release_notes` directory. Because product release notes are not installed by any packages, VERITAS recommends that you copy them from the VERITAS software disc to the `/opt/VRTSfsdoc` directory so that they are available on your system for future reference.



Displaying Documentation Online

The VERITAS File System guides are provided on the VERITAS software disc under the `file_system/docs` directory as PDF files. To view or print PDF documents, you need the Adobe Acrobat Reader. The following two documents comprise the VxFS documentation set:

- ◆ *VERITAS File System Installation Guide*

After installing the `VRTSfsdoc` package, you can access this guide in the following location: `/opt/VRTSfsdoc/vxfs_ig.pdf`.

- ◆ *VERITAS File System Administrator's Guide*

After installing the `VRTSfsdoc` package, you can access this guide in the following location `/opt/VRTSfsdoc/vxfs_ag.pdf`.

See the *VERITAS File System Installation Guide* for `VRTSfsdoc` package installation information. The `VRTSvxfs` package contains manual pages for VxFS administration commands.

Cluster File System Documentation

There is a separate documentation package named `VRTScfsdc` for the Cluster File System. The `VRTScfsdc` documentation package contains the same *VERITAS File System Administrator's Guide* as `VRTSfsdoc`, but has a different installation guide named the *VERITAS SANPoint Foundation Suite Installation and Configuration Guide* that includes cluster administration information.

The online manual pages available with the VERITAS File System (listed under “[Online Manual Pages](#)” on page 9) are also available with the Cluster File System. There is a section in each VxFS manual page detailing any cluster functionality issues associated with that command (see “[Using Cluster File Systems](#)” on page 4).

Online Manual Pages

This release includes the following online manual pages as part of the `VRTSvxfs` package. These are installed in the appropriate directories under `/opt/VRTS/man` (add this to your `MANPATH` environment variable), but does not update the `windex` database. To ensure that new VxFS manual pages display correctly, update the `windex` database after installing `VRTSvxfs`. See the `catman(1M)` manual page for more information.

Section 1	Description
<code>cp_vxfs</code>	VxFS-specific copy command.
<code>cpio_vxfs</code>	VxFS-specific <code>cpio</code> command.
<code>getext</code>	Gets extent attributes for a VxFS file system.
<code>ls_vxfs</code>	VxFS-specific list command.
<code>mv_vxfs</code>	VxFS-specific move command.
<code>qioadmin¹</code>	VxFS Quick I/O for Databases cache administration utility.
<code>qiomkfile¹</code>	Creates a VxFS Quick I/O device file.
<code>qiostat¹</code>	VxFS Quick I/O for Databases statistics utility.
<code>setext</code>	Sets extent attributes on a file in a VxFS file system.
Section 1M	Description
<code>cfscluster^{3,4}</code>	CFS cluster configuration command.
<code>cfsdgadm^{3,4}</code>	Adds or deletes shared disk groups to/from a cluster configuration.
<code>cfsmntadm^{3,4}</code>	Adds, deletes, modifies, and sets policy on cluster mounted file systems.
<code>cfsmount,</code> <code>cfsunmount^{3,4}</code>	Mounts or unmounts a cluster file system.
<code>df_vxfs</code>	Reports the number of free disk blocks and inodes for a VxFS file system.
<code>ff_vxfs</code>	Lists file names and inode information for a VxFS file system.
<code>fsadm_vxfs</code>	Resizes or reorganizes a VxFS file system.
<code>fscat_vxfs</code>	Cats a VxFS file system.
<code>fsck_vxfs</code>	Checks and repairs a VxFS file system.
<code>fsckptadm⁵</code>	VxFS Storage Checkpoint administration utility.
<code>fsclustadm^{3,5}</code>	Manages cluster-mounted VxFS file systems.
<code>fsdb_vxfs</code>	VxFS file system debugger.
<code>fstyp_vxfs</code>	Returns the type of file system on a specified disk partition.
<code>glmconfig³</code>	Group Lock Manager (GLM) configuration utility.



mkfs_vxfs	Constructs a VxFS file system.
mount_vxfs	Mounts a VxFS file system.
ncheck_vxfs	Generates path names from inode numbers for a VxFS file system.
qlogadm ²	Low level ioctl utility for the QuickLog driver.
qlogattach ²	Attaches a previously formatted QuickLog volume to a QuickLog device.
qlogck ²	Recovers QuickLog devices during the boot process.
qlogclustadm ^{2,4}	Cluster QuickLog device administrative utility.
qlogdb ²	QuickLog debugging tool.
qlogdetach ²	Detaches a QuickLog volume from a QuickLog device.
qlogdisable ²	Remounts a VxFS file system with QuickLog logging disabled.
qlogenable ²	Remounts a VxFS file system with QuickLog logging enabled.
qlogmk ²	Creates and attaches a QuickLog volume to a QuickLog device.
qlogprint ²	Displays records from the QuickLog configuration.
qlogrec ²	Recovers the QuickLog configuration file during a system failover.
qlogrm ²	Removes a QuickLog volume from the configuration file.
qlogstat ²	Prints statistics for running QuickLog devices, QuickLog volumes, and VxFS file systems.
qlogtrace ²	Prints QuickLog tracing.
umount_vxfs	Unmounts a VxFS file system.
vxdump	Incremental file system dump.
vxedquota	Edits user quotas for a VxFS file system.
vxfsconvert	Converts an unmounted file system to VxFS or upgrades a VxFS disk layout version.
vxfsstat	Displays file system statistics.
vxquot	Displays file system ownership summaries for a VxFS file system.
vxquota	Displays user disk quotas and usage on a VxFS file system.
vxquotaoff vxquotaon	Turns quotas on and off for a VxFS file system.
vxrepquota	Summarizes quotas for a VxFS file system.
vxrestore	Restores a file system incrementally.
vxtunefs	Tunes a VxFS file system.
vxupgrade	Upgrades the disk layout of a mounted VxFS file system.

Section 4	Description
fs_vxfs	Format of a VxFS file system volume.
inode_vxfs	Format of a VxFS file system inode.
qlog_config ²	QuickLog configuration file.
tunefstab	VxFS file system tuning parameters table.
Section 7	Description
qlog ²	VERITAS QuickLog device driver.
vxfsio	VxFS file system control functions.
¹ Functionality available only with VERITAS Quick I/O for Databases feature	
² Functionality available only with VERITAS QuickLog feature	
³ Functionality available only with the VERITAS Cluster File System product	
⁴ New in VxFS 3.5	



Command Summary

Symbolic links to all VxFS command executables are installed in the `/opt/VRTS/bin` directory. Add this directory to the end of your PATH environment variable to access the commands:

Command	Description
cp	VxFS-specific copy command.
cpio	VxFS-specific cpio command.
cfsccluster ^{3,4}	CFS cluster configuration command.
cfsgadm ^{3,4}	Adds or deletes shared disk groups to/from a cluster configuration.
cfsmntadm ^{3,4}	Adds, deletes, modifies, and sets policy on cluster mounted file systems.
cfsmount, cfsumount ^{3,4}	Mounts or unmounts a cluster file system.
df	Reports the number of free disk blocks and inodes for a VxFS file system.
ff	Lists file names and inode information for a VxFS file system.
fsadm	Resizes or defragments a VxFS file system.
fscat	Cats a VxFS file system.
fsck	Checks and repairs a VxFS file system.
fsckptadm ⁵	VxFS Storage Checkpoint administration utility.
fsclustadm ^{3,5}	Manages cluster-mounted VxFS file systems.
fsdb	VxFS file system debugger.
fstyp	Returns the type of file system on a specified disk partition.
getext	Gets extent attributes for a VxFS file system.
glmconfig ³	Group Lock Manager (GLM) configuration utility.
ls	VxFS-specific list command.
mkfs	Constructs a VxFS file system.
mount	Mounts a VxFS file system.
mv	VxFS-specific move command.
ncheck	Generates path names from inode numbers for a VxFS file system.
qioadmin ¹	VxFS Quick I/O for Databases cache administration utility.
qiomkfile ¹	Creates a VxFS Quick I/O device file.
qiostat ¹	VxFS Quick I/O for Databases statistics utility.

Command	Description
qlogadm ²	Low level IOCTL utility for the QuickLog driver.
qlogattach ²	Attaches a previously formatted QuickLog volume to a QuickLog device.
qlogck ²	Recovers QuickLog devices during the boot process.
qlogclustadm ^{2,4}	Cluster QuickLog device administrative utility.
qlogdb ²	QuickLog debugging tool.
qlogdetach ²	Detaches a QuickLog volume from a QuickLog device.
qlogdisable ²	Remounts a VxFS file system with QuickLog logging disabled.
qlogenable ²	Remounts a VxFS file system with QuickLog logging enabled.
qlogmk ²	Creates and attaches a QuickLog volume to a QuickLog device.
qlogprint ²	Displays records from the QuickLog configuration.
qlogrec ²	Recovers the QuickLog configuration file during a system failover.
qlogrm ²	Removes a QuickLog volume from the configuration file.
qlogstat ²	Prints statistics for running QuickLog devices, QuickLog volumes, and VxFS file systems.
qlogtrace ²	Prints QuickLog tracing.



Command	Description
setext	Sets extent attributes on a file in a VxFS file system.
umount_vxfs ⁵	Unmounts a VxFS file system.
vxdump	Incremental file system dump.
vxedquota	Edits user quotas for a VxFS file system.
vxfsconvert	Converts an unmounted file system to VxFS or upgrades a VxFS disk layout version.
vxfsstat	Displays file system statistics.
vxquot	Displays file system ownership summaries for a VxFS file system.
vxquota	Displays user disk quotas and usage on a VxFS file system.
vxquotaoff vxquotaon	Turns quotas on and off for a VxFS file system.
vxrepquota	Summarizes quotas for a VxFS file system.
vxrestore	Restores a file system incrementally.
vxtunefs	Tunes a VxFS file system.
vxupgrade	Upgrades the disk layout of a mounted VxFS file system.
¹ Functionality available only with VERITAS Quick I/O for Databases feature ² Functionality available only with VERITAS QuickLog feature ³ Functionality available only with the VERITAS Cluster File System product ⁴ New in VxFS 3.5	

Software Issues in VxFS

▼ Stack Size Change

When installed on Solaris 7, Solaris 8, and Solaris 9 VxFS changes the default stack to 24K for 64-bit systems. If you are using systems only in 32-bit mode, you can change the stack size back to 16K. The stack size is 16K for Solaris 2.6. The stack size is designated in the Solaris configuration file `/etc/system`.

▼ Storage Checkpoints Do Not Operate with HSM Products

Storage Checkpoints cannot be created on a file system where the VERITAS Storage Migrator™ is active, or with other hierarchical storage management (HSM) products that use the DMAPI interface.

▼ VxFS 3.5 Incompatible with HSM Applications

VxFS 3.5 does not operate with VERITAS Storage Migrator versions 4.5 and earlier. A patch for VERITAS Storage Migrator 4.5 is available from VERITAS support on the VERITAS Customer Support website:

<http://seer.support.veritas.com/docs/249443.htm>

Other HSM applications may also require a patch. Contact your HSM vendor for product-specific information.

▼ Disable QuickLog Device Logging Before Installing VxFS 3.5

Because of the QuickLog disk layout change in VxFS 3.5, you must disable QuickLog logging on any file systems mounted with the `mount qllog` option before upgrading. See the *VERITAS File System Installation Guide* for more information.

▼ The `ustat` Command Returns Error for VxFS File Systems Larger than One Terabyte

The `ustat` command returns an `EOverflow` error for VxFS file systems larger than one terabyte because the variable used to store file system size overflows (see the `ustat(2)` manual page).

▼ Commands Must be Large File Aware to Operate Correctly on File Systems Larger than One Terabyte

For utilities to operate correctly on large file systems, they must be large file aware. This applies even if commands are invoked on small files in a large file system. See the Disk Layout chapter in the *VERITAS File System Administrator's Guide* for more information.



▼ Inode Limitation on File Systems Without Large File Support

For a file system to have more than 8 million inodes, you must create it using the `largefiles` option of `mkfs` (the `fsadm` utility can also be used to set the `largefiles` flag on the file system). See the `mkfs_vxfs(1M)` and `fsadm_vxfs(1M)` manual pages for details.

▼ vxupgrade Does Not Upgrade Older Disk Layouts Directly to Version 5

The `vxupgrade` command upgrades older disk layouts in stages, so a Version 1 file system disk layout must be upgraded to Version 2, Version 2 to Version 4, then Version 4 to Version 5. The `vxfsconvert` command upgrades unmounted Version 1 and Version 2 disk layouts directly to Version 4, but `vxupgrade` must be used to convert to Version 5.

▼ Quick I/O Files Cannot Be Sparse Files

If you try to convert a sparse file to a Quick I/O file, the Oracle instance can fail if Oracle tries to write into an unallocated block. Specifically, datafiles used by the Oracle8i and Oracle9i temporary tablespace may be sparse files, so do not convert these to Quick I/O files. See the *VERITAS Database Edition for Oracle Database Administrator's Guide* for more information.

▼ Increased Kernel Stack Size Required

VxFS often requires more than the default 8K kernel stack size, so during the `VRTSvxfs` installation, entries are added to `/etc/system` to increase the kernel thread stack size to 16K.

▼ Panics on Solaris 8 Operating Systems

There are possible stack overflow problems on VxFS file systems that are NFS exported. The problem occurs only on Solaris 8, 32-bit systems. If you are using Solaris 8 Update 2 or earlier, follow these steps to increase the NFS thread stack size:

1. Apply Sun Microsystems patch number 108901-03 or later. See the `patchadd(1M)` manual page for information on installing patches.
2. Add the following line to the file `/etc/system`:

```
set rpcmod:svc_default_stksize=0x4000
```
3. Reboot the system.

Caution For Solaris 8 Update 2 or earlier, you *must* apply this patch on *both* 32-bit and 64-bit operating systems before altering the default stack size parameter, otherwise the system will panic on reboot.

If you are using Solaris 8 Update 3, follow these steps to increase the stack size:

1. Add the following line to the file `/etc/system`:

```
set rpcmod:svc_default_stksize=0x4000
```

2. Reboot the system.

▼ Some Disk Quota Operations Do Not Function on NFS

When VxFS file systems are exported via NFS, quotas on the file system apply to users when accessing the file system from NFS clients. However, neither the Solaris nor the VxFS quota commands on the NFS client can be used to query or edit quotas.

The VxFS quota commands can be used on the server to query or edit quotas.

▼ Non-standard Command Behavior When Using Access Control Lists (ACLs)

The output of the `ls -l` command on VxFS file systems shows `mask/CLASS_OBJ` in place of group permissions if ACLs are in use on a file or a directory. You can determine the effective group permissions by using the `getfacl` command. In the next release of VxFS, the behavior of `ls -l` will show effective group permissions, that is, `GROUP_OBJ` masked by `CLASS_OBJ`.

The `chmod` command changes `mask/CLASS_OBJ` instead of the group permissions if ACLs are in use on a file or a directory. `GROUP_OBJ` is not changed by `chmod`, and because effective group permissions are determined by `GROUP_OBJ` and `CLASS_OBJ`, the default group may not receive the permissions specified by `chmod`. Because `ls -l` shows `mask` only (which is changed by `chmod`), it only *appears* that the group permissions are changed as specified in `chmod`. Use of `chmod` command is not advisable on files with ACLs. Instead, use the `getfacl` command to manipulate permissions.

In the next release of VxFS, the behavior of both `mask/CLASS_OBJ` and `GROUP_OBJ` will change after executing the `chmod` command. Even in that case, using the `getfacl` command is advisable for manipulating permissions.

See the following manual pages for ACL-related information: `aclcheck(3)`, `aclsort(3)`, `chmod(1)`, `getfacl(1)`, `ls(1)`, `setfacl(1)`, and `uname(1)`.

▼ 100% Full File System Cannot Be Resized

In some circumstances, the `fsadm` command cannot resize a 100% full file system due to lack of space for updating structural information. Check VxFS file systems on a regular basis and increase their size if they approach 100% capacity.

▼ Under Some Conditions, fsadm Cannot Truncate a Directory

The `fsadm` command cannot truncate a directory if it has only one extent that is more than two blocks in length, even if all the directory entries are deleted.



▼ Must Reboot After Running the pkgadd Command

When you upgrade to a new VRTSvxfs package, reboot the system. New kernel modules are not loaded by the `pkgadd` command, so a reboot is required.

▼ A Change in the Method of Computing CUT Values May Cause Misleading Error Messages to Display.

In this release, the method for computing the Current Usage Table (CUT) values for a Version 2 file system has changed.

If a Version 2 file system is mounted on a system running VxFS 3.4 or VxFS 3.5, and that file system is subsequently used on an earlier version of VxFS, the following messages may display when performing a full `fsck`:

```
vxfs fsck: incorrect CUT entry for filest 1, fix? (ynq)
vxfs fsck: incorrect CUT entry for filest 999, fix? (ynq)
```

This is expected and does not indicate file system corruption. Answer **y** to both questions. There is no need to perform a full `fsck` when moving such a file system to and from different versions of VxFS unless the file system is dirty, in which case a full `fsck` is required.

▼ Some Fields Not Displayed by the fstyp Command

The `fstyp -v` option shows the super-block. For the Version 4 and Version 5 disk layout, some information is no longer in the super-block, so fields such as `nau`, `logstart`, or `logend` display zeros. `nau` can be computed using the following formula:

$$\text{nau} = (\text{size} + \text{aulen} - 1) / \text{aulen}$$

`fstyp -v` displays the `size` and `aulen` fields. You can use `mkfs -F vxfs -m raw_device_file` to display many fields that are not part of super-block. See the `mkfs_vxfs(1M)` and `mkfs(1M)` manual pages for more information.

▼ Data Integrity Issues with Disks and Disk Arrays with Write-back Caches

Disk drives configured to use a write-back cache, or disk arrays configured with a volatile write-back cache, exhibit data integrity problems. The problems occur after a power failure, SCSI bus reset, or other event in which the disk has cached data, but has not yet written it to non-volatile storage. Contact your disk drive or disk array manufacturer to determine whether your system disk drives use a write-back cache, and if the configuration can be changed to disable write-back caching.

▼ DMAPI Not Supported on Version 1 Disk Layouts

Use DMAPI only on VxFS Version 2 or higher disk layouts.

Using VxFS in VCS and Other HA Environments

The VERITAS File System can be used in VERITAS Cluster Server™ and other High Availability environments. Because the VxFS driver is loadable, it is not guaranteed to occupy the same position in each system's virtual file system switch (vfssw) table. To ensure reliable failover of a VxFS file system between hosts, add the following line in the same position to each host's `/etc/system` file:

```
forceload: fs/vxfs
```

When using VxFS in a High Availability environment, make sure that all systems in the cluster are running the same version of VxFS. Systems running different versions of VxFS cannot failover.

Note The VxFS cluster feature works only with VERITAS Cluster Server.



Getting Help

For assistance with any of the VERITAS products, contact VERITAS Technical Support:

- ◆ U.S. and Canadian Customers: 1-800-342-0652
- ◆ International: +1-650-527-8555
- ◆ Email: support@veritas.com

For license information:

- ◆ Phone: 1-925-931-2464
- ◆ Email: license@veritas.com
- ◆ Fax: 1-925-931-2487

For software updates:

- ◆ Email: swupdate@veritas.com

For information on purchasing VERITAS products:

- ◆ Phone: 1-800-258-UNIX (1-800-258-8649) or 1-650-527-8000
- ◆ Email: vx-sales@veritas.com

For additional information about VERITAS and VERITAS products, visit the Web site at:

<http://www.veritas.com>

For software updates and additional technical support information, such as TechNotes, product alerts, and hardware compatibility lists, visit the VERITAS Technical Support Web site at:

<http://support.veritas.com>

Licensing and Support From Sun Microsystems

When you buy the VERITAS File System through Sun Microsystems, you must also purchase a license kit from Sun for each feature. For support and licensing information, refer directly to the license kits, *not* the contact information provided above and in the VERITAS File System documentation.

Note The VERITAS Installation Menu is not available on the CD when you purchase the VERITAS File System through Sun Microsystems.

The VRTSexplorer Diagnostic Program

The VRTSexplorer program is available to assist VERITAS Customer Support engineers in diagnosing technical problems associated with VERITAS products. You can download this program from the VERITAS FTP site or install it from the VERITAS software disc. For more information about the VRTSexplorer program, consult the README file located in the support directory.

Downloading VRTSexplorer from the Web

1. Use a web browser or the `ftp` program to download the VRTSexplorer program from the following URL:

```
ftp://ftp.veritas.com/pub/support/vxexplore.tar.Z
```

Save the file to a temporary directory, such as `/tmp`, as shown in the example session below.

2. Log in as `root` on the system that is experiencing the problem. Extract the contents of the downloaded file to the directory `/tmp/VRTSexplorer`:

```
# cd /tmp
# zcat vxexplore.tar.Z | tar xvf -
```

3. Run the VRTSexplorer program located in the VRTSexplorer directory:

```
# /tmp/VRTSexplorer/VRTSexplorer
```

4. When VRTSexplorer prompts for a destination directory for the information that it collects, press Return to accept the default directory `/tmp`, or enter an alternative path name of your own choice. VRTSexplorer writes the results of its analysis to a compressed tar file named `VRTSexplorer_casenumbr_hostname.tar.Z` in the specified directory.

5. Use the file upload facility of your web browser, or the `ftp` program, to transfer the VRTSexplorer output file to the VERITAS Customer Support anonymous FTP site:

```
ftp://ftp.veritas.com/incoming
```

6. Telephone VERITAS Technical Support at the number listed under “Getting Help” on page 20. Tell them that you have run VRTSexplorer and provide the name of the file that you transferred to the FTP site.

Alternatively, if you have already been assigned a call ID number by Customer Support, send email to `support@veritas.com` and include your case ID number in the subject line.



Installing VRTSexplorer from the VERITAS Software Disc

The file VRTSspt package is included on the VERITAS software disc under the /support directory. To load the software from the software disc:

1. Log in as superuser.
2. Place the VERITAS software VERITAS software disc into a CD-ROM drive connected to your system.
3. If Solaris volume management software is running on your system, when you insert the VERITAS software disc it is automatically mounted as /cdrom/cdrom0.
4. If Solaris volume management software is not available to mount the VERITAS software disc automatically, you must mount it manually. After inserting the disc, enter:

```
# mount -F hsfs -o ro /dev/dsk/c0t6d0s2 /cdrom/cdrom0
```

where c0t6d0s2 is the default address for the CD-ROM drive.

5. Move to the support directory and install the VRTSspt package:

```
# cd /cdrom/cdrom0/file_system/support
# pkgadd -d . VRTSspt
```

6. The program is installed in the /opt/VRTSspt directory and takes approximately 500 KB of disk space. To run the program, enter:.

```
# /opt/VRTSspt/VRTSexplorer/VRTSexplorer
```

7. Use the file upload facility of your web browser, or the ftp program, to transfer the VRTSexplorer output file to the VERITAS Customer Support anonymous FTP site:

```
ftp://ftp.veritas.com/incoming
```

8. Telephone VERITAS Customer Support at the number listed under “[Getting Help](#)” on page 20. Tell them that you have run VRTSexplorer and provide the name of the file that you transferred to the FTP site.

Alternatively, if you have already been assigned a call ID number by Customer Support, send email to support@veritas.com and include your case ID number in the subject line.

9. To remove the VRTSspt package, enter:

```
# pkgrm VRTSspt
```